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Chapter 5

High performance development pathways

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Introduction

Elite athlete development or high performance development pathways are important because they enable talented athletes to excel in their performances and represent their country at international and world stage competitions. The sport development pyramid (Eady 1993), which implies that talent emerges from a large base of participants at the grassroots level, has become inadequate in explaining the complexities of high performance development (Green 2005; Sotiriadou & Shilbury 2009; van Bottenburg 2003). It portrays sport development as a simple linear process where participants progress directly from one stage to another (Sotiriadou 2013). However, many people participate in a sport without any desire to progress to higher levels of performance (De Bosscher, Sotiriadou & van Bottenburg 2013; Eichberg et al. 1998). Further, there are examples of sports which have high performance systems that do not rely on a broad participation base (van Bottenburg 2003; De Bosscher & van Bottenburg 2011).

Sotiriadou, Shilbury and Quick (2008, p. 266) used a definition of sport development that captures its dynamic, convoluted and systematic nature: ‘a dynamic process, in which sport development *stakeholder involvement* provides the necessary sport development *strategies and pathways* to facilitate the *attraction, retention, transition/transfer and nurturing* (ARTN) of sporting participants’. This definition places sport development within the context of systems theory (Midgley 2003) – that is: a process of input-throughput-output – and outlines sport development as a process that is inclusive of stakeholder involvement (input) who provide strategies or policies (throughput) for successful pathways (output). Successful pathways enable and facilitate the attraction, retention, transition/transfer and nurturing of participants or athletes within a sport system (Curry et al., 2022; Sotiriadou 2013).

Depending on the scope and capacity of a sport system to reach community participants or draw talent, sport development processes – attraction, retention, transition/transfer and nurturing – may be used to grow mass participation numbers or target the development of elite athletes. As discussed in previous chapters, the distinction between mass participation and elite athlete development has led to the conception of the ‘development *through* sport’

(SFD) and the ‘development *of* sport’ (SD) to denote the different sport development purposes or desired outcomes; see chapter one. The focus in this chapter is on these systems and processes that offer the pathways for the development *of* sport (SD).

Outline of the chapter

This chapter outlines the complexities involved with designing and delivering pathways to elite or high performance. In doing so, the chapter discusses the input of various stakeholders or organisations as well as the people who deliver athlete pathways. Last, comparisons and examples of different sports and practices show the diversity of elite pathways and the variety of policies, strategies, and tactics used. Recent studies pointing toward emerging high-performance pathways, such as the talent transfer (Cury, Sotiriadou & Kennelly 2022), are also discussed.

After completing this chapter, you should be able to:

- understand the dynamic nature of sport development that drives the systematic approach to developing athletes
- recognise the need for diversity in elite pathways depending on sport and country related contexts
- understand the non-linear nature of sport development that allows participants or athletes to enter, exit, or re-enter a level of participation within the attraction, retention, transition/transfer and nurturing processes
- understand pathway variations and their implication to elite development
- identify the services used to develop elite athletes and the roles of the stakeholders that initiate or implement them

The need for a systematic and context-specific approach to developing elite pathways

The processes of shaping and implementing pathways for high performance athlete development tends to follow a formalised set of steps. For instance, in Australia, the pathway for athlete development for elite swimmers in South Australia (at state level) forms part of Swimming Australia’s Athlete Development Pathway (at the national level) and is specified within Swimming Australia’s High Performance Strategic Plan submitted to the ASC. The formalisation of elite pathways is not simply required for organisational transparency and

efficiency in order to achieve elite athlete success. Rather, it outlines the coordination of resources required to develop high performance athletes and implies the need for a sophisticated approach to developing and implementing high performance development pathways. This sophistication is highlighted through the emergence of professional, specialised staff (Emery, Crabtree & Kerr 2012) and targeted practices (Gould & Carson 2004) considered necessary for successful high performance development pathways. The rugby case study later in this chapter is an exemplar of evolving practice of high performance development, which represents a highly professionalised, competitive and sophisticated way of developing elite athletes.

The increased sophistication and professionalisation of high performance management have led to countries' successes at World Championships and Olympic Games. For example, Australia's success at the Sydney 2000 Olympic Games was the outcome of a systematic, professionalised and formalised, long term and generously funded elite system that resulted in 58 medals, including 16 gold (Sotiriadou 2009). The host effect can also be a significant factor. Using London 2012 as a springboard, Great Britain outperformed econometric predictions by 15 medals (67 awarded; 52 predicted), especially in Cycling and Triathlon (15; 9) (Otamendi, Doncel & Martín-Gutiérrez 2020). High performance sport systems of countries, like Australia in the early 2000s and Great Britain more recently, have become the benchmark for other aspiring nations to duplicate. Such duplication of high performance managerial practices has led to the *homogenisation* of elite sport systems in the hope of emulating elite success (De Bosscher, De Knop & van Bottenburg 2009; van der Roest, De Bosscher & Shibli 2022).). However, on many occasions, nations that applied other countries' benchmarks have not achieved the anticipated results. It has been found that a certain level of heterogeneity – variations in elite sport systems and delivery of services to athletes and coaches – is necessary to reflect country and sport specific contexts. For example, Sotiriadou, Gowthorp and De Bosscher (2013) studied elite sprint canoe and kayak development pathways in Australia. That study demonstrated that canoeing in Australia has its own specific culture that relates to the talent transfer from surf lifesaving to canoeing, driving Australian canoeists' pathways differently to those of European athletes. Although it might seem attractive for some sport managers to copy and adopt other high performance development systems and practices, research suggests that that high performance systems and practices are only appropriate as a way of learning about and understanding elite sport pathways (e.g., Andersen & Ronglan 2012) as best practice in one country may not

correspond to best practice in another; simply reproducing benchmark practices is not appropriate (Böhlke & Robinson 2009).

The non-linear nature of sport development and elite pathways

Unlike popular belief that “An athlete development pathway describes a continuum that begins with the acquisition of movement skills through to lifelong engagement and proficiency” (ASC, 2020, p. 1), the development to high performance is far from a linear process (Sotiriadou, Thrush & Hill 2020; Sotiriadou, Shilbury & Quick 2008).

Participants, athletes and those who undertake other support roles – such as coaches, administrators, scientists and volunteers who are involved with sport in various capacities – can *enter*, *exit* and *re-enter* a sport at several development stages.

This movement varies according to a number of factors. First, an individual’s *personal choice* impacts the development pathway that they may take. For example, an individual may choose to retire as an athlete yet continue to be involved in the sport through a support role – such as coach, administrator or official (transition pathways). Moreover, an individual may discontinue with one sport in order to take up an alternate sport or a retired athlete can be trained to move to a different sport as an elite athlete (talent transfer pathways).

Second, the *skill* level of an individual – that is: capacity to become an elite athlete – may impact the pathway taken. An individual may continue to be involved in the sport at a social or amateur level.

Third, the pathway that an individual takes may also depend on the *opportunities* presented, for example, in terms of access to appropriate facilities and equipment, scholarships, quality coaching, sport science and level specific training and competitions. Of course, there may be other unforeseen circumstances that may lead to a ‘movement’ in the pathways. An injury can push back participation or performance. Other microenvironmental factors, as we experienced during the Covid-19 pandemic, have the power to not only pause Olympians and the Tokyo 2020 Olympic Games, but also masses of the population wishing to pursue physical and leisure activities at global scale. Even in these extreme circumstances, new pathways emerged through either technological and software advances or exercise applications (Sotiriadou, De Rycke, De Bosscher & Descheemaeker 2022) at the participation level to either attract to retain physical activity. Similarly, pathways emerged for elite athletes predominantly targeting athlete retention and nurturing pathways (e.g., health and mental

wellbeing) as well as transition opportunities for athletes who had to retire due to the shift of the Games a year later (Cury et al., 2022).

Sport pathways are not necessarily elite athlete bound. Figure 5.1 illustrates that from an organisational perspective, sport development and sporting pathways resonate with the input of several stakeholders and organisations and in particular people within those organisations (as shown in the circle within organisations in Figure 1) dedicated toward offering pathways.

These sports pathways can present opportunities for sport development to everyone, regardless of gender, age, skill, ethnicity or area of interest within the sport system. Hence, the attraction, retention, transition/transfer and nurturing (ARTN) processes in the sport system relate to anyone in the sport system, from young participants, to coaches, sport managers, athletes, volunteers and so forth. Importantly, the ARTN processes are circular, continuous, multi-directional.

This non-linear approach to sport development recognises that many people practice a sport without any desire to ascend to higher levels. Others though, given the opportunity and talent, may transition to higher levels of competition, coaching or administration and even become elite athletes, elite coaches or senior managers who reach the top of their career. At the end of their careers some people in the sport system chose to retire and leave the system. Others re-enter the system as an elite athlete or coach in a different sport. For instance, gymnasts can transition to diving and surf life savers can take up canoe or kayaking. It is also possible that when athletes or participants stop their active participation to work in the system in another capacity, such as coaching, volunteer, media, or to leave the elite levels of participation and play at grassroots club or competitions levels. The following sections discuss these pathways, along with the stakeholders involved in delivering the pathways to elite success.

<PLACE Figure 5.1: An organisational perspective on the pathways of sport development: The attraction, retention, transition/transfer and nurturing process. HERE>

High performance pathways, policies and practices

In their description of systems for managing excellence in sports performance, various researchers (for example, De Bosscher, et al. 2006; Houlihan & Green 2008; Oakley &

Green 2001) acknowledge the importance of sport development programs, facilities, competitions and other factors for the structural progression of athletes. While some research calls these factors elite development strategies and tactics (Sotiriadou, Shilbury & Quick 2008), other studies refer to them as elite sport policies that lead to international success (De Bosscher et al. 2006). The intertwined nature of the terminology used to express the same phenomenon is grounded on the simple fact that policies give direction for strategies to be shaped and enacted. Sport development strategies are the delivery mechanisms and actions taken by the sport development stakeholders for successful elite pathways.

Figure 2 is the high performance sport development model which showcases that ARTN processes can be ‘elite-athlete’ specific. Stakeholders and pathways are adjusted to the needs and requirements of elite athletes with organisations such as institutes of sport, specialised high performance managers and coaches, as well as programs, facilities, as well as advance technologies, research and systems in place to reflect the needs of an elite sport system (Sotiriadou, 2023).

Figure 5. 2 here

Specifically, figure 5.3 outlines, there is a blend of services – strategies or tactics – that facilitate successful sport development processes and open up the pathways to elite success. These services – throughputs – include sport development or talent development programs tailored to specific sports and levels of participation within the ARTN. In addition, initiatives support athletes during – scholarships and sport coaches – and after their careers – psychologists and tertiary education programs. Importantly, in addition, events – such as training camps – and competition structures – reflecting athletes’ development levels – as well as facilities, technologies and equipment are required to train, compete and maintain the momentum of development and success.

Elite sports need a fast path to transform innovative new ideas into winning applications (Sotiriadou & De Bosscher, 2018). Digital innovations used in high performance offer digital transformation and innovative platforms for high performance sport as value creation competitive advantage (Sotiriadou, 2023). A systematic analysis of the role of technologies and digital innovations in high performance sport (see Sotiriadou, 2021) showed that the combined fields of biomedicine, sports engineering and nanotechnology enable real time

biological data to be collected from athletes and coaches and analysed (i.e., data analytics) to inform training, performance, competition as well as fan engagement decisions.

Figure 5.3 also shows the various organisations and key people involved in the delivery of elite pathways. These organisations include governments, NOCs, NGBs, clubs and universities. People include coaches, volunteers, umpires, administrators, managers, high performance managers, sports scientists, sport medicine staff, family members and even friends. Part of a strategic approach to managing high performance sport is ensuring that the sport recruits, retains and supports staff, coaches and high performance managers capable of delivering the outlined throughputs and the sport's or the athlete's key performance indicators (KPIs). Protecting athlete welfare and team cohesiveness become a priority and result in sports taking steps to protect the integrity of running a professional team. A case in point that attracted media attention was during the Glasgow 2014 Commonwealth Games when Athletics Australia suspended the team's head coach Eric Hollingsworth in a unanimous decision over his criticism of sprinter Sally Pearson. The decision was made in order to protect the integrity of the athlete and the sport and spare the team from unnecessary distractions during competition. Empowered by the decision and support, Pearson ended the week with a gold medal in the 100m hurdles, publicly claiming that the suspension of the national head coach made the team happier (Gleeson 2014).

< PLACE Figure 5.3 HP services – strategies, policies and people – for success HERE >

Noticeably, as figure 5.3 shows, at the heart of the successful delivery of throughputs and practices is a strategic approach to managing high performance sport (Sotiriadou 2013; Sotiriadou & De Bosscher 2013). Indeed, after comparing the elite sport systems of nine countries, Houlihan and Green (2008, p. 276) concluded that 'the manifestation of business like values is evident in the establishment of performance targets, strategic planning, selectivity (of athletes and sports targeted for funding usually focused on the best medal prospects) and a growing trend of funding decisions based on the likelihood of achieving a return on investment'.

High Performance pathway variations

Several factors influence elite pathways and result in pathway variations. As this section outlines, when these variations are explored from a macro level we see differences in the ways nations develop elite pathways. However, when we explore elite pathway variations at a micro level, sport specific differences emerge.

At a macro level, the Olympic success of athletes or teams depends increasingly on the performance capacity of the national system and its effectiveness in ‘using all relevant resources for the benefit of elite sport. Some nations do not have this option, as they are compelled by more basic needs, and others simply establish different priorities’ (De Bosscher, et al. 2006, p. 186). Consequently, many countries with sport systems in the nascent stages of system development – for example, Malaysia, Iraq, Bosnia and Herzegovina – cannot invest in sport policies to improve their high performance sport development pathways (Robinson 2013). Robinson and Minikin’s (2011; 2012) research on elite sport systems in LICs and LMICs shows that most national federations in these countries are unable to support high performance sport development. The implications of such inability are demonstrated in Olympic Games representation. For example, 205 countries participated in the London 2012 Olympic Games, 41 sent fewer than five athletes, 95 sent fewer than ten athletes, 85 won a medal and 120 did not. The research and policy focus on improving the performance capacity of national sport systems and processes of HICs has clear implications for LICs and LMICs with less developed sport systems in terms of their capacity to compete on in international context.

High performance sport development pathways may vary depending on the nature of a sport. For instance, early specialisation sports like gymnastics – whose participants start at a very young age – need to modify their policies, programs and subsequent pathways to meet the changing needs of athletes as they move towards high performance. In comparison, diving is typified by low grassroots participation with little requirement for early specialisation; gymnasts and divers, then, require different high performance management, as a result of their age differences, which must be taken into account when designing elite pathways.

High performance sport development pathway variations are also evident depending on a sports’ professionalised status. Golf and tennis, for instance, are professional sports that operate in a system where private coaches and/or academies offer alternatives to the publicly

provided athlete development pathways. The case study on elite development pathways in tennis later in this chapter is a reminder of the complexities of elite pathways.

While talent transition pathways have received substantial research attention in the elite sport development literature, talent transfer initiatives, which enable athletes to transition from one sport to another, have received limited consideration. In a study of alternative and contemporary elite athlete pathways, Cury et al. (2022) found that talent transfer is different to transition as it includes accelerated athlete integration into elite sport program, the presence of pre-elite prominent athletic prowess and when compared to talent transition pathways, differentiated skill development progress to the elite level (p. 1). The differences between talent transfer and talent transition suggest that talent transfer can complement talent transition pathways in elite sport development systems.

The integrated network of high performance partners

The success of elite athletes is a result of a variety of factors, including talent, dedication to training and competition, as well as the coordinated efforts of various stakeholders who support athletes during their journey to high performance (Sotiriadou, Shilbury & Quick 2008). As figure 5.4 illustrates, government bodies, public and private sport and non-sport organisations and a host of individuals or groups of people are involved in a network of partnerships that facilitates elite pathways. Despite some variation across countries, in general, the key partners in elite pathways involve international, national, state, provincial and local sport organisations.

At an international level, the IGO of a sport is comprised of NGBs and is responsible for their governance. NGBs promote their sport nationally at every level, from grassroots to high performance; they are also responsible for the identification and development of talent and the coordination of elite development pathways. In addition to these predominantly publicly resourced organisations, private academies and private coaching centres are making a strong mark in highly professionalised and commercialised sport, such as tennis, golf, and cycling.

In countries with a federal system – like Canada, Spain and Australia – individual states or regions have a degree of political autonomy. In those circumstances, NSAs focus on the nurturing of their existing elite athletes and the responsibility of attracting and retaining new

talent to SSAs at a state/provincial level. Within their states, SSAs are committed to supporting the development of a system that (a) encourages participation, (b) develops talent, and (c) contributes to the health and wellbeing of individuals and groups. In their efforts to deliver development *of* and *through* sport to the communities they serve, state or regional sporting associations work closely with provincial or state departments of sport and recreation. These departments are the lead agencies responsible for the implementation of government policy and initiatives in sport and recreation.

<PLACE Figure 5.4: Integrated network of high performance partners HERE>

This inter-organisational collaboration and the filtering of roles and responsibilities is equally present in other contexts, including between the IOC and NOCs, between schools, tertiary institutions or colleges that offer opportunities for participants to play sport, train, excel and be selected to participate at higher level competitions. It is also evident within other regulatory bodies. For instance, the World Anti-Doping Agency (WADA) is the international body that monitors and regulates the fight against doping in elite sport. The Australian Sports Anti-Doping Agency (ASADA), the United States Anti-Doping Agency (USADA) and the Autoridade Brasileira de Controle de Dopagem (ABCD) in Brazil are examples of the 133 National Anti-Doping Organisations (NADOs), that are responsible for testing national and visiting athletes in- and out-of-competition.

All in all, stakeholders can vary in the role they play in facilitating high performance sport development pathways and enacting strategies, tactics and programs. It is also important to note that the same cluster of stakeholders – for example, coaches – may play a very different role depending on the level of their involvement in any, or all, of the ARTN phases. Collectively, the stakeholders shape an elite sport partner network that should allow for partnerships, integration and the sharing of knowledge and resources for best results.

<PLACE TEXT BOX 1 HERE >

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Summary

The seven pathways of sport development in figure 5.1 illustrate the non-linear nature of people's involvement with sport. This chapter explained that elite pathways are interrelated: participants enter, exit or re-enter the sport system in various roles and capacities. In addition,

elite pathways are not isolated from each other as people can move up, down or out and back in to the sport system at various times. More importantly, elite pathways can vary depending on the sport – for example, rugby versus tennis pathways – or the country of reference – developed versus developing sport systems. Regardless of such variations, the high performance practices outlined in this chapter (see figure 5.2) point toward the need for strategic high performance management that is reflected through the availability of professionals – such as, coaches, high performance managers – and well designed and delivered services – competition structures and athlete career support – that facilitate the pathways to elite success. This systematic approach to elite pathways is ultimately facilitated through the integration of a network of high performance partners (see Figure 5.3). This network includes international and national federations, state and regional associations as well as, in many cases, schools and local clubs. Collectively, carefully designed elite pathways are of paramount importance in delivering sustainably successful elite athletes.

Discussion Questions

1. Using the information from the case study in tennis, discuss how athlete development pathways in other professional sports (for example, golf, cycling) are structured. Consider the potential implications of a highly professionalised elite pathway for athletes. What, if any, are the benefits in the commercialisation and professionalisation of elite pathways?
2. Unlike sport systems in HICs, many LICs and LMICs do not have the required input and throughput to produce effective elite pathways and athletes. Examine the elite sport pathways in Malaysia, Iraq or Bosnia and Herzegovina. What alternatives do these countries use and what strategies you would recommend be adopted, given their fiscal and resource related scarcities, to produce elite pathways with minimal input?
3. Discuss examples of elite sport policies – for example, research and sport sciences, talent identification and development, coaches and coach education – and practices – for example, physiotherapy treatments for injury prevention and recovery, talent selection processes, coach development seminars – and consider how these policies and related practices facilitate successful elite pathways.
4. Discuss the reasons behind the evolution of elite pathways as non-linear, rather convoluted, processes that involve various parties and require a formalised strategic approach in order to be effective.

5. Elite sport cannot be regarded as a simple extension of mass participation because it is possible to build high level competition systems without relying on a broad participation base. Discuss a sport or a situation where elite pathways do not rely on a broad participation base and analyse how and why that is the case.

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