

The Trajectory to Elite Level: An Investigation of the
Individual and Environmental Features of Within Career
Transitions in Sport

Georgios Andronikos

A thesis submitted in partial fulfilment of the requirements of Edinburgh Napier

University, for the award of Doctor of Philosophy

May 2018

Abstract

While much of the ‘sport transitions’ literature focusses on the ‘end of career’, research focussing on within career transitions in sport has identified a number of challenging transitions, for example, the move from junior to senior sport. While there is some very focussed (e.g., Scandinavian context) quantitative research that has been conducted, our understanding regarding the factors that contribute to the adjustment of athletes through within career sport transitions is mainly based from qualitative methodologies. It is clear that there are a number of important transitions on the path to elite sport, which may vary depending on factors such as sport and culture (e.g. diversification to specialising; junior to senior; academy to professional; elite to super elite; continued longevity of success). Continuing to broaden and deepen our understanding in this area will help both researchers and practitioners working with athletes on this pathway. As such, the objectives of this thesis are to: 1) Understand the predictive factors of adjustment and satisfaction through important within career sport transitions; 2) Investigate the individual, environmental and experiential features that are associated with successful and unsuccessful transitions to elite level sport 3) Investigate the individual characteristics and environmental features of a highly successful world class elite development program.

These three thesis objectives were achieved through four aims and associated studies. Specifically: a) Examining the junior to senior transition experiences of a cross-cultural population using the Transition Monitoring Survey, b) Examining the individual and environmental characteristics, and developmental experiences of athletes who successfully negotiated the transition to elite level through qualitative methodology, c) Examining the individual and environmental characteristics, and developmental experiences of athletes who were unsuccessful in negotiating the transition to elite level, through qualitative methodology,

and d) Examining the mechanisms that underpin the success of an independent triathlon program in developing elite world-class level athletes, using a qualitative approach.

Subtleties of the trajectory were identified and interestingly athletes who successfully progressed to elite level made a choice to commit to their sport after taking part in deliberate play activities during early steps. On the contrary, unsuccessful athletes specialized early and in some cases the sport they were involved was not a personal choice. Findings showed that a combination of individual and environmental characteristics is necessary in order to cope successfully with within-career transitions. Physical abilities, commitment, motivation, aspirations, mental skills and the ability to respond to challenges were acknowledged as facilitators of a successful trajectory towards elite level. As environmental features also play a significant role in the outcome of the within career transitions an environment focused on long-term development, with clear and coherent communication and goals promoting the athlete wellbeing while in the same time utilizing intentional challenge can facilitate the pathway to elite level. The integration of the selection process as part of the talent development and the use of role models within the team to enable individuals continuously learn from each other were additional features identified. On the other hand, social pressure, balancing a dual career, a winning focused environment and poor communication were the main barriers that may lead to dropout.

Practical implications are that increasing the quality of athletes' preparation and equipping them with the skills and attributes required in order to cope with the challenges of the within career transitions during their trajectory to elite level competition would facilitate progression. As such, not only developing individual characteristics but also creating an environment that aids to this end would increase the chances of athletes reach at elite level. Research implications of this thesis are that key individual and environmental features that facilitate progression to elite level were identified. Future research is required regarding the

potential connection of early experiences and long-term achievements in sport, differences between team and individual sports while also further examination of successful environments and longitudinal examination of within career transitions.

Author Declaration

Edinburgh Napier University, May 2018

I hereby declare that:

- a) I have composed this thesis,
- b) This thesis is my own work and,
- c) This work has not been submitted for any other degree or professional qualification
except as specified

Georgios Andronikos

Acknowledgements

Firstly, I would like to sincerely thank my supervisor Russell Martindale for his exceptional guidance and invaluable support throughout this journey. You have given me great inspiration to pursue my dreams. Thanks for keeping me going and helping me do my best.

I would also like to thank my second supervisor Tony Westbury who through rough times was there to give me wise advice. He has been a great mentor since my first day at Edinburgh Napier University.

I would like to thank my colleagues and friends for their encouragement and for giving me strength throughout the last years. Also many thanks to all those who shared their experiences with me, without you these pages would not have been possible.

I will be forever thankful to my parents for always believing in me and supporting me anyway they can. I really wish my Dad were here to see me completing this journey.

Finally, Katerina I could not have done it without you. Thanks for your love and support and all the best.

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Chapter 1-Introduction

Every year several millions of children take part in an organized sport activity and for some of those children this is the beginning of a successful career as an elite adult athlete or of a healthy lifestyle. Athletic career contains a number of stages of development which have been described in the literature as initiation/sampling, development/specializing and mastery/investment (Bloom, 1985; Côté, 1999). In addition, a fourth stage described as maintenance years has also been proposed (Durand-Bush & Salmela, 2002). Transitions between those stages appear to be crucial for the successful progression and athletes face several transitions throughout the trajectory to elite level, which will be challenging and demanding for them (Wylleman & Lavallee, 2004). Schlossberg (1981, p.5) defined transition as ‘an event or non-event which results in a change in assumptions about oneself and the world and thus requires a corresponding change in one’s behaviour and relationships’. For instance, athletes may deal with changes in terms of the competition level or within their teams or their coaches. Essentially, there are two types of transitions: normative and non-normative. Normative are expected transitions and occur when an athlete enters a new stage in their development while non-normative are the transitions that are involuntary and it is not possible to be predicted (Schlossberg, 1984).

The developmental model of transitions faced by athletes describes all the normative transitions that an athlete will face at athletic, individual, psychosocial and academic/vocational level. This model demonstrated the complex nature of athletic development and identified that multiple transitions may occur in the same time. More specifically, transitions in individual, psychosocial, academic/vocational level may overlap (Wylleman & Lavallee, 2004). This adds pressure to the young athletes and makes that period particularly challenging since they have to make life choices, adjust to new environments, develop new skills and generally cope with the demands they face in multiple domains of their lives. In addition, research suggests that the

development of athletes is a dynamic and non-linear process and therefore there are numerous pathways that athletes may take throughout their trajectory in sport (Abbott, Button, Pepping, & Collins, 2005). This idiosyncratic nature of development coupled with the importance of the transitions makes it essential that talent development programs provide flexible and individualized support to athletes throughout their trajectory to elite level.

Much of the within career transition research has been focused on the transition out of sport (Grove, Lavalley & Gordon, 1997; Stambulova, Alfermann, Statler, & Côté, 2009; Werthner & Orlick, 1986), although understanding within career transitions has shown to be important and as such this area of research gains increasing attention. Nonetheless, there is still a need for more research in this area (Stambulova, Franck, & Weibull, 2012). The trajectory to elite level contains numerous challenging transitions that may vary depend on sport and culture and many athletes drop out during important transitions such junior to senior level or academy to first team (Baron-Thiene & Alfermann, 2015; Bruner, Munroe-Chandler, & Spink 2008; Finn & McKenna, 2010; Stambulova *et al.*, 2012). While it is necessary to highlight that it is not possible for all athletes to compete at elite level, it is clear that environmental and individual characteristics can play a role influencing the success of the progress rates of development athletes across transitions on their trajectory to elite level (e.g. Savage, Collins, & Cruickshank, 2017).

The athletic career transition model developed by Stambulova (2003) describes each transition as a process, which involves demands, resources and barriers. In each transition, athletes face a spectrum of demands that they need to deal with in order to make a successful transition. The result of this coping process is related to the dynamic balance between resources and barriers. Other researchers have highlighted certain individual characteristics which help athletes progress successful through transitions (Alfermann & Stambulova, 2007; MacNamara, Button, & Collins, 2010a, 2010b) and achieve excellence in the long-term (Durand- Bush &

Salmela 2002; Gould, Dieffenbach, & Moffett, 2002). Furthermore, an effective Talent Development Environment (TDE) with the ability to support athletes and provide all the necessary resources can help the transitions of athletes (Henriksen, 2010; Martindale, Collins, & Abraham, 2007). Previous research has examined TDEs and has identified key features that facilitate effective development of athletes (Henriksen, Stambulova, & Roessler, 2010a, 2010b, 2011; Mills, Butt, Maynard, & Harwood, 2012, 2014a, 2014b). It was found that use of role models, drive to achieve excellence, individualized support, long-term focus, strong team spirit and providing opportunities to enable athletes develop resilience were amongst those key features. However, those studies emphasized on specific contexts (case studies of specific environments or specific sport). In addition, Martindale *et al.*, (2007) provided an overview of the environmental features of effective talent development by examining diverse National Governing Bodies (NGB) based sport and Fletcher and Wagstaff (2009) examined the factors that may attribute to success at Olympic Games. As such, by analyzing sport environments the knowledge over talent development will expand and enable us to understand in a better way how to create environments that develop talented athletes to their best potential throughout their trajectory to elite level (Henriksen, 2010).

Quantitative studies relating to within career transitions are sparse; however, those that exist are focused within a Scandinavian context. Much of our understanding, regarding the factors that influence athletes during these transitions is mainly attributed to qualitative research. The great majority of research in within career transitions level has been conducted in Sweden by several researchers (Alge, 2008; Čačija, 2007; Franck & Tuovila, 2008; Mavroidis, 2004; Stambulova *et al.*, 2012; Vujic, 2004). Research has also examined within career transitions in Spanish (Lorenzo, Borrás, Sánchez, Jiménez, & Sampedro, 2009), UK (Fin & McKenna; Pummell, Harwood, & Lavalley, 2008; Morris, 2013) and Canadian contexts (Bruner *et al.*, 2008). The findings showed financial and social support, psychological

attributes such as commitment, motivation and high aspirations coupled with long-term goals were facilitators of successful development during within career transitions. On the other hand, financial difficulties, parental and social pressure, combining sport with school, increasing demands in training, reduced playing time and fitting into the new adult environment were identified as the most common barriers. However, research suggests that context and culture is an important consideration and as such, this thesis will examine within career transition in different populations from both players and experts perspective adopting a mixed method approach.

It is important to further examine the area of within career transitions in sport both quantitatively and qualitatively as continuing to broaden and deepen our understanding in this area will help both researchers and practitioners working with athletes during their trajectory to elite level. Moreover, it is essential to increase the research in breadth of contexts (e.g. cultures, sport). Thus, a mixed method approach was used to investigate the following objectives of the current thesis:

- 1) Understand the predictive factors contributing to success (adjustment, satisfaction) during the transition from junior to senior level.
- 2) Investigate the development experiences, individual and environmental features that are associated with successful and unsuccessful transitions to elite level sport.
- 3) Investigate the individual characteristics of athletes and the environmental features of a highly successful world class elite development program.

To address these objectives the structure of this thesis will contain six chapters following this introduction. In those six chapters the following four studies were conducted to address the three objectives of the thesis described:

Chapter 2 will include an extensive literature review of the up to date research in the area talent identification and development in general but also in within career transitions more specifically. This chapter aims to offer an overview of the research findings and identify the gaps in the literature that require further examination and therefore provide the rationale for the current thesis.

Chapter 3 targets objective 1 and by the use of a quantitative instrument (Transition Monitoring Survey) will assess the junior to senior transition in sport. Chapter 3 will offer an original contribution to the current literature as it will be the first study to quantitatively examine junior to senior transition experiences outside of a Scandinavian context using a cross-cultural sample in order to broaden our understanding in this area. It is evident through previous research that this particular transition requires further examination in a broader population outside Scandinavia. Therefore, study 1 was a cross-cultural examination of the transition from junior to senior level of talented and promising young athletes.

Chapter 4 will help address objective 2 by examining the development experiences, individual and environmental features of athletes who successfully negotiated the transition to elite level. It is evident that more research is required in this area and as such, this study will provide more in depth information regarding the transition to elite level. In addition, by examining diverse sport and cultures (UK and Greece) study 2 will broaden our understanding regarding successful transitions to elite level in different contexts (development environments, countries). The qualitative retrospective approach was followed to help investigate the complexity of the trajectory towards elite level and also glean more information about previous experiences and their potential influence while also identify key individual and environmental characteristics around the transitions itself.

Chapter 5 also targets objective two by the development experiences, individual and environmental features of athletes who did not manage to negotiate successfully the transition

to elite level. This chapter is original as only a few studies have examined dropout of athletes when entering elite senior level. More specifically, this chapter is original because of the nature of the athletes who took part in this study. The majority of the studies examining in this area have examined dropout during development stages. Moreover, there is a dearth of knowledge in this area because it is a hard to reach population. In addition, understanding what had a negative impact in their trajectory towards elite level can guard against bias of only interviewing successful athletes but also offer a comparison to successful athletes which is crucial in helping to identify critical events, characteristics or barriers to success. As such, it will significantly add to the existing literature by identifying the reasons that influenced their withdrawal from sport and also investigate potential differences in the development experiences of athletes who 'made it' to elite level and those who did not negotiate successfully this transition. Examining more athletes in different contexts using a retrospective qualitative approach allow us to both broaden and deepen our understanding in this area.

Chapter 6 will address objective 3 by investigating the individual characteristics of athletes and the environmental features of a highly successful world class elite development program using semi-structured interviews to gain an in depth understanding. By examining the mechanisms that underpin success this study will provide evidence from the experts' perspective regarding the factors that facilitate progression to elite level. More specifically, it will describe the modus operandi of this particular world class development environment consisted by a multinational squad operating independently without constraints from NGBs. This chapter will offer an original contribution to the literature because no other research has investigated an independent development environment and will also shed light to the experts' perspective regarding the transition to elite level. By identifying strategies applied in a highly successfully environment the current knowledge of the mechanisms that underpin success will expand and guidelines that can potentially be applied in other context will be acknowledged.

Chapter 2-Talent Identification and Development and Within Career Transitions: An Overview of the Current Literature

2.1. Stages of Development and Within Career Transitions

2.1.1. Overview of stages and transitions.

There appear to be several stages and associated transitions throughout the development process of athletes. According to Bloom's model (1985), there are three stages of development: initiation (early years), development (middle years), and perfection or mastery (later years). These stages are not determined by age, but by the completion of specific tasks such as the development of relationships or attitudes, development of new identities or the mastery of skills (Bloom, 1985). Côté (1999) carried out similar work within a sport-only context and refined the model proposing: sampling years at the age of 5-12, specializing years at the age of 13-15 and investment years at the age over 15. According to Côté (1999) sampling years involve participation in a variety of sport and more deliberate play than deliberate practice. Specializing years are characterized by a reduction in sport and include approximately same amounts of both deliberate and practice. Investment years incorporate higher frequency of deliberate practice in comparison to deliberate play, focused predominantly on one sport. This model is known as the Developmental Model of Sport Participation (DMSP). Furthermore, Durand-Bush and Salmela (2002) suggested another stage of athletes' development. The authors highlighted four stages of development: sampling years, the specializing years, the investment years and the maintenance years. Durand-Bush and Salmela (2002) identified many similar factors related to successful talent development in sport including socio-cultural factors (e.g. the role of parents, coaches, peers/teammates, other athletes and support staff), personal characteristics (e.g. confidence, motivation and perseverance), training (e.g. technical, tactical, physical and mental preparation) and competition factors (e.g. planning, coping with pressure, expectations, and adversity, and focusing on the process rather than the outcome of events).

Similarly, Kreiner–Phillips and Orlick (1992) described that there is a difference in the challenge between “getting there [to elite level]” and “staying there [at elite level]”. It is highlighted that during this stage there is a need for increased training quality, coping resources and additional support in order to cope with the stress of continued elite competitive sport.

Stambulova (1994, 2000) suggested that the career of an athlete is consisted by six predictable stages and transitions: a) the beginning of the sport specialization, b) transition to intensive training, c) transition to high-achievement sport and adult sport, d) transition from amateur to professional sport, e) transition from culmination to the end of the sport career, f) end of the sport career. The analytic athletic career model (Stambulova, 1994) does not indicate chronological ages or educational system markers for each transition. Wylleman, De Knop, Menkehorst, Theeboom, and Annerel (1993) connected the stages with ages by using the periods which former Olympic athletes made the transitions. It was found that the transition into initiation stage occurred at the age of 14.3, into development stage at the age of 15 and into the mastery stage at 18.5 years old. Nevertheless, the ages that the transitions take place can differ depending on the sport. For example, female gymnasts usually end their career between the ages of 15 and 19 (Kerr & Dacyshyn, 2000) which is the age that male rowers tend to make the transition to the mastery stage (Wylleman *et al.*, 1993). Similarly, Reints, Wylleman, and Dom (2008) examined the development pathways of judokas while Germeau (2009) investigated the pathways of swimmers and fencers and it was shown that the judokas experienced the same normative transitions and stages within the athletic domain as those described by the model of Wylleman and Lavallee (2004). In addition, it was found that the ages at which the athletes made the transitions were similar for judokas, fencers and the swimmers: initiation stage = fencers and swimmers at the age of 7; judokas at the age of 9, developmental stage= fencers age 11, swimmers and judokas age 13, mastery stage= fencers age 18, swimmers age 19 and judokas age 15.

Despite the fact that the transitions of athletes occurred approximately in the same ages as they were presented in the model of Wylleman and Lavallee (2004) the pathway towards expertise may vary. Those variations can be attributed to the nature of the sport and different types of activities that athletes are involved with. Identifying the various types of development experiences is important as they may influence later participation and progression within sport.

2.1.2. The pathway towards expertise: deliberate, play practice & experience.

The transition from junior to senior level may occur at different ages depending on the nature of the sport. In addition, the type of sport may affect the development of athletes during their trajectory towards higher levels of performance (Côté, Baker, & Abernethy, 2007). For example, gymnasts may reach elite performance through early specialization and deliberate practice while on the other hand marathon runners are more likely to reach their elite performance by sampling, deliberate play and by focusing later on deliberate practice (Côté, Lidor, & Hackfort, 2009). Researchers examining the pathway of development of elite athletes (e.g., Carlson, 1988; Côté, 1999; Hill, 1993) have identified that early specialization is not a prerequisite for exceptional performance in sport at senior level. In line with this, Baker, Horton, Robertson-Wilson, and Wall, (2003) suggested that participating in other activities during the first steps of development improved the physical and cognitive skills of athletes which were essential for their main sport.

Deliberate play refers to activities that youngsters choose to be involved and are not strictly regulated by adults (e.g. Côté *et al.*, 2007) such as backyard football or street basketball. Côté *et al.*, (2007) suggested that that deliberate play activities can increase the level of enjoyment of youngsters. This level of enjoyment can promote long-term involvement in sport and future commitment to talent development (Baker & Cobley, 2008). Furthermore, research has identified the importance of engaging in a variety of activities in the early years (e.g. Baker & Cobley, 2008; Côté *et al.*, 2007; Durand-Bush & Salmela, 2002). As such, deliberate play

and participation in a variety of activities during early steps of development can increase the motivation levels of young athletes (e.g. Côté *et al.*, 2007; Côté & Fraser-Thomas, 2008) which promotes effective long-term development.

The term ‘practice makes perfect’ is used to describe that repeated practice is required over a long period of time in order to develop expertise in any domain (e.g. sport). The most well-known theory in the area of expertise is the theory of deliberate practice from Ericsson, Krampe, and Tesch-Romer (1993). Deliberate practice has been described as a structured activity aiming to improve an important aspect of current performance. Deliberate practice incorporates immediate access to feedback, the opportunity for repetition, error detection, and correction, and requires full attention, maximal effort, and complete concentration (Ericsson *et al.*, 1993). This theory states that athletes need to practice 10.000 hours in order to reach expertise. Their training needs to include activities created to improve the performance of individuals. The theory of deliberate practice suggests that expertise is achieved through appropriate quantity of quality training rather than innate talent.

Based on the findings from a number of studies (Baker *et al.*, 2003; Baker, Côté, & Abernethy, 2003a, 2003b; Côté, 1999; Law, Côté, & Ericsson, 2007), Côté *et al.*, (2007) created the Developmental Model of Sport Participation (DMSP). The DMSP refers to two different pathways to skills acquisition that described the trajectory to elite sport: early diversification or early specialization. The DMSP describes the development of athletes and has been thoroughly researched and refined over the last 15 years. The DMSP provides a detailed overview of the processes, pathways, and outcomes related to development of athletes throughout childhood and adolescence. Côté, Lidor, and Hackfort (2009) suggested seven postulates associated with the different pathways of the DMSP. More specifically, five postulates focus on the influence of sampling and deliberate play on youth’s participation, performance, and personal development in sport and two postulates focused on important

transitions (Table 2.1). Côté and Vierimaa (2014) suggested that the seven postulates related to the DMSP can be adapted and used in talent development programs in order to fulfil the numerous needs of youth athletes in sport. Considering the individualized nature of the early sport experiences, high level of participation in deliberate play activities should be incorporated in the optimal development progression prior to emphasizing on deliberate practice with specialization for elite level athletes. While elite level can be reached with early specialization and deliberate practice during childhood, it can have a negative influence on mass participation and long-term personal development through sport.

Table 2.1 Developmental Model of Sport Participation

Postulate 1	Early diversification (sampling) does not hinder elite sport participation in sport where peak performance is reached after maturation
Postulate 2	Early diversification (sampling) is linked to a longer sport career and has positive implications for long-term sport involvement
Postulate 3	Early diversification (sampling) allows participation in a range of contexts that most favourably affects positive youth development
Postulate 4	High amounts of deliberate play during the sampling years build a solid foundation of intrinsic motivation through involvement in activities that are enjoyable and promote intrinsic regulation
Postulate 5	A high amount of deliberate play during the sampling years establishes a range of motor and cognitive experiences that children can ultimately bring to their principal sport of interest
Postulate 6	Around the end of primary school (about age 13), children should have the opportunity to either choose to specialize in their favourite sport or to continue in sport at a recreational level

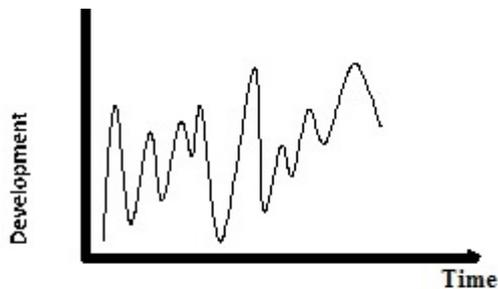
Postulate 7 Late adolescents (around age 16) have developed the physical, cognitive, social, emotional, and motor skills needed to invest their effort into highly specialized training in one sport

Research focused on the development experiences of elite level soccer players showed that those who became professional footballers had more hours per year in soccer play activities but not in soccer practice, competition or other sport between the ages of six and twelve compared to those who did not progress to elite level. Therefore this study proposed the ‘early engagement hypothesis’ to explain those findings. (Ford, Ward, Hodges, & Williams, 2009). The early engagement hypothesis supports that minimal diversification in other sport and high levels of both play and practice in the main sport would be the most appropriate pathway for soccer players. As such, research has shown that progress towards elite level can be achieved through different pathways and a variety of combinations of deliberate play and practice. In addition, deliberate experience is another element that can add significantly towards effective development. Deliberate experience can be described as the learning that occurs through the act of performing and in sport it reflects the learning that takes place in the competition environment and it can help to the enhancement of expertise, talent and ultimately performance (Buchanan, 2014).

More specifically, in a study of Ollis, Macpherson, and Collins (2006) regarding expertise in rugby refereeing it was shown that transfer of skills and deliberate experience are additional determinants of expertise. These results support the findings from several researchers who emphasized the importance of deliberate experience (Baker *et al.*, 2003b; Buchanan, 2014; Dunad- Bush & Salmela, 2001; Gould *et al.*, 2002). Therefore, expertise requires not only deliberate practice but also deliberate experience and consequently a shift

from the traditional phase-stage approach towards a non-linear model has been recommended by Ollis *et al.*, 2006 (figure 2.1).

Figure 2.1. Interpretation of referees' micro-development diagrams of their progression during a 6- or 12-month period (Ollis *et al.*, 2006).



In summary, research in the area of deliberate play and deliberate practice supports that pathway towards elite level is individualized and a blend of diversification and deliberate play, practice, and experience can promote effective talent development. However, considering the nature of sport and individual differences is important because it can heavily influence the pathway towards expertise. The complex and individualized nature of development has also been highlighted by the models developed to explain within career transitions.

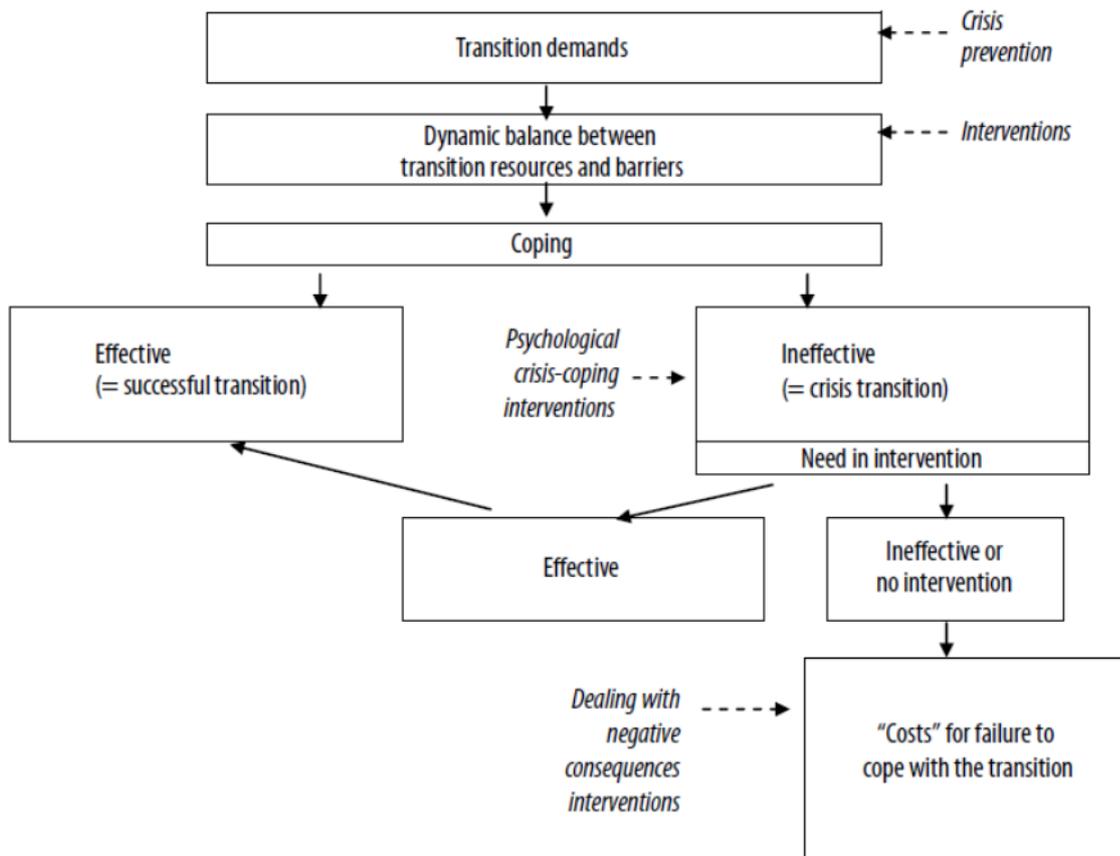
2.1.3. Transition models.

According to Schlossberg's model (1981) three sets of factors interact during a transition: 1) characteristics of the person that experiences the transition, 2) perception of the transition, 3) characteristics of the pre and post-transition environments. Despite the fact that this definition was created to examine transitions in life many researchers have used it in the sport context as well (Baillie & Danish, 1992; Danish, Owens, Green, and Brunelle, 1997; Parker, 1994; Sinclair & Orlick, 1994; Swain, 1991; Wylleman, Alfermann, & Lavallee, 2004). Additionally, the model of Sinclair & Orlick (1994) and the model of Stambulova (1994) focus on the fact that sport careers include several transition phases which should not be examined as single events but as processes. Athletes need to find a balance between the demands and

their resources during each transition phase and use coping strategies in order to successfully make a transition to the next phase of their athletic career. Understanding transitions and the successful negotiation of them is important because long-term success seems to depend more on this negotiation process throughout an athlete's career trajectory than to the actual performances during those stages (Abbot & Collins, 2004; Sinclair & Orlick, 1993).

The athletic career transition model (figure 2.2) describes each transition as a process with demands, coping processes, factors that influence coping, resources, barriers, outcomes and long-term consequences (Stambulova, 2003). Transitions include several demands associated with competitions, practice, communication and lifestyle. It is necessary for the athletes to cope with those demands in order to successfully continue in their sport or to adjust to their post-career (Alfermann & Stambulova, 2007). In each transition, athletes face specific demands that need to cope with in order to make a successful transition. The result of the coping process is related to the dynamic balance between coping resources and barriers. Coping resources are external and internal factors facilitating the process of coping. These factors can be the experience of an athlete, motivation, knowledge, social and financial support. Social support is perceived to be the most significant resource at the start and at the termination of a career. In addition to social support, coach and parental support have shown to facilitate the transition process (Brown 1985; Bussman & Alfermann 1994; Sinclair & Orlick 1993). On the other hand, organizational support is highest when athletes reach their peak performance, rather than when they are negotiating earlier developmental stages (Alfermann & Stambulova, 2007). The barriers of a transition include all the factors (internal/external) that may affect negatively the coping process such as interpersonal conflicts, lack of skills or struggling to combine sport and studies or work.

Figure 2.2. The athletic career transition model (Stambulova, 2003)

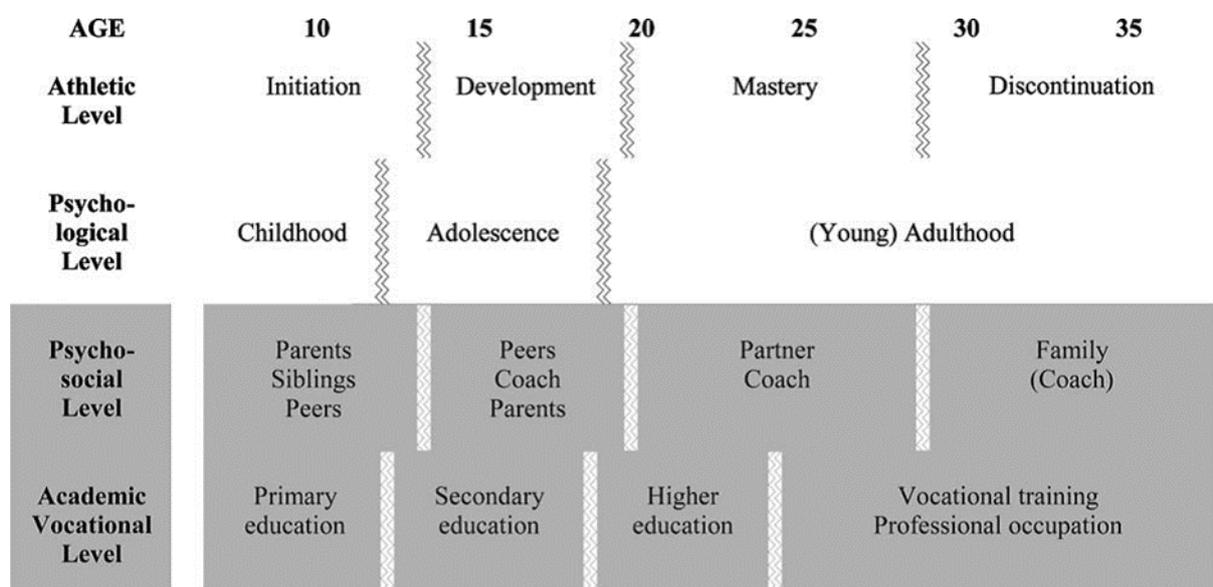


Furthermore, Wylleman and Lavallee (2004) developed a model which outlined the range of types of normative transitions that athletes may face. These include transitions at athletic, individual, psychosocial and academic/vocational levels. This model is consisted by four layers: a) athletic, b) psychological, c) psychosocial, d) academic/ vocational (Figure 2.3). The first layer describes the transitions and the stages that the athletes are likely to face in their athletic career. The three stages (initiation, development, mastery) identified by Bloom (1985) and described above are included in this level. In addition, discontinuation stage was added to represent the transition out of competitive sport (between 28-30 years old). However, those ages are possible to differ depending on the type of sport (Wylleman & Reints, 2010). As for the second layer, it represents the stages of development and transitions that take place at psychological level such as childhood, adolescence and (early) adulthood. The third layer reflects the changes that may occur in the psychosocial development of an athlete linked with

his/her involvement in sport. This layer includes peer relationships, athletic family, coach-athlete relationships and interpersonal relationships that are important to the athletes. Finally, the fourth layer represents the transitions and stages in educational and vocational level. This layer contains the transition from primary to elementary school, the stage of secondary/ high school, the transition to higher education and the transition to professional occupation. This model highlights the interactive role of transitions in other domains of life of athletes. In addition, this model emphasizes on the fact that non-athletic transitions can also influence the career of an athlete within sport.

In summary, the most common models of within career transitions are those from Stambulova (2003) and Wylleman and Lavallee (2004) which identified the complexity of the trajectory to elite level. The fact that different types of transitions may occur at the same time and consider that some of them might be unexpected increases the level of challenge that athletes have to cope with.

Figure 2.3. Developmental model on transitions faced by athletes at athletic, individual, psychosocial and academic/vocational level (Wylleman & Lavallee, 2004).



2.1.4. Types of transitions.

There are two types of transitions: normative and non-normative. The normative transitions are those that are expected and predictable and take place when an athlete exit from one stage and enter a new stage (Schlossberg, 1984; Sharf 1997). Normative transitions in sport are for example the transition from junior to senior level, academy to first team or the transition out of sport. On the other hand, the non-normative transitions are not planned, cannot be predicted and are involuntary. Those transitions are the result of events in the life of an individual (e.g. injury) or changes in the circumstances of the environment (e.g. change of coach or an unanticipated transfer to another team). A non-normative transition can be a major injury meaning the end of the season or the ‘‘cut’’ from the team (Schlossberg, 1984). On the other hand, an unexpected transfer or a change of coach can be facilitative for the development of the athlete because this may result in increased playing time or being part of a better training/development environment. The transitions are connected with the developmental context in which they take place. Consequently, an athlete will face both transitions related to the athletic context and transitions linked with the development of the athlete at psychological, psychosocial and academic/vocational level (Wylleman, Lavallee, & Alfermann, 1999). This non-linear pathway of development characterized by normative and normative transitions usually results to a formative transition; the transition out of sport or career termination.

2.1.5. Early research: career termination.

The first studies of career transitions in sport context focused on career termination (Haerle, 1975; Mihovilovic, 1968) and it was shown that athletes may experience negative events after their retirement. Researchers tried to understand the career termination by comparing to gerontological models (Johns, Lindner, & Wolko, 1990; Rosenberg 1981), thanatological models (Fortunato & Marchant 1999) and transition models (Schlossberg, 1981). Gerontological models emphasize on the ageing process and how interactions between

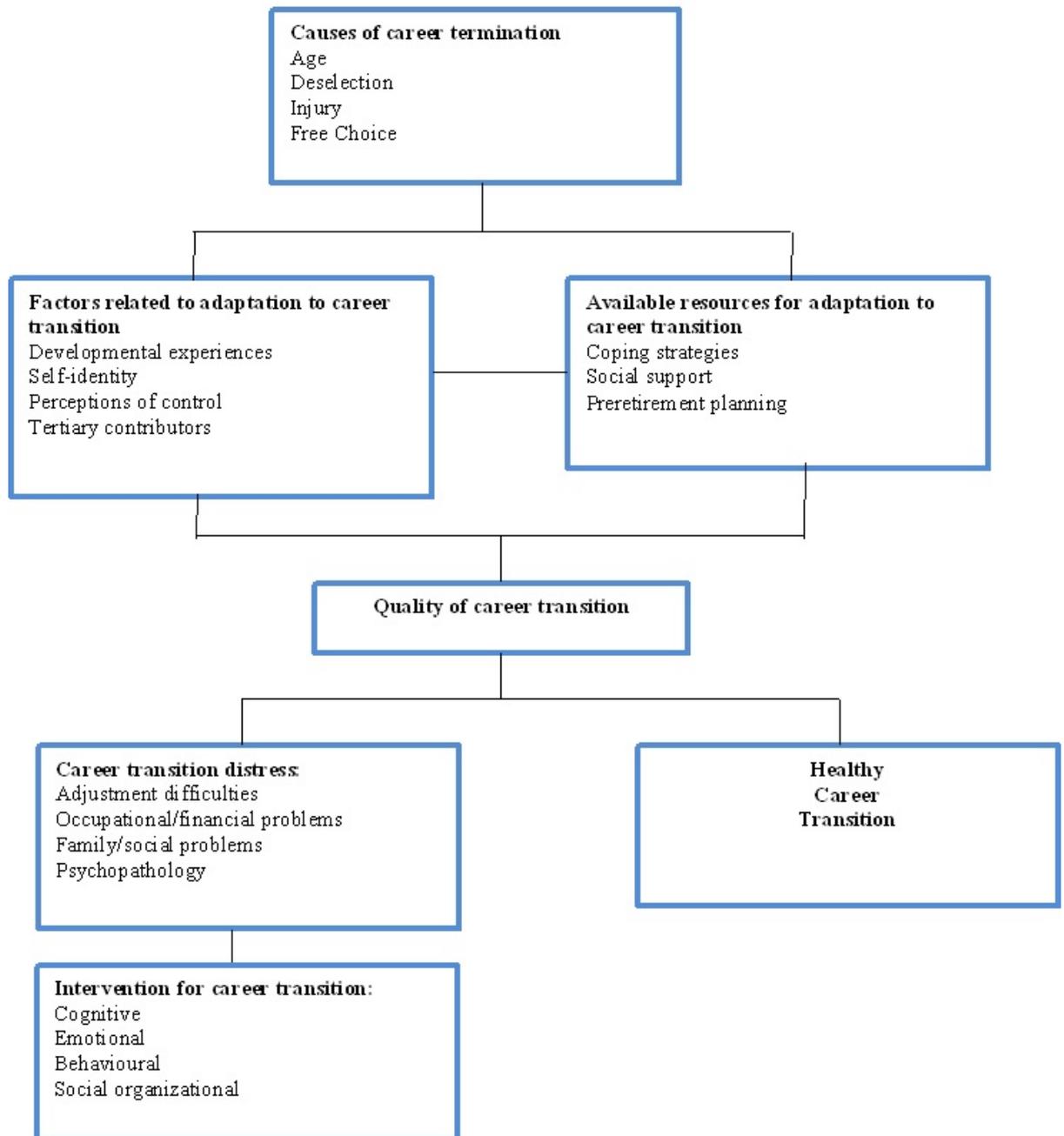
ageing and the society may affect the employees. Rosenberg (1981) discussed the merits and shortcomings of six approaches related to social gerontology (the study of ageing): activity, disengagement, subculture, continuity, social breakdown, and exchange theory. According to Rosenberg (1981) the social breakdown theory and the exchange theory are the most salient in relation to sport retirement. Evidence suggests that retirement of athletes is unlikely to be voluntary (Frith, 2001). Therefore, in the contrary to the disengagement theory which suggests that the society and the aging individual withdraw from one another to the mutual benefit of both, athletes try to stay in sport long after their skills deteriorate. Activity theory suggests concepts like role replacement and activity level maintenance, subculture theory highlights norms that are dysfunctional to retirement planning, and continuity theory propose as an explanation that commitment, sacrifice, and self-concept from the competitive athlete role can be transferred to new roles. However, the main messages from those three theories are incorporated in the social breakdown theory. The social breakdown theory (Kuypers & Bengston, 1973) suggests that negative social evaluations to individuals who lost a role (e.g. retirement) may create tendencies to withdraw or to reduce certain activities. A proposed measure to combat this negative downward spiraling cycle out of activity is the 'social reconstruction' cycle. The "social reconstruction" cycle is able to maintain but also restore the positive self-image of individuals through counseling and engagement in other activities that improve self-reliance. Finally, the exchange theory (Dowd, 1975) suggests that rearrangement of social activities and networks can promote successful aging. As such, through understanding and counseling on these issues athletes can reduce the risk of social breakdowns and through social reconstruction smooth out the transition period out of sport. However, it has been argued that those models cannot be applied in sport because retirement in sport may take place at an earlier age (Lavalley, 2000).

As for the thanatological models which focus on the psychological, physical and social reactions to death, they were used in order to explain the "social death" that athletes may experience after their retirement especially in cases of forced retirement (Zaichkowsky *et al.*, 2000). "Social death" originates from the science of thanatology (study of death and dying) and refers to the condition of being treated as if one were dead, although still physiologically and intellectually alive. Despite the fact that the concept of death is an analogy and taking into account that there is a substantial difference between actual death and retirement from sport the concept of "social death" is perceived as beneficial when designing career support/counseling programs. Lerch (1982) discussed two thanatological models that present similarities between the social death of a retiring athlete and the physical death of a hospital patient: the "awareness context" notion of Glaser and Strauss (1965) and the "stages of dying" of Kubler-Ross (1969). The "awareness context" includes the following types of awareness: closed, suspicion, mutual pretence, and open. When athletes are unaware of plans to release, cut them from teams could be linked to closed awareness. Athletes may suspect that a demotion will happen which would be defined as suspicion awareness. Mutual pretence, is analogous to make-believe, where managers, coaches and trainers are aware of the fact that no matter how well the athletes perform their careers in sport are close the end. Finally, open awareness would be when retiring athletes and others know that career termination is inevitable and they openly acknowledge the fact. Kubler-Ross (1969) identified key reactions used by terminal patients to deal with the approaching death (denial, anger, bargaining and acceptance or resignation) which has interesting parallels with athletes dealing with social death. Nonetheless, Lavalley (2000) claimed that those models are not suitable for examining the transition process due to the fact that they do not consider the difficulties faced by an athlete after retirement. In addition, retirement can be considered as a social rebirth instead of a social death (Sinclair & Orlick, 1994)

The transition out of elite sport can cause emotional difficulties (Allison & Meyer, 1988), decrease self-esteem (Werthner & Orlick, 1986) and mental health problems (Menkenhorts & Van Den Berg, 1997). It was shown that the majority of former athletes experienced the career termination as a negative life event (Sinclair & Orlick, 1993; Alfermann, 2000). Additionally, Botterill (1988) identified that athletes after their retirement may experience difficulties developing new relationships outside sport, lack of social contacts and loneliness. The career termination model (Taylor & Ogilvie, 1994) describes the transition process between the athletic career and the post-sport life. This model explains the factors that are linked with the transition out of sport (e.g. causes, resources) and how those factors can affect athletes (Figure 2.4).

However, during the last two decades research has focused more on the within-career transitions and more specifically to the transitions to higher levels of competitions. That particular time of an athletic career is very challenging not only because of the increasing demands but because of the multiple transitions occurring at psychological, psychosocial and academic/vocational level simultaneously. As such, it has gained more and more attention during the last years which is essential to extent our understanding of how to effectively prepare and support athletes during their trajectory towards elite level.

Figure 2.4. Conceptual Model of Adaptation to Career Transition Model (Taylor & Ogilvie, 1994).



2.2. Transitions to Higher Level in Sport: Junior to Senior (elite), Academy to First Team, Club to Regional

2.2.1. Overview of within career transitions

Participation in elite sport can be challenging for a youth athlete both psychologically and physically (Hollander, Meyers, & LeUnes, 1995). A transition is the result of one or more

events (Lavalley, 2000; Taylor & Ogilvie, 2001) and causes to the athlete personal and social disequilibrium (Wapner & Craig-Brey, 1992). Transitions between key points in career are critical periods for the athletes (Pearson & Petitpas, 1990). Bloom (1985) was one of the first researchers who examined the transition into elite sport. He suggested that athletes may face difficulties to adopt new behaviours and beliefs during this period linked with hard work, commitment and personal sacrifices. During the last two decades, studies have focused on the transition from junior to senior level which was described in the model of Stambulova (2003). It represents the mastery stage at the model of Wylleman & Lavallee (2004) and the transition from specialization to investment years in the developmental model of sport participation (Côté *et al.*, 2007). Transition into elite sport can be determined by age or by the organizational structure. For example, in the United States, the athletes need to deal with the transition from high school to college (Leonard, 1996) while in Europe athletes need to make the transition from local sport club to elite regional or national clubs (De Knop, Wylleman, Van Houcke, & Bollaert, 1999).

The transition phase towards higher levels of competitions is characterized by its multitude of challenges. The outcome of this transitions can be determined by individual characteristics of athletes and by their application during that time. The most common characteristics identified in the literature are coping strategies and personal resources.

2.2.2. Coping strategies.

It has been shown that it is necessary for young athletes to learn how to deal with stressors (Holt & Dunn 2004; Nichols & Polman 2007). The ability to deal effectively with the demands possibly represents the difference between a successful and an unsuccessful transition from junior to senior level at sport (Stambulova 1997; 2003). There are four main categories of coping which are problem-focused coping, emotional- focused coping, appraisal-focused coping and avoidance-focused coping (Aldwin 1999; Lazarus & Folkman 1984; Lavallee,

Thatcher, & Jones, 2004). Many of those coping strategies have been identified already (Grove, Fish, & Eklund, 2004; McKay, Niven, Lavalley, & White, 2008). An example of emotion-focused coping is adolescents who usually depend on social support from their coaches, parents and friends (Grove *et al.*, 2004; Stambulova 2009). In problem-focused coping the weaknesses and strengths of an athlete are targeted in order to solve the problem and enhance the athletic performance (Poczwadowski & Conroy, 2002). Avoiding or denying situations, not preparing well and giving poor efforts are some ways of avoidance- focused coping (Poczwadowski & Conroy, 2002). The appraisal- focused coping involves re-evaluating situations which can be a cognitive process (plan ahead, analyse the situation) or a behavioural process (ask for advice, confront) (Anshel, Kim, Kim, Chang, & Eom, 2001; Poczwadowski & Conroy, 2002). It has been suggested that the ways of coping checklist (Folkman and Lazarus, 1980; 1988) could improve our understanding of coping during a transition phase (Lazarus, 1999). Stambulova (2003) grounded her theory on stress and coping literature and created the athletic career transition model which suggests that the outcome of a transition depends on the effectiveness of the coping strategies implemented associated with athlete's resources and barriers they face.

Therefore understanding in depth the personal resources of athletes is crucial as it can differentiate a successful from an unsuccessful transition. A number of studies have identified several personal resources that are considered to be essential for later success at elite level. Findings from previous research showed that both internal (e.g. motivation) but also external resources (environmental support) are important during the transition phase.

2.2.3. Personal resources.

Several Swedish studies have examined the transition from junior to senior level and have identified the essential resources required in order to successfully progress to higher level in sport (Čačija, 2007; Franck & Tuovila, 2008; Mavroidis 2005; Vujic, 2004). Common characteristics of the transition from junior to senior level in sport were identified in those

studies. Overall, research in Sweden highlighted the fact that intrinsic motivation along with other psychological characteristics such as self-belief and confidence are essential for athletes in order to progress to senior level. In addition, the environment plays an important role as it can provide encouragement and support when required. A trusting relationship between coaches and athletes can significantly add to this end. Social support was also a common finding and studies reinforced the crucial role of the family, friends and teammates during the transition process while also noted that excessive pressure may have the opposite outcome to the desired. Finally, access to facilities and equipment was deemed as necessary and in the study of Alge (2008) athletes supported that having the opportunity to follow a dual career facilitated their transition to senior level.

Furthermore, within-career transitions have been examined qualitatively in other contexts and countries. Pummell *et al.*, (2008) examined the club to regional transition, Bruner *et al.*, (2008) and Lorenzo *et al.*, (2009) examined the junior to senior elite level transition while Fin and McKenna (2010) investigated the coaches' perceptions regarding the transition from academy to the first team. Those studies also revealed that personal resources such as motivation and commitment were among the key determinants for a successful transition to senior elite level. In addition, readiness for the increased physical demands of elite level was highlighted by Bruner *et al.*, (2008) which could be considered as part of the essential toolbox of personal resources. Moreover, those studies highlighted the important role of social support and more specifically the tangible and emotional support provided by the parents but also social support from significant others and teammates as well. The crucial role of the coaches during that phase was also acknowledged coaches who participated in the study of Fin and MacKenna (2010) suggested that positive reappraisal strategies are beneficial for to the transition success.

The most up to date research examining within career transitions and more specifically the transition from junior to senior level was conducted in Sweden by Stambulova *et al.*,

(2012), Franck, Stambulova, and Ivarsson 2016 and Franck, Stambulova, and Weibull, 2016. The quantitative analysis of this transition showed that personal resources were a highly significant predictor of adjustment to senior level reinforcing the findings from previous studies both in Sweden but also in other contexts. Both of the longitudinal projects of Franck and her colleagues (2016) recognized the complexity of the transition from junior to senior level by identifying different adjustment patterns. Personal resources; high motivation and athletic identify in particular play an important role in the transition process. In addition, athletes' ability to use adequate coping strategies was suggested as one of the main factors influencing the outcome of the transition. These findings indicate that external resources such as support are important, however, the internal resources are the most crucial for the adjustment to senior level in sport. Franck, Stambulova and Ivarsson, (2016) identified three different profiles athletes which demonstrate that the transition from junior to senior level may vary from individual to individual.

Overall, it is clear that a variety of individual and environmental characteristics can influence positively the outcome of a transition. However, it needs to be highlighted that the transition process is individualized in nature and there is not a specific pathway towards success as shown in recent studies (Franck, Stambulova, & Ivarsson, 2016; Franck, Stambulova, & Weibull, 2016). Therefore, it is necessary to acknowledge the demands and barriers that athlete may face in order to better understand the potential risks that may lead athletes to an unsuccessful transition or even to drop out from sport.

2.3. Demands and Barriers

2.3.1. Crisis Transition

According to Stambulova (2009), the transition from junior to senior level is a normative transition and takes place when an athlete starts to participate in adult competitions. This transition represents the entrance to the master stage and is possible to have duration

between 1 and 4 years. This phase has also been characterized as the most difficult transition which also plays a vital role for the future career of an athlete. In addition, Côté (1999) stated that the transition to elite sport is a period that the athlete makes an investment into the sport. This transition divides the athletes into two unequal groups. The first and bigger group does not manage to cope with the transition and remain stable, remove to recreational sport or even dropout. The athletes of the second group are those who successfully continue to the higher levels of competition (Stambulova, Alfermann, Statler, & Côté, 2009).

A successful transition occurs when an athlete manages to use all the resources that are necessary in order to overcome the barriers during the coping process. On the other hand, a crisis transition occurs when an athlete does not manage to cope with the transition demands and there is a need for psychological intervention/assistance. The model of Stambulova (2003) describes three types of interventions in order to cope with a crisis- transition: 1) preventive, 2) crisis coping, 3) negative - consequences coping. The preventive intervention help athletes to understand the forthcoming demands of the transition and develop the recourses which are essential in order to cope successfully with the transition. Crisis coping intervention helps athletes to understand the crisis analyse it and find the best way to deal with it in an effective way. The negative – consequences intervention helps athletes to deal with the “costs” of an unsuccessful transition which can be injuries, overtraining, neuroses, psychosomatic illness, dropout, drug use, criminal behaviour (Stambulova, 1994). Most often psychological assistance/interventions are essential when an athlete has already experienced the consequences of not coping successfully with a crisis- transition. Kadlcik and Flemr (2008) used the athletic career transition model in order to examine the retirement process and the adaptation to retirement in Czech athletes. A variety of factors were found to influence the transition process. Those factors included demands, barriers and resources of the transition as well. It was also identified that each factor is possible to facilitate or weaken the transition by

acting either as a resource or as a barrier in the coping process. Many researchers proposed that preparation for transition can remove barriers and make the adaptation to the next stage of their careers easier for the athletes (Coakley 1983; Petitpas, Champagne, Chartrand, Danish, & Murphy 1997; Pearson & Petitpas 1990).

Bussman and Alfermann, (1994) in their study with track and field athletes from Germany identified that 70.5% of those who got involved in competitive sport during childhood stopped their career during adolescence, nearly 90% quit from competitive sport during the transition phase into adulthood. Additionally, in Greece, 73.4% of high-level athletes aged 17-23 stopped their career (Koukouris, 1991). Another study conducted by Johnson, Tenenbaum, Edmoinds, and Castillo (2008) examined sport high schools focusing on the development of elite junior athletes to elite senior athlete. The results showed that 36% of the athletes failed to make a successful transition into elite level. As such, it is well known that the transition to elite sport is a challenging transition for athletes. Therefore, it is essential to understand the most common demands and barriers that may not allow athletes to progress to higher level or even lead them to drop out from sport.

2.3.2. Common demands and barriers

It has been suggested that this transition incorporates multiple demands and challenges in practice and competitions but also in life of athletes in general. The main demands during the transition to senior level as proposed by Stambulova (1994, 2009) were balancing goals in sport with life goals, coping with pressure of selection, win prestige among peers and cope with relationship problems. Athletes who experienced the transition phase as a crisis stated that they could not cope with the demands on their own and psychological assistance would be necessary (Stambulova, 2000). Moreover, Franck and Tuovila (2008) identified that athletes perceived as the most demanding tasks the increasing physical demands, the need for performing better, the need for improving their mental skills and the financial difficulties they faced. Similarly in

studies conducted in Sweden and other countries demands and barriers highlighted by the athletes included: reduced playing time, external pressure (coaches, parents, media), demanding training, balancing a dual career, adjusting to the new environment (different teammates, communication with coach), lack of financial resources (e.g. Bruner *et al.*, 2008; Lorenzo *et al.*, 2009; Vujic, 2004; Cacija, 2007; Mavroidis, 2005). Considering all those demands and potential barriers if athletes do not have the appropriate resources and available support the transition process will become increasingly challenging for them which may result in an unsuccessful transition to higher level in sport or even drop out. Some of the key barriers that can potentially have a large influence on the development of athletes and as result at the outcome of their transition are analysed below.

Self-identity.

During this period of high drop out during adolescence, individuals face several developmental tasks such as developing new relationships with peers, becoming emotionally independent from their parents and identifying with a masculine or feminine role in the society (Rice, 1998). Consequently, the development of a self-identity during adolescence is an inevitable and important aspect of a young person's life. Indeed, it has been found that self-identity is influenced by the participation in competitive sport (Brewer, Van Raalte, & Petitpas, 2000). The level of development of the self-identity can affect an athlete either positively or negatively. Self-identity of athletes that are involved with high competitive sport during adolescence may become based on athletic performance (Coakley, 1993). Athletes that focus only on their athletic career may neglect other lifestyle, education or career options (Baillie & Danish 1992; Werthner & Orlick 1986). This process is called identity foreclosure and it can negatively affect the use of coping strategies which have proven to be essential for transitions during the athletic career (Crook & Robertson, 1991; Gordon, 1995; Pearson & Petitpas, 1990). As Franck, Stambulova, and Weibull (2016) highlighted in their study despite the fact that

athletic identity was a key resource for a successful transition from junior to senior level it should be noted that this could be a risk factor for the wellbeing of athletes in the future.

Social relationships.

Young children during childhood need to learn how to relate to their peers while during adolescence they need to start developing more complex and mature relations with their friends become psychologically independent from their parents and as adults they need to create steady social and family relationships (Rice, 1998). Social environment and social relationships are important for athletes because of the support they can provide to them during their development within sport. When athletes become isolated from social support it can be damaging not only to performance but also to their health and well-being (Rees & Hardy, 2000). In general, the social network of athletes consists of coaches, parents and peers. Athlete-coach, coach- parents and parents-athlete relationships have been characterized as the athletic triangle (Smith *et al.*, 1989) or as the primary family of sport (Scanlan, 1988). These relationships have been shown to be crucial for successful development on the trajectory toward the development of elite sport status.

Education.

The process of education and professional development is followed by the great majority of people (Newman, Lohman, Newman, Myers, & Smith, 2000). Due to the fact that education in most of the countries is compulsory until the age of approximately 16 athletes will face challenges in their academic and athletic development in the same time (De Knop Wylleman, Van Houcke, & Bollaert, 1999).

The transition to higher education is a vital period for the individuals because high-performance sport become increasingly important for a youth athlete while there is a need for educational/vocational development (Wylleman & Lavalley, 2004). Furthermore, role models and the value of sport development in higher education institutions is highly context specific.

In North America, the competitive sport are incorporated into the structure of the education system (De Knop *et al.*, 1999) which is not the usual structure in Europe. For example, in USA college sport is very competitive and serious as compared to University sport in the UK (Martindale, Collins, & Daubney, 2005), which can act as either a barrier or facilitator of athlete development. As such, balancing a dual career can be one of the barriers during that time for student-athletes.

Apart from the barriers that may influence directly the outcome of within career transitions; previous development experiences may also affect the trajectory of athletes. More specifically, the talent identification and development (TID) model influence heavily the development of athletes and factors such as development rates, relative age effect, early focus on performance may determine the success or not of athlete when dealing with a challenging transition later in their career. Therefore, considering the fact that transitions are perceived as a process rather than a single event it is essential to understand the nature of the TID programs and their influence on the development of athletes during their trajectory to elite level.

2.4. Talent Identification and Development

2.4.1. Traditional TID models

Talent identification models based on physiological, anthropometric or technical variables used to measure the performance of young athletes within age-specific groups have proven problematic for several reasons (Vaeyens, Lenoir, Williams, & Philippaerts, 2008). The search of youth talented athletes is consisted by four stages: 1) detection, 2) identification, 3) development, 4) selection (Williams & Reilly, 2000). Talent development is a long-term process that involves not only the talented person, but also a strong support system (Bloom, 1985) because athletes will face many challenges over time (Bloom, 1985; MacNamara, Holmes, & Collins, 2008). Talented athletes mature at different paces, consequently they flourish at different ages. Some of the athletes will be identified as talent at 12 years-old while

some others may be identified at their 16 or 17 years old. Individual differences like those mentioned above amongst youngsters are one of the elements that influence the traditional talent identification and development programs making them unreliable. In addition, Brouwers, De Bosscher, and Sotiriadou (2012) examined the importance of performance at young ages as an indicator for later success in tennis. The findings from the study showed that good performances at youth competitions are not a guarantee for later success at the top level of tennis. As such, variations in development rates, maturation differences which are linked with relative age effect and focus on early performances rather than long-term development can act as barrier for the effective development and progression of athletes.

2.4.2. Variations in development rates.

It should also be taken into consideration that some characteristics of talent may need several years to emerge (Simonton, 1999). Research has shown that the start of training and competitions also vary amongst successful athletes of several different sport (Carlson, 1997; Deakin & Copley, 2003; Van Rossum, 2000). Güllich (2007) examined the dates that Olympic athletes started training in their respective sport. The sample was 4455 athletes who participated in the Olympic games of 2004. The results of this study identified that there is a varied range of ages at onset of training for main sport among athletes of the Olympic Games of 2004. The findings of this study underpin the need of second chances to athletes, not neglecting the late developers and give evidence of the fact that there a variety of maturation points idea proposed by Simonton, (1999). Thus, the earlier the selection takes place the more talented athletes will be excluded (Abbott, Button, Pepping, & Collins, 2004).

2.4.3. Relative age effect.

Sometimes young athletes from the same selection year can be older in comparison to their teammates for 11-12 months which can lead to cognitive, physical and emotional differences amongst athletes (Copley, Baker, Wattie, & McKenna, 2009; Musch & Grondin

2001; Weir, Smith, Paterson, & Horton, 2010). Those differences have been defined as “relative age effect” (RAE). RAE has been identified in a variety of sport (Cobley *et al.*, 2009; Till, Cobley, Wattie, O'Hara, Cooke, & Chapman, 2010; Musch & Grondin, 2001). A recent study clearly demonstrated that the biological maturity status has a strong effect on the RAE in alpine ski racing and soccer, and that less mature and relatively younger athletes have less chances for selection (Müller, Gonaus, Perner, Müller, & Raschner, 2017). Based on the findings of this study, assessing the biological maturity status during the selection process could reduce the exclusion of the late developers. A practical way of doing so would be to assess the age at peak height velocity (APHV) of the athletes. Another study examined the existence of RAE in U17 soccer world championships from 2007 to 2015. Interestingly, significant within-year effects were found and in regards to constituent year effects an overrepresentation of the older age cohort within the 2-year age band was demonstrated. Additionally, the same study showed that players’ constituent year timing at earlier stages of talent development had a long-term impact on participations and on the career development of players. Moreover, a study from Doyle, Bottomley and Angell (2017) develop the Tails of the Travelling Gaussian (TTG) to model the mechanisms behind RAE by examining the RAE bias in academic subjects and in admissions to elite English Premier League soccer academies. Researchers highlighted that the TTG can enable us to better understand RAE, quantify and integrate research in this area and facilitate the creation of solution for the eradication of this phenomenon.

The theories of a possible explanation of the RAE are the following: maturation, competition and the experience theory. Older children within a selection year are more likely to be chosen due to their greater maturation. Even one-year difference at young ages can be a great difference in the height, stature and weight of youth athletes (Baxter-Jones, 1995; Malina, 1994). The maturation advantages may lead to a better performance which in consequence can

influence the judgment of coaches regarding the selection of elite teams. Those athletes that are selected may receive better coaching which leads them to have an advantage in their development in comparison to other athletes from the same age group (Wattie, Cobley, & Baker, 2008). They will also have additional time (Côté *et al.*, 2007), more games and more training compared with the younger athletes of the selection year. Therefore, the chances of an older child not only of being selected for a team but also to have active participation within a sport are more which may lead to the increase of athlete's motivation. Therefore, it has been suggested that recognition and prioritization of long-term development over short-term win focus is essential to reduce the RAE but also facilitate effective development of athletes (Andronikos, Elumaro, Westbury, & Martindale, 2015).

2.4.3. Early performance focus as a barrier to long-term development

Moreover, the study from Güllich (2007) supported that early specific training is not a precondition for later success at senior level in sport. It has also been proven that several international athletes have participated and trained in a variety of sport during their childhood and not exclusively within one discipline (Baker, Côté, & Abernethy, 2003b; Baker, Côté, & Deakin, 2005; Côté, Baker, & Abernethy 2003; Deakin & Cobley, 2003; Gibbons, Hill, McConnell, Forster, & Moore, 2002). A review of the findings from studies regarding traditional TID programs (table 2.2) revealed that children who were recruited and supported from an early age did not manage to be successful athletes in senior elite level. On the other hand, several successful athletes in senior level had not been part of TID programs in young ages. This evidence strengthens the theory that traditional TID programs may exclude promising athletes and especially late developers due to the multidimensional nature of talent (Abbott & Collins, 2002, 2004; Martindale *et al.*, 2005; Vaeyens *et al.*, 2008).

As such, early focus on performance can be a barrier for long-term development of athletes and may result in the reduction of the talent pool. Generally, talent is a dynamic concept

and factors that influence the performance are interacting between them and change over time as well (Simonton, 1999; Abbott, Button, Pepping, & Collins, 2005). Numerous researchers suggest that predictive models of talent should not be unidimensional. However, implications for practitioners are not yet clear and understandable. For instance, practitioners recognize relative age effect, although it is not yet clear how they need to adjust their TID systems in order to deal with this issue. Similarly, Morris (2000) showed that practitioners involved in the selection of elite junior athletes were aware of the fact that psychological skills facilitate the development of athletes. However, they reported that they did not know the exact psychological mechanisms that contribute to the achievement of talent (Morris, 2000). Therefore, in order to eliminate this dichotomy between theory and practice within talent identification and development greater understanding of the role of the psychological factors influencing talent should be achieved. Consequently, TID programs need to take into account the interaction between determinants of performance (anthropometric, physical, and psychological), talent development environment and learning strategies/psycho-behaviours (Abbott & Collins, 2004).

Table 2.2 Indicators of low to moderate efficacy in talent identification programmes based on early age recruitment (Güllich, 2007).

Joch (1992)	483 children (6 years) selected in a TID programme, 7-year longitudinal study.	After 7 years, only 153 children were still part of the talent promotion programme.
Rost et al. (1989)	131 children (10 years) selected in a TID programme, 2-year longitudinal study.	Within 2 years, the group was reduced to 32 members.
Riecken et al. (1993)	20,100 children (10–13 years) selected in child and youth sport schools, 1-year follow-up.	25% of the recruited talents were relegated after their first year in a promotion programme.
Riecken et al. (1993)	48 Olympians (Seoul 1988) in 12 sport, retrospective research of former TID data.	Only 20 athletes completed the selection criteria for admission to child and youth sport schools at age 9–10 years.

Kupper & Wallberg (1978)	Young wrestlers (13 years) selected in child and youth sport schools, 9-year follow-up.	5 of the wrestlers recruited participated in national senior championships, 115 never did.
Güllich <i>et al.</i> (2001)	4972 squad athletes, 7 Olympic sport, 7-year longitudinal study with recording of squad status and yearly level transitions.	0.3% of the athletes selected in the youngest level of the federations' squad system for Olympic preparation eventually became one of the 10 best international senior athletes.
Ljach (1997)	A retrospective review of child and youth sport schools, 35,000 members.	0.14% of the children involved achieved sporting excellence at senior level.
Güllich <i>et al.</i> (2005)	11,287 members of elite sport schools, 3-year longitudinal study.	1.7% of former members of elite sport schools obtained a medal in an international senior championship.

2.5. Individual Characteristics Related to Sporting Success

2.5.1. Readiness for competition

Young athletes during their childhood need to develop their readiness for structured sport competition. Readiness from a motivational point of view indicates in which extent the children participate in sport because of their interest in the sport (Passer, 1996). Motivational readiness can be improved by the well-meant involvement of athletes' parents (Wylleman, De Knop, Verdet, & Cecic-Erpic, 2006). From a cognitive perspective, readiness refers to the ability for abstract reasoning and for understanding the roles and responsibilities which are related to the sport context. It has been suggested that the role-taking of children are not fully developed until the ages of 8 to 10. Therefore, if young athletes are prompted by their parents, for example, to take part in sport prior to their cognitive maturation they may feel frustration which can lead to losing interest in participating in sport. This is a result of the lack of cognitive capacities that they need in order to deal with the challenges and demands that they are facing within sport (Van der Meulen & Menkehorst, 1992). Furthermore, children until the ages of 10-12 are not able to understand their own abilities consequently they depend on adults for information regarding their abilities (Fry & Duda, 1997). When the youngsters get older they

start to compare themselves with their peers. The risk of dropout is possible to be higher if the athletes are ability oriented and if they perceive themselves as less capable in comparison to other athletes (Fry & Duda, 1997). Therefore, motivation and cognitive maturation are vital for young athletes in order to progress in competitive sport.

Additionally, the goal orientation of athletes can significantly influence their development as it is closely associated with participation and progression in sport. Whether athletes are satisfied and confident may determine not only their involvement in sport but also their ability to progress throughout the trajectory in sport. Existing research has identified the main motivation climates and how they influence goal orientation.

2.5.2. Goal orientation.

Kasser and Ryan (1996) proposed that goal content can be differentiated based on the content in two types: intrinsic goals (physical fitness, community feeling, affiliation, and self-acceptance) and extrinsic goals (popularity, financial rewards, attractiveness). The pursuit of intrinsic goals promotes the satisfaction of the basic psychological needs which are competence, autonomy, relatedness and must be constantly satisfied according to the self-determination theory (Deci & Ryan, 2000), while the pursuit of extrinsic goals does not satisfy the basic psychological needs (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). There are three types of achievement motivation: ability oriented motivation which in sport psychology is referred as 'ego' goal orientation (Duda, 1993), task-oriented motivation and social approval-orientated motivation which has been investigated less in sport in comparison to the other two (Maehr & Nicholls, 1980). When the motivational climate is more ego-orientated is usually described as performance climate and coaches, parents, staff and teammates emphasize on outcomes and encourage athletes to adopt competitive behaviours and beliefs (Ames, 1992; Duda, 1993). On the contrary, a task-oriented environment or mastery climate promotes learning and personal development by allowing athletes to make mistakes

and stimulating peer interaction and cooperation (Ames, 1992; Duda, 1993). As such whether the climate is performance or mastery influences the degree to which an athlete will exhibit ego or task-oriented motivation (Duda, 1993).

The two goals ('task' and 'ego') are basically linked with the feelings and the thoughts of people regarding competence (Nicholls, 1989). The achievement goals are divided as well between performance and achievement goals (Nicholls 1984; 1989). It has been suggested that pursuit of both mastery and performance approach goals can increase the experience of positive motivational constructs (Carr, 2006). In his study, Carr (2006) identified that the high mastery/high performance approach/high performance avoidance displayed endorsement of high levels of performance-approach and performance-avoidance goals. These youngsters did not adopt solely performance goals and a possible explanation might be that the mastery goals mitigated the negative processes linked with their avoidance goal pursuit. In the achievement goal approach from Elliot (1999; 2005), there are four types of achievement goals: mastery-approach, mastery-avoidance, performance-approach and performance-avoidance. High scores on all four achievement categories were linked to high relatedness, perceived competence and enjoyment of physical education activities (Wang, Sproule, McNeill, Martindale, & Lee, 2007). Similarly, a study examining the motivational climate in physical education classes showed that perceptions of a mastery motivational climate may promote the intrinsic interest of students and their intentions to be physically active (Sproule, Wang, Morgan, McNeill, & McMorris, 2007). Massey, Gebhardt, and Garnefski (2008) proposed that both goal content and goal processes regarding adolescents are linked to a variety of personal, social and environmental factors. For instance, ego-oriented athletes show less commitment in practice, they are less likely to maintain self-confidence, and they experience less satisfaction and enjoyment and report more competitive anxiety (Roberts, 2001; Ryska, 2001; Van Yperen & Duda, 1999). In addition, it has also been suggested that ego orientated athletes may adopt a 'winning at all

costs' philosophy (Roberts, 2001). On the other hand, task orientation is linked with maximal motivation and adaptive behaviours (Duda 1993; Roberts, 2001). It was shown that athletes who are task orientated have less stress, are more intrinsically motivated and more capable learners (Deci & Ryan, 2008; Duda & White, 1992).

In order to reach to elite level though, athletes need to develop a toolbox of individual characteristics that have proven to be essential. Several researchers have shown that psychological characteristics such as commitment, motivation, goal setting, and self-efficacy can distinguish the athletes that will manage to make a successful transition to higher level of competition in sport or other domains.

2.5.3. Psychological characteristics of developing excellence (PCDEs)

Several researchers have identified that a variety of psychological characteristics are essential for an athlete in order to perform at elite level (Durand- Bush & Salmela 2002; Gould, Dieffenbach, & Moffett, 2002; Hanton & Jones 1999; Orlick & Partington, 1998). MacNamara, Button, & Collins (2010a, 2010b) identified that learning strategies and implementation of specific psychological behaviours helped athletes to gain as much as possible from practice and generally development opportunities. Those psycho-behavioural characteristics are termed as psychological characteristics of developing excellence (PCDE) (MacNamara *et al.*, 2010a) and include mental skills and attitudes, emotions and desires. In line with this, Harwood (2008) employed a 5c framework (commitment, communication, control, confidence and concentration) in order to incorporate psychological skills training in football training sessions. As a result not only the coaches improved the delivery of their sessions but also the players enhanced the 5c skills.

One of the first studies on the topic examined the development of strategies and skills which were the foundation of elite swimmers precompetitive facilitative stress. The swimmers reported that their skills were developed by learning experiences and a variety of educational

methods. They described that coaches, parents and experienced swimmers helped them to perceive anxiety as facilitative for the competitions. Additionally, they developed imagery skills and goal setting in order to manage their anxiety (Hanton & Jones, 1999). In addition, the ability to focus was identified by elite successful athletes (Durand- Bush & Salmela, 2002; Gould *et al.*, 2002). Gould *et al.*, (2002) interviewed Olympic champions and it was revealed that the athletes were optimistic, moderately perfectionistic, had high levels of hope and sport intelligent. In another study conducted by Orlick and Partington, (1998) it was identified that the following elements characterized successful athletes: ability to focus attention, control of performance imagery, commitment of the pursuit of excellence, setting of practice goals, competition simulation, mental preparation, detailed competition plans, distraction plans. Additionally, Williams and Krane (2001) acknowledged that the following mental skills and psychological characteristics are linked with peak performance: well developed competitive routine and plan, motivation and commitment, coping skills, concentration, self-confidence, self- regulation, goal setting and visualization. Nevertheless, these developmental skills are not a guarantee for later success, although there are essential characteristics that can help athletes reach their best potential (MacNamara & Collins, 2012).

Furthermore, athlete's psychological skills are a key factor for dealing successfully with transitions (Alfermann & Stambulova, 2007; Macnamara *et al.* 2010a; 2010b). In Thomson (1992) study it is stated that those adolescents who successfully continue within a sport are likely to have progressed due to factors such as motivation and mental toughness. Psychosocial skills are determinants of the adolescents that were identified as talented and were capable of balancing sport and school (Henriksen, Stambulova, & Roessler 2010a, 2010b). Commitment, self-belief, motivation, goal setting, focus, distraction control, the ability to cope with pressure, imagery, realistic performance evaluation social and communication skills were some of the psychological characteristics that were identified to facilitate the way to elite performance

(Macnamara, Holmes, & Collins 2006, 2008; MacNamara *et al.*, 2010a, 2010b) or distinguish between successful and less successful elite athletes (Abbot & Collins, 2004; Orlick & Partington, 1998). It was shown that successful Olympic athletes were more focused, committed and used extensive mental preparation in comparison to less successful athletes (Gould, Damarjian, & Medbery, 1999). Those findings were supported by the research from Durand-Bush and Salmela (2002) conducted with Olympic and world champions and showed that self- confidence and motivation were the main personal characteristics of elite performers. The findings from Weissensteiner (2012) study also suggest that psychological characteristics that are required for exceptional batting performance in cricket are linked with the mental toughness and its dimensions.

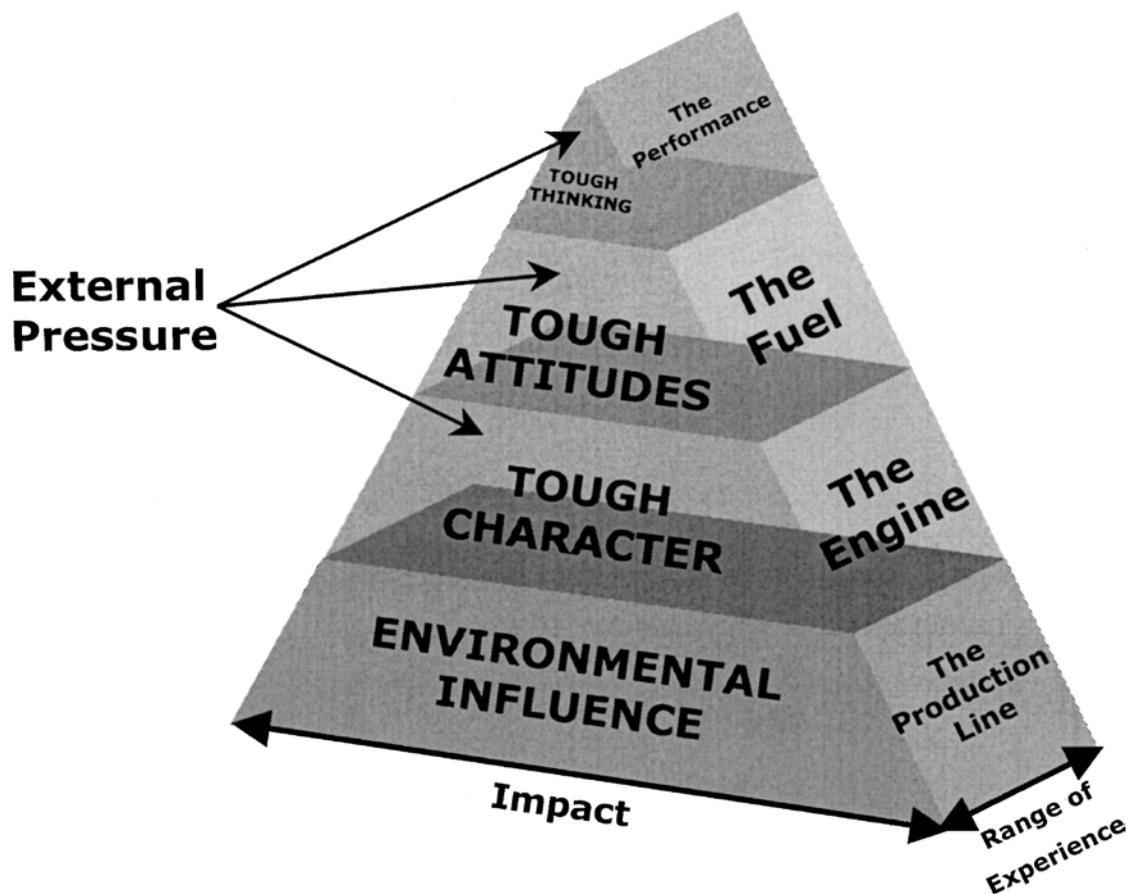
Mental toughness is a complex concept and many definitions could be given, however, it is commonly believed that it is a prerequisite for success at elite level. Mentally tough athletes are believed to be able to cope better with pressure or failure and also be committed to pushing the limits in order to be successful.

2.5.4. Mental toughness.

The definition of mental toughness was provided by a group of athletes with international experiences provided the definition for mental toughness in the study of Jones Hanton, and Connaughton (2002, p. 209). They suggested that "mental toughness is having the natural or developed psychological edge that enables you to: generally, cope better than your opponents with the many demands (competition, training, and lifestyle) that sport places on a performer. Specifically, be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure." However, it should be noted that mental toughness may be displayed by different behaviours depending on the nature of each sport (Bull, Shambrook, James, & Brooks, 2005). It has also been suggested that mental toughness supports the progression in the pathway of development towards elite performance

(Crust & Clough, 2005, 2011). In the study of Bull *et al.*, (2005) the researchers interviewed the top ten mentally toughest England cricketers from 1980 to 2000 according to the suggestions of 101 coaches. The summary of the themes emerged from the interviews are shown in figure 2.5. In the study of Gould *et al.*, (2002) 73% of the Olympic champions reported that mental toughness is an essential characteristic. The description regarding mental toughness varied, although resilience, perseverance and the ability to deal with adversity were described as elements of mental toughness by the majority of the athletes. Moreover, Jones, Hanton, & Connaughton, (2007) using a qualitative approach as well described mental toughness as thirty attributes and categorized them in four different dimensions: attitude/mindset (belief, focus), training (long-term focus to promote motivation, pushing to the limits), competition (cope with pressure, belief control though and feelings, stay focused) and post-competitions (handling success or failure).

Figure 2.5. The mental toughness pyramid, Bull *et al.*, (2005).



2.5.5. Self-regulation skills.

Additionally, autonomy (Schoon, 2000), self- efficacy (Johnson, Tenenbaum, Edmoinds, & Castillo, 2008), determination and persistence (Bloom, 1985) have been underlined as essential characteristics in order to achieve excellence which is supported by the study of Van Yperen (2009). In this study, psychological factors were significant predictors of later success for youth male footballers competing in Netherlands. Additionally, interpersonal skills (communication skills, leadership, and social skills) and personal skills (goal setting, discipline, and organizational skills) were found to be necessary in order to increase the potential in achievement domains (Jones & Lavallee, 2008). Coping with stressors and adapting to the challenges increases autonomy and responsibility which is a key element for development successfully (Côté & Hay, 2002). In general, self- regulation skills were shown to be essential for the progression to elite level in sport (Jonker, Elferink- Gemser, & Visscher, 2010). Self-regulated learned has been defined as the processes by which individuals activate and sustain cognition and behaviours systematically oriented toward the attainment of their learning goals (Zimmerman & Pons, 1986). Self-regulation refers to self-generated thoughts, feelings, and actions that are systematically designed to affect one's learning of knowledge and skills (Zimmerman, 2000). Self-regulation also involves self-evaluation of the progress in the relation to the goals set (Zimmerman, 2002). Individuals with self- regulated skills have the ability to control their emotions, focus on improvement of themselves and seek support when is necessary (Petlichkoff, 2004). Self- reflection is a significant element of effective talent development (MacNamara & Collins, 2010) and of talent development environments as well (Martindale *et al.*, 2005).

Discipline, commitment, resilience, ability to find and use social support identified to be of most importance for a successful in elite level in soccer (Holt & Dunn, 2004). On the other hand, players who did not manage to make the transition successfully lacked self-

determination (Holt & Mitchell, 2006). Self-regulation strategies can differentiate youth athletes who manage make the transition to elite level from those who do not (Toering, Elferink-Gemser, Jordet, & Visscher, 2009). Strategies of self-regulation enable athletes to reflect on their own learning process which leads them to a more effective learning in comparison to their peers (Jonker *et al.*, 2010). Self-regulation helps athletes to manage their thoughts, actions, emotions and involves aspects of self- efficacy, reflection, effort, evaluation, planning and self- monitoring (Baumeister & Vohs, 2004). In practice, when athletes self-regulate they plan how they want to progress (Glaser & Chi, 1988), reflect on their current level, plan their desirable pathway of development (Chen & Singer, 1992) and they have the ability to remain motivated and focused on their long-term development (Martindale *et al.*, 2005). Consequently, talent development programs and coaches should promote self- control of emotions, thoughts, actions (Baumeister & Vohs, 2004). Planning, self-evaluation and self-monitoring should also be encouraged instead of simply guiding athletes about what is the right thing to do (Toering *et al.*, 2009). For instance, Elferink-Gemser and Hettinga (2017) discussed how the application of the cyclical process of self-regulation of learning and training could be applied to pacing. While preparing for a race, trainers can encourage athletes to reflect on their race goals and plan their strategies regarding energy distribution. During the race, the athletes need to continuously monitor and evaluate whether their distribution of energy is optimal for the current moment under the current conditions. Finally, after the race, the coach/trainer needs to evaluate in collaboration with the athlete if the energy was distributed in the optimal way and consider the outcomes of the performance. This information will then be used as feedback for the reflection phase of the next race.

Individual characteristics can be developed through the trajectory to elite level, however, it has been suggested that certain strategies can facilitate the development of those skills. Teaching mental skills to young athletes could enable them to have the necessary

psychological characteristics required to deal with adversities at higher level in sport. It has also been suggested intentional structured challenges can promote the development of the desired skills and attitudes.

2.6. Development of Mental skills

2.6.1. Teaching mental skills.

It has been suggested that educational system should focus on teaching children to cope with challenges (Lohman, 1999) which is a philosophy that needs be followed in sport context as well. Psychological behaviours optimizing learning and focus are linked with success in sport (Freeman, 2001) and those factors can be developed by the use of effective psychological strategies such as goal setting, performance evaluation and planning (Abbot & Collins, 2004). Research has proven that mental skills such as self-control can be taught and is possible to influence positively commitment and persistence of athletes (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2010). Nowadays, both life and psychological skills development are becoming more and more usual in top-level academies (Bath, 2011). It has been proposed that psychology consultants need to be integrated members of the coaching team making recommendations about the ways of incorporating mental skills in training and helping athletes develop their mental skills through their training and experiences (Bull *et al.*, 2005). Similarly, Gould *et al.*, (2002) proposed that individuals who influence athletes such as family members, coaches and significant others should be educated so as to promote the development of the essential psychological skills. Furthermore, it has been suggested that obstacles and failures which inevitably are part of the development pathway should be used for critical reflection, learning and future implication (Martindale *et al.*, 2005). Consequently, both “good” and “bad” provide opportunities of development to the athletes if they are utilized appropriately. However, the degree of challenge (Breslau, Chilcoat, Kessler, Glenn, & Davis, 1999), gender

(Breslau & Anthony 2007), psychosocial factors and individual differences need to be taken into consideration.

Research has shown that development programs should start early and be created a well-designed early educational experience (Baker *et al.*, 2003). For instance, the pilot program “Developing the Potential of Young People in Sport” employed physical challenge combined with the teaching of PCDEs. In addition, teachers, parents and coaches involved in the program used a variety of methods in order to provide a similar message to the children (Collins, Martindale, Button, & Sowerby, 2010). Therefore, PCDEs were taught, encouraged, demonstrated in practice by the behaviour of the coaches and the coaching systems and finally tested in direct and indirect ways. Children stated that they managed to successfully employ the PCDEs in a variety of challenges (academic performance, extracurricular activities) which helped them to fulfil their aspirations (Bath, 2011). Successful application of PCDEs has also proven to be linked with accomplishment of goals for non-sport environments such as university transition (MacNamara & Collins, 2010) and musicians (Kamin, Richards, & Collins, 2007). Psychological characteristics of athletes represent the extent in which they can take advantage of the opportunities given by the talent development environment. Therefore, it is vital to emphasize on these characteristics from early stages of development. (Freeman, 2000).

Researchers have suggested that mental skills can be developed through challenge facilitating their effective progression in sport. In some cases, those challenges might be random (e.g. life circumstances), however, the theory supporting that intentional structured challenge can be implemented to promote the development of mental skills has gained increasing attention.

2.6.2. Developing mental skills through challenge.

Collins and MacNamara (2012) proposed that a degree of challenge is an essential part of talent development pathway in order to enable the development of psychological characteristics that have proven to facilitate the way to elite performance (MacNamara *et al.*, 2006, 2008, 2010a, 2010b) and psychological skills that are useful for dealing with transitions within the sport (Alfermann & Stambulova, 2007). Recently, a pilot study showed that progressing smoothly and linear towards the top is often symptomatic of problems (Collins, Abbott, & Richards, 2011). Similarly, all the players (successful or unsuccessful) who participated in the study of Richardson, Littlewood, Nesti, and Benstead (2012) stated that coping with challenges that they faced helped them to develop not only as a player but also as a person. They described that they felt isolated when they arrived in their new clubs and helplessness when they had to deal with challenges such as injuries and missing their friends and families. However, they believed that coping with this and moving forward made them "stronger" persons. A recent study also suggested that "challenge" is likely to be beneficial for the development of athletes (Andronikos *et al.*, 2016). In addition, athletes who are successful and highly supported in young ages have fewer possibilities of succeeding in senior level in comparison to other peers who despite the fact they are less successful in young ages they persist and enter support programs later in their careers (Güllich & Emrich 2006). Lack of early learning and development of confidence and skills which are generated by difficulties or challenging periods during an athlete's career may result in a knockback due to the increasing challenges especially near the top of the performance pyramid (Helsen, Hodges, Van Winckel, & Starkes, 2000). In the study of Van Yperen (2009), it was identified that youth players who managed to reach elite level in football had higher acknowledged "challenge" factors such as number of siblings and minority ethnicity. In general, "trauma" is related with certain groups in sport. For instance, single-parent families are usual in football context. Moreover, coaches

reported that they challenged athletes every day (Durand- Bush & Salmela, 2002). Consequently, it appears that skills and knowledge acquired from "life" traumas influence the development and performance of athletes in sport (Manini & Genereux, 1995).

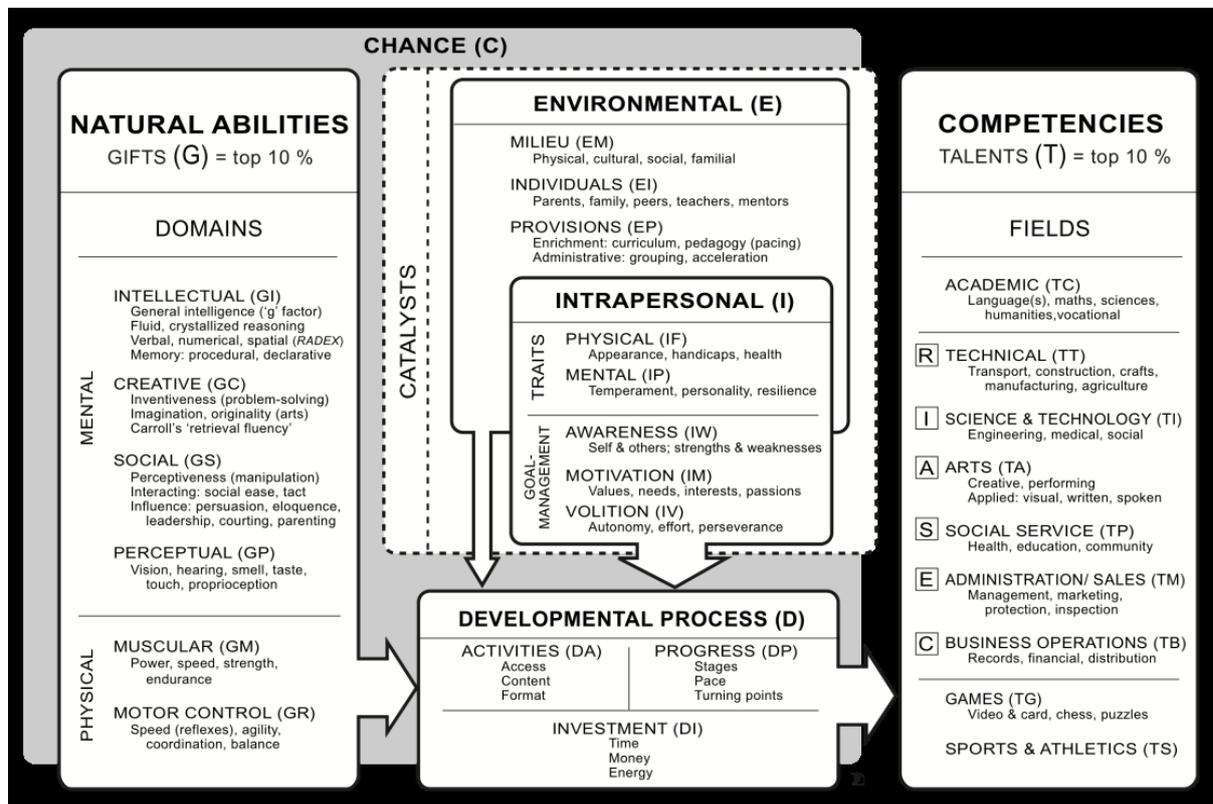
According to Collins and MacNamara (2012), a toolbox of skills combined with the knowledge for their suitable and effective employment is possible to contribute more in comparison to a generic skill or set of skills. PCDEs are considered to be close with the learned resourcefulness due to the fact they are a variety of transferable skills instead of precise skills directed to a specific issue. According to Rossenbaum and Jaffe (1983) learned resourcefulness is the general development of a proactive coping approach to challenges. Collins and MacNamara (2012) focus on the advantages of the development of a set of skills throughout several means, their continuing evaluation and modification by the usage of a variety of tests. They also emphasize on the evidence regarding the positive influence of these skills especially for athletes during their development (MacNamara *et al.*, 2010a, 2010b). Additionally, Deinstbier (1989) suggested that facing and overcoming challenges helps to the development of skills and attitudes that can strengthen individuals for their future experiences. This theory advocates that a training process similar to stress inoculation training (Meichenbaum, 1977, 1996) or physical training with overload designed with clear guidelines and causative process can influence the response to stress shifting towards a solution-focused perception (Eubank, Collins, & Smith, 2000). In addition, it was shown that teaching of PCDEs in combination with challenge in order to evaluate and improve the skills had a positive influence on the transition of student-athletes to the university and consequently to new training environments (MacNamara & Collins, 2010). "Structured trauma" may act as facilitator of adjusting athletes to upcoming challenges. For young athletes during their pathway of development this may include relevant challenges such as competing in an older age group, playing out of position, setting higher goals and expectation compared with other teammates, deselection from certain

competitions or selection for international competitions, military type challenges and training camps in basic or unfamiliar conditions (Collins & MacNamara, 2012).

As such, it is clear that individual characteristics are essential for effective development and can facilitate the successful transition of athletes. Both physical but also mental skills are necessary for successful progression towards elite level. The mental characteristics, in particular, can be nurtured by the environment in which athletes develop which includes their parents and coaches but also the culture around them of the macro and micro environment. The talent development process has been described in detail by Gagne (2004). More specifically, the Differentiating Model of Giftedness and Talent (DMGT) proposes a clear distinction between the concepts of giftedness and talent. Giftedness is defined as the possession and use of untrained natural abilities (gifts) in an ability domain to a degree that places an individual at least among the top 10% of their age peers. On the other hand, talent is defined as the mastery of systematically developed abilities and knowledge in at least one field of human activity to a degree that places an individual within at least the top 10% of age peers. This model suggests that natural abilities are fundamental elements of talent. The process of talent development becomes apparent when youths take part in systematic training, practicing and learning. According to the DMGT this process can be facilitated or hindered by the following two catalysts: intrapersonal and environmental. Motivation and volition are the key intrapersonal catalysts that play a vital role in initiating the process of talent development. The environmental catalysts includes broad environmental influences (e.g., geographical, social, or cultural aspects and economic issues), individuals (e.g. parents and siblings, teachers, peers), and available resources included in a particular milieu. Finally, chance is another casual factor that can be associate with the environment (e.g. the ‘chance’ of being born in a particular family). An overview of the DMGT can found in figure 2.6. Therefore, it is essential to examine in

depth the nature of talent development environment in order to understand how they may influence the development of athletes during their trajectory to elite level.

Figure 2.6 Gagné’s Differentiating Model of Giftedness and Talent (DMGT 2.0; 2008 update)



2.7. Talent Development Environments

2.7.1. The influence of TDEs on the development of athletes

Talent development environment is a vital factor that can facilitate the successful transition of athletes (Martindale, Collins, Wang, McNeill, Lee, Sproule, & Westbury, 2007). TDE is one of the most consistent factors that can also be immediately controllable in the life of a developing athlete (Martindale *et al.*, 2007). Youth athletes need to be prepared for senior level during their developmental stages. It is essential to focus on long-term aims during the development of an athlete and see junior level as a precondition for senior level (Martindale *et al.*, 2007). TDEs are learning environments for the young athletes and coaches are able to help

athletes develop their mental skills. The development of PCDEs can be promoted and reinforced by effective talent development environments (MacNamara *et al.*, 2010a, 2010b; Martindale *et al.*, 2005). In the study of MacNamara *et al.*, (2010b) the coaches encouraged the engagement in quality practice by describing clearly to the athletes the purpose of the training. In addition, they used questioning and probing in order to ensure that the athletes had understood and finally reinforced the desired behaviour. Moreover, the coaches used strategies that have been identified by the literature. They set clear standards and expectations (Gould *et al.*, 2002), provided support and encouragement (Martindale *et al.*, 2005), provided social support (Connaughton, Wadey, Hanton, & Jones, 2008; Wolfenden & Holt, 2005), emphasized the importance of effort and persistence (Martindale *et al.*, 2005) and demonstrated positive behaviours (Gould, Collins, Lauer, & Chung, 2007). Coaches used those strategies in order to create a learning environment that would facilitate the development and the improvement of PCDEs amongst youngsters (Subotnik & Knotek, 2007).

Furthermore, researchers have focused on the factors that influence the development of athletes and amongst the most important factors of the micro-environment are coaches, parents and peers (Côté 1999; Côté 2007; Wolfenden & Holt 2005; Wylleman *et al.*, 2007). It was shown that parental support, peers, community in the sport club, support from the sport federation and experienced coaches to trust are some of the environmental factors that can facilitate transitions and in general the development of athletes (Alfermann & Stambulova, 2007; Wylleman, Lavallee & Alfermann 1999). For instance, both coaches and parents can help athletes develop essential psychological characteristics that facilitate effective development. By creating an optimistic and achievement orientated climate parents helped athletes to develop their confidence and their motivation which are essential characteristics for later success. It was shown that coaches play a crucial role in the psychological development of the athletes. Coaches influence athletes by emphasizing on hard work, discipline and having

characteristics that facilitated the trust of the athletes. They also encouraged and supported them and taught them mental skills (Gould *et al.*, 2002). In addition, a number of studies have examined either specific environments or cultures in an attempt to identify the key features of effective development.

2.7.2. Key features of effective talent development environments

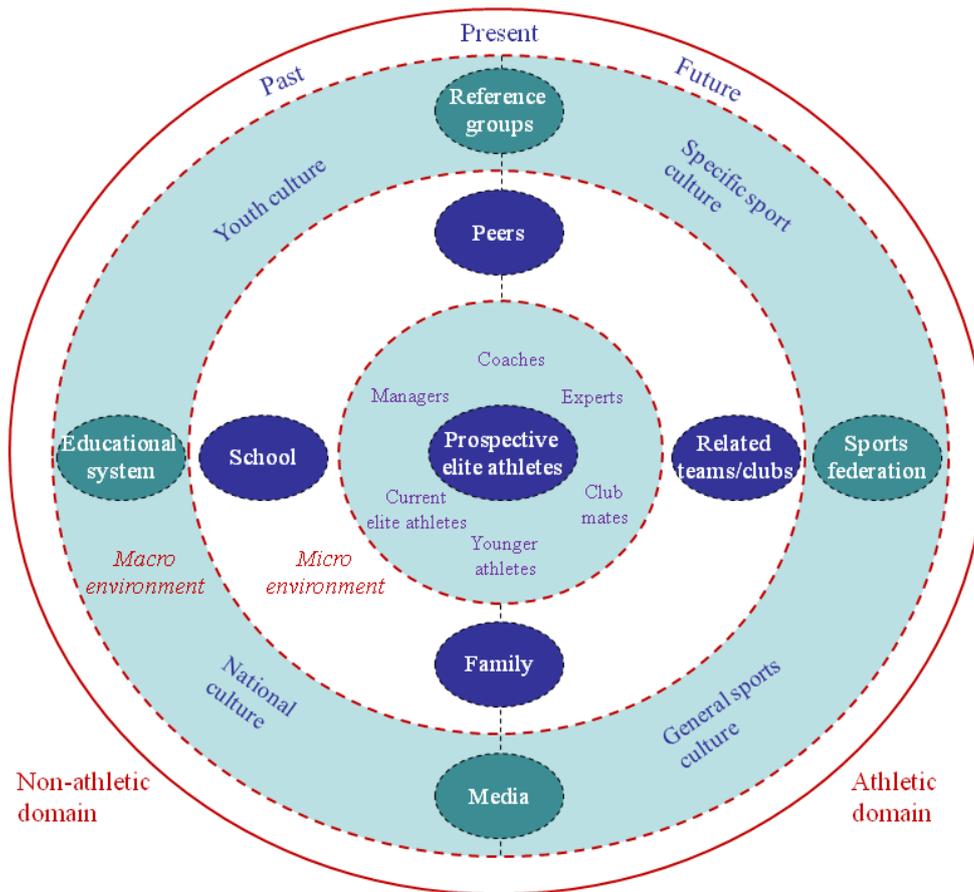
The following factors were identified as key features of elite coaches' views on effective talent development: long-term strategy and planning, communication and support ensuring that philosophies and aims are coherently linked, flexible systems allowing room for differences, support through transition and emphasize on athlete's progress. All the above efforts must be coordinated in an integrated system (Martindale *et al.*, 2007). In addition, Henriksen (2010) developed the Athletic Talent Development Environment (ATDE) which is a working model that can be used as a framework to describe a sport environment and clarify the roles and relations within it (figure 2.7). The main aim of an ATDE is to facilitate the successful progression of athletes from junior to elite senior level in sports. As such, young prospective athletes are in the centre of this model and other elements of the ATDE are divided in two levels (micro and macro) and two domains (athletic and non-athletic) complemented by the past, present and future of the ATDE. More specifically, the micro level is where the youth athletes spend a significant part of their daily life and therefore it is characterised by real communication and interaction. As for the macro-environment, it refers to the social settings which may affect the athletes and the values of the cultures to which athletes belong. The athletic domain includes the elements of the environment that are closely linked to sport while on the contrary the non-athletic refers to all the other spheres of athletes' lives. The club environment (coaches, managers, elite senior athletes and experts) directly surrounds the athletes who are at the centre of the model. In addition, additional components included in the micro-level as well are school, family peers and related teams, while media, sports federations

and the educational system are other components of macro-level. Finally, the macro-environment also consists of cultural contexts (e.g. national culture, culture of the specific sport, youth culture).

Henrisken (2010) focused on the athletes' interactions within the sport on the micro-level and the influence of the macro-level on those interactions. The following features were identified as the most significant for a successful athletic talent development environment. Firstly, training groups with supportive relationships, proximal role models, support of sporting goals by the wider environment, training that allows diversification, support for the development of psychosocial skills, strong and coherent organization, focus on long-term development and finally integration of efforts (Henriksen, 2010). Despite the fact that those cases studies refer to certain talent development environments in Scandinavia the findings have lot similarities with the guidelines for effective talent development in the UK (Martindale *et al.*, 2007). Conclusively, talented athletes can maximize their possibilities to reach their best potential when they are provided with the appropriate elements of the talent development environment such as parental support, facilities, quality coaching. At the same time, they need to display high motivation and acquire learning strategies.

Additionally, understanding the culture in which athletes are developed can provide useful information as athletes can be hugely influenced by the national culture, the general sport culture or the youth culture. For instance, while a number of researchers would argue that anatomical differences determine the success of Jamaican sprinters or the Kenyan long-distance runners the influence of the culture can be very significant as well.

Figure 2.7. Athletic Talent Development Environment (ATDE) working model, Henriksen (2010)



2.8. The Role of Culture

2.8.1. National culture

Individuals and development structures can be different among countries and therefore they need to be taken into consideration when designing a talent development model (Tebbenham, 1998). It has been suggested that psychological, social and cultural circumstances play a crucial role in talent development of an athlete (Côté, Lidor, & Hackfort 2009). The culture and its influence need to be considered when looking for the elements of sporting success in a nation because this factor appears to have a substantial influence on the performance of the athletes. The sporting culture of Australia, for instance, seems to have a considerable influence on the performance of the athletes both men and women (Horton, 2000). It should be noted that a common strategy used is to target specific sports and devote available resources to achieve success in those particular sports. Jobling (1987) described sport in

Australia as national ‘‘religion’’ or ‘‘obsession’’. Taking into consideration the example of Australia it is understandable why factors from the macro- environment should also be examined as they can influence in a vital way the participation of young children in sport. Additionally, it can influence the identification and the development of the talented athletes or become an intertwined process over time. Recently, studies have shown that national culture and national sport systems may have a significant influence on the transitions of athletes (Alfermann, Stambulova & Zemaityte, 2004; Stambulova, Stephan & Järphag, 2007). Canada, Brazil and Kenya are more examples of countries that their sport culture influences the development of athletes. In Canada for instance, kids learn to ice skate from young age because ice hockey is the most famous sport in the country, players are seen as national heroes and hockey games receive great attention from the media. Consequently, the facilities and the resources regarding ice hockey are abundant as well. In Brazil, football is the national sport and due to a variety of reasons (social, cultural, financial) millions of children are playing and will continue playing football. Runners from Kenya have dominated long-distance races for the last 20 years. It has been suggested that genetic factors are the reason for the dominance of East Africans in distance running. However, researchers proposed that social and cultural factors may have a substantial impact on East African countries (Pitsiladis, Bale, Sharp, & Noakes, 2007).

The theory claiming that specific races or ethnicities dominate in some sport is based on the assumption that each race is a genetically homogeneous group. However, research has shown that genetic differences between Africans are bigger in comparison to the genetic differences between Africans and Eurasians (Yu, Chen, Ota, Jorde, Pamilo, Pathy, Ramsay, Jenkins, Shyue, & Li, 2002). Therefore, non-generic factors might be the explanation of the success of long-distance runners from East African countries. Explanations. More specifically, Scott, Georgiades, Wilson, Goodwin, Wolde, and Pitsiladis (2003) acknowledged that

Ethiopian runners had run long distances (20km) in order to travel from home to their school and back. Another study found that children from East Africa that used running as the main mean of transportation had 30% higher VO₂ max in comparison to those who did not. Consequently, the fact that the children had to run every day to and from school is possibly one of the key determinants of the success of the East African runners (Saltin, Larsen, Terrados, Bangsbo, Bak, Kim, Svedenbag, & Rolf, 1995). Approximately 80% of the Kenyan athletes are originated from altitudinous regions (Onywera, Scott, Boit, & Pitsiladis, 2006). Genetic factors may explain this phenomenon (Manners, 1997) or living in altitude and using altitude training for a long time may have caused adaptations to the athletes (Scott *et al.*, 2003; Onywera *et al.*, 2006). Moreover, barefoot running may have an influence on the success of East African runners. Research findings suggest that barefoot runners do not land on the heel and therefore they avoid impact produced by the transient forces, which may contribute to injuries (Lieberman, Werbel, Daoud, Venkadesan, D' Andrea, Ojiambo Mang' Eni, & Pitsiladis, 2010). Previous literature also has suggested that the lack of cushion leads to a forefoot or midfoot and strike instead of a rear foot strike, which leads to a reduction of the impact on the hips and knees (Bonacci, Saunders, Hicks, Rantalainen, Vicenzino, & Spratford, 2013; Murphy, Curry, & Matzkin, 2013). A recent study reinforced this finding by showing that the footwear conditions (barefoot, uncushioned minimalist shoes, cushioned minimalist shoes, standard running shoes) had a significant effect on angle at foot striker, step length and stride frequency (Hollander, Argubi-Wollsen, Reer, & Zech, 2015). In addition, a transition to minimalist running was shown to reduce the symptoms of chronic exertional compartment syndrome and anterior knee pain which highlights the potential benefits of barefoot running (Roth, Neumann, & Tao, 2016). The success of Jamaican sprinters is not attributed to generic factors but to the unique and exceptional model that they use which focuses on identifying and developing talented athletes from junior to senior level (Robinson, 2007). Robinson (2007) concluded that

the real explanation of the outstanding achievements of the system is that all of its actors are moved by a spirit that unifies them to work to ensure that Jamaican athletics lives up to its rich history and tradition of excellence.

2.8.2 Social Culture

Moreover, variation of sport systems and social norms can affect the development of an athlete. For instance, in China and Russia professional coaches work with young athletes, although in Sweden, USA and UK the majority of the coaches in youth sport are volunteers (Stambulova *et al.*, 2009). In addition, even the city in which athletes grow up may play a significant role in their future career. Data gathered in North America showed that if someone is born in a city that has 50.000-100.000 citizens the chances of becoming an elite athlete are higher in comparison to someone that is growing up in either a bigger or smaller city (Côté, MacDonald, & Abernethy, 2006). The reasons for the phenomenon of the birthplace effect are yet unclear, even though researchers have formed some theories. Plenty of facilities are available in large cities, although they might be expensive or a lot of travel time may be required. Additionally, there is high competition in big cities due to the fact that there are plenty of children participating in sport which make it difficult for them to stand out from the crowd (Seaton, Marsh & Craver, 2009). In the contrary, smaller cities have cheaper facilities and it is easier for the young athletes to get there as well. Additionally, the competition is less and this may lead to extra support. Consequently, more opportunities for the children to participate along with support from the parents and coaches increase the motivation of the young athletes especially if they start feeling as 'talented'.

2.9. Overview

In summary, this theoretical review has highlighted what we know about the stages and transitions between those stages in the athletic career. The theoretical models of Stambulova (2003) and Wylleman and Lavallee (2004) have recognized the complex nature of the trajectory

to elite level and in particular the challenging period when progressing towards higher levels of competition at senior level. This period has linked with increased rates of drop out and thus previous research has attempted to understand the nature of the transition to elite level. Considering the numerous barriers and demands identified throughout the trajectory to elite level it is essential for athletes to be equipped with personal resources in order to progress successfully (Stambulova *et al.*, 2012). In addition, it has been suggested that the talent development environment underpins effective development and can facilitate the development of those personal characteristics (Martindale *et al.*, 2007).

This review identified that there are some areas of within career transitions that need to be further explored. Firstly, within career transitions have only been examined quantitatively in Swedish context and researchers have proposed that there is a need to investigate other cultures and contexts. Moreover, despite the fact a number of studies have adopted a qualitative approach to provide an in-depth understanding of the nature of the transition; further research is required to identify the key mechanisms that facilitate effective development athletes. As such, a mixed method approach was used in this thesis in order to both examine quantitatively within career transitions but also investigate the development and transition experiences from the athletes' perspective. Finally, a case study examining an independent highly successful world-class elite development program was conducted to provide evidence from the experts' perspective regarding the factors that facilitate progression to elite level.

Chapter 3- Cross-Cultural Assessment of the Transition from Junior to Senior Level in Sport

3.1. Introduction

To date research in the area of within-career transitions has focussed heavily on the career termination, however, during the last decade, researchers have identified several challenging transitions during the trajectory of athletes to elite level. As discussed in the previous chapter, career transitions are considered to be normative or non-normative turning points in the athletic career (Wylleman & Lavallee, 2004; Wylleman, De Knop, & Reints, 2011), and athletes need to be able to deal with a variety of demands in order to successfully progress in sport or adjust to their post-sport career (Alfermann & Stambulova, 2007). The type of transitions experienced by athletes will vary depending on factors such as culture or organisational structures within a sport and as such different transitions have been identified. One of those transitions is the one from junior to senior level in sport which has been characterised as one of the most demanding periods in athletes' careers. While the 'junior to senior' transition does not explicitly account for 'level' of expertise, it relates to the transition from development to mastery stage outlined in the developmental model of transitions faced by athletes (Wylleman & Lavallee, 2004), and to the transition from specialization to investment years in the developmental model of sport participation (Côté, Baker, & Abernethy, 2007).

According to Stambulova (1994, 2003, 2009), the transition from junior-to senior level in sport starts when athletes begin to practice with a senior team and participate in associated competitions or games. Athletes have reported the transition from junior to senior level to be the most difficult one throughout their career in sport (Stambulova, 2009). As outlined by Stambulova, (2003) an athlete's ability to cope with the specific demands of this transition is related to the dynamic balance between transition resources and barriers. Adding to the

challenge present through this transition to the senior sport, athletes may have a number of other concurrent transitions in their psychological (adolescence to adulthood), psychosocial (living with parents to living independently) and academic/vocational development (from school to university or job) (Wylleman & Lavalee, 2004).

Given the complex and integrated nature of the challenges at this stage, it is perhaps unsurprising that many talented athletes drop out during this period of their career. For instance, Johnson, Tenenbaum, Edmonds, and Castillo, (2008) found that one-third of the athletes who participated in sport high schools (schools that specialized in the development of elite junior to elite senior athletes), failed to make a successful transition. Furthermore, in a study by Vanden, De Martelaer, Rzewnicki, De Knop, and Wylleman, (2004) only 17% of elite junior athletes successfully progressed to the senior national team, 31% remained stagnant, 28% continued to perform irregularly with ups and downs and 24% of the athletes dropped out. While not all athletes can make the transition by definition, it is unclear whether more athletes could make the transition successfully or more efficiently, if they were prepared or supported differently.

The transition from junior to senior level has been examined in several countries around the globe: UK (Fin & McKenna, 2010; Hayman, Borkoles, Taylor, Hemmings, & Polman, 2014; Morris, Tod & Eubank, 2017; Pummell, Harwood, & Lavallee, 2008), Spain (Lorenzo *et al.*, 2009), Denmark (Christensen & Sorensen, 2009), New Zealand (Hollings, Mallet, & Hume, 2014), Canada (Bruner, Munroe-Chandler, & Spink, 2008) and Sweden (Alge, 2008; Čačija, 2007; Franck & Tuovila, 2008; Mavroidis, 2004; Stambulova *et al.*, 2012; Vujic, 2004; Jorlén, 2008). The results of studies examining the transition to senior level have showed that performance related characteristics such as playing time (Bruner *et al.*, 2008), deliberate practice, access to specialist coaches, warm weather training camps (Hayman *et al.*, 2014), early success in elite senior level (Hollings, Mallett, & Hume, 2014), use of buddy systems

with senior players (Morris, Tod & Eubank, 2017) and quality preparation (Finn & McKenna, 2010) can facilitate a successful transition to elite senior level.

Additionally, psychological skills and attitudes (problem solving, self-control, acceptance of responsibility, self-reflection, determination, commitment, motivation etc.) have been suggested to help athletes effectively cope with the demands and barriers of the transition from junior to senior level (Finn & McKenna, 2010; Hayman *et al.*, 2014; Hollings, Mallett, & Hume, 2014; MacNamara & Collins, 2010). For example, a number of studies have shown that high levels of motivation contribute to the adjustment of athletes who are transitioning from junior to senior level (Franck, Stambulova, & Ivarsson, 2016; Morris, Tod, & Eubank, 2017). Moreover, it has been highlighted that individualized social support from coaches and family can facilitate the successful transition from one stage to another (Hayman, Mallett, & Hume 2014; Pummell, *et al.*, 2008). However, the nature of this support is crucial, because it can also create stress in some cases (Morris, Tod, & Eubank, 2017). In addition, personal resources, coping strategies and environmental support were associated with sport satisfaction (Stambulova *et al.*, 2012) indicating that the satisfaction of athletes is influenced by a combination of factors. In the same study, sport satisfaction was strongly associated with life satisfaction, which indicates that if their sport career does not progress as expected and it takes a negative turn, their satisfaction with other areas of their lives will be influenced. In line with this finding, an ecological approach (Martindale, Collins, & Daubney, 2005) and a holistic approach (Henriksen *et al.*, 2010a, 2010b, 2011) for effective development of athletes have already been suggested in the literature.

Most of the up to date research examining the transitions of athletes is qualitative in nature (e.g. Finn & McKenna, 2010; Morris, Tod, & Eubank, 2017; Pummell *et al.*, 2008) and as such provides a rich understanding. As with any qualitative research, however, it is difficult to generalize findings beyond the participants. There is also a scarcity of quantitative research

in this area and thus investigating a broader population has been suggested (Stambulova *et al.*, 2012). Based on the findings of eight qualitative studies investigating the transition from junior to senior level in Sweden the Transition Monitoring Survey (TMS) was developed to assess quantitatively the transition experiences from junior to senior level (Franck, Stambulova, & Ivarsson, 2016; Stambulova *et al.*, 2012). The TMS has since been usefully employed in Sweden, giving insight to athletes' experiences of the junior to senior transition, and it has the potential to enable researchers to gain a wider understanding of the transition from junior to senior level across different sport and cultures. Indeed, Ryba, Stambulova, Si and Schinke, (2013), have highlighted the importance for future research to examine the career development of athletes across different cultures.

Therefore, further research to strengthen our understanding of the transition to senior level in sport is essential. Taking into account that the majority of research examining this particular transition is qualitative in nature; more quantitative research regarding the transition from junior to senior level has been recommended (Franck, Stambulova & Ivarsson, 2016). Examining the transition from junior to senior level within different cultures will enable us to extend our understanding of the transition process, and TMS has been the proposed tool for this purpose. (Stambulova *et al.*, 2012; Stambulova & Alfermann, 2009). As such, the current cross-sectional study examined the experiences and perceptions of athletes regarding their transition from junior to senior level in sport across different regions (Europe and South America). Athletes were recruited from a variety of sports to give a diverse sample for both individual and team sport. The first aim of the study was to describe the transition from junior to senior level. The second aim of the study was to understand the predictive factors of adjustment and satisfaction during the junior to senior transition.

3.2. Methodology

3.2.1 Participants

Two hundred and ninety-two athletes, aged between 16 and 24 years old ($M= 19.5$, $SD= 2.8$) participated in this cross-sectional study. Of those, 202 were male and 90 were female. Participants were recruited from different sport clubs or sport schools in Greece, UK, Spain, Chile and Mexico (185 athletes from Europe and 107 from South America). All athletes fulfilled criteria to be considered within the junior to senior transition (Stambulova, 1994, 2009). Specifically, 82 started the transition less than 12 months ago and 210 started the transition from junior to senior level more than 12 months ago. In addition, all participants were considered to be 'talented' or aspiring to elite level and selected onto a recognised 'pathway trajectory' from which elite status can be reached. All participants were recruited from clubs recommended by regional sport confederations, and/or attended sport schools. In order to be admitted at a sport school students need to compete at an Olympic sport with a club recognized by the sport federation, have achieved a 1st-8th national/international position for individual sports; for team sports practical assessment is required. Moreover, sport schools include training sessions within their curriculum, which are delivered by qualified coaches of the respective sport in order to facilitate the development of talented student athletes. Firstly, to be admitted in a sport school students need to achieve One hundred and eighty-three participants competed at 'regional' level, seventy-four at 'national' and thirty-five at 'international' level as junior athletes.

Eighty-one competed in an individual sport while 211 competed in a team sport. Sport included in the study were the following: tae-kwon-do (8), football (107), basketball (33), volleyball (30), athletics (47), handball (28), kickboxing (3), swimming (1), table tennis (1), tennis (5), fin swimming (1), triathlon (1), diving (1), synchronized swimming (2), cycling (2),

kung fu (1), gymnastics (2), boxing (2), rhythmic gymnastics (11), windsurfing (2), karate (1), capoeira (1), speed skating (1) and rock climbing (1).

3.2.2 Instrument and Translation

The TMS questionnaire was developed by Stambulova *et al.*, (2012) and was based on career development/transition frameworks (Wylleman & Lavalee, 2004; Stambulova, 2003; 2009) and previous Swedish qualitative research on the transition from junior-to-senior sport (e.g. Alge, 2008; Franck, 2009). The first part of the survey introduction included a set of questions about the personal and athletic background (e.g. age, gender, type of sport, level of competition, number of training hours, motivation etc.). The second part included questions about the participants' current situation in sport and life and examined the athletes' perception of different spheres of sport and life in regard to their importance and satisfaction. The third part, the transition process, contained seven subscales exploring the transition process (demands, coping strategies, support, pressure, personal resources, stress, need for additional help, and adjustment to the senior level). The full questionnaire can be found in the appendix of the thesis. The TMS has been used in previous research (Stambulova *et al.*, 2012) and Cronbach's alphas for the TMS subscales ranged from 0.57 to 0.91; with 8 of the 11 alpha values over 0.70. The alpha values for three subscales in the Current Situation in Sport and Life part were lower than satisfactory; however, in the Transition Process part, all alpha values were satisfactory. In the current study, the Cronbach's alphas were more than 0.78 which is considered satisfactory for all categories of TMS.

For the purpose of this study, the TMS was translated into Greek, Spanish, Mexican Spanish and Chilean Spanish following the guidelines of back translation (Werner & Campbell, 1970) and the decentring technique in order to be culturally adapted (Werner & Campbell, 1970). This enabled the TMS to be used with Greek, British, Spanish, Chilean and Mexican athletes. Most cross-cultural researchers believe that back translation is the most adequate

method for translating an instrument (Werner & Campbell, 1970). The back-translated version and the original version were compared in the source language until any differences or lack of clarity in the meaning were clarified or removed (Ercikan, 1998). Despite the fact that Spanish is the official language in Mexico and Chile there are cultural and linguistic differences that caused problems to the researcher. Collaboration between experts in the two cultures/languages enabled the researcher to deal with these problems. This process is defined as decentering (Werner & Campbell, 1970). Through decentering, it was shown that there are phrases in the source version that were impossible to be translated well into the target language. Consequently, the material in one language was changed in order to provide a natural-sounding version in the second language (Werner & Campbell, 1970).

3.2.3 Procedure

According to the Code of Practice on Research Integrity of Edinburgh Napier University: “Young persons of 16 years and over are generally thought to be able to give informed consent, but this will vary depending on the nature of the research. Consent should be confirmed before the completion and return of any online survey questionnaires removing the need for written consent.” Therefore, consent from the participants was a compulsory question in the online questionnaire and it was not possible for them to continue to the survey without giving their consent. Considering the fact that all the participants were over 16 and this was low risk study ethical approval was granted from the Edinburgh Napier University Research Ethics and Governance Committee.

The researcher sent a recruitment e-mail accompanied with an information sheet about the study to sport clubs (recommended by the regional confederations) and sport schools in UK, Greece, Spain, Mexico and Chile. The participants were informed that it is not compulsory to take part in the study, were also informed about related ethical issues including confidentiality and data protection. Consent was a compulsory question before continuing to

the survey and was gained from every participant agreed to take part in the study. The survey was completed online using Google Forms software. The survey was forwarded to potential participants via the sport clubs and sport schools in which potential participants were members. The survey remained online for a period of 7 months to allow the researcher to collect as many responses as possible. From the 329 who initially started the survey 292 completed it and their responses were included in the analysis.

3.2.4 Data analysis

The data was inputted and analysed via IBM SPSS Statistics 23. Firstly, in order to give an overview of the athletes' perceptions regarding the transitions from junior to senior level in sport descriptive statistics for the demographics of the participants and for each TMS item were conducted. Subsequently, in line with the methods used by Stambulova *et al.*, (2012) to identify the factors that contribute to the adjustment of athletes to senior level in sport, to their sport and life satisfaction three sets of multiple regressions were used.

Prior to interpreting the results of the multiple regression analysis, several assumptions were evaluated. Firstly, according to the literature if the sample is bigger than $104 + 8m$ (where m = number of the predictors used for the hierarchical regressions), the sample is considered to be satisfactory (Green, 1991). Researchers have also suggested that a ratio of 10 to 1 is essential when more than six predictors are used in a multiple regression model (Miller & Kunce, 1973). Therefore, data collected from 292 participants was considered appropriate to conduct hierarchical multiple regressions.

In the first multiple regression, the perceived degree of adjustment to the senior level in sport was the criterion variable and transition demands, coping strategies, environmental support, personal resources, perceived stress, perceived need for additional help/support were the predictor variables. To check for the potential impact of mediating factors gender, region,

type of sport, hours of training and transition time were also included in all three regressions conducted in this study.

In the second multiple regression, sport satisfaction was the criterion variable and coping strategies, environmental support, personal resources, perceived stress, perceived need for additional help/support, perceived degree of adjustment to the senior level, were entered in the model as predictor variables. In the last multiple regression analysis, the variables used to predict life satisfaction were importance of different aspects of sport, sport satisfaction, perceived stress, perceived degree of adjustment to the senior level in sport.

3.3. Results

Stem and leaf plots and boxplots indicated that each variable used in all the three regressions models was normally distributed and free from univariate outliers. Additionally, inspection of the normal probability plot of standardised residuals predicted values indicated that the assumptions of normality, linearity and homoscedasticity of residuals were met. It has been suggested that multicollinearity is severe only when the variance inflation factors (VIF) are more than 10 (Neter, Kutner, Nachtsheim, & Wasserman, 1996). However, variance inflation factors as low as 2 can have significant impacts (Petraitis, Dunham, & Niewiarowski, 1996). In the data of the current study VIFs below 2 indicated that multicollinearity would not interfere with the interpretation of the outcome of the multiple regression analysis.

3.3.1. The transition from junior to senior level in sport based on TMS

Table 3.1 gives a summary of the Means, Standard Deviation and Cronbach alpha for the subscales of the data. The scale (1 to 10) was divided into the following four categories 'below 2.5 = very low, 2.5 to 5 = low, 5 to 7.5= moderate 7.5 = high' to facilitate the interpretation of the findings and allow the reader to have a more contextualised understanding of the mean scores.

Motivation, resources and support.

The participants were very motivated ($M= 8$, $SD= 1.4$) to make a successful transition to elite senior level in their respective sport. The most common personal resources amongst the athletes were current health ($M= 8.4$, $SD= 1.3$), physical condition ($M= 8.3$, $SD= 1.5$), self-expectations ($M= 8.3$, $SD= 1.5$), sport motivation ($M= 8.2$, $SD= 1.7$), mental and communication skills ($M= 8.1$, $SD= 1.4$). In addition, athletes reported that they receive high levels of support from their coach ($M= 8.1$, $SD= 1.9$), teammates ($M=8.2$, $SD= 1.6$) and family ($M= 8.1$, $SD= 2$). Notably, they also reported that they receive less support from their club/federation ($M= 6.8$, $SD= 2$) compared to the support they receive from their close environment.

Challenges and coping strategy use.

Their biggest demands for the participants were the ‘relationship/communication with the coach and the teammates’ ($M= 7.5$, $SD = 2.5$), ‘combining sport with school/work’ ($M= 7.5$, $SD = 2.1$), ‘combining school with leisure time’ ($M= 7.5$, $SD = 2.1$) and the ‘preparation for a competition/game’ ($M= 7.5$, $SD= 2.4$). The athletes reported that they mostly used the following coping strategies to deal with the demands and the challenges of the transition: ‘I have clear goals in sport life’ ($M= 8.2$, $SD= 1.9$), ‘I have clear goals in non-sport life’ ($M= 8.2$, $SD= 1.7$), ‘I try to keep good relationships with people around’ ($M= 8.2$, $SD= 1.4$), ‘I try to think positive in any situation’ ($M= 8.1$, $SD= 1.5$), ‘I try to give 100% in each training and competition’ ($M= 8.1$, $SD= 1.7$). On the other hand, athletes stated that they used the following coping strategies less in comparison to other strategies: ‘being in a difficulty I search for help of other people’ ($M= 5.6$, $SD= 2.4$), ‘I try to learn from others’ ($M= 6.3$, $SD= 2.6$) and ‘being in a stressful situation I express my negative feelings’ ($M= 6.9$, $SD= 2$).

Table 3.1 Means (M), Standard deviations (SD) and Cronbach's alpha for the variables of TMS

<u>Variables</u>	<u>M</u>	<u>SD</u>	<u>α</u>
Transition process			
Transition Demands	6.36	1.99	.82
Coping Strategies	7.2	1.07	.78
Environmental support	7.38	1.35	.79
Environmental pressure	5.73	1.75	.79
Personal resources	7.54	1.07	.79
Perceived degree of adjustment	7.6	1.29	.79
Perceived stress	5.63	1.91	.8
Perceived need for additional help	5.78	2.01	.81
Current situation in sport and life			
Importance of different spheres of life	7.92	1.22	.8
Satisfaction with different spheres of life	7.7	1.17	.79
Importance of different aspects of sport	7.94	1.38	.79
Satisfaction with different aspects of sport	7.68	1.39	.78

3.3.2. Contribution of the transition variables to athletes' perceived degree of adjustment and sport and life satisfaction

Predictors of adjustment to senior level in sport.

All the transitions variables and the mediating factors were entered in the regression model and revealed a significant relationship between perceived degree of adjustment to the senior level in sport and the predictors $R^2 = 0.42$, $F(11, 280) = 18.47$, $p < 0.0001$. Personal resources (physiological, psychological, interpersonal skills and former experiences in life and sport as defined in TMS) was the strongest predictor of perceived degree of adjustment in

senior level ($\beta= 0.52$, $p< 0.0001$). Hours of training ($\beta= 0.106$, $p = 0.027$), type of sport ($\beta= 0.104$, $p= 0.029$) and environmental support ($\beta= 0.11$, $p= 0.04$) were also positive predictors of adjustment to senior level in sport. This set of predictors accounted for 39.8% of the athletes' perceived degree of adjustment to the senior level.

Table 3.2. Predictors of adjustment to senior level in sport

	β	t	p
Transition demands	.032	.618	.53
Coping strategies	.004	.073	.94
Environmental support	.113	2.05	0.04
Personal resources	.52	8.92	<0.0001
Perceived stress	.06	1.05	.29
Perceived need for additional help/support	-.09	-1.52	.12
Region	.07	1.45	.14
Gender	-.01	-.28	.77
Type of sport	.104	2.19	.029
Hours of training	.106	2.22	.027
Transition time	.079	1.54	.24

Predictors of sport satisfaction.

In the second set of multiple regressions, the transition variables and mediating factors were entered in the regression model and a significant relationship was revealed between sport satisfaction and the predictors $R^2 = 0.33$, $F(11, 280) = 12.85$ $p< 0.0001$. Environmental support ($\beta= 0.27$, $p< 0.0001$) was a strong positive predictor of sport satisfaction. Perceived degree of adjustment to senior level in sport ($\beta= 0.142$, $p= 0.027$) and coping strategies ($\beta= 0.18$, $p=$

0.005) were also positive predictors of satisfaction in sport. This set of predictors accounted for 30.9% of the athletes' satisfaction with different aspects of sport.

Table 3.3. Predictors of satisfaction with different aspects of sport

	β	t	p
Coping strategies	.18	2.86	.005
Environmental support	.275	4.64	<0.0001
Personal resources	.063	.88	.379
Perceived stress	.103	1.7	.09
Perceived need for additional help/support	-.017	-.27	.78
Perceived degree of adjustment to the senior level in sport	.142	2.22	.027
Region	.072	1.31	.189
Gender	-.02	-.4	.68
Type of sport	.097	1.9	.058
Hours of training	.083	1.62	.106
Transition time	-.058	-1.06	.452

Predictors of life satisfaction.

In the last set of the multiple regressions, a significant relationship between the criterion variable life satisfaction and the predictors was found $R^2 = 0.29$, $F(9, 282) = 13.1$, $p < 0.0001$. Satisfaction with different aspects of sport ($\beta = 0.31$, $p < 0.0001$) was a strong positive predictor of life satisfaction. Additionally, the significant predictors of life satisfaction were importance of different aspects of sport ($\beta = 0.19$, $p = 0.007$), and perceived degree of adjustment to senior level in sport ($\beta = 0.131$, $p = 0.21$). Region as a negative predictor of life satisfaction ($\beta = -0.123$,

p = 0.025). This set of predictors accounted for 27.2% of athletes' satisfaction with different spheres of life.

Table 3.4. Predictors of satisfaction with different spheres of life

	β	t	p
Importance of different aspects of sport	.19	2.69	.007
Satisfaction with different aspects of sport	.31	4.17	<.0001
Perceived stress	.017	.327	.74
Perceived degree of adjustment to the senior level in sport	.131	2.32	.021
Region	-.123	-2.25	.025
Gender	.075	1.47	.140
Type of sport	-.099	-1.88	.06
Hours of training	-.071	-1.36	.173
Transition time	.041	0.73	.464

Note. R^2 adjusted= 27.2%

3.4. Discussion

3.4.1. The transition from junior to senior level from the athletes' perspective

The aims of the study were to describe the transition experiences from junior to senior level and understand the predictive factors of adjustment and satisfaction during the transition from junior to senior level. Athletes of the current study were competing at least at regional level in clubs and/or were students at sport high schools. All of them were considered as talented and were part of a 'pathway trajectory' from which elite status can be reached which demonstrates their high aspirations. Athletes who participated in this study perceived their sport

as very important and they were highly motivated to make a successful transition to senior level in their respective sport (perhaps elite level to be expected given the nature of their sport involvement, and recognition of talent). The question included in the TMS states: ‘‘how motivated are you to establish yourself at the senior level in your sport’’? Therefore, it can be concluded that based on the background and aspirations of the athletes who participated in this study it would be sensible to expect that the transition to senior level in their respective sport will be at an elite status.

The main challenges faced by the athletes were their relationships/communication with the coach and the new teammates, preparing appropriately for competitions and balancing a dual career. Perhaps unsurprisingly, athletes transitioning find it difficult to settle into the new team dynamic and build new relationships. However, this inevitable part of the transition process can be facilitated. For example, researchers have highlighted that effective communication between athletes and coach is an essential part of an effective talent development environment (Henriksen *et al.*, 2010a, 2010b, 2011; Martindale *et al.*, 2007). Furthermore, systems that integrate pre-elite athletes into the elite environment in advance of the transition can facilitate their successful progression (Douglas & Martindale, 2008).

Additionally, due to the likelihood of an increased standard of competition at the higher level, it is unsurprising that athletes found preparing for competitions to be challenging. Therefore, it would seem essential to place specific focus on preparing for the transition, both physically and mentally, well in advance (Finn & McKenna, 2010; Martindale & Nash 2013). This, of course, can be difficult for athletes where their pre-transition coach or environment has a focus on winning rather than longer-term player development (Ivarsson, Stenling, Fallby, Johnson, Borg, & Johansson, 2015). As such, tight coherency across the sport pathway seems to be important, with explicit remit and reward for coaches who ‘develop players’, as opposed to being pressured for short-term results. Furthermore, coaches may need to be educated

regarding the demands and the optimal approach that could help athletes effectively progress to senior level. Strategies may include: developing the necessary attributes (physical and mental) of athletes, being supported, given time to adjust and graded challenge. Intentional challenge has been proposed to facilitate the development of psychological skills and attributes that are essential to negotiating challenging periods throughout the trajectory to elite level (Collins & MacNamara, 2012).

Combining sport with school and/or work was another major challenge reported by athletes, which supports the existing literature (Lorenzo *et al.*, 2009). Interestingly, research suggests that athletes who managed this dual career focus successfully in their journey to the senior level reported that having the opportunity to combine professional and sport career facilitated their transition (Mallet & Hanrahan, 2004). Furthermore, when athletes are focusing only on sport they may neglect other areas of life (Baillie & Danish 1992) which can lead to identity foreclosure (Gordon, 1995). However, this is not to say it is the right thing for all athletes. Such challenges and expectations should be adjusted on an individual basis according to athletes' needs, abilities and differences (Douglas & Martindale, 2008). In line with this, Pink, Saunders, & Stynes, (2015) showed that the holistic development of athletes and more specifically their activities outside sport can help them have a better balance in their life, increase their performance and promote engagement. In addition to this, the activities outside sport can also prepare athletes for their life after sport. This is of key importance as despite the fact that athletes who took part in this study were talented and had high aspirations; not all of them will manage to maintain a successful career in elite level sport for various reasons. Thus, preparing them holistically can equip them with a toolbox of skills that can be used either in sport or in their professional career if this becomes necessary.

Athletes reported that the most commonly used coping strategies used were active and solution-focused related to the clarity of goals, effort, positivity and interpersonal relationships.

Psychological skills training (PST) is usually used to introduce and facilitate the development of coping strategies in order to enhance performance (Weinberg & Gould, 2014). Imagery, goal-setting, self-talk and physical relaxation techniques are usually the main mental included in PST (Vealey, 2007). The use of coping strategies was also positively associated with their sport satisfaction which reinforces the findings from Stambulova *et al.*, (2012). Previous studies have shown that goal setting (MacNamara & Collins, 2010), supportive relationships (Rees & Hardy, 2000), willingness to always give their best efforts (Alge, 2008) have been linked with successful talent development. On the other hand, seeking help from others, learning from others and expressing negative feelings were the coping strategies that were used least by the athletes. This may be related to being in a new environment, where athletes may be reluctant to seek help from others and express their emotions. However, research has shown that the ability to use available sources of social support can help athletes deal with challenges, develop resilience (Holt & Dunn, 2004) and successfully progress to the next level (Pummell *et al.*, 2008). Moreover, social support seeking predicted career success in professional adult soccer (Van Yperen, 2009) and both perceived and actual support have been shown to be linked with better performance (Rees, Hardy, & Freeman, 2007).

Even though support seeking was not used as a main coping strategy, athletes perceived high levels of available support from teammates ($M= 8.2$, $SD= 1.6$), coaches ($M= 8.1$, $SD= 1.9$) and family ($M= 8.1$, $SD= 2$). The mean scores for the support provided by the close environment were similar, however support from teammates was marginally perceived as higher compared to family and coaches. In addition, although personal resources were the most significant predictor of adjustment to senior level, environmental support also a significant predictor, which reinforces the relevance of support from the micro environment identified in the literature (Henriksen *et al.*, 2010a, 2010b, 2011 Martindale *et al.*, 2007). In line with the findings of Stambulova *et al.*, (2012) environmental support also predicted athletes' sport

satisfaction indicating that the micro environment can also influence the satisfaction of athletes with their sport. Research has shown that family support is important for aspiring athletes (Hayman *et al.*, 2014; Holt, Tamminen, Black, Sehn, & Wall, 2008) while the ‘right relationships’ and teammates’ support can facilitate a successful transition to elite senior level (Bruner *et al.*, 2008).

3.4.2. Predictive factors contributing to successful transitions (adjustment, satisfaction)

It is clear from the data in this study and previous research that the environment plays an important role in the development of athletes both by contributing to their adjustment to senior level and their satisfaction with sport. However, the factor that had the strongest association with adjustment to senior level was ‘personal resources’, which reinforces findings from Stambulova *et al.*, (2012). The most common personal resources amongst the athletes of the current study were physical abilities, high aspirations, mental and interpersonal skills. As such, both studies showed that personal resources were the most significant predictor of adjustment to senior level in sport. This highlights the need to teach and develop certain skills and attitudes in order to prepare athletes for within-career transitions (Alfermann & Stambulova, 2007; Durand- Bush & Salmela 2002; Jonker *et al.*, 2010; MacNamara & Collins, 2010; Martindale *et al.*, 2005). For example, self-regulation skills have been shown to facilitate a successful transition to elite level (Toering *et al.*, 2009) and the importance of being physically prepared in order to step up to a higher level has also been recognized (Douglas & Martindale, 2008). Coaches can help their athletes develop self-regulation skills by encouraging athletes to establish specific goals for their development in sport, ask them to self-evaluate their performance or estimate their competence on new skills/tasks. Coaches could also give athletes more choices regarding the performance characteristics they want to pursue (Zimmerman, 2002). Therefore, the indication of this study is that the main driving force of a

successful transition to elite senior level may derive from athletes themselves. If so, the role of the environment needs to prioritise the development of mentally tough, self-regulating, well-prepared athletes, and beware of short-termism and autocratic, coach-led teaching styles.

Findings of the current study showed that athletes more committed to training (as measured by training hours) felt more adjusted to senior level. However, based on the nature of the sport different commitment rates might be required. Research has highlighted that development environments need to provide opportunities to enable athletes to develop characteristics and attitudes such as commitment (Savage *et al.*, 2017). Previous research has also highlighted the role of psychological factors in helping athletes navigate their way to elite level through challenges. Psychological characteristics such as commitment, goal setting and concentration were common amongst successful elite athletes (Gould, Dieffenbach, & Moffett, 2002, Orlick & Partington, 1998). Similarly, coping (Hanton, Neil, & Mellalieu, 2008), mental toughness, resilience, and the psychological characteristics of developing excellence (Bull *et al.*, 2005, Fletcher & Sarkar, 2012, MacNamara *et al.*, 2010b) can facilitate the pathway to elite level. In addition, the recent study by Savage *et al.*, (2017) suggested that motivation is particularly useful for early traumas in the athletic career. Traumas, however, are more likely to occur during the transition to mastery/investment stage (i.e. junior to senior) as this stage requires more time and commitment (Côté, 1999). Athletes may expect to progress smoothly during this stage (Henriksen & Mortensen, 2014) which may increase the level of impact of traumas compared to the ones occurred during earlier stages of development. Findings showed that traumas can increase the ‘bouncebackability’ of athletes (Savage *et al.*, 2017) which is a key characteristic for successfully coping with the challenges of the transition from junior to senior level in the sport. As such, a number of studies suggest that the implication of intentional structured challenge can facilitate the development of individual characteristics that have

proven to be essential throughout the trajectory to elite level in sport (Collins & MacNamara, 2012; Collins *et al.*, 2016; Savage *et al.*, 2017).

Findings showed that type of sport also was associated with the adjustment of athletes at senior level which indicates that the type of sport and environment may influence the development of athletes. More specifically, team sport athletes felt more adjusted compared to the athletes competing in individual sport. In line with the findings of the current study, only six out of 31 dropouts in a study conducted with adolescent athletes from elite German sport schools were participating in team sport (Baron-Thiene & Alfeermann, 2015). It has been suggested that individual and team sport athletes have different personal characteristics (Nia & Besharat, 2010; Weinberg & Gould, 2014), although it is not clear whether certain personalities are drawn to certain sport or if the sport environment creates different personalities (Eagleton, McKelvie, & De Man, 2007). For instance, research has shown that team sport athletes have a higher perceived competency, affiliation with peers, competitive excitement, positive parental involvement and enjoyment compared with individual sport athletes (McCarthy, Jones & Clark-Carter, 2008). In line with this, a study conducted in Sweden found that team sport athletes viewed sport as more important and were also more satisfied with their current situation in sport compared to individual sport athletes (Franck, 2009). However, the nature of the environment is important because in football, for example, players are expected to move from a caring and nurturing environment to a brutal and outcome-oriented environment at the senior level (Richardson *et al.*, 2012). This reality coupled with the lack of exposure to elite senior environments (as junior athletes) may cause difficulties to their adjustment at this level (Bruner *et al.*, 2008). Therefore, gradually introducing players to the senior squad and educating them regarding the difficulties of the transition would help them build internal resources to manage demands and seek support from others (Morris, Tod, & Oliver, 2015; Morris *et al.*, 2017).

In relation to life satisfaction, how important athletes perceive their sport and especially how satisfied they feel with their sport were the strongest contributing factors. As well as sport satisfaction, and importance of sport, life satisfaction was also associated with the perceived adjustment and region. Similarly, Stambulova *et al.*, (2012) found that ‘sport satisfaction’ and ‘perceived degree of adjustment’ were associated with life satisfaction. Researchers have suggested that performance dissatisfaction is related to burnout (Lemyre, Hall, & Roberts, 2008) and injuries (Gustafsson, Kenttä, & Hassmén, 2011). Nonetheless, as difficulties are expected especially during transitions athletes may not feel very satisfied with sport. The fact that sport and life satisfaction were so closely related shows a potential risk of identity foreclosure, which may have implications for coping (Baillie & Danish 1992). Additionally, ‘region’ was negatively linked with ‘life satisfaction’, which could be explained by the fact that participants from South America felt less satisfied compared to their European peers. It has been suggested that cultural differences should be taken into consideration before designing a talent development model (Tebbenham, 1998) because cultural circumstances can influence the development of athletes (Côté, Lidor, & Hackfort 2009) and their transitions (Stambulova, Stephan & Järphag, 2007). However, it is important to note that based on the findings of this study region did not appear to have a significant effect on the adjustment of athletes to senior level.

3.5. Conclusion, Limitations and Future Research

The current study identified the key challenges and key strategies during the transition from junior to senior level and found that personal resources was the biggest predictor of adjustment at senior level. However, due to the complexity of this transition more factors such as training hours, type of sport and environmental support were influential of the perceived degree of adjustment at senior level. The practical implications of those findings are that since personal resources is the key element that can facilitate a successful transition to senior level

the outcome of this process is influenced from experiences and preparation prior to the transition. Therefore, quality preparation including mental skills training and intentional structured challenges could be used to enable athletes to be well prepared both physically and mentally. In addition, training hard and consistently is a crucial aspect that will increase the likelihood of an athlete to adjust to the senior level more effectively as commitment was linked with adjustment at senior level. Moreover, mental and physical skills need to be developed in order to facilitate progression to higher level. The environment can add significantly towards this end by providing the opportunities and challenges to the athletes. Apart from increasing the quality of preparation prior to the transition, allowing athletes to participate with the senior team can help them understand the expectations and enable them to adjust to the new standards and team environment/personnel. Last but not least, the main barriers identified in the current study were the ability to balance a dual career, fit into a new environment and be prepared for the increased workload. As such, the strategies described can help the athletes be better prepared to step up to higher level.

It is important as well to address the limitations of the current study: lack of established criterion-related validity of the TMS in the languages it was translated for the purpose of this study. Despite the fact that the use of a heterogeneous sample is common in the area of sport psychology (e.g., Munroe, Estabrooks, Dennis, & Carron, 1999; Samuel & Tenenbaum, 2011) the lack of balance of representation of both genders, types of sport (individual and team sport) and level of highest competition of the participants needs to be acknowledged. Nonetheless, the data of the current study provided useful information regarding the transition from junior to senior expanding our current knowledge through the investigation of a cross-cultural sample. Interestingly, the transition experiences reported in the current study and in previous work utilizing the TMS show similarities in the transition experience of athletes.

However, due to the low predictive variance, further research examining the transition experiences of athletes is still warranted. In order to understand the complexities of within career transitions more research in different cultures and environments is essential. This would help understand context-specific needs and help design evidence-based transition plans. To facilitate this process, and allow researchers to use the TMS questionnaire in different countries the translated questionnaires should be validated with the relevant populations. Researchers have suggested a minimum sample size of 100 regarding the sample size required for conducting factor analyses (Gorsuch, 1983; Kline, 1994) while others recommended that 200 is fair and 300 is good (Comrey & Lee, 1992). In addition, considering the ratio of number of participants to number of variables is a better way to determine the minimum sample size for conducting a factor analysis (Kline, 1994). The recommendations regarding the appropriate ratio vary from three to six times the number of variables (Cattell, 1978) while other researchers suggest a ratio of 10 to 1 (Everitt, 1975) or even a ratio of 20 to 1 (Hair, Anderson, Tatham & Black, 1995). Considering the number of factors in TMS and the languages that it was translated a minimum of at least 100 responses or more based on the recommendations from the literature for each language would be essential. Time and resources constraints did not allow the researcher to collect the required number of responses and therefore conducting a factor analyses for each language that TMS was translated was not possible.

In addition, there is a need to focus on a specific level of transitions (e.g. the transition to elite level). Furthermore, due to the complexity and idiosyncratic nature of the transition process, further in-depth qualitative examinations are warranted. For instance, understanding how the preparation time leading towards the transitions influences the development of personal resources would be very useful as personal resources were found to be more important compared to actual support during the transition process. Athletes who had a successful transition to elite level can retrospectively describe the pathway of development and highlight

the key challenges and give further insight regarding the process of developing the personal resources that helped them progress. As such, examining the development and transition experiences of athletes who negotiated successfully their transition to elite level would add significantly to the current knowledge in this area.

Chapter 4-A Qualitative Examination of Successful Athletes' Transition Experiences to Elite Level

4.1. Introduction

Study 1 examined quantitatively the transition from junior to senior level, although since study 1 was not a longitudinal study it could not be identified in which level the participants reached at (e.g. elite, sub-elite). Despite they were on a pathway towards elite level they were not tracked and as such examining within career transition at a specific level was deemed necessary. Thus, the transition to elite level was investigated retrospectively through the perspective of athletes who had successfully negotiated this transition. The transition to elite senior sport is a particularly difficult time for athletes, not least because it has such a critical role in the trajectory of an athlete's career (Stambulova, 2003; Wylleman & Lavalee, 2004). During that period, it may be determined whether an athlete will progress to elite senior level, continue competing at lower senior level or even drop out. Study 1 showed that the most predictive factor of adjustment to senior level for aspiring talented athletes was personal resources. In addition to this, their commitment in particular, the type of sport and the environment support had a significant influence on their adjustment to senior level. To further explore these findings and understand how personal resources can influence adjustment and how can be developed through the environment athletes who successfully progressed to elite level were examined in the current study. Their development experiences were also investigated in an attempt to identify their potential relationship to the development of individual characteristics and progression towards elite level.

It has been suggested that the development of athletes and of humans in general is influenced by elements of the micro and macro environment (Bronfenbrenner, 1979; Henriksen *et al.*, 2010a, 2010b). Culture or society, sporting policy and education (macro environment) may influence the development of individuals. For instance, high values placed on a particular

sport in a culture have a great effect on the sport achievements. Ice hockey in Canada, downhill skiing in Austria and table tennis in China are examples of the cultural influence on sport (Baker & Horton, 2004). Additionally, the sporting policy or strategy of a government may influence the development of athletes. For example, according to Vincze, Fügedi, Dancs, and Bognár, (2008) lack of success in Hungary was mainly attributed to the government's failure to establish effective sport policies or governing strategies. Furthermore, the type of school and the location (accessibility of facilities) may influence the development of talented athletes according to Côté *et al.*, (2006). Support from school is also essential especially when athletes are trying to combine school with sport (Pummel *et al.*, 2008).

It has also been shown that parents, coaches, teammates and friends (micro environment) have a significant influence on the development of athletes. Researchers have identified that external resources are vital and can facilitate a successful transition to elite level (Bennie & O'Connor, 2004; Morris & Eubank, 2016; Pummell *et al.*, 2008). More specifically, it has been identified that parents provide both tangible and social/emotional support to athletes (Bloom, 1985; Carlson, 2011; Gould *et al.*, 2002; Gulbin, Oldenziel, Weissensteiner, & Gagné, 2010; Hayman, Polman, Taylor, Hemmings, & Borkoles, 2011; Wolfenden & Holt, 2005) which is essential in order to cope with the demands of a transition (Wylleman, De Knop, Ewing, & Cumming, 2000; Wuerth, Lee, & Alfermann, 2004). In addition, coaches can also provide tangible support and build good relationships with the athletes while providing high-quality training programs including informational support (Bruner, Munroe-Chandler and Spink, 2008; Johnson *et al.*, 2008; Morgan & Giacobbi, 2006). Several studies showed that athletes received informational (e.g., sporting experiences from role models or seniors), emotional (e.g., encouragement), and self-esteem (e.g., competence) support from their teammates or friends (Henriksen, 2010; Holt & Morley, 2004; Johnson *et al.*, 2008; Martindale

et al., 2007; Morgan & Giacobbi, 2006; Weissensteiner *et al.*, 2009) which can promote long-term involvement and commitment in sport.

Recent studies have shown that despite the fact that effective TDEs in different contexts are unique, they still share many common characteristics. More specifically, Henriksen *et al.*, (2010a; 2010b; 2011) and Larsen *et al.*, (2013) found that across different successful talent development environments in track and field, sailing, kayaking and football certain characteristics were consistent. For instance, elite athletes play a significant role in the development of athletes and individuals develop psychosocial characteristics such as responsibility, hard work ethic, self-awareness, drive for excellence and social skills, which underpin their athletic development. The environments have a cohesive organizational culture based on integrated values, are ever-adjusting according to the current progress in each sport, promote holistic lifestyle and focus on long-term development rather than early results. It has been suggested that the talent development environment is the most directly controllable part in the course of developing elite athletes (Martindale *et al.*, 2007). Therefore, since features of the TDE are controllable; efforts can be usefully focused on identifying and improving those elements to effectively develop athletes in their best potential (Bailey, Toms, Collins, Ford, MacNamara, & Pearce, 2011). As such, it is particularly important to understand how to design talent development environments in order to facilitate effective development in the trajectory towards elite level.

Available resources play a significant role in the outcome of the transition and can be environmental factors or personal characteristics. Apart from the environmental factors, the outcome of a transition is influenced by the ability of athletes to cope effectively with the demands the transition (Stambulova, 2003). Developing resources prior to the transition can help athletes be better prepared for the upcoming demands of a normative transition (Stambulova, 2003). Equally important might be early experiences influencing the

development of personal characteristics such as personality or grit, which can be useful during within career transitions. Several studies have suggested that individual psychological characteristics are facilitative for progressing effectively and dealing with adversities. More specifically, commitment, self-belief, motivation, goal setting, focus, the ability to cope with pressure are some of the psychological characteristics that were identified to help athletes progress and reach at elite level (MacNamara *et al.*, 2006, 2008, 2010a, 2010b; Abbot & Collins, 2004; Orlick & Partington, 1998; Gould *et al.*, 1999; Durand-Bush & Salmela, 2002).

Due to the complexity of the transition process to elite senior level, further research in this area is necessary to allow us to understand the appropriate resources required for each specific career transition (Wylleman *et al.*, 2004). Not only individual characteristics but also environmental factors can influence the development of athletes. Existing literature has highlighted the influential role of the environment in the development of athletes (Henriksen *et al.*, 2010a, 2010b, 2011, Martindale *et al.*, 2005, 2007). Additionally, findings from chapter 2 showed that the strongest predictors of adjustment to senior level in sport were personal resources, training hours, type of sport and environmental support. Thus, exploring the transition and development experiences of successful athletes will allow us to identify which individual and environmental characteristics and in which ways they facilitated their successful transition to elite senior level. Examining both individual and team sport athletes that were nurtured in different talent development environments and within different countries will also give us an opportunity to distinguish certain common generic features related to effective development. When examining experiences it is essential to use a methodology that will enable the researcher to capture the perspective of the person who experienced it (Vaismoradi, Turunen, & Bondas, 2013). Therefore, it is not surprising that qualitative approach is usually preferred regarding the analysis of within career transitions. The aim of the study was to describe the transition experiences to elite level through athletes' perspective. The second aim

of the study was to identify any potential challenges and distinguish the key features that facilitated their effective development and eventually their successful transition to elite senior level. The third aim for this study was to identify a potential influence of prior development experiences of athletes and preparation on the outcome of the transition to elite level.

4.2. Methodology

4.2.1. Design

The main aim of this study was to examine the transition experiences of successful elite athletes. The secondary aims were to examine the development experiences, individual characteristics of athletes and environmental features associated with successful transitions to elite level. Thus, a qualitative methodology was chosen as the most appropriate method for the data collection procedure. A qualitative approach was chosen in order to gain an in depth understanding of the challenges athletes faced and the key features associated with their successful transition to elite level. A qualitative approach allows the researcher to follow up with probes or questions which gives the opportunity to further examine areas related to the research objectives (Guest, Namey, & Mitchell, 2013). This approach gives the opportunity to the participants to share information and experiences regarding the phenomenon being studied without being constrained completely by the questions being asked (Berg, 2004). This enabled the researcher to examine previous development experiences to identify whether they somehow influenced their transition to elite level. Additionally, in some cases participants may not fully understand a particular question, although when using a qualitative approach they have the chance to ask for further clarification. As a result, they answer the question that was truly being asked instead of a question they had actually misunderstood (Guest *et al.*, 2013).

4.2.2. Participants

In order to understand the elements that facilitate a successful transition to senior level at elite sport it was necessary to ensure that all participants had successfully transitioned into

senior level elite sport; by nature of them competing in the top level of their sport, for their country. This was necessary to ensure that all the participants had experienced the transition elite senior level successfully but also managed to stay in elite sport and have a successful career. There has been a great number of definitions about ‘elite’ athlete in sport psychology research and therefore a recent study attempted to create a system identifying the ‘eliteness’ of athletes by conducting a systematic review (Swann, Moran, & Piggot, 2015). For the purpose of this study all the participants were considered ‘successful elite’ or better based on the equation suggested in Swann’s *et al.*, (2015) study. In total six successful elite athletes who fulfilled the criteria agreed to take part in the study. All six athletes were males; three of them were British and three were Greeks. The fact that all participants were males can be attributed to chance; however, this did not allow the researcher to investigate any gender differences between the successful athletes. Four participants were footballers, one judoka and one track and field athlete (sprinting). Their achievements included competing in the Champions League, competing in the Europa League, league winners, cup winners, representation at the U21 national team, competing at commonwealth games, silver and bronze medal at a World cup event. A more detailed description of the participants can be found in table 4.1.

Table 4.1 Participants

Participant	Age	Nationality	Gender	Sport	Achievements
1	32	Greek	Male	Football	Greek Cup winner, Greek super league winner, Participation in Europa league and Champions league, 150+ appearances in top division
2	24	Greek	Male	Football	Representation of the U21 national team, 50+ appearances in the top division.
3	23	British	Male	Judo	Silver medalist in world cup event, representation at the U21 national team.
4	24	British	Male	Track and field	Bronze medalist in World cup event, participation in commonwealth games
5	21	British	Male	Football	Representation at U15, U17, U19, U21 national teams, 50+ appearances in the Premiership.

6	26	Greek	Male	Football	Representation of the U21 national team, Greek cup winner, participation in Europa league, 100+ appearances in the first division
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4.2.3. Procedure

The researcher applied for and received ethical approval for the study from the Research Ethics and Governance Committee of the School of Applied Sciences, Edinburgh Napier University before approaching potential participants. Participants who fulfilled the selection criteria were approached by personal contact or were introduced to the researcher by the supervision team. The researcher sent a recruiting e-mail along with an information sheet to the potential participants that fulfilled the criteria for study participation. All the participants were informed that it was not compulsory to take part in the study and they would be able to withdraw from the study at any moment. Consent was gained from every participant prior to their interview. They also were acknowledged that in case they agree to take part in the study all the data will be anonymized and confidential as much as possible. The data was stored on a password-protected computer in which only the researcher and the supervisor of the study had access in order to protect the data and ensure complete confidentiality. No individuals will be identifiable from any report, presentation or publication.

The main interview questions were sent to the athletes prior to the interview in order to enable them to familiarise with the type of the questions of the interview (Martindale *et al.*, 2007). Participants need time to consider their responses, and this technique has been suggested to provide denser and richer data from the participants (Burke & Miller, 2001). The interviews were chosen to be conducted by telephone or Skype. The interviews lasted approximately 56 minutes and were recorded and transcribed verbatim. So as to ensure the in-depth examination of the transition experiences each athlete was asked the same sequence of questions, although further clarification and probing was used as required (Patton, 1990).

Pilot interviews were conducted with two professional track and field athletes who managed successfully to make a transition to elite senior level. The athlete who participated in the first pilot study was a personal contact of the researcher. He was contacted and was informed regarding the study and the interview process. He agreed to take part in the pilot interview and also give feedback about the interview process. He also suggested one of his former teammate regarding the second pilot interview. After critically reflecting back on these interviews and carefully examining the feedback obtained the interview guide was evaluated and refined. Firstly, the order of the questions was changed to improve the flow of future interviews and allow participants to describe their development process prior to the transition to senior level. Moreover, the wording of some questions was changed since both of participants said that the meaning was not clear when they were asked for feedback.

Guidelines suggested by Patton (1990) were also followed in order to guide the interviewer away from biasing the responses of the participants. This was facilitated by the use of neutral and impartial position when probing participant responses, combined with the build of rapport, comfort and open responses (Backstrom & Hursch-Ceasar, 1981). The pilot interviews were not included in the final analysis as they were not considered to be of sufficient quality and the participants did not fulfil all the desirable criteria. More specifically they did manage to make a successful transition sub-elite senior level, although they did not manage to compete at the elite senior level in their sport, which is the reason they were not included in the study.

4.2.4. Instrument

To maximize the chances of gaining a complete picture of the nature of the transition to elite senior level, a semi-structured interview was developed, consisting of nine open-ended questions, carefully structured to generate open-ended responses (Neuman, 1997; Patton, 1990). This approach was chosen in order to allow flexibility when exploring areas that may

emerge during discussions with the participants (Rynne, Mallett, & Tinning, 2010; Nash, Sproule, & Horton, 2011). Details of the interview guide are presented in table 4.2. In addition to the interview questions, specific probes were used for clarification and further discussion of a specific point (Patton, 2002), to obtain consistency in the depth of responses across participants. These specific probes were identified for each question and encouraged participants to elaborate on their responses e.g., “Which were the most crucial periods and why?”, “How did you cope with this situation/pivotal point/ challenge?”, “Which factors do you think can influence development?”

Table 4.2 Questions used in the semi-structured interviews with the successful athletes

-
1. Can you describe your current situation in sport?
 2. Could you describe me your career within sport until now?
 3. Which were the pivotal points and main challenges throughout your career?
 4. When did you consider yourself to be ‘elite’? What facilitated that change? How does this change over time?
 5. Is the process towards ‘elite level’ same for everyone?
 6. From your personal experience can you give us examples of talented athletes that did not reach their best potential? Why did this happen?
 7. What characterizes someone who has the potential to become elite? How does this change over time?
 8. Which are the goals for your future steps in your career?
 9. What elements do you think can facilitate development and/or remove barriers?
-

4.2.5. Data analysis

Interviews were analysed using inductive analysis according to the procedures described by Edwards, Kingston, Hardy, and Gould (2002). The researcher firstly familiarized himself with the data by reading and re-reading the data and by taking notes with initial ideas.

The initial codes were generated and then the search for themes was initiated. Themes were generated in order to check they work in relation to the data set (Braun & Clarke, 2006). The inductive method adopted for this study included coding experience and similarity inferences (Patton, 1990). More specifically, coded experiences were compared and clusters of similar experiences were used to develop themes, themes were then compared to form categories and general categories. The comparison process continued until the data was saturated. Finally, the themes were defined and named and were supported by quotes in the result section (Martindale *et al.*, 2007).

Moreover, reliability checks were carried out in collaboration with the main supervisor (Scanlan, Ravizza, & Stein, 1989). The researcher initially coded the raw data quotes into raw data themes. Regular debriefing sessions after every stage of the analysis process with an expert in the area have been suggested to test the understanding and interpretation of the data by the lead researcher so as to minimize the influence of personal bias (Shenton, 2004). Thus, bi-weekly meetings were organized between the researcher and the main supervisor in order to review the themes and compare them with the quotes. Those meetings enabled the ongoing reflection of the coding experience and allowed the researcher to discuss points that may have been under or over emphasized and to remove any assumptions made from the gathered information. The researcher and the main supervisor focused on the reliability checks following the procedure described above by discussing and reviewing the analysis until they reached to 100% agreement. Finally, themes and subthemes were presented and were supported by quotes in the results section.

4.2.6. Trustworthiness and credibility

A number of measures were taken to enhance trustworthiness and credibility of the findings in the current study (Patton, 1990). As described earlier the researcher made all the necessary actions in order to assure that the questions were truly open-ended and that the

responses were not biased by personal opinions of the interviewer. In line with this, the transcripts and the researchers' interpretation of the raw data were sent back to the athletes in order to ascertain the credibility of the findings through stakeholder checks (Patton, 1990). All participants agreed that the analysed data accurately represented their views. Following the recommendation from Shenton (2004) frequent debriefing sessions with the supervisor were organised in order to reduce the potential bias of the researcher. In addition, seeking agreement from an expert in the field and using representative quotations were techniques used to increase the credibility of the current study (Graneheim & Lundman, 2004). Finally, reflective commentary was used in order to allow the research to reflect and evaluate the process of the data analysis (Guba & Lincoln, 1989).

4.3. Results

This section presents data according to the main themes identified by the analysis of the interviews: 1) development process, 2) challenges, 3) characteristics of successful talent development environments, 4) individual determinants of success (table 4.3).

Table 4.3. Characteristics of the development process, challenges and key determinants for a successful transition to elite level

Main Theme	Subtheme1	Subtheme2	Subtheme3
Development process	Early steps	Foundations of motivational and technical development	Enjoyment - Fun Deliberate play & Sampling Socialization Time and space for development High standards of youth development
	Development years	Conscious decision to excel	High aspirations Continuous improvement Healthy lifestyle Commitment/consistency
		Individualized pathways	Innate talent Networking Coincidences/luck Available facilities/coaches Family & financial situation
Challenges	Injuries	Sport-specific normative transitions	Junior to senior level Amateur to professional level Pre-elite to elite level
		Key elements facilitating a successful transition	Available support Graded challenge and progress in a steady pace Playing time in the 'right' level
			Reason for dropout Psychological impact Rehabilitation Comeback Become wiser Media

Challenges	Pressure		Fans Club expectations
	Balance academic/vocational career with sport		Prioritization Available support
	Performance related challenges		Staying at elite level High training workload
	Distractions		Nights out, video games, peers
Characteristics of successful talent development environments	Support Network	Emotional and esteem support	Family Friends Significant others Teammates Coach
		Informational & tangible support	Coach Sport scientists Elite level teammates act as role models
		Organisational support	Facilities/equipment National governing bodies Board members with relevant knowledge and vision Connection of higher education with sport
	Holistic approach	Long-term focus	Skill focus development Not win focus Clear goals Healthy competition Education of athletes and significant others Equality between athletes

Characteristics of successful talent development environments	Intentional structured challenge	Athlete wellbeing	Economic stability
			Mental challenges Tough love & teammates challenging each other <ul style="list-style-type: none"> • Continuous improvement Learn from failure <ul style="list-style-type: none"> • Deal with defeat/disappointment Mental challenge <ul style="list-style-type: none"> • Overcome fear of re-injury Senior debut <ul style="list-style-type: none"> • Empower the desire to improve Strict <ul style="list-style-type: none"> • Discipline
Individual determinants of success	Performance related characteristics		Physiological attributes & sport abilities Appropriate recovery
	Psychological characteristics & Resilience		Hard work ethic & perseverance & commitment Reflection & problem solving Cope with pressure & disappointment Self-confidence & focus Positive attitude & discipline & coachability

4.3.1. Development process

Early steps.

The athletes initially got involved in the sport to have fun, enjoy themselves and socialize with their peers. They were all involved in deliberate play activities such as ‘backyard’ football and tried several different sport early in their development. This initial involvement acted as a trigger for them to understand their potential, try harder to improve and seek opportunities for more organized activities.

‘I started playing football when I was a kid same as everyone else in the alleys and when I realized that this is what I want to do I asked my parents to join an academy.’

Participant 2

‘I started just to have fun and do something enjoyable in my free time as a kid and then when I saw that I had the potential to compete in higher level I started thinking about football more seriously...’

Participant 1

Participants also described that the coaches need to promote enjoyment and fun during the early steps of development since this can increase the motivation of athletes. Consequently, young athletes are more likely to stay involved in sport and engage more seriously by trying harder to get better.

‘They have to be enjoying it. They have to find it fun. They can’t just be doing it because it is a chore and because they have been told to do it by their mum and dad. The coach or the trainers need to make it fun for them at that young age. They need to be enjoying it and then with that enjoyment as they grow older they will start to try that bit harder’

Participant 4

Some of the athletes participated in a variety of sport before deciding in which sport they wanted to focus. Other reasons rather than actual performances at that time led athletes to choose their sport. Based on the descriptions of the participants, they had a free choice (without external pressure) to choose the sport they wanted to focus on because either they simply preferred its nature or because they wanted to be part of a team and socialize like participant 6 reported.

‘...from a very young age I did a number of different sport, football, trampolining but from 13 or 14 I focused predominantly on judo and I was never really very good but I just kept going and kept going...’

Participant 3

‘...when I was 7-8 years old I was doing 5-6 different sport. When I got older because of the school I had to stop some of them and finally I was between tennis and football. I liked more to play a team sport because I was socializing with more people so I chose football.’

Participant 6

However, in some cases, the decision between sport was difficult to make.

Interestingly, the level of enjoyment was the crucial factor that facilitated the final decision of youth athletes.

‘...it was mainly football and the only reason I did football was that I was fast. So I had to make the very, very difficult decision at the time of either picking football or trying to put all my eggs in one basket, as I describe it, and go for sprinting. It got to the point where I was enjoying my athletics more than I was enjoying my football.’

Participant 4

Certain key elements that facilitated the technical development of athletes during that stage were discussed. Participants agreed that high standards of youth development helped them acquire the skills that are necessary to achieve excellence in the long term. Having the appropriate support from early steps was highlighted during the interviews. More specifically, it was suggested that time and space should be given to young children in order to allow them to develop at their own pace.

‘I would say for athletes if they are given the right support from the ground up, so from a very young age, if they are given the right support, they are allowed to try every skill, try every event ... well for my sport, try every event, and allowed the time that they need to try and develop. So not just give them one shot and ‘oh you have had a shot’, if they enjoy it, let them try it more.’

Participant 4

Certified coaches with relevant knowledge in coaching and educating youths were described to be essential from the first stages of development process. Particularly in football, participants highlighted the fact that a structured youth academy with high standards can facilitate the development of players and enable them to reach their best potential.

‘At that age [8-12] you get taught very well at such a big club [SPL club]. They have plenty of coaches and you get taught well when you are young.’

Participant 5

‘I was lucky to join a team that at that time had youth academies of good standards with qualified coaches that had great knowledge of fitness, strength and conditioning, tactics and generally anything related to the development ages which was an asset for my future.’

Participant 1

‘The academies are blooming with experienced people working and with scientists, not practitioners. This element is important because football is like medicine if you don't follow it and you don't get informed then you lose.’

Participant 1

Development years.

Conscious decision to excel.

At this stage of their development athletes described that they made a conscious decision to excel. Participants described that they had high aspirations during the development age (>12 years old). Constantly progressing regardless of failures or disappointments is the key according to these successful athletes. They proposed that sky is the limit if you do what you love. The participants reported that athletes should try to be the best they can be at all times in order to reach their best potential. The idea of the desire for continuous improvement was highlighted as the optimal mentality for both coaches and athletes.

‘I had an ultimate goal that I want to achieve, and like I said I still want to achieve that and as long as I keep focused on the ultimate goal, for me, it doesn't matter how many times I fail as long as I know that I am still improving, I am still working towards this end goal.’

Participant 3

‘When you love what you do you don't have a limit, you need to be healthy and try to reach your best potential with hard work of course.’

Participant 2

‘...when you are doing well, you need to do something better, and make yourself better, even though you are doing well at the time, you still need to do better.’

Participant 5

‘ You need people who are experts and they search, they develop and they are continuously educated You need people who want to become better and better every day and are willing to teach this mentality to their athletes as well.’

Participant 1

Interestingly, participants reported that being committed, staying focused on your target, adopting a healthy lifestyle and being consistent in training, nutrition and recovery is more likely to determine the success of an athlete than technical skills or physical attributes.

‘We may start together in a team and you can have better technical skills but lack other skills which may determine whether you are successful or not. You might not be so consistent in terms of your timetables, your nutrition, your obligations, your training and all these factors play a significant role. If someone has less technical skills but follow the factors described above he might have a better future...’

Participant 1

Individualized pathways.

According to the athletes a combination of a healthy lifestyle, commitment/consistency, high aspirations and the mentality of continuous improvement represents the conscious decision to excel during the development stage. Nevertheless, athletes highlighted that the development pathway is idiosyncratic. For some people, it is smoother while others have to overcome multiple obstacles. Athletes supported that innate talent can be helpful, although injuries or logistic issues such as transportation or available facilities/coaches are potential barriers for young athletes.

‘Everyone has different barriers. Mines have been pretty smooth other than a couple of injuries. Other people have probably had maybe transport issues, maybe their only coach has been in one area and they can’t get there, so I can see that preventing people from developing. Also maybe they don’t have the equipment or that in their area, where they change or where they are based. That is another barrier. I would say it is definitely different for every single person. It is not a smooth run for everybody.’

Participant 4

Moreover, participants suggested that networking and coincidences may influence the development of an athlete. For instance, knowing the right person or be seen by a scout can be the “ticket” for someone to join an elite level team with top quality coaching, facilities, networking, or even luck may influence the progress of youth athletes. An organized scouting system could minimise the need for luck for

athletes with good potential. Such a system coupled with available facilities in all areas and financial support for low-income families could increase the talent pool.

'No for sure it is not the same for everyone, for some people it is quite smooth for others it is difficult. It depends on the coincidences and sometimes it is a matter of luck to reach your best potential. Talent is a requirement because you can't play at elite level without talent but you need to know the right person. Maybe you also need to have economic support from your family. This is what I mean by coincidences: to be lucky to have a talent and to be seen by the right person in order to move to a big team. For me, there was a coach that liked my talent and believed that I would fit his team and he took me by the hand and brought me where I am now. This coach was very important for me and I owe him a lot'

Participant 2

Giving the opportunity to youngsters to join an organized club requires the financial support the family which could be a barrier especially in certain areas. Participants from Greece described that nowadays organized sport may be a luxury for many families showing the potential impact on the development of children due to lack of funds. Ideally, the state should provide the necessary development opportunities for those young athletes, however considering the resources constraints in Greece during the last decade that would not be feasible.

'The family can help the children by giving them the opportunity to train in an academy. However, this requires money and if a family can't afford this then they need to find an alternative solution. Nowadays with the economic crisis in Greece being involved in sport is more difficult...'

Participant 2

Especially during the transition period, athletes might be forced (due to the economic crisis in Greece) to work in order to contribute to the family's income or to support themselves. Thus, the financial situation of the family and the ability to financially support the athletic career of the children can be crucial for the outcome of this transition particularly in less popular sports.

'Now with the economic crisis in Greece being involved in sports is more difficult because people need to work from an early age to earn some money.'

Participant 6

Participant 6 reported that parents also need to care for the wellbeing of their children since this can have a negative effect on their performance in sport. As such, a

positive and caring environment is possible to promote the well-being of athletes and increase the chances of developing to their best potential.

'Parents should not project their bad mood or stress to their children, or argue in front of them because this has a negative impact on athletes' well-being and their performance in sport.'

Participant 6

Mastery stage.

Sport-specific normative transitions.

Athletes described that the transition to mastery stage may incorporate a combination of sport-specific normative transitions such as amateur to professional level, junior to senior level and pre-elite to elite level. These transitions are expected to happen and usually represent the entry to mastery stage. Athletes reported that working in a professional environment even if it was at junior level was very helpful for their future development and particularly (both the transition from junior to senior level but also the transition to elite level) transition to senior level. Others started participating at senior level when they were relatively young which gave them the opportunity to gain experience, understand the expectations at senior level and get prepared to cope with the upcoming increasing demands of the elite senior level.

'I believe I left the right moment from an amateur team to a team that worked in a professional way even if I was playing for the junior team because I learned football in a different way compared to how you learn it in an amateur team.'

Participant 6

'At the age of 15 I started competing in adult level in a local team and after playing for two years at the age of 17 I started competing in semi-professional level. I played for two years in the 4th division, after this, I played for one year at a team in the third division and I was constantly improving so I moved towards elite level. Then I played for two years in the second division and now I am at a very popular club in Greek Superleague.'

Participant 2

It was reported that an achievement during that stage can increase the motivation of athletes and inspire them to try harder in order to be successful. Winning

a U21 championship was the trigger for one of the participants to realize his true potential, commit and work hard to become an elite senior athlete.

‘...when I was 19 years old I won the British championships, under 21, and that was kind of a springboard into my judo career, because I realised that I could achieve something and from then I started to take judo a lot more seriously, I was going on trips all over Europe and then a year and a bit later I decided that I really wanted to attack my judo career so I decided to train full time.’

Participant 3

Key elements facilitating a successful transition.

Available support. Support from the team environment during this transition appears to be essential for effective development. According to the participants, attention to youth athletes should be in place aiming to develop their technical, tactical and physical skills enabling them to be competitive at elite senior level. However, in cases that there was a lack of club support; family support enabled athletes to stay engaged in competitive sport, regain their confidence and progress in their career.

‘The pivotal point was when I made the transition from amateur to the professional level and I was getting better and better every year. However, when I joined a big team I was unlucky because they didn't pay attention to me in order to help me develop technically, tactically, physically so for those 3 years I remained stagnant or I would even say it was a drawback. By going to a big team I expected that I would have the appropriate support in terms of coaching but outside sport as well to help me improve as a person which I didn't have. The standards that I had in mind did not really exist, I fall over the clouds when I understood how the team works, and it was completely different compared to what I expected. The good thing is that I had the support of my family because this situation had a negative impact on my psychological state at that time.’

Participant 1

Steady progress. Steady progress and playing time at senior level were the key elements that facilitated a successful transition towards elite senior level according to the majority of the participants. Data showed that progressing to elite senior level in a fast pace may be detrimental to the future career of youth athletes. Athletes described that slow but steady steps should be taken by the athletes because too much progression in short time may have an effect opposite to the one intended.

‘I got better and better and I moved to the next level. This is good for young athletes; whichever level they want to reach they need to reach it step by step not go from zero

to top. They need to practice every day and work hard every day and with slow but steady steps to reach their best potential.'

Participant 2

'The transition from amateur to or second team to senior professional team needs to be made at a normal pace, step by step does not go from the first step to the tenth because usually, you fall down.'

Participant 6

Playing time in the 'right' level. Furthermore, playing time at senior level was also recognized as a prerequisite for a successful transition to senior level. Participants explained that in order to prove their playing ability and gain playing experience playing time is needed. Only training with the senior team or playing a few games per year is not enough for the athletes to get prepared for the demands they have to face as senior athletes.

'Playing one game per year and playing 30 is a big difference. That year gave me the opportunity to play consistently and I showed that I can play at this level.'

Participant 6

4.3.2. Challenges

Injuries.

Participants reported that injuries can affect them both physically and psychologically which eventually may lead them to drop out. Thus, they proposed that rehabilitation period is crucial and medical staff, support from family and coaches are essential to help them come back. However, they suggested that unfortunately in some cases injuries can be the main reason that athletes do not reach their best potential or simply drop out.

'There are a few athletes that I know have dropped out simply because of injury. They have been getting the same injury over and over again and then they don't do the right rehab all the time, they never really recover from it or they didn't go to the right physio, the physio has not given the right support, I don't know. Through injury, there are a lot of athletes that I know that have not quite reached their potential.'

Participant 4

'Some of the athletes may have injuries which can affect their psychology in a negative way and make them drop out.'

Participant 2

On the other hand, an injury can be beneficial according to athletes who described that they became wiser and managed to reach the same or even higher level of performance after an injury. Essentially, athletes from the UK (participant 5) and athletes from Greece (participant 1 and 6) recognized this difficult period in their career as a learning process. As such, it is how someone responds to challenge that appears to be the key.

‘The main challenge in my career came last year. I damaged the ligaments in my ankle so I was injured for four months and then it was the summer so I never really played football for six months which was difficult. When I came back from my injury I was still building back up to speed and I wasn’t the quickest for about a year. It was a big challenge for me. Well for a long time I was quite down about it and I thought ‘am I ever going to get back to playing where I was before I got injured’ but my dad helped me through a lot of it, he kept pushing me through and saying ‘you can do it’.’

Participant 5

‘I broke my leg and the possibilities were against me, it seemed like I would not be able to play again. The medical team helped me a lot, we should never forget about them. But the person who helped me psychologically was my coach, he helped me to get over my fear that I had inside me that I might not play again at elite level, get over the fear that I will get injured again. Finally, I managed to get over it and I competed at the same level or even higher level.’

Participant 1

‘I had an injury and for sure it made wiser and it was a difficult period of my career. You need to stay calm in many situations such as an injury and work to recover in order to reach the level you were before. I believe that after my injury I became wiser in many things, I learned how to react in tackles and how to use my body better.’

Participant 6

Pressure.

The existence of potential external pressure from fans or media was highlighted by the participants. Athletes agreed that it is something that they need to learn to deal with because it can have a negative impact on their performance.

‘...to play in front of the fans and see what it is like. When you play with the younger teams you are not experiencing anything like that.’

Participant 5

‘We are a country [Greece] that has 15 newspapers, 500 websites and 10 radio stations with sport content. So every day there is some tension around football and many people enter this vicious cycle and get influenced by the journalists which leads them to lose their way. This happened to me as well but I decided that there is no point giving attention to them.’

Participant 1

Furthermore, participants said that club expectations can put pressure on athletes and make their daily routine more stressful. Unrealistic expectations can be challenging and problematic for athletes.

‘...managing the expectations of people in the team I went was also difficult because they believed that coming from a big team I could take the ball from one side to the other and score. This mentality caused some difficulties in my everyday life. The expected more than they should.’

Participant 1

Balance academic/vocational career with sport.

Four of the six participants found it challenging to combine work/studies with sport. Athletes focused on two main elements that helped them balance their sport career with studies and/or work: prioritization and available support. Prioritization of different tasks according to the needs of each period is the key for athletes to achieve their goals in sport, studies and work. Athletes believe that available support within the school and from the team/coach is very useful because it can increase their chances of meeting their goals and staying committed to their sport.

‘I left school halfway through the year, I went back to study PE and English so I was still doing them. We get a Wednesday off so I would go to school on a Wednesday and because I was only doing two subjects I was catching up on both during the week and the teachers helped me a lot and got me through it. Then I passed both my exams but it was quite hard to play football and do the Highers as well. But I was enjoying football so it was something to take my mind of it as well. It was hard but it was worth it once I had done it. Then that was me I could then totally focus on football once my exams were out of the way.’

Participant 5

However, participant 4 described that some people need to work in order to support themselves so inevitably have to decide between sport and job and it is a very tough decision to make.

‘A lot of people have had to make that decision. And if I was put in that decision I would struggle, I would struggle big time to make that decision. I think it is easy for you to go down the route of carrying on with your job because I feel like it is there, it provides you with support and stability but then to go and pursue athletics or your sport, it is a big call to make and if you struggle to juggle both of them then you have to make that decision. I can see that being a very tough one for someone to make.’

Participant 4

Athletes reported that prioritizing was the key that enabled them to successfully combine a career in sport while working or studying. Setting specific goals depending on the needs and the expectations of either academic/vocational or sport career enabled them to combine both. This strategy resulted in favouring either sport or studies/work at certain periods of the year. For this to happen, support and understanding from the coaches/team are essential. Athletes need that support of their life choices because they are not only athletes but also people with their own wishes and targets outside sport.

'...so as a junior, when I was younger, it was balancing my school, my social life, and my training and now I am a university part-time, so I have to balance my university work alongside training full time and earning money to pay my rent. So at different times of the year, different things take priority. So for example at the moment, when it comes to exam time, the university has a slight edge over judo, although judo is my main goal so judo is always the prominent reason. But at different times you have to prioritise differently.'

Participant 3

'Everybody will favour one or the other. With me right now it is my training and my athletics and my studies and at some time like this time last year, I probably favoured my training a lot more because I had things to aim for. I wanted to achieve things that year whereas now it is the other side. I have got an honours degree to try and attain so there is a complete opposite. It is difficult to juggle both and at some point, I will favour one over the other. It is not something that is easy for people to do. It is not easy for me to do. My coach is completely 110% behind me. I can sometimes say to him, I said to him not too long ago actually, last week say, that I can't come to training at the time training is set at because I have got testing at uni to do, I have got reports to write up, something like that and he has been like 'yes, ok, here is the session, do it when you can'. A lot of coaches then could turn round and say to you 'if you are not at training, you are not doing training, we are not going to have you training somewhere else'. Some coaches can and some coaches probably do that. My coach is 110% behind me.'

Participant 4

Athletes said that loving what you are doing is what will make the difference at the end and will help athletes to run the extra mile and combine their career in sport with their work/studies or dreams outside sport.

'If you love two things and you want to think about your future sometimes studies overrun football but if you are good and you really want both then you can do them at the same time. I play football professionally but I also study at the university physical education and sport science. It is something I wanted and everything turned out to be OK. The people from the team help me and they did some certain things in order to facilitate my situation and enable me to study at the university and play professionally at the same time.'

Participant 2

Performance related challenges.

According to participants' opinions, the biggest performance-related challenge is to stay at elite level. Some of the participants (1 and 6) had to make hard decisions for their careers in order to eventually get back to elite level after having a performance decrease or being dropped by their teams. Athletes competed with lower level teams or even lower division teams in order to get playing time, build up their confidence and finally come back to elite level.

‘Then I took the decision to leave and I went to a weaker team in order to have some playing time and gain confidence which is what happened in the next two years. The first year was not great though because I had ups and downs in my performance. However, the second year my performance was stable which gave me the opportunity to make a transfer to one of the big teams of Greece.’

Participant 1

‘The biggest challenge was to stand up again after spending a year in obscurity [lower division teams] and PP [Super league team] was a step for me to come back to elite level.’

Participant 6

The training workload was described as tiring and it was suggested that athletes need to be ready to cope with this. Excessive training is challenging for the everyday life of athletes and sometimes it can lead to injuries which may result in drop out. Additionally, appropriate guidance from coaches was described to be helpful for overcoming any potential mental barriers that may arise.

‘An athlete may not manage to reach elite level because the body doesn't help him or because he can't handle the daily challenges of football, the training etc. Football is tiring and some of the athletes may have injuries which can affect their psychology in a negative way and make them drop out.’

Participant 2

‘So physically he has made me stronger, he has made me faster but I would say the main thing is it has taken a while, because it is not easy to break down this barrier that you have mentally about how you look at things like the 400 but I would probably say that is probably the biggest thing he has done for me. He has changed the way I look at the 400, rather than the way I actually run.’

Participant 4

Distractions.

Potential distractions such as nights out, hanging out with friends or playing video games were also discussed by the participants. Being committed and focused to your target seems to be the key in order to avoid those potential distractions. However, at certain times those 'distractions' can relieve pressure which highlights the need to consider individual circumstances before identifying good and bad practice.

'For a footballer, distractions are always the same, more specifically the bars, nights out are everyday challenges for a footballer. Even going out for a coffee you may see something nice that you like so the distractions are part of everyday life. When someone lives away from his home the distractions are more because you are not mature enough to decide that you won't go out because you have training tomorrow morning. It is difficult for a young footballer.'

Participant 2

'Whilst some of my friends would spend night after night just kicking a football around with a friend or going out drinking or with their play stations, I had a focus and I had like the direction in where I wanted to go in my life. So I think when I was at school I realised I was a bit different from everybody else because I was focused and dedicated to something.'

Participant 3

'Stay focused on what you are doing and don't get distracted from nights out, coffees, journalists, women. Everything in balance.'

Participant 1

4.3.3. Characteristics of successful talent development environments

Support network.

Emotional and esteem support.

Athletes identified that an effective support network consists of a range of people, such as family, friends, significant others, teammates, and coaches. Having support during good and bad times from people from the micro environment is the basis for effective development since athletes need to rely on certain people that they trust and they need this extra 'push' when things are not going well. It was suggested that without this social support the pathway to elite level can be more difficult for athletes. According to the participants' view, significant others can support emotionally during tough times but they can also bolster their confidence while dealing with stressful situations.

‘My family for sure, this is where it all begins. They gave me the right principles and they taught me to compete in a healthy way. They were the ones who helped me throughout my pathway along with my coaches and my friends who were close to me at all times.’

Participant 2

‘Sometimes life isn’t great and your training is not going the way you want it to, your work is not going the way you want it to and you are down in the dumps and you really just have to rely on the people around you. So when I was back at home, I had the full support of my friends and my family and they were really supportive. Now I am up in EE by myself, but I have a girlfriend so she is my support network and I have a good few friends who help me and a coach who I trust.’

Participant 3

‘I would say a lot of the time, my family came into it. Because they are very, very supportive. Very supportive. Even when I have got a slight niggle, I am not completely fully training, my mum and dad are constantly ‘if you carry on your rehab, if you carry on doing this then you will be back at the same stage as you were’. My mum is the type of person who will give you a kick up the backside and say ‘you don’t want this person to be beating you, do you?’ and that is kind of like mental reassurance to me that I need to go and do my rehab and get back, ‘I need to get back quick, I need to get back to the same level I was at when I left’. So I would say them being on my back all the time, sort of, is a blessing in disguise...that level of support which when you are having tough times, when you are facing barriers, that it allows you to have someone to be by your side and give you that support to keep going and keep driving through it, because if you have not got that support then I don’t think it is easy for you to do on your own. I am not saying it can’t be done on your own but it is a heck of a lot easier if there for you.

Participant 4

Informational and tangible support.

Experts (e.g., coaches, physiotherapists, psychologists) are essential pieces of a successful environment in elite level and athletes acknowledged this. Receiving the support from people who are experts in their field can help athletes pay attention to detail and enhance their performance. Providing athletes with guidance regarding possible solutions to a problem or providing them with the necessary resources to cope with a stressful situation is of paramount importance according to the participants.

‘The coaches influenced my development in a good way; if you have a good coach you acquire a good mentality as well. My coach was my second father for me personally.’

Participant 2

‘I believe a psychologist is essential in a team especially after the age of 15 because athletes may need to speak with a psychologist and express some issues that may bother them which can help them perform well. On the other hand, carrying their issues in the pitch will make them underperform.’

Participant 6

It was reported that role models and more specifically elite level teammates can also provide support and help athletes become better especially in terms of building their character based on professional elite level standards. By acting as a good example they can inspire youth athletes and enable them to understand what it takes to be elite.

‘It helped me very much the fact that I was training with the senior team of OO [Super league team] for a year and a half because my teammates were elite level players who had played in Champions league. This helped me build my character. You know to stop being immature, not complain, not swear things that I did when I was younger but then you grow up and you mature faster in this area because you need to.’

Participant 6

‘She is a higher level judo player than me, she has competed in the Olympics etc, she has had a lot more experience she is also quite a bit ... well, she is also four years older than me, so she has had more life experience in the sport and the most important thing that I think is that she understands.’

Participant 3

Organizational support.

The need for appropriate facilities/equipment and support from national governing bodies was also highlighted by the participants. This is the basis for developing effectively athletes in any sport and the absence of this organisational support can be detrimental to the future of young talents.

‘definitely friends, family, coaches, teammates, I would probably say them all under the same category but then also you would have your actual sport governing body, who can provide you with help but then you also have to have support from your club, or your club has to have support as well to provide you with the right equipment, provide you with the right area to train in, so all those things are out with your control really. So if you have all them as well then you have basically a base ... the club has a base to provide athletes with everything they need to develop.’

Participant 4

‘The appropriate facilities are an essential element and can facilitate the development of athletes. As I said good facilities are very important and also the person who is teaching you football. Coaches need to be capable of inspiring the athletes to try harder and harder.’

Participant 2

‘It would be nice to have some support from the state and have in place an organized system to facilitate the development of athletes.’

Participant 2

Moreover, board members with relevant knowledge and vision could make a difference in a team/organization. Players who experienced this described that the level

of organizational support and the environment of the team was ideal for players to reach their full potential.

‘Those years I felt like a top-level footballer because we improved continuously. We had a great president who brought a new model of organization which he wanted to have as a player. I don't think he had it when he was playing in Greece, he experienced it when he was playing abroad. The board was amazing. The president had experiences from Europe and he knew what he had to do. He changed a lot of things. We were only thinking about the performance and nothing else worried us.’

Participant 1

The connection between education (higher) and sport was also suggested and the successful example of NBA was given to emphasize the potential benefits of such a structure.

‘I really like the system in the USA regarding basketball. The athletes go a college and they combine education with basketball and we can all see the results of this and they have by far the best league [NBA] in the world. They managed to connect education with sport and this is very important.’

Participant 2

Holistic approach.

Long-term focus.

The usefulness of maintaining a skill focus development instead of being results oriented was highlighted by the participants. Winning at young ages does not necessarily mean that an athlete is skilful or has the potential to be successful. The success could be a result of a physical advantage at that time. Therefore, improving technique and skills aiming to be successful in the long-term is suggested to be advantageous for youth athletes.

‘I would say people not being medal orientated at a younger age, the best way to get to elite level is to not be focused on results. Not be result orientated. I feel if you are results orientated too early you will only focus on how to win at that time. Being able to win as a child doesn't necessarily mean that you are skilled in judo. It just means you are stronger than somebody else or you can pull somebody harder, whereas if you focus on technique, and focus on the long-term goals it is much easier to become elite because you have the capability to get that rather than just win at your level.’

Participant 3

Constantly progressing is the philosophy that will increase the possibilities of a youth athlete to make a successful career at elite senior level. In addition, having clear and achievable goals is useful for athletes because it keeps them committed at all times.

‘He [the coach] always told me that it didn’t matter, we were always developing for the future, and it is ok, as long as each time I competed I could show that I had improved a little bit, and what we were working on I was putting into practice, he was ok. The problem was if I wasn’t progressing, so if I fought the same person and each time I got a little better, he was happy. So he said the results will come and as long as I keep putting in the hard work and keep trying to improve, eventually the results will come.’

Participant 3

‘So by doing that you have little things that you want to achieve and through every aspect of my training there are little things I need to achieve and as long as I see myself hitting those targets then I find it much easier to deal with them.’

Participant 3

Players supported that an environment that promotes healthy competition is of paramount importance because it challenges athletes to get better. This can be a mechanism to get the most out of the athletes in every training session.

‘Every day is a competition we are in. I have a good friend in my training partner and we are both in the same weight category but everything is a competition. If we lift weights in the gym, who can lift the heaviest weights that day, if we have conditioning, who can do it for the fastest or for the longest? If we have a judo fight it is obviously who can throw each other the most, every single day. Even in training is competition which means that we constantly push ourselves to get better and better as well as having to support each other as well.’

Participant 3

Essentially, having a long-term focus should be instilled to the athletes because success at young ages or even at the beginning of the senior career is not a guarantee of a successful career. Consequently, it was suggested that athletes need to keep progressing constantly and stay committed to this mentality.

‘Another thing that they need to be aware of is the agents because unfortunately they are in football and they promise too much to the young players. Therefore, those [players] who might be good are looking for the immediate money to have a good contract for a couple of years, then they “sit” on their contract and as a result, they lose their opportunity to develop and progress. They see the tree and not the forest.’

Participant 1

Education was also described to be essential for the development of elite level athletes. More specifically athletes highlighted that family should instil right principles

from an early age and promote healthy competition. As the youths develop significant others should be educated regarding the needs, expectations and long-term goals of the athletes in order to empower the support network instead of creating obstacles because of the lack of knowledge.

‘To begin with my family for sure, this is where it all begins. They gave me the right principles and they taught me to compete in a healthy way. They were the ones who helped me throughout my pathway...’

Participant 2

‘I think education of people supporting the athlete is very important. If for example, a young person’s parents understand the routes, understand what the long-term goals are and what needs to be done in terms of training and commitment then it is much easier for the child. Because sometimes ... my parents were fantastic, they backed me 100% but sometimes people’s support networks don’t understand what is happening so they struggle and so they put pressure on the child too early or they won’t let them attend certain sessions because they think they are doing too much. Whereas if you educate the parents or the support system, especially when you are younger it will allow you to maximise the child’s potential.’

Participant 3

Athlete wellbeing.

Furthermore, athletes reported that it is important to be treated as equals within the team environment and have economic stability. A caring environment based on the values of trust and honesty in order to make athletes feel satisfied should be in place because according to the participants their wellbeing is connected with their performance. They suggested that their wellbeing is the starting point for being a successful athlete, therefore, it is believed to be a key determinant for success.

‘When athletes want to be a professional in any sport the environment needs to make them happy, make them feel close with everyone and be happy to work hard.’

Participant 2

‘Psychology is number one in my opinion but generally is a sequence of elements with sound foundations. Everything needs to be in balance and athletes to feel well.’

Participant 6

‘The players were protected in all domains of life; the team cared for us and our families every moment in every occasion. Economically everything was settled you didn’t have in your mind when I will get paid, how much I will get which is very important. There was isonomy between players. There were no discriminations; all the players were equal.’

Participant 1

Intentional structured challenge.

Participants described that during their career challenges helped them to improve weaknesses. More specifically, learning to deal with disappointment and defeat is an important lesson for young athletes. Losing time after time can make an athlete understand this the hard way. However, if the coach is next to the athlete to support and instil values such as hard work, perseverance instead of letting the athletes get upset for losing this challenge can be really beneficial. This scenario could be a structured challenge (competing against stronger opponents) in order to achieve the desired outcome which in that case would be to learn to deal with defeat/disappointment. Additionally, having teammates with the same mindset can be really helpful since they push each for the greater good always within the limits of healthy competition.

‘Obviously, it helps to have physical attributes but I have seen many talented persons come and go because they don’t have the psychological drive or toughness to reach the top. I believe that it is something that you instil in someone from a young age. So it is kind of like ‘tough love’ if you understand that phrase? It is kind of like tough love. From a very early age, although technically to start with I wasn’t very good, I was always taught to train the hardest, to push myself as far as I could. It can be taught and I believe it is mostly through tough love and having a good group of people around you who are also, like-minded. If there are a group of people who are all trying to achieve something, it is easier to do it as a group. So if everybody is trying their hardest it means you push each other.’

Participant 3

On the other hand, when things are going too easy for young athletes they lack the ability to deal with disappointment and they are more likely to drop out when the demands will be higher and the challenges numerous. Therefore, even losing can be a learning process and a very important one. Dealing with disappointment/defeat was described as a key characteristic for effective development especially when athletes face multiple challenges. A period like this is the transition from junior to senior level or the transition to elite level for instance so athletes who had developed this characteristic will have more chances of moving up to the higher level.

‘But I find that people who get it easy, struggle when things get difficult. So there are a few people who as a child I used to idolise over, and think were fantastic, but then as I got older and maybe they lost a couple of times, they struggled to deal with the defeat in the same way that I have. And instead of pushing through they just quit. They were so used to winning. I think that is a major factor.’

Participant 3

The idea of structured challenge is to keep challenging an athlete in order to get at the edge and eventually improve either mentally or physically. Making sure that athletes are giving their best efforts in training is essential therefore structured challenge seems to be a cornerstone of successful talent development environment according to the participants.

‘He doesn't basically ease up on you. So I suppose that is kind of tough love as well. Especially when it comes to the last one, he has seen that you have just performed poorly in your second last run, but he is then on at you, for the whole length of your recovery to then make sure that that last one is what it is meant to be and it doesn't drop off even further. So he is not someone that is scared to let you know what you should be doing even if you are looking really rough at training. So my coach, different style, different time but the exact same kind of person, exact the same kind of technique as what my mum and dad use.’

Participant 4

Moreover, challenging an athlete after an injury can also have a positive effect in the future because a major injury can cause fear for re-injury to the athletes which has to be eliminated. An individualised approach is needed in such cases because each person has a different character and there is no golden rule of how to approach a sensitive situation like this. For instance, one of the participants was challenged mentally in front of his teammates which motivated him and made him overcome his fear and be the best version of himself.

‘It was something simple not very complicated. When the medical team gave him the OK that I can train with the rest of the team he didn't put pressure on me in the beginning. He was monitoring me and he was checking how I behaved. In parallel he was taking notes of my weaknesses and when he decided that in terms of fitness I was at the level he wanted and I was only mentally unprepared he challenged me with a unique way in order to help me get over my fear. When we had competitive drills in small areas with duels, intensity, pressure sometimes I didn't put my feet in the fire I was either jumping or holding back. So he stopped the training 3-4 times and he offended me in front of my teammates in order to challenge me and make me play harder in order to prove him wrong. He believed in me and he saw some positive

elements that he wanted to have in our games and that's why he believed in me. It really helped me with no question.'

Participant 1

Another structured challenge reported by a participant was related to being given a senior debut at a young age. This strategy can provide a clear picture of the expectations at the elite senior level and empower the desire of athletes to improve and manage to reach elite senior level.

'It was a very big step for the manager to give me a shot in the first team that young. It kind of helped me and showed me what is there to have if I really want it that badly. If I put in the work.'

Participant 5

Finally, being strict at certain ages can make sure that players will follow the code of conduct and will be disciplined. This is another crucial aspect of elite level taking into account that undisciplined athletes are not usually welcome to the professional level and inevitably drop out or compete at semi-professional level.

'For sure they need to be strict and challenge you because when children are 15-16 it is difficult for them to listen, someone needs to make you behave.'

Participant 6

4.3.4. Individual Determinants of Success

Performance related characteristics.

Athletes described that certain sport abilities and physiological attributes such as strength and speed are essential for athletes in order to reach elite level. They also highlighted the importance of appropriate recovery and they linked poor recovery with injuries and bad fitness. Interestingly, participants highlighted that athletes should be responsible for their recovery and care for their body in order to be at the best possible condition for training and competitions.

'I started weight training, and it has made me a lot stronger, as you can imagine, but it has also made me faster which has made it a lot easier for me to run a fast time because the times I was running before, you were having to put in a lot of effort, but now because I am faster, I can run those exact same times with hardly any effort.'

Participant 4

'I think injuries have probably occurred because of people ... they take their fitness a bit of granted. They think they are going to be constantly fit or someone who has never had injuries or things like that. Then they don't do the correct things, post-training, to make sure that they are fit going into the next session and then they might feel fit for that session, the next again session and so many sessions following up, but if you carry on not doing the correct things post-training, it is all going to mount up and then something is going to happen at some point. So I feel that that is probably one of the reasons why injuries occur. I see it in so many different athletes where they don't recover as they should and they don't use the correct methods, whether it is ... whether it is stretching or taking in protein or something like that, to allow them to recover. I think that is probably one of the main reasons why injuries occur.'

Participant 4

'I had teammates who were coming at training 5 minutes before it started and were leaving always first thinking about the coffee afterwards without caring about recovery and how they could enhance their fitness. We are talking about professional level. Athletes should give much attention to their recovery and their preparation.'

Participant 1

As participant 3 specifically described physical attributes and sport abilities can facilitate the pathway towards elite level. Nonetheless, it was suggested that this would not be possible without having the drive and the mental toughness required to reach elite level.

'You do need some kind of sporting natural ability and physical attributes because everybody who reaches the top, whether they are great or not, has some deep sporting ability. However, I have seen many a talented person come and go because they don't have the psychological drive or toughness to reach the top.'

Participant 3

Psychological characteristics and resilience.

All the athletes highlighted that the most important elements that will enable an athlete to reach elite senior level are certain psychological characteristics and resilience. The participants distinguished six psychological characteristics that are required in order to reach elite senior level: 1) hard work, perseverance and commitment; 2) reflection and problem-solving; 3) coping with pressure and disappointment; 4) self-confidence; 5) focus, and finally; 6) positive attitude, discipline and coachability. Along with those specific characteristic athletes emphasized the importance of resilience and defined it as the ability to bounce back and overcome adversities that may arise. According to the participants being resilient essentially means to be determined to keep

trying no matter how difficult things are. All the participants agreed that these elements are the ones that will make the difference for someone who wants to become elite. An example of a program that has been developed to facilitate the development of resilience in a teaching context is BRITE (<https://www.brite.edu.au>) hence a similar approach could be used in sport as well.

‘You need to be resilient and never give up; you need to keep trying no matter what difficulty you may face. This is a determinant for an athlete to continue within the sport and reach their best potential. I realized that I can be a professional footballer because I was working daily and I never gave up.’

Participant 2

Hard work ethic, perseverance and commitment.

According to the athletes having a work hard ethic means to give your best efforts at all times and have the drive to excel. Athletes also described that attending training with consistency while constantly keep trying to get better is a cornerstone of the hard work ethic.

‘Consistency, desire and a strong personality. If someone combines these characteristics the success is guaranteed if there are no injuries.’

Participant 1

‘But on top of everything else, there is just the will to work hard and push yourself. There is nobody at the very top of any sport who hasn’t pushed themselves to the point of being sick, or crying, you have to be able to push yourself and push yourself and if you can do that and you have a bit of natural ability then you have put yourself in good script to become one of the top in anything.’

Participant 3

‘I am really working away at all my weaknesses and trying to keep on improving my strengths...’

Participant 4

In addition, being committed to a specific target and having the perseverance to do their best no matter what obstacles they may face was highlighted by the participants. Whether it is an injury or failures or not being picked for the team athletes need to stay committed and be totally determined to overcome the difficulties that has arisen.

‘The physical is also connected with the psychology because in sport especially in elite level the body may not cope with the intensity and you can have an injury. This injury can affect you psychologically and make you think of dropping out. This is the point

when you need to be mentally tough and keep trying. You need to work more to cover the training time you lost and not drop out. This is how you become resilient by not really caring about anyone, you only need to have in your mind your target and what you want to achieve. It is vital not to drive away from your target, from what you want to achieve.'

Participant 2

'So I would say the major factor for me was just constant determination. I was constantly being put down but I had a good coach and he told me it was ok, it was fine, 'you are doing the right things to develop as a judo player' so I was still achieving the thing I needed to achieve within my judo and the way I was training, it was just the end result wasn't particularly good. Which was obviously the problem but I just kept going and kept going.'

Participant 3

Reflection and problem-solving.

Participants described that sometimes they need to self-reflect and be aware of their strengths and weaknesses in order to enhance their performance. Reflection combined with the ability to use a problem-solving approach when facing difficulties is a toolbox for athletes to eventually overcome those difficulties. Those two characteristics can facilitate the personal development athletes and enable them to reach their personal goals.

'When I wasn't playing or when they were not satisfied with me it did not affect me psychologically. Maybe I was sad for a bit and then I started thinking what was the problem, how can I overcome it and I was trying to give a psychological boost to myself.

...You may have some moments that you think about your mistakes and what you need to improve. You need to think in order to find a way to react and eventually improve through hard work.'

Participant 2

Coping with pressure and disappointment.

Furthermore, athletes distinguished the ability to cope with pressure and disappointment. If an athlete learns how to deal with pressure, difficulties and disappointments it is likely that they will become resilient throughout the process. This characteristic should be instilled to young athletes since it is an element that will enable them to progress further in their careers. The difficult moments will be much more than

happy moments in sport, therefore, athletes need to be able to cope with failures, disappointments and pressure in order to finally reach elite level.

‘You need to be mentally tough. The failures are more than the successes. The disappointments are more than the happy moments but the joys are so strong that this is what you remember in the end.’

Participant 6

‘Players need to be able to handle the pressure and have the willingness to continue. When someone has a strong character it enables him to survive. Being a strong character is depends on you and how resilient you are and whether you can handle the pressure.’

Participant 2

‘You have to be able to deal with disappointment because as soon as it gets tough, as soon as it gets difficult you are given two choices, you either give in and you live for the easy life and you just have fun or you pick yourself up and you get back in and you keep trying to progress. So that is one major challenge, is dealing with disappointment over and over again but having the self-belief to know that you will eventually achieve what you need.’

Participant 3

Self- confidence and focus.

As described by participant 3 above athletes always believed in their abilities and felt confident that they will manage to be successful. The participants emphasized on self-confidence and they described that believing in your skills can facilitate better performance. Realizing the potential is more likely if they have the confidence, which will create more chance of progressing to a better quality team/environment.

‘If you believe in yourself and you think you can do everything possible it makes everything so much easier. You can perform better. You definitely need talent but if you believe in yourself it makes your talent show. So if you have got talent and you don’t have confidence then you don’t show it as much as someone who has got talent and is very, very confident in himself and they will stand out more because they are not shy to get on the ball or do something.’

Participant 5

Closely linked with self-confidence is the ability to focus during performance. Athletes reported that the ability to focus during competition and follow the plan designed prior to the competition is of paramount importance. They also described that being focused during not only competitions but also during training is likely to increase the quality and the outcomes.

‘He says running or competing at a higher level is probably 80-90% mental, 10-20% is your actual ability. And I actually believe in that. There is a lot of times where I have gone into a race where I have not felt great physically but in my head, I have been ‘I need to run it this way, I need to do this, I need to be here at this time, and be here at that time’. It has worked, I have not felt great going into it but I have still come out and still ran a good time, I have still come out and I have still won. So mentally if you are strong mentally, and you know what you want to do mentally and if you are focused, then that is half the battle already.
...and you are still 100% focused during your training and go that extra mile ... when it is hard, just keep going, then you ... I believe you probably will reach the level that you want to achieve.’

Participant 4

Mental preparation such as cue cards, pre-performance routines were also described as beneficial for individual sport athletes since they allow them to be calm and focused while blocking out the potential distractions at a competition.

‘He has allowed me to be a lot calmer but he has also given me cue cards, mental cue cards, to focus on when I am about to race and when I am racing. So that is probably how he has managed to make me focus, and make me a bit stronger mentally than what I was before. Because I was really focusing on who was in the race, and what the race was and if it was a championship whereas now, it is just a 400. He has calmed me down a lot.’

Participant 4

Positive attitude, discipline & coachability.

Having a positive attitude was another factor that was suggested by the athletes who took part in this study. Good values and generally choosing and following a positive attitude towards teammates, coach and opponents is vital at elite level sport.

‘As long as you have the ability and you have the right attitude and character, then you should make it. But it does all come down to the character and your attitude. I think your ability does take most of it but you definitely need the other two to make it.’

Participant 5

‘Someone needs to have a good character to reach to elite level. A bad character can ruin everything because players that were talented but did not have a good character they did not manage to reach their best potential.’

Participant 2

Similarly, participants also gave examples of athletes that did not acquire these characteristics and finally did not manage to stay elite level. For instance, a young gifted footballer did not manage to stay at elite level competing at the Bundesliga because of his behaviour on the pitch and his attitude in general. Positive attitude, having the

willingness to be corrected and to act on that correction and be disciplined are the desirable elements described by the athletes regarding the ideal behaviour of talented athletes with ambitions to reach elite level. More specifically, being coachable means that athletes need to be aware of what the coaches want and also be willing to listen, learn and use that feedback to refine their skills or improve their performance.

‘He never managed to stay in elite level because of his bad behaviour, his lack of discipline and he was immature. He didn’t accept that someone was above him and inevitably he would correct him, he would teach him how to play, how the coach would like him to play. He was playing in his own way, he was getting booked all the time, he was spitting, swearing and had arguments and this is not tolerable in football.’

Participant 6

4.4. Discussion

The aims of the study were to describe the transition experiences of elite level athletes through their own perspective, identify the challenges and the key features related to successful transitions to elite level in sport and examine the potential influence of development experiences. To begin with, key stages of development (early steps, development years and mastery stage) emerged through the analysis of the data), which correspond broadly to the stages of development described by Bloom, (1985) & Côté, *et al.*, (2007). During their early steps of development all the athletes who participated in this study were involved in deliberate play activities which have been shown to promote enjoyment and intrinsic motivation both of which facilitate further engagement in sport and future commitment to talent development (Baker & Cobley, 2008; Balyi & Hamilton, 2004; Bloom, 1985; Côté *et al.*, 2003). Time and space given for the development was identified which is in line with previous literature suggesting that some characteristics of talent may need several years to emerge (Simonton, 1999). Moreover, high standards of youth development were suggested to promote effective talent development particularly in those athletes involved in football. Previous research has proposed that there is need to put additional emphasis on coach training (Gould,

Collins, Lauer, & Chung, 2007; Petitpas, Cornelius, Van Raalte, & Jones, 2005). For example, a systematic evaluation of youth sport coaches in an organisation would increase the quality of coaching at youth level which appears to be key for effective long-term development (Smoll & Smith, 2002). A systematic evaluation would be possible if clear criteria were used by experienced and well-educated coach coordinators to observe youth coaches, give them feedback, evaluate their training plans, ask them to self-reflect and discuss those reflections in order to identify strategies for future improvements and development.

During the development stage athletes reported that they were very committed and had high aspirations. Research has shown that commitment to the pursuit of excellence and motivation were characteristics that successful athletes share (Gould *et al.*, 2002; Orlick & Partington, 1998; Williams & Krane, 2001). It has also been shown that characteristics like commitment and motivation can facilitate the way to elite level in sport (MacNamara *et al.*, 2006; 2008; 2010a; 2010b; MacNamara & Collins, 2012) and help athletes during the transition from junior to senior level (Mavroidis, 2004) or during the transition to university (MacNamara & Collins, 2010). However, apart from making a conscious decision to excel by being committed, continuously improve, adopt a healthy lifestyle and have high aspirations other elements may influence the development of athletes. For instance, availability and access to facilities and coaches can be influential. Essentially the place of birth may have an impact on the development opportunities of a youngster (Côté, *et al.*, 2003) since certain areas in each country have more available facilities and coaches. In addition, luck/coincidences were reported amongst the factors that can facilitate successful development (Albert, 2006; Bailey, 2007). Nonetheless, in some cases, poor networking or not having luck can be an obstacle in someone's development. Data showed that the ability of parents to support

financially their children is another influential factor considering that research has shown that parents usually provide significant financial support (Côté, 1999; Durand-Bush, 2000).

Around the time of the transition from development to mastery other normative transitions are expected to occur in vocational, psychosocial and psychological level (Wylleman & Lavalee, 2004). Athletes identified that the transition from junior to senior level occurs during that time which supports the existing literature (Wylleman & Lavalee, 2004; Stambulova, 2003). However, they also described the transition from amateur to professional and the transition from pre-elite to elite level. Our understanding is that all these transitions are normative and athletes should be prepared for them, although there is no certain pattern in which those transitions will occur. Depend on each individual, the nature of the sport and the circumstances of the environment the timing of these transitions may vary. For instance, in this study individual sport athletes competed at pre-elite level, made the transition from junior to senior level and after the age of 18 they made the transition to elite level. In other cases, footballers made the transition from amateur to professional elite level (training and competing at elite level academies of professional teams) while they were junior athletes and later on they made the transition to elite senior level.

Inevitably athletes will face several challenges such as injuries, pressure (Mavroidis, 2005; Pummel *et al.*, 2008) or balancing school and sport (Lorenzo *et al.*, 2009; Fin & McKenna, 2010) during their development process. The findings showed that those challenges may lead even to drop out or can be beneficial depend on how athletes deal with them. Athletes need to find ways cope with them and improve themselves throughout the process. Based on the findings of the current study the key elements that can help athletes deal with those challenges and have a successful

transition to senior elite level are the following: physiological and psychological characteristics, appropriate support, graded challenge and progress in a steady pace and playing time in the 'right' level.

It was suggested that the physiological abilities (depend on the nature of the sport) are essential in order to progress and eventually reach elite level. It was clear that while physiology is an essential fundamental, psychological characteristics are the elements that will make the difference for a promising athlete. Previous research has identified that certain psychological characteristics such as high self-confidence, better concentration and less likely to be distracted, being able to handle anxiety, and bounce back from mistakes are necessary in order to achieve expertise (Baker & Horton, 2004). In the current study resilience and a number of psychological characteristics were identified as key determinants that can facilitate a successful transition and career in sport. More specifically, a hard work ethic accompanied by perseverance and commitment was described by the athletes. In addition, the ability to cope with pressure and disappointment was highlighted. Olympic champions have reported that resilience, perseverance and the ability to deal with adversity are cornerstones of mental toughness (Bull *et al.*, 2005). In line with the findings of the current study, researchers have identified that commitment, self-confidence (MacNamara *et al.*, 2006, 2008, 2010a, 2010b; Pummell *et al.*, 2008), problem solving (Fin & McKenna, 2010), reflection (MacNamara & Collins, 2010; Martindale *et al.*, 2005), ability to focus (Durand- Bush & Salmela, 2002), discipline (Holt & Dunn, 2004) are beneficial for the effective development of talented athletes and are capable of facilitating a successful transition to elite senior level.

Furthermore, athletes suggested that in certain cases intentional structured challenge implemented by their coaches enabled them to overcome an obstacle, get

better or learn how to deal with disappointments. For instance, intentionally playing against tougher/more difficult opponents helped one of the participants learn to deal with defeat and being mentally challenged enabled another participant to overcome his fear of re-injury. In line with this, Savage *et al.*, (2017) proposed that structured challenge should be incorporated in talent programs (e.g. intentionally promote athletes to a level or squad that will be difficult for them to handle on a technical and tactical level). This supports Collins and MacNamara (2012), who suggest the deliberate use of structured challenge to aid progression and psychological development within talent development pathways. Interestingly, recent studies have shown that it is the learning that athletes bring into the challenge that seems to be crucial rather the experience itself. Findings suggested that such experiences are not the sources of developing new psychological skills and attitudes but rather an opportunity to prove, test and refine already existing skills (Collins *et al.*, 2016; Savage *et al.*, 2017). Furthermore, Savage *et al.*, (2017) proposed that there is a need to proactively and intentionally develop supporting mechanisms to prepare youth athletes for the inevitable upcoming challenges. Therefore, not only providing regular challenges and facilitating reflective learning but also ensuring that athletes have the appropriate ‘up-front’ skills and attitudes to ‘bring in’ to the challenge was deemed necessary (Savage *et al.*, 2017). Notably, the participants of the current study highlighted that being gradually introduced to the challenges and expectations of elite senior level would be the most beneficial approach proposing that rapid progress may have an opposite result to the intended. Similarly, it was stated that playing time at the ‘right’ level is essential to better prepare athletes for competing at elite senior level. Thus, athletes stated that they seek more opportunities to get challenges and develop themselves as proposed by Collins *et al.*, (2016) and Savage *et al.*, (2017). Being gradually challenged, having time

and space to improve suggests that a long-term approach appears to be a vital element for the transition process itself. This finding reinforces previous research showing that long-term commitment is more important than rapid progress (Henriksen, 2010). However, Henriksen's research focused on sailing, track & field and kayaking in all of which senior elite athletes typically reach their peak in the late twenties, which allows the environments to be patient in their approach. Notably, Martindale *et al.*, (2007) also suggested that talent development environments should emphasize on the athletes' progress rather than on their early results.

Existing literature has highlighted the need for appropriate support during the transition process (Alge, 2008; Holt & Dunn, 2004; Lorenzo *et al.*, 2009; Martindale *et al.*, 2007; Pummel *et al.*, 2008; Alfermann & Stambulova, 2007; Wylleman *et al.*, 1999). A support network that provides emotional, esteem, informational and tangible support was described by the athletes. Research has shown that social support has been linked with group cohesion (Westre & Weiss, 1991), coping with stress (Crocker, 1992), burn out (Gould, Tuffey, Udry, & Loehr, 1996), recovery from injuries (Udry, 1996) and performance (Rees, Ingledew, & Hardy, 1999). In addition, organisational support was suggested to be of significant importance for the development of players (Pankhurst & Collins, 2013). Moreover, athletes supported that talent development environments should be promoting the well-being of athletes. Often the wellbeing of athletes have been overlooked in talent development research (Burgess & Naughton, 2010), although there is evidence showing that high-quality TDE is related to the wellbeing of athletes (Burgess & Naughton, 2010; Côté, 1999; Durand-Bush & Salmela, 2002; Ivarsson, Stenling, Fallby, Johnson, Borg, & Johansson, 2015).

4.5. Conclusion, Limitations and Future Research

The aims of this study were to describe the transition experiences of successful athletes to the elite level, identify the main challenges, distinguish the key determinants that enabled them to make a successful transition to elite senior level and examine the potential influence of previous development experiences. Participants proposed that certain elements during the first stages of their development such as enjoyment, deliberate play, high standards of youth development and willingness to continuously improve facilitate effective development in the long-term. Furthermore, they identified certain challenges that athletes are likely to face and notably they highlighted that the way that someone responds to a challenge is the key. Finally, individual characteristics, support network and a talent development environment that implements a holistic approach focused on long-term development and athlete wellbeing can help athletes progress towards elite senior level.

This study provided some further insight regarding the mechanisms that facilitate a successful transition to elite senior level in a high level of performance. More specifically, it emphasized on the influential role of the development process (early steps and development years) in the potential outcome of a transition process. Psychological characteristics appear to formulate throughout those stages and it was identified that athletes' response towards challenges faced during the transition process is of vital importance taking into account that challenges are inevitable at that time. Moreover, despite the fact that only two participants were individual sports athletes, the importance of the team spirit at individual sports was highlighted.

A limitation of this study was the small number of participants interviewed, however, athletes who took part in the study were carefully chosen based on specific criteria in an attempt to access the transition experiences of successful athletes (in

various sports and talent development environments). The key determinants that can influence the outcome of the transition appear to be similar across different countries and sports. Thus, this study provides an indication that talent development programs should focus on identifying and improving those common generic features. As only one individual from each environment was interviewed results should be carefully considered since other athletes within the same environment could have had different experiences based on how they perceived their development.

Further research is required to enable us to understand the mechanisms that influence the transition process to elite senior level in sports. It would be useful to identify the elements that may stop athletes' progression, and help clarify the nature of the important features identified by successful athletes (for example, successful and unsuccessful athletes may all be highly motivated, but perhaps the nature of the motivation may be different). Thus, examining the experiences of elite junior athletes who did not manage to make a successful transition to elite senior level or maintain at this level would expand our knowledge in the area of within-career transitions. Understanding the potential barriers from the perspective of athletes who did not 'make it' will allow us to support the development of athletes more effectively. In addition, examining how the environment of a team affect athletes especially in individual sports would add significantly to our knowledge.

Chapter 5-Unsuccessful Transitions: Understanding Dropout from the Athletes' Perspective

5.1. Introduction

The transition to elite level was examined in the previous study from the perspective of athletes who successfully negotiated this transition and managed to establish themselves at elite level in their respective sport. However, it is common for elite athletes to drop out during that phase of their careers and there are a number of reasons that may contribute to this. Thus, useful information can be obtained by researching dropped out athletes. Firstly, the possibility that perceptions of successful athletes might be biased needs to be considered. Furthermore, athletes who dropped out are in a position to give further insight in regards to the factors that could have helped them to stay in sport and pursue their career and as such investigating their opinions is of great importance. This view is supported by Stambulova (2017) suggesting that more attention should be given to negative transition experiences and the relevant environmental/contextual factors. This will enable us to increase our understanding of within career transitions and consequently help athletes have healthy long lasting careers in both sport and life. In addition, there is limited research examining drop out in sport let alone attempting to identify the reasons or experiences that led athletes to this decision. More specifically, a recent review conducted by Park, Lavallee, and Tod (2013) summarized 126 studies examining elite athletes regarding their within career transitions in sport. The great majority of those studies focused on the retirements from sport while only seven investigated drop out from sport and its relationship with within career transitions. Two of those studies described those athletes who withdraw from sport faced transitions difficulties. A recent study examining drop out identified that personal characteristics, motivation and volition, in particular, played an important role

those athletes who pursued a career in elite level sport (Baron-Thiene & Alfermann, 2015).

Research has shown that two-thirds of athletes aged 7–18 withdraw from sport each year with high attrition rates particularly during adolescence (Petlichkoff, 1996). The premature sport career termination of young athletes before reaching their best potential has been defined as dropout (Alfermann, 1995). This phenomenon has also been characterized as ‘disengagement’ from sport by Koukouris (1991, 1994, 2005). Butcher, Lindner, and Johns (2002) examined the sport participation histories of 1387 young students and their reasons for dropping out from sport. Findings showed that the most important reason for dropout during young ages was lack of enjoyment. Pressure, time required and the need to engage with other things outside sport are also a common reason that leads athletes to drop out (Brustad, Babkes & Smith, 2001). However, ‘lack of enjoyment’ became a less important reason for withdrawal as participants aged. Balancing sport with studies, poor communication with the coach and injuries were amongst the reasons that led to drop out, as athletes get older.

A multitude of factors (psychological, social, economic, educational and political) has been shown to contribute to dropout (Bernie & O'Connor, 2004). In an attempt to meet the overwhelming pressures of competitive sport; athletes may experience conflicting emotional, physical and mental demands, which can lead to excessive stress and burnout (Gould *et al.*, 1996). There are a number of examples in the literature of elite athletes who drop out from sport at the peak of their careers due to the effects of excessive stress in sport (Arce, Francisco, Andrade, Arce & Raedeke, 2010; Hill & Appleton, 2011; Lemyre, Hall & Roberts, 2008). It has also been suggested that dropout is linked with low level of self-determination (Balish, Rainham, Blanchard, & McLaren, 2014; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002).

Given the multi-challenge transition into senior elite sport, it would not be surprising if there were unnecessary loss of talent at this stage.

Furthermore, athletes who dropped out may suffer on a personal level experiencing a number of negative reactions such as identity issues or negative emotions (Alfermann, 1995; Koukouris, 2001; Johns, Lindner, & Wolko, 1990). For instance, identity foreclosure can have an impact on the use of coping strategies that have proven to be a key element to cope with successfully with the demands of within-career transitions during the athletic career (Crook & Robertson, 1991; Gordon, 1995; Pearson & Petitpas, 1990). Potential barriers during within-career transitions include lack of organizational support, lack of financial and school support and lack of physical preparation. These barriers may decrease the confidence of athletes if feedback is too critical (Bruner *et al.*, 2008) or can have a negative impact on the success of within career the transitions (Pummel *et al.*, 2008). Furthermore, if those who are providing support do not provide the right type of support it may have the opposite desired effect (Finn & McKenna, 2010). For instance, some research has shown that negative effects occur if partners of athletes put pressure on the athletes to engage in distracting social events and parents try to live their dream through their child (Finn & McKenna, 2010). Ultimately, such drop out in athletes, not only can be devastating on a personal level but also will lead to the reduction of the talent pool and loss of potentially great athletes in the sport (Gustafsson, Kenttä, Hassmén, & Lundqvist, 2007). Therefore, it is necessary to understand in depth the reasons that may lead to drop out because some of those reasons may well be controllable. Consequently, with the appropriate support, resources and experts in place the dropout rates could decrease and allow to a larger proportion of athletes to remain engaged in sport competing in their best potential (Côté *et al.*, 2007; Henriksen, 2010; Martindale *et al.*, 2007).

Butcher *et al.*, (2002) extended our knowledge in dropout research by recognizing the potential impact of the level and intensity of previous sport participation and developmental experiences. Interestingly, sampling has been suggested to foster fundamental skills for lifelong involvement in a diversity of sport, prolonged sport enjoyment, and mixed social opportunities (Côté & Hay, 2002; Kirk, 2005). On the contrary, numerous negative outcomes have been linked with early specialization, including injuries, performance anxiety, parent and coach pressure, isolation, a restricted identity, and burnout (Hecimovich, 2004; Wiersma, 2000). For example, Wall and Côté (2007) examined both high-level dropped out and active youth hockey players and found that dropout players started off-ice specialized training significantly earlier than the active players did (mean age of 11.75 years versus mean age of 13.8 years) and invested significantly more time in specialized training than active players at young ages (12-13).

Motivational theories can also be useful when examining dropout in sport. The hierarchical model of intrinsic and extrinsic motivation (Vallerand, 1997) which is based on the self-determination theory (Deci & Ryan, 1985, 1991, 2000) shows that intrinsic motivation promotes participation and commitment. Additionally, the behaviour of coaches can also influence the motivation of athletes (Vallerand & Losier, 1999) since coaches essentially create a 'motivational climate' (Ames, 1992) which can affect athletes' motivation. Research in education (Deci, Schwartz, Sheinman, & Ryan, 1981; Gottfried, Fleming, & Gottfried, 1994; Vallerand, Fortier, & Guay, 1997), sport (Goudas, Fox, Biddle, & Underwood, 1995; Pelletier, Tuson, Fortier, Vallerand, Brière, & Blais, 1995; Pelletier, Fortier, Vallerand, & Brière, 2001) and work (Pelletier & Vallerand, 1996) suggested that leaders who adopt an autonomy-supportive style promote self-determined forms of motivation while controlling style supervisors

produce a decrease in self-determined forms of motivation. For example, autonomy-supportive individuals: provide choice by allowing athletes to make decision about certain aspects of the training, provide a rationale for tasks, limits and rules, inquire about and acknowledge athletes' feelings, provide non-controlling competence feedback, avoid overt control, guilt inducing criticisms, controlling statements and tangible rewards, limit ego-involvement and promote athlete responsibility (Mageau & Vallerand, 2003). Moreover, coaches who provided feedback regarding performance coupled with praise or encouragement depend on the outcome had athletes who experienced more enjoyment and were keen on being challenged (Black & Weiss, 1992).

Athletes who may have experienced a relatively easy progression towards elite senior level may not be able to cope with the increasing demands and challenges and therefore drop out. Being challenged and facing adversities throughout development has been suggested to be key in order to acquire necessary skills for dealing with transitions and achieving excellence. More specifically, the theory of Collins and MacNamara (2012) suggesting that structured challenge is an essential feature of any talent development system gains increasing recognition throughout the last years. Thus, when considering aspiring elite athletes the development of psychological skills and attitudes are crucial during the trajectory to elite level, which undoubtedly contains multiple challenges. The psychological characteristics of developing excellence can facilitate athletes' progression and enable them to deal with the challenges that will arise during their trajectory to elite level (MacNamara *et al.*, 2010a, 2010b). Essentially, those skills can be introduced, developed and refined throughout intentional challenges to enable athletes to be better prepared.

In summary, research has shown that development experiences, barriers during within-career transitions and the environmental factors can influence the outcome of the trajectory to elite level. The majority of previous studies have attempted to identify the reasons that led athletes to withdraw from sport (e.g. Klint & Weiss, 1986; Gould, Feltz, Horn, & Weiss, 1982; Weiss & Williams, 2004). However, as Lindner, Johns, and Butcher (1991) recommended a more in-depth examination of dropout rather than studies with descriptive nature would be more fruitful. Understanding the underlying reasons for dropout and the potential link of development experiences would extend our knowledge in this area. So far, very few talent development studies have examined dropped out athletes. In addition, retrospective interviews with successful athletes may be limited by recall or hindsight biases. Therefore, it was deemed necessary to investigate more in-depth the dropout by interviewing athletes who almost 'made it' at elite level before eventually dropping out. The main aim of this study was to investigate the development experiences, individual characteristics of athletes and environmental features related to unsuccessful transitions to elite level.

5.2. Methodology

5.2.1. Design

In order to explore whether development experiences or personal characteristics influenced the progression of athletes and further understand the potential barriers to the transition to elite level, it was necessary to ensure that all participants were aspiring athletes and had been or had the quality to become elite athletes at senior level. The criteria for the athletes were the following: to have competed for up to 18 months at elite senior level or to have been successful at elite junior level and be externally considered by the national federation of their respective sport to had the potential to compete at elite level.

Therefore, in order to gain further insight into the environmental and individual factors that may influence the progression of athletes, determine the outcome of the transition to elite level and identify reasons that facilitated the withdrawal of athletes from sport a qualitative approach was chosen. Adopting a qualitative approach was deemed to be the most appropriate for the aim of the current study since it allows the researcher to examine more in depth areas linked with the research objective by utilizing probes (Guest *et al.*, 2013) for clarification and further discussion of a specific point (Patton, 2002). This methodology minimizes the potential constraints generated by the questions being asked and allows the participants to share their knowledge and experiences of the phenomenon under investigation (Berg, 2004). Moreover, a qualitative approach allows participants to ask for further clarification when they do not have a clear understanding of a particular question. As such, they respond to the question that was truly being asked instead of what they had actually misunderstood (Guest *et al.*, 2013).

5.2.2. Participants

Four of the six participants had competed at elite senior level in their respective sport. However, the athletes who participated in this study did not manage to maintain at elite level and dropped out within 18 months. Two of the six participants who dropped out prior to reaching elite senior level were externally considered to have the potential to compete at elite senior level in their sport and both were members of their national teams and had won national/international medals in U18 categories. In total six 'dropped out' athletes who fulfilled the criteria participated in the study. Of those, three were females and three were males; all of the participants were Greek. There was one basketball player aged 29, one football player aged 27, one track and field athlete (sprinting) aged 26, one swimmer aged 26, one fin swimmer aged 24 and one

synchronized swimmer aged 29. Achievements of the participants include world record at senior level, gold medals in European competition, silver and bronze medals in international competitions and gold medals in national competitions. More specifically, individual sport athletes (swimming, fin swimming, track and field) achieved world-class outcomes (e.g. medals in international and European competitions) while they were consistently in the top 3 at national level before dropping out. The team sport athletes (synchronized swimming, football, basketball) were members of their youth national teams that won medals while competing at European and international youth national competitions in their respective sports.

5.2.3. Procedure

The study gained ethical approval from the Research Ethics and Governance Committee of the School of Applied Sciences, Edinburgh Napier University. Participants who fulfilled the selection criteria were approached via e-mail. Additionally, participants were recruited via a snowball sampling technique (Peters & Waterman, 1982). According to Hardon, Hodgkin, and Fresle (2004), purposeful snowball samples allow researchers to easily find and be introduced to knowledgeable people who fulfil the inclusion criteria of the study and are able to answer informatively the research questions. All the participants were informed that it is not obligatory to participate in the study and they would be able to withdraw at any moment. Consent was gained from every participant prior to their interview. They also were informed that if they agree to take part in the study all the data will be anonymized and confidential as much as possible. The data was stored on a password-protected computer in which only the researcher and the supervisor of the study had access in order to protect the data and ensure complete confidentiality. No individuals will be identifiable from any report, presentation or publication.

Prior to the agreed date of the interview the main interview questions were sent to the participants in order to allow them to familiarise themselves with the type of the questions of the interview (Martindale *et al.*, 2007). It has been suggested that giving time to the participants to think about the responses can provide richer data (Burke & Miller, 2001). The interviews were chosen to be conducted face to face or through Skype. Four of the interviews were conducted face-to-face and two were conducted via Skype because this was the most suitable for the participants at that time. The range of time of the interviews was between 47 and 92 minutes with an average of approximately 64 minutes and were recorded and transcribed verbatim. The interviews were conducted in Greek language since it was the native language of the researcher and the participants. Therefore, this enabled them to share their experiences and feelings and eliminated any language barriers during the interview. So as to ensure the in-depth examination of the transition experiences each athlete was asked the same sequence of questions, although further clarification and probing was used as required (Patton, 1990).

Two pilot interviews were conducted with a basketball player and a swimmer who had dropped out from their respective sport. Both interviews were conducted face-to-face as this was the preference of the participants and were recorded. The first one lasted 47 minutes while the second lasted 76 minutes. The athlete (basketball player) who participated in the first pilot study was a personal contact of the researcher. He was contacted and was informed regarding the study and the interview process via email. He agreed to take part in the pilot interview and also to give feedback about the interview process. He also suggested another potential participant for the second pilot interview. After careful consideration, the interview guide was evaluated and refined. More specifically, the order of the questions was changed in order to improve the flow

of the interview and the wording of some questions was changed since participants asked for clarification during the pilot interviews. Finally, two of the questions were deemed unnecessary to be included in the interview script since probing related to certain questions could extract the desired information.

Guidelines suggested by Patton (1990) were also followed in order to guide the interviewer away from biasing the responses of the participants. This was facilitated by the use of neutral and impartial position when probing participant responses, combined with the build of rapport, comfort and open responses (Backstrom & Hursch-Ceasar, 1981). The pilot interviews were included in the final analysis as they were considered to be of sufficient quality and the participants fulfilled all the desirable criteria. More specifically, at the time of the interviews, the researcher was not aware of the level that the potential participants had managed to compete prior to their withdrawal from sport and their aspirations to elite level. Therefore, after the end of the interviews and since both of them had completed for less than 12 months at elite senior level and had won national and international medals the researcher decided to include the interviews in the study.

5.2.4. Instrument

To maximize the chances of gaining a complete picture of the nature of the transition to elite senior level, a semi-structured interview was developed, consisting of seven open-ended questions, carefully structured to generate open-ended responses (Neuman, 1997; Patton, 1990). This approach was chosen in order to allow flexibility when exploring areas that may emerge during discussions with the participants (Rynne *et al.*, 2010; Nash *et al.*, 2011). Details of the interview guide are presented in table 5.1.

Table 5.1. Questions used in the semi-structured interviews with the dropout athletes

1. Could you describe your career within sport until you dropped out?
 2. Which were the pivotal points and main challenges throughout your career?
 4. Did you consider yourself to be 'elite'? What facilitated that change? How did this change over time?
 5. Is the process towards 'elite level' same for everyone?
 6. From your personal experience can you give us examples of talented athletes that did not reach their best potential? Why did this happen?
 7. What characterizes someone who has the potential to become elite? How does this change over time?
 9. What elements do you think can facilitate development and/or remove barriers?
-

5.2.5. Data Analysis

Inductive thematic analysis was used to analyse the interviews according to the recommended procedures by Edwards, Kingston, Hardy, and Gould (2002). Adopting an inductive approach means that the themes that were identified were strongly linked to the data themselves (Patton, 1990). The researcher followed the following phases during the thematic analysis: familiarization with the data by reading and re-reading the data and taking notes of initial ideas, generating initial codes, searching for themes, reviewing themes, defining and naming themes and finally producing the report. In addition, coding experience and similarity inferences were included in the inductive methodology used (Patton, 1990). In more detail, the coded experiences were compared and clusters of similar experiences were used to develop themes, themes were then compared to form categories and general categories. This process continued until the

data was saturated. Finally, the themes were defined and named and were supported by quotes in the result section (Martindale *et al.*, 2007).

Moreover, the researcher and the main supervisor carried out reliability checks (Scanlan, Ravizza, & Stein, 1989). It has been suggested that regular debriefing sessions can reduce the personal bias of the lead researcher (Shenton, 2004). As such, the researcher and the main supervisor had bi-weekly meetings during the analysis process to review the generation of themes and compare them with the existing quotes. This ongoing process enabled the researcher to constantly reflect by discussing points certain areas that were either over or under emphasized and remove any assumptions. The debriefing sessions continued until the researcher and the main supervisor reached to 100% agreement regarding the analysis of the data gathered.

5.2.6 Trustworthiness and Credibility

A number of measures were taken in order to increase the trustworthiness and credibility of the findings of the current study (Patton, 1990). Firstly, the researcher recorded all the interviews which allowed him to transcribe them verbatim. As it was highlighted in the previous section, the researcher followed all the necessary steps to ensure that the questions were open ended and responses were not biased by interviewer's personal opinions. Stakeholder checks was another method used to increase the credibility of the data. This was done by sending the transcripts and the interpretation of the researcher back to the participants (Patton, 1990). All participants agreed that the analysed data accurately represented their views. Following the recommendation from Shenton (2004) frequent debriefing sessions with the supervisor were organised to reduce the potential bias of the research. In addition, seeking agreement from an expert in the field and using representative quotations were techniques used to increase the credibility of the current study (Graneheim & Lundman,

2004). Finally, reflective commentary was used in order to allow the researcher to reflect and evaluate the process of the data analysis (Guba & Lincoln, 1989).

5.3. Results

This section presents data according to the main themes identified by the analysis of the interviews: 1) development process, 2) barriers that may lead to drop out and 3) effective talent development (table 5.2).

Table 5.2. Individual and environmental features influencing the development process of dropped out athletes

Main Theme	Subtheme 1	Subtheme 2	Subtheme 3
Development process	Early Steps	Key characteristics of early development	Lack of deliberate play and lack of personal choice (4) Lack of sampling Late involvement (2) Late involvement
	Development stage	Individualized pathways	Innate talent Networking & coincidences
		Getting more serious	Success at youth level Selection for regional/national youth teams Higher training load
	Dropout		Dropout prior to senior level Dropout after reaching senior elite level
Barriers that may lead to drop out	Cultural values & Ethos	Club philosophy, coach and athletes' behaviour Negative influence of parents' attitudes Corruption	Lack of respect No love/enjoyment for the game & outcome-oriented environment Unhealthy competition Poor communication No integration Parents projecting their negative feelings Not enough or negative family support Public relationships/ networking Doping Bribing Demands from sponsors

Barriers that may lead to drop out	Combine sport and education	Practicalities External pressure Existing culture	Time constraints and physical exhaustion Being absent frequently Pressure teachers and parents for high grades at national exams & future choices/career Pressure from society Education and long-term life goals vs career in sport
	Physical, psychological and practical challenges	Physical	Injuries Staying at elite level
		Psychological	RAE Weight management problems and eating disorders resulting in trauma Lack of professional mindset
		Burnout	Intensive & long hours of training Participation in multiple competitions
	Life circumstances	No access to good quality facilities	Poor training facilities Not available facilities
Financial situation		Financial difficulties Economic crisis	
		Be away from home and living independently	Staying away from home for long periods Living on your own
			Body structure (height & weight) Agility Flexibility

Effective talent development	Physiological attributes and sport specific skills		Fitness Game understanding Technique
	Psychological characteristics		Hard work ethic & self-discipline Desire to achieve excellence and 'power of soul' Perseverance, focus on your goals and self-belief Learn from mistakes, improve weaknesses & seek social support
	Support Network	Social support	Family Coach Teammates Friends
		Organisational support	Appropriate facilities University bonus, financial rewards/support
Holistic Approach	Developing athletes as 'whole people'		Communication, athlete understanding & individualized approach Clear, long-term goals, support their life choices Knowledgeable, open-minded and caring coach
	Intentional structured challenge		Tough trainings Compete against fresh legs International youth competition

5.3.1. Development Process

Early steps.

Key characteristics of early development.

Interestingly, none of the participants described that they took part in deliberate play activities. All the participants started being involved in sport in organized clubs rather than deliberate play activities such as park football and street basketball. Essentially, four of the participants specialized early in their sport without taking part in other activities or other sport (sampling). For two of the participants, the initial involvement was not even their personal choice. Either their parents chose a sport for their personal reasons and signed them up or they were chosen through a talent identification program (participant 5).

‘My mom watched this sport and she decided that if I give birth to a girl I will take her to synchronized swimming. The standards were very good and the team was winning medals all the time. When I was young this seemed quite amazing to me. I was training a lot since I was very young, at least 4-5 times per week.’

Participant 4

‘When I was 3-4 my parents took me to a swimming pool in order to learn to swim and I stuck with it. For this to happen my friends and the environment played a crucial role. Of course, you need to like the sport that your parents took you, if you can't digest that you have to do swimming you won't, you will do something else. I joined swimming and I stayed with it.’

Participant 2

‘I started in the 2nd year of primary school when I was 7-8 years old. I started at school when some physical education teachers came to school as a part of a talent identification program. We did some sprint and endurance races and I was first for both girls and boys so the physical education teachers told me if I wanted to train with them...’

Participant 5

Participants reported that enjoyment was an essential requirement to stay involved in their sport even if they did not genuinely choose it in the first place. Additionally, participating in sport gave the chance to youngsters to socialise with

peers. According to the participants, sport played a positive role in their socialisation, enabled them to build strong relationships and enhanced their wellbeing.

‘Before starting to swim I was nobody, I had no friends. Neither inside nor outside school and I didn’t have self-esteem. When I started swimming I suddenly found myself with new friends, people that I know call brothers especially with Thanasis and Panagiotis from my team and Yiannis my coach that I call him a second father.’

Participant 3

‘In my occasion, I was a very happy person when I joined the team [basketball] because until then all my activities were individual or just with my brother so I really liked it, I loved it.’

Participant 1

On the other hand, two of the athletes (participant 1 and 3) got involved late in sport after the age of 12-13. Notably, they did not refer to any diversification (sampling) during their early childhood. Interestingly, they still managed to become members of their youth national teams and then reach to elite level in their respective sport.

‘I started late at the 3rd grade of high school and by luck, I went to swimming, I tried it and I loved it. After a year the fin swimming coach saw me, he liked me and he suggested me to join the fin swimming team.’

Participant 3

‘I started playing basketball when I was 12. I played on the team for 5-6 years in all the categories.’

Participant 1

Development stage.

Individualized pathways.

Participants highlighted that each individual is unique and the pathway of development is undoubtedly different between individual athletes. Both innate talent, desire and background can influence the future development of an athlete.

‘I have spoken many times with other successful athletes and it is not the same, everyone is different, with a different personality, different coach, different family, the pathway is not the same, everyone is different.’

Participant 3

‘The pathway is unique for everyone and sometimes it can be very difficult and it depends on how much time of your life you devote how much you want and if you have a natural talent.’

Participant 5

‘No, no way it is the same for everyone because not everyone is the same or equal because of external factors such as family, economical situation, networking with the

people of the sport which is something I understood when I became a coach. Moreover, not all the children are equally talented, skilled or intelligent.'

Participant 4

Additionally, participants described that networking is another factor that can play a vital role in the future development of a young athlete. All three team sport athletes emphasized on the role of agents because they believed that networking can determine which youth athlete will step up to higher levels of competition. Being part of a regional/national youth team, or knowing a coach who has a good network or having an agent that will promote the player, it is possible to create more opportunities for athletes. Essentially, it is more likely for those athletes to have an opportunity to compete at higher level, although they still need to have a professional mindset in order to manage to step up and stay at that level.

'If the coach doesn't consider you a good person or if you don't have a good agent or if you don't play for the regional/national youth team you won't progress. You will reach a certain level and then you need to find an agent and pay him in order to progress. Essentially you need an agent to progress; no matter who you are or how good you are if you find a good agent he will help you progress. Anyone can reach up to a level after this an agent is needed this is the only way. With no promotion, there is no chance. For example, Alekos and Manolis went to PP [Greek super league team], why do you think they cared for them? They knew Dimitris who was the coach at the regional youth team so these were 'his players' but they didn't have a professional mindset at that age.'

Participant 6

'There was a player Trifonas and when we were young he was moving away to avoid getting hit by the ball. Trifonas made individual training every summer with a particular coach, the Nureyev of Greek Basketball Petros; great player and a great coach. Trifonas had a great network and he was also coming from a sporting family. His father was a referee, his uncle was coach of the regional youth team and in general, Trifonas was supported. Eventually, he came back from summer training after the end of a summer and he could dunk. He reached the point that he could not hold the ball to learn how to dunk.'

Participant 1

Getting more serious.

Early success during the development stage was a common theme amongst all the athletes of this study. More specifically, participants reported that when they were young they found it easy to win the majority of the competitions they participated. This

boosted their confidence and acted as a trigger for them to believe in themselves and become more interested in their sport.

‘I was winning gold medals all the time, apart from a few races that I won silver medals. I was competing in regional competitions until I started high school and I was training a lot every day. During high school, I was first in my region and I was qualified for the national competition. I went and I did very well, I was 1st in the whole country for my age.’

Participant 5

Within the next 3 years I managed to enter the national team, we won 3 medals, 1 bronze in 100 meters, 1 silver in 200 meters and 1 gold at the relay race and then when I started competing at the senior level at 2010 we won a silver at the European championship. Next year I managed to break three world records and of course, I won gold and silver at the European championship...

Participant 3

‘Until the age of 12-13 things are quite relaxed, but when there was a national competition the team participated. However, I believe that things get more seriously around the age of 13-14 when you start competing in the national leagues. When I was 15 I won my first medal and you know you think OH! I am good at this and you get more interested.’

Participant 2

Apart from being successful at young ages and getting more serious with their development in sport athletes also became members of the regional/national youth teams. Inevitably, during this phase, the training workload increased abruptly which highlights the fact that their involvement in sport started becoming more serious.

‘When I was 16 I won a gold medal in a national league, gold in national league open, became a member of the national youth team and participated in international competitions. I finished second in the final of the European league.’

Participant 2

‘When I was 12 and a half I joined the national youth team so you can imagine how fast 5 times per week became 6-7 times per week. Many hours of training per week. I remember I had to leave school sometimes to go to the training and to competitions. When I started the high school the level and the intensity were higher so I felt that the sport was much more competitive from that point onwards. I had two hours of training before school, 2 hours after school and then 2 hours at night. Since I was 12-13 I was training at least 6 hours per day because here in my city I was one of the few girls of my selection year so I had to train with the older girls.’

Participant 4

Dropout.

Athletes dropped out either prior to reaching elite senior level or after training/competing at senior elite level for a short time (less than 18 months). An injury

for participant 5 and an eating disorder for participant 4 facilitated their withdrawal from sport. However, they did not specifically describe these reasons as the main factors that led them to drop out rather than a part of a sequence of different elements such as external pressure, high expectations, time constraints and goals outside sport.

‘However, I believe it had to do with the pressure from school and parents about what will happen in the future.’

Participant 5

‘In terms of chronological age, I didn’t join the national team in elite senior level, I didn’t manage to stay in the national team after the age of 18. The pressure was very high and the expectations of the coaches as well. They had some targets and they were pressuring us by any means likewise as most of the girls that were in the team in order to make us perform in our best potential or drop out. Around the age of 17, I had an eating disorder likewise the most of the girls that were in the team.’

Participant 4

One of the athletes participated in elite senior team training and managed to get some playing time, although he dropped out because he was not satisfied with the playing time he had and he could not handle the pressure at that time (participant 1). Participant 3 also explained that despite reaching senior elite level and having great achievements as described earlier (3 medals at youth national level, 1 medal at international youth level and 3 medals at adult international level including a world record) he decided to stop because he could not cope with the pressure and he was seeking ‘a normal life’.

‘At some point, I was taking part in double training with the U18 team and the senior team which was amazing because it was amazing! My hands had great touch with the ball. In the senior team, I did training and I was part of the squad for some of the games but I didn’t play. This happened when I was 16-17 and it didn’t seem nice to me. I believed that they had faith in me and they would give me playing time. At the start of the next season, they gave me some playing time but that was it. Later I decided to stop, I didn’t go to the training, I didn’t like the Wednesdays’ training, and I didn’t like the coach. Basically, the reason was that everyone from my environment pressured me that it is time to make choices for my future.’

Participant 1

‘The reason why I decided to move to the USA was a girl, I firstly moved here for a girl. I wanted to stop because I was swimming for 7-8 years and I wanted to try starting from the scratch here in the USA. I wanted to have a normal life even for a little while,

I missed this. I now miss swimming and I appreciate it more now that I stopped but for now I wanted a normal life, some time with friends and to be calm...'

Participant 3

Lack of enjoyment, poor communication, no coherency within the team and bad relationships in the team environment led one of the athletes to stop her professional career in swimming even though she earned a salary and she was competing at the top national division (only for 18 months). Not being satisfied by her team environment played a vital role in her decision to stop being a professional athlete.

'Towards the end of the season I decided that there is no point to continue if I don't enjoy it, I stopped enjoying it, I stopped being interested. I felt that the people around me coaches, athletes, board members had a completely different philosophy and I couldn't communicate with them so I thought that I didn't want to continue anymore, I fed up with this situation and I decided to stop swimming gradually. For sure I compare the coaches and no one is perfect but there are some things that are unnegotiable, some values are unnegotiable. I would say that lack of quality people in the area of swimming influenced my decision whether to continue or not...'

Participant 2

Finally, one of the participants stopped competing at elite senior level because he decided to continue his studies in a foreign country. He also described that he tried to continue playing in the UK but because of the different conditions (climate and structure); he did not manage to stay engaged in sport.

'I went to the UK for studies, when I came here I played for the university team for a while but the circumstances were completely different. I didn't continue playing because of the conditions and because of 'politics', things work in a different way here...'

Participant 6

5.3.2. Barriers that May Lead to Drop Out

Cultural values and ethos.

Club philosophy, coach and athletes' behaviour.

Athletes described that in some cases coaches did not respect their athletes and their personal aspirations. Not supporting the life choice of an athlete can have a detrimental effect on the coach-athlete relationship and can be a barrier that may lead to withdrawal from the sport as described by one of the participants. This could be

linked to the transformational leadership theory, which suggests that leaders build relationships based on personal, emotional and inspirational exchanges with the goal of developing followers in their fullest potential (Bass, Avolio, Jung, & Berson, 2003). In the following example it is clear that the coach did not follow such an approach.

‘I remember a teammate that went to the Olympics who argued with her coach because she had exams for the university and wanted to finish her studies since she was in her final year studying in the medical school, although her coach registered her for an international competition. So she asked him: ‘why did you register me?’ I have exams and I want to graduate. He took it personally that if she doesn't go to the competition he would be exposed to the swimming federation and he told her if you don't want to go don't come tomorrow for training and she didn't show up. She left, found another coach and went to Athens. All this because he didn't respect her. He didn't respect that she had other things to do outside sport; she had a life outside the pool despite the fact that it was the final year before the Olympic Games. He acted against the will of his athlete despite she told him that she wanted to go to the exams at these specific dates because it was important for her.’

Participant 2

In addition, bad behaviour from coaches towards athletes by offending them verbally was reported as another aspect of negative behaviours from coaches that may take place.

‘We had a coach that on the one hand he taught us a lot but on the other hand, he had a very bad behaviour towards us. For instance, if you gained a kilogram he would humiliate you in front of the whole team and people that might be around and usually in front of important persons.’

Participant 4

Furthermore, participants reported that they did not learn to love the sport and enjoy themselves when they started competing during their development stage. Data showed that the win focus environment of the teams and the craving of coaches to win as many games/competitions as possible at youth level have an impact on the development of athletes. Participants reported that short-term goals might include the ‘sacrifice’ of athletes by forcing them to compete in different categories because of their outstanding performances at that time.

‘The truth is we didn't learn to love the sport, we learned to win and to play for the win because that was the mentality of the team since we were the best of our county. Therefore, the youth teams were structured with a winning focus but there was no joy of the game. We could win for 50 points and we could be in the counterattack and the

coach was shouting and swearing because we did a pass behind the back or finished with a layup using the opposite hand. There was not much enjoyment, mostly fear.'

Participant 1

'In sport like mine that you start from a young age competing if the coach puts you in 3 different categories the body melts, you get exhausted and this is a reason for a talented athlete not only to stop developing but stop existing as an athlete.'

Participant 4

Moreover, an outcome-oriented environment inevitably seeks winning and money. Thus, athletes felt that their needs were neglected and the top priority was either money or winning or both without genuine interest in the athlete. This lack of interest regarding the athletes made them less satisfied with their sport and facilitated their decision to withdraw from sport.

'Essentially, it is good if there is a smooth collaboration between coaches and athletes but if the coaches perceive themselves as managers and want to make money then things are even worse. Weird times, especially after the Olympic Games things were uncertain, at least now you know that money are not available. Back then we felt that the priority was to earn as much money as possible there was no real connection with the athletes. They were cold-hearted and they were only interested in performance. They expected from you to win points according to the money you were getting paid. I didn't like this because I felt there was no honest interest for the athletes'

Participant 2

Unhealthy competition was another element that was highlighted by the athletes. Teammates were competing against each other rather than working hard together in order to get better as part of healthy competition.

'We were very competitive against each other, we were thinking who will manage to "eat" each other and be the first within a duet. We hated each other we only cared who would perform better individually.'

Participant 4

Poor communication between athletes and coaches was another potential barrier described by the athletes. More specifically, according to the interviews, athletes often sought discussion and communication with coaches, because they valued their opinion. However, athletes reported often having to simply follow commands from their coaches without having clear expectations or discussing their long-term plan. According to the Self-Determination Theory, the satisfaction of the basic needs (competence, relatedness

and autonomy) foster well-being and health. In addition, it has been suggested that an autonomy supportive coach adopts behaviours that encourage choice and regulation of individuals own behaviour and reduces the use of pressure (Deci & Ryan, 1985). Similarly, the participants stated that this approach could affect positively their development.

‘Another pivotal point was with my coach that led me to lose my motivation and I felt that there was no communication between us. He believed that I had to make sprint races and nothing else and he didn’t let me do long jump which is what I wanted during that time and I felt pressured by his behaviour. He never explained why he just kept saying no you won’t do long jump or maybe you will do next time or next week you will have a few shots. Many times in the competitions my coach registered me for other sport in order to have the experience so sometimes I competed in long jump and I did very well even without specific training. Many times I was first because I knew what I had to do. But there was no discussion between me and my coach about what I wanted or about what he thought it was the best for my development, sometimes my coach was very strict.’

Participant 5

‘It could be better if they teach the athletes both technical and mental skills with more discussion and better communication.’

Participant 1

No integration within the team environment was also reported by the participants as a problem. More specifically, athletes training individually with different coaches or in separate venues is an indication of the lack of integration within the sport clubs as described by participant 2 and 4.

‘To begin with, we were not even a team, it was totally unstructured. The athletes were training here and there, athletes were training with another coach on their own, this was a trend and I think it still is maybe a bit less at swimming. Everything was free and athletes were swimming wherever they wanted. In the same time, the club showed tolerance and those difference coaches because if they didn’t then the athletes would have to pay the coach.’

Participant 2

‘Then we learned that athletes and coaches were training in another pool before important games without us knowing. This had an impact on me and I was distressed because I was trying to understanding why.’

Participant 4

Negative influence of parents’ attitudes.

It was reported that the attitudes of parents can potentially impact the performance of athletes and eventually their development as well. Athletes described

that when parents project their negative feelings (such as an argument between them) to the children especially during a stressful time (e.g. a competition) may have a negative impact on their concentration, may distress them psychologically and inevitably affect their actual performance. Additionally, trying to live their dreams through their kids by pushing them towards their desired outcome is an example of negative support to young athletes as explained by participant 2. Participant 5 acknowledged that sometimes parents did not offer as much support as required mainly because they perceived sport differently.

‘I remember going to a race and it was the first time I was travelling away from home and my dad drove me to the meeting point. My parents had an argument that day and generally, my dad pressured me at that time very much with the things he said to me and I my psychology was really bad so I was daydreaming in my own world without being able to perform well in the race. Before the races it was stressful because you had to be focused on what you were doing, be ready for the start of the race, to think only about the race and think about what you need to do without having anything else in your mind. My dad told me that they will break up with my mom but they are just waiting for us [me and my sibling] to finish school and he told me this just before the big national competition and it influenced me very much. I wasn't thinking about it but I was psychologically distressed that day and I believe it was because of this.’

Participant 5

‘In my opinion, it is sick when parents who had unfulfilled dreams pressure their children in order to live their dreams through them.’

Participant 3

‘My parents did not support me enough; they thought it was something secondary, just a hobby, just exercise and nothing else. But for me, it did not just exercise it meant much more to me.’

Participant 6

Moreover, the potential negative impact of parents' attitudes to the team environment was also mentioned. It was pointed out that when parents are shouting from the sidelines while athletes are competing can create unnecessary pressure to them taking into account the fact that young athletes do not know how to cope with fans.

‘Some of the parents had a negative impact on the environment of the team as well.’

Participant 4

‘Other players had their parents around them all the time shouting and I don't think this helped them. I was more anxious when my parents were around because at that age a

kid doesn't know how to deal with the spectators. It is also an important part of the athlete that the better level you play the more spectators there will be which becomes part of the game; whatever happens in the environment and how you deal with this situation.'

Participant 1

Corruption.

Corruption of board members, coaches and demands from sponsors were other factors described as potential barriers to the development of athletes. More specifically, athletes described that board members promoted certain athletes because they were part of their network. Financial rewards also may influence the decisions of people which is unethical and can happen at any level from a small club to international federations.

'Despite she was the world champion she didn't participate in the Olympic Games but the European champion did because her father had connections in the federation. We are too 'small' to understand, it is something like politics, we are too 'small' to understand... This sport is very controversial, basically, all the sport that include judges.'

Participant 4

'For example in Ukraine, someone with money from oil buys 10 great players and builds a team for just 2-3 years before disappearing. This is not a sport, this is a fraud, it is gambling. Similarly, the Olympic Games is a big fraud. Qatar paid to get Mundial....'

Participant 6

Athletes emphasized on the fact that some of the people who take decisions have personal agenda or promote their network or even lack knowledge in regards to the sport and they are mainly in public relationships instead of actually facilitating equal opportunities and effective development. For instance, board members that have limited or no experience/knowledge of a sport may take vital decisions regarding the structure of a team or the selection of athletes.

'Many people that are in the area as board members don't remember how is it to exercise or have never participated in sport in their lives. They are there only for the public relationships. Nonetheless, these people take the decisions and influence the development of athletes. They are a variable that influences the development of athletes.'

Participant 2

‘A huge role for me play the board members because most of the times (99% in my opinion) are the people who because of bribing or relationships or other reasons may put aside a talented athlete to achieve their personal goals or help another athlete because is part of their networking...’

Participant 4

In one occasion, a coach recommended to his athlete to take anabolic steroids to increase performance in order to be successful, suggesting that this is the only way to progress. Additionally, participant 6 stated that the high demands and expectations of sport nowadays push athletes to use anabolic steroids or become victims of (over) advertising.

‘I had a coach that was saying for me: ‘she is competing only fair; how does she expect to be successful like this?’ I have heard him saying that. He meant that I was too fair and didn't accept to take anabolic drugs. The coach did not believe in me and expected from me to take illegal drugs. A coach that consents to give drugs to his athletes is tragic and not respectable at all. How can you trust with this behaviour and how can you let them guide you? Of course not.’

Participant 2

‘Sport have lost their meaning and have the crossed the line towards ‘super sport’. ‘‘Super sport’’ lead people to death by the use of anabolic steroids. Over advertising is another issue, even the biggest clubs and the greatest players are driven by companies, sponsors and money.’

Participant 6

‘When sponsors are involved things can go wrong because companies may ask from the athletes several things. In general, I believe it is important to have values and to keep those values.’

Participant 5

Combine sport with studies.

Practicalities.

Athletes reported that the most difficult period to combine sport and studies was in their final year at high school when they had to study and get prepared for the national exams. During that time the majority of the participants either stopped, paused, reduced training and they all agreed that it was difficult to manage to do both effectively. In addition, participant 3 reported that the absence of scholarships and funding in case of national or international achievements influenced his decision to potential scholarships

to stop competing in sport. Instead, he decided to focus on studying in order to achieve good results in exams. It should be noted that generally in Greece athletes who manage to finish in top 3 in a national/international competition gained a scholarship, although this changed during that period. This scholarship was allowing them to either enter any university they wanted (wins at international level) or gain an increase in their marks during the national exams based on their achievements in sport (wins national level).

‘I stopped because I had to focus on school and more specifically on national exams. I also quit playing the piano during that time, generally, I quit.’

Participant 1

‘When I was in high school and I had the national exams, it was like all my life depended on this which is very wrong in my opinion.’

Participant 5

‘I stopped before Easter; I didn’t play for the last few months. During that period, I focused on studying because it was the period of the national exams.’

Participant 6

‘The first person that comes to my mind is Kuriakos that was a member of one of the best junior national teams in 2010 and they also won the gold medal in the relay race. Kuriakos was a young boy and was really good but I remember he stopped because he couldn’t combine school and sport and there were no scholarships for athletes with national/international achievements during that period.’

Participant 3

Time constraints and physical exhaustion were the main obstacles for athletes who attempted to combine a career in sport along with their studies and/or work. Spending too many hours training (participant 3) made it challenging for him to study for school after training thus he made a decision to focus on sport rather than try to juggle both at the same time. Other participants stopped sport during their final year at high school because of the high demands related to the final exams and the high expectations of both school and parents. Participant 2 continued participating throughout her final year and as a university student stated that it was exhausting for her to cope with training and lectures at the university. She also gave an example of other fellow athletes who combined work, sport and had a family.

'Combining sport with school was very hard because we spent around 6 hours at training, 2 and a half hours in the water then after half an hour we had to go the gym for 2 and a half hours so it was quite challenging to go back home after this and study for school.'

Participant 3

'If you have double training and gym 3 times per week and the rest of the days just training automatically you can't attend some of the classes at the university, you can't work or even if you do work you can't work full time. I liked my course so I started going more regularly to the university and continued training 10 times per week. And I was knackered... I have some friends that are playing water polo, they have families and they continue to play water polo because obviously, they like it but in the same time they work 8 hours per day and during the evening they train which is difficult.'

Participant 2

Furthermore, athletes missed a lot of classes because their competitions especially those participating in swimming are organized in 3-4 day tournaments. Consequently, they had gaps in certain classes and found it hard to follow up since their schools did not offer them support. Surprisingly, in one case (participant 4) despite the fact she attended a sport school no support was offered to her and she had to seek help from the ministry of education.

'Until first grade of high school, I was a very good student as well. But I missed a lot of classes. There was a teacher that we had a class with him every Friday at the last hour of the schedule and because most of the leagues and competitions started Friday or even before Friday this particular teacher saw me during the year only 2 or 3 times. So by the end of the year, he told me OH! Are you here as well? I didn't expect you. In general, there was this concern about the future which especially in Greece is very intense...'

Participant 2

'Being 12, 13, 14 and live far from your family and not going to school is tough. I remember the girls that were staying in Athens were going to school sometimes and we were attending the classes with them but I remember once the teacher sent me out because he told me that I don't know you are not from here. I asked him to stay to just attend the class but he told me to leave. Despite this, I was a good student and the principal of the school wanted me and another girl to fail because we had lost too many classes throughout the year. So we had to go the minister of education to get a specific permission to give exams because we were absent too many times. Imagine what I did; how much I wanted it. Take into account I was in a sport school as well. They knew that we were waking up at 6 to swim with snow at the surroundings of the swimming pool with no proper facilities but we were trying because we believed in ourselves and we were representing our country. If after some years we managed to get a medal wouldn't they cheer for us? But they don't help us pass the grade in school?'

Participant 4

External pressure.

External pressure from teachers and parents regarding the results of the national exams and the future choices for their career was a psychological load during that time. Athletes felt that everything depended on their results, which is something they didn't like. Additionally, the society applied more pressure to student-athletes who focus on sport instead of looking for a job.

'During high school [Lyceum] I was pressured psychologically to decide what I want to do. I didn't have much time for training, I had private classes to get prepared for school and generally, I felt pressure about what to do with my life...'

Participant 5

'When you are 16 you know... the moaning starts, the grades, what you will do with your life, pressure from the teachers and the parents. Generally, there is a concern about the future. This concern cannot be erased by sport itself or by anything. Even graduating from the best university can't ensure a great future. However, parents have the concern of doing the best for their children. Despite this I continued training during second grade of high school, attending all the training...'

'...I don't know if as an athlete it is normal to do only sport. There is a prejudice, people may call you idle. They didn't call me idle but good athletes with achievements were called idle; it is socking. You have to face a society which if you are a student in your final year and you don't an income they may find it weird that you have prioritized sport.'

Participant 2

Existing culture.

Moreover, the existing culture, particularly in Greece, dictates that youngsters should focus on their studying and their life goals in the long term instead of chasing a career in sport. No opportunities are given to student-athletes to combine a dual career so it is up to them to take the decision to try to do both or choose in which they focus most of their efforts.

'When you are older than 16 is it difficult to be in sport. You have to choose for the future of your life if you want to do this in order to win what in the end? Is there something certain? I had to make choices. To be involved with football with so many coincidences affecting your future then no.'

Participant 6

'You have to go and study and it is rational to continue your development as a person. From the one side, you identify your options and if it is worthwhile staying in your city and from the other hand you need to take into account that swimming and sport, in general, are good for now but will they be for the long-term? So you have to make a

choice at that time. You will choose what's best for your future for the next 10-20 years not for the next 1 or 2. So I went to Athens to study and continued swimming...'

Participant 2

Physical, psychological and practical challenges.

Physical.

Injuries were described by the athletes as the main physical challenge that athletes may face during their development. In addition, participant 1 suggested that playing at elite level is achievable, although the real challenge for him and two teammates was to actually stay at elite level instead of taking a transfer and then dropping down to compete in a lower division or becoming a recreational athlete.

'A big challenge that I faced was an injury I had when I broke my leg. I was very sad but I don't remember as something bad, it was a difficult time for me because I wasn't training for quite some time but the transition back to the sport was relatively fast and smooth because I was swimming and then I went back straight to track and field training and everything was all right despite the fact that I had my leg in plaster for 6 months. It was a challenge because my leg was weak and I couldn't perform as well after my injury.'

Participant 5

'From the three good players we had in our team no one managed to stay at elite level. One of them played in the first division but got injured and now he is playing at amateur level. The second one made a transfer to a first division team but he never really managed to play although he got paid for his contract and similarly I dropped out as well.'

Participant 1

Psychological.

Relative age effect created problems for participant 1 since it created a false image that he was genuinely better because of the fact that he was relatively older. Thus, when opponents grew up he found it difficult to compete against them.

'I am born on January 1984 and when I started playing I had one more year in school compared to the boys in my selection year. Therefore, when I was playing I had the psychological advantage against them because I had played against them in the neighbourhood and I considered them younger. All the years that I was playing at the team I could perform well because I had the psychological boost that I am better in my selection year. Later, when I started playing against older and bigger athletes my psychological advantage was lost.'

Participant 1

Weight management problems were reported by two of the participants. One of them (participant 6) found it difficult to monitor his weight during the last year of high school, which made it hard for him to return to football. As for synchronized swimming, eating disorders appear to be a common problem amongst athletes. Unfortunately, this excessive pressure regarding weight coupled with negative behaviours from coaches caused distress resulting in traumatic experiences as described by participant 4.

‘I gained 8-9 kilograms because I was eating a lot to have the energy to study and I was eating huge quantities without training at all so I reached 89 kilograms at that period. After this, I got back to football but it wasn't easy, I needed time, I was fat for football.’
Participant 6

‘This pressure regarding our weight led some of the girls to intentionally throw up and they were coming to training with broken vessels. It is a very violent sport for the soul of a kid. If I had a child now I would recognize some signs because I have been through several situations but my parents couldn't possibly know likewise the parents of most of the children.’
Participant 4

‘I meet other athletes after many years and they are not dealing with their experiences in the same way as me. For example, one of my teammates was crying and she couldn't stop; I was telling her that so many years have passed and there is no need to be sad. She had anorexia and she didn't eat because a coach was in the middle of a lawsuit and her parents were against him. He had hard feelings for her and she was behaving in a bad way to her. Sometimes he would say to her no don't go the toilet I don't care you can s*** your pants.’
Participant 4

A lack of professionalism and not having a professional mindset may lead to drop out, according to participant 6 the right mindset is essential in order to stay at elite level. Talent and networking may help someone reach to elite level in football but then a professional mindset is needed in order to manage to stay at this level.

‘Sakis who was playing at PK [Super league team], who was a former teammate and Antonis that we played together had the talent, the potential and someone helped them to play at elite level. However, the quality of each player is proven by what they are doing now and if they managed to stay in elite level. Lampros is playing at elite level because he has the professional mindset but Antonis is at a lower level league in a foreign country playing for a team at second division. He was a great player but he didn't have the professional mindset.’
Participant 6

Burnout.

When coaches focus too much on winning without caring about the wellbeing of athletes by pressuring them and by having high expectations, the possibility of burning out is more likely. Especially when coaches register athletes to compete in several competitions (of different age groups) just for the sake of winning more medals and increasing their reputation.

‘The sacrifice to win a medal or achieve a specific target set by the coach can drain you mentally and physically trying to achieve it that may lead you to burn out. In sport like mine that you start from a young age competing if the coach puts you in 3 different categories the body melts, you get exhausted and this is a reason for a talented athlete not only to stop developing but stop existing as an athlete. There is no need to offend anyone or drain mentally anyone to achieve something great. Those people who follow this approach won't manage to stay in sport because they are very sad they enter a vicious cycle and at some point, they are left outside sport. A coach that made many children drop out went back to her country and she managed to survive for two years and after this, she disappeared as a coach.’

Participant 4

No access to good quality facilities.

Athletes reported that the quality of the available facilities was not ideal and they had to train in outdoor pitches (basketball) or swim in cold water (swimming). However, when competing in higher level such as the regional/national youth team indoor pitches were available. As participant 2 reported that she had transportation issues since she had to travel to a different city and attend a double training for a whole year because the available swimming pool was under construction. Also when living in a big city like Athens for example, the access to facilities may demotivate athletes to continue pursuing a career in sport because of the travel time required.

‘For sure the training during winter at an outdoor pool was difficult. Sometimes the heating was broken and we were swimming at a swimming pool with cold water, sometimes the conditions were adverse.’

Participant 3

‘When I started training with the national youth team and the senior team in an indoor court it was very good for my feet and then with the U18 team we were playing in outdoors courts so I didn't enjoy the training with the U18 team.’

Participant 1

‘When I was in the second grade of high school there was an international school championship and for those who know this is the perfect opportunity to get an

exemption from national exams. That year I had a tough year, the pool was closed so we had to go to Xanthi for training and we did 2 trainings combined in one, I remember we were swimming for 3 and a half hours. We were swimming the first training; had a banana and 15 minutes break and then we went back to pool for the second training. Tragic situations...! I also had some injuries during that year and I didn't go well during that year. I didn't manage to qualify for the international school championship despite the fact that the year before I was first by far...'

'...When I went to Athens to study I continued swimming and I joined one of the elite swimming clubs of Athens; well too much hassle to get there every day. My university was at the centre of Athens and I was going there using the underground and the training was at the south part of the city [which is far away].'

Participant 2

Life circumstances.

Financial situation.

The impact of the financial situation of a family or a whole nation on sport participation and future development of athletes was also discussed. When families do not have the ability to support financially their children, it may influence the prosperity of their careers. In line with this, the economic crisis in Greece has definitely influenced the available resources in sport.

'Moreover, you may have to deal with financial difficulties. More specifically, you may need to make financial sacrifices. Sport require financial sacrifices. This can be a doctor when you have an injury, the sport physiologist to monitor your fitness and give you guidance, the physiotherapies you may need. Even only the swimsuits cost a lot. The compensation money you earn from the team is for sure some help based on the hours you devote but you have expenses related to your rehabilitation/recovery, your nutrition because you need to be careful about what you eat.'

Participant 3

'Finance is another challenge for the athletes. For some people, it is not an option to study at the university without working because their parents can't afford supporting them with their living costs. If you are lucky enough to have the financial support from your parents, you can do sport in the same time with your studies. But as you grow up parents will support as much as they can until a reasonable point. After that, you need to learn how to live by yourself.'

Participant 2

'Likewise in other domains sport in Greece have been affected by the crisis and things are quite difficult.'

Participant 6

Be away from home and living independently.

Athletes reported that staying away from home for long periods was challenging for them especially at young ages. When athletes reach adulthood they are independent

so they live on their own which is another challenge that athletes have to cope with at that time. They also make their own decisions and they have to be responsible for them despite the lack of experience they have which potentially can be a barrier for their athletic career.

‘Apart from Marina that we were very close and we discussed my issue I didn't have anyone else. I am from W [a small town of Greece] and we were staying all the time at Athens so I was away from my parents all the time and I was very young.’

Participant 4

‘You leave with a large luggage and you come back after a month because you are away for competitions. You leave and the home is without plants but when you come back suddenly spring has come and the house is green and full plants. But when you turn 18 or when you start living on your own potentially you change team. For example, I moved from a small town but my team was the regional champions and generally, we had both team and individual success traditionally. As you enter adulthood you need to take responsibilities and the opportunity to enjoy a lot of things that you couldn't as an adolescent. So you are responsible for your decisions and their cost. You don't have the experience to evaluate always with the best possible way the alternatives that you have.’

Participant 2

5.3.3. Effective talent development

Physical attributes and sport-specific skills.

Athletes described that a combination of elements such as physiological attributes, psychological characteristics and support are necessary for someone to reach their best potential. Data showed that the participants believed that physical attributes such as body composition, weight, height, flexibility, agility and fitness are the cornerstone for a successful career in elite level. Certain attributes are more important depend on the nature of the sport; for instance, it was described that height can help swimmers to be more efficient.

‘You need to have the appropriate body composition, some flexibility, in general, some generic attributes that will help you to play at elite level. It is not enough to be fast, you need 15 different things to reach elite level. You need physical attributes, talent combined with coincidences in your favour in order to reach to elite level.’

Participant 6

‘Firstly the typical skills required depending on the nature of the sport. However, in some cases, athletes lack these typical skills. For instance, in swimming, it is important

to be tall because you have larger axis so each stroke makes you go further but there are shorter athletes that have been successful.'

Participant 2

Agility, game understanding and the ability to combine different skills particularly in football during the performance were also discussed. In addition, specific skills related to each sport or playing position such as passing skills and being altruistic are vital for point guards in basketball according to participant 1.

'You need to be intelligent in the game and have a good understanding of the game. You need to combine agility with technique and so many different skills, in football you need to combine several skills.'

Participant 6

'I believe that different characteristics are essential for each position in basketball. A point guard needs to be altruistic; if he is selfish then the team is struggling. So you need to have the characteristic of passing.'

Participant 1

Most of the participants agreed that the basis of a good athlete are physiological attributes but psychological characteristics and environmental support are the main facilitators of athletes' progress. Physiological attributes such as body structure are of paramount importance but it was highlighted that psychological characteristics are those that will make the difference for promising talented athletes.

'I believe that it is important to have the right body structure according to the sport you do because it is a great advantage for an athlete that can facilitate their development. Secondly, it is the psychology and lastly is the support from the environment.'

Participant 5

Psychological characteristics.

Athletes described that certain psychological characteristics can be helpful for athletes throughout their pathway towards elite level. More specifically the majority of the participants agreed that athletes need to have the following characteristics: 1) hard work ethic and self-discipline, 2) desire to achieve excellence and 'power of soul', 3) perseverance, focus on goals and self-belief and 4) learn from mistakes, improve

weaknesses and seek social support. Interestingly, participant 6 reported that skills acquired through her sport career helped her in her professional career.

‘The most important characteristics I gained from sport still help me to work effectively as a member of a team and to be able to contribute to a team. I can ‘run the extra mile’ and give more than 100% of my efforts when it is needed. These are the characteristics that I gained from participating in sport.’

Participant 6

Hard work ethic and self-discipline.

Athletes highlighted that working hard in both training and competition is crucial and always athletes have to give their best efforts, be committed and motivated to achieve the best possible result; not in terms of medals or outcome but in terms of personal efforts. Additionally, they described that having self-discipline is crucial since it allows athletes to control their emotions, stress and eventually cope with any diversities that may arise.

‘Don’t go to a competition and do anything less compared to what you can do, die in the pool, don’t come back tomorrow and say I could have done that, don’t hold back at all. There is no need to win the gold but win your personal gold by doing your best...’

Participant 4

‘You can't hold back you need to be put 100% of your effort. You need to listen to the coach's voice and record whatever he says to you for the sport. In the training you need to reach to a point of s**** your pants; that hard was some of my training. We had some training that when I was thinking about them I couldn't sleep at night; it was so scary how hard I had to swim but he was proven right in the end.’

Participant 3

‘What makes the good athlete? Work and self-discipline; also to be calm and never lose your temper. All the players that had these characteristics and were a bit more relaxed were those athletes that were the best. For example, Trifonas could listen the coach shouting at him and then he could turn to someone and smile, those kids that managed to compete at a high level were a bit more relaxed. They enjoyed it more in comparison to others.’

Participant 1

‘Self-discipline and motivation are very important elements for success. Furthermore, another element that can help someone to become elite is the ability to control their emotions and stress, to be calm and have composure because stress sometimes is too much and you need to know how to cope with it before the races. I believe it is something you learn how to manage and you learn yourself better through this experience. Whoever has been to many races has less stress because these experiences are not new and the ability to manage the emotions at that certain moment has been developed.’

Participant 5

Desire and 'power of soul'.

Data showed that the key element of being successful and for coping with challenges is the desire to achieve excellence and the 'power of soul' of each individual. In the Greek culture, this expression is used to express the passion and dedication of someone to do their best and achieve their target. Participant 4 gives a detailed explanation of what 'power of soul' means. This could be linked with high levels of motivation, desire to achieve excellence and determination to achieve your goals and do your best no matter what happens. Similarly, participant 2 also highlighted that having the desire to achieve excellence and use the power of your soul is one of the most important elements that athletes need in order to reach their best potential.

'I believe that what you mainly need is the power of soul and nothing else. The more desire you have; the more you want it no matter how difficult things might be you will find your way. Of course, if you have the appropriate skills it will be easier because the pathway will not be full of thorns. For me, the power of soul and desire are the most important. Power of soul and desire are the most important elements and the best way to reach your targets. I will describe you how I feel it. Entering a swimming pool, I feel like being in a church, I feel that I find my God, underwater I feel that this is my paradise, my nirvana, nothing can touch me because I feel so strong like nowhere else in the world, I feel fearless, limitless.'

Participant 4

'So apart from the typical physiological skills elements of great importance are the power of soul and mental toughness. You may be well trained but not be in a good psychological state for any reason because your grandfather died, or your girlfriend didn't speak you well or anything which may influence your performance. On the other hand, you may not be well trained throughout a year but be focused and have the desire so much that the body obeys with a magic way to what you want. Generally, I believe in the power of the soul in sport. Psychology is underestimated science in sport in my opinion and especially how it can influence performance.'

Participant 1

Perseverance, focus on goals and self-belief.

Participants believe that it is important that athletes should not get disappointed when things are not working well for them. On the contrary, they should stay strong and have the perseverance to keep trying in order to achieve their goals.

'You also should not be disappointed because I have seen beloved friends being mentally distressed and this led them not only not to want to achieve their targets but not want to swim again or listen about synchronized swimming.'

Participant 4

'When you are not playing well you should not get disappointed because this may lead you to drop out. You need to have a strong character and come back.'

Participant 6

Despite any difficulties that athletes may face because it is certain that at some point in their career they will face some difficulties they need to have the perseverance to go through without giving up. Staying focused solely on their goals was distinguished by the majority of the participants. Believing in yourself and becoming almost selfishness sometimes in order to boost your self-esteem and focus only on your goals without any distractions is considered an advantage by the participants of the study.

'Perseverance and not giving up. Like there is a throne that you need to conquer and you should aim to conquer it without caring about the rest around holding the swords against you. You could care only about the throne that you are looking at, the swords should only scratch you nor penetrate you because in the end very sword that has penetrated you it takes a small piece off of you and you won't manage to reach the throne because you will lose everything in the way. So you need to look forward and remain focused on your target like the horses that wear blinkers.'

Participant 4

'Something that is common is the commitment and to believe in yourself. I believe you need to be committed to what you are doing and very focused on your goals.'

Participant 5

'You must have some typical skills, obviously if you are unfit, if you haven't trained well you can't go to a big competition but the detail that can make the difference is the psychology and more specifically the perseverance, believe in yourself and your powers, desire to succeed and not to care too much about what people say, in other words, to be a bit in your own world.'

Participant 2

Learn from mistakes, improve weaknesses and seek social support.

Participants described that the ability to learn from mistakes and continuously improve your weaknesses is of great importance for a successful career. As described by participant 3 it takes time to learn, develop and improve thus athletes need to be patient; learn from their mistakes and try to continuously improve themselves.

'You don't need to understand everything from the beginning, you will make many mistakes, you will be stressed, you may puke but you learn as the time passes and you become better and better. You should not get disappointed because you are not as good as someone who swims 3-4 years more than you. You learn from your mistakes because

a lot of mistakes will happen, no one is a star from the beginning; the whole pathway is uphill and you continuously learn.'

Participant 3

'...you need to accept that you have certain weaknesses and find a way to improve them. I believe that being intelligent can help to progress and develop. Be intelligent enough to hide your weaknesses and highlight your strengths.'

Participant 1

Finally, the ability to seek for social support was highlighted by participant 4 because this element was missing during her transition from junior to senior level and retrospectively it appears that things could be different if she asked for help. People in the close environment need to be aware of any problems that may arise because only when they are familiar with a problem they can help with it.

'Support is also very important and communication, discussion with the coach. When an athlete has a problem they need to discuss it with the coach and together find a solution in order to move forward and progress. The athletes need to express themselves; for instance, I am a bad example because I didn't seek support from others and I didn't share my concerns because I believed that there is no need to bother others with my problems. Support network should be in place with strong foundations around the athletes and athletes need to seek for support. When someone is not aware of a problem it is not possible to help. When parents are not aware of a problem they can't do anything about something that they are not aware of.'

Participant 4

Support Network.

Social support.

Participants described that social support from parents, coaches, friends and teammates is essential to effectively progress in sport. More specifically they suggested that emotional and tangible support from the family is very helpful since athletes need their parents to be close to them both practically and emotionally.

'And of course my parents helped me but I put them last, maybe they should be higher up but anyway my parents helped by getting me to and from training every day. I never worried about how to go and get back from training.'

Participant 5

'For sure support from the coach and support from the family. Parents need to support their kids, explain why it is important to participate in sport and help them get motivated by those reasons.'

Participant 1

The close environment of the athlete can influence the development in a positive way. Having a supportive family environment helps psychologically in my opinion.

Participant 6

Interviews showed that support from the coach is a cornerstone in the development process of athletes since coaches can provide all types of support to players (emotional, esteem, informational and tangible). The majority of the participants expressed their respect and the belief that their coaches helped in a vital their progression by increasing their self-esteem, supporting them through difficult times and instilling them with the skills and knowledge required.

‘I am very lucky that I met a coach who saw something in me and promoted me, he invested money, time and a lot of effort to train me and my parents helped me very much as well. I couldn’t do it alone, if it wasn’t for them I would still swim in amateur level. These persons pushed me and helped me because I never had the self-esteem to chase my dreams on my own, they showed me what I could do in this area.’

Participant 3

‘She was an important factor and the thing is that outside the training she wasn’t my coach. She would discuss my concerns with me she would ask me if I am OK; she wasn’t distant. She cared about me as a person and not only as an athlete.’

Participant 4

‘On top of the list, I would put my coach. He was a great person and he really liked his job. He was a leader. He had a good knowledge of track and field, his training could help you reach your best potential because you felt that you were always prepared for the competitions.’

Participant 5

Furthermore, support from teammates was another aspect that helped the participants of this study. Teammates acted as a stress relief prior to important competitions (participant 3) or the bonding between teammates increased the satisfaction of athletes and created a healthy talent development environment for the youth athletes (participant 3 & 5). For example, relaxing the night before an important race or teammates providing emotional support to each other before races was very much appreciated by participant 3.

‘I remember the easiest and simplest that when we were going to competitions in other cities it was very relaxing to be at the hotel with teammates because we had fun and it was easy, we were forgetting about the competition the stress was reduced without even trying and subconsciously all of us were helped from this. I remember a lot of times

before a big race my teammates were with me keeping me company until the last moment, encouraging me many times I remember at least 4 persons being with me all the times helping me. For me, this was very important and I really appreciated it so I tried to do the same for them when they had a big race. They were always helping me at this as well, I was very lucky to have great persons in my team.'

Participant 3

'Furthermore, another thing that I felt that was facilitating my development was the environment in the team. We did different types of sport but we had strong bonds between us even if we were not in the same age but we did train together. Sometimes the training was divided into parts based on the needs of each athlete, for example, I did sprint starts other athletes could run around the field all the time. However, in the warm-up and the cool down we were all together. We were also together during the competitions. This helped me a lot throughout my development.'

Participant 5

Additionally, friends can also provide social support to athletes. For instance, the first person who actually cared for participant 4's issues and managed to understand and support her was a friend who happened to be an athlete. This enabled him to understand the issue she had but essentially he was the first one who approached her and cared for her.

'I met a boy who was a champion at kickboxing and when we met he asked me aren't you a bit fat to be a synchronized swimming champion? This bothered me and he understood it because in his sport weight plays a crucial role as well. He told me: I heard that you are very good but what happened? What happened to you? This was the first time that someone asked me what happened to me and I took a step back and started thinking about it because maybe I was more open because he was also an athlete and I was thinking that we wouldn't judge me and he won't rebuke me, I perceived him as a guide as a support.'

Participant 4

Organisational Support.

According to the participants' beliefs, appropriate facilities should be in place to facilitate the effective development of youth athletes. More money needs to be invested in creating new facilities or at least maintaining the existing ones in the optimal level.

'There is no money, Athens Olympic Stadium which was the largest swimming pool during Olympic Games now is in a miserable condition. They don't have money for heating, the changing rooms are dirty and generally, the facilities look like a dump. Better facilities are essential in order to help the development of young athletes.'

Participant 3

Moreover, it was described that a scholarship given for student-athletes to enter a university can be very useful since athletes give most of their energy and time to training that makes it difficult for them to study for the national exams. Higher education in Greece is free so the available positions for students are determined by the marks achieved in the national exams. Therefore, scholarships given to athletes can be either a) immediate entrance to university (regardless marks in national exams) or b) 10%-30% bonus to the existing mark in the national exams. Those scholarships were based on the achievements of athletes in national and international competitions. As described earlier the lack of scholarships despite his achievements led a promising athlete to drop out. In addition, it was suggested that financial rewards should be given to athletes when they have national or international achievements. Also, financial support could enable athletes to be well prepared without making financial sacrifices to buy supplements and essential equipment by themselves.

'For sure, it helps that the state gives scholarships [bonus] or at least used to give scholarships. For instance, I didn't get the 'without exams' bonus [a] for the department of physical education and sport science but I had 10% bonus on top of my final grade of the national exams which was helpful and enabled me to enter the university I wanted. You can't ignore this factor because it compensated the pressure from the family and the society for the national exams.'

Participant 2

'It is very good to have the scholarship to enter a university without exams because it doesn't mean that if you are an athlete you are lazy that did not study to enter a university. Instead, an athlete dedicates all their energy to a sport and maybe this is even more difficult in comparison to studying. The ideal would be to pay the athletes for their achievements because this would help them continue, to buy their supplements, their equipment etc. We did everything on our own no support from the state we paid for everything. There is a legislation saying that if you make a European record or a World record you get paid but you don't even expect the money. Theoretically, athletes should get paid for these achievements in order to give them a motive that the money they spent they will get them back somehow.'

Participant 3

Holistic Approach.

Developing athletes as a 'whole' person.

Athletes described that holistic development is the key in order to help athletes' progress and reach their best potential. Developing as a 'whole' rather than focusing only on the athletic aspect will enable athletes to build the necessary psychosocial characteristics that are necessary for achieving excellence not only in sport but also in other domains of their lives.

'It depends on the priorities you have in your life; I was nurtured in a club and a family in which sport meant to be a good student, good athlete and good person. If you are a good athlete, you can also be a good student. This doesn't mean you can only be one of those two; you can be both at the same time. A life is surrounded by everything. In the future will you be a good employee and not a good father?'

Participant 6

Communication, athlete understanding and individualized approach was described by the participants as a prerequisite of holistic development which promotes effective development of athletes as a 'whole' person. Since each individual is unique, a different approach is required in order to support and motivate athletes based on their personality and individual needs.

'An athlete needs support in order to develop. Good communication with the coach is essential. Discussion between athletes and coach is important because usually in training there are only commands without discussion at all. I believe that discussion and support from the close environment are essential. Parents should listen to their kids, communicate with the coach regarding the performances and the expectations of the child. Understanding the athlete is essential and athletes also need some space especially when they are doing well because their experience is very intense at an emotional level because if you are doing well you don't know how to manage this. A balanced environment can be really helpful for this and enable the athlete to have a positive outcome out of this not by winning a gold medal but by staying in sport and by trying to reach their best potential.'

Participant 5

'Each person is motivated by different things. Different things can motivate people to give 100% of their potential so I don't believe that all athletes should be treated in the same way in their personal relationship with the coach. In terms of training, all the athletes should do the training that they are supposed to do.'

Participant 1

Clear, long-term goals & support of life choices.

Participants described that having clear and long-term goals can facilitate their development since according to them, goals related to commitment, good habits and

hard work ethic can enable athletes' progress. On the contrary, goals focusing on outcomes or performances during their development stages won't necessarily be beneficial for them. As participant 2 discussed her coach decided to risk her dropping in ranking only because he believed that focusing on her studies would be the best in the long-term. Eventually, the athlete did manage to stay in the same level of performance easily and she also managed to enter the university she desired. This is an example of how the life choice of an athlete [have good results at national exams] was achieved because of the holistic approach adopted by the coach.

'Having clear is also necessary. Goals need to be long-term and not to win the next race but goals like: "I will always attend the training", "I will give 100% of my efforts in the training", "I will be fit" etc. In addition, I believe that support from the coach and the close environment is crucial.'

Participant 5

'...the coach told me that starting from next week you will swim half an hour every day until your national exams. I was shocked! What is he talking about? We have a competition in one month. I was very annoyed back then but later I understood that this was the best thing he could have suggested to me. It requires self-sacrifice not to be selfish and go against your personal goals as a coach by risking one of athletes to drop in ranking in order to do what's best for them, to show the best possible pathway. I really appreciated this later, back then I was very angry with him because I felt that he degraded me. After many months or years, I appreciated him very much and still I respect him. After the national exams, I started training regularly again straightaway and I managed to swim close to my times after a couple of months. So generally it was a very good year taking into account the effort I put in training throughout that year it was a great year.'

'It is important to be in a team that supports the life choices of the athlete as a person and consequently as an athlete. And when I say, team, I don't mean only the board members and the coach but also a healthy competitive environment with the teammates'

Participant 4

Knowledgeable, open-minded and caring coach.

Athletes described the characteristics of an ideal coach and they expressed the belief that a coach is one of the most important foundations of effective development. Having a good knowledge of the sport, designing training programs that will enable athletes to reach their best potential but also be close to athletes. Also using different types of

training such as yoga to enable athletes to develop a variety of abilities both physical and mental was suggested to be important.

‘I was lucky because I had a good coach. When I was 11-12 a new coach came to my club and she wasn’t the typical coach of synchronized swimming swearing and shouting to the athletes in order to perform well. She had a different style and she managed to keep us all involved in the sport. She had great technical knowledge and I am grateful that she was my coach for this period of time because I was developed as an athlete and essentially she built my foundations. Now that I reflect back I believe that I couldn’t have had a better coach.’

Participant 4

‘Having a coach with good knowledge regarding the training technique that should be used in relation to age, sport, and daily routine of each athlete and of course knowing the way to approach individually an athlete and motivate them because each athlete has a different personality.’

‘Nowadays yoga is very popular, all the athletes have incorporated yoga daily in their training routine in order to strengthen but also because of it also very mindful so I wish I knew yoga when I was 19 and I wish I could do yoga frequently.’

Participant 5

According to the participants when the coach cares for them as people it can increase their satisfaction and can influence their wellbeing positively. Helping athletes to incorporate a sport career with other interests outside sport or studies can contribute to the philosophy of developing athletes as a ‘whole people’. Having a fine balance between life in sport and outside of them could be beneficial for the holistic development of athletes. However, the personal philosophy of a coach is closely related to the type of the environment they will create. Thus, the philosophy of the team should be aligned with the philosophy of the coach and based on the opinions of the participants it should focus on developing athletes as a ‘whole’.

‘The warmth I felt in my first team I never felt like this again nowhere. To care about you as a person, about your development at all levels. Basically, I have this feeling that none of the clubs cared about you being good as a person and therefore as an athlete as well. They should not be interested only in your results but also care about you as a person, what are your interests, what do you want to achieve in your life. Obviously, you are interested in swimming but how can we help you incorporate swimming in your life in order to feel complete and do what you do with love and passion.’

Participant 2

‘The coach is vital and especially how he interacts with the athletes not only as a coach but as a person because athletes are not robots that go to the training and don't have anything else in their lives. Honest and clear communication is also important, the

coach needs to be close to the athletes, get to know them and be aware of any issues that may bother the athletes. Be close to the athletes, have good communication, a clear plan, daily support in training but also through tough times such as an injury. If a coach believes in an athlete and knows that the athlete has national exams he could have this information in his mind and understand that this may influence the athlete. A coach needs to monitor the psychology of the athletes in order to understand the athletes' feelings and be on their side. Maybe I ask too much but this is the ideal for me.'

Participant 5

'The most important element is to have a culture that helps the athlete to be a good person as well and the coach plays a crucial role to this, but based on the philosophy of team the respective coach will be chosen. So if the coach cares only about success rates he will create the environment respectively....'

Participant 1

Intentional structured challenge.

Participants highlighted that in some cases it was essential to face challenges designed on purpose by their coaches in order to get outside their comfort zone and push themselves to get better. For instance, the national youth team provided that type of challenge to participant 1, racing against fresh athletes was the physical challenge introduced by his coach for participant 3. Participant 6 described that participating in an international youth cup in a foreign country acted as a learning experience. Data showed that it was a big challenge at that time, although it was beneficial for his personal development.

'I really liked when I was playing for the national youth team because I had someone to put pressure on me, to steal the ball from me which was not happening in my team. This was a challenge and I was very happy at that time.'

Participant 1

'Even at the training when I was preparing for the world record my coach put my teammates to swim next to me in order to race against fresh legs all the time.'

Participant 3

'The international youth cup at Sweden in 1999 was a challenge. Wasn't it a challenge leaving your country to go there and play with other kids from all around the world so far away from home? A big challenge for me! We went at that age to expand our horizons, see how children from foreign countries play football and how good you are compared with other players of similar age from all around the world. Playing in a tournament within your country with players all around the country would also be good too but we went on a trip. We faced different circumstances and new experiences and finally, he had a great time and we learned a lot.'

Participant 6

5.4. Discussion

The main aim of this study was to examine the development experiences, individual characteristics of athletes and environmental features associated to unsuccessful transitions to elite level. Athletes in the current study did not attribute their withdrawal from sport only to one reason rather than to a combination of different factors. A variety of environmental factors can be influential especially during that crucial period of the athletic career. More specifically, a win focus environment, poor communication, negative influence from parents and the challenge to balance a dual career could act as a trigger for the drop out process.

5.4.1. Development Process

During the early experiences of participants, the early specialization was more common compared to deliberate play activities or participation in other sport (sampling) during childhood. It should be noted that there was no explicit question regarding the type or amount of time spent participating in deliberate play activities or sampling. Nonetheless, the participants were asked to describe their development process and none of the participants referred to any sampling or deliberate play activities (unlike those participants in study 2, who were proactively forthcoming with descriptions of this type of early experience). Interestingly, the majority of the participants stated that the reason they started participating was not even a personal choice since their family chose their sport. As such, either the athletes of the current study did not participate in any, or much deliberate play activities or deliberate play was not an 'important or memorable enough' experience to mention it during the interviews. It is well established from the literature that this type of activities can facilitate long-term engagement in sport, enable athletes to build the fundamentals skills in order to move forward successfully and promote intrinsic motivation (Baker & Cobley, 2008; Bloom,

1985; Côté *et al.*, 2003). According to the data of the current study, lack of sampling and deliberate play appears to be a common characteristic of these athletes that did not successfully progress to elite sport. However, while it is not possible to allude to causation from this study, more research is required to identify the relationship between early experiences future engagement in sport and transitions to senior level. It is also essential to acknowledge that participants were not explicitly asked about this, however as discussed above none of them described any deliberate play or sampling at young ages.

Moreover, not only did athletes not describe involvement in deliberate play and sampling but also all of them reported specialising early in their sport. However, it needs to be noted that two of the participants got involved in sport around the age of 12 but similarly to the rest of the participants they specialized in their respective sport. Research supports that early specialization can be a suitable path towards elite level (e.g. Ward, Hodges, Williams, & Starkes, 2004), however solely focusing on one sport at young ages is more likely to lead to dropout or burnout Gould *et al.*, (1996). Even with the potential concerns of early specialisation outlined clearly in the literature, many development programs still require a high level of investment from young ages and discourage youngsters to participate in a diversity of activities (Hecimovich, 2004; Gould & Carson, 2004).

Participants also reported that they were very successful at youth level, although they did not manage to either progress at elite senior or maintain at this level for a long period. Research has shown that there is a low correlation between physical variables and performances at young ages and later success at elite senior level (e.g. Brouwers, De Bosscher, & Sotiriadou, 2012; Barreiros, Cote, & Fonseca, 2014; Till *et al.*, 2010; Vaeyens, Güllich, Warr, & Philippaerts, 2009). On the one hand, achievements at youth

level may act as a trigger for the athletes to engage in more deliberate practice, as well as motivate them to pursue excellence (Gould *et al.*, 2002; MacNamara *et al.*, 2010a, 2010b). In line with this, it is clear that success during early stages increased their motivation to participate in competitive sport. However, it appears that not facing defeats did not help them to improve their ability to cope with disappointment, which is an integral part of becoming a successful athlete. For instance, RAE could be a possible explanation for these performance advantages for the chronologically older or more mature athletes (Romann & Cobley, 2015) which may result in subsequent dropout, when sport development becomes more challenging (Cobley *et al.*, 2009).). As such, findings reinforce the experiences of one of the participants who faced several mental and physical challenges when RAE stopped creating an advantage for him and eventually dropped out. As Collins and MacNamara (2012) have suggested intentional structured challenged is essential during the development pathway in order to help athletes develop the essential skills required for a successful career. Strategies towards this end may include increased workload, playing up an age-group or out of position and de-selection or selection for particular competitions.

Moreover, closely linked with their success at youth level is the fact that the great majority of the participants were selected to represent their regional/national youth teams. Individual sport athletes described that athletes who are selected to the regional/national youth teams are more likely to have access to good quality coaching and facilities and receive more attention. Notably, for the participants of this study representation at youth selection teams was not enough to enable them to make a successful transition to elite senior level. On the other hand, team sport athletes stated that the selection process itself is debatable since it cannot be based on personal performances as in individual sport. As such, according to the athletes' opinions,

networking, agents and luck/coincidences may influence the development of athletes. Research has also shown that luck/coincidences may facilitate successful development (Albert, 2006; Bailey, 2007). More specifically, participants described the existence of corruption in the area of sport even at youth level. Selection in national/regional teams is not always based on actual performances, which may result in the exclusion of talented athletes. In some cases, coaches reinforced the use of anabolic steroids and officials had influenced judgement during competitions. Several cases of corruptions have been reported related either to competition results or non-competition focused decisions (for a more detailed review, see Maennig, 2005).

5.4.2. Factors that may lead to drop out

Participants described that a win-oriented environment (at youth level) may influence future participation since athletes are not learning to love the sport or be intrinsically motivated. According to research, athletes who are intrinsically motivated are more capable learners (Deci & Ryan, 2008) and as a result, they have more chances of avoiding drop out (Burgess & Naughton, 2010). Additionally, participants reported that better communication could have helped them stay in sport and chase their dream to become elite level athletes. Research focused on talent development environments has also shown that long-term goals, athlete understanding and communication are facilitators of effective development (e.g. Martindale *et al.*, 2005, 2007; Henriksen, 2010).

Furthermore, the potential negative influence from the parents' behaviour was also described in this study. Participants gave examples of parents either projecting their negative feelings on youngsters or not supporting enough especially emotionally. All the parents provided tangible support but during challenging periods there was a lack of emotional support. Research has shown that family and peer support plays a

significant role in shaping youth sport experiences both from a positive (athlete motivation levels, elite sport participation) and negative (drop-out) perspective (Sheridan, Coffee, & Lavalley, 2014). Consequently, participants highlighted the importance of the support network but also acknowledged that in some cases negative influence or lack of support was a barrier for their development towards elite level. Similarly, Fin and McKenna, (2010) have suggested that if those who are providing support do not provide the right type of support it may have the opposite desired effect.

In addition, balancing a dual career (school or work) along with sport was challenging due to the lack of time and because of the social pressure especially during the period of the national exams. As such this challenge had both a psychological and a practical consequence on the athletes. Firstly, athletes had either to skip classes or stay in other cities/countries for long periods because of competitions. The social pressure could be explained by the by the existing culture in Greece (where all the participants were from) forcing youngsters to focus solely on their studies during the last two years of their secondary education. This is because the results of the national exams will determine the university they will enter so as their future professional career (at least according to the social norms). This period of pressure that collides with the transition period from junior to senior level in sport has been described as problematic.

Combining studies with a sport career is a common challenge in studies examining within-career transitions (Fin & McKenna, 2010; Lorenzo *et al.*, 2009) and excessive pressure has also been linked with dropout in the study of Salguero, Gonzalez-Boto and Marquez (2003). Those overlapping challenges are described at the developmental model on transitions faced by athletes (Wylleman & Lavalley, 2004). Notably, the ministry of education in Greece has recently (2017) suggested changing

the current approach in order create a more holistic educational system which will not be based solely on the results of the national exams.

Nevertheless, because of the individualized nature of the trajectory towards elite level other challenges such as financial difficulties, injuries, burn out and eating disorders may arise. The ability of parents to support financially has been linked with the successful progression to elite senior level in the literature (Côté, 1999; Durand-Bush, 2000). Participants highlighted that when combining university with a sport career, the financial support from the family becomes essential, although not all families can afford this. In order to deal with this issue, the state (in Greece) used to provide scholarships to student-athletes with exceptional achievements, which stopped because of the economic crisis. Injuries occurred to athletes who took part in this study and previous research has shown that injuries (Pummel, 2008) and burnout (Gustafsson, Hassmén, Kenttä, & Johansson, 2008) are common challenges that may lead to withdrawal from sport. The participant who suffered from an eating disorder highlighted the need to educate parents of youngsters participating in this type of sport because as she explained it is difficult for them to understand the nature of the problem and help appropriately. It has also been suggested in the literature that screening for disordered eating behaviours should be a part of pre-participation examinations and team physicians should be educated about the diagnostic criteria for eating disorders (Joy, Kussman, & Nattiv, 2016).

5.4.3. Effective Talent Development

Moreover, participants acknowledged that physiological characteristics such as body structure, technical/tactical skills and physical attributes are the basis for effective development. According to them, however, psychological characteristics are those that can facilitate the transition to elite level. Amongst those characteristics were hard work,

desire to achieve excellence, perseverance and ability to learn from mistakes. Participants agreed that those psychological characteristics will allow athletes to step up to a higher level of competition reinforcing the findings of previous research (MacNamara *et al.*, 2010a, 2010b; MacNamara & Collins, 2010; Durand- Bush & Salmela, 2002; Holt & Dunn, 2004). Interestingly though none of the participants identified the ability to cope with disappointment as important which in previous research was deemed as necessary in order to reach elite level (Bull *et al.*, 2005; Gould *et al.*, 2002).

Using a metaphor one of the participants suggested that: 'Like there is a throne that you need to conquer and you should aim to conquer it without caring about the rest around holding the swords against you. You could care only about the throne that you are looking at, the swords should only scratch you nor penetrate you because in the end every sword that has penetrated you it takes a small piece off of you and you won't manage to reach the throne because you will lose everything in the way. So you need to look forward and remain focused on your target like the horses that wear blinkers'. The interpretation of this description could be that challenge is better to be avoided as it may 'harm' your development while in reality, recent theories suggest intentional structured challenge is beneficial for athletes (Collins *et al.*, 2016; Savage *et al.*, 2017). As such, the lack of challenge for the majority of the participants could be one of the reasons that they did not develop their ability to deal with disappointment and setbacks. The absence of challenge; as it was not reported by the participants could be the reason why athletes lacked this vital skill which has been highlighted not only in the literature but also from the successful athletes of the previous chapter. According to Savage *et al.*, (2017) not only providing challenges but also making sure that athletes have the essential skills and attitudes to 'bring into' the challenge is vital for their development

too. Essentially only one of the participants extensively described performance related intentional structured challenge as part of his development plan. This particular athlete was constantly challenged throughout training in various ways and eventually, he managed to step up and win the gold medal (world record) at senior international level. Thus, his ability to be successful (even for short term) could be partially attributed to the fact that he developed both physical and psychological skills through challenge. However, this constant challenging approach could be related to the fact that he decided to stop competing and seek a 'normal life'.

Friends, teammates, family, coach can help them deal with the challenges that will arise during the trajectory to elite level. Unfortunately, this was not the reality for some of the participants, which had a negative impact in their sport career. Research has shown that coaches play a positive role in facilitating athlete's transition to elite sport (Bruner *et al.*, 2008). It should be taken into account that coaches are considered the most prevalent providers of social support (tangible, informational, emotional and esteem support). However, in some cases of the current study athletes perceived their feedback as over-critical affecting their confidence negatively or had poor communication with their coaches, which was a barrier to their development. Notably, though, participants suggested that seeking social and expressing their concerns is vital as well. For example, the individual with eating disorder suggested they could have received more support if concerns were shared earlier. In line with this, research has identified that the ability to seek social support when necessary is key for athletes who reached elite level (Van Yperen, 2009). In addition, as discussed earlier the lack of support from parents.

In the current study it was suggested that developing athletes as 'whole people' will be beneficial for them not only for their career in sport but also for their life outside

of sport. Supporting life choices, having positive relationships with the coach and understanding the needs of the athletes were amongst the suggestions of the participants. Pink *et al.*, (2015) also proposed that developing young athletes as 'whole people' can increase players' performance and promote athletic engagement. More specifically, in their research, it was identified that recreational activities can help athletes refresh away from football, 'switch off' from football and have a 'well-balanced' life. Additionally, off-field activities provided a means to prepare for their life after football. The environment examined in the study of Pink *et al.*, (2015) respected the individuals and their autonomy, cared for the whole person, valued the work-life balance and supported players' off-field activities. As such, education, recreational or relationship-based activities can influence football positively. In line with this, athletes who had the chance to combine a career in sport while studying have reported that it was beneficial for them (Mallett & Hanrahan, 2004). A recent study indicated that a dual career can be facilitative or debilitating depend on parent-teacher and player teacher relationships. In addition, dual career is one of the crucial factors influencing athletes' retirement transition and post-sport career. As such, a dual career can potentially be facilitative for the transition to elite sport but also to their transition out of sport. However, the individual needs of each need to be taken into careful consideration when designing their development plan as progression is not linear and each athlete may require a different approach tailored according to their personality, interests, needs and goals (e.g., Douglas & Martindale, 2008).

5.5. Conclusion

The current study attempted to investigate the development experiences, individual characteristics of athletes and environmental features associated with unsuccessful transitions to elite level. While it is difficult to draw causative conclusions

using this type of research methodology, particularly with no ‘matched’ athlete group to compare to, the findings of the current study highlighted some interesting issues that seem to have influenced the decision of promising athletes to withdraw from sport. Although the results can be compared with study 2 it is not a well-controlled comparative group as the one used in a recent study (Collins *et al.*, 2016).

This study adds value to the current literature base, due to its focus on the developmental experiences and decision making related to drop out through the transition to elite sport. It was identified that dropout from sport was influenced by a combination of factors rather than a specific reason. In line with previous research, a lack of sampling and deliberate play during the early steps is among the potential influential factors. In addition, athletes described that win focus environment, poor communication, inappropriate support or lack of support and balancing a dual career may affect the development of athletes influencing their decision to drop out. On the other hand, athletes highlighted the significance and need for individual characteristics (physical and psychological), effective support network and the importance of a holistic approach towards the development of athletes. As such, developing athletes as ‘whole people’ can enable them to acquire a toolbox of skills and attitudes that will be useful to cope with the normative transitions in various domains of their lives when they reach adulthood. The smoothness of their progression during early stages and the lack of intentional challenge hint that structured challenge could benefit athletes by enabling them to develop essential physical and psychological characteristics.

The inclusion criteria were very specific, and by definition, ‘dropped out’ elite athletes are difficult to find. As such, it was difficult to access athletes fulfilling the criteria of this study. However, since the individuals were carefully chosen, and not many studies have focussed on the experiences of dropped out elite athletes, this study

adds significant value to our understanding of the reasons that may lead to drop out during the transition to elite level in sport, and the factors that are necessary to help athletes remain engaged and facilitate progression. Mainly because those particular participants are very difficult to access the sample that was under investigation in this study gives a unique opportunity to extend our understanding regarding unsuccessful transitions at elite level. Moreover, the athletes were competing in different sport; thus the unique nature of each sport does not enable us to make assumptions for each sport individually. Nonetheless, the findings gave us a broad picture of the transition experiences of athletes to elite level in Greece. Therefore, it appears that similar challenges or adversities of the same nature are likely to occur during the transition to elite level. Interestingly, common elements emerged from the analysis of the interviews that provides evidence in regards with the potential barriers and the facilitator factors of athletes' development. On the other hand, it should be taken into account that each sport has different needs, athletes may face different challenges and their response may vary depending on their gender and their previous experiences. Interestingly, individual sport athletes highlighted the importance of the team 'atmosphere' despite the fact they compete as individuals rather than a team.

Further research is required in order to further understand the trajectory of athletes to elite level. The previous studies of this thesis examined both quantitatively and qualitatively the transitions and development experiences of athletes through their own perspective. In order to obtain an in-depth understanding, a mixed method approach was undertaken and athletes who successfully or unsuccessfully negotiated their transition to elite level were examined. Therefore, it was deemed essential to investigate successful transition to elite level from an experts' perspective. For this purpose, a world class elite development program was chosen for study 4. In study 4,

the individual characteristics of athletes and environmental features of a highly successful elite development programme were examined.

Chapter 6- Examining the Nature of a Successful Environment of Triathlon and its Influence on Athletes' Development towards Elite Level.

6.1. Introduction

The first three studies of this thesis gave a broad but also in-depth understanding of the within career transitions towards elite level in sports from the perspective of athletes. It is of great importance to examine how athletes who are currently in a transition experience this period and also distinguish challenges but also key elements that can facilitate a successful transition to elite level. As such, athletes experiencing the transition from junior to senior level were asked to complete a survey (TMS) and athletes who either successfully or unsuccessfully negotiated the transition to elite level were interviewed. Their previous development experiences coupled with the transition experiences, their individual characteristics and the environmental features that they were developed into provided useful information to further extend our understanding about this complex period in the athletic career. However, this process may contain bias because athletes were asked to retrospectively describe their experiences so their perception of previous events could be distorted based on the outcome of this particular period. Therefore, it was deemed important to investigate experts' opinions on this phase of athlete's trajectory to elite level.

The competitiveness of elite sport has increased significantly in recent times, and governments and national sporting organizations make considerable financial investments in their pursuit for success at the top level (Green & Houlihan, 2005). There is a multitude of factors that can influence the success at elite and those factors are divided into three levels: macro-, meso-, and micro-level (De Bosscher, De Knop, Van Bottenburg, & Shibli, 2006). Macro-level factors relate to the social and cultural background in which people live, including economic welfare, population, geographic

and climatic differences, degree of urbanisation, cultural and political system. Meso-level factors include the sport policies of nations (e.g. policies on coach development, policies on talent identification and selection) and micro-level factors relate to the athletes (individual characteristics) and their close environment (e.g. parents, friends and coaches).

Researchers have recognized the importance of the environmental factors and the structure of talent development environments and as such, a number of studies have examined how those factors influence the development and performance of athletes (e.g. Henriksen, 2010; Martindale *et al.*, 2005, 2007; Mills *et al.*, 2012). More specifically, Henriksen (2010) examined three successful environments in Scandinavia: sailing, track and field and kayaking. Notably, despite the differences in the nature of the sports and in the structure of the environments those talent development environments shared a number of common features. These included, the drive for excellence, the use of role models, long-term focus on performance rather than early results, continuously learn and develop, strong team spirit, openness, co-operation and healthy competition. In addition, work by Mills and colleagues (2012) in English football academies suggested that environments should focus on providing opportunities to footballers in order to help them develop awareness, resilience, goal-directed attributes, intelligence and sport-specific attributes which were deemed as essential to reach at elite level. Similarly, Holt and Dunn (2004) found that commitment, discipline, resilience and social support facilitates success in football. Recently, the findings of Mills *et al.*, (2014a, 2014b) suggested that footballers face several challenges during the pathway to excellence, although the appropriate organisational culture, balance between support and challenge and positive

relationships within the team along with high quality resources (facilities, coaches, sport scientists) can enable athletes reach their best potential.

In addition to those studies which were either cases studies or focused solely on one sport; Martindale *et al.*, (2007) attempted to provide an overview of the key features of effective talent development in the UK. Interestingly, the coaches described that long-term focus, wide-ranging coherent messages and support, emphasis on appropriate development rather than early success, individualized and ongoing development and integrated, holistic and systematic development are the main features of effective talent development. Apart from strategic level development and policies, inspirational leaders are essential in order to effectively manage and execute such initiatives leading to successful outcomes (Fletcher & Wagstaff, 2009). By examining the effects of transformational leadership on performance level, it was found that inspirational motivation significantly discriminated high and low performance groups (Callow, Smith, Hardy, Arthur & Hardy, 2009). Attributes such as honesty, self-insight, flexibility, emotional intelligence, collective thinking, trust and the ability to create vision can increase the effectiveness of those leading a group towards success (Ringer, 2007; Stein, Papadogiannis, Yip, & Sitarenios, 2009; Yukl, 2008). According to Northouse (2010, p.3) leadership is defined as ‘a process whereby an individual influences a group of individuals to achieve a common goal’. In line with this, recent research focused on resilience has been shifted away from individuals towards the study of groups or teams (Brodsky, Welsh, Carrillo, Talwar, Scheibler, & Butler, 2011; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). Research showed that caring relationships and effective teamwork achieved through trust and cohesion can describe resilience at group level (Blatt, 2009; Gittell, Cameron, Lim, & Rivas, 2006;

Lengnick-Hall, Beck, & Lengnick-Hall, 2011; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008).

Furthermore, it has been identified that groups that embrace challenges and adopt a learning orientation are more capable of adjusting to demanding situations (Bennett, 2010; Sutcliffe & Vogus, 2003; West, Patera, & Carsten, 2009). Brodsky *et al.*, (2011) suggested that a number of processes such as creating a culture which strengthens the sense of community or developing shared value systems should be in place to promote resilience within groups. Interestingly, those findings are in line with the suggestions of elite level athletes and coaches regarding the factors that can positively affect performance in international level (e.g. Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999; Greenleaf, Gould, & Dieffenbach, 2001; Gould, Greenleaf, Guinan, & Chung, 2002) or with research that examined successful elite level environments (Henriksen *et al.*, 2010a, 2010b, 2011; Mills *et al.*, 2014a, 2014b).

Studies have also been attempted to identify the factors that determine success in Olympic Games (Fletcher & Wagstaff, 2009). Interestingly, a number of studies showed that success at Olympic competition is related to the management of organizational related issues, team cohesion and good relationships between coach and athletes, high quality coaching and social support (Gould, Greenleaf, Chung, & Guinan, 2002; Gould, Greenleaf, Guinan, Dieffenbach, & McCann, 2001; Gould, Guinan, Greenleaf, & Chung, 2002). On the other hand, distractions from media, having problems with the coach, lack of organisation (planning, travel), unfair selection and financial issues were reported as potential barriers (Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999; Greenleaf *et al.*, 2001; Gould, Guinan, Greenleaf, & Chung, 2002). Moreover, athletes may struggle with their nutrition or injuries and the management of expectations can be another challenge. The atmosphere of the team, the

communication and the coaching style may also become a barrier for the athletes (Fletcher & Hanton, 2003; Hanton, Fletcher, & Coughlan, 2005). In line with this, the roles of the support staff in some cases appear to be contradictory which may create conflicts (Collins, Moore, Mitchell, & Alpress, 1999; Reid, Stewart, & Thorne, 2004).

In summary, it has been proposed that environmental factors have a considerable influence on the development of players (Henriksen *et al.*, 2010a, 2010b, 2011; Martindale *et al.*, 2005, 2007; Mills *et al.*, 2012, 2014a, 2014b). Much research has focused on the individual characteristics of elite level athletes (e.g. Mallett & Hanrahan, 2004), or the athlete's experience (e.g., Durand Bush & Salmela 2002). There has been a more recent upsurge in the examination of talent development environments (Henriksen 2010a, 2010b, 2011; Larsen *et al.*, 2013; Martindale *et al.*, 2007, 2010; Mills *et al.*, 2012, 2014a, 2014b). This has provided an understanding of talent development processes in a range of different sport environments and contexts, for example, sport in the UK (Martindale *et al.*, 2007; Mills *et al.*, 2014a; 2014b), and specific sport contexts within Scandinavia (Henriksen, 2010). There is also work that has highlighted leadership qualities and processes within high-performance environments (Fletcher & Wagstaff, 2009), while also acknowledge the crucial role of communication and interaction with others (Weinberg & McDermott, 2002). As such, researchers have recognised the importance of the structure of the environment, the roles of the experts and the relationships in elite level environments. However, the context of each environment examined is crucial and therefore more research is needed to expand our understanding regarding the optimal development of talented athletes towards elite level in different sports and contexts. In order to collect rich data, experts who have had a successful track record of developing elite world-class level athletes were chosen for this purpose. Another aspect of this selection was the fact that the

environment they were working was independent with multinational athletes without any constraints from national governing bodies. Therefore, this study aimed to investigate the individual characteristics of athletes and environmental features of a highly successful world-class elite development programme.

6.2. Methods

6.2.1. Design

There were several criteria used to classify the environment as ‘highly successful’ and therefore appropriate for this case study. First, in relation to performance outcomes over a time span of two Olympic cycles, the environment produced multiple European, World and Olympic medallists. Second, in relation to development over the same timescale, the environment consistently facilitated athletes achieving a top 6 finish at the highest competitive level for the first time in their careers. Finally, the environment was identified and recognized publically as one of the best triathlon environments in the world.

Unlike most elite development environments, the program of the current case study was independent without any constraints from National Governing Bodies or any other clubs and sponsors. Furthermore, the environment was not constrained by any particular national culture or structures, as the athletes and staff were multi-national, with multiple worldwide camps and competitions acting as ‘home’ for the majority of the annual cycle.

In order to understand the elements that attributed to the development of this successful environment that promoted effective development and enabled several athletes to meet their best potential and reach at world-class level a qualitative methodology was chosen as the most appropriate method for the data collection procedure. More specifically, a case study approach was used. This allows the

researcher to gain an in-depth understanding of a single situation or phenomenon. The participants of case studies might be a person, a program, a project, a concept or an institution. As such, purposive sampling is usually used (Chien, 1981) or according to Goetz and LeCompte (1984) criterion-based sampling. Essentially the researcher established the criteria necessary to include in the study and then find a sample that meets these criteria. Criteria may include age, years of experience, evidence of level of expertise and situation and environment (Thomas, Silverman, & Nelson, 2015). While cases studies have adopted an ethnographic approach in order not only to collect many sources but also experience a specific environment (e.g. Buchanan, 2014; Toms, 2005) the current study aimed to gain a retrospective understanding of expert perceptions, over a long period of time. Therefore, it was deemed necessary to examine the experts' perceptions regarding this long-term process rather than observe a certain time frame of this programme. Furthermore, the researcher was only able to gain access to the participants after the programme had ended post Olympics, limiting data collection options. As such, a qualitative approach was chosen in order to gain an in-depth understanding of the nature of an environment with a successful track record of developing world-class triathletes.

Taking into account that adopting an ethnographic approach was not feasible due to practical and time constraints as it was not possible for the researcher to gain access to the participants prior to the Olympic Games using semi-structured interviews deemed to be most appropriate methodology. As such, the current study used a qualitative approach with semi-structured interviews which allowed the participants to share their experiences in detail and also allowed the researcher to explore more in depth areas of interest by following up with probes (Guest *et al.*, 2013). These specific probes were identified by the researcher for each one of the questions and encouraged

participants to elaborate on their responses e.g., “How the selection process differs to how NB would select athletes?”, “What influences those who do not reach their best potential?”, “What is the structure of the development process of your athletes?” As such, the participants were able to share their experiences and thoughts without being strictly constrained by the main questions asked (Berg, 2004). The adoption of semi-structured interviews also gave the opportunity to the participants to ask for clarifications and make sure they are answering what was truly under investigation (Guest *et al.*, 2013).

6.2.2. Participants

To understand in depth its structure and mechanisms it was necessary to ensure that the key personnel (4) involved in the design, development and running of the programme were interviewed. This includes the head coach and support staff (nutritionist, masseur and psychologist). All participants agreed to take part in the study, although the interview with the masseur did not come to fruition in the timescale of the research. A multinational group of experts working in the environment took part in this study. To reduce the possibilities of the participants being recognized their nationalities are not disclosed, since those details would make it easy for individuals in the area of sport and let alone triathlon to identify the programme under investigation. Participants had worked in the past for the institute of sport of very successful nations in various sports in their respective disciplines. The average age of the participants was 46 years (± 4.9) and their experience working at the elite level in sport was on average 19 years (± 1.7). In addition, all of the participants had completed a PhD in their area of expertise (physiology/coaching, sport psychology, nutrition).

6.2.3. Procedure

The researcher applied for and received ethical approval for the study from the Research Ethics and Governance Committee of Edinburgh Napier University before approaching potential participants. Therefore, three participants in total were included in the study (head coach, nutritionist and psychologist). The researcher sent a recruiting e-mail along with the information of the study to the potential participants that fulfilled the selection criteria. All the participants were informed that it is not compulsory to participate in the study and they would be able to withdraw from the study at any moment. Consent was gained from every participant prior to their interview. They also were acknowledged that in case they agree to take part in the study all the data will be anonymized and confidential as much as possible. The data was stored on a password-protected computer in which only the researcher and the supervisor of the study had access in order to protect the data and ensure complete confidentiality. All necessary actions were taken in order to avoid individuals being identified from any report, presentation or publication, although as there are not many independent elite triathlon environments experts in this area may still be able to distinguish the identity of the participants.

The researcher sent the main interview questions to the participants after their agreement to take part in this study. This technique was used to enable the participants be familiar with the type of questions used in the interview (Martindale *et al.*, 2007). The rationale behind this decision was based on the literature suggesting that when participants have more time to consider their responses the data they will provide will be richer and denser (Burke & Miller, 2001). Two of the interviews were conducted via Skype to accommodate the needs of the participants and one of the interviews was conducted face to face. The time range of the interviews was between 78 and 92 minutes

with an average length of approximately 86 minutes. All the interviews were recorded so as to allow the researcher to transcribe them verbatim and analyse them. In order to maximise the effectiveness of the interviews and enable the examination of the experts' views in depth each participant was asked the same sequence of questions. However, further clarification and probing were used when required (Patton, 1990). Building rapport and comfort with the participants and using neutral language when probing for their responses (Backstrom & Hursch-Cesar, 1981) was used to guide the researcher away from biasing the responses of the experts.

6.2.4. Instrument

A semi-structured interview was developed, consisting of nine open-ended questions, carefully structured to generate open-ended responses (Neuman, 1997; Patton, 1990). This approach was chosen in order to allow flexibility when exploring areas that may emerge during discussions with the participants (Rynne *et al.*, 2010; Nash *et al.*, 2011). For instance, instead of explicitly asking for the philosophy of the programme participants were asked to identify key characteristics of the programme, describe its structure and explain how they facilitated the development of the athletes. As such, the philosophy emerged from the responses of participants during the interviews. More details of the interview guide are presented in table 6.1.

Table 6.1. Main questions used in the semi-structured interviews of the triathlon case study

1. Could you provide us with an overview of the development process for an athlete in your sport?
 2. What characterizes someone who has the potential to become elite? How does this change over time?
 3. What is the process of identifying/ selecting someone to your squad?
 4. What percentages of your athletes reach their best potential?
-

-
5. Have you identified any differences between athletes who reach their best potential and those who don't?
 6. What are the challenges during the athletic career of athletes? Do they change over time?
 7. What do you do to facilitate the development of athletes?
 8. Which coping strategies do athletes use so as to cope with the challenges?
 9. Could you tell me about the use of "others"?
-

6.2.5. Data analysis

Inductive thematic analysis was the method chosen for the analysis gathered from the interviews of experts of the current case study (Edwards *et al.*, 2002). Following an inductive approach requires the researcher to identify themes which are closely related to the data (Patton, 1990). In more detail, the researcher used the following steps: read multiple times the interviews to become familiar with the data while also wrote initial ideas, generated initial codes, searched for themes, reviewed the themes, defined and named those themes and finally produced the final report. Coding experience and similarity inferences were also included in the inductive analysis (Patton, 1990). The comparison of the coded experiences led to the creation of clusters of similar experiences which were used for the development of the themes. Finally, the themes were compared to form the categories. The described process continued until the saturation of the data. Finally, the themes were defined and named and were supported by quotes in the result section (Martindale *et al.*, 2007).

Moreover, the researcher carried out reliability checks in collaboration with the main supervisor (Scanlan, Ravizza, & Stein, 1989). Shenton (2004) has suggested that regular debriefing sessions should be used to reduce the personal bias of the researcher. Therefore, meetings between the main researcher and supervisor took place during the analysis of the data to continuously review the generated themes. This reflective process allowed the researcher to remove any assumptions made and also further discuss points that were under or over emphasized during the analysis. The bi-weekly meetings continued until the researcher and the supervisor reached to 100% agreement in regards to the analysis of the gathered data for the current case study.

6.2.6. Trustworthiness and credibility

Following the recommendation from the literature a number of measures were taken to enhance the trustworthiness and credibility of the findings of the current case study (Patton, 1990). Firstly, the researcher recorded and transcribed all the interviews. As described in the previous section, the researcher made all the essential actions so as to ensure that the questions were open ended and responses were not biased by interviewer's personal opinions. Another method used to enhance the credibility of the data was stakeholder. The researcher sent the transcripts and the interpretation of the researcher back to the participants and all of them agreed that the data accurately represented their views (Patton, 1990). Further actions taken to improve the credibility of the study included: frequent debriefing session with the supervisor (Shenton, 2004), seeking agreement from an expert in the field and using representative quotations (Graneheim & Lundman, 2004). Finally, reflective commentary was also used to enable the researcher to reflect and evaluate the process of the data analysis (Guba & Lincoln, 1989).

6.3. Results

The results section presents the data according to the main themes identified by the analysis of the interviews: 1) the engine room for excellence, 2) athlete selection: key considerations and 3) key processes in athlete development (table 6.2).

Table 6.2. Key characteristics facilitating the success of the triathlon programme

Main Theme	Subtheme 1	Subtheme 2	Subtheme 3
The engine room for excellence	Motivations of the coach	World-class aspirations Driven by helping to change athletes' lives	
	Innovation and utilisation of discipline-specific expertise	Coach knowledge and experience Interdisciplinary approach and wide-ranging experts input	Multi-support staff environment Close working relationships and coherency Innovation and the role of expertise further afield
	Engaging influential parties	Parents, Coaches and Partners	
	Facilitating a world-class learning environment through role modelling		
Athlete selection: Key considerations	Ambitious individuals with strong motivation and potential	Assessment of motivation Coupling motivation with appropriate psychological behaviours Physiological and performance related factors Assessment of performance potential	
	Selecting athletes that will add value to the squad	Assessment of 'value added' attributes	

Key processes in athlete development	Building in opportunities to ‘get to know’ the athletes		
	The development of talent takes time		
	Development rates dependant on interaction between athlete and environmental characteristics		
Key processes in athlete development	Complexities of long-term development management	Holistic and individualized approach Need for apprenticeship Apprenticeship mapping – management of expectations	
	Challenges: A mechanism for development	Natural challenges Use of intentional challenges and response from athletes	
	Key transition – athletes entering world-class status		
	Management of intentional challenge: potential risks		

6.3.1. The engine room for excellence

Motivations of the coach.

World-class aspirations.

The coach is highly intrinsically driven to be world-class, and to be the best they can be. To be recognised as world-class, participant 1 highlighted that the coach needs to be producing athletes who are successful at a World and Olympic level. While the coach wanted to be amongst the best in the world in terms of success; it was clear that external factors such as money was not a big motive. His key goals related to a desire to be the best through maximising athletes' potential, which represents an example of a transformational leader. The coach was also interested in gaining outcome success, however, the foundation of his motives were intrinsic.

'Obviously, he is in the business of being world class himself and to be recognised as that, I think you have to have the medals, you have to have people winning top events. He is very interested in being a world class coach, he is very interested in being recognised, in other words through world and Olympic medals.'

Participant 1

'It is not about the money, it is about being the best you can be. So there are interesting dynamics with that.'

Participant 1

'But I have never really thought about money as very important. If I have enough then that is fine. But over the years I have started to think; well ok, now I have done this for a long time but also I am not making very much money. So the intrinsic motivation was for me to see what tools I have, and what I could do to help athletes. It gave me more satisfaction if I could help somebody who was starting lower rather than somebody who was already higher. I just don't get very much personal reward.'

Participant 2

Due to the nature of funding within the sport, and the drive of the coach to become world-class, the coach regularly invested financially in athletes, akin to scholarships. This commitment was often necessary in order to work with the athletes the coach wanted to. This enabled the coach to help develop athletes he felt had potential, but who didn't have the capability to pay for the necessary coaching and opportunities in the early phase of their development.

‘You have to feed yourself and for the last three or four years, I have also funded some athletes. Up to \$8,000 I would give them, per year for their first year. Because if you have made a commitment to our squad and me, then I figure that I will help you. In the early days I would have athletes that would get better, and by the time they got better they would have no money to go to races. And the federations don’t want to support them because they haven’t got the results yet. So for a number of years after this last Olympics, I have funded three or four athletes per year in my squad of ten. A bit like a scholarship. By the end of the year, they have got good enough to earn some money to pay me back. I was investing in them because there was no other way of doing it. If I wanted to have an athlete if I really believed in that person...So if we needed something for the squad to get a better job done, then I just paid for it, I didn't care who was going to fund it. Nobody was funding it, I was going to do it.’

Participant 2

Driven by helping to change athletes’ lives.

Another key motivation for the coach was the development of the athletes in a holistic sense, over and above their progression within the sport. The coach has a strong desire to make a significant impact on athletes' lives, as people, which shows the coach demonstrates characteristics of transformational leadership. The coach was the key driver of the development process, and his values and philosophy underpin the goals, the nature and the ethos of the environment. This holistic interest is expressed in developing athletes as ‘whole people’, enabling them to maximize their potential and helping them become more rounded individuals as stated by participant 3.

‘It is because I didn't get very much out of coaching her. So I didn't change her life. Before me, she was already an Olympic champion, wealthy woman. I just helped her get back up to where she was before, right? So for me the intrinsic motivation of my coaching was very much about changing somebody's life. Because I don’t make very much money. So I have to have some very special, intrinsic goals that I am interested in.’

Participant 2

‘He is very motivated to make a difference to the athletes, give them an opportunity where they can reach their potential. So if an athlete just wants to podium at a world cup, which is the level below, and he can help them do that, job done, success. Not every athlete can be a world medallist... He is pretty happy to drive to really challenge people to reach their potential, whatever that level is.’

Participant 1

‘I guess there is one thing that coach tries to work hard on is that he has got athletes who have got a global perspective, both on themselves and on other people, and have respect for themselves and respect for what other people try to do. That is to me a more rounded person, a more rounded individual.’

Participant 3

The coach also highlighted his interest in the challenge of trying to develop athletes where other coaches or systems have failed. This seems to be part of his desire to challenge himself, as well as making a significant difference to people's lives.

'He quite likes taking on board people who have been dismissed or overlooked or dropped by the national governing bodies, he quite likes thinking 'well I can do a better job so I am going to take the athletes on, I think they have got the potential to make it' or 'I don't know if they have got the potential to make it but they are a good athlete and I am going to see if I can make a better job than the national governing body who has dropped their funding'. So some of the athletes are aspiring to get into some professional world-class level, some of them are people who have been there and dropped back and others are older athletes who have come in. So it is all a different variety of types of athletes with different levels of potential.'

Participant 1

Innovation and utilisation of discipline specific expertise.

Coach knowledge and experience.

The coach has a strong knowledge base and vast experience working at elite level in different sports, in different roles. During his career, he also deliberately chose to work in challenging environments in order to further improve his coaching skills. For example, he took on a head coaching post, working with athletes of a 'small nation' with no previous success or history in triathlon. This multi-role background and the coach's proactive challenge seeking experiences enabled him to make a big difference to more naturally talented athletes in this independent international squad.

'Sometimes you have scientists who are too science and coaches who are too coachy and sometimes they are not that good at explaining differences. I had an empathy for what it was like to be a coach. I had an empathy for what it was like to be an athlete and then I was a sports scientist also. In that three years, I worked with 15 different sports. It was a wonderful chance for me to have lots of experience in different sports. And at one time in [big nation], I was the go-to guy for sports science for the combat sports, boxing, wrestling, the target sports, like shooting, archery and also in the endurance sports like triathlon or running. So how many people do you know that have that experience in such a wide range?'

Participant 2

'I wanted to find out if I was any good. So I really picked the worst place to develop triathletes. I feel as if my [small nation] experience was like deliberate practice. I picked somewhere that was going to be difficult. At the time there was no role models in sport, almost any sport, the weather is terrible and the funding was terrible. But what I saw was a bunch of athletes, not very good ones, a small group, ten of them but they gave me absolutely everything. I had to take their minds out of the [small nation]. I had to teach them to become citizens of the world. That was the key. Because the kids in [small nation] thought they

weren't good enough. And in the end, many of them became very, very good. All ten of these athletes had careers, real careers. Everyone got onto a podium at an international race.'

Participant 2

'So I think part of the magic for us was having talented athletes, me with some good skills that I developed in [small nation]. So I made the biggest difference when I taught them how to swim properly. At one time I had four athletes in the top ten in the world who were all from no swimming background, but I was lucky enough to be good at teaching swimming. Pool swimming is different to open water swimming. So I think I had some good skills that I would attribute to my learning in [small nation] because in [small nation] I had to find ways, tricks, to improve these people. And I didn't have any talented people with a swimming background, or running background, I had to make them.'

Participant 2

So when I had better athletes come along, they made the transition to higher levels very quickly. I had the skills to be able to do the squad analysis and find out what I needed to do to make the biggest difference.

Participant 2

Interdisciplinary approach and wide-ranging experts input.

Multi-support staff environment. The coach works in collaboration with a nutritionist, masseur and psychologist using an interdisciplinary approach. The sport masseur is usually full-time, while the psychologist and nutritionist work part-time. These part-time roles comprise of providing support from distance, in combination with time spent face to face at training camps, races and major Games. In addition, a physiotherapist has also supported full-time in more critical periods, for example in the build-up to the Olympic Games. Assistant coaches have also been utilised at different times throughout the longevity of the squad.

'I had a full-time masseur for the last five or six years. I had a psychologist I would pay. So I would pay for these things. I would also fund a physio to go into training camps. And the athletes would only partially fund that person. So I would give them cheap, very good physio. So I was facilitating the way that they could survive when they get better. That is the way I had to do it. If I wanted to be world competitive I had to do it that way. But there is only one other coach in the world right now who is like me.'

Participant 2

'I went down and observed in the race for that. Each year, I had seven days of contact, in terms of physical contact, and then I would email at least once a month to say 'hi, how is it going?' to each of the athletes and support staff. Also if they contacted me, or we did Skype, so I was always touching base, just trying to keep contact and seeing how people are. And just working with people. So that was 2009, 10, 11 and then 12, similar but obviously the London race was the Olympic race then. So down there for that. We did a review after that and the coach again decided he was going to go on to Rio and he said 'do you want to join that again?' and I said yes. It is almost an identical process through to Rio 2016.'

Participant 1

'I think more support staff are more permanently around the set up so the coach is a coach, the athletes, there is a masseuse who tends to be there full time, however around the Olympics 2012 there was also a sports physio who was actually brought in for the season before and then for three or four months just building up to the Olympics and that had a huge positive impact in keeping people physically together and non-injured, leading up to that.'

Participant 1

However, there are some constraints in this environment particularly related to limited finances and opportunities. Therefore, as described by participant 1 if those part-time support staff were able to dedicate more time to the athletes this would provide an improved support for their development.

'But maybe the sport is changing. The sport is changing, over the last eight years. It is going back into a sport that has less money. Many sports there is not very much money. So when you get beyond a certain level, you have to be with a national coach. Right? There is no money. Our sport is starting to go back into that. For about eight, ten years, there was a fair bit of money around, people could go and win races and earn sponsorship but now it is getting a smaller and smaller package. And that is affecting the ability for me to do my work.'

Participant 2

'Ideal world, I think an environment like that, if you could have the coach, psychologist, the nutritionist, a physio, the massage all full time there, I think [you'd see a] huge difference.'

Participant 1

Close working relationships and coherency. The support staff members work closely with the coach and each other, espousing an interdisciplinary approach. In fact, due to the part-time nature of some of the support staff, much of the impact they had is likely to be 'through the coach'. In addition to this, each member has certain individual responsibilities typical of those roles. For example, the psychologist had a remit to develop and introduce psychological skills and education to the athletes where appropriate. While the nutritionist educates the athletes regarding weight management and helps them optimize performance based on what and how much they drink and eat.

'So it [the conversation] is much more process orientated and we reflect on that. Through a conversation, you may give them [athletes] a couple of strategies, like planning, or goal setting, and we would clarify a few things, 'the coach says you should be doing this tactically, not that - what do you think?' This is then incorporated into a plan, which includes observing and reflecting on how well they focus and execute the plan [processes] under pressure...so I'm giving them some skills, but importantly ensuring clarity and communication with the coach, and also integrating some process orientated review afterwards and building from there. However, the biggest impact I have on the athletes may

well be through my conversations with the coach, and how this impacts how he works with the athletes on a day to day basis.'

Participant 1

'We put them on a low fibre diet for a few days leading into races just to minimise the amount of gut upset so just educating on what that means, helping them manage the hunger levels when they are on a low fibre intake cause most of these athletes are on very high fibre intakes generally. Just supplement use, if they are using it, what should they use. Checking they are using safe supplies. We have had periods of time where we have done some sweat rate testing, and some hydration monitoring, just to make sure they are understanding how much they actually need to drink to optimise their performance, so there has been a number of different aspects from a nutrition side that we have done over the years. Basically to help their development and their understanding and their knowledge. And also their trust in that whole process, particularly when it comes to weight management.'

Participant 3

As described briefly earlier when discussing the interdisciplinary approach utilised; significant efforts are made to ensure that the key messages and aims of the team are coherently linked together. Therefore, support staff members are very conscious to ensure that the work they do fits well with the messages that are being given by the coach and other members of staff. This ensures the coherency of the environment, messages, goals and expectations from the athletes.

'I might say 'let's talk about a race plan' but then it would be integrated with what was being reinforced by the coach and linked into what they actually do and change. And that is essential from a psychology point of view because of something as simple as trying to get someone to focus very much on the process of a race, if the coach was very outcome orientated and always talking about winning this and that, then I would have a very limited impact. If I am suggesting something the coach is also reinforcing, then now it is going to happen. Because anyone who is important is saying 'this is what you should be doing' so then they are highly likely to do it and eventually we might see change. I think the coherence between significant others is crucial. The coach would speak to significant others, parents, partners, other coaches, national governing coaches involved, to try to get a good understanding of what is trying to be achieved and to get everyone singing from the same hymn sheet. That would be the job of the coach.'

Participant 1

Not only do the support staff members work in close collaboration with the coach but they also support the coach to maximise his ability to function well. For instance, the role of the psychologist would include helping the coach to manage themselves and function effectively despite pressure or any other stressors and challenges that may exist.

'For him as a coach, I have been talking about the athletes all this time but actually, psychologists work with the coach has been huge as well, so me and him talking about his coaching and about him managing his life and his stress is also part of it. Because if we

have a well-functioning coach, it is likely that the relationship and communication will be better with the athletes, everyone is happier then if suddenly the pressure is on him and life is super tough for him, that is going to impact on how he interacts and how the athletes are.’
Participant 1

Additionally, the staff offer support to the athletes from a confidential and remote position. For example, this may be particularly important in relation to weight management from a nutritionist perspective because it can be an emotional journey for athletes (especially females), which may create tension to the coach-athlete relationship. All these efforts are in line with the plan designed by the coach and reinforce the existing goals and expectations.

‘To be at the best level, at the top, at an Olympic Games, these guys have to be lean, guys and girls. That is not necessarily something that comes naturally for a lot of athletes. It is something that has to be worked on. And the closer you get to that leanness, the more you have to manage yourself very carefully. So I have helped him at times in terms of body composition and the coach does most of that now, but just assessing body composition and giving them realistic targets, how to get down there. A lot of the stuff I have done is more just him bouncing ideas off me. And then he deals with the athletes directly and then there are other times where it is important for me to take that out of that relationship. For me to be the one who talks food. So he has got a nutrition degree and he has got a very good knowledge of nutrition and he observes, he is there on a day to day basis to observe what the athletes are actually doing but sometimes it needs to be taken out of his domain because it becomes a conflict. Because it is emotional. Particularly with girls. That is where I have been the other person.’

Participant 3

Innovation and the role of expertise further afield. Other experts are invited to training camps in order to provide up to date training methods or knowledge to the athletes and the coach. This use of experts ensures that key messages are reinforced from other experts (who are not part of the environment) and also provide up to date knowledge of training methods or mental skills for example. The coach is highly motivated to stay up to date on research developments in order to identify novel ways to help the athletes as much as possible.

‘He is always talking to the expert in the field of the latest technique or strategy or technology or whatever, he might bring them in to talk to people or he might take them to camp or he might go and see them or speak to them and come back and tell everyone. He is using other people, expertise in the world to reinforce and bring new information into the squad to try to keep it current, up to date and cutting edge in terms of the things they are doing. Or he might find a research article and go ‘read this’, ‘you read this athlete and then present it and we’ll talk about it’. On anything, on training stuff, on mental skills or whatever. He is always using experts and knowledge out there. To impact and reinforce things in the squad.’

Participant 1

Engaging influential parties.

Parents, Coaches and Partners.

In order to reinforce this coherence, the coach collaborates closely with the families and significant others to ensure that everyone who may have an influence on the athletes is on board with the existing plan. This allows players to be focused on their goals, have a clear understanding of the expectations and the actions that need to take in order to achieve the best possible results. In addition, significant others support those efforts since they are aware of the plan that needs to be followed.

‘So, for example, let's say an athlete was having a problem, and the athlete was unhappy, then it wouldn't be unusual for the coach to be sitting there, with the athlete and on skype their mum or their other coach, having a three-way conversation. So the coach is speaking to the athlete and their mum, and there is a very open dialogue about what has happened and what they are doing about it and ‘don't worry mum' and that is partly just disseminating the knowledge and communicating that this is the plan and this is what they are trying to achieve. He might ask the athlete to go home for periods of the year. It is quite important that they don't go home and come back overweight and don't train properly. It might be like ‘mum, I know you like feeding up your son when he comes home but don't do it, they have got to stick to this sort of diet’. So you would ask people to do stuff. Or it might just be communication.’

Participant 1

‘So there are some of the athletes who have been in the programme who have been married or engaged or have a significant other, the fact is they are going to travel a lot. The coach has camps in different countries, according to what is best for their preparation at that time. And so if that significant other is not a stable relationship and fully supportive of the process, then there is always going to be undermining or going ‘why are you going away again?’ It just undermines the whole process and they start to cut corners. ‘I'll come out two weeks later because I want to spend a bit more time at home.’ Or ‘can I just spend this period of time at home training? Can't you just send me a programme and I'll train at home with my previous club?’ So the support of the significant other, if they are younger athletes, their parents, it is important that the parents understand how he operates and especially with younger athletes it would be the kid that goes home and says ‘the coach did this, and coach made me do this ...’ or their question about ‘why aren't you performing?’ It is giving them the realistic expectation of what this is going to take. Those relationships are really important to have. For him to have with family and significant others just as much as it is to have with the athlete themselves.’

Participant 3

‘He is communicating with people who might influence the athlete, coach, parent, partner, whoever might do, to try to get everyone helping in the same direction.’

Participant 1

Facilitating a world-class learning environment through role modelling.

Notably, the coach treats the athletes equally rather than using a hierarchical system similar to the federations which might be difficult for some athletes. This process recognises that everyone has something to offer and that standards of excellence are the same for everyone. This facilitates healthy competition and openness to learning between the athletes. Participant 2 highlights that the high level of success of the group may well have been more to do with the healthy (world class) competition within the group rather than any coaching expertise. Also, athletes from different backgrounds complement the development of each other and some of them act as role models (more experienced or exceptional swimmers etc.) which is one of the key characteristics of transformational leadership (Bass, 1985).

‘I was quite tough about who I picked and I was very interested because in a squad you can’t have any premier athletes, so I treat everyone the same. It is not a hierarchical system. So I am the same as the lowest athlete or the highest athlete, it doesn’t matter. I treat you all the same. So sometimes that is a little bit weird for some people. Because the federations often have a hierarchical system.’

Participant 2

‘We had a test event this year in Rio and my athletes of the past, they came third, fourth, fifth, sixth, seventh, eighth, ninth, tenth. So this is like the test for the Rio Olympics. And athletes that I had helped develop, they were eight out of the top ten. So now I am looking back thinking I had something very special going. And part of the thing is, maybe not my talent, maybe it is me joining forces together of different nationalities, who were not competing in the same country team. I was providing an environment for them to develop but I was also one of the first independent coaches.’

Participant 2

6.3.2. Athlete selection: Key considerations

Ambitious individuals with strong motivation and potential.

The coach is looking for individuals who are extremely motivated to achieve excellence. Consequently, athletes who are selected for this coaching environment often have some kind of motivational background story. For example, they may have been dismissed or overlooked by their federations or other coaches, or some other situation that means they are extremely committed and driven to succeed – almost desperate. This is what the coach is looking for.

‘So imagine you don't quite fit into your federation. Where do you go? I just happened to be somebody who did well with a few people and then I always got the people who were a little bit difficult or didn't quite fit in. But also I got people who moved the country to be with me. They would leave their family for me, sometimes I have a wife with a husband at home, she would come, she would leave home for nine months a year. So I had athletes that were very motivated. And they would use their own money. Mostly they would not be funded. And so very motivated people. You think of how many people will invest so much money to travel the world [to develop]. It is not fun developing, it is hard work and it is not easy.’

Participant 2

‘I think someone has to be super, super committed and have a strong desire to want to be elite, for whatever reason that might be, that could be because they have got a huge desire not to fail or it could be something from their personality or from their past, this huge drive to the best or to achieve something very special, so they have to be extremely driven, because the things they have got to commit take a long, long time and huge commitment of being away from home and going through difficult times, going through injuries and going through disappointments and all that sort of stuff, they have got to really, really want it.’

Participant 1

‘I am looking for something a little bit special. Mostly they have got to have an ability to improve and work with the coach. And so their desperation to get good, the ability to work with the coach and also a little bit of crazy that tells me they will do more.’

Participant 2

Assessment of motivation.

There is no advertisement or athlete scouting. Athletes who join the squad always approach the coach, not the other way around; meaning that there is an element of self-selection at an early stage, the athletes want to be part of the squad and are very motivated. Additionally, the coach, will ‘test’ the athlete's motivation by asking them the reasons that led them to want to be part of the squad.

‘We have never advertised. So they are all people who have approached him, he will obviously have a look at what their history is in terms of who they have been coached by before. And what their results are.’

Participant 3

‘If they do express an interest in being part of the squad then he will probably challenge them a little bit and say ‘why do you ...’ try to gauge a little bit of their desire to do well, see what they are willing to give to be better.’

Participant 1

In addition, the coach speaks with the partner/significant other of the athlete willing to join the squad in order to identify whether they are committed to supporting their effort. Their commitment and support are also essential for the effective development of athletes.

‘Generally speaking, so he tries to always do that with the support of the previous coaches and other significant people around them. If the person is married for example, he will have the husband sit in on the interview, or the wife sit in on the interview, that sort of stuff, so it is kind of an ‘is this a team approach? Are you both committed to this?’

Participant 3

Coupling motivation with appropriate psychological behaviours.

As mentioned above, the coach is looking for athletes who are motivated, who have the desire to achieve excellence (whatever this might be for each individual). However, this motivation has to be coupled with athletes who are capable of working hard consistently and able to do simple things well without overthinking and can make the most of the learning opportunities that are presented. Those attributes are considered to be essential requirements, and as such, the coach will use these characteristics for selection criteria to the squad. According to participant 2, potential to achieve excellence is deemed to be closely related to these psychological attributes.

‘First of all, they do the work consistently and at a high level. Because you know, people talk about psychology on race day, mentally tough, but actually, it is not about that; it is about the work that you do every single day. It is about how relentless you are. So the first thing that I see about the good athletes is that they drive themselves.’

Participant 2

‘It is hard work – every day hard work. That is it. That is how we do it.’

Participant 2

‘I think it probably relates to some of the psychological stuff in terms of being able to progress within that environment if you like and listen and learn and be able to take on board stuff. I have seen some very injury prone people who still succeed and I think that is because of the way they cope with the injuries and the way they manage themselves even though they are injury prone, they have still achieved and still maintained in the squad...because triathlon is much more about learning and development than it is about the racing.’

Participant 1

‘A lot of it is to do with coping strategies, keeping things simple, not over thinking everything and being able to commit themselves to the almost simple lifestyle. It is not super complicated. It is not like they are being asked to do very intricate, complicated things. I think it is much more about doing simple things, very well, very consistently over a long period of time. And the longer someone can stay injury and illness free, put big blocks of training together, then the more they are going to be able to realise their potential, so it is a lot about management.’

Participant 1

‘To be a consistent performer at that top level takes so much more work, you have to be a full-time athlete to do that. So you have to be able to commit yourself to, this is your life, your life is train, eat, sleep, go back and do it again ... do what the coach has told, travel

around the world, in and out of a suitcase, in unfamiliar environments, where your family isn't around, and then perform on the day when it comes to a race.'

Participant 3

'That resilience of mindset, that resilience of ego, that resilience of just being able to pick yourself up and do again and that it is not, that the outcome expectation isn't always about being the best in the world because there are only so many people that can be the best in the world at what they do. Otherwise, there wouldn't be such a thing as 'the best in the world' because everyone would be the best. It is that kind of sense of confidence in what you know you have the capability to do, and being able to apply yourself and be flexible enough to learn from your mistakes but also to learn from others, to have respect for other people.'

Participant 3

Physiological and performance related factors.

The fundamental focus on psychological attributes was not to take away from the crucial role of physiology and other performance factors. The participants highlighted that the success of athletes is also underpinned by physiological attributes, so some aspects of performance potential must be apparent. For instance, it may be body structure or the fact that an athlete is a good swimmer, has high VO₂ max, is very skilful or tactically good. However, participants agreed that psychology is the factor that will make the difference. This is mainly because their psychological characteristics are linked with their capability of getting the most out of themselves and pushing their limits in order to maximise their potential.

'They have to be lucky enough to have some innate talent and physical abilities that are going to help them do well, whatever that might be. Someone might have very, very strong engine. Huge VO₂ max, for whatever reason whether it is genetic or they have just trained forever. Or someone else might just be very skilful, very talented swimmer, very good technically, very good tactically, very clever, they might not be quite as fit but they make up for it because of other aspects they have got. So there is a whole combination of physical aspects that are necessary to compete at that level. Not everyone can do it. However, they do need to make the most of themselves. I think that is where there the psychology comes into it.'

Participant 1

'To be at the very, very top but if you look at someone like J, who won a medal in the *Major Championships*, if you looked at her physically, she is not the physical specimen that you would expect to be at the top level but she worked hard and she has got a good engine. But she still has to be managed very, very carefully. She is not physically robust and she is getting older. But you can squeeze absolutely everything out of someone and get something, get their best every performance and that is regardless of what their physiology is.'

Participant 3

'But the desperate ones, the ones that can't get any better or have already tried or don't fit, or booted out, not good enough to make it. So over the years I have picked a lot of people

who have been on a programme and booted out or I see something magic happen in the race but I see that I can also pick up on something else that can make a difference.'

Participant 2

Assessment of performance potential.

Moreover, the coach follows the triathlon competitions and has knowledge regarding the performances and abilities of the current athletes. The coach would also speak with the previous coach/coaches of an athlete. Useful information with regards to weaknesses, strengths and needs of each athlete can be obtained through this process as well. Therefore, even before an athlete approaches the coach, he is already aware of the player's performances, previous training plan, strengths and weaknesses.

'He has got a strong knowledge of the sport if you like, there are not many people he is not aware of in terms of who is progressing, he has lots of contacts in all the countries and in junior ranks and obviously the world cup level he will know who is there, if you like, he will know who has got funding, who is working with which coaches and who gets dropped from funding. So I think because of that he has got quite a good knowledge of people's performances and he may have inside knowledge from their coaches or other people they know, teammates, whatever, so in that sense, he has got a head start. He has followed people for years or if someone just comes on the scene he is like 'I am interested in that person', let's have a look, so he will look at performances, he will look at the knowledge of how they have maybe handled challenges and bounced back and that sort of thing.'

Participant 1

'He has spoken to previous coaches, if he has had an athlete who has been coached by other people before, particularly if they are coming straight from another coach, he wants to make sure that the coach actually knows that this is going on, but also to find out what the coach's experience is in terms of what things have they been working on, what areas of weakness do you think needs to be looked at.'

Participant 3

Selecting athletes that will add value to the squad.

As mentioned earlier, one important element of creating a world-class learning environment was related to athletes being important role models and healthy competition for each other. As such, another essential criterion for selection was both the character and abilities of the athlete. More specifically, the coach tries to identify individuals that will add value to the squad as a whole, which is a strategy that has been documented in other elite environments (Hodge, Henry, & Smith, 2014). For example, someone might be a very good swimmer so he/she will challenge the rest to become better. Additionally, he may select

someone based on his or her personality if he believes that this will improve the environment of the squad. The balance of the group is of vital importance therefore when selecting, the coach assesses the personality of the athletes and takes into consideration the potential risks and benefits for the whole group. For this to happen, the psychological profiles of players need to be in balance; if within the squad someone is too dominant this could potentially have a negative impact on the whole squad.

'Sometimes he takes on athletes who are already at a world-class level, or who have already got world medals, Olympic medals, it just depends partly on who wants to join his squad and who he wants in the squad to make the squad function. He is always thinking about the squad if different personalities coming into the squad would add value in different ways. It might be that someone is a really, really good swimmer even though they are not world class at everything, they will help the others lift that aspect. Or it might be that he brings people in that he thinks will add value because of their personality, they will add value to the squad environment. So he is not necessarily thinking everyone can reach an elite level [world class]. He wants to help that person reach their potential, and they add value, so therefore that is fine.'

Participant 1

'Trying to make sure that they get along as a group. That is one of the things that I think has been successful in this programme, is that whilst they are competitors against each other, there is a friendly nature within the group, so that they can actually comfortably spend time with each other in a social setting as opposed to it always being competitive setting. He is fairly careful in how he selects people to come into the programme. So make sure there is a balance, there is no one person who is dominant. He might have people who are good strong runners but not as strong at swimming so that at swimming, somebody else will be more dominant.'

Participant 3

Assessment of 'value added' attributes.

In order to assure the balance of the squad, the coach conducts a detailed interview with the prospective athlete including a psychological profile. This allows the coach to have an understanding of the character of the prospective athlete and identify whether he/she would fit in the squad without ruining the balance. Moreover, the coach will ask and value the opinion of the rest of the athletes before deciding whether to give a prolonged trial period to the prospective athlete.

'He will always do a detailed interview with them, either by Skype or face to face. Then almost always will do the psychological profile as well. Basically, he asks them some hard questions in terms of 'why do you want to come to the programme, what do you think you are going to get here?' and then he will usually ask the rest of the group what they think. It has always been, 'ok guys, I have had a request from this person, what are your thoughts?'

And so if it is going to be someone where people go 'oh I hate her, I can't ...' or 'she is just a b*****' or 'he does this' or 'I don't like his attitude' or whatever, that is often a strong indicator. Whereas if they go 'oh yes, whatever' or 'yes, that sounds good' then it gives him an idea of what the rest of the current group are going to be like when that new person arrives.'

Participant 3

'And also he does a psychological profile before he decides. To see partly their communication styles and things like that, but also so that he can make sure that there is not too many dominant in one area in the programme at one point in time because that creates a bit of instability.'

Participant 3

Additionally, athletes/staff members will be invited for trials in training camps, which gives a chance to the coach to review their input and decide whether they would add value to the team if they join. When the trials are positive the coach will give athletes a block of time (e.g. six months) for identification and selection.

'Then sometimes he will say: ok, why don't you come along for ten days and have a little trial, six weeks ... He might get people to pop in and be around the squad for just a short period of time, almost like an invite, a bit like he did with me in his "come and review our system"'. I am a psychologist, not an athlete, so I came in for a few days, did my thing, went away and he would have been thinking did the athletes like him, did I like him, was it useful' as well as what information is there, will he fit in?'

Participant 1

'They might get an opportunity to test the water, at a camp or something and then they can come in and he might say 'ok, let's get you in six months' and then give them a block of time and the identification, selection, is ongoing.'

Participant 1

6.3.3. Key processes in athlete development

Building in opportunities to 'get to know' the athletes.

Another aspect of the selection and early development process is that the coach will dedicate time to try to understand the athletes as much as possible. For example, athletes may be encouraged to stay in the staff accommodation (partly to help with expenses, as it would be free of charge) but importantly in order to spend time with the athletes to get to know them better. This allows the coach to understand the athletes; their habits, their coping skills and their needs in order to create their development plan accordingly. This approach also enables the coach and nutritionist to teach basic skills to the athletes such as cooking skills or budget management that are essential for effective development in the long-term. Essentially, the

selection of athletes and getting to know athletes is integrated with their development because the coach has a clear understanding of an athlete and their needs only after knowing them 'overtime' and seeing how they respond to different situations and/or under pressure.

'So generally when we have got a new athlete in the programme we have a period of time where they live with us, so we can assess, both of us can assess what their coping skills are, how good they are at looking after themselves, their cooking skills. We have taught some kids how to cook. Just basic sort of self-survival skills, what sort of things do they purchase when they are buying food? Are they going for the most expensive items which are totally unnecessary and therefore are always going to be an issue for someone who is on a low budget? That is something that we have done. We have also postponed their payments so they can pay when they need to pay. Which means we cop a hit in terms of the financial stability of the programme, but it is just basically making sure that they can afford ... giving them some leniency in terms of whether they can ... sometimes it has been six to twelve months where they haven't paid any coaching fees because they can't afford to. Even loaning some athletes money to get them through.'

Participant 3

'The identification and selection is integrated within the development and ultimately it is very difficult I think to pick out potential without seeing someone over a period of time and seeing them under pressure in different types of situations.'

Participant 1

'There can be a period of time where the coach is learning about the athlete, so it is not the coach never makes mistakes, it is not the athlete never makes mistakes. Sometimes, for example, the coach will push, push, push, push and then an athlete gets ill or burns out or something goes wrong and has to take a period of time off training. The coach says 'look, that is my fault, I pushed you too hard, I didn't listen to what you were saying about how far you can go'. So the coach is learning about the athlete as well over a period of time. Yes, so that does take time.'

Participant 1

The development of talent takes time.

The coach and support staff espoused that the development of talent is a long-term project. As such, the coach will give a number of opportunities to the athletes to prove that they can make it. If they fail to do quickly or first time of asking, the coach will guide them, challenge them and give them a number of opportunities in order to assess how they respond and how they progress. If they fail to meet the coach's expectations after a more prolonged period of time (up to 18 months) after opportunities for change are given, then the coach will ask the athlete to leave. Similarly, athletes that cannot fit into the environment or cannot cope with the challenges may decide to leave the team. Taking these potential situations into

account it should be noted that, according to the participants, at least three-quarters of the athletes who joined the squad managed to reach their best potential within 2-4 years.

'If it is select, and now you are in the squad then that is 'job done' but if it is 'am I going to keep you in the squad for an indefinite amount of time?' then he is always, if he doesn't see progress over a certain period of time, or if he doesn't feel that he can help, or the athlete isn't changing when he needs them to then it will be 'see you later'. I would say he would give people 18 months-two years, so he wouldn't say 'you are not producing, you have not changed in four months, you are out'. He would say 'it takes time', or if there was an issue of some sort impacting on others he would tend to keep an athlete for a period of time, and watch them under the challenge of racing, under the challenge of the environment that they are in, see how they progress and he would be pushing buttons trying to get them to change, and develop, if they just really, really didn't change and he didn't see any future then he would ask them to leave. Equally, athletes can self-select out as well.'

Participant 1

'When for whatever reason, they don't feel they are progressing enough or they can't handle being away or someone lures them away with 'look we will give you funding now'. But if someone went away for those reasons I imagine he would think 'they have not really got the values that I am after anyway.'

Participant 1

'75% have reached their full potential whilst in the programme. And I would say 80-85% would have reached it within three to four years have left the programme, having been in the programme for long enough that they developed some good skills, understanding, that sort of stuff. Not someone who was in the programme for six months. Someone who really did get a good grounding of development in that programme would have reached their potential. Actually, I would even shorten that, within a couple of years afterwards. There are a few examples of that that I am thinking of, that would take it up a little bit higher. I would say it is a pretty high number, I would say 75% within the programme itself.'

Participant 3

Development rates dependant on athlete and environmental characteristics.

The participants all reported that the progression rates of the athletes varied enormously depending on a variety of factors, some of which were hard to understand. However, the ability of athletes to trust the process, build a strong relationship with the coach and commit themselves to the mental and physical challenges were often the ones who progressed at faster rates.

'They progress quite differently sometimes. So some people can come to the squad and progress very rapidly and other people take time and just have a very slow progression or a very gradual progression so there is quite a bit of variety in terms of the progression rates. I would say that part of the progression rates probably does depend on how capable the athlete is to take on board the type of environment that they suddenly find themselves in. So in a way, there can be no hiding place from that. Some athletes can just take on board that physical and mental challenge and make progression and make a change. Those ones are often the ones that get very quick progression.'

Participant 1

‘So if the coach has got a plan in his mind about what needs to be put together here, and they follow that and they fully commit to it and they concentrate on it, and they spend a lot of time trying to achieve that, whether that is related to the training or the recovery or whatever aspect of it, they tend to make gains because they are then doing what he is asking. If someone is always battling and struggling to commit themselves to certain things, because they are either too challenging or they disagree or whatever it might be. They may be scared of failing, then that causes a slight inconsistency in their approach. It is not to say they don’t discuss stuff because athletes do say ‘I think this, and I think that’. The athletes learn to understand themselves very well, and the coach can’t access all of that information. An experienced athlete can say ‘look I need to have an easy day to day because I can feel that I am burning out a bit’ or the other way ‘no it is ok, I can go’, but if the coach trusts that the athlete is on top of understanding themselves, then they can compromise on it or they will work as a team. But certainly early on, I think athletes don’t necessarily know what the right thing is and so those that tend to go ‘I will commit myself to this experiment or for this time I am here in camp’ they tend to make the most gains.’

Participant 1

‘I would say the key thing, people who get the most out of themselves, it comes back to the psychology really and how that psychology is applied within the relationship with the coach, the fact that they are in this environment away from everything they have known before, their ability to learn and take on board information and become better, all that sort of stuff.’

Participant 1

Having a trusting relationship with the coach and following his plan appears to be influential for the progression rate of an athlete according to participant 3. Notably, female athletes usually responded better in this particular environment which could be attributed to the coach’s attitude or to the personalities of the athletes.

‘I have even seen some who don’t necessarily have engine capacity that are willing to learn and to listen and to change things like technique to become more efficient as athletes, to change their body composition. They are willing to trust the coach and the direction that he has given and basically will follow ... If the coach says ‘jump’ they will just go ‘how high?’ and with that, there has to be a certain amount of robustness.’

Participant 3

‘There is something sometimes with boys they don’t want to listen. That is the difference between coaching guys and girls, girls go ‘he says jump’ and they say ‘how high?’ and the guys will go ‘why? Tell me why?’ Obviously, there are successful boys and they respond to someone so whether it is his coaching style or whether it is just the particular individuals that he picked and that is maybe the reason why they hadn’t been successful until that point of time. They would be people that basically didn’t invest in that trust process. They weren’t willing to give everything and follow the coach’s instructions.’

Participant 3

Complexities of long term development management.

Holistic and individualized approach.

In line with the coach’s dedication to developing athletes holistically, the coach and support staff focus on long-term goals and provide individualized support and feedback to

the athletes in the squad. The holistic nature of the environment is characterized by realistic goals and expectations, management of short-term/long-term goals and individualized focus on improving athletes tactically, physically, mentally and technically, developing the athletes as triathletes, but also people.

'Development and racing are two obvious examples but he is looking at a very holistic picture, he is looking at the athletes' characters and the values that they hold and how they carry themselves, how they interact with people, as well as how they train and how they recover and how they race. It is a very holistic kind of programme. That is because those things are important in achieving potential.'

Participant 1

The participants also emphasized the fact that the coach provides individualized feedback and tried to improve every aspect of the athletes. When comparing this approach to an Olympic swimming coach for instance it is easily understood that this kind of support and attention cannot be taken for granted at elite level in triathlon. This approach which is based on individual needs, weaknesses and strengths helped athletes of this environment to improve technically, mentally, tactically and physically in order to get the most out of the athletes is strongly linked with the transformational leadership theory.

'Many of these athletes had been with very, very good swim programmes before but the swim coaches weren't able to help them. It is because as a swim coach at a high level you only come across good swimmers who learn how to swim when they are eight or ten. You never come across a 22-year-old, or 25-year-old who never knew how to swim.'

Participant 2

'The coach [of the triathlon squad] works holistically so he will spend a lot of effort talking about technique in the swimming pool let's say and give them individual feedback on 'you work on this, you have the band and you do that and do this, go away and do that' and you might have a squad, a national coach working with a national squad in the lanes next to you and they are just going 'right, four eight hundred, freestyle, go, this time ...' then they will do it, finish 'right that is the session done'. Do you know what I mean? No individual, no input, just literally I am physically training you now. You are going to do this swimming and then you are done. 'Well done, out you get'. There is no attempt to change the technique or individualise anything so you can only assume that is not as effective. They are just working on the physical but he is working on the whole range. I can't give specific examples of who is good and who is not so good but certainly I know that there is a range of different levels of effectiveness and different levels at which people believe that the environment has to develop everything, mental, physical, technical, tactical, some others are much more physiological based and that is that. Some coaches get more athletes through to world class level so you have got to assume a coach who can bring in developing athletes at a world level is probably more effective than someone who either only has world class and they don't really add value or he doesn't produce.'

Participant 1

Need for apprenticeship.

Usually the national federations fund athletes according to how they successful they are, however as highlighted by participant 3 more funding, attention and time is required in the development of younger athletes.

‘You look at national federations, they are funded according to how many medals they get. They are looking at ‘is this person going to win us a medal?’. They invest their funding and they are like ... if you look at the way a lot of federations are structured at the moment, they are not putting much of that funding into development.’

Participant 3

Examples were given highlighting the negative consequences of talented athletes being pushed to compete too soon by federations, instead of being given the time to fully develop before racing at elite senior level. If athletes compete too early at elite senior level, with high expectations of success, it is likely that they will fail and consequently cope poorly. If this occurs because of the excessive pressure or unrealistic expectations then it is likely to be connected to a poorly thought out the development plan, and high rates of drop out. As such, it was highlighted that nurturing time is essential and in order for this to happen federations need to invest more in the development of athletes.

‘I have seen a number of federations, having worked across a number of federations now, basically put them up on a pedestal and treat them as the next new miracle that is going to come into the sport, which puts a lot of pressure on at a very early age, when they are not psychologically prepared to deal with that, and to deal with the fact that they are not going to be the best of the best when they get into that senior elite level. They are not prepared for the fact that we are going to have to go back to square one a little bit. They go through the ranks. Which for someone who goes from under 23 to senior and to stay at the top level, like to stay at the top ten or top fifteen through that process, is extremely rare. I don't think I have ever seen it; certainly not the sport of triathlon. So they kind of get this success early on and there is this expectation they are always going to be successful and then they are not when they start their transition and that tends to be problematic. And I don't think federations and coaches, private coaches maybe a little bit more aware of that, and certainly the coach has been more aware of that and tried instilling them with the expectation that they are not going to be successful ... federations will give them a lot of money and put a lot of pressure on them in terms of that level of performance. That is where they tend not to cope and fall out of the programme or fall out the squad ... but often fall out of triathlon for a while.’

Participant 3

‘It is something that I have seen numerous times and I can give plenty of good examples of, where a young kid, comes through and they are very talented, they get into it with a good coach and we have even seen it at Olympic selection level. So if you look at the Olympic selections for the [big nation] team of 2008 in Athens, there was one young girl who did extremely well in the selection races and obviously qualified herself through the selection

racers, and they put a lot of expectation on her and she failed dismally. In fact, I don't think she even finished the race in Athens. And then fell out of the sport completely. So that is one extreme example, and that was probably someone who was selected because of the way the selection process was, but then wasn't nurtured through that next period of time, in terms of what is a realistic expectation. And had never been an athlete at the top.'

Participant 3

Therefore the need for a nurturing developmental period of apprenticeship is of paramount importance especially for the young talented athletes who want to step up and compete at senior elite level. As described by participant 3 a rushed introduction coupled with high expectations may lead to drop out. As such, time for development is essential and as such athletes may need to participate in less prestigious races because they will gain experience competing against experienced athletes. Triathletes seeking immediate success are likely to get frustrated as World Series events are increasingly demanding and competitive, at the same time as reduced financial rewards.

'And then to go to races and come 50th is very demoralising. And that is the reality, when you are a young developing athlete, trying to get into that top-level field that is basically what you are facing. With the generations that come through now, they are not willing to put in the years it takes to work through that. I think you have got to know that you are not always going to be the best athlete, and you need to be prepared to put in time, it is almost like an apprenticeship, you have to be prepared to put your apprenticeship hours in, it is going to take three or four years where you have some very disappointing results, you might have a couple of good ones just to keep you going. Now the thing that the national federations all tend to do is they will go 'you can only race the top level races, we are not going to let you race the local, little race in Mexico that could earn you a lot of money, because it is too close to this most important race'. So the little races where they could actually be successful and have some good results, they are less and less being given exposure to because if they are a good talent, the national federations will go 'no, we want you to just focus on these high-level races'. So you are just faced all the time with this disappointment of not being successful against your peers. But your peers that you are comparing yourself against are very experienced. Sometimes athletes who have been in that for ten years, and you often lose sight of the fact that they have had to do their apprenticeship and they weren't always that good.'

Participant 3

'Hadn't even had a lot of exposure to the world cup series, the big series where the elite's actually race. Hadn't had much exposure to that and I think there is a level of intensity in those races, and even a level of aggression may not be the term to use, but it is pretty cut throat. People will swim over you, people will dunk your hair, rip off your goggles, and sometimes that is accidental because it is just a frenzy of that number of people in one space at one time, but sometimes there are tactics on the bike and things like that, and even tactics sometimes when they are running, it is cutthroat. The reality is the way triathlon at the top level, at the elite level has progressed, there are now 50 or 60 starters at the start line, both in the men and women, there is not a lot of difference in the men in the top 30 placings, if you look at times, and probably in the women in the top 15 placings, so the difference between the best athletes and the rest is quite small. So you are putting, young developing

athletes into that highly competitive environment when they have come from a junior development programme and the depth of talent isn't as strong and the number of people in a race perhaps isn't as high, and it can be very, very intimidating.'

Participant 3

Apprenticeship mapping – management of expectations

It was also highlighted that realistic expectations are vital part of this apprenticeship period for young talented athletes. Participant 3 described that federations tend to raise the expectations for young athletes without staying focused on the long-term plan. Federations and coaches need to give athletes development time and clearly identify when their expectations should be met without altering this plan unexpectedly. Therefore, expectations should not be shifted based on current performances since this may become disruptive for the long-term plan designed for each athlete.

'I used to do some work with the [big nation] rowing team and at one stage they brought into the Institute of sport, four young girls. The idea was to develop them as talent. And so there was a lot of discussion around 'what are the expectations in terms of progression and are we focused on body composition or are we really just looking at how they are progressing with training and progressing their training load?' And initially, that started off really well. There weren't treated and the expectation wasn't that they would be the top people, they were training amongst the top people but there was always like a 'but we expect they are not going to be at that level, so we don't expect them to be as fast, we don't expect their times to be as high, we don't expect their body composition to be the same. So I think a development programme needs to stay true to 'what are we actually trying to get these people to do and in what time frame' and one of the most important things, as a developing athlete, the most important thing is their skill set, their technical skills, to be able to do their sport. Because they are still learning those technical skills and then building the fitness the capacity on top of that. Let's map out what we think the expected progression will be and focus on your targets, not the top level people and what you expect to be.'

Participant 3

'The expectations in terms of the outcome are modified. And that they are adhered to because that is what I see change, the outcome expectations change. And it is the federations and the coaches that make those changes. They basically change the bar height midway. They have gone this is a young kid, they have got lots of potential, we will put an investment into them but they don't invest in the nurturing time and the patience or maybe they don't communicate that effectively in terms of when they expect those results to come. So I don't have a problem with them investing in someone provided their expectations are set at a reasonable level in terms of when the outcomes are actually going to come back to them. That may be five years down the track, not two years down the track.'

Participant 3

The coach [of this environment] has realistic expectations and most importantly, the coach prioritizes the long-term development goals of the athletes. At the same time, short-term success needs to be managed and prioritised depending on the circumstances. For

example, athletes may need to focus on earning money from racing or gain race experience in the short term, but without losing the main focus, which is success in the long term. The way in which goals are nested enables athletes to achieve those necessary shorter-term milestones (e.g., earn points in races to maintain funding) while they keep working for their ultimate goal (e.g. Olympic Games). However, the management of the athletes and the potential conflict that exists in their achievements and progress (e.g. ability to delay gratification) needs careful consideration, as does understanding the need for a nurturing developmental period or apprenticeship.

‘So you can sometimes have a bit of a long-term/short term conflict of interest. That is another thing the coach and athlete have to be very bought into and both understand that this is a long-term thing, while clearly, they are going to achieve as they go, as quick as possible, sometimes it is getting that balance between prepping someone for the event, the one that really matters, versus prepping them as best they can for like things that are still very, very important, like world championships or even just doing well in certain races because you pick up funding or you pick up points, all this sort of stuff, just getting that balance because you can’t do it all. You have got to build from somewhere and you have got to prioritise certain things at certain times. So progression may not be intended to be very quick, it might be slow, slow, slow, slow, foundation in place, next bang, ‘next season you will be hitting the scene and everyone will be ‘where has this person come from?’ because we have set you up here, over the winter you will do this and then you will be ready. So next season you should be coming in the best shape of your life and surprising a few people because we have done this to build up and lead to that.’

Participant 1

Challenges: A mechanism for development.

Natural challenges.

As described by the participants previously, it is inevitable that all the athletes will face many challenges throughout their career. This seems to be an integral part of the development process and therefore to be successful athletes need to have, or need to develop an ability to deal with those challenges. Athletes will get injured or be away from their families, underperform, not develop as fast as they expected, not get funding or burnout etc. Some of those challenges are described in the following quotes, with the key message that athletes have to develop their skills to cope with them and develop through them.

‘Probably all of them will be injured. Probably all of them will have some level of challenge of being away from either their partner or their family or their friends and being quite

isolated. They will be challenged because they are sacrificing a normal type of life potentially to try and achieve something really big. Which I am not saying is a hardship for everyone. Actually for people that is what they want to do, they love what they are doing but still that is what they are committing to. The challenges of not performing to the level they want. The challenges of not learning and developing quick enough. The challenge of the frustrations of the coach saying they need to do that and then thinking they need to do something different. The challenges of not having enough money. The challenges of getting dropped by their national governing body. Some of them are things that everyone would experience inevitably like being injured, burnt out or exhausted.'

Participant 1

'They suddenly go away to another country, they may have been in another country before with their governing body, but essentially with an independent coach they are away from family and friends really for long periods of time, so they will spend about four months in Europe, they will spend a month in Africa, they will spend a winter over here, in America, they are spending long, long blocks of time away from friends and family and any comfort zone. But also the type of environment is very challenging. So essentially there is no stone unturned, and the nature of a lot of it is about challenging athletes to make a change. Now whether that is technically, or tactically, or physically or whatever, but it is also about them as a character, so if he feels someone is acting too much like a pre Madonna or they think a lot of themselves, but he thinks 'well you are not world class, you are not a consistent world medallist, you are maybe top ten or top twenty, if he feels there is more potential in them but they are not ... they want to do their own thing or they don't want to take on board advice, or they are always battling against the coach to take on advice or do what he wants them to do, then he will really be challenging that and really push hard. So that can cause friction within the relationship which can be difficult for an athlete to deal with because they are away from their typical support networks of friends and family.'

Participant 1

Taking into account the fact that challenges are inevitable throughout athletes' career and integral part of the development process the ability to handle those challenges is crucial. The participants highlighted the need to handle challenges and characterized this attribute as fundamental for effective development towards elite level.

'I don't think I have known anyone who hasn't had a hugely challenging time at some point while they are trying to achieve what they achieved. So they have got to want to get through that. Not that they would know that at the beginning of the journey necessarily but as they go through, at key points they could drop out or leave the squad or just decide it is not for them, and they have got to find a way of pushing through that. I would probably say that is a key, a fundamental thing.'

Participant 1

'The biggest thing I could point to would be their psychological capacity to develop through challenge and through the experience that they are getting while constantly learning and developing.'

Participant 1

'But from a psychological perspective, I see it as someone who can handle setbacks and disappointment without losing sight of their primary goal and accept that that is part of getting to achieve their primary goal. So there is some resilience in terms of their resourcefulness and their ability to just process setbacks like injuries and that sort of stuff and keep progressing towards their goal.'

Participant 3

'You need to learn lots of stuff, and you need to be able to cope with feeling very fatigued and still pushing through and being pushed hard at training etc. and all the other stuff that is probably very difficult to cope with. Like maybe a coach who is not necessarily giving you lots of lovely feedback. You are getting pushed hard and where do you turn when your folks are in Austria and you are in America.'

Participant 1

Use of intentional challenges and response from athletes.

One of the main characteristics of the environment examined in this case study is its challenging nature. According to the participants, challenge is an integral part of the development process towards excellence. Therefore, the coach intentionally either lets athletes face certain physical or mental challenges or creates some for them intentionally. This creates a tough love relationship between the coach and the athletes, however, this happens in order to get the most out of the athletes and help them reach their best potential.

'He has to make a call, that tough love call, and say 'put up and shut up and just get on with it. I don't care.' Because that is his job as a coach. If he sensitive enough that if someone is really ... sometimes he has to make a call as to whether that is the most important thing for their well-being versus whether they just need to suck it up and deal with it. That is sometimes a very fine line. His job is to keep pushing their buttons to get them to where they need to be. And it is not an easy path. It is not bells and whistles, fun and game all the time. There are times when some people will struggle and provided he kind of knows why they are struggling ... sometimes he does have to pull that punch and just go 'get on with it, I don't care'. And he is not doing that because he doesn't like them or because he is insensitive, he is doing that because that is what they need to be the best in the world.'

Participant 3

'He is very much their coach, he is there to get the best out of them, so it is a tough love situation. Even though he is friendly, he is not their best friend and he doesn't want to be.'

Participant 3

'So the other athletes that are there, in the programme at the time, he will sometimes, very occasionally he has brought someone in deliberately to ruffle a few feathers.'

Participant 3

There is a strong belief that through challenge athletes will develop the necessary skills that will help them progress. For instance, the coach may decide to select two athletes to share the same accommodation in order to challenge them to develop certain characteristics. This could include a psychological behaviour or change a habit such as sleeping late. On other occasions, he may let people struggle with something instead of

offering them support because he wants to test their limits and see if they can learn to deal with difficulties. Based on his philosophy, skills can be learned through challenge, although the key is how the athletes approach and respond to challenge. If the athletes seek new challenges and respond well to challenges then they are more likely to progress effectively. Support staff (e.g. psychologist) may also challenge the athletes to trigger a change if this would facilitate optimal performance.

‘As long as it is not unnecessary or overloading, the coach can implement and facilitate challenge by organising things or by going ‘right, we are going to race you in this competition because we want to learn this’. Boom. See what you learn. That is a challenge to do something. A challenge in training to do something different or something extra or something you think is beyond you. You’ll see if it is beyond you.’

Participant 1

‘Maybe the coach is putting them with a certain person because they think they are going to learn from each other and that is why they are not getting on. This person is like this and they are like that. And actually the coach wants athlete 1 to be a bit more like athlete 2 and athlete 2 to be more like athlete 1 so he puts them together. Or it might be someone they don’t like, well actually we can’t have people who don’t like each other, so let’s make them room together. Don’t like you, don’t like you, oh now I like you, or at least I respect you. So there is change. The coach might be using those challenges intentionally to get a change. Or to get someone to learn how to cope better because they are going to *have* to learn how to cope with that because that is just a minor hassle. You have got to be able to cope with minor hassles so I will give you a few on purpose. So now you have it, what are you going to do about it? I am not going to change it, what are you going to do to cope? Manage it. And they can prove they can do it. Or I have learned some skills and I will room you with someone else because you have learnt something. So challenges can be used intentionally. It is not that challenge is a bad thing, they are essential and they actually facilitate growth and development.’

Participant 1

‘That is similar to the coach challenging them to change in some way. I might challenge them to change but in a friendly way. In a sense of ‘these are skills you can practice, go and do it now and see what has changed’. So you are always using the practical world and reality to try and make a change.’

Participant 1

Whilst challenge, either natural or intentional is a fundamental development tool in this environment, openness to this type of environment is an essential attribute for athletes who want to be members of this squad and get the most out themselves. The resilience is built through the training, racing and challenges and skills are developed throughout the pathway. As such, athletes also need to be willing to learn and change and engage with this process.

‘So part of that comes down to an openness to want to challenge themselves, but also that you have got the skills to cope with that. So the right sort of coping skills, but those things you can learn and a lot of people I have seen don’t necessarily come in being able to cope with stuff, and through experience and through the training and the racing, they develop that resilience or those skills, or the knowledge of themselves or what they need to do to be successful and to learn and to progress and to compete under pressure and to train hard although they are feeling totally exhausted.’

Participant 1

‘People have to be able to learn skills, they have to be able to learn technique, they have to be able to learn tactics and learn how to race and how to train and how to recover. They need to be able to learn about themselves, they need to be open to change, to challenge, at quite a fundamental level. So not everyone can do that, not everyone is open to that sort of thing.’

Participant 1

The coach highlighted that the very successful athletes who wanted to be challenged constantly in order to become better and better stayed in the squad. This attitude is very close to the coach’s attitude since seeking challenges is one of the main characteristics. Similarly, this attitude is common amongst the successful people in the world according to the coach.

‘So the tough ones, guess what, they stayed. Why did they stay? Because they want to be challenged. They become the Olympic gold medallist or they become the commonwealth games gold medallist and they earn lots of money and they get notoriety and these things but still, they will stay with you because they don’t want somebody to tell you how good you are. They want somebody to push you to make you better. This is the key. Some of the others can do well but if you are really looking for somebody who is going to do exceptionally well. It is a bit like somebody like me, I am relentless, I want challenge. All the very successful people in the world, all have very similar characteristics.’

Participant 2

Key transition – athletes entering world-class status.

When athletes become more successful they receive more attention from federations, sponsors and can start to receive mixed advice. As such, managing success becomes challenging and can potentially be a barrier if for example, athletes become money oriented, start ‘cutting corners’, get distracted from sponsors, instead of focusing on performance. Finally, listening to advice from others such as partners, family, and coaches can also become problematic because if athletes don’t follow their plan it will hinder their development. Moreover, it may trigger a miscommunication between the athlete and the coach, which also may hinder their relationship and as a consequence their performance/development.

'I think different challenges pop up for athletes as they go through. Once someone does achieve some level of success or they feel more comfortable at a higher level, it is quite often the case that there is then lots of extra pressures. If they perform well at one stage now, they have got to maintain that level of performance. There is possibly more pressure on them in that sense. They might be more targeted as an athlete in the races. There is more distraction. As you go up, as you get more successful there is potentially more distraction, more expectation, and more pressure. There are more people trying to give them advice, there is more pressure to do well because of sponsors or this or that. Or there is a national governing body more interested again, and there might be pressure for them to come here, or there might be conflicting evidence about what they should be doing training wise. There might be partners or parents who suddenly have a say. More media pressures.'

Participant 1

'Well, when they start getting successful and particularly when they start getting accolades and money and that from their federations ... more people get involved. More people have a vested interest. When they are not successful they are basically left out on their own and have to prove themselves. When they become successful they are treated very differently. Federations will treat them differently. Their friends and family; more people will be advising them. More people will be offering them free bikes and free shoes. A promo shoot here or money there and that can diversify their focus in my viewpoint and with that it creates doubt. Because you might have someone say 'I think you should be doing this, why aren't you doing this? Why isn't your coach getting you to do this?' and that creates doubt. Unless you have a really good communication mechanism and very open communication with the coach and a trust that goes beyond the superficial level they can get very distracted and confused by all these other people have viewpoints...'

Participant 3

Such distraction is more likely to happen in younger or less experienced athletes who receive extra attention and financial rewards, believing they have 'made it'. This can be problematic because it is against the philosophy of the environment. There are examples of athletes who changed their attitude and perceived themselves as successful as soon as they had some achievement at senior elite level. This led them not to train as hard as before, be money oriented and get influenced by sponsors.

'I have had some 17-20-year-old athletes. There was one boy who joined in 2012 as a 19-year-old and then in 2013 ... he watched and learned a lot that year, the next year he really raced well in triathlons ... he became third in the world at under 23s. In only his third Olympic distance triathlon. As a 20-year-old, beating the under 23s. Unfunded before that, he had no money. He just did a great job. But then he came back after doing all of that, the next year, and he was a d***. He only lasted three more months. I booted him out of the squad, he was being a d*** every day. He did well, he became lazy, had more money and funding, he thought he was good, he had sponsors ... so some people change when they do very well. Some people don't. Mostly I have had some good people that don't change very much.'

Participant 2

'And some of them just get almost money focused. When they are not good they are focused on performance, when they are good and start earning good money, at the top level of triathlon, it is not as high these days but it used to be they could earn a decent income. Then

they get focused on chasing the money and decisions are sometimes made around a financial basis rather than what used to be: what have I got to do to be the best?'

Participant 3

'They were very good to work with when they were in trouble. But when this athlete got back up to European medallist and world cup winner, it turned in to business again, marketing, PR, money making, all the business aspects. There was one thing I realised, and I stopped doing, was taking on athletes who were already something very special.'

Participant 2

Moreover, athletes may lose their focus especially not only because of money but also because of the opposite gender for example. Changing their attitude and losing their focus could have a detrimental effect on their development. As such, participant 3 suggested that more support and less momentary incentives should be given to athletes when they young in order to help them effectively progress to higher level.

'I guess the areas that I have seen is the development say from under 23 through to world-class international and that is a tricky transition because as with all sports, I think athletes can perform very well at a young age, just based on their pure talent, then perhaps have a little bit more time in the sport of triathlon, as opposed to other sports but they get stuck. They seem to get stuck and that transition from under 23 into senior elite. I have seen a lot of athletes drop out or not continue to be successful or because they are 20, 21, 22 and starting to develop a sense of independence for themselves, they change focus perhaps. They might have been totally focussed on triathlon before and then all of a sudden the opposite gender comes into play and what their mates are doing comes into play and they want everything but obviously can't get everything so their attitudes can change...'

Participant 3

'Because if you were living in the ideal world I wouldn't give them a lot of money when they were younger ages, I would give them support, but not monetary incentives.'

Participant 3

This change of attitude led former athletes of this environment to produce poorer performances. This was attributed to the fact that they subsequently, did not actively seek challenges anymore, they start cutting corners, not doing appropriate rehabilitation. Inevitably, this undermines their performance and their development in general.

'They go backwards. But when they get good, really good, the federations want them again. Money. Prestige. And do they want to stay with me and I am just a pain? No. I am too tough on them. So the development process is different to staying there. The development process with the very good athletes who are talented is actually quite easy and not so tough ... angry, tough. For the athletes that aren't quite good enough, you can still get them there but it is really tough. It is tough work every day. Because it is not natural for them to be that good. It works to get them there.'

Participant 2

'If you want to be highly successful, many times, have a long career that is multiple Olympics, you know, those ones, they always fight. But most people don't. Most people get good ... how do you feel once you are getting articles written about you? And everybody tells you how good you are? The federation gives you money, you get great results. And then you still have your coach who says 'no, not good enough, back to work, enough of the holiday, back to work'. It is not so much fun. Right? So I think development is different.'

Participant 2

'Also once you are successful at something, some people will take their foot off the pedal a little bit. 'It is ok, I have got there.' They don't realise that they have to stay there. So they start cutting corner and ... I know the coach would have said if they start cutting corners, by reducing the amount of time they spend on rehab and sort of stuff, making sure that their muscles are loose, that they are looking after their rest, then they get sick, injured, because they just load up on too many other things.'

Participant 3

Management of intentional challenge: potential risks.

Interestingly, the coach identified that too much challenge could be linked with the fact that some of his athletes left as soon as they became successful. As such, excessive challenge could be considered to be problematic, for example, through certain key transitions such as the progression to world-class elite. The coach highlighted that the process of 'getting there' is different to what is needed to 'stay' at a world-class elite level. The development process towards elite level is hard and constantly challenging for the athletes but in order to stay at such a high level, it is possible that a different or more flexible approach is needed. As the coach stated the success rate of this environments is very high in developing athletes to become successful at elite top level. However, many athletes left when they reached that level.

'If you look at my record, my record shows that I developed a lot of good athletes within the top five or ten in the world. But in recent years, as soon as they get there, they leave. Because the journey is not very much fun.'

Participant 2

'There was one girl who stayed for 18 months, then she got number 5 in the World Series race, massive improvement, but guess what, that 18 months was really tough. It wasn't fun. I didn't care. It is my job, right? My job is to make athletes. So I don't care about having fun. It is just my job, to make them better. To find a way to make them better. My job is not to make them happy. One thing I realised over the years is that I have made some people miserable but good. It hasn't been fun. But they have got to a very high level and what happened when they go to that high level is they left. What I have realised now is that I have probably lost a lot of good athletes once they got good because I made the process of development hard.'

Participant 2

The coach also admitted that adopting a softer approach is difficult for him personally, but more flexibility in their coaching style would potentially have been beneficial, particularly through this transition period.

‘But if I look back, I probably made it too hard. Have I been successful, have I produced athletes? What about if I have made it so hard to produce the athlete, that by the end they want to leave? Is that success? I think I have probably been a little bit too hard.’

Participant 2

‘So I am highly motivated. I can’t do things 90%, 80%. Every day. Of course. So if I have to be nice to somebody, because they are weak, or I make it fun for them, that is not really my style. Because I work very hard and I am very successful and I am highly motivated, it is very hard for me to take somebody seriously who wants to be world class, who needs a soft approach. Nurturing approach. That is harder for me. Sometimes I can be soft and nurturing but most of the time I find that hard work. And most of these people, who need a lot of this nurturing and softness, won’t make it anyway.’

Participant 2

6.4. Discussion

The aims of this case study were to investigate the individual characteristics and environmental features of a highly successful world-class elite development program. The findings revealed the basis of the structure of the triathlon environment, experts gave evidence of how the strategies used during the selection process and identified the key characteristics of the development process towards elite world-class level. To begin with, high motivation levels of both the coach and the athletes were essential for the success of this environment. The coach was very motivated to make a difference in athletes’ lives more holistically, and he also considered high aspirations as a prerequisite for someone to join the squad. Not surprisingly, motivation has been linked with the ability to successfully negotiate career transitions (MacNamara & Collins, 2010) and develop effectively (Hollings, Mallett, & Hume, 2014). In addition, the importance of role modelling within the team was highlighted by the participants of this case study which has also been found in successful environments in Scandinavia (Henrkisen, 2010). However, it is important to note that it was emphasised that working on a daily basis with role models, and the careful management of the composition of the group, could have been key to the success of the environment. The

experts emphasized on the vital role of high-quality coaching but also of the use of other experts in the area and the ability to adopt an interdisciplinary approach. For this to happen, coherent aims and messages are essential which has also been suggested in previous research in a UK context (Martindale *et al.*, 2007). Notably, the experts involved in this environment were trying to engage the influential parties (parents, significant others) by making sure they were aware of the plan and aims and their potential input in this pathway to elite world-class level.

An important part of the findings because of its originality is the analysis of the identification and selection process of the athletes joining the triathlon squad. As high aspirations and motivation were deemed essential from the coach this was the first individual characteristic he was looking for before inviting an athlete to come for a trial. In addition to this, the personalities of the athletes were also amongst the main selection criteria as the balance of the squad as well as the potential values added when selecting an athlete were carefully considered. It has been proposed that positive relationships affect the development of footballers (Mills *et al.*, 2014b); however, in this case, study the coach was evaluating the personal characteristics by a psychological profile, a trial with the rest of the squad and was also taking into account the opinions of the athletes. This shows that the coherency of the team and the team atmosphere is of paramount importance as an environment that promotes healthy competition needs to be created. It is well established in the literature that certain aspects of talent may take time to emerge (Simonton, 1999); although it is not clear how the selection process can facilitate this. Considering this and the fact that long-term focus rather than early results promotes effective development (Martindale *et al.*, 2007) the environment of this case study gave opportunities to athletes to join, train, progress steadily over time, settle in the environment and they were constantly evaluated over a long period of time. The development rates are not equal for everyone and they are related to the level of trust between athletes and coach and the level of commitment to the challenges within the

environment. However, the experts were looking for athletes who would continuously progress and learn without pressing for immediate results.

In order to facilitate this process, the experts were using challenges as opportunities to help athletes develop those characteristics they believed they were necessary. In many cases, those challenges were intentional structured challenges designed to facilitate the development of certain skills or attitudes. The theory of a challenging environment in athlete development has gained increasing attention in the recent years (Collins & MacNamara, 2012). More recent studies have suggested that environments need to provide athletes with opportunities but also ensure that athletes do have the basic skills and attitudes to 'bring in' to the challenges they face (Collins *et al.*, 2016; Savage *et al.*, 2017). This case study gave evidence of how a continuously challenging environment can help athletes progress effectively and reach elite world-class level supporting the practical application of the theory developed by Collins and MacNamara (2012). Nonetheless, it should be noted that when athletes reach at this level another approach could be more beneficial during their attempt to maintain at elite world-class level. However the character and attitude of the athletes appeared to be a crucial factor in how this needed to be managed. The coach admitted that excessive intentional challenge can drive athletes away especially if they make the transition to elite world-class level. As Durand-Bush and Salmela (2002) have suggested that the fourth stage of development in an athletic career is the maintenance years and according to the findings there is a distinction between 'getting there' and 'staying there'. As such, a different approach during that phase appears to be necessary, although a small portion of athletes stayed in this environment and kept seeking challenges despite their success, again highlighting the importance of the athlete characteristics in this process.

In line with this, the key transition recognized in this case study was the one to elite world-class level and the barriers that are related to this period. Participants emphasized on the potential distractions that may arise due to increased attention and financial rewards.

They also stated that athletes may reduce their efforts or not follow strictly their plan because they may think they 'made it' which inevitably can have a negative impact on their progress. The risk of all the above is higher especially when athletes are stepping up to higher level of competition when they are younger. Therefore experts proposed that more support is needed rather than financial rewards because at a young age they are not necessarily helping athletes' development. In line with this, participants highlighted the need for apprenticeship. More specifically, competing in races that will be difficult would be a learning process particularly for young athletes which should be an integral part of their development. This finding could be linked to the results of the study examining the successful athletes in which it was shown that steady progress is beneficial during the transition to elite level.

6.5. Conclusion, Limitations and Future Research

The aims of this case study were to investigate the individual characteristics and environmental features of a highly successful world-class elite development triathlon program. The participants of this study identified that high motivation of athletes is the basis of effective development towards elite level and this can be facilitated by the coherency of the environments, quality role models and holistic goals as well as the appropriate use of highly motivated experts. Moreover, strategies for selecting athletes for this environment such as long trial periods, assessment of motivation and evaluation of personalities in relation to the rest of the members of the group were discussed. Finally, the participants emphasised the complexities of long-term development management and highlighted the important role of utilising challenge carefully as a mechanism of development.

This study added a significant contribution to the current knowledge of within career transitions and more specifically to the transition to elite world-class level. Interestingly, this independent environment had no constraints from governing bodies or officials, which makes it unique and allowed us to investigate what experts do when there is more 'freedom' to choose the structure of a talent development environment. Despite the fact that this case

study focused on a triathlon environment, within a unique context, there are some strategies and philosophies that seem to have the potential for application in other sports or be adopted by national federations. While qualitative methodology does not enable generalization, it is hoped that enough context has been provided to allow readers to glean useful information where it is deemed relevant to their environment or context (e.g., user generalizability).

Limitations of the study are inherent in the small number of participants interviewed, however, this is the nature of the environment under study. Further, only the experts of this environment were interviewed, while athletes who were members of this squad were not interviewed regarding their experiences. Future research needs to consider the perspective of athletes participating in such a unique environment as the one examined in this case study, particularly those who were successful and those who were not, or who dropped out. In addition, examining more sport programs (e.g., team and individual) with successful track records of developing elite level athletes could provide useful information regarding the potential similarities and differences between individual and team sport athletes for example. Expanding our understanding regarding the factors that can facilitate the progression to elite level can increase the likelihood of athletes to ‘make it’ at higher level and prevent teams, squads or nations from losing athletes with great potential.

Chapter 7-General Discussion, Limitations and Future Research

7.1. Overview

This thesis was conducted to extend the current knowledge regarding the trajectory to elite level in sport by investigating the key individual and environmental features that are associated with successful within career transitions. There is limited research in the area of within career transitions and considering that the trajectory to elite level is complex, nonlinear and multi-faceted, the factors related to the successful negotiation of within career transitions need to be investigated further. Therefore, the following three objectives were addressed:

- 1) Understand the predictive factors contributing to success (adjustment, satisfaction) during the transition from junior to senior level.
- 2) Investigate the development experiences, individual and environmental features that are associated with successful and unsuccessful transitions to elite level sport.
- 3) Investigate the individual characteristics of athletes and the environmental features of a highly successful world-class elite development program.

7.1.1. Study 1

Study 1 was designed to examine the transition experiences of talented athletes and investigate the predictive factors of adjustment and satisfaction through within career transitions addressing Objective 1. More specifically, the transition from junior to senior level was chosen for this study as it has been described as one of the most challenging ones during the trajectory towards elite level. Research has examined this transition within populations in Scandinavia, however, there is a scarcity of quantitative research in the area of within career transitions. To address this research gap it has been suggested that a broad examination of different cultures, environments and sport is necessary to expand our understanding regarding the transition from junior to senior level (Stambulova *et al.*, 2012). Therefore, the Transition Monitoring Survey (TMS) was used in a cross-cultural population

to enable us to gain a broad understanding of this particular transition. The results of this study highlighted the importance of personal resources, commitment to training, environmental support and type of sport in relation to adjustment at the senior level in sport. From this quantitative analysis, it became evident that athletes need to be well prepared both physically and mentally in order to cope with the demands of the elite senior level. Considering the results of study 1 the rationale for the next study was to explore the development experiences of successful athletes to identify whether previous experiences influenced the development of personal resources and also examine the individual and environmental features related to their successful career.

7.1.2. Study 2

Study 2 was specifically designed to meet Objective 2 by investigating the key features that are related to successful transitions to elite level sport and examine the development experiences of successful athletes. The rationale for this study was based on the need to focus on a specific level of within career transitions (e.g., the transition to elite level) and understand more in depth the factors that can attribute to successful progression. To address this research gap and understand the key features associated with a successful transition to elite level a qualitative approach allowing an in-depth investigation was followed. The transition to elite level which was chosen because of its challenging nature and the fact that a high percentage of athletes drop out during that phase. The results of this study identified that intrinsic motivation to participate at early stages and making a conscious decision to excel during the development phase was a common characteristic. Moreover, deliberate play activities in the early steps but also experts with good knowledge during the development phase were acknowledged by the athletes. Since challenges are inevitable athletes need to develop the ability to deal with upcoming challenges. Thus, individual characteristics such as hard work ethic, problem-solving and the ability to cope with disappointment need to be nurtured and developed. It was suggested that a potential

solution would be to develop those skills through intentional challenges. This intentional challenge, however, needs to be carefully balanced with the available support which is required especially during certain periods of the trajectory towards elite level. Finally, an environment promoting long-term focus while also adopting a holistic approach towards development was deemed as the most effective. However, it is important to note that successful athletes can be biased regarding their careers and as such interviewing athletes who dropped out would allow us to make comparisons between their careers in sport. Taking into account that there is limited research in the area of drop out study 3 examined athletes who did not manage to negotiate successfully their transition to elite level or failed to maintain at elite level.

7.1.3. Study 3

Study 3 also addressed Objective 2 by examining the individual, environmental characteristics and development experiences of athletes who did not manage to negotiate successfully the transition to elite level or maintain at elite level. The rationale for this study was based on the fact that there is limited research investigating athletes who didn't 'make it' to elite level. This study also allowed the comparison between those who successfully negotiated this transition and those who didn't. Therefore, a qualitative methodology was followed in this study. Study 3 showed that those athletes were specialized early and in some cases, it was not their personal choice to start the sport they were participating in. Thus, potentially there is a link between early experiences and progression in sport; however, this needs to be further examined to allow us to draw safe conclusions. Results showed that withdrawal from sport is attributed to a combination of factors rather than a specific element. Amongst those factors were the following: poor communication, inappropriate support, balancing a dual career without support or with excessive pressure and a win focus environment during the development stage which can increase the risk of athletes dropping out. After examining both quantitatively and qualitatively the athletes' perspective about

within career transitions it was deemed necessary to investigate experts' perspective. As such, experts responsible for a development program with a successful track of producing world level triathlon athletes were examined in the next study.

7.1.4. Study 4

This study was specifically designed to target Objective 3 of this thesis to investigate the individual characteristics of the athletes and environmental features of a highly successful world-class elite development program. The rationale for this study was that athletes' perceptions may be biased or limited and therefore examining experts' opinions regarding the trajectory to elite level would add significantly to our limited knowledge in within career transitions. While a small number of case studies have examined successful athlete development environments, all of which are set within the constraints of a broader controlling body, such as a national governing body. To provide an original and novel contribution to our current knowledge a unique triathlon environment consisted of multinational athletes, without any constraints from governing bodies and with a proven excellent track record of producing world-class athletes was chosen to be examined. Findings revealed that high motivation of both the coach and the athletes was the basis of achieving excellence. In addition, utilizing experts in different areas working in an interdisciplinary approach while also actively incorporating significant others in the development process was described. The coherency of goals was also a key characteristic of this environment as experts, athletes and significant others had clear guidelines of the goals and necessary actions in order to achieve them. Key considerations regarding the selection of athletes were discussed providing evidence that time for prolonged trials is essential, continuously developing is vital and the team atmosphere even in an individual sport can be crucial for the athletes. However, the complexities of long-term development were highlighted by the participants and the use of challenges as a mechanism of development was evident in this particular environment.

7.2 General discussion

The key findings of the four studies conducted in this thesis will be summarized in this section and the significant and original contribution to knowledge will be highlighted. Study 2 and 3 acknowledged a number of subtleties in the early experiences between athletes who had a successful career and those unsuccessfully negotiated their transition to elite level. The current thesis showed that individual characteristics are the foundation of a successful trajectory to elite level. The nature of the environment plays a significant role in the development of those characteristics which means that individual characteristics which are important for later success can be developed from early stages.

7.2.1. Early steps

Study 2 showed that athletes who successfully negotiated their transition to elite level took part in deliberate play activities in the early steps of their development. This type of activity has been shown to promote enjoyment and intrinsic motivation both of which facilitate further engagement in sport (Baker & Cobley, 2008; Bloom, 1985; Côté, Baker & Abernethy, 2003). Moreover, athletes made a conscious decision to join a structured development environment and also had great commitment to achieve their high aspirations. Qualified and educated coaches at young ages were described to be essential for athletes who had a successful career in sport (study 2). On the other hand, many dropout athletes from study 3 were pushed by their family to join a specific sport rather than making a conscious decision based on their intrinsic motivation. In addition, they did not state any involvement in deliberate play activities during the first steps of their development pathway. The successful athletes made a conscious decision to excel during their development stage driven by their intrinsic motivation while drop out athletes had high levels of success during that period. Athletes also acknowledged the importance of the availability of facilities and the ability of families to support financially and logistically their children throughout their trajectory in sport.

7.2.2. Individual characteristics

All four studies of this thesis showed that individual characteristics are the main key determinants of successful progression towards elite level. Those individual characteristics include physical attributes and psychological skills. Physiological characteristics were deemed necessary to cope with the demands of the training workload and underpin performance at elite level. Several research projects have highlighted the significance of physiological characteristics for elite level performance in sport such as football (e.g. Stølen, Chamari, Castagna, & Wisløff, 2005), track and field (e.g. O'Connor, Olds, & Maughan, 2007), triathlon (Sleivert & Rowlands, 1996) and judo (e.g. Torres-Luque, Hernández-García, Escobar-Molina, Garatachea, & Nikolaidis, 2016). Athletes and experts who took part in this thesis recognized physiological characteristics as the basis for successful progression.

However, psychological skills are crucial as they can help athletes deal with difficulties, bounce back from an obstacle (e.g. injury), be highly motivated and continuously improve towards elite level. Study 1, 2 and 4 showed that commitment and motivation were the cornerstones of successful progression. In study 1 commitment (training hours) was associated with adjustment; athletes in study 2 identified hard work ethic as one of the main individual determinants of success. Finally, in study 4 athletes had to approach the coach on their own initiative and show their motivation to dedicate themselves. At the same time, the coach was highly motivated to make a difference in their lives and was looking for high levels of motivation.

Existing research has also shown that certain psychological skills can help athletes deal successfully with the within career transitions and facilitate their development towards elite level (Alfermann & Stambulova, 2007; MacNamara *et al.* 2010a, 2010b). Similarly, a multitude of studies has identified that a number of psychological characteristics are vital for athletes in order to compete at elite level (Durand- Bush & Salmela 2002; Gould *et al.*,

2002). Based on the interpretation of the interviews characteristics such as hard work ethic, commitment, motivation, desire to achieve excellence and the ability to deal with disappointments were shown to be cornerstones of effective development towards elite level. Furthermore, psychological characteristic like perseverance, focus, self-confidence, reflection, positive attitude, coachability and seeking social support were described as facilitative for the transition to elite senior level. Different combinations of the aforementioned or similar psychological characteristics have been suggested extensively in the literature (Abbot & Collins, 2004; Durand- Bush & Salmela, 2002; Gould *et al.*, 2002; MacNamara *et al.*, 2006, 2008, 2010a, 2010b; Orlick & Partington, 1998; Williams & Krane, 2001). This thesis reinforces the significance of the psychological skills and highlights the necessity to nurture those mental skills during the development phase in order to equip athletes with a toolbox that will enable them to progress through the within career transitions. Increasing the quality of preparation of athletes prior to their transition period to elite level is possible to increase their chances of reaching their full potential and achieving personal excellence.

7.2.3. Environmental Features

The environment can significantly contribute to the development of those individual characteristics and facilitate the effective development of athletes. As such, the combination of individual characteristics and environmental features can help athletes be better adjusted for elite level. More specifically, it was shown in study 1 that the second strongest predictive factor of adjustment was environmental support. A talent development environment can aid in the development of the individual characteristics described. This can be facilitated by having experts who are educated regarding the strategies that can be used to develop mental skills and behaviours. In line with this, the qualitative studies showed that an environment with long-term focus rather early results while providing support to ensure athlete wellbeing was described as the optimal environment that can nurture the desired individual

characteristics. Of course differences because of the nature of the sport, the cultures or the uniqueness of each environment were identified in this thesis, although common key environmental features were acknowledged. Some of those features have been suggested in previous literature and more specifically by Martindale *et al.*, (2005; 2007), Henriksen (2010) and Mills *et al.*, (2012). Long-term focus, holistic development, ongoing continuous improvement and opportunities that will allow athletes to develop personal skills need to be an integral part of the development environment to facilitate athletes reach their full potential and achieve excellence.

The need for opportunities which will enable athletes to develop personal characteristics was suggested by Mills *et al.*, (2012) and this approach is aligned with the theory firstly introduced by Collins & MacNamara (2012) supporting that structured challenge can be beneficial for athletes. Recent studies suggest that the skills athletes bring in those experiences is the key element in this process and not the challenges themselves (Collins *et al.*, 2016; Savage *et al.*, 2017). In this thesis, successful athletes and the experts valued the importance of challenges either intentional or random (e.g. deselection, injuries) and stated that they can lead to the improvement of an athlete as a whole. On the contrary, athletes who dropped out appeared to have a tendency to avoid challenges in a fear of failure or disappointment and viewed challenges as obstacles rather than learning opportunities. This could be linked with the smoothness of their careers and potentially with the fact that the essential skills required to bring in those challenges were not cultivated in advance. In overall, it was clearly evident throughout studies 2, 3 and 4 that challenges can be useful learning experiences especially for the development of skills such as dealing with disappointment, perseverance, mental toughness which are invaluable for a successful career in sport. However, it needs to be highlighted that a recommendation derived from this thesis was that excessive intentional challenge can become problematic. Also, a dual career without support may have a negative influence on the development of student-athletes as

shown in study 3. In study 4 it was also suggested that athletes after reaching elite level may require a different approach as many of them were not eager to remain in this program and undertake continuous challenges. As such, based on these findings it could be speculated that a differentiated strategy to develop athletes towards elite level and another for maintaining athletes at elite level requires being adopted. In line with this, the literature suggests that there is a phase in the athletic career called maintenance years (Durand-Bush & Salmela, 2002) and the approach towards athletes needs to be further investigated considering the findings of this thesis.

Social support has been recognized in the literature as highly important for the successful progression of athletes (Franck & Touvila, 2008; Holt & Dunn, 2004; Lorenzo *et al.*, 2009; Pummel *et al.*, 2008; Rees & Hardy, 2000; Stambulova, 2009). Types of social support include tangible, emotional, esteem and informational and all these types were identified to positively influence athletes when they were in balance. However, moving one step forward this thesis provided exact strategies which can be used to actively utilize the use of significant others to aid in the development of athletes. For example, having meetings with the athletes and their parents or partners to discuss their commitment, communicate clearly the future plans and discuss possible ways in which they can help. Those actions are evidence of the successful collaboration and input of significant others during the trajectory of athletes towards elite level in triathlon. On the other hand, athletes who dropped out reported poor communication, lack of emotional support during difficult periods and incoherency of goals. As such, it appears that coherency and appropriate support in close collaboration with the coaching team could add significantly to the effective development of athletes.

The use of role models was another facilitator of progression towards elite level. Athletes who had successful careers explicitly described that guidance from fellow elite athletes was very useful for them. Regardless the nature of the sport (team sport vs individual

sport) the input of teammates was characterized as invaluable especially when teammates were highly experienced and successful. In addition, in the triathlon environment the fact that athletes had varied nationalities and as a consequence, their different experiences and skills contributed to the improvement of the level of the squad. This was achieved either by increasing performance through healthy competition or by changing behaviours, coping strategies through the interaction with more experienced and successful athletes. Simply improving swimming skills by competing against a more experienced and better swimmer or changing habits by staying in the same room with someone who challenges their personality were examples of strategies applied which had positive results. The use of role models has also been identified in other talent development environments (Henriksen *et al.*, 2010a, 2010b, 2011; Larsen, Alfermann, Henriksen, & Christensen, 2013). The usefulness of the multinationalism squad was highlighted by the experts involved with the triathlon environment and they attributed its success on the interactions between the squad members. As such, valuing carefully the character and experiences of athletes before selection could influence positively the development of all the members of the squad regardless if it is a team sport or an individual one. It should be noted that healthy competition needs to be promoted at all times because especially in individual sport athletes are essentially opponents training together. Therefore, the coaching team needs to create this healthy competition environment and ensure that all athletes are on board with this philosophy.

The holistic development was suggested by both athletes and experts as the optimal approach for developing athletes to their full potential. Even the dropped out athletes reported that such an approach would have helped them during their trajectory to elite level. Long-term focus, athlete wellbeing and athlete understanding were the key features of holistic development suggested by athletes and experts. Long-term focus has been identified in a number of case studies (Henriksen *et al.*, 2010a, 2010b, 2011; Larsen *et al.*, 2013) and was one of the main suggestions for effective development in a UK context (Martindale *et*

al., 2005; 2007). Instead of considering the transition to elite level as an isolated event in the trajectory of athletes their development need to be perceived as a whole process and athletes to be developed as whole people towards elite level. Focusing on constantly improving and developing will then increase their chances to be better prepared and well equipped with a wide spectrum of skills to adjust to the elite senior level. Examples of a long-term focus are clear coherently linked goals, education of parents and significant others and development of skills rather than winning. Additionally, despite the fact wellbeing of athletes is sometimes overlooked; research has shown that high-quality talent development environments are related to the wellbeing of athletes (Burgess & Naughton, 2010; Côté, 1999; Durand-Bush & Salmela, 2002; Ivarsson *et al.*, 2015). It was reported that athletes want to feel equal rather than be part of a hierarchical system and also have financial security. To overcome this challenge the coach of study 4 provided scholarships to athletes to allow them to focus on achieving the best outcome. Closely linked with this, athlete understanding was valued by the participants of study 2, 3 and 4. Martindale *et al.*, (2005; 2007) identified that athlete understanding is one of the key features of effective talent development. Similarly, this thesis provided evidence on how a caring environment can influence positively the development of athletes and highlighted the importance of individualized approach. Understanding the needs of each individual and supporting/challenging appropriately appears to be critical for a successful trajectory to elite level. The coach of study 4 spends time with his athletes to design their development plan according to their needs and character, successful athletes made the next step when they felt valued and on the other hand, dropouts were pushed away when they felt they were treated as 'machines' and not people.

Combining sport with a hobby or studies can contribute to the holistic development of athletes. However, some of the student-athletes in study 3 attempted to follow a dual career in school or university and competitive sport but the structure of the education in

Greece did not allow this. The lack of scholarships and the lack of flexibility (distance learning, individualized teaching curriculum) made it impossible for them to successfully combine different activities. In one case though, the coach valued the needs of his athlete and allowed her to prioritize studies for a certain period which allowed her to enter a university but also remain in the same standards performance wise. Studies or a hobby allows athletes to 'switch' off, have a well-balanced life and as a consequence achieve better performance (Pink, Saunders, & Stynes). Athletes who had the chance to follow a dual career also reported that this was beneficial for them (Malett & Hanrahan, 2002). This finding was reinforced by this thesis and the need for support during within career transitions was particularly highlighted. More specifically, support from the state, family and the team is absolutely necessary when athletes are trying to combine school/university with a career in sport. On its own and without support this task is an overload and may have negative consequences. Considering the reflections from the triathlon coach an overload of challenge may be problematic and this could be an example of this.

7.2.4. Selection process

Another significant contribution of this thesis was the practical selection strategies applied in the triathlon development program. Identification and selection of athletes have been vaguely described in research examining talent development environments (e.g. Henriksen, 2010; Martindale *et al.*, 2007), however, no clear applied recommendations regarding selection strategies have been made before. The fact that the coach was aware of the performances of athletes was the first step of the selection as he had some knowledge regarding their progression. In addition, the coach never approached athletes and that was on purpose as he wanted to 'test' their motivation and how much they wanted to be part of this squad. Following their decision to approach the coach he then had interviews with them to assess the level of their commitment and motivation and also assure that the significant others were keen on being engaged in this collaboration. A psychological profile was also

used to enable the coach to understand if athletes can fit in with the rest of the athletes and determine whether they could bring in values that would be beneficial for the whole squad. This process allowed the coach to design their development plan accordingly and based on their individual needs and psychological profile. Moreover, as the development times vary from individual to individual this coach offered prolonged trial periods and was trying to get to know the athletes by living close to them. This understanding was highly valued by the coach as it can minimize the risk of wrong decisions made by the coach and foster better communication and bonding between coaching staff and athletes. Interestingly, before agreeing on undertaking a new member in the team the coach was always valuing the opinions of the rest of the athletes of the squad. Finally, the ongoing evaluation of the ability of athletes to continuously improve was also applied in this environment and was deemed as necessary for elite level performance.

7.3. Limitations

A limitation that needs to be acknowledged is the fact that despite all participants in study 1 had high aspirations and some of them were members of elite sport school it is not certain to know what level they managed to reach at. Following up the progress of the participants would have given us more in-depth information regarding the effectiveness of their individual and environmental features. In addition, ideally, international squads of athletes recognized officially as the most talented of their age groups would allow us to specifically examine the transition from junior to elite level strictly at elite context. As such, this limitation of varied levels of athletes who completed the TMS needs to be taken into account when interpreting the results of study 1. However, it was deemed necessary to do as the main objective was to investigate this within career transition in a broad population to increase the breadth of research in this area. Therefore, in order to have access to a larger number of participants, the selection criteria were designed accordingly to include a wider

pool of potential athletes and allow the broad examination of the transition from junior to senior level.

Moreover, in study 2 and 3 athletes from different environments were interviewed which limits our ability to link the findings with a specific environment. However, the fact that successful/talented athletes were interviewed gave a chance to derive meaningful conclusions and identify common elements in their experiences. The fact that all participants had been nurtured in different environments is a limitation that needs to be acknowledged, although study 2 and 3 were not case studies of a specific environment rather than an in depth examination of the development and transition experiences of athletes. As such, this sample the quality of the sample and its variability was deemed adequate for the purpose of study 2 and 3. However, it needs to be acknowledged that the participants were not matched between them; such a classification was conducted by Collins et al., (2016) and would have allowed safer conclusions during the comparisons between successful and dropout athletes.

The cases study 4 examined only the experts and none of the previous or current athletes of the triathlon environment. This could be viewed as a limitation as investigating both athletes and experts would allow us to triangulate the results strengthen the representation of findings. Nonetheless, athletes' opinions might be biased and therefore in an attempt to draw a detailed and accurate image of the environment examined in study 4 the experts of this environment were interviewed. Because of their expertise and the uniqueness of this particular environment, it was decided to focus on the perspective of the staff members (coach, nutritionist, and psychologist). Another limitation that needs to be noted is the fact only one interview was contacted with each member of staff. Follow up interviews, observation or adopting an ethnography approach (e.g. Toms, 2005) could have given a deeper insight into the structure, mechanisms and strategies used in this particular environment.

7.4. Future research

Future research should be conducted in order to validate the TMS in the languages that were used in this thesis. Moreover, the influence of the type of sport in the adjustment to senior level should be examined in more detail to determine which environment is optimal for effective development. According to the findings of study 1 type of sport was predictive of adjustment of athletes. In addition, in studies 2, 3 and 4 it was highlighted that even in individual sport the team climate is critical for effective development. Therefore, there is a need to further examine the differences between individual and team sport and identify how the structures of the development environments may affect the development of athletes.

It would be beneficial if future studies adopt a longitudinal qualitative approach in order to examine closely elite athletes during this transition from junior to elite senior level; prior and after to provide a clear picture of the whole process during those challenging years in the trajectory of athletes. A longitudinal approach would allow us to draw more accurate conclusions regarding the key determinants that can facilitate effective development at elite level. Additionally, focusing on only one sport could give the opportunity for specific practical recommendations derived from the findings of a longitudinal study.

Future research could also assess the transition to elite level by examining athletes during this phase of their career by reviewing the outcomes and reflecting on the process. In addition, matching the athletes based on their demographics and achievements would allow making close and accurate comparisons between successful and unsuccessful athletes. A sample consisting of athletes developing in the same environment would provide us with rich information regarding the interaction of the environmental characteristics with the character of the individuals. Finally, it is essential to further examine the potential influence of the development experiences and as such, more research is required in this area.

Finally, further research is required regarding the identification and selection of athletes more specifically about the effectiveness of different strategies. This thesis provided

practical recommendations of selection strategies that have been successfully applied in practice for triathlon athletes in an independent development program. Therefore, it is necessary to further examine whether those strategies can be implemented in other contexts, how they need to be adjusted based on the nature of sport and identify more strategies that can be useful for both and athletes.

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