Early Sport Specialisation and Olympic Athlete Performance

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Declaration of Authenticity

I declare that the research project, *Early Sport Specialisation and Olympic Athlete Performance*, is my own work and that each source of information used has been acknowledged by means of a complete Harvard Referencing System. This dissertation has not been submitted before for any other research project, degree or examination at any university.

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Abstract

Despite having a large pool of high-achieving youth athletes in athletics, current statistics of Olympians in South Africa show that athletes do not transition from junior up to the elite senior level. The aim of this study is to identify South African Olympic athletes lived experienced and views of early sport specialisation (ESS), sport coaching, and Olympic Athletics performance. Whether or not the governing bodies are working to improve athlete and coaching development and participation, has a far lesser impact unless it is felt by the athlete. Currently South Africa does not utilise any version of an elite athlete development model or athletics academy. The American Development Model (ADM), Long-term Development Model (LTAD), and the Foundations, Talent, Elite, Mastery (FTEM) model are all discussed as possible options for adoption by South African federations. An interview guide was developed to determine challenges from the perspective of athletes and coaches. Participants included current and former Olympic athletics athletes, coaches, and sport administrators. Critical interpretation and critical analysis are key to understanding widespread coaching practices which may be detrimental to the Olympic-level achievement of an athlete. Analysis revealed emerging themes from the interviews were: no ESS, athlete burnout, and no financial or developmental support for athletes or coaches. The use of an athletics academy for athlete and coach development, the LTAD model, with modifications to address bio-psycho-behavioural issues and coach education, and a change in governing body structures is recommended as the athlete and coach development model for South Africa moving forward.

Key words: *Early sport specialisation (ESS), elite athlete, athletics, Long-term Development Model (LTAD)*

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DEFINITIONS OF KEY TERMS

Amateur athlete *- athlete who is not paid directly to compete; these athletes are often still competing for school*

Athlete development models - outlined programmes intended to develop and promote sport participation from sub-youth to seniors, identify and nurture elite athletes, and prevent injury and burnout at all levels of participation

Athletics - sport of track and field

Early sports specialisation (ESS) - year-round training and competition in a single sport at an early age (adolescent)

Elite athletes/performers and high performance athlete - terms will be used interchangeably; specialists who have mastered their sport; this level of athlete is at or near Olympic level of skill mastery and performance in their specialised sport or event

Junior athlete - 19 years and younger

IAAF - International Association of Athletics Federations; the international governing body for the sport of athletics

Multilateral athlete development models - includes mental and social development in addition to sports skill development and mastery

Olympian *- athlete who competed in the Olympic Games at some point in their career*

Organised youth sports - any sports competition at the primary and secondary level that is structured and monitored by a governing body (ie, school, community center, local sport federation, etc.)

Professional athlete - athlete who is paid to compete either part-time or full-time; age is not a requirement to be a professional

Primary-youth or Sub-youth athlete - 15 years and younger

Specialist - an athlete that focuses, and excels solely on one event or sport

Sport - activity requiring physical exertion and skill.

Sport coach or sports coaching - a person in authority that designs, implements, and manages sports related training programmes for an individual or team

Senior athlete - 20 years and older

Youth athlete - 17 years and younger

Youth Olympic Games - organised by the International Olympic Committee; held every four years and modeled after the Olympic Games for amateur, adolescent age athletes

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1. CHAPTER 1

INTRODUCTION

1.1. Introduction

Essential phases of athlete development pathways are identified by athlete development models that assimilate concepts of personal development, psychosocial transitions, practice (or play) and early specialisation (sampling); this is critical for the transition of youth throughout their careers (Brenner & Council on Sports Medicine & Fitness, 2016; Coutinho, Mesquita & Fonseca, 2016; Galatti *et al.*, 2016; Myer, Jayanthi, Difiori, Faigenbaum, Kiefer, Logerstedt & Micheli, 2015). These transitions include the introduction to sport as well as post-athletic careers. Studies conducted in Denmark by Suppiah, Low and Chia (2015) and in the USA by Riewald and Snyder (2014) have found athletes are able to reach elite, Olympic levels with continued participation in multiple sports until later in their physical development, and without early sport specialisation (ESS).

Based on the reasoning of the researcher, the difference between South Africa and nations that dominate the Olympic Games is due to coach education and implemented athlete development models. One study by Tshebo, Matele, and Feltz (2018:24) found that in Southern Africa, schools and federations (i.e. teachers and coaches), significantly impact both athletic and career development more than parents. “Athletes’ early career development tends to be tied to academic development with limited parental and community involvement” (Tshebo *et al.*, 2018:24). It is the researcher’s perception that provincial bodies have not supported development of athletes for longevity and often

over-looked promising athletes due to a lack of talent identification model. Provincial and other sport related governing bodies have not aided local clubs financially or educationally. The lack of educational support for coaches and clubs has inevitably limited the achievements of athletes. In select instances, as observed by the researcher, some athletes who did achieve at provincial levels were not permitted to attend national events because the committee determined there were too many athletes of the same race. Thus, committees instead selected an athlete who had not achieved the standard in order to balance the races being represented. The lingering effects of the apartheid system may influence certain areas of policy and sport (Jacobs, De Bosscher, Venter & Schreerder, 2018:5), and this may sometimes attempt to redistribute opportunities previously withheld to certain groups.

Some provinces may have offered significant funding assistance to clubs and athletes and may not experience high levels of corruption. However, it is unknown by the researcher if there was a connection to receiving the funds or education and personal relationships with federations or political party lines. It was also possible that the preference for racial quotas over performance as experienced by the researcher in Kwa-Zulu Natal (KZN), was not the common situation in other provinces that earned more medals at local and national levels, as it was assumed they selected the best athletes regardless of racial quotas.

1.2. Background

Specialising in a single sport at a young age is viewed as a controversial topic as much sport philosophy literature, despite their findings or preferences, “indicate there is a need for sustained reflection within the discipline on whether this practice is permissible or

Table 1. Typical aspects of early sport development.
(Source: Ferguson & Stern, 2014: 378)

i. High volume, intensity, duration of training at a young age
ii. Minimal rest or time off
iii. High structured training with emphasis on physical development
iv. May involve exclusion of other sports
v. May be initiated by parents, coaches or trainer
vi. Goal of obtaining provincial status

desirable and under what conditions it should proceed" (Torres, 2015:314). Today, organised youth sports often stress developing and attaining sufficient sport-specific skill levels rather than the fun, recreational preferences of decades past. Adolescents may be pushed to emulate the training practices of their idols and strive to become an 'elite' athlete at a young age; elite athletes are viewed as specialists who have mastered their sport. Keep in mind the goals of each athlete may differ, yet some view sport as a career path as a means to reach university or professional levels. Sport specialisation, or rather year-round training and competition in a single sport, has become more prominent in younger athletes (Ferguson & Stern, 2014). Table 1 shows the typical aspects of early sport development. Many coaches and athletes have adhered to the theory of 'deliberate practice' which states that experts are always made, not born (Gonçalves, Rama & Figueiredo, 2012), thus motivating athletes to pursue early sport specialisation (ESS). Becoming a specialist or expert required an athlete focus on three stages: (1) starting at an early age, (2) specialising and increasing participation, and (3) dedicated full-time commitment (Source: Jayanthi, Pinkham, Dugas, Patrick & LaBella, 2013).

One theory as to the reason for ESS dominance was due to the misinterpretation of a study by Ericsson, Krampe, and Tesch-Romer in 1993 which lead to the "10,000 hour

rule" (Ferguson & Stern, 2014:379-380). Ericsson *et al.* (1993) investigated predicting factors of elite, expert performers, and determined that, "high volumes of deliberate practice (defined as specific, focused, skill based practice) at a very young age [before age 5-7] was the strongest predictor of becoming an expert performer" (Ferguson & Stern, 2014:380). It showed that individuals who began early and achieved 5,000-10,000 hours were more likely to become a master over those who began deliberate practice late and did not acquire the hours. Note the range of hours, and the omission of a specific number of hours, not taking into account that each individual is unique. Also, the subjects obtaining master and expert status in the Ericsson study were musicians, mathematicians, and chess players. Application of the aforementioned principle and theory has been widespread, which convinced athletes and coaches that the only way to become an elite athlete was through deliberate practice and ESS. It may be plausible to consider 5,000-10,000 hours of studying a sport could also make an athlete an expert on strategy and knowledge, yet it would seem unlikely that the 'mental rule' found by Ericsson would fully apply to the physical demands required in sport.

Table 2. Position Statements Against ESS
(Source: Ferguson & Stern, 2014: 380)

i.	American Medical Society for Sports Medicine
ii.	American Academy of Pediatrics National Athletic Trainers Association International Society for Sports Psychology
iii.	World Health Organization
iv.	International Federation of Sports Medicine National Association for Sports and Physical
v.	Education

ESS coupled with consistent, high-intensity training has lead to an array of over-use injuries, pain, social isolation, anxiety, loss of playing time, burnout, and early retirement (Brenner, 2016; Côté, Baker & Abernethy, 2007; Côté, Lidor & Hackfort, 2009; Coutinho, Mesquita & Fonseca, 2016; Ferguson & Stern, 2014; Jayanthi, LaBella, Fischer, Pasulka & Dugas, 2015; Jayanthi *et al.*, 2013; Mohib, Moser, Kim, Thillai & Gingmuth, 2014; Myer, Jayanthi, Difiori, Faigenbaum, Kiefer, Logerstedt & Micheli, 2015). Multiple authorities have spoken out against the practice of ESS to protect young athletes (see table 2; Ferguson & Stern, 2014); unfortunately, many coaches remain unaware of the damage that can be done as they enforce ESS and overtraining of athletes at any level. A more recent study of 1214 athletes aged 7-18, found the risk of physical injury increased when athletes trained over 16 hours per week, and also suggested that athletes participate in training fewer hours per week than their age in years (Jayanthi *et al.*, 2015); this again appeared to negate the theory of the ’10,000 hour rule’ in terms of physical training.

In response to studies similar to those of Jayanthi *et al.* (2015), some sport federations and entities, have shifted away from a focus on ESS for elite athlete development. Instead, they have moved to promoting adolescent athletes’ participation in multilateral development and various training methods to prevent burnout later in the athlete’s career, while also mentoring and developing coaches to better train and identify pre-elite athletes. Continuing trends of athlete burnout, early retirement, and over-use injuries demonstrated a need for all federations to adopt and implement athlete development models to educate coaches and protect athletes from unnecessary ESS.

While talent identification and development models were used for recommendations in athlete training, it was essential that coaches pay close attention to the personal needs

of the athletes and make necessary adjustments as they constantly evaluate the development progress of an athlete. Youth athlete development has been essential for elite team competition success and longevity (Galatti, Côté, Reverdito, Allan, Seoane & Paes, 2016; van de Vijver, van Bodegom & Westendorp, 2016), and specialisation was crucial as pre-elite athletes perfected their skills and focused on a single sport. However, current sports coaching practices of increased training hours and specialisation have a negative impact on the longevity of elite athletes as many athletes are leaving sport due to injury and burnout (van de Vijver *et al.*, 2016).

1.3. Problem statement

Unfortunately, coaching methods for youth athlete development in South Africa has not been regulated and therefore, federations have not ensured the safety or longevity of youth athletes at the beginning or professional stages. In 2011, the South Africa Coaching Framework (SACF) was published and proposed theoretically significant changes to the hierarchy and regulation of coaching practices; however, no permanent structures were implemented in athletics. It seems South Africa has not effectively tracked or monitored athletics coaches or athletes at any level through an official governing body to ensure athlete safety and proper coach education. Despite committees, which the author has been a member, that have the intention of regulating coaches, Athletics South Africa (ASA) has yet to enforce an ethical code of conduct, coach development programme, or athlete development model. Ethical practices surrounding working with athletes, especially adolescents, were incorporated in this study in an attempt to re-enforce ideals of proper athletic youth development based on extensive research. As stated previously, athletes all over the world can encounter similar challenges with ESS as well as similar

success with monitored developmental training (Riewald & Snyder, 2014; Suppiah *et al.*, 2015; van de Vijver *et al.*, 2016).

Despite having a large pool of high-achieving youth athletes in athletics, statistics of Olympians in South Africa showed that athletes have not transitioned from junior up to the elite senior level (International Olympic Committee, 2022). Since the inception of the Youth Olympic Games in 2010, South Africa has sent a total of 188 youth athletes to represent the country:

i. 63 athletes in 2010
ii. 54 athletes in 2014
iii. 72 athletes in 2018 (International Olympic Committee, 2022).

However, Chad le Clos (swimming) and Dylan Bosch (swimming) were the only youth Olympians to make the transition to the Olympic Games as of 2018. These statistics indicated that athletes were not able to transition from sub-youth up to the elite senior level. One possible cause may have been that many of the athletes identified by coaches as pre-elite youth were over-trained and pushed into early sport specialisation (ESS), thus plagued them with injuries, burnout, and a disinterest in their specific sport as they aged. The current study attempted to uncover lived experiences relating to training methods, athlete achievement, and federation support.

1.4. Research aim and objectives

The aim of this study was to identify South African Olympic athletes lived experiences and views of early sport specialisation (ESS), sport coaching, and Olympic Athletes' performance. Further, the study aimed to develop guidelines for the coaching and enhancement of children and youth in athletics. The objectives of this research were to:

i) Analyze how athletes perceive sports coaching methods.

ii) Explain how coaching practices affected past (and current) Olympic athlete performance.

iii) Determine which youth athletes were able to transition from Youth Olympic Games to the Olympic Games.

iv) Criticise South Africa's methods to enforce coaching regulations and frameworks.

v) Develop guidelines for improvement of coaching children and young athletes.

1.5. Research question

The primary research question was: How can South Africa enable the transition from sub-youth up to the elite senior level for high-achieving youth athletes in athletics?

1.6. Research philosophy

1.6.1. Ontology

Classification of the research paradigm was determined based on the researcher's response to questions of ontology, epistemology, and methods (Aliyu, Singhry, Adamu & AbuBakar, 2015:3). The ontology addressed how to know something was true (Aliyu *et al*., 2015:11). Ontology was a method of categorising and grouping concepts and/or knowledge. The researcher strived to find ways to qualitatively measure to discover truth; it was the philosophical basis for the researchers interests and design. He believes that the truth is relative and based on whose lenses it is viewed through. The researcher

therefore assumed a subjective approach in this study, as he believes that the truth involves getting the experience of the participants involved in the phenomenon being studied. Further, the researcher is engaged as a co-creator of the truth with the participants.

The researcher was born in the United States of America and attended a Christian university, namely Oral Roberts University, in Oklahoma, USA, on an athletics bursary. He has been involved in coaching in South Africa since 2007 and was extremely passionate about training for quality over quantity. He created a development club in Kwa-Zulu Natal (KZN) for athletes ages 8 and up. Along with producing national and international athletes, he has, most notably, attended the Youth Olympics and Youth Commonwealth Games as the team manager for South Africa. As a certified Athletics South Africa (ASA) Level III coach and one of the few qualified National Coach Developers (NCD) in South Africa, the promotion and participation for increasing coach knowledge was lacking from governing bodies and coaches. Based on personal experience and first-hand observations, the researcher believed many changes were needed to be made in South Africa in order to dominate the world stage.

1.6.2.Epistemology

Epistemology was built from the researcher's ontology in that knowledge was obtained through research and analysis. Interpretivism relates to the way in which I gained knowledge and/or understanding. The researcher was a constructivist and subjectivist. It was noted that some level of subjective bias can be nullified based on social norms surrounding the inter-subjective consensus (Hay, 2017:4); intra-subjective ideas (knowledge) are specifically significant and unique to individuals involved. The focus as

a constructivist was on the process views of personal experience rather than the product; in providing individuals "with opportunities and incentive to build [knowledge]" (von Glasersfeld, 1995:4). He did not believe in a singular truth or reality; the truth to the researcher depended on who's viewpoint he was looking through. "Thus the notion of multiplicity is central to constructivism, that is, there are multiple representations of reality, none of which is automatically or necessarily superior or inferior to the others" (Johnson, 2005:8). Based on being constructivist, the researcher believed an individual's reality was rooted in their interpretive ambiguity of a culmination of their experiences, knowledge, and interactions; therefore, he was also subjective.

The purpose of knowledge was to aid the growth and improvement of individuals and the entire population. Epistemologies shape how individuals react to uncertainty, which can be defined as the absence of knowledge. Epistemologies "supply the "truth-generating" mechanisms … through which strategists seek to resolve incomplete knowledge problems" (Rindova & Courtney, 2020:788). "If we are to understand the workings of the economic system, we must examine the meaning and significance of uncertainty; and to this end some inquiry into the nature and function of knowledge itself is necessary" (Knight, 1921:199). Knightian uncertainty (KU) resolved that uncertainty arises from unpredictable, poorly understood change, which poses knowledge problems of enumerating, classifying, and estimating large numbers of effects among interacting factors. However, high levels of knowledge allowed for essentially starting at the end and working backwards as possible outcomes were known or anticipated, whereas incomplete knowledge may be viewed as an obstacle to initiating action. New knowledge may create new paths to the future, which differs from the past. "These ideas suggest

that strategy making under KU is a knowledge generation process that requires and enables departures from the known past to respond to and reshape an unfolding present guided by subjective beliefs … and imaginative projections…" (Rindova & Courtney, 2020:791). Thus, we needed to expand our understanding and reduce uncertainty and risk through deepening inquiry and use of knowledge.

Critical interpretation and critical analysis were key to understanding widespread coaching practices which may be detrimental to the Olympic-level achievement of an athlete. By conducting interviews related to athletic development, coaching methods and ideals, early sport specialisation experience, and federation support, athletes' needs, and preferences may be better understood. An interview guide was chosen to determine challenges from the perspective of athletes and coaches. Whether or not the governing bodies were working to improve athletic and coaching development and participation, has a far lesser impact unless it is felt by the athlete. Questioning methods and challenging their usage created a dialogue that critiqued what was and was not acceptable by coaches and federations in the eyes of athletics athletes. Once the results were analysed, the knowledge was used to develop a process for change in the regulations of federations and practices of coaches.

1.7. Theory development

South Africa has produced numerous youth athletes who perform at maximum levels but have not achieved at the senior level. According to the International Olympic Committee (IOC; 2022), 188 South African youth have participated in the Youth Olympics since 2010, yet only two athletes have reached the Olympic Games. Studies around the world have

shown that great care must be taken with athletes at all stages of development to ensure injury prevention, success, and longevity (Henry, 2013; Jayanthi *et al.*, 2013; Jayanthi *et al.*, 2015; Kuettel, Boyle and Schmid, 2017; Luke, Lazaro, Bergeron, Keyser, Benjamin, Brenner & Smith, 2011). However, a variety of athlete development models (Long Term Athlete Development model (LTAD), Foundations, Talent, Elite, Mastery Framework (FTEM), American Development Model (ADM), and more) exist and many coaches and federations have seen great success no matter the model they have chosen to implement or develop. It has been assumed that countries who utilise models for athlete development and talent identification also require training and certification for their coaches (otherwise they would not effectively implement models and strategies).

A noteworthy finding by Snyder and Riewald (2014) showed Olympians place great importance on coaching in relation to their success. “Training knowledge, teaching ability, strategic knowledge of the sport … and general training knowledge was considered the top-rated quality of a coach …” (Snyder & Riewald, 2014:53). Established frameworks and models (LTAD, ADM, FTEM) for coach and athlete development vary based on the federation and country of reference (each of the models were described in depth in the literature review of this paper). However, it is essential to consider all who are involved with the training of an athlete: coaches, parents, medical staff, trainers, and of course the athlete. Training takes a great deal of time and having a clear understanding of set goals and plans to achieve can make all the difference. Oliver, Lloyd and Meyers (2011) recommend coaches and parents be trained in appropriate treatment of athletes both physically and emotionally, as both can have long-term effects on an athlete. Having a child who is in the small population of elite athletes can be extremely exciting as a coach

or parent. However, young elite athletes are still developing in many areas and must be nurtured as a normal child, despite their exceptional talent and skill.

It is essential to consider the life of an athlete and their ability to recover and continue, keep in mind the Team USA findings which recorded Olympic athletes trained for 14 years before making an Olympic team. (See Table 3 for clinical recommendation for specialisation with longevity in mind.) Athletics and sport in general are meant to be life-long practices for an active, enjoyable life. By effectively implementing the LTAD model in South Africa to emphasise detailed evaluation at a myriad of stages of an athlete's participation it may lead to increased learning, growth, and longevity while preventing

Table 3 Clinical Recommendations for Youth Specialisation (Source: Myer *et al*., 2015).

SORT: STRENGTH OF RECOMMENDATION TAXONOMY	
A: consistent, good-quality patient-oriented evidence	
B: inconsistent or limited-quality patient-oriented evidence	
C: consensus, disease-oriented evidence, usual practice, expert opinion, or case series	
Clinical Recommendation	SORT Evidence Rating
Youth should be given opportunities for free, unstructured play to improve motor skill development and parents and educators should encourage child self-regulation to help limit the risk of overuse injuries.	C
Parents and educators should help provide opportunities for free, unstructured play to improve motor skill development during the growing years, which can reduce injury risk during adolescence.	C
Youth should be encouraged to participate in a variety of sports during their growing years to influence the development of diverse motor skills and identify a sport, or sports, that the child enjoys.	C

overtraining, burnout, and injury. The reasoning of the researcher concludes that if a model, LTAD in this case, can be accepted by coaches that implements monitoring for personal, social, and environmental changes while assessing sport performance and participation, all athletes, coaches, and federations would have an opportunity to greatly benefit.

1.8. Theoretical frameworks

Coaches are a key to the achievement of an athlete. Based on research and personal observation, the “Theoretical Framework of Coaching Roles and Athlete Development” details the requirements for a coach to successfully train an athlete up to the Olympic level without the use of ESS, based on the authors views (see figure 1). Coaches must first prepare themselves before they can create training and development programmes for athletes at any level. It is vital that coaches earn accredited qualifications and become educated in various general and sport-specific methods, while also being recognised by federations. Once coaches are qualified, they can then effectively work with athletes to ensure safety, development, and performance outcomes. Note that figure 1 was created to show the need for continuing education for coaches and post-athletic career for athletes; training and preparation for success for both coaches and athletes is never ending. Côte and Gilbert (2009:316) defined coaching effectiveness as “[t]he consistent application of integrated professional, interpersonal, and intrapersonal knowledge to improve athletes’ competence, confidence, connection, and character in specific coaching contexts”. As coaches gain experience and knowledge, they can approach the level of expert coach; an expert coach must have extensive knowledge in

a particular sport context (Côte & Gilbert, 2009:316). However, coaching expertise and effectiveness does not rely only on knowledge, they must be able to develop athletes to produce enhanced performances (Passmore, 2007:12). “The ability of a coach to effectively and consistently develop his or her athletes’ 4 C’s [Competence, Confidence, Connection, Character/Caring] will be the ultimate indicator of an expert coach” (Côte & Gilbert, 2009:317). Coaching expertise also requires learning from experiences and

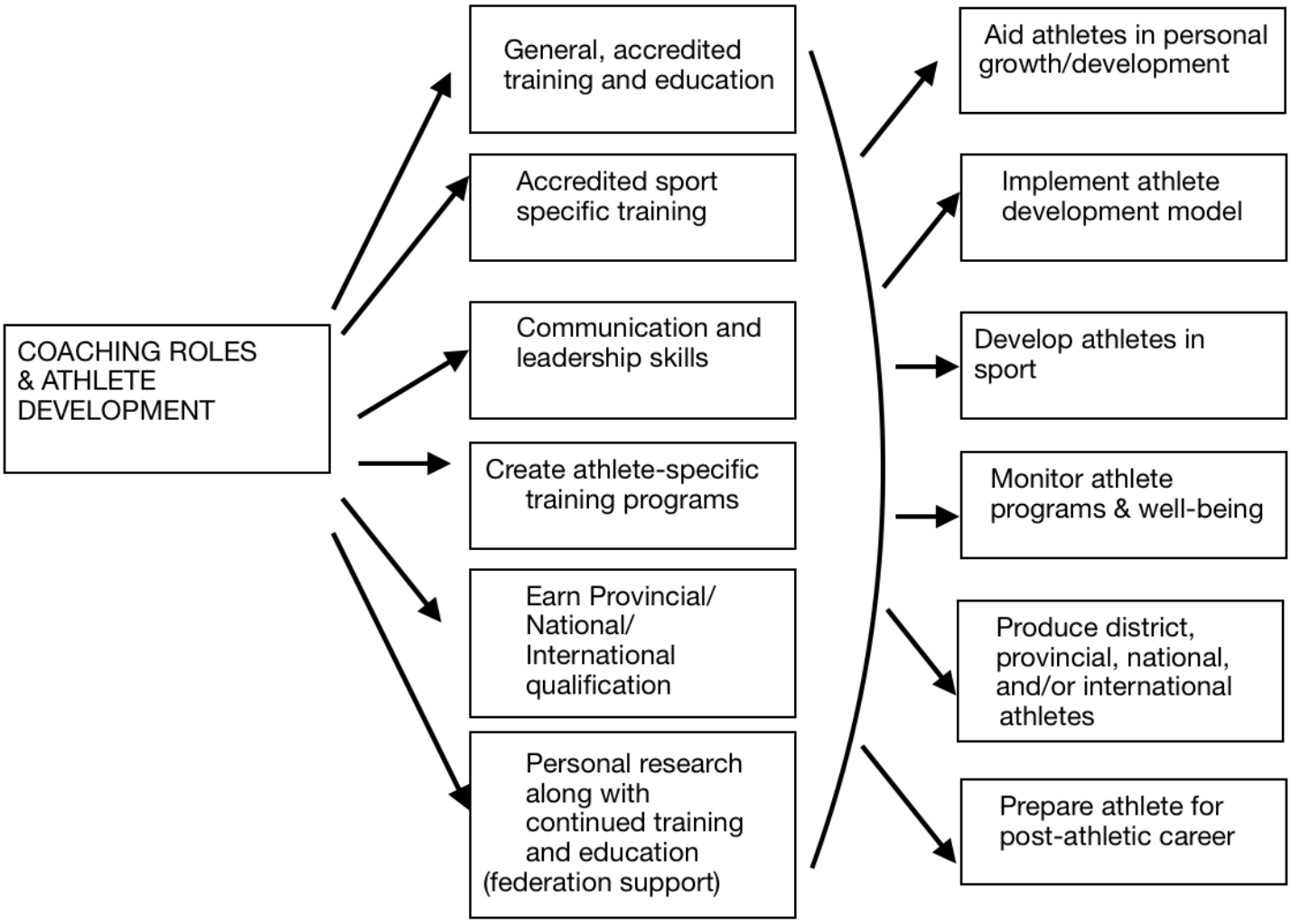

Figure 1 Theoretical Framework of Coaching Roles and Athlete Development

reflection along with producing athlete outcomes, and coaching context (Côte & Gilbert, 2009:308-310). “The performance demands of a sport and the developmental level of its athletes are the two most important variables involved in defining a specific coaching context …every relationship between a coach and athlete(s) constitutes a specific coaching context because of the different dynamics that exist” (Côte & Gilbert, 2009:315 & 319). The knowledge a coach has means nothing if it cannot be translated into success for the athletes in terms of needs and goals during and after their athletic career.

1.8.1.Primary theory: Long-term Athlete Development Model

Studies and experts have been vocal in the needs for change in the development programmes around the world. Continuing education of national and provincial coaches is essential for the success of individual athletes, coaches, and National Sports Federations; this must be a top-down method of training to ensure the adequate opportunity for coaches. In keeping with the inductive path of research, the Long-term Athlete Development Model (LTAD) was the model used for guidance and comparison. Coaches must learn the most effective methods for improving athletic abilities without causing harm for both the average and elite athlete, which may involve the ADM, LTAD, FTEM, or a combination. “Models or frameworks should enable explanation, prediction and modification of behaviour” (MacNamara & Collins, 2013:794) in order to better prepare and train athletes in sport and life. By caring for athletes at all stages, coaches can ensure the longevity of their careers and participation at higher levels; young elite athletes are meant to be nurtured and protected by those in authority. The development of elite athletes and their coaches will allow them to perform on an international platform

with greater success and pass their knowledge to other groups and individuals. Allowing athletes at all levels to enjoy and learn can grow sport overall and improve the quality of life for all who are involved.

1.9. Research design

The research design was a mono method study, specifically, a qualitative study through the use of interviews. The data collection for this study relied mainly on the responses from past Olympic level athletics athletes, many who are now involved as coaches and administrators in sport, in South Africa (see Appendix A for the interview guide). The use of an interview guide allowed for participants to describe any notable moments during athlete training and performance. The questions required participants to recall various levels of training, competition, and performance outcomes at a myriad of ages and developmental stages. The data was used to recognise the lived training experiences of the athletes, performance achievement, and federation support in relation to South African Olympic Athletics athletes. More details of the design are discussed in chapter 3.

1.10. Delimitations

The boundaries of this study, or rather the inclusion criteria, were athletics athletes, coaches, or administrators who participated at the Olympic-level between 1996-2018. All participants had to either be an athlete or directly coached an Olympic athlete to be considered. Games the administrators approached for this study were either past Olympic athletics athletes or coaches who have moved into administrative positions within athletics. Youth and junior athletes who did not participate in the senior level Olympic Games were not included in this study.

1.11. Assumptions

It was assumed that each province/country had a governing body to monitor coaching practices and track athlete performance. It was assumed federations want to improve coaching tactics and athlete performance. It was also assumed coaches were a leading cause to the over-training and early specialisation of youth athletes as coaches designed the training programmes, and that although coaches have good intentions, they required increased education and support from governing federations. Lastly, it was assumed that the interview questions were answered honestly by all participants.

1.12. Chapter summary

Athletes at any level were under the care of coaches, parents, and local governing bodies. Athletes rely on these authorities to guide them to success. As athletes show promise and progress towards elite status, a variety of training methods were (or should have been) employed by a coach. Many rely on ESS while others look to athlete development models to guide youth skill development. Different countries and sporting codes have implemented various models with some success, while other countries rely on the discretion and education of coaches to determine how to best train an athlete.

It has been the experience of the author that South Africa has not regulated coach education or youth-athlete development effectively, thus preventing elite senior athlete achievement. Bias did exist on part of the researcher in this case as the researcher works in the field of athletics and athlete development. The realistic view of the researcher did come across during the research process, however, neither significantly impacted the

active research portion of the study which relied greatly on the interviews completed by former South African Olympic athletics athletes.

Chapter 2 explored prior research relating to coach education programmes, leadership methods, early sport specialisation, and various athlete development models from around the world. It provided a knowledge base of terminology, leadership practices, current issues and findings, and experience of athletes at all stages of development and achievement. Chapter 3 portrayed the research method and design used for this study. It also incorporated data collection and ethical considerations. Chapter 4 included detailed results and discussion. Chapter 5 provided an overall conclusion of the findings and research, as well as recommendations. This was followed by a list of references utilised in developing the foundation and analysis for the study. Appendices, including the interview guide, were then listed.

2. CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

The life of an athlete and their career is unique to the circumstances of the individual, which can be influenced by financial status, time of specialisation, family, coaches, and sport governing bodies, to name a few. When an athlete is identified as pre-elite and how they are trained may be a key to their achievement and longevity, which would then be impacted by the financial assistance, methods of talent identification (TID), and coach education programmes implemented by governing bodies. However, monetary support does not need to be in the form of cash for an athlete, it could be covered medical expenses, kit, and paid coaching fees, especially while in the pre-elite stages. TID and athlete development coincide with coach education programmes as coaches must disseminate the approved training and development methods approved by the sport governing body to ensure athlete safety and optimal achievement. Ultimately, the level of achievement of an athlete and push towards specialisation relies on the approved coaching practices, training group (or academy), leadership, management of the sport governing body, and limited stress, both physical (ie, injuries) and psychological (ie, finances).

2.2. Coach education programmes

Coach education is often cited as essential for athlete and sport development and is typically included within athlete development models. One study found that in Southern African countries (Botswana, South Africa, Zimbabwe, and Namibia), “Schools (in this case teachers and coaches) and federations (national and international sports programs) played a greater critical role in their career development than did parents” (Tshube, Malete, & Feltz, 2018:22). These findings further feed the need for schools and federations to prepare and educate coaches, and teachers who are used as coaches, in all aspects of athlete development. Van den Berg (2020:284) surveyed university student-athletes in Gauteng and found “coaches currently do not function beyond the normal sport environment to provide a form of academic, psychological and social support.” She recommended improved, holistic training practices to develop intentional long-term focus, guidance, feedback, and goal setting. Coaches must possess (or develop) skills and qualities in several areas, including but not limited to, leadership, education, psychology, self-awareness, and management of people, systems, and technology. It would then be fair to assume that any coaching profession would require some sort of formal training or education, preferably one endorsed and monitored by a national or international governing body that licenses coaches. A global study on coach education programmes (CEPs) found some to be extremely sport and age specific while others were overly general with little context (Shaikh, Santos, Rodrigue, Ciampolini, Galatti, Seguin, & Fournier, 2019:29). The study also found the overly general CEPs “deterred relatability and practical means of applying content to practice” (Shaikh *et al.*, 2019:29). This implies the need for national CEPs to enable the transition of coaches into specified sporting

code context to increase positive application which incorporates “practical opportunities such as active rather than passive learning, problem-based learning, reflection, peer learning and interaction, ongoing feedback and social support, and communities of practice” (Shaikh *et al.*, 2019:29). Coaching, whether full-time, part-time, or as a volunteer, requires a level of qualifications to be met to ensure safety and enable high achievement of athletes at various ages and stages of development.

2.3. Coaching requirements: South Africa

There are no specific competencies required to coach in South Africa, specifically in athletics, at any level. The South African Coaching Framework (SACF) that was published in 2011, has not seen any updates regarding coaching standards for athletics. The SACF states the need for governing bodies to:

i) Develop a comprehensive model for long term coach development in South Africa, referenced against African and international frameworks where appropriate and aligned to LTAD and Long term tutor development (LTTD),
ii) Develop a transparent system of recognition of prior learning (RPL),
iii) Develop a comprehensive programme of coach education and development on a sport specific and generic basis, as appropriate,
iv) Establish an accessible system for the education and development of coaches at all levels (Vardhan & Duffy, 2011:39).

In addition, the SACF suggested an audit of the current coaching workforce, which has also not been implemented. RPL courses were offered for coaches in athletics in 2017, however, it was not publicised how many were fully recognised. It would be interesting to see since many coaches entered the field after participating in high school, or were

assigned the position after becoming a teacher, and were not formally trained. Ideas and theories were in fact created, but no real plans have been implemented in athletics. Suggested committees, such as Kwa-Zulu Natal Sports Confederation Coaches Commission and a sub-committee for High Performance, were in fact established, however, many who sit as members and chairpersons are politically connected and not qualified coaches. The continued control of athletics by unqualified politicians (in place of qualified coaches) at every level may inevitably keep the sport from seizing opportunities for achievement.

2.4. World Athletics Coach Education and Certification System (CECS)

World Athletics (formally International Association of Athletics Federations, or IAAF) developed and implemented the five level Coach Education and Certification System (CECS) (see table 4). CECS was first introduced in 1990 with only three levels but grew to five levels in 2007. More recently World Athletics created an online academy to develop coaches as leaders, practitioners, and educators. The World Athletics global website offers online courses for coaches and technical officials, and e-learning courses relating to health and science. The goal of CECS is to ensure each country has educated, qualified coaches who can eventually teach and train coaches at an international standard. The programme is meant to enable countries to develop from within and strengthen coaches and athletes to improve athletics overall.

While CECS is an international programme, it was noted by Duffy, Crespo, and Petrovic (2010) that much of the European Union does not use the CECS as they have developed their own CEPs. "There are national systems operated by the Member Federations, by university systems, by others in Europe and other highly developed countries. However,

Table 4. The IAAF Five-Level Coaches Education and Certification System (Source: worldathletics.org)

Level	Level I	Level II	Level III	Level IV	Level V
Title	**Youth Coach**	**Assistant Coach**	**Coach**	**Senior Coach**	**Academy Coach**
Duration	10 day course	14 day course	14 day course	14 day course	3 to 12 month course
Objective	To develop the skills to organise Kids Athletics: preparation & competition + orientation to athletics for 13-15 year-olds	To provide an opportunity to begin the Coaching Pathway	To develop intermediate coaching skills and knowledge	To develop performance coaching skills and knowledge	To develop a professional specialisation in coaching
Target Group	Teachers and Talent Scouts	Teachers and Coaches	Coaches	Performance Coaches	Experienced and active coaches
Entry Requirements	Minimum of 18 years of age, interest in athletics	Minimum of 21 years of age, interest in athletics	Successful completion of Level II and one year of active coaching certified by MF	Successful completion of Level III and one year of active coaching certified by MF	IAAF Diploma in Coaching or Equivalent Recommendation by MFs
Qualifications	IAAF CECS Level I Certificate	IAAF CECS Level II Certificate	IAAF CECS Level III Certificate	IAAF Diploma in Coaching, after 2 years active coaching	IAAF Academy Diploma
Funding	Olympic Solidarity and National	IAAF, Olympic Solidarity and National	IAAF, Olympic Solidarity	IAAF	IAAF, Area, MF, self-funded
Participants' competence after the course	T o stage Kids' Athletics and to prepare and motivate these youth (13-15 years) to continue with athletics	To implement appropriate athletics programmes to youth athletes	To coach a selected event group to beginner and developing athletes	To coach a selected event group to performance athletes	To serve the MF in the chosen area of Academy specialisation
Activity Areas	Schools, Clubs, Member Federation, Ministry of Education	PE classes in schools, basic training in clubs	Athletics institutions (e.g. clubs), Member Federation	Athletics institutions (e.g. clubs), Member Federation	Member Federation, Universities, Clubs
Invitation	by Member Federation, Schools, Clubs	Recommendation by Member Federation	by IAAF, recommended by MFs	by IAAF, recommended by MFs	by IAAF, recommended by MFs
Equivilency	None	On request to IAAF and approval	On request to IAAF and approval	On request to IAAF and approval	On request to IAAF and approval
Lecturer Education	CECS Level I Lecturer Organised by IAAF and MFs	CECS Level II Lecturer Organised by IAAF	CECS Level III/IV Lecturer Course Organised by IAAF	CECS Level III/IV Lecturer Course Organised by IAAF	IAAF Academy Lecturer' Nominated - approved by IAAF
Education choices	None – covers Kids' Athletics and Youth athletics	None – covers all events	From six Event Groups	From six Event Groups	Chief Coach, Elite Coach, Coaching Development Director

these often have no connection with and make no reference to the CECS or to each other" (Duffy *et al.*,2010:28). Countries that do not have the same foundations as European

nations, like South Africa, may benefit from utilising the system and courses provided by World Athletics both in person and online. However, to take part in these courses, a coach's federation (or country) must at least nominate them to attend and earn a certified level, and possibly fully fund their attendance. In some cases, countries are extremely selective in who they send on these courses. It would be for the betterment of any country's athlete development to increase the number of qualified coaches. Coacheswould need the opportunity to choose to participate and federations would be able to choose who to fund, but they should not restrict those who wish to earn a diploma.

2.5. Improving coaching competencies

Education and accredited qualifications for a coach are as significant as those for a teacher in the education system. Enabling appropriate levels of coach guidance through acquired organisational, management, and personal communication skills, feedback, and content knowledge, is positively linked to performance, whereas a lack of perceived guidance and support by coaches can lead to poor coping mechanisms and stress for athletes, influencing performance negatively (Mills, Butt, Maynard & Harwood, 2014:17). Van den Berg (2020) found university athletes in South Africa were dissatisfied with coaches when the only feedback and focus was on performance outcome, and recommended coaches be trained outside of the typical sport specific scope to better meet the psychosocial-behaivoural needs of athletes. Glad (2010:8) found that national athletics coaching structures found increased success when including the following items:

i) recruiting new coaches;

ii) maintaining a database of active coaches;

iii) coordinating the deployment, support and recognition of coaches;

iv) managing a coach education programme;

v) disseminating coaching literature and scientific materials;

vi) coordinating the provision of scientific, medical and other support for the coaches of elite athletes,

vii) advising the federation on the annual calendar, national team selection and training plans for elite athletes;

viii) organising training camps for elite athletes and their coaches;

ix) coordinating with the IAAF on matters related to the Coaches Education and Certification System (CECS) and the High Performance Training Centres, etc;

x) recognising and rewarding coaches who provide valuable service to the sport.

Implementation of courses for coaches at all levels, along with registration and tracking by federations, will aid coaches in effectively training their athletes to greatness and create a population of expert coaches. In addition to expert coaches, these coaches will be trained in efficacy practices to develop athletes in all aspects, not just sport skills. Côte and Gilbert (2009:316) defined coaching effectiveness as "[t]he consistent application of integrated professional, interpersonal, and intrapersonal knowledge to improve athletes' competence, confidence, connection, and character in specific coaching contexts". The general idea is that coaches want to do well and want their athletes to reach their potential, many simply do not have the adequate understanding of psychology, leadership preferences, training systems, and cycles to properly and safely develop programmes for athletes at every developmental or professional level.

Past studies have shown if a coach takes in to account the needs and personality of the individual, grater compatibility between coach and athlete was possible (Carron &

Chelladurai, 1974; Leeson & Fletcher, 2005; Van den Berg, 2020). The ability of a coach to adjust his or her style to accommodate athletes is detrimental; however, the coach must first notice the needed change and be willing to adjust. By simply showing interest in athletes' individual wants and needs, a coach has made the first step towards feelings of inclusion, compatibility and possibly cohesion (Carron & Chelladurai, 1974; Leeson & Fletcher, 2005). Utilising various screening methods, such as LSS, MML, CART-Q, and/or the CES, will give insight to the needs and preferences of the athlete. Continuing education for coaches, assistance in implementing new methods, and monitoring active coaches will give much needed support to coaches and athletes. Use of the aforementioned programme will enable coaches and athletes to be more intentional with their actions.

Passion and experience do not equate to good coaching practices. Coaching needs to have some basis of formal education directly related to coaching skills. At the national level in South Africa, coaches are to complete from level I to level IV to become a national coach. However, it has been the researchers personal experience that during these courses, some coaches do not complete assignments or have any true knowledge of coaching or coaching context, yet are given the certificate of completion. These instances truly exacerbate the need for real change in athletics coaching in South Africa.

An alternative programme for coach development would take an investment of time and effort from provincial and national federations. Keys for development of coaching skills and competencies are extensive, but can be summarised in the following:

i) Formal qualification from accredited institution (appropriate for the level of athletes),

ii) Full understanding of stages of training,

iii) Police clearance,

iv) Annual membership with national federation,

v) Annual continuing education course,

vi) Actively coaching,

vii) Follow code of ethics (this includes SAIDS and WADA),

viii) Develop his or her athletes' 4 C's (Competence, Confidence, Connection, Character/Caring),

ix) Understand and work toward coaching effectiveness as defined by Côte and Gilbert (2009).

If federations and coaches would use the article from Côte and Gilbert (2009) to base training and expectations, along with the implementation of the RAMPAGE method for each training session, many issues would be automatically resolved for athletes (more details on the RAMPAGE method are found in section 2.11). "In competitive sport, coach leadership and coach–athlete relationship variables are better and stronger predictors of task cohesion than social cohesion because their underlying goal is to … bring about team success and performance accomplishments" (Jowett & Chaundy, 2004:309). Coaches must encourage athletes set their own goals, possibly with guidance from the coach. Coaches need to keep training age and level appropriate. "[W]hen athletes perceived their coach to be effective in developing the psychological skills and motivational states of athletes they tended to report greater connection with their coach" (Mohd, Kassim & Boardley, 2018:195). Athletes must also be taught to understand it is ok to fail as it is an opportunity to learn. A loss or failure to reach a goal can be devastating

to an athlete, and a coach needs to help them to learn from the experience rather than quit or be traumatised for an extended period.

An aspect of gaining an accredited qualification would entail knowing the stages of training: training to train, training to compete, and training to win. Various times of the season and development of an athlete requires a different stage. Unqualified and/or unregistered (with federation) coaches are to be fined at events when entering athletes and athletes will not be allowed to compete. While it may seem to be damaging to the athlete who planned to compete, it is essential that athletes understand the need for a qualified coach to keep them healthy and safe during training and competition. Coaches that are truly passionate about helping athletes will work to better themselves and take offered continuing education courses to ensure they are providing adequate programmes. Police clearance is an absolute must as some coaches have a history of taking advantage of young athletes, yet are still chosen to accompany provincial teams as a coach or manager.

This programme will ensure coaches understand how to keep athletes safe while training optimally. The federations will have a list of qualified coaches and a larger pool to pull from for national and international events. Coaches who do not comply with regulations or constantly damage athletes can be reprimanded appropriately. And above all else, athletes will be able to choose their path of achievement and will not be abused psychologically or physically.

2.6. Coaching Effectiveness

Côte and Gilbert (2009:316) defined coaching effectiveness as “[t]he consistent application of integrated professional, interpersonal, and intrapersonal knowledge to

improve athletes' competence, confidence, connection, and character in specific coaching contexts." According to Carron and Chelladurai (1978:46) "interpersonal relations between coach and athlete represent a class of unique social behaviors from the viewpoint of both frequency and duration of the interaction." Studies have shown that athletes who are satisfied with their received leadership have better performance perception than those who do not receive preferred leadership styles (Carron & Chelladurai, 1978; Terry, Carron, Pink, Lane, Jones & Hall, 2000; Mills *et al.*, 2014). Passmore (2007:15) found athletes "value a coach with experience and credibility and who draws on this to add value to their understanding of human behaviour." Elite athletes will require coaches to communicate more as the athlete has likely experienced multiple coaching styles and may have developed preferences (Kavussanu, Boardley, Jutkiewicz, Vincent & Ring, 2008:399)."[W]hen athletes perceived their coach to be effective in developing the psychological skills and motivational states of athletes they tended to report greater connection with their coach" (Mohd, Kassim & Boardley, 2018:195). The perception of the athlete is a determining factor for the efficacy of a coach. Understanding the psychological aspects of how to coach athletes is extremely significant. As coaches and athletes begin to understand the wants and needs of one another and begin to receive these specific aspects, effectiveness will increase.

2.6.1.Coaching effectiveness: Model application

The conceptual model of Côte and Gilbert (2009) integrates the interactions of coaches' knowledge and athletes' outcomes in specific coaching contexts. These three components account for the various behaviours, experiences, and results in any coach-athlete relationship. Knowledge represents "coaches' declarative (knowing) and

procedural (doing) knowledge", whereas the athletes' outcome "reflects the variations in athletes' attitudes, behaviors, or performance that can result from different types of coaching" (Côte & Gilbert, 2009:309). Coaching contexts combines diverse athlete related factors which "vary in terms of athlete age, developmental level, needs, and goals" (Côte & Gilbert, 2009:309). Increased coaching efficacy will inevitably develop an athlete's 4 Cs (Competence, Confidence, Connection, and Character) and coach-athlete cohesion. Cohesion is a process that involves the propensity for a sport team to form a bond in the quest of satisfying its performance goals or its members' affective needs; this is also relevant for coach-athlete relationships for individual performers. According to Carron, Brawley, and Widmeyer's (1985) conceptualisation, cohesion includes both social and task components. Social cohesion is defined as the degree to which members of a team like each other, whereas task cohesion is defined as the degree to which team members cooperate with each other and in unison to achieve common performance goals.

Federations, coaches, and athletes striving to achieve elite performance levels will benefit from the implementation of the Côte and Gilbert (2009) model. Coaches play an integral role for athlete achievement throughout the screening, training, and performance of an athlete or team. Ideally, as coaches are educated in modern techniques of training and programme development, their efficacy will increase. Elite sport coaching effectiveness can be measured and improved through various methods once areas of deficit are identified. Elite athletes need to be involved in this process as athlete perception impacts coaching efficacy. In addition, elite team sport will need to address group cohesion, whereas an individual performer does not necessarily require cohesion to other athletes.

It is important to note that many individual performers do train within groups, however, their achievements rely solely within personal performance, such as those who play tennis or compete in individual events in athletics.

2.7. Sport Coaching effectiveness

There are a number of psychological factors that influence the coaches, players, and their interactions together. Perceptions of coach's behaviour are purely subjective by the athlete, as is the attitude of the athlete by the coach. Because so many facets of the athlete-coach relationship are determined by perception, it is detrimental for a coach to be seen in a positive, preferred style of leadership by the player. Achieving this needed compatibility between the coach and player can be achieved, but will always be a work in progress. Although a coach may be able to communicate successfully with individuals, there is no guarantee he or she can translate the same effectiveness to the entire team. Coaches must be conscious of how individuals respond to comments and situations during team functions. To be successful in communicating and teaching individuals and the team, a coach must be aware of leadership, satisfaction of instruction, compatibility factors, and group cohesion.

To be an effective leader, one must show interest in individuals as well as group success. By including everyone and rewarding those who perform well a leader will most likely gain respect and aid group cohesion. "The longer athletes had been involved in their sport the more critical they were of their coach perhaps because more experienced athletes are also more knowledgeable of their sport and coaching techniques" (Kavussanu *et al.*, 2008:399). Coaches should teach their athletes their given sport, and as the players gain knowledge and experience, adjust their leadership style. In a study conducted by Light

Shields, Gardner, Bredemeier, and Bostro (1997), correlation demonstrated that perceived and preferred leader behaviours, as well as self-reported leader behaviours, were related to team cohesion; the strongest relationship was between perceived leader behaviours and task cohesion. It is essential for coaches and team leaders to realise the needs and wants of team members and enable them by utilising the most effective types of leadership behaviour.

Leaders who are personable and less directive have been shown to have groups with higher cohesiveness; however, in organisations and companies, evidence shows group cohesion to increase when productivity is rewarded (Gardner & Shields, 1997). A study conducted by Hill (1975) stated that face-to-face interaction created a higher degree of interdependence. Fuller *et al.* (2000) compared the preferred leadership behaviours of female and male athletes of three sports: netball, basketball, and Australian football. The difference in this case showed the female athletes to have a greater preference of democratic behaviour (Fuller *et al.*, 2000). All research showed both genders to prefer a similar pattern: Positive Feedback, then Training and Instruction, Democratic Behaviour, Social Support, and Autocratic Behaviour (Fuller *et al*., 2000). However, "the cohesiveness of a group can influence the type of leader behaviour which is most effective with subordinates" (Carron & Chelladurai, 1981). Kavussanu *et al.* (2008:399) found athletes preferred coaches of the same sex and perceived them as more positive, as well as effective motivators and character builders.

Differences in perception between teams and their leaders, however, may create unstable situations; differing viewpoints have been shown to produce critical differences of opinion about the necessary priorities and prevent the team from moving forward (Gibson, Cooper

& Conger, 2009). Interestingly, one study found “that a considerable number of coaches (38–42%) rated themselves higher than their athletes on motivation, game strategy, and character building, and most coaches (50% or more) rated themselves higher than their athletes on technique and on the total scale” (Kavussanu *et al.*, 2008:400). Perceptions help shape behavioral inputs which outline the ability of an individual to participate in team processes. “The perceptual process is influenced by many individual differences, including variations in experience, personality, and cognitive complexity, which in turn influence interests, values, and mental scripts” (Gibson *et al.*, 2009:63). Coaches need to not only understand the preferences or athletes, but their perceptions in order to adequately adjust to properly motivate and teach.

2.7.1.Sport Coaching effectiveness: models

The Multidimensional Model of Leadership (MML) measures the athlete’s performance and satisfaction perception (actual and preferred) of a leader’s behaviour. Chelladurai (1980) adapted leadership behaviour to the sport context, and elaborated leader behaviour in terms of five dimensions: training and instruction, democratic and autocratic behaviour, positive feedback, and social support. The Multidimensional Model of Leadership (MML) along with the five dimensions of training and instruction, democratic and autocratic behaviour, positive feedback, and social support, are combined in to the Leadership Scale for Sports (LSS) (Chelladurai & Saleh, 1980; 2002). The LSS contains three versions: a perceived version (athlete), a preferred version (athlete), and a self-described version (coach). The athlete completes both the perceived and preferred regarding a coach’s behaviour. Those two versions are then compared to the self-described version which requires the assistant coach to describe his or her own

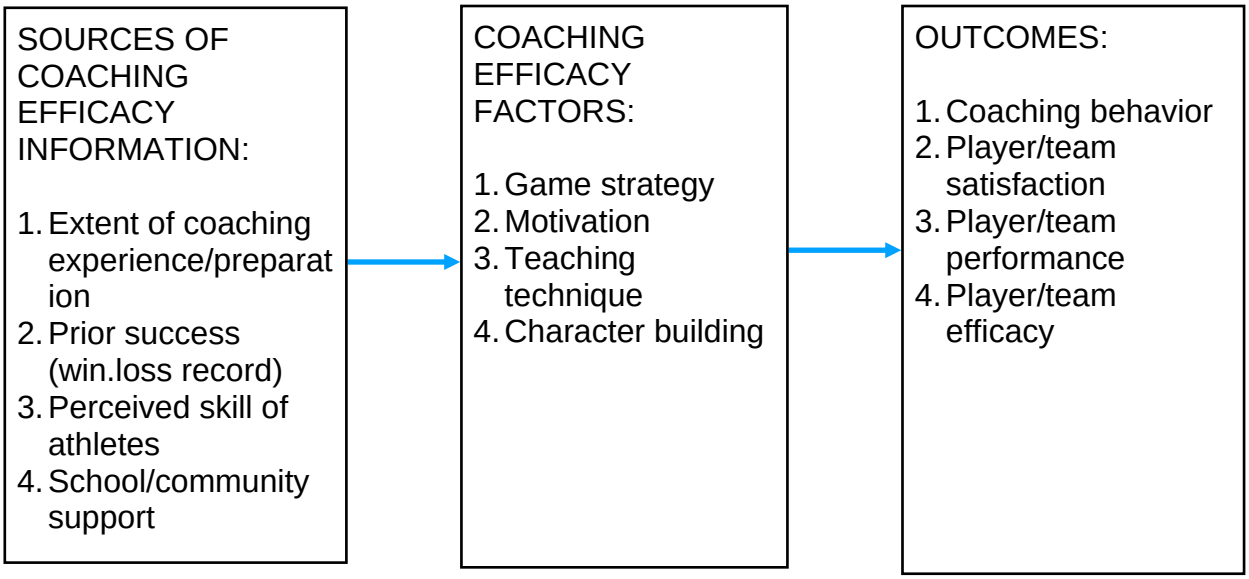

Figure 2. Coaching efficacy model. (Source: Feltz *et al.*, 1999)

leadership behaviours. The Leadership Scale for Sport (LSS) incorporates frameworks of trait, behavioral, and situational leadership theories, to address the interactions of the coach and athlete in a sporting environment (Fuller, Sherman & Speed, 2000).

The Coaching Efficacy Scale (CES) is based on a multidimensional model (see figure 2) of the four dimensions of coaching efficacy: game strategy, motivation, technique, and character building (Feltz, Chase, Moritz & Sullivan, 1999). The model indicates the influence coaching efficacy will have on coaching behaviour, individual/team satisfaction, individual/team performance, and individual/team efficacy. The model was developed with the input of 11 coaches, Bandura's self-efficacy theory, and research based on teacher-efficacy. Feltz *et al*. (1999) found that higher efficacy coaches had significantly higher winning percentages, greater player satisfaction, and used more praise and encouragement than lower efficacy coaches. "[T]he positive athlete-related outcomes associated with coaching efficacy indicate that highly efficacious coaches may also be

more effective" (Kavussanu *et al.*, 2008:385). Chase, Feltz, Hayashi, and Hepler (2005) identified the ranking of the sources of coaching efficacy for coaches to be:

i) player development,

i) coaches' development,

ii) knowledge/preparation,

iii) leadership skills,

iv) player support, and

v) past experience.

It is worth nothing that the coach participants in the studies were all male coaches. The CES can be utilised as a tool for coaches and federations, however, it relies on the coach perceptions and quantitative outcomes

The Coach-Athlete Relationship Questionnaire (CART-Q) was developed with two versions to quantitatively measure the dynamics between a coach and athlete. "The coach-athlete relationship has been found to relate in theoretically meaningful ways to such constructs as personal and interpersonal satisfaction, social cohesion, and motivational climate" (Jowett, 2009:48). Validity testing was conducted on multiple university sports teams and was shown to effectively reflect coach-athlete relationships. "The CART-Q was selected as the instrument to measure athletes' connection with coaches because it is concise and directly targets the perceived quality of coach-athlete relationship rather than perceptions of specific interaction styles or behaviours, regardless of sport or specific context" (Vierimaa, Erikson, Cote & Gibert, 2012: 607). "One version measures coaches' and athletes' direct closeness, direct commitment, and direct complementarity, while the other version measures coaches' and athletes' meta-

closeness [emotions], meta-commitment [cognitions], and meta-complementarity [behaviors]" (Jowett, 2009: 36). The versions only vary in the wording as it relates to either the coach's feelings or the athlete's (ie. 'I trust my coach' versus 'I trust my athlete'). Each question is answered based on a 7-point Likert scale. This type of questionnaire can be useful for all athletes and coaches, but may need to be administered multiple times each year to best understand the changes in the relationship (ie, pre-season, rehabilitation, post-season).

Potential for positive interpersonal relationships and correlated team cohesion is directly related to coach–athlete relationships. According to Jowett and Chaundy (2004) the degree to which relationship variables add to the prediction of cohesion beyond what is predicted by leadership variables alone can be significant. Their findings suggest that it is important to use models and methods that consider the social influence processes of coach leadership as they are reflected in the relationships developed between athletes and their coaches. They also suggest that embracing an individualistic conception of leadership that merely reflects what coaches "do" (behavioural processes) leads to incomplete knowledge and understanding of the interpersonal dynamics involved in developing cohesion in sport; team members need to feel as though they are known as individuals.

Coaches, athletes, and federations that are interested in the highest levels of athletic achievement should invest the time to complete multiple assessments periodically throughout training cycles. The analysis of the results will be helpful in understanding the needs and wants of athletes as they grow and mature in life and sport. The interpersonal relations between a coach and an athlete are unique social behaviours which may vary

throughout the relationship and season. However, the duration of the relationship and possibility of communication will not automatically lead to more positive interaction between the coach and athlete (Carron & Chelladurai, 1974). Accurate assessment of the factors contributing to or detracting from coach-athlete compatibility is required; it seems that the personalities, needs, involvement and contributions of both to the interpersonal relationship must be taken into account (Carron, 1982; Carron & Chelladurai, 1978; 1981; Carron, Brawley & Widmeyer, 1985; 1998; 2002). Psychological, satisfaction, and efficacy related assessments should be completed annually, possibly during initial physical evaluation phases.

2.8. Athlete Welfare and Development

Development-Through-Sport (DTS) programmes are viewed as essential by some as physical activity can be a lifelong benefit. DTS programmes can improve the learning performance of children and young people, encouraging school attendance and a desire to succeed academically (Dodo & Ntombana, 2022, Torres, 2015). A study in Namibia found athletes (and general sport participants) were more likely to finish 10th grade as well as contribute to others progress to tertiary (Torres, 2015). During developmental phases, elite child athletes are exposed to high volumes of specialised training while their bodies are still maturing, which can make them more susceptible to risks affecting welfare and well-being along with negative effects on performance and personal development (Oliver, Lloyd & Meyers, 2011). A study conducted on athletes ages 7-18 found a direct correlation between injured young athletes who spent more hours per week in organised sports (Jayanthi, LaBella, Fischer, Pasulka & Dugas, 2015). Athletes with a serious overuse injury were 1.90 times more likely to be highly specialised as compared with

participants with a non-serious overuse injury (Jayanthi *et al.*, 2015). Current evidence suggests that delaying sport specialisation for the majority of sports until after puberty (late adolescence, ~15 or 16 years of age) minimises the risks and lead to a higher likelihood of athletic success (Brenner, 2016; Jayanthi *et al.*, 2013). Participation in multiple sports can provide a variety of positive qualities to athletes, most notably: increases in physical literacy (ie, creativity, decision-making, overall physical skills, and versatility), cross-training (ie, injury prevention and training of both aerobic and anaerobic systems), psychological recharge (ie, stimulation through variety, less burnout, enjoyment, reduced pressure), and enhanced social experiences (ie, different team cultures, roles, and communication requirements) (Vealey & Chase, 2016).

2.8.1.Specialisation

Some generalisations can be made that may apply to athletes in similar situations. For example, the U.S. Olympic Committee (USOC) distributed a survey called 'The Path to Excellence' to U.S. Olympic athletes who competed from 1984-1998 and distributed a newer version of the survey to Olympians who competed from 2000-2012. The two surveys were conducted with hopes of improving athlete identification and development (Snyder & Riewald, 2014). This study found that 97% of U.S. Olympic Athletes (2000-2012) considered themselves multi-sport athletes; the majority played 3 sports up to the age of 14, 2.2 sports during ages 15-18, 1.27 sports during ages 19-22, and 1.31 sports after age 22 (Snyder & Riewald, 2014). The average ages at which U.S. Olympians reached milestones were:

i. Introduced to the sport: 11.4 years old
i. Achieved local competitive success: 14.2 years old

ii. First dreamed of becoming an Olympian: 14.0 years old
iii. Started making decisions to make Olympic dream a reality: 17.5 years old
iv. Believed it was possible to become an Olympian: 19 years old
v. Made first U.S. Olympic Team: 25.5 years old (calculated based on the midpoint of the selected age-range) (Snyder & Riewald, 2014).

Very little discrepancies occurred between the two 'Path to Excellence' surveys concerning the time athletes achieved various milestones. Note that the time between an introduction to the sport and making a U.S. Olympic team was 14 years (11.4 – 25.5 years of age), and just over half of those years were spent playing multiple sports; "which belies the notion that early specialisation is critical to long-term success" (Riewald & Snyder, 2014:52). The USOC study also found the top-rated motivation factors for Olympians were:

i) Challenge/love of competition,
ii) Desire to be successful,
iii) Competitive outlet,
iv) Fun.

While this study was limited to U.S. Olympic athletes, it can be argued that the overall success of U.S. Olympic athletes is quite significant; thus rendering their study extremely insightful. This study shows the importance for elite athletes to participate in multiple sporting codes throughout their adolescence in order to maintain their motivation into adulthood.

A study conducted on Danish national (elite and sub-elite) athletes (aged 9–21) found that athletes spent 62–63 months of their development years practising other sports

(Suppiah, Low & Chia, 2015). Like the U.S. athletes, the elite-level national Danish athletes did not specialise until after age 18 and only participated in national or international competitions near the end of their development years (Suppiah *et al.*, 2015). The study also stated that exposure to a variety of sports and the development of an athlete is contingent upon not only the nature of the sport, but also the culture and context of the country. The researchers warned against the adoption of TID models which act as a 'one-model-fits-all' (Suppiah *et al.*, 2015).

2.8.2.Maturation

Maturation in athletes varies between individuals and should be considered when looking toward specialisation. The degree of specialisation can be varied to ensure the athlete responds positively to training, however, this is often not the case and athletes fully transition to one sport without being monitored. Training at high volumes for extended periods of time does increase chances of injury. A study of 1214 athletes ages 7-18, found the risk of physical injury increases when athletes trained over 16 hours per week as is common in elite athletes (Jayanthi *et al*., 2015:801). "Specifically, exceeding 16 hours per week of total sports participation, regardless of the number of sports, seems to carry the greatest risk … [n]early two-thirds of middle school–aged children receiving medical treatment sustained an injury during sports or physical activity" (Myer, Jayanthi, Difiori, Faigenbaum, Kiefer, Logerstedt & Micheli, 2015:438). Diversity of activities can aid prevention of injuries as it contributes to neuromuscular skills, however, specialisation and overcommitment can be damaging to the development of our youth athletes as well as increased risk of injury (Jayanthi *et al.*, 2015; Myer *et al*., 2015; Vealey & Chase, 2016).

2.8.3. Injuries

Injuries are a major issue with early specialisation and overtraining (see Table 5). Ahlquist, Cash, and Hame (2020:9) found university athletes who " trained for greater than 28 hours per week or dedicated more than 8 months of the year to their eventual varsity sport before age 14 years had increased odds of an injury." Acute injuries can be seen at many levels and most likely does not contribute to ending the career of an athlete as recovery time is minimal. However, "[t]wenty percent of elite athletes have reported injury as a reason for quitting their sport, and up to 8% of adolescents drop out of sporting activities due to injury or fear of injury" (Myer *et al.*, 2015:440). Athletes can struggle with physical and mental health following an injury, which may reduce their overall physical activity. If these patterns of physical inactivity persist the individual may develop negative health consequences in adulthood.

For children to grow they need time to adapt and rest; lack of which can risk further development of the athlete in all areas, not only physical abilities (Oliver *et al.*, 2011). Sports are meant to facilitate improvement in all aspects of life, including education, health, and self-esteem. However, negative experiences can cause even elite athletes to leave the sport due to injury, burnout, psychological stress, social issues, emotional problems, or lack of enjoyment. "Athletes may become socially isolated from their peers and may have altered relationships with family, over-dependence on others with a loss of

Table 5. Degree of sports specialisation on and risk of all-cause injuries. (Source: Jayanthi et al., 2015; Myer *et al*., 2015)

Degree of Specialisation	Risk of Injury	Risk of Serious Overuse Injury	Risk of Acute Injury
Low specialisation (0 or 1 of the following):	Low	Low	Moderate
Year-round training (>8 months per year)			
Chooses a single main sport			
Quit all sports to focus on 1 sport			
Moderately specialised (2 of the following):	Moderate	Moderate	Low
Year-round training (>8 months per year)			
Chooses a single main sport			
Quit all sports to focus on 1 sport			
Highly specialised (3/3 of the following):	High	High	Low
Year-round training (>8 months per year)			
Chooses a single main sport			
Quit all sports to focus on 1 sport			

control over their lives, arrested behavioural development, or socially maladaptive behaviours" (Brenner, 2016:e5). For most sports, such intense training in a single sport and the exclusion of others should be delayed until late adolescence to optimise success while minimising injury, psychological stress, and burnout (Jayanthi *et al.*, 2013).

2.8.4.Longevity

Athletes at an elite level undoubtedly feel pressure to perform optimally and win. Unfortunately, this is also often the case with youth athletes who are still learning about their bodies and sports. Intense, adult-driven training can lead to negative changes in athletes along with injury and burnout. "Talent development research on young athletes

demonstrates that professionalised, adult-style practices are likely not optimal for fostering talent development" (Myer *et al.*, 2105:440). Research indicates that adolescent athletes are more likely to achieve goals and enhanced performance when they are enjoying the activity. Due to current societal trends for specialised, single-sport athletes, children are pressured to decide their future early and this causes an increase in stress. This possibly causes the child to feel a lack of control or a decreased amount of decision-making power in their lives (Myer *et al.*, 2015). Addressing the possible stressors for athletes, no matter the level of competition, will reduce chances of burnout, improve the management and longevity of their athletic career. Studies on burnout and sports attrition raise valid concerns that earlier specialisation often resulted in shorter careers at the national level and coincided with earlier retirement compared with athletes who became specialists later in their development (Myer *et al.*, 2015).

A unique study was conducted on 1,055 Olympic track and field athletes from 41 different nationalities from the Olympic Games from 1896 through 1936 by van de Vijver, van Bodegom, and Westendorp (2016). The purpose of the study was to show a life history trade-off between early and above average physical performance and longevity in male Olympic athletes. Athletes who peaked higher, or at an older age, showed an 11% increase in their mortality rate, whereas athletes who peaked at an earlier age showed 17% increased mortality rate, meaning, the earlier (younger) an athlete peaked, the shorter their lifespan. "The age at death decreased from 76.8 years in those who had their peak performance [older,] in the 25% lowest ranks to 74.1 years in male athletes who reached their personal record in the [younger,] 25% highest ranks. Male athletes who had both an early and extraordinary peak performance suffered a 4.7-year longevity cost" (van

de Vijver *et al.*, 2016:1823). Despite the omission of socioeconomic factors, this is the first study to extend understanding of the correlation between physical performance and longevity in humans.

2.8.5.Finances

Longevity in athletes is linked to emotional and psychological stressors, and a common stressor among adults is financial strain, which can also impact children. Organisations, including schools, clubs, academies, and federations, that are charged with athlete development have shown a range of involvement in goal setting and achievement (or lack of) during and post athletic careers. The influence coaches, organisational systems (like schools and academies), and governing bodies have on the success of an athlete cannot be underestimated (Tshube *et al.*, 2018); the challenge is to determine how much and where assistance will be utilised for an athlete. Organisations should prioritise the development of an athlete's character, competence, confidence, connection, and financial literacy over athletic achievement. Funding should be allocated in a manner that enables the organisational administration to expand and support as many athletes as possible, establishing a larger scale development programme.

MacNamara and Collins (2013) argued that the omission of talented athletes at the early stages results when implemented in athletic institutions with limited funding. Specifically, by limiting the number of athletes in the TID system in phase one due to financial constraints, the pool in phase two will automatically be smaller and may have preemptively eliminated potentially gifted athletes before the verification phase (MacNamara & Collins, 2013:795). Coaches, academies, stakeholders, and sponsors must also accept the need to involve more athletes and work together to determine

methods of funding. Effective structure and consistency within academies, sport entities, and other governing bodies, enables confidence and reduces stress for all connected to the athletic goal. As athletes are more educated and involved in the process of their career-path, the more efficient the effort becomes on all fronts. These underlying values create a positive foundation for coaches to build appropriate training programmes for athletes.

2.8.5.1. Finances: Branding and social media

Coaches need funds to sustain their lives as well as increase their education and qualifications to better serve their athletes. As athletes, their time to work a 'normal' job is often limited due to training and travel, thus creating a challenge for athletes needing funds for training, coaching, kit, medical needs, meals, and accommodation. Adequate funding may be the difference in a child continuing sport. As children grow and learn in sport, parents, and sometimes coaches or academies, absorb the cost of training and travel. World-class athletes, coaches, academies, and governing bodies would all benefit from utilisation of branding methods and social media as a pathway for improved public relations and increased sponsorship. This may already be apparent as some world-class athletes receive substantial sponsorships due to their 'marketability' despite not dominating their sport or event. This concept is appealing to those who are not earning the paychecks for winning at various events, however, it does show that in terms of sponsorship and financial abilities, much is determined by social preferences of the public. However, with social media being so prevalent in daily life, adolescents must be careful how they portray themselves. It would behoove athletes and coaches to be taught how to utilise social media and focus on a 'professional' page rather than a personal page.

Wetzel, Hattula, Hammerschmidt and van Heerde (2018:591) studied “how the value drivers of recruitment, winning, and publicity fed sales-based brand equity (SBBE) and attendance… Overall, the increasing brand leverage effect yields important implications for marketing theory and for sports brand management.” They also found that when building a brand it was important to consider recruitment, winning percentage, and publicity. It would also be beneficial to influence the media through positive paid advertisements or public relations (Wetzel *et al.*, 2018:607). Alon and Shuv-Ami (2021:230-231) noted the key role fans’ connection played in the potential opportunities for athletes (or teams) and sponsors, and emphasised the need to consider the effect of inappropriate sponsors on their brand. The study recommended using social media to generate positive interaction between athletes and fans to promote community. Achen (2017:34) suggested using social media as part of the marketing communications as a means to improve financial performance, monitor reputation, encourage loyalty, and reduce costs because it is customisable, two-way communication. Creating a more positive persona in the public eye has been proven to generate increased income, however, maintaining the image may require constant effort and possibly the assistance of qualified professionals.

2.8.5.2. Globally ranked athlete stipends

While some athletes’ parents assume the role of sponsor from youth to senior, others may receive funding from their development academy, federation, or Olympic committee, while other athletes must secure their own private sponsorship to fund their careers. Remember that in Southern Africa, coaches are more directly connected with athletes, and athletes do not often receive financial support from family, thus athletes are very

much in need of funding at all stages (Tshube *et al.*, 2018:22). Outside of offering bonuses for achieving medals at the Olympics, some countries fund their top athletes and coaches year-round. For example, USA Track and Field (USATF) athletes submit paperwork to the US Olympic Committee (USOC) in hopes of receiving funds for their athletics careers. The USOC then assesses athletes for stipends (funding) based on need and Olympic medal potential (usatf.org, 2019). The tier in which an athlete qualifies for will determine the funds awarded (see table 6). Athletes that qualify can also petition for their coach to receive funding, as long as the coach meets the requirements of the USATF Registered Coaches Program (usatf.org, 2019). Countries that plan to enable the participation of their

Table 6. USATF Athlete, Medical, and Coaching Stipend Programme (Source: usatf.org, 2019)

Tier	2019 Athlete Stipend	2019 Medical Reimbursement	2019 Coaching Stipend
Tier I	$10,000	$2,000	$2,000
Tier II	$7,000	$1,500	$1,500
Tier III	PCSF stipend - $5,000	$1,000	$1,000
Tier IV	$2,000	$500	N/A
Talent Protection Programme	$12,000	$3,000	$1,500
	*PCSF: Post-Collegiate Scholarship Fund		

elite athletes and limit their financial stressors, would benefit from the development and implementation of similar programmes. This type of funding and process can be simple and transparent, thus increasing the capabilities of athletes and coaches while generating trust in federations and Olympic Committees.

2.9. Athlete Development Models

Athlete development trends are geared towards early specialisation and elite status in the adolescent years, which can cause long-term negative effects. Identifying a middle ground that enables a high level of success while giving an athlete decision-making power at appropriate times has become a challenge for all involved. However, “development of skills that lead to excellence in sport occurs from the successful interaction of biological, psychological, and sociological factors; the interaction of these factors occurs in relation to two key aspects: the training process and the environment, considering them not as separate components, but elements of the same organically designed system” (Galatti, Côté, Reverdito, Allan, Seoane & Paes, 2016:21). Athlete development often focuses on the athlete alone, but the environment of the athlete, including teammates, family, coaches, school, and peers all contribute to the trajectory of an athlete. This also alludes to why governing bodies often outsource athlete development by using academies and high performance centres (HPC) to better monitor and control pre-elite and elite athletes’ environments to better enable performance.

One study found that although athletes often began a sport to appease their parents, athletes often ‘performed intense training’ based on the influence of their coach(es) (Jayanthi *et al.*, 2013). One study also found athletes to value these 5 qualities in a coach above all else:

i) Training Knowledge,
ii) Teaching ability,
iii) Strategic knowledge of the sport,
iv) Skill competence,

v) Ability to motivate or encourage (Team USA, 2012).

This demonstrates that athletes trust their coaches to guide them to high achievement through proper training. Using suitable models and methods that emphasise quality training in a positive environment in collaboration with coaches and parents will allow for the highest level of development and achievement of an athlete.Galatti *et al.* (2016) proposed a paradigm shift in sport culture which would promote positive change by creating a sports programme integrating an elite performance team, multiple youth development teams (recreational and competitive), and community projects and activities. The shift would require investment in multiple youth development teams open to the public that practices and watches the sport. The concept is that spectators will learn the sport and support those training, with the option of joining a development team. The assumption would be the increased exposure and knowledge dissemination will increase youth participation on competitive and recreational teams with the goal of lifelong sport participation, thus feeding the elite teams. The recreational and competitive teams would complement one another and allow for a range of specialisation. The growth of elite and recreational teams would also require coach education programmes to effectively promote pre-elite athletes. This could also be accomplished by utilising local development clubs which breed lifelong love of sport to then feed pre-elite academies that focus on holistic athlete development prior to international competition, and provide coach education programmes. Galatti *et al.* (2016) identified six key points to diversify and optimise the strategies in effect for sports clubs:

i) Value the interdependency between the elite team and associated youth development teams;

ii) View youth development teams as a social mass supporting the club, not a source of expenses;
iii) Develop the person, not just the athlete; Diversify and tailor the actions to the sport(s) and group(s) involved;
iv) Respect the social group characteristics that motivate and maintain the club;
v) Professionalise and develop coaches over time;
vi) Recognise coaches as the key players connecting the sports programme, board of directors, club members, athletes (of all levels), fans, and all other involved individuals.

The recommendations can be utilised on a larger scale as well with academies, sport entities, and National Sports Federations to improve athlete development, coach development, internal communication, and reinforce values that produce elite athletes and influential community members. In addition to the recommendation of independent studies, coaching and athlete development models have documented success in relation to elite athlete longevity.

2.10. American Development Model

The U.S. Olympic Committee utilised their studies relating to the “Path to Excellence” survey, along with global research, to establish the American Development Model (ADM; see figure 3). As mentioned previously, the surveys highlighted the need for diversity in sport during adolescence to better prepare and enable athletes to achieve Olympian status. The five key principles of ADM include:

i) Universal access to create opportunity for all athletes

ii) Developmentally appropriate activities that emphasise motor and foundational skills
iii) Multi-sport or multi-activity participation (i e cross-training)
iv) Fun, engaging and progressively challenging atmosphere
v) Quality coaching at all age levels

The principles of the ADM were created with the positive experience of each athlete in mind to prolong their engagement; both the general and elite athlete pools are to be nurtured in accredited sports. All athletes, including possible U.S. Olympians and Paralympians, are to have opportunities to develop fundamental skills in multiple sporting codes. The ADM relies on an American culture that loves sport and physical activity must be promoted in order to have generations that can compete.

American Development Model was created in 2014 based on the LTAD principles (Team USA, 2018). The 5 stages they created include the following:

i) Discover, Learn, and Play (ages 0–12 years)
ii) Develop and Challenge (ages 10–16 years)
iii) Train and Compete (ages 13–19 years)
iv) Excel for High Performance or Participate and Succeed (ages ≥15 years)
v) Mentor and Thrive (for Life)

2.11. Long-term Athlete Development Model (LTAD)

In response to the many injuries plaguing young elite athletes, the Long-Term Athlete Development (LTAD) model (launched in 2005 in Canada) is becoming more common as it focuses on physiological results. “This approach has been adopted as an overarching philosophy of sport participation in many regions, including the UK (eg. Sporting Future –

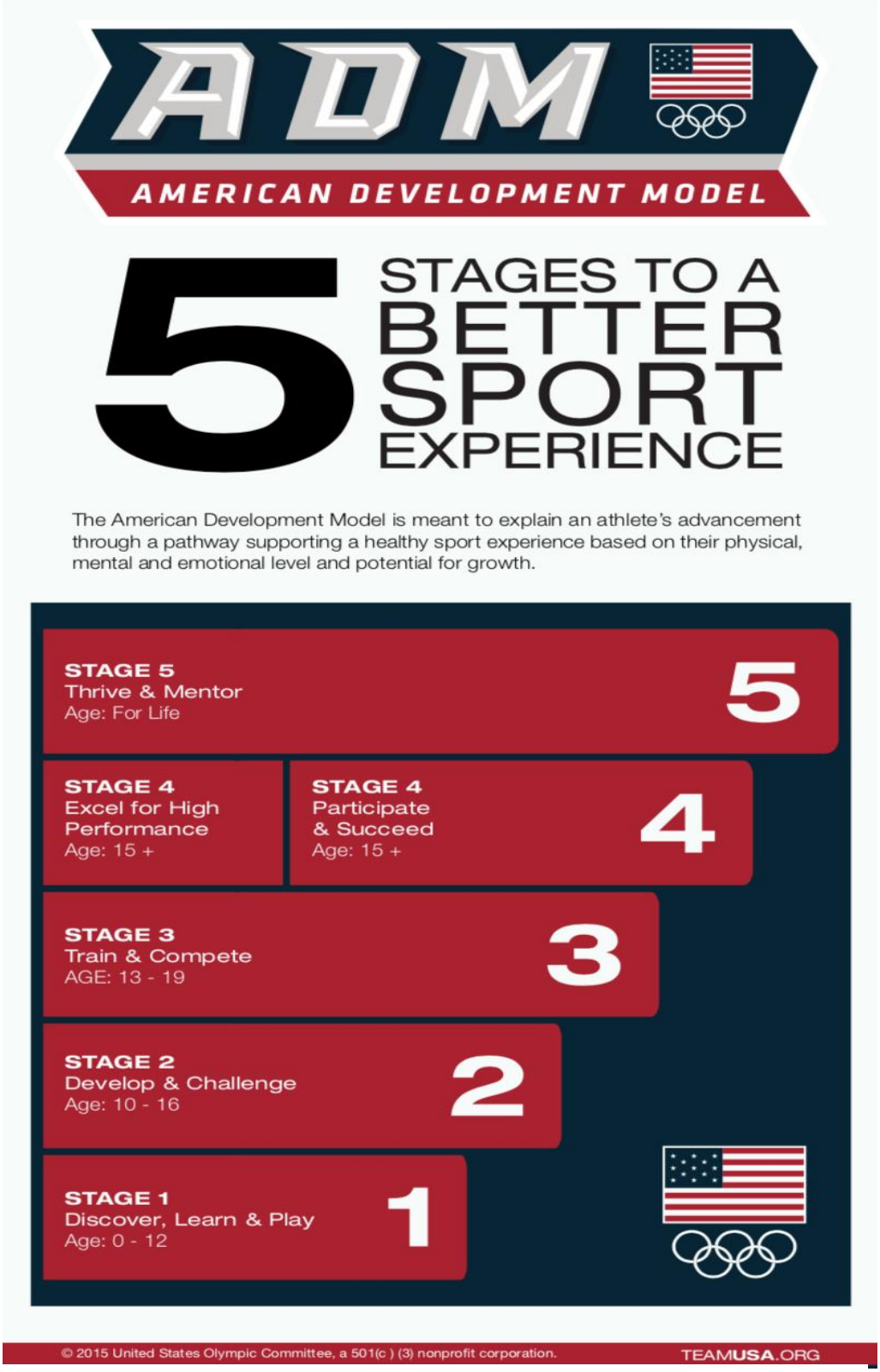

Figure 3. American Development Model (Source: Team USA, 2018:8).

A New Strategy for an Active Nation) and Canada (eg. Canadian Sport for Life) " (Millar, Clutterbuck & Doherty, 2020:259). This also includes talent identification (TID) as a method of finding athletes that can handle the training loads of an elite athlete. The LTAD uses "training to optimise performance longitudinally, and considers sensitive developmental periods known as ''windows of opportunity''(critical/sensitive periods for accelerated development of motor performance based on a suitable training stimulus during appropriate maturational time periods)" (Ford, De Ste Croix, Lloyd, Meyers, Moosavi, Oliver & Williams, 2011:389). This model is based off seven stages of athletic development: 1. Active start, 2. FUNdamental stage, 3. Learning to train, 4. Training to train, 5. Training to compete, 6. Training to win, 7. Retirement/retainment. "The focus of the early stages of the model is encouraging activity in many sports in a fun and engaging manner. While the later stages focus on sport specific skills, intense training and high-level competition. The stages can be applied and modified to any sport and provide an excellent template when considering appropriate athletic development" (Ferguson & Stern, 2014:382). Other countries, like the USA, UK, and Canada, are turning to this model to counteract the issues caused by specialisation too early; protecting the athletes must be a priority. Canada restricts funding to National Sport Organisations (NSOs) unless they "incorporate the principles of long-term athlete development into their strategic and operational priorities … and develop sport specific LTAD framework that outlines the progression of athlete development" (Millar *et* al., 2020:260). As South African Sports Confederation and Olympic Committee continues to evolve, a version of this model may be adapted and integrated by South Africa's national coaches.

A key to the LTAD model is the education and adoption by coaches. The model is a pathway to develop athletes and increase athletic participation. Beaudoin, Callary, and Trudeau (2015) documented the implementation of the LTAD model in Canada. The study found that certain aspects of the model were readily accepted based on the coaches' experience and perception. Some concerns of the participating swim coaches included: (a) the negative impact of overemphasis in the LTAD model on training volume at the expense of precise techniques, and (b) competition rules in their sport that appeared to contradict elements of their LTAD. Coaching environments had a severe impact on LTAD's adoption and successful implementation as they are the bridge for change between athletic entities and the athletes. The coaches that participated in this particular study were extremely conscious of the needs of their athletes, which is unfortunately not always the case. When coaches are aware of the contradictions of the LTAD model, athlete needs, and sport rules, adequate adjustments can be made effectively to protect and benefit the athlete.

Researchers have cited a number of problems with this theoretical model that are not necessarily transparent to coaches:

i) the model is only one-dimensional, and interpretations are restricted because the data on which it is based rely on questionable assumptions and erroneous methodologies,
ii) LTAD is a generic model rather than an individualised plan for athletes and focuses more on physiology/conditioning than skill components
iii) the LTAD model must be seen as a 'work in progress' (Beaudoin *et al.*, 2015; Ford *et al.*, 2011; Gulbin, Croser, Morley & Weissensteiner, 2013).

Although the model has been prescribed globally, it is essential that coaches are educated on how to interpret the model and how to adapt it to fit their sport and athletes. Millar *et al*. (2020:259) found that the foundation of sport club characteristics (ie, structural features and competent personnel), communication with stakeholders (ie, how policies are disseminated), and economic, political, and social/cultural conditions (ie. available resources and regulations) would either facilitate or inhibit the adoption of LTAD. Ford *et al.* (2011) insists that the model would be more suitable if it were to be more holistically orientated, encompassing some of the key interdisciplinary perspectives seen elsewhere, such as, include well-established guidelines for youth resistance training, recommend resistance training for enhancement of muscular strength in youths, with improvements in body composition and motor performance, and reductions in injury. Also, the "window of trainability" is broad and must give options for coaches to clearly determine this window using longitudinal strength training studies appropriate for growth and maturation (Ford *et al.*, 2011). Although LTAD is a development model, the focus is not on the development of athletes' talent outside of a specific sport or event, which in turn, limits the longevity of athletes and possibly their ability to excel at the top-level injury-free.

In order to obtain the desired outcomes from the LTAD model, federations would need to ensure coaches would be able to successfully implement methodology and customise coaching sessions for athletes to encourage optimal development. "The integration of a holistic approach, considering physical, psycho-social, technical and tactical development is viewed as key for the planning, delivery and implementation of LTAD" (Till, Eisenmann, Emmonds, Jones, Mitchell, Cowburn & Lloyd*,* 2021:53). To simplify the implementation of LTAD successfully and holistically, Till *et al.,* (2021) created the RAMPAGE coaching

session framework, which stands for **R**aise, **A**ctivate, **M**obilise, **P**repare, **A**ctivity, **G**ames, **E**valuate. They "designed and developed the coaching session framework aimed at optimising LTAD that:

i) can be applied across multiple youth levels (ie. physically inactive to sports performers) and multiple sports (eg. team to individual),
ii) can be applied across all stages of development,
iii) considers the integration of physical development with other aspects of youth athletic development (ie. technical, tactical and psycho-social development), and
iv) considers 'how' coaches may implement this for LTAD purposes." (Till *et al*., 2021:45)

Till *et al*. (2021) noted that practitioners must consider the load, intensity, and quality during each section of RAMPAGE as the athletes' well-being must always be a priority. Raise refers to warming up by raising the body temperature as a means of injury prevention through meaningful and appropriate activities, like A-Skips, as opposed to only running laps. Activate and Mobilise utilises a dynamic-warm up (ie, animal walks or mobility challenges) instead of static stretching. Prepare is meant to ready athletes for their main movements during the later stages by performing high-intensity movements in controlled conditions. The Activity of the session should be specific to the sport, age, and skill level of each participant. The Games of the session must be purposefully designed to generate the desired outcome, such as endurance or agility. Evaluation can be integrated during the cool-down portion of the session as athlete(s) and coaches reflect on the session and discuss recovery, goals, or the next session. As previously stated,

LTAD is not considered a holistic programme, however, with adequate up-skilling of coaches, and a focus on communication, control, confidence, concentration, resilience, presence, self-awareness, and commitment as key cornerstones of a psycho-social curriculum throughout the different aspects of RAMPAGE, each session can be successful.

2.12. Foundations, Talent, Elite, Mastery (FTEM)

The Foundations, Talent, Elite, Mastery (FTEM) framework is an innovative, unique sport and athlete development framework. FTEM combines current theoretical research perspectives with extensive empirical observations from one of the world's leading sport agencies to offer a broad utility to researchers and sporting stakeholders alike (Gulbin *et al.*, 2013). Note the use of the term framework versus the descriptor of model; FTEM is a flexible, non-prescriptive pathway, not a prescriptive model for talent identification and development (TID), although it does include aspects of talent identification (TI) (Gulbin, Croser, Morley & Weissensteiner, 2014). "The FTEM acronym represents the four macro-stages of the skill and performance development ... which is further differentiated into 10 micro phases" (Gublin *et al*., 2013:1322). FTEM integrates general and specialised phases of development for participants within the active lifestyle, sport participation and sport excellence pathways; which typically doubles the number of developmental phases in order to better understand athlete transition; avoids chronological and training prescriptions; more optimally establishes a continuum between participation and elite; and allows full inclusion of many developmental support drivers at the sport and system levels (Gulbin *et al.*, 2013). Figure 4 presents the stages of FTEM, however, the framework is non-linear and allows athletes to jump and progress according to their

abilities and needs. Figure 4 also emulates how the FTEM framework phases build and aid development of the athlete at multiple junctions (Gulbin *et al.*, 2013). The FTEM is an operational framework, it does not focus on a fixed age, and is extremely flexible in athlete management and development. Each macro- and micro-phase also considers bio-psycho-behavioural elements (see figure 5), which are essential to appropriate and effective athletic development (Gublin *et al.*, 2014). Gublin *et al.* (2013; 2014) argue that bio-psycho-behavioural themes are present at every FTEM phase.

> "For instance, within the Foundation phases (pp. 1324–1325), we acknowledged self-esteem, play, memory, family, confidence, perception and decision-making, instruction and feedback and goal setting and commitment. In the Talent phases (pp. 1325–1326), we addressed extrinsic and intrinsic rewards, motivation, dropout and underachievement, growth mindset, self-regulation, persistence and determination, trainability, control, positivity and mentoring" (Gublin *et al.*, 2014:799).

The generalised F1 (Learning and Acquisition of Basic Movement) and F2 (Extension and Refinement of Movement) lay the foundation for not only pre-elite athletes, but a healthy lifestyle for any individual within the programme. Note that only T1(Demonstration of Potential) and T2 (Talent Verification) are directly related to TID, and the remaining 80% of the model focuses on skill and performance development (Gublin *et al.*, 2014). Athletes are able to progress through the model as they refine and master a variety of skills and choose to move from recreation to competitive to elite. Table 7 shows an example of a planning and diagnostic matrix utilising the FTEM model of development (Gublin *et al.*,

2013). Interestingly, age boundaries are not included in this model as the developers

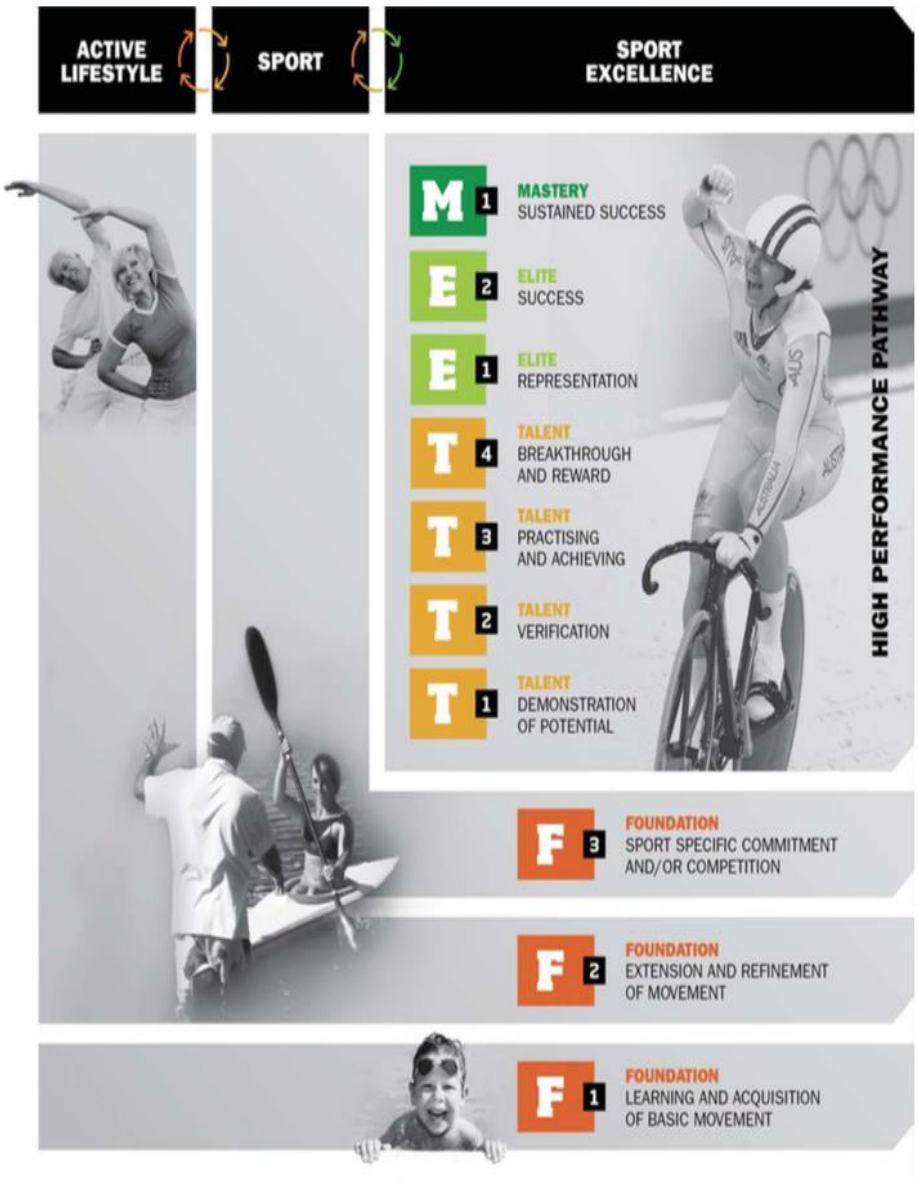

Figure 4. The Integrated FTEM (Foundations, Talent, Elite, Mastery) framework for optimisation of sport and athlete development.
Notes: The high-performance pathway represents a more "unstable" pathway in comparison with active lifestyle and sport. This translates to a high degree of non-linearity as athletes can potentially leapfrog several phases in their ascent, as well as re-circulate twin the HP pathway in the case of talent transfer athletes. Overall, the FTEM framework is specifically designed tone applies at the individual, sport and system levels, with key drivers established for each level. (Source: Gublin *et al*., 2014:1323)

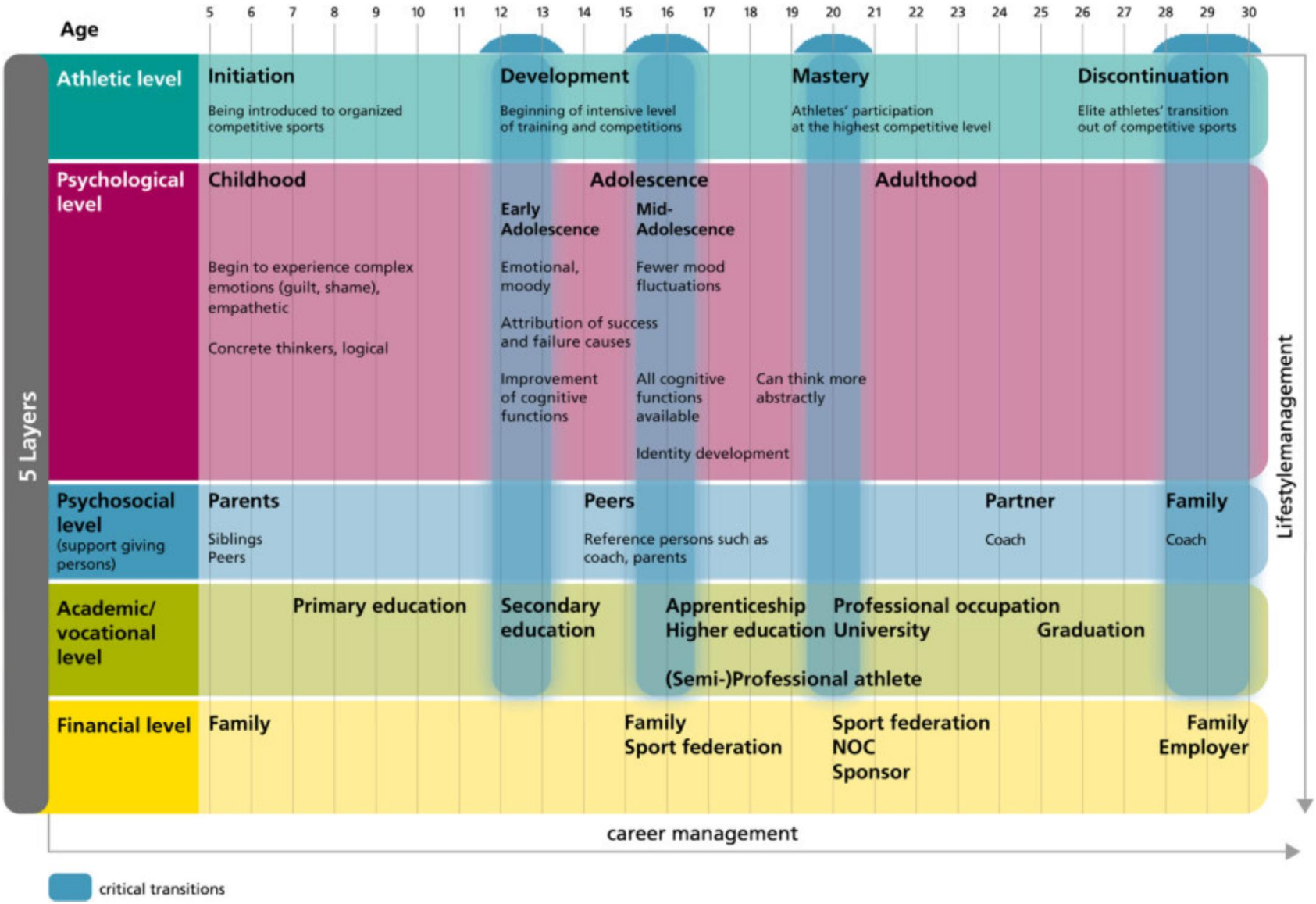

Figure 5. Bio-Psycho-Behavioural Themed Development and Transitions Model. A development perspective on transitions faced by athletes at athletic, individual, psychosocial, academic/vocational, and financial levels (Source: Wylleman & Lavelle, 2004; Ruchti, Birrer, Morgan& Kummer, 2017).

Table 7. A conceptual planning and diagnostic matrix to demonstrate the most effective application of the FTEM framework. Representative questions specific to each FTEM illustrate the differentiation concept (Source: Gublin et al., 2013:1328).

	1. INDIVIDUAL SPORT APPLICATION						2. SYSTEM APPLICATION
STAGE	**Athlete**	**Coach**	**Camps and competitions**	**Daily training environment**	**Leadership**	**Research and innovation**	**(Strategic, educational, intergovernmental)**
M	Has all non-essential training been eliminated?						
E2		Are our national coaches truly world class?					
E1			Have we integrated our pre-elite with our elite training camps?				
T4				Have we ensured quality sport science and medicine support?			
T3					Are we effectively case managing our talent roster?		
T2						How can we manage our talent verification decisions?	
T1							Can we institute a national talent identification (TID) system to assist multiple sports?
F3							Can we provide more incentives for volunteers to take-up coaching?
F2							Can we lobby to increase the number of PE specialists in schools?
F1							Could we establish an alliance between Sport, Health, and Education to assist parents and pre-schools to promote movement exploration?
	1. At the individual and sport level, the 6 key high performance drivers. These form the core drivers but there is flexibility to recognize and incorporate the relevant sport specific drivers as well. I.e. vet service in equestrian or facilities and infrastructure in diving. 2. Systemic elements are designed to represent any strategic, education, or intergovernmental components which impact on sport delivery by multiple national sporting organisations.						

recognised the ability of adults to develop and master new skills. Some of the major advantages of the FTEM framework are: multiple development phases; free movement within the framework and omission of prescriptive elements; “fully inclusive of developmental support drivers at the sport and system levels” (Gublin *et al.*, 2014:798).

2.13. Pitfalls of all development models

No matter if it is a model, framework, academy, or sport entity, the possibility to consider all aspects of an athlete’s life is impossible. Additionally, many federations and models neglect to enable a post-athletic career transition. Hong and Fraser (2022:11) found that when identifying career transition stresses, “there is a need to develop high-performance athletes’ financial literacy and self-development skills.” Limitations of athlete development models are inevitable, and academies, federations, and organisations would benefit from using them as guidelines rather than strict rules. Limitations to be considered are:

i) generic pathways,

ii) data is not from a specific sporting code or limited evidence,

iii) not holistic,

iv) broad stages of development determined by age (Gublin *et al*., 2013).

It is noted that most models have three to six developmental stages which include fundamentals, learning to train, training to train, training to compete, training to win, and retirement (Gulbin *et al*., 2013:1319). Creating boundaries and foundations for athletes and coaches enables the anticipation of certain changes and stresses, thus aiding a smoother transition relating to bio-psycho-behavioural themes. Figure 5 gives some

insight as to the layers and stages of development being experienced by athletes, beginning at age 5 until age 30. The model can be applied to various individuals beginning at different stages in their lives, however, changes would need to be made in each level to reflect the current status of each athlete. Despite the FTEM citing many of the crucial bio-psycho-behavioural themes referred to in Figure 5, neither the LTAD nor the FTEM have been proven to effectively manage all transition stages for elite athletes. While the LTAD does not develop athletes and coaches with bio-psycho-behavioural themes in mind, the FTEM framework does leave room for extended consideration of these areas.

MacNamara and Collins (2013) argued that the LTAD and FTEM cause the omission of talented athletes at the early stages when implemented in athletic institutions with limited funding. Specifically, within the FTEM framework, “in financially constrained TID systems, the number of athletes that enter the T2 phase will be limited and based upon the assessment of potential that occurs earlier in the process thus the TI process may actually prematurely deselect “potential” before these athletes are offered the opportunity to progress to the talent verification phase” (MacNamara & Collins, 2013:795). However, Gulbin *et al.* (2014:799) defends the FTEM framework stating:

“… we can reinforce that there are important advances for TID emanating from the FTEM framework that could advance TID diagnostics, inclusivity and the minimisation of Type II errors. First, we have highlighted the role that TID plays in the overall sequencing of development, and emphasise that the success of T1 and T2 will be dependent upon the critical experiences that precede (ie. the Foundations F1 to F3) but also follow the TID work (ie. T/E/M elements). Thus, we have reinforced that TID processes cannot be divorced from these crucial bookends. Second, we acknowledged the limited view of

talent defined by metrics alone and recalibrated our definition of talent to include sport-specific insights established by national sporting organisations (pp. 1325). This is a much broader consideration of talent typically employed in high-performance sport and we believe that it will potentially increase participant inclusivity. Third, we included the phenomenon of "self-identification" as a TID process (pp. 1325) and reinforced that the demonstration of potential can be both internally and externally mediated. This means that if an athlete has belief in their own abilities, then a T1 or T2 phase is not mandatory, thereby reinforcing FTEM's non-linearity."

Regardless, talent identification is reliant upon those making the observations and selections in early stages. The underlying challenge is how best can talent be identified and nurtured and still allow a lifelong relationship between the athlete and sport? Future research and field experts will need to consider best practices and recommend guidelines rather than continuing with current models of TID.

Coutinho, Mesquita, and Fonseca (2016) examined 54 peer-reviewed articles focused on talent development, specifically the type and amount of practice required to become an elite athlete. Within the literature, Coutinho *et al.* (2016:279) found three considerable and contrasting views:

i) both early specialisation and early diversification can lead to expertise development.

ii) deliberate practice and deliberate play do not provide a sufficient spectrum of different learning activities for talent development.

iii) criteria utilised to categorise various learning activities was inconsistent and lacking detail.

These three observations amongst a large number of recent studies shows that even the experts do not agree how to best determine the needs and appropriate training parameters for developing elite athletes. The lack of a widely accepted definition and detailed criteria of learning activities must be addressed as a research and expert community. Currently, the LTAD and FTEM are a generalised model and framework being used to create sport-specific programmes. Athletes would benefit greatly if the aforementioned issues were utilised to design long-term sport-specific development programmes. Again, long-term analysis and models that include all aspects of an athlete's life would be the most beneficial in creating specialised programmes for athletes.

It is recommended that future studies utilise longitudinal, multi-method research (ie. qualitative and quantitative) to benefit from the strengths of diverse methods, and thus more effectively advance the knowledge foundation of elite athlete development (Coutinho *et al.*, 2016). Coutinho *et al.* (2016:289) suggest a "quantitative set of data to gather patterns of sport activities undertaken throughout athletes' development and qualitative data intended to explore the meaning that athletes place on events, processes and structures within those specific experiences". In addition, researchers, and coaches for that matter, should not omit the child's entire learning spectrum (ie. deliberate practice, play practice, spontaneous practice and deliberate play) when attempting to identify major contributing factors to talent development.

2.14. Sport Policy

Implementation of a model or achieving a paradigm shift in sport requires strategy and support on all levels, ranging from ‘grass-roots’ to the national government. It is essential to note that funding for both mass participation and elite sport comes from the national government, however, it is kept in corresponding categories. “The reasons stated in the sport policy is that sport is identified as a tool to achieve national and global priorities; these include the following acknowledged objectives, namely: Sports tourism, sport for peace and development, sport environment and lastly, sport and national government priorities” (SRSA, 2012:57). Some stake holders, like the national government, may exert influence or power over sport policy and entities as they manage and distribute funds for elite and mass participation sport (Jacobs *et al.*, 2018:18). National federations, like ASA, need the funds for their daily operations and would benefit from increase in funds or favorable policies (Jacobs *et al.*, 2018:18). Whereas NGOs like SASCOC are meant to deliver public policy objectives and not be influenced by governmental agencies (Jacobs *et al.*, 2018:16). Challenges identified by the African Sport Index (ASI) study regarding sport policies in SA were: (1) the high turnover of senior political and administrative leadership leading to continuous changes to policy strategies; (2) decrease in the effectiveness in implementing policy strategies; (3) changes to policies, strategies and plans which do not allow for the maturation of the strategies to occur; and lastly (4) politics within sport from government and civil society which has led to the restrained growth of sport as a whole (Keim & De Coning, 2014).

2.15. Africa Athletics Foundation: Coach and athlete development

Rather than rely on governing bodies, coach and athlete development can be done through nonprofit organisations which operate independently as academies within local communities, to better serve those seen as previously disadvantaged as well as other top athletes. Dodo and Ntombana (2022) found minorities (black, colored, and Indian) were most negatively affected by policy gaps and changes within the sport of rugby in South Africa. Their recommendation to advance human capabilities and communities was to facilitate free participation without prejudice or social exclusion. Utilise DTS programmes as integral parts of policy of organizational development while implementing a bottom-up approach, as opposed to the typical top-down method. Additionally, this idea would "require public-private partnership collaboration and networking at the grassroots level up the pyramid structures of sport development nationally" (Dodo & Ntombana, 2022:57). Bottom-up development for sport feeds the need for local entities, like academies, to develop sport and athletes.

One local academy example that operates in KZN is Africa Athletics Foundation (AAF). AAF is a nonprofit that works with a local development club (Elite Performance Group, or EPG), sport service provider and coach development company, A2Z Sport Solutions (A2Z), and operates out of the Msunduzi Athletics Stadium in Pietermaritzburg (see figures 6 and 7). AAF receives no funds from sport governing bodies; athletes achieve using their work ethic, talent, personal or family funds, or bursaries from the AAF.

Previous academies in KZN were funded and established by politically connected individuals who did not fully grasp how to develop athletes or adequately manage the finances. This collapse of previous academies created a negative perception of the term

‘academy’. The political influence over sport is detrimental to the achievement of athletes. This is also why AAF does not approve federations and government agencies contributing financially to their programmes. Athletes must be cared for within an academy, but this concept was not present in the history of academies in the area. It is best that funds not come from government to ensure the integrity of the AAF development programmes, however, governing bodies should endorse and promote such programmes.

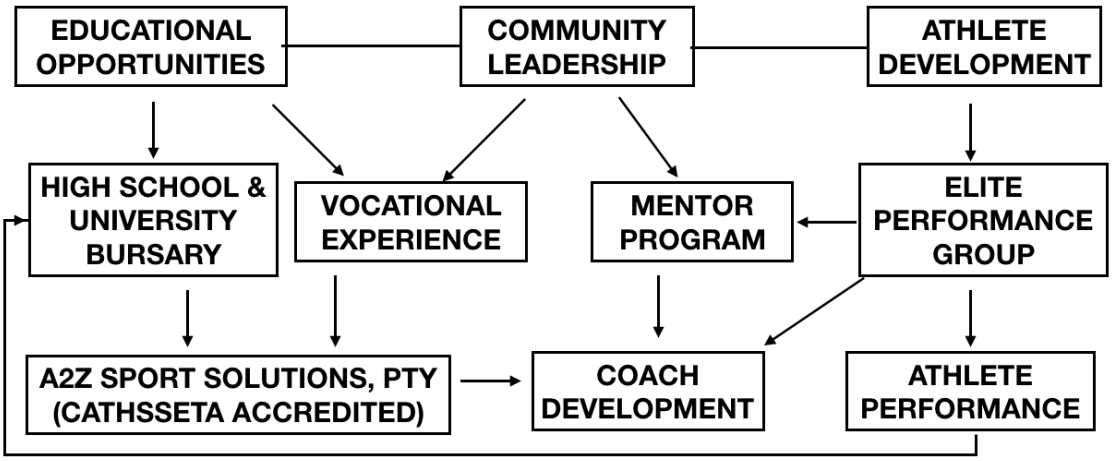

Figure 6. Africa Athletics Foundation Sport Academy community

Athletics academies are created with the intention of developing and producing elite level athletes through exceptional support from sponsors, trainers, medical staff, and coaches; all of which creates jobs requiring various levels of qualifications. Currently, AAF-EPG athletes are encouraged to participate in multiple sports until after matriculation. Athletes that achieve in middle school and high school are able to earn bursaries, both partial and full, to private institutions in Pietermaritzburg to ensure they have opportunities for higher education while being close to training facilities. Athletes also have the option after matriculation to continue their education and athletics careers in South Africa through institutions like Varsity College, or move oversees for university. If athletes choose

university oversees, those athletes can return to Pietermaritzburg, South Africa having gained the necessary experience to compete internationally as a senior elite athlete. Some athletes choose to forgo university to stay with AAF and periodically travel throughout Africa and Europe to compete and improve their craft. Regardless, the main goal for AAF and EPG is to enable athlete success, and the path is not the same for each individual.

A2Z Sport Solutions (PTY) is certified through CATHSSETA and acts as the education arm of AAF as it offers continuing education and qualification courses for coaches and technical officials. A2Z also aids in management of events, athletes, facilities, job-skill training, and community outreach. Educational and vocational interests of athletes are also nurtured and networks are sourced through A2Z to aid their opportunities to pursue their goals outside of athletics to ensure they are contributing, positive members of the community. AAF considers the life of an athlete outside of sport and works to enable their success during and post-athletics career, because they understand the need to maintain a holistic approach to athlete development. Athletes with a desire to remain working with athletes post-personal athletics career are given the option to internship with AAF, EPG, and/or A2Z.

2.15.1.AAF: Stakeholder views

SASCOC, ASA, and provincial governing bodies are all connected. Provincial bodies (ie, KwaZulu-Natal Athletics) are fed by local clubs (ie, Elite Performance Group in Pietermaritzburg) and national clubs (ie, Varsity College). The national federation (ASA) relies on athletes and coaches promoted by provincial structures, and ASA supplies and promotes the athletes and coaches for SASCOC. The AAF Academy is working to do

great things in the community and enable athletics olympic level achievement through development of coaches and athletes at junior, youth, and senior levels. The foundation has been established with EPG and A2Z and the stage is set for optimal expansion of the academy system with the stakeholders (athletes, parents, coaches, communitiies, and South Africa) views in mind (see figure 7). Note in the figure that a dotted line separate the contextual environment from the transactional environment, which means there is influence on the transactional but not a consistent two-way flow of information or practices. There is no barrier between the transactional and operating environments as the two constantly impact one another.

2.15.2.Operating environment

The Operating Environment is the current processes within the AAF academy system. AAF partners with EPG for coach and youth athlete development and community outreach. Athletes train at the Pietermaritzburg Msunduzi Athletics Stadium all year long.

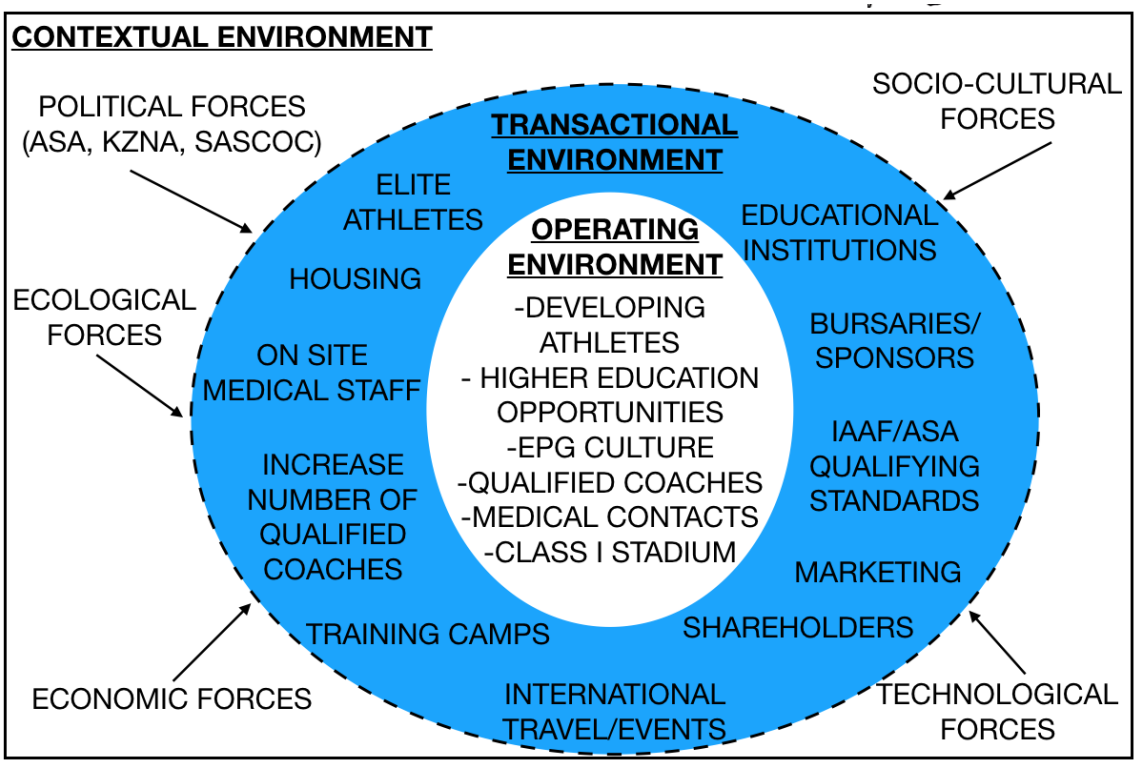

Figure 7. Stakeholder view of AAF Academy

The stadium is a Class I world Athletics Track, which means it is certified for international competitions. EPG has been operating since 2008 and is very well known in the KZN community for athlete achievement in school and in sport. Coaching staff creates both personalised and general training and gym programmes for all enrolled athletes while training new coaches. Coaches work with athletes to create short and long term goals; these goals partially determine the type of training programme for the year. Because coaches interact with the athletes 4-6 days a week, they are able to monitor the progress of each athlete and can more easily discuss any physical or emotional challenges with the athlete and parents. If any problems arise, the athletes will be directed to the proper medical associate who then determines the root cause and recommend any changes, whether it be nutritional or physical. Note that while not all athletes are fully sponsored, all the medical staff on site are available to the public. Athletes journal daily to track

progress and changes inter bodies, thus becoming more self-aware, and learn motivational tools and skills along with race-day preparation to reach their potential in competition.

While training with EPG, athletes learn proper mechanics and well as leadership skills. Athletes mentor and guide one another in training and in life; often offering peer advice on how to properly navigate many teenage issues. Social media has been a significant topic and AAF reinforces the need to keep personal and sport pages separate, while also maintaining a certain standard on both. Athletes are a brand and if they want to get individual sponsors as senior elite athletes, they need to be marketable and have ‘clean’ online profiles.

2.15.3.Transactional environment

As part of the “transactional view,” AAF rents the Msunduzi Stadium and stocks the gym with necessary and innovative equipment, such as curve treadmills, zero gravity treadmills, power lifting areas, squat racks, weights, rowing machines, ice baths, recovery suits, and other general items. The stadium allows for AAF to host training camps for international athletes and teams and well as local events. This also benefits Pietermaritzburg and generates income as the visiting athletes stay in local facilities for during events and camps. Extensive use of the stadium offices allows for medical staff to be on site, this includes dietitians, physicians, and physical therapy. Offices are also used for coach training courses to increase the number of qualified coaches in KZN and South Africa.

A major aim of the AAF programme is to increase the knowledge of sports and general fitness among children to improve their educational opportunities and generate positive

community leaders. AAF also strives to provide support for adolescent and senior athletes and coaches in sports, education, and vocational avenues to enable success after their time in competitive sport ends. All matters concerning business and finances must be approved by all board members. Meetings are held via online platforms or matters are disseminated through email which streamlines the meetings and issues as members are direct with concerns, submissions, and responses.

2.15.4.Contextual environment

The contextual environment is composed of the following forces: political, socio-cultural, economic, ecological, and technological. While this environment cannot be changed or significantly impacted by AAF, it is worth noting that the political forces of Athletics South Africa (ASA), provincial structures (like KZNA), and the South African Sports Confederation and Olympic Committee (SASOC) all have a bearing on selection of athletes to compete at the World Championships, Youth Olympic Games, Olympic Games, Paralympics, African Games, and Commonwealth Games. While it would be ideal for athletes to be chosen on abilities alone, that is not always the case and the prevention of ‘blocking’ opportunities must be considered. Athletes must be able to achieve the ‘A’ qualifying standard and perform optimally at each competition to ensure selection committees will add them to the team.

2.15.5.AAF: funding allocation

AAF programmes support, assist, and promote opportunities for athletes and coaches to compete and achieve at the local, national, and international levels in all age groups. In order for athletes to achieve greatness, they need to be able to focus on training and

minimise stress. AAF funding is used to benefit athletes and coaches, and allows athletes to compete oversees as amateurs. Meaning, athletes can still compete in the USA at the university level because they did not receive monetary gifts or sponsorship while part of AAF. AAF is sponsored, not each athlete. Athletes that secure their own sponsorship must do so through their agent or manager.

Outreach programmes practiced by AAF include providing kit for rural athletes and transporting them to the stadium twice per year. During schools competitions, rural schools bus their athletes to the Pietermaritzburg Stadium, but they do not have spikes or running shoes and many of the girls do not wear a sports bra, or even a bra for that matter. AAF is passionate about ensuring athletes have what they need to compete at each level, regardless of pre-elite status. AAF uses athletes as brand ambassadors for companies interested, as well as for service providers. In addition, athletes that are approached for sponsorship, but want to maintain their amateur status, do not accept sponsorship as an individual. However, the sponsor will have the option to ‘gift’ or ‘fund’ the training group in some form. This will give the sponsor a bigger platform and the athletes will still be able to compete at the university level oversees.

AAF budgets to ensure athletes are able to compete internationally and still have their needs met all year (ie, housing, food, medical). Traveling to Europe, the USA, and other parts of Africa requires time and money; typically, elite athletes travel for one to three months each year. This timeframe provides the opportunity to get acclimated and perform at optimal levels during their peak. Competing against the best in the world prepares athletes for different world competitions and exposes their strengths and weaknesses

prior to championships. Athletes that learn how to better perform on the world stage will be more likely to get sponsorships and achieve the international qualifying standards.

Funding is used to establish more ideal training facilities, bring in additional qualified coaches, create a plan for continuing education courses for coaches, hire a consultant for brand development, creation of an academy campus, and a portion is set aside for future travel and competition. Funding provides kit, housing, general living expenses, training fees, medical fees, education fees, and travel costs for local and international competition for selected athletes. Funding enables full use of the local athletics stadium, Msunduzi Stadium for example, to utilise the offices for necessary medical practices, education courses, and a state-of-the-art gym. All the tools needed by an elite athlete to achieve greatness is in one facility, near housing and amenities. A2Z Sport Solutions (PTY) is used to administer coaching coursework, develop the gym, and manage the stadium. Coaching courses are offered on site in addition to options for a coach mentorship programme with EPG. More athletes, and South Africa, will benefit from developing qualified coaches, rather than only focusing on a few elite athletes. A system has been developed to track participating coaches to ensure they are supported and implementing the training methods.The AAF Academy has identified the niche along with a system that enables development of olympic level athletics athletes for South African. AAF strives to be a positive influence in the community and SA through the training of leaders in athletes and coaches, both recreational and elite participants.

2.16. Leadership

Leadership can be viewed as an essential characteristic for success in multiple facets. Leaders can generate the success or failure of a community or programme, and in this

case, an athlete (and coach) development model. “Leaders who encourage individuals to feel more personally responsible for their quality of work and to feel good about their contributions can improve their team members’ health and happiness” (Raye, 2014:62). Fractal organizations build group cohesion with united efforts and common goals.

To establish athletics entities as a more fractal-like organizations, processes of universal participation towards improvement and collective decision-making would need to be implemented. “Fractal phenomena depend upon iteration and feedback loops to ensure ongoing evolutionary change, and a variety of inputs can lead to many varieties of a species” (Raye, 2014:57). Relationship development is a constant within the training group and between athletes and coaches. Communication is key and athletes are taught early on to appropriately speak with coaches relating to personal and physical issues so ensure effective training. “Sharing information not only reduces uncertainty, it also expands the perspectives of everyone in the feedback loop” (Raye, 2014:60). Verbalization and discussions around goals of the organisation, training group, and individuals would also be beneficial to establishing a more fractal-like system.

Raye (2014:64) recommends monitoring employee health as an indicator of organisational health. “People are healthiest and most resilient when they feel valued, appreciated, and fairly compensated for their contributions.” Employees, and athletes, feelings and perceptions not only affect their own health, it will impact the productivity and success of the group. Treating the business or training group as a living system (organism), in which communication flows freely and the working parts are valued and utilised, rather than being smothered with hierarchy, will be critical to establishing a fractal-like organization.

Fractal-like business means the system creates a pattern of integrity in each aspect of the whole organization, like a repeating geometric shape, evolving towards successful business practices. “Fractal organisation theory recognises an emergent human operating system that mimics nature in its capacity for creativity, adaptation, vitality, and innovation” (Raye, 2014:50). A fractal system would create patterns of integrity, relationship development, information sharing, collective decision making, universal participation towards improvement, devoted leadership self-organization, self-optimization, goal-orientation and vitality (Raye, 2014:50; Tunc & Turan, 2013:14).

2.17. Conclusion

Choosing a model or framework for a country, federation, or club programme may or may not yield exceptional results. The chosen model can generate desirable results with adequate training prior to implementation, monitoring of coaches and athletes, and continued education. It is essential to remember athletes must have a safe environment to function optimally off the track as well as on it. Coaches who are trained and educated in updated, effective methods in holistic athlete development are more capable in assisting athletes in honing their skills as well as enabling their mental and emotional well-being. While some countries have their own protocols which take into account the regional and cultural norms, World Athletics has provided a structure that can be sufficient on its own, or can be used as a foundation. Factors determining the success of the model or framework would be national sport policy, coach education, programme implementation, flexibility, and holistic training (or services) for athletes.

3. CHAPTER 3

RESEARCH DESIGN & RESEARCH METHODOLOGY

3.1. Chapter Introduction

Athletics athletes in South Africa were known to achieve at youth and junior levels, but often were unable to compete at the senior level internationally as was seen by lack of Youth Olympic athletics athletes later competing in the Olympic Games (International Olympic Committee, 2022). The purpose of this study was to determine the lived experiences of these elite athletes and coaches and determine commonalities along with possible solutions. The reasoning behind the methodology of this research study was to understand the cause for decreased athlete retention and performance in South Africa's elite youth athletics athletes, as the local and global research noted the fall-off of athletes can be caused by a myriad of issues (ie, injury, psychological burnout, lack of community support, coaching effectiveness, athlete development model, etc.). This study attempted to discover the real views and needs of South Africans who represented their country on the international stage rather than rely on the reasoning found in other parts of the world.

3.2. Research Design

This phenomenological, mono-method qualitative study was conducted using exploratory research and an interview guide. The lived experiences of regional and local athletics athletes and coaches in relation to development and support were the center of the query. However, as the researcher abandoned previous assumptions, exploratory research utilising a literature review was necessary to better understand the parameters of Olympic

athletes' experiences. Several peer-reviewed, published studies, both globally and locally, relating to elite athlete development models, athlete welfare, coach education, effective coaching methods, and various related articles were incorporated to ensure adequate information in developing the interview guide and determining conclusions. The qualitative research also required an interview guide which allowed for the participants to speak freely yet enabled the researcher to maintain the focus of the conversation (See Appendix A). Interview guides are useful to prompt a topic of discussion while the open-ended probe eliminates restrictions of the participant. All individuals included in this study were current and former South African Olympic Athletic Athletes, some of which are now coaches and administrators, along with other South African Olympic Athletic Coaches. This gave perspective of the multiple viewpoints necessary for understanding current and preferred practices of elite athlete development experience as it related to South African athletics athletes.

3.3. Research Methodology

The literature review was conducted using both google scholar and a scholastic database (EBSCO) applying the terms: athlete longevity, elite athlete development model, talent identification model, early sport specialisation (ESS), athlete welfare, athlete career transition, coaching effectiveness, coach education programmes, and athlete tracking. Outside of looking at athlete development, some countries' and universities' practices of athlete tracking and promotion were included; this did lend insight to reason for success and failure of programmes (for development and identification) and athletes at various levels. The span of the literature review provided differing studies and opinions on ESS, and how best to treat and train athletes from early sport participation, through their athletic

career, and post-athletic career transitions while enabling longevity and injury-prevention. Note that studies conducted oversees in ‘first-world’ countries were included along with studies done in the southern region of Africa. It was noted by the researcher that the peer-reviewed studies conducted oversees, in countries like the United Kingdom, Denmark, or the United States of America, may not be fully applicable as affluence, lifestyle, and culture do play a part in the holistic development of an athlete. However, in terms of experiencing global success and enabling safety and longevity of athletes, it would not be appropriate to simply dismiss the findings from other parts of the world, but rather keep in mind the need to modify the implementation and monitoring methods to adequately suite South Africa.

Participating athletics athletes and coaches from South Africa completed a qualitative interview relating to personal training and performance history. This type of qualitative data was not able to be generalised for all sporting codes in South Africa, however, it did provide valuable details regarding athletics programmes. “It should be noted that the general rule on sample size for interviews is that when the same stories, themes, issues, and topics are emerging from the interviewees, then a sufficient sample size has been reached” (Boyce & Neale, 2006:4). An interview guide was used as a means of establishing organisation to the conversation. An interview guide was considered a semi-structured method which allowed for follow-up questions and space for individual expression while maintaining flow of the interview (Kallio, Pietilä, Johnson & Kangasniemi, 2016:5). The outline of open-ended questions was based on prior knowledge of the subject by the researcher and covered the main topics of the study (Kallio *et al*., 2016:5). The guide differed from a questionnaire in that the participants were

able to answer as they deemed appropriate rather than choosing from given options. The first step of developing an interview guide was to plan the population (and sample size) and what information was needed from them (Boyce & Neale, 2006:5). Next, the protocol (ie, setting up the meeting) and list of pertinent open-ended questions were created to be utilised for each interview to ensure consistency (Boyce & Neale, 2006:5). The participants were not given the questions prior to the phone interview; when setting up the meeting, the participants were given general information about the overall study and read the letter of consent. While the interview was somewhat spontaneous, the goal of obtaining details about participants experience through open ended questions remained. It was believed that participants would be more honest and candid with their responses if the interview operated similar to a normal conversation.

3.4. Research Population and Sampling

Any SA athletics athletes and coaches who were part of an Olympic team between 1996 and 2021 were considered as participants, even if they did not medal and were not currently competing. One hundred and fourteen (114) different athletics athletes competed between 1996 and 2016 in the Olympic Games and thirty-eight (38) Youth Olympic athletics athletes from 2010-2018 (International Olympic Committee, 2022). Interviews were done as one-on-one conversations between the researcher and the participant. Numerous individuals were contacted to contribute to the study, however, only a small percentage were willing to participate without financial compensation. All interviews were conducted by the researcher via telephone. Once the contact details were obtained for each athlete or coach, the interview was conducted and ultimately transcribed. The survey population included a minimum of eight (8) former Olympic

athletics athletes and coaches for youth and seniors. The use of such a sample gave a census of what athletics athletes in South Africa encountered throughout their development.

3.5. Data collection

Interviews were completed via telephone by each individual participant. Participants gave consent by participating in the interview; the informed consent and details of the purpose of the study were stated at the beginning of the interview. Participants were able to stay anonymous in the study as the names were not disclosed to anyone except the researcher and each interview has been coded. All participants were given access to results upon completion of the study.

The integrity of the data remained intact as a professional third party was used for the transcription process. The third party did not receive names of the participants. Once transcription was complete, the results were interpreted by the researcher utilising coding methods to identify common categories and responses. Upon the completion of analysis, the results revealed at what stages athletes began to specialise and achieve their performance goals, areas athletes and coaches needed more support, and views on programmes for athlete and coach development. All results (omitting participants' names) were available to those who submitted an inquiry.

3.6. Data analysis

Fortunately, the empirical analysis of interview responses allowed for a case study of SA Olympic athletics athletes and revealed areas federations and coaches (ie, education,

qualification, implementation, or training methods) can better provide for athletes at all levels. The interviews did broadcast issues not yet considered by this study as concepts fell outside the focus parameters of this study. These ideas were mentioned in the recommendations section of Chapter 5.

Use of open-ended interview guide gave participants an opportunity to “explain why” and fully describe their personal narratives. Researchers felt this was necessary to better grasp the participants experience or opinion. Following the interviews, the recordings were sent to a third party, professional to transcribe for a set fee. Once the transcripts were received, nonsensical threads were removed to ensure it was free flowing while the participants intent remained clear. Next, the relevant open-ended responses were coded and categorised using Verbal Exchange Coding; researchers then determined frequency of the themes of responses and focused on sections of text that were relevant or reoccurring. “Verbal Exchange Coding is intended as an introductory approach for novices to closely examine the complexity of talk through focused parameters of conversation types and everyday cultural practices” (Saldaña, 2021:138). In this study, athletics was considered the culture which encompasses athletes, coaches, families, medical personnel, and federations. “Verbal Exchange Coding is appropriate for a variety of human communication studies and studies that explore cultural practices” (Saldaña, 2021:138). Transcripts were recorded exactly as the conversations occurred, which allowed for analysis and interpretation of meanings. The transcriptions were broken down first into one of five categories:

i) Phatic Communion or Ritual Interaction, a “class of routine social interactions that are themselves the basic verbal form of politeness rituals

used to express social recognition and mutuality of address"; an example is:

A: Hey.

B: Morning.

A: How's it going?

B:OK. You?

Simple exchanges such as these can communicate such cultural patterns as status, gender, race, class differences, etc.

ii) Ordinary Conversation, "patterns of questions and responses that provide the interactants with data about personal, relational, and informational issues and concerns, as well as perform the routine 'business' of ... everyday life".

iii) Skilled Conversation, which represents "a 'higher' or 'deeper' level of information exchange/discussion" between individuals, and can include such exchanges as debates, conflict management, professional negotiations, etc.

iv) Personal Narratives, consisting of "individual or mutual self-disclosure" of "pivotal events in a personal or organisational life".

v) Dialogue, in which conversation "transcends" information exchange and the "boundaries of self," and moves to higher levels of spontaneous, ecstatic mutuality (Goodall, 2000:103-104).

The second level categorises the "cultural practices of everyday life" (Goodall, 2000:116).

i) Routines and Rituals of structured and symbolically meaningful actions during our day.

ii) Surprise-and-Sense-Making Episodes of the unanticipated or unexpected.

iii) Risk-Taking Episodes and Face-Saving Episodes of conflict-laden exchanges.

iv) Crises in a verbal exchange or as an overarching pattern of lived experience.

v) Rites of Passage, or what is done that significantly “alters or changes our personal sense of self or our social or professional status or identity” (Goodall, 2000:116-119).

The researcher aimed to give meaning to each response on a deeper level through the use of the aforementioned categories. The goal of the study was to determine how best to train athletes to achieve their full potential. Furthermore, governing bodies may be able to use the results to either solidify or modify their missions and organisational capacities to generate improvements by adopting development models to enhance and extend the life of athletes.

3.7. Ethical considerations

All ethical considerations were observed, and approval was obtained from Da Vinci and ASA. The ethical considerations in this study referred to the protection of confidentiality and anonymity of the athletes/coaches who participated in the surveys. Names of participants were only known by the researcher and no names were used in the publication of the study. The participants were aware of being recorded during the

interview process. Participants were assigned a random number (ie, A1, A2, etc.), and that was used instead of a name where necessary. Participants were not at risk for reprimand or backlash by participating in this study by their clubs or federations as it focused on the practices and perceptions of individual training history and achievement, thus aligning with the principle of no harm.

Qualitative studies address trustworthiness, or rather credibility, transferability, dependability, and confirmability, in order to solve issues of validity and reliability (Shenton, 2004:63). Credibility of qualitative research depends on the methods used in each aspect of the study, especially the questions used for data collection; this coincides with the development of a proper interview guide, honesty of informants, peer scrutiny, awareness of the organisational culture, population sampling, and triangulation. “Triangulation may involve the use of a wide range of informants” (Shenton, 2004:65). This type of data source enables individual perspectives to be verified against one another to portray a vivid picture of circumstances (Shenton, 2004:66).

Once data was collected, it was analysed using credible methods. The inductive approach to this particular qualitative content analysis included three phases: preparation, organisation, and reporting of results (Elo, Kääriäinen, Kanste, Pölkki, Utriainen & Kyngäs, 2014:1). “One of the key criteria addressed by positivist researchers is that of internal validity, in which they seek to ensure that their study measures or tests what is actually intended” (Shenton, 2004:64). The researcher ensured the proper development of an interview guide through use of adequate background knowledge, which was essential to helping participants stay focused on study topics during data collection. Once all data was collected, the researcher was compelled to sift and sort, or rather organise,

the responses into usable data. “The organisation phase included open coding, creating categories, and abstraction” (Elo *et al*., 2014:2). Reporting of the results established transparency and required “self-critical thinking at each phase of the analysis” (Elo *et al*., 2014:8).

In general, transferability is the ability for the results to be related and used in different scenarios outside of the study. However, it is essential readers understand the boundaries of the study to ensure results are not applied outside of their limits. “Since the findings of a qualitative project are specific to a small number of particular environments and individuals, it is impossible to demonstrate that the findings and conclusions are applicable to other situations and populations” (Shenton, 2004:69). In some instances, the study, although limited, may be useful as a baseline study.

Dependability in this study required the researcher create a prototype model to allow for a repeat study or steppingstone for further study within this report. Shenton (2004:71) recommended in-depth details to allow readers to fully understand the methodology and use the research design as a “prototype model”. The text addressed the following areas:

i) the research design and its implementation, describing what was planned and executed on a strategic level.

ii) the operational detail of data gathering, addressing the minutiae of what was done in the field.

iii) reflective appraisal of the project, evaluating the effectiveness of the process of inquiry undertaken (Shenton, 2004:71-72).

Objectivity of the researcher lead to confirmability, however, due to the instruments utilised in qualitative studies that relied on human interaction, some level of bias was inevitable (Shenton, 2004:72). “The concept of confirmability is the qualitative investigator’s comparable concern to objectivity” (Shenton, 2004:72). Recognition of shortcomings, admission of researchers’ beliefs and assumptions, methodological description, triangulation, and use of an audit trail. All of these concepts aimed to reduce bias and play key roles in the ‘audit trail’ “which allows any observer to trace the course of the research step-by-step via the decisions made and procedures described” (Shenton, 2004:72). While complete objectivity was not possible, researchers minimised bias and remained self-critical of each step to increase credibility.

In terms of this research study, trustworthiness was paramount for the success of the qualitative study. The researcher remained objective (as much as possible) and self-critical throughout all processes of the study. All participants were considered reliable and responses valid based on their careers and experiences; although reliability and validity were not the focus as this was a qualitative study. Trustworthiness of each participant was essential for the success of this study. In essence, each participant was credible, dependable, and their statements were able to be confirmed and transferable due to the consensus of the participants. Transferability was limited as the sample population was restricted to athletics athletes and coaches in South Africa. However, all details of the methodology were included in the report for reader assessment.

3.8. Chapter summary

Qualitative interviews provided the necessary insight into the training history of elite level athletics athletes in South Africa which allowed for the possible reasons for low retention rate from youth to senior levels. To ensure a level of credibility in this study, only the researcher conducted the interviews. The data showed where coaches and federations can improve in order to aid elite-athlete development and longevity.

4. CHAPTER 4

FINDINGS AND DISCUSSION

4.1. Introduction

Despite having a large pool of high-achieving youth athletes in athletics, statistics of South African Olympians have shown that athletes do not transition from sub-youth up to the elite senior level. The aim of this study was to identify South African Olympic athletes lived experiences and views of early sport specialisation (ESS), sport coaching, and Olympic Athletes' performance, in order to develop guidelines for the coaching and enhancement of children and youth in athletics. Interviews were conducted on current and former Olympic athletes, coaches, and administrators to more fully grasp the reasons for the low turnover rate. The main concerns of this research were:

(i) Analyze how athletes perceive sports coaching methods.

(ii) Explain how coaching practices affected past (and current) Olympic athlete performance.

(iii) Determine which youth athletes were able to transition from Youth Olympic Games to the Olympic Games.

(iv) Criticise South Africa's methods to enforce coaching regulations and frameworks.

(v) Develop guidelines for improvement of coaching children and young athletes.

4.2. Findings

Participants in this study offered insight on the above topics and many gave detailed responses to the questions in a manner that created overlapping themes. Use of Verbal Exchange Coding determined the majority of conversations were categorised as ritual interaction, ordinary conversation, skilled conversation, or personal narrative. Ritual interaction and ordinary conversations were apparent in the interviews as the mood was light. Personal narration was common as participants portrayed their individual experiences in athletics throughout their lifetime. However, participants touched on the skilled conversations as they attempted to explain why they felt current practice in South Africa were in need of review and intervention. Interviews were then further coded for crises and rites of passage. In terms of crises, the responses that created a pattern of neglect (by the federations) was highlighted. Comments relating to rites of passage were focused on methods of achievement and personal struggle. It was noted by the researcher that once the recording ended, participants had more to say as they felt uneasy being completely vulnerable during the interview. Analysis revealed emerging themes from the interviews were: no ESS, athlete burnout, and no financial or developmental support for athletes or coaches.

4.3. Analysis: Athlete development

Early sport specialisation (ESS) has been said to be detrimental to the longevity of an athlete. Participants in this study recommended and experienced specialisation between 15-18 years of age. (See table 8 for specific participant comments regarding overall athlete development.) Most South African participants agreed that while athletes at the

senior Olympic level did not experience ESS before 15 years of age, the youth Olympic athletics athletes who were unable to transition were typically specialists early. It was also strongly expressed that when the senior athletes were not performing or there was a gap, the youth were expected to fill these spots and perform at high levels early in their careers. Being pushed to excel on the national and international levels too early may lead to early retirement. Interestingly, SASCOC does not encourage or provide platforms for athlete development or talent identification, although it has established an Athletes Commission. Since SASCOC has not given any direction for planned development, it is assumed there is no true vision from the governing body, which in turn shows lack of transformational leadership. No programmes have been endorsed or created by SASCOC or other South

Table 8. Participant Comments Related to Athlete Development
“There’s not a lot of support structure to help you and guide you to the senior level. Then once you transition into the senior level there’s kind of like a throw you in the deep and then just swim. I just feel like it was really really hard for me to transition.” - A3
“Specialised athletics training was only after I finished matric. I think it’s important to only start specialising later as different sports develop different parts of the body in general.” - A2
“I want to see you at the next Olympics and I want you to run well and I want you to perform well and work out a plan to develop that athlete so that he or she makes that smooth transition because also at a young age there’s a lot of expectations and parents are thinking of sponsorships and this child can go and run and see the world and I can live my life vicariously through my child.” - A7
“I think a lot of youth or junior very good athletes just stop because there’s no support and they feel that there’s other things they want to chase in life rather than something they don’t get support in.” - A1
“Our athletes are being destroyed at a very early age so now what South Africa has to do is not to put emphasis on big performances at their national level. Even if they do, they have to have a plan as to how they’re going to bridge this gap between youth and juniors to Olympic level but it’s not only in South Africa, it’s around the world.” - A6

African federations to specifically train identified athletics athletes. This leads into questions about the longevity of athletes that achieve national accolades before matriculation, as it was portrayed by participants that athletes were overtraining to achieve these results. Participant A8 stated the following: *I think we should really look at long-term development. It's okay if you are running phenomenal times as a 16 year old, but I also don't want you to run at every track meet every weekend and every championship and put you into a senior event … we have to sit down and plan*. A7 stated, *So many young athletes that specialise from a very, very young age, by the time they do get to a professional level they can only manage to be there for one season. Then you ask yourself, What happened to this athlete? They were a phenomenal high school athlete that could not transition into a professional athlete. It's the mental aspect of it, the physical burn-out and the overall development.* The mentioned cases of burnout were a result of over-use injuries, mental burnout, or financial struggles. Psychological stress was highlighted often as a need that was consistently ignored by coaches, however, the reason for this was unclear. The feelings around athlete development and SASCOC settled on the need for a plan for development and monitoring to enable long-term success.

4.4. Analysis: Governing body support and finance

Predominant feelings portrayed no financial support or developmental support was available from federations or SASCOC until athletes were already achieving medals at large events (see table 9 for selected participant quotes). SASCOC, Athletics South Africa (ASA) and federations did pay for some travel and accommodations at various events. It was expressed that assistance was needed for monthly coaching fees and living

expenses. Participant A3 said, I*t is really tough as an athlete to try and make it a lifestyle, especially when you're older, and I definitely get how athletes just fall out it because it's just really tough.* Athletes funded themselves or their parents assisted until they reached the podium at national and international events, or until they diverged toward another career path. However, at this high point of achievement, the assistance from South Africa was not typically needed as the athletes earned corporate sponsorship elsewhere. Participant A2 stated, i*t's R96k a year out of my own pocket for coaching fees and then you're working full time, you're studying full time, you're doing everything full time and then you do athletics, so it's really hard*. This comment showed that even after reaching Olympian status, South Africa may not assist athletes financially. Financial worries can also lead to extreme psychological stress, which also leads to burnout. Failing to assist athletes may have caused premature retirement, created a gap of elite athletes, and thus pushed younger athletes to compete at the senior level early; whereby perpetuating the loop of early specialisation and early burnout in South African athletics athletes. The price of being an Olympic athlete was steep for the participants, the coaching fees mentioned did not include physio, medical, massage, kit, living expenses, or nutrition. Due to expenses, even the Olympic athletes were expected to have a full-time job in addition to the full time job of being an athlete. There may be people who believe that was the choice of an athlete, however, if South Africa's expectation was for the athletes to perform optimally, some financial support may be required. Athletes who were also competing for a university did receive some assistance from the school for education, training, and coaching. In terms of sponsorship and financial assistance during development or after reaching Olympian status, participant A3 stated, *You live by luck of the draw with athletics*.

Table 9. Participant Highlights for (lack of) financial support
"I wouldn't say on national or on provincial level there's a lot of support. National level it's only going to the events, there's no pre-games or like physios or programmes, I feel, in place that support you in being an overall athlete." - A4
"I experience the most support from university level. Like at a championship the university pays for almost everything. So a lot of support there and also bringing physios and everyone." - A5
"I only found out when I was 17 what SASCOC is and since then I haven't received any support whatsoever." - A3
"It's R96k a year out of my own pocket for just coaching fees you know and then you're working full time, you're studying full time, you're doing everything full time and then you do athletics so it's really hard." - A2
"I know of good people who do get support and I know of good people who do not get support. I don't think SASCOC has a very good system for producing Olympians and good athletes. Most of the time the people that do make it, do have financial backing from their parents." - A3
"We don't have any sponsorships for our coaches or clubs and KZN battles to get sponsorships to develop their teams. There's always talks about development and sponsorships and nothing comes through." - A6

4.5. Analysis: Coach education and financial viability

Similar comments were made by participants regarding lack of coach education (see table 10). Coaches do not receive development or financial assistance from any South African governing bodies. Participants exposed the lack of financial viability of a coaching career as well as a lack of coach education. In regard to South African coaching education, participant A2 stated, *We're so behind so we're always trying to catch up to the knowledge and the standards of the world and I feel like we don't necessarily always get the exposure that we need, so we don't actually know how to work with the athletes and to adjust the coaching. As the athlete gets older, obviously the training also needs to change, and I feel like there's not really anything to help guide the coaches and the athletes to do that very well.* Participants highlighted the need for a specialised, qualified coach, because

without the proper education, a coach's good intentions can either cause harm or not yield the desired results. It was also viewed as essential for coaches to make training fun during developmental stages and ensure athletes were ready physically, mentally, spiritually, and emotionally. The combination of a lack of education about training and long-term development in addition to a desire to be well-known, coaches who were driven to produce high performance athletes, often destroyed athletes along the way. As a follow-up to these viewpoints, participant A7 stated, *They (coaches) are just interested in what money you can bring in for them now and that is why we have so many athletes, potential world champions that are walking the streets here in South Africa, that have fallen to*

Table 10. Participant Comments on Coach Development
"I finished high school I got a coach that specialised [in my event], before that I was training everything. I would just run and I would do all the other things that's not specific so I think the training is much more specific and it helps that I don't train things that I shouldn't." - A3
"We don't have any sponsorships for our coaches or clubs and KZN battles to get sponsorships to develop their teams. There's always talks about development and sponsorships and nothing comes through." - A8
"America has proven programmes that work that you can put an athlete on and as an athlete goes onto that programme he or she will be an Olympian by a certain time. In South Africa we don't have any strength building foundation and if you do want it, it's a very unique skill you need to go and look for in South Africa and then pay through the roof as well." - A1
"I think a lot of that has to do with the lack of knowledge in South African coaching and I feel very sorry for our coaches in the sense of like they also don't have support and the motivation to be taking athletes to the next step in the senior level because for them they don't have a lot of motivation. It's not very financially sustainable to be coaching in South Africa." - A2
"Every coach wants to prove how good they are. Very few of them know about the long-term programme, very few of them. I know from first-hand experience, they (high performance centers) destroy athletes." - A6

drugs and to all sorts of things, that are working as cashiers because there was just no plan and there was just no skill development that they could use post athletics.

4.6. Financial support

According to this study's findings, lack of financial support for training and general international competition (ie, competitions outside of championships) was a common concern for athletes and coaches, as it was expressed that the majority of coaches and athletes are not contractually supported by federations in South Africa. Governing bodies would benefit, as would national athletes, by creating and marketing a 'brand' to bring in funds for athlete development and retention. Longevity of an athlete relies on their ability to reduce stress and limit injuries and setbacks. Athletes who are able to focus on training, instead of working full time and training, would then be more likely to achieve and compete for a longer period, as well as seek medical attention in early stages rather than later since it would not cause financial strain. There are some early athlete development programmes (EADP), which provide gym and medical visits, however, these are not only for athletics and are not necessarily accessible by athletes that live in a different city. It is assumed that national athletes that are sponsored (ie, coaching fees and medical) and housed at a High Performance Centre would not be able to use those funds to live 'off-campus' or support a family. Universities do offer funds in terms of bursaries and coaching fees for some athletes, which was confirmed and experienced by participants of this study. The underlying challenge for athletes and coaches is how to have athletics as a career when they must source monetary funds prior to reaching the podium at an international competition? Coaches are able to charge fees each month for services, however, coaches who are wanting to support their families may struggle to have the

quantity of athletes necessary to work solely as a coach. Continuing education is also a cost that may deter some coaches from working to improve their knowledge of training methods. Coaches and athletes would then need to have supplemental income or another main career in order to feel financially stable. Finding a balance for federation and private sponsorship is essential if South Africa wants to have a constant flow of athletes coming up that can compete with international veterans.

4.7. Conclusion

The research questions were answered by the interviews, albeit many responses overlapped and reiterated the need for change. Much of the findings reenforced the literature regarding the needs of athletes in order to be successful and maintain a longterm career. Participants perceived sports coaching methods to be inadequate overall; there proved to be a great need for increased coach education. This in turn, showed coaching practices impacted past (and current) Olympic athlete performance negatively. Participants viewed inefficient or detrimental coaching practices and lack of federation and SASCOC support as the reason youth athletes were unable to transition from Youth Olympics to the Olympic Games. South Africa does not enforce coaching regulations and frameworks, as was evident by lack of coach education. Recommendations for improvement of coaching children and young athletes was clarified to mean appropriate and continued coach education. Many of the issues for athletes stemmed from lack of coach education, which should be not only encouraged, but enforced by federations and SASCOC, to ensure the safety and success of future athletes at all levels.

5. CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

Assumptions and experiences of the researcher prior to conducting the interviews were in fact proven accurate, with the exception of racial bias as none of the participants cited that as a concern. ESS and Olympic athlete performance did not complement one another in the long-term in this study. According to this study, athletes that waited to specialise until after 15 years old were better able to cope with the demands of high-performance training and competition. Waiting to specialise did not automatically equate to medals. However, lack of support systems for coach education, talent identification, athlete development, burnout, medical assistance, and financial assistance may have led to the inability of not only the majority of high achieving youth athletes to fail to transition to senior elite (Olympics), but also for many senior athletes to leave athletics. If South Africa desired to earn accolades at international events, would they not have considered creating a safe, educated path which permits optimal athlete success? Athlete burnout can occur at any stage or age, and responsibility was up to the athlete, parents, and coaches to create a plan for the athlete for development and post-athletics. Sport governing bodies needed to do more to safe-guard athletes physical and mental well-being, and through improved programmes of support for athletes and coaches change is possible. In order for any change to be successful in terms of coach and athlete development to enable success and longevity, all athletics entities need to focus leadership and organisational development.

5.2. Research objectives revisited

The first research objective achieved in this study was: Analyze how athletes perceive sports coaching methods. The interviews proved that athletes are left wanting in terms of coaching methods as there are not enough qualified coaches to fill the needs of SA athletics athletes and governing bodies. This objective was completed, and unfortunately, many feel that not only are the qualifications of coaches lacking, but athletes are being used to the point of injury and burnout for the furthering of a coach's career.

The second research objective was: Explain how coaching practices affected past (and current) Olympic athlete performance. This objective was answered despite the small number of participants and exclusion of athletes who failed to transition from youth to senior. It was clear that coach education programmes are lacking, the athletes that were included in this study had some of the more experienced, qualified coaches and training programmes. It can be deduced that the reason these athletes did well as senior athletes was in part due to the 'exceptional' coaching.

The third research objective was: Determine which youth athletes were able to transition from Youth Olympic Games to the Olympic Games. This objective was achieved as the research found that the number of athletes who competed at both the Youth Olympic Games and Olympic Games for athletics were nonexistent. The few athletes that did transition from youth to senior were swimmers, and they were able to reach the podium.

The fourth objective achieved in this study was: Criticise South Africa's methods to enforce coaching regulations and frameworks. Research on current practices were found to be negligent at best as SA athletics governing bodies do not enforce any regulations

for qualifications or disseminate approved athlete development framework. The lack of TID and coach education shows lack of concern and capability by the governing bodies in athletics to assess the challenges and collaborate to generate a solution.

The fifth research objective was: Develop guidelines for improvement of coaching children and young athletes. This objective was achieved in that new guidelines were envisioned and are outlined later in this chapter. Due to the issues found with objective four (4), general recommendations were developed for TID, athlete and coach development, and producing change in the organsational structures of the governing bodies. However, because the needs of athletes and coaches need to be met now, rather than wait for political entities to go through re-structuring, the improved practices rely on outsourcing coach and athlete development using established, local academy programmes.

5.3. Key findings

The primary research question was: How can South Africa enable the transition from sub-youth up to the elite senior level for high-achieving youth athletes in athletics? Analysis revealed emerging themes from the interviews were: no ESS was present in senior athletes who participated in the Olympic Games, athlete burnout, and no financial or developmental support for athletes or coaches.

Omission of ESS, athlete burnout, and lack of developmental support for athletes and coaches can all be grouped together in terms of a need for a holistic athlete development model which includes TID and a coach education programme. The use of a model creates a developmental structure for athletes that takes into account age, maturation, and goals. However, use of any model has downsides and will be more beneficial if the model is

used as a starting point for implementing aspects that consider bio-psycho-behavioral elements to ensure a more holistic approach and is properly monitored and adjusted; this is confirmed through sections 2.12, 2.13, and all of 2.14. According to sections 1.6 and 2.9 in this dissertation, athletes that train with a plan and set goals, have a positive environment, and qualified coaches are more likely to succeed; which is often easier to monitor and maintain in academies and HPCs. And sections 2.1, 2.8, 2.8.1, 2.13 and 2.14 also re-enforce the need to maintain a holistic approach to athlete development while encouraging athletes to practice multiple sports until at least 15 years old. In terms of coach education programmes, sections 2.2 through 2.7 detail the necessity of competent coaches as well as methods to improve coaching effectiveness, and therefore improving athlete welfare through appropriate training methods. In order to develop and implement effective coaching programmes, adequate leadership is required from governing bodies and/or developmental organisations; this is confirmed in sections 2.15 through 2.15.2.

Financial status as an athlete and coach was a significant concern for participants in this study. Section 2.8.3 explains that injuries can be a cause for athletes to leave sport, and athletes who are not financially stable may choose to forego seeing a physician when an acute injury presents itself, thus resulting in a career ending injury. Sections 2.8.4 and 2.8.5 support this finding as significant because without addressing the stressors for athletes, chances of burnout inevitably increase, which inhibits the longevity of their athletic career. The same sections can be applied to coaches as they are also impacted by the stress of financial strain, and may choose to find an alternative profession if they are unable to support themselves.

5.4. Recommendations: academy

One of the goals of this study was to determine how to ensure athlete and coach development through safe practices that still allow for maximum achievement. The assumption prior to this study was that the governing bodies would be slightly modified and then implement programmes and models to meet developmental needs. However, there is more benefit for athletes, coaches, and governing bodies when utilising academies, like AAF, for athlete and coach development; governing bodies must simply endorse the academies that are producing and operating effectively. As a political entity, the connection and awareness of local needs may go unseen while larger issues are at the forefront. Academies remain focused on developing coaches and athletes at the local level and enable opportunities for them to compete nationally and internationally.

5.5. Recommendations: model for athlete development

The LTAD model for TID and the CECS for coach education are the recommended programmes for South Africa to better serve athletes and coaches. CECS will bring coaches and administrators up to the required levels of understanding for successful implementation of the LTAD model. While the LTAD model is not excessively intricate, it does offer a starting point and guidelines for athletes, coaches, and federations, specifically during the developmental stages. In order to create a more holistic and interdisciplinary model in terms of athlete development, sport entities would need to consider adding areas for bio-psycho-behavioural growth and maturation through the use of the RAMPAGE coaching session framework. Alone, LATD does not generate individualised programmes which adequately train identified youth talent, but this will

enable autonomy for athletes to create, along with their support system (ie, coaches and parents), a plan for their athletics careers. The implementation of RAMPAGE coaching session framework will assist coaches in creating safe, age-appropriate training sessions which are relevant to an athlete's goals. Due to the lack of qualifications of many coaches in South Africa, coach education must be improved as a requirement of the LTAD model. As part of the LTAD model, SASCOC and local federations should offer (required) advancement of coaches' qualifications and thus enhance coaches' understanding of physiological principles and biological maturation concepts aligned with CECS. As coaches become more educated, the safety and training methods will inevitably improve. LTAD implementation would require a top-down method of training and offer continued assistance and monitoring. SASCOC and federations would need to track coaches and clubs to ensure compliance and progress. In order for any model to be successful, SASCOC and ASA would need to collaborate to ensure adequate training of personnel and ensure leadership positions are held by those who are passionate and qualified.

5.5.1.Practice plan

No matter their level of qualifications, every coach must have a plan for each training session. Utilising the RAMPAGE method, a basic template has been created for athletics coaches for easy modification to create daily workouts for their programmes. Coaches will need to determine the time of year or season, along with the athlete's programme which is aligned with goals. Then the other aspects of the session can be mixed and altered to keep athletes happy and enjoying their time. See table 11 for an example of an in-season practice plan and see Appendix E for a template practice plan.

Table 11. Example Practice Plan For Coaches using R.A.M.P.A.G.E. Source: modified from Till *et al.*,2021

Step	Definition	Example
RAISE	physiological (e.g., elevating body temperature, increase heart rate, increase extensibility and pliability of muscle) and psychological (e.g., increase focus, training preparation) benefits, movement skills with appropriate quality and competence, fundamental locomotor skills in all directions (forward, backwards, lateral).	WARM UP A
ACTIVATE & MOBILISE	(DYNAMIC WARM-UP)- stability and mobility skills to reduce injury (ie, traditional body weight strength circuit, animal walks / movements, partner-based games or inclusion of stability, strength and mobility challenges)	INTRO SPRINT MECHANICS
PREPARE	Short-term goals may be to ready the body for the high-intensity movements (e.g., rapid deceleration and change of direction). Long-term goals may be to develop specific physical capacities such as maximal speed or change of direction ability. Speed, agility and power-based activities, with a specific focus upon the athletic motor competencies of acceleration, deceleration and reacceleration	HURDLE HOP PAUSE: 4X5 (hands on hips)
ACTIVITY	focus on the needs and aspirations of the athlete based on ability, age, and goals	Hurdle hop 3x 10,20,30m acceleration
GAMES	integrate skills into a game scenario, possibly add endurance, use partners or small groups (possibly relays)	Monkey Jump Kilimanjaro
EVALUATE	Cool-down with flexibility, verbal reflexion of session achievement and purpose	Al-doa stretches

5.5.2.Stakeholder benefits

Stakeholders of the AAF programmes include coaches, athletes, parents, communities, and governing bodies. Advantages are present for each group regardless of sponsorship of athletes or coaches. The ripple effect of this programme is endless.

Coaches benefit from increased education and qualification, access to coaching material on multiple platforms (in-person, online, or podcasts), and skills to create training programmes using holistic methods. Coaches are also automatically put into a tracking system to ensure they are active and monitor their continued education. As part of the AAF programme, coaches will be mentored by experienced coaches at each level of development. In turn, these coaches will be able to make coaching their profession by building their own training groups.

Athletes who are part of AAF will benefit whether they are a sponsored athlete or not. All athletes should have the opportunity to train in a positive environment and be part of a holistic sport system. As a result of the training methods and qualified coaches, they will experience less injuries, better performances, increased self-confidence, understand the ‘why’ aspects, and longevity. The entire system has been created for the betterment of their athletics career and life after sport. They have opportunities for further education and vocational experience, and selected athletes are sponsored and able to travel the globe to compete.

Parents and families benefit as athletes within the training group are more disciplined and leaders in the community. This is a requirement as part of the group, causing athletes to strive to be model citizens and a positive influence. Athletes that are sponsored are able to relieve the financial pressure from their parents, and if they gain elite status, they may

be able to assist with bills using athletics. Either way, each athlete will be given opportunities for higher education and vocational avenues to ensure they can support themselves at the very least.

The advantages for communities vary with the location as not all areas have a Class I athletics stadium. However, in keeping with the example in Pietermaritzburg, job opportunities increase with usage of the stadium for events and camps. This also generates increased income for the area as teams need food and accommodation during those times. The rural schools and athletes that are brought in are given experiences that will produce a lifelong love and participation in sport, as well as have the opportunity to obtain sponsorship. An increased number of positive leaders in the youth inevitably impacts the community for good and can only improve current situations.

Governing bodies benefit with the least amount of input. Provincial entities, ASA, and SASCOC will not need to budget for development of coaches or athletes. No committees will need to be formed to monitor coach education and create tracking methods. Provincial bodies have a constant flow of athletes at each age level that are exemplary individuals and athletes as a result of the increased number of qualified coaches. Since athletes and coaches will no longer be looking for support from the federations, the governing bodies can focus on their re-structuring and leadership development. ASA and SASCOC will only need to endorse AAF and put forth names of coaches to attend World Athletics CECS courses; AAF will pay for the attendance of each coach. With more coaches capable of positively impacted athletics and developing elite athletes, more athletes will qualify for World Championships, Commonwealth Games, Paralympic Games, Youth Olympic

Games, and Olympic Games based on the ‘A’ standard and points earned through global competitions; thus, enabling South Africa to earn more medals on the international stage.

5.5.2.1.Impact on human development and team performance impact

Utilising the AAF academy would have a significant impact on human development and team performance in South African athletics. AAF provides pre-elite and elite athletes with the financial support they need to focus on achieving their goals, which takes the pressure off of SA athletics governing bodies. Coaches are also taught skills and methods they can market to make coaching their profession rather than a hobby. Less financial strain would equate to less stress, making the athletes more of a joy to interact with, and allowing them to grow as leaders and mentors within the training group. This in turn impacts parents and families in a positive manner as athletes who are leaders in the community and focused on their goals are less likely to cause trouble. The EPG team and community benefit from an increased number of effective, compassionate leaders, both athletes and coaches, as it is made up of athletes and coaches from age 8 to 74. Leadership and mentorship are keys to keeping such a diverse group cohesive. Athletes help correct one another on technique at different points in training, thus making them more aware of themselves and the skills necessary to be successful. For example, when practicing starts off the blocks, athletes go one at a time and film one another with a slow-motion camera. They help each other breakdown the good and bad aspects of the start with the guidance of the coaching staff. Correcting mechanics creates more efficient performances, which can be the difference between getting on the podium and clapping from the stands. The team as a whole will bring in more medals for the province and the country, showing other clubs and provinces that focusing on development and teaching

generates higher performance. The increased number of trained and qualified coaches inevitably creates a larger pool of high achieving athletes capable of competing internationally.

5.6. Return on investment for the author

The process of conducting this study has challenged me in countless ways. Removing myself from the situations proved challenging, but very necessary in order to have minimal influence over the outcome of this study. My time-management skills were truly put to the test as working on this required hours of quiet focus, something that parents with small children do not experience often. I am very aware of the detrimental effects negative coaching practices have on adolescents, and will be extremely cautious when my children begin participating in sport. I pray that when they are old enough to compete at national events, the politics of past team selections are no more so they have a fair chance at participating.

Professionally, this study expanded my knowledge of athlete development models and coach education programmes. I also learned more about the lack of transparency and non-existent information about the decisions being made by governing bodies for athletes and coaches. As a coach I have witnessed and been a part of committees and teams, and I have had athletes that were selected, and others who were purposely omitted. Diving deep into the recommended requirements from other countries has brought to light the unfortunate delay in South African capabilities. The reasons so many athletes are unable to achieve or choose to leave sport could be solved with proper regulation of safe and appropriate coaching methods from governing bodies. I do see a great benefit to communities as privately funded academies like AAF gain momentum and relevance

across the country for the betterment of athletics. The holistic approach to coaching and athlete development is something I have always been passionate about, and finding so many articles that support that idea and dissect it further has truly re-ignited the flames within me to work with the youth. I look forward to interacting with more qualified coaches at events and seeing SA compete and win on the international stage.

5.7. Recommendations for further studies

This study can be used as a baseline for future studies; there were limitations in this study as it did not include athletes that no longer competed after Youth Olympic Games, Paralympic athletes, nor did it identify how athletics governing bodies obtain funds. The challenges found in this study in terms of athlete longevity and achievement may not only plague South Africa, but other countries may also experience an extreme drop from elite youth to senior elite. One future option may be to focus solely on the athletes who dropped off after the Youth Olympic Games to determine if they changed to another sporting code or left sport all together, and the reasons behind their decisions. It would be insightful to analyse and compare other countries' turnover and retention rates; as well as the programmes they have in place for youth development and senior support. SA athletes that were able to compete at the Olympics typically did not reach the podium. Did they choose the wrong sport or event? Were they early developers and therefore dominated the competitions early, but never had the same impact on a global scale because their local advantages meant nothing on the international stage? It would be interesting to compare personal training history (athlete development) with their international competition who made it to the finals or podium. As mentioned earlier, a previous study conducted by the US Olympic Committee on US Olympic athletes represents participants

from 1996-2012 and their views and experiences during developmental stages. Using the USOC questionnaire as inspiration for future interview questions, or a modified questionnaire, for South African Olympic athletes, may shed light on differences in experiences and achievements, which may give insight to enable improvements in coach education, talent identification and development (TID), and longevity of elite athletes. Future studies may also look to include Paralympic athletes or conduct similar studies on that population.

While it is outside of the scope of this study to dissect the funding and budgets of governing bodies of athletics, it is worth noting that some coaches and board members selected for 'teams' have sometimes never produced a world-class athlete or have not coached athletes in recent years or decades. In turn, this may also discourage some coaches from earning increased qualifications as the perception may be that only those connected are selected. However, there is not a public record of these instances as only the athletes and head coaches are listed for team travel, any other board members or 'coaches' are not made visible to the public, thus feeding questions of transparency and trustworthiness. Identifying where money was spent outside of the required athletes and coaches would better enable federations to re-allocate remaining funds to development and athlete retention as well as improve the trustworthiness and transparency of these governing bodies. Public funds are allocated to sport federations annually, however, how these funds are currently budgeted for the benefit of development was not within the aim of this study, and can be pursued in further research.

5.8. Limitations

This study was limited by the current tracking methods and participation of federations and Olympic-level athletics athletes. A major limitation was the need for participants to recall accurate information from 10-30 years ago, however, as it relates to their path towards the Olympic Games, they were able to utilise records and accolades. Conclusions from this study can only be applied to athletics and no other sporting codes as in-depth interviews do not produce mass statistical data. The participation of the study was limited to those with time for a 10–15-minute telephone conversation.

5.9. Conclusion

The issues highlighted in this study should be considered by South African federations, ASA, and SASCOC and create a willingness to outsource development to specialists for the betterment of individuals and the country. A key step in caring for youth athletes should be ensuring their safety by teaching coaches proper training methods. However, while the governing bodies may not have the programmes in place, they should endorse the programmes available through AAF. Results of this study exemplify the need to develop and implement plans for support of athletes and coaches in South Africa. Specifically, creation of a database of coaches to enable opportunities to obtain qualifications, continued education, and monitoring of athlete safety and achievement. In terms of talent identification, the use of the AAF database of youth, junior, and senior athletics athletes for those who have competed in finals at provincial, national, and international competitions would be beneficial for governing bodies. These athletes and their coaches will be monitored and assisted with programme creation, kit, and medical

needs (including physio and mental health). Coaches and athletes will be trained and educated to ensure athletes have options and can make a choice about their future, rather than being required to leave home; which is a benefit of the multiple coach education platforms offered by the AAF programme. Some athletes do not have the grades or coping skills to attend school and training at HPCs, they should be able to get services and qualified coaching closer to home. Athletes on the path to the Olympics also receive monetary assistance for coaching and living expenses where possible and assistance in obtaining sponsorship through private funding. Again, the AAF programme identifies the pre-elite and elite athletes and their coaches to better assist in areas that would be most beneficial for the athlete.

People use sport as an outlet for stress as well as for health improvements. Unfortunately, injuries, psychological stress, bullying, and negative experiences may turn athletes away from sport. Perceived environments of athletes can play a major role in their ability to achieve success, which is why the training environment with EPG is so significant. Athletes are influenced by teammates, family, coaches, school, and peers. Developmental training methods that are appropriate for the athletes age and skill level, while collaborating with parents (or support system) will positively impact the trajectory of an athlete.

While the athletes involved in the study waited to specialise until after 15 years old, most Olympic athletes from South Africa have not earned medals on an international level. Meaning that while they were still able to compete and extend the life of their career, they did not reach the podium. Many factors impact the achievement level of an athlete, but the long-term goal of SASCOC, ASA, and provincial bodies should be to enable clubs,

schools, and academies, to generate ideal opportunities for local and international accolades for athletes and coaches through development programmes. It is the goal of this study that longevity programmes that develop athletes and coaches, like those established by AAF, emerge and are implemented throughout the country to enable high achievement for more athletes and coaches in South Africa.

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7. APPENDIX

7.1. APPENDIX A: TALENT IDENTIFICATION INTERVIEW QUESTIONS

1. What age did you, or do you, recommend athletes start specialised athletics training? Please explain why you believe this to be the best option.

2. Based on your experience as an athlete/coach, what is your view of South African athletes pathway from youth to Olympic level? Do you feel it is sufficient? How is it effective/ineffective?

3. 114 different South African athletics athletes competed between 1996 and 2016 in the Olympic Games and 38 Youth Olympic athletics athletes from 2010-2018 (International Olympic Committee, 2022). What do you think the role of Athletics South Africa (ASA) and SASCOC play in the number of world class youth and junior athletes produced by South Africa and number of Olympic level senior athletes?

4. What role do you feel coaching and training practices play in the impact of the our athletes transition from youth and junior to Olympic level?

5. What assistance is offered for developing athletes and coaches whose goal is to reach elite/Olympic levels? Is it specific to your area?

7.2. APPENDIX B: INFORMED CONSENT LETTER

I am a graduate student working under the direction of Prof. Paul Singh at DaVinci Institute in the Master of Management of Technology and Innovation programme. I am conducting a research study to obtain a comprehensive view of the factors that have been significant in the areas of athlete identification and development for South African Olympians who were members of Olympic and Youth Olympic teams from 1996 through 2018. The findings will be used for the publication of journal articles and my thesis project for completion of my master programme. The data will be invaluable in helping a variety of organisations design and implement programmes for the development of future Olympians. I am inviting your participation, which will involve questions about your current and past sport training experiences. You have the right not to answer any questions, and to stop participation at any time. You have the right to insist that your name will not be recorded anywhere and that no one, apart from the researcher and identified members of the research team, will know about your involvement in this research. If participating in the interview, it will take 10-15 minutes to complete. Your participation in this study is voluntary and you are giving consent by answering the questions. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. There are no foreseeable risks or discomforts to your participation.

7.3. APPENDIX C: ETHICAL CLEARANCE LETTER

The Da Vinci Institute for Technology Management (Pty) Ltd
PO Box 185, Modderfontein, 1645, South Africa
Tel + 27 11 608 1331 Fax +27 11 608 1380
www.davinci.ac.za

Reference: 02321
Date: 06 July 2021

Ethical Declaration

Ethical Declaration

I, the undersigned, hereby declare that the Masters Research of the student named below has received ethical clearance from The Da Vinci Institute Ethics Committee. The student and supervisor will be expected to continue to uphold the Da Vinci Institute's Research Ethics Policy as indicated during the application.

Proposed Title: Early Sport Specialisation and Olympic Athlete Performance

Student Name: White Christopher James

Student number: 10143

Supervisor: Prof Paul Singh

Co-Supervisor: N/A

Period: Ethics approval is granted from 2021/07/06 to 2021/10/10

Chairperson: Research & Ethics Committee

Prof HB Klopper
Executive Dean: Research and Institutional Partnerships

7.4. APPENDIX D: GATEKEEPERS LETTER FROM ASA

ATHLETICS SOUTH AFRICA NPC
Reg No 2006/034767/08
Athletics House, No. 3, 11th Avenue, Houghton Estate, Johannesburg, 2198
Tel: (+27) 11 880 5800 Fax: (+27) 11 788 6872 / (+27) 11 442 3091
P O Box 2712, Houghton, 2041; asa@athleticssa.co.za ; www.athletics.org.za

01 August 2021

To whom it may concern:

Athletics South Africa (ASA) hereby grants national coach, ASA high performance committee member, and Da Vinci masters student, Christopher White, permission to contact Olympic level athletes and coaches, both past and present, for his masters research relating to early sport specialization and Olympic performance. Coach Chris White must procure contact details through personal networking.

If you have any questions or require further information, please contact Hezekiel@athleticssa.co.za .

Yours sincerely

Hezekiel Sepeng
Excellence Manager – Athletics South Africa
(Not signed due electronical sending)

7.5. APPENDIX E: Printable Practice Plan

PRACTICE PLAN

DATE _____ SEASON_____

ATHLETE (S) _____ AGE_____ EVENT _____

GOAL:

Step	Exercise
RAISE	
ACTIVATE & MOBILISE	
PREPARE	
ACTIVITY	
GAMES	
EVALUATE	