Promoting Athletes' Personal Development in High-Performance Sport Environments

by

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Abstract

The overarching purpose of this dissertation was to create new understandings of how to promote personal development in high-performance sport environments. This purpose was addressed via three studies. The purpose of the first study was to develop a grounded theory of how to promote personal development in high-performance sport environments. The grounded theory was derived from individual interviews with 32 members of the Canadian junior and senior national biathlon teams, including 18 athletes (9 women, 9 men, M_{age} = 20.8 years, SD = 2.9), five coaches (1 woman, 4 men), three technical leaders (2 women, 1 man), and six parents (3 mothers, 3 fathers). Follow-up interviews were conducted with five key participants. Straussian grounded theory methodology (Corbin & Strauss, 2015) was used and involved multiple analytic techniques (e.g., open coding, constant comparison, memoing, theoretical integration). The grounded theory was based on the core category that personal development is a continual and individualized process and offered three propositions of how to promote athletes' personal development process; (a) athletes used strategies of realistic self-evaluation and goal setting; (b) athletes experienced different situations and reflected on their areas for personal development; and (c) athletes perceived and received social support. The propositions can be used to promote athletes' personal development in high-performance sport environments.

The grounded theory informed the second study. The purpose of the second study was to engage high-performance athletes and stakeholders in the co-design of a personal development intervention for high-performance sport environments, called AHEAD. The AHEAD intervention was tailored to the sport of biathlon and developed using a logic model and the Template for Intervention Description and Replication checklist for Population Health and Policy (TIDieR-PHP; Campbell et al., 2018). Twenty-eight participants (15 athletes, 8 coaches, 5 technical leaders) were engaged as co-designers of the intervention and their input and feedback was solicited via focus groups or individual interviews. A qualitative description (Sandelowski, 2000) methodology was used, involving an abductive content analysis procedure

(Elo & Kyngäs, 2008) guided by the TIDieR-PHP 9-item checklist to analyze the data. Participants' feedback facilitated the development of the AHEAD's logo, activity bank, delivery format, scheduling, and individualized approach. This study demonstrated how end-users and stakeholders could be involved as co-designers of sport psychology interventions.

The purpose of the third study was to evaluate the effectiveness of the AHEAD intervention. Sixteen high-performance athletes (8 women, 8 men, M_{age} = 19.3 years, SD = 2.2), from a biathlon training centre participated in the AHEAD intervention. The intervention was delivered in-person over 10 weeks, involving three phases: baseline (2 weeks), intervention (6 weeks), and post-intervention (2 weeks). After an introductory session, the weekly intervention workshops focused on five behaviours: self-awareness, goal setting, reflection, perspective, and evaluation. A multiple-baseline across behaviours single-case study design (Kazdin, 2021), incorporating mixed methods, was used to evaluate the intervention and examine changes in personal development across the five behaviours. Changes were assessed after each workshop and post-intervention. Results revealed that perspective was the most effective workshop (10 participants reported improvements in this behavior), followed by self-awareness and evaluation (9 participants improved), goal setting (8 participants improved), and reflection (6 participants improved). Results from post-intervention interviews indicated that participants had positive experiences of the AHEAD intervention. Whereas certain workshops were effective for some participants, overall, the evaluation showed mixed effectiveness.

Preface

This dissertation is an original work by Helene Jørgensen. The first study (Chapter 3) was supported by the IOC Olympic Studies Centre PhD Students and Early Career Academics Research Grant Programme 2021 (RES0052648) and the third study (Chapter 5) was funded by the Mitacs Accelerate Program (RES0063864).

The grounded theory study in Chapter 3 used individual interviews for data generation and received research ethics approval from the University of Alberta Research Ethics Board (REB), project name "A Grounded Theory of Personal Development in High-Performance Sport Environments" (ID: Pro00103527). The co-design study in Chapter 4 included individual interviews and focus groups and received research ethics approval from the University of Alberta REB, project name "The Development of an Athlete Personal Development Program" (ID: Pro00114718). The intervention study in Chapter 5 included online surveys and individual interviews and received research ethics approval from the University of Alberta REB, project name "AHEAD: A Mixed Methods Study of a Personal Development Program for High-Performance Biathletes" (ID: Pro00124215).

Dedication

To all my teams.

Thank you to Canada's biathletes and coaching staff who inspire me every day.

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I am fortunate to have many people in my life who cheered, supported, and inspired my academic journey. First, I would like to say a heartfelt thank you to Dr. Nicholas L. Holt for being my supervisor for my entire graduate degree. Your high standards and mentorship during my master's inspired me to come back to the University of Alberta to continue working with you and pursue a PhD. You have not only been a great supervisor. You were a patient coach who saw me both as a person and a student; providing feedback that was hard, but always thoughtful. Dr. Tara-Leigh F. McHugh, thank you so much for agreeing to be my co-supervisor since January 2023. You are such a sharp, driven, and motivating person. Your leadership inspires me to see the value of my own role in research and coaching as an arena to advocate for women in sport. I am very grateful for my supervisory committee member, Dr. Amber D. Mosewich, for the attention to detail you brought to my program of research. I am grateful for all the times you were available to meet with me over the years. I always left our meetings feeling encouraged to tackle whatever we had brainstormed. I would also like to thank my examination committee, Dr. Josephine Godwyll for serving as my chair, as well as Laurie Eisler, Dr. Margo Adam, and Dr. Stephen Mellalieu. I am so thankful for your time, knowledge, and expertise.

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I am very grateful for the friends and colleagues I have had a chance to work with in the *CASA Lab* and *Team Period*. Thank you to all the CASA Lab members who made research and learning fun. Thanks should also go to Team Period, my current research lab, who inspire me to conduct and promote research focused on women's health. A special thank you to my PhD

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CHAPTER 1: General Introduction

General Introduction

Promoting athletes' personal development is an important focus in the policies of Canadian sport organizations (Canadian High-Performance Sport Strategy [CHPSS], 2019). A survey used to inform the federal Canadian sport policy showed that 45% of sport participants thought personal development was the most important consideration to advance sport in the next 10 years (Sport Information Resource Centre [SIRC], 2022). In this dissertation research, I adopted the position that it is necessary to create high-performance sport environments that foster both athletic skills *and* personal development (Henriksen & Stambulova, 2017). Indeed, research has shown that fostering personal development can help high-performance athletes address career transitions, performance issues, and personal challenges (Devaney et al., 2018; Harwood & Johnston, 2016; Larsen et al., 2014). However, some athletes have reported that their personal development needs are not sufficiently addressed in the sport environment (Gledhill & Harwood, 2019). This could be because stakeholders within high-performance sport environments – such as coaches, parents, and technical leaders – do not have sufficient knowledge to promote athletes' personal development (Larsen et al., 2012). As such, creating new understandings of how to promote personal development may help stakeholders in high-performance sport environments better support athletes, both within and beyond the sport context.

Fraser-Thomas et al. (2017) broadly described personal development through sport as the acquisition of healthy psychological, emotional, and social outcomes. This description focuses on outcomes, but in this dissertation, I conceptualized personal development as a continual and individualized *process* whereby athletes strive to improve across life contexts (Jørgensen et al., 2023). From my perspective, an athlete-centred approach is required to study personal development. An athlete-centred approach involves seeing athletes as whole people, focusing on addressing their needs, and using strategies where performance and personal

development can co-exist in the same sport environment (Henriksen et al., 2019; Miller & Kerr, 2002; Mills et al., 2014).

Researcher Positionality

Stating the researcher's positionality is a way of showing how the research has been shaped by the researcher's identities and roles (Chavez, 2008). Additionally, in my opinion, it helps to reveal my personal motives for conducting the studies, which may provide the reader with a sense of my perspective. As such, in the following paragraphs, I provide an overview of some of the pertinent aspects of my journey through sport. These aspects of my personal journey shaped why I selected personal development as the focus of my research and how my own experiences shaped the research process. I situate my experiences, outline my positionality, and describe my research approach.

I was a biathlete, but I did not feel as though my own journey through sport was the catalyst for personal development. Rather, my personal development occurred *after* I retired from sport because of reflecting on my experiences in biathlon and being exposed to other learning contexts (e.g., moving from Norway to Canada, working as a coach). As opposed to the athletes in my dissertation, I was not a member of a high-performance sport environment (e.g., national team). I competed at a younger age (age 9–18) and lower competition level (the Norwegian Biathlon Cup) than the athletes who participated in this study. As a former athlete, it helped me connect with the participants' stories (Bourke, 2014).

In the Spring of 2023, I was hired as a senior national team coach of Biathlon Canada. In this role I work with Canada's most talented biathletes, helping them to perform on the international stage. I began my coaching journey at the youth level. As I worked my way up the ladder, I had opportunities to coach internationally with the Canadian junior and senior biathlon national teams. Decision-makers at Biathlon Canada got to know my coaching skillset, while also learning more about my research. I firmly believe that part of the reason why I got hired as a national team coach is that personal development is an integral part of my coaching philosophy.

My view of personal development in high-performance sport environment influences the way I coach and interact with athletes, coaches, parents, and technical leaders in Biathlon Canada.

As I interacted with more coaches at the highest level of international sport, my belief that the best coaches care about their athletes both as performers and as people has been reinforced. Now I am a national team coach, I prioritize caring about the athletes that I coach beyond their athletic development. I care about them as people. For example, if athletes disclose personal challenges or difficulties with career transitions, I provide emotional and esteem support to help them learn from their experiences. Before I was an established high-performance coach, I questioned if personal development could find a place – a home – in high-performance sport environments. This question intrigued me to pursue this dissertation research; to see if I could create new understandings of how to promote personal development beyond what I already knew about high-performance sport. What I have come to realize is that esteem and emotional support can still contribute to athletic *and* personal development because high-performance sport is also about navigating challenges across life contexts. But providing esteem and emotional support may not be sufficient; even within a supportive environment many athletes seem to need individual skills and strategies to foster their own personal development.

"What is your role on the Canadian team? Are you a physiotherapist or a massage therapist? Because you can't be a coach." I was asked these questions during the World Cup tour in 2021. These questions reflect the underrepresentation of women in sport (Walton et al., 2022; Wasend & LaVoi, 2019). My interrogator was clearly having trouble believing a woman could be the coach of a combined men's and women's team. Before I was hired as a national team coach by Biathlon Canada in 2023, other nations approached me saying their organization would be very interested in hiring a *woman* "sometime soon," which made me feel they were just looking for a spot to fill, rather than hiring a coach with a unique skillset (or someone with a burgeoning coaching resumé, who was also completing a PhD in sport psychology and coaching). I also heard stories of other nations putting one of their women staff members (e.g.,

team doctor, physiotherapist, massage therapist), who did not possess biathlon-specific coaching knowledge, on the shooting range because that is where they would have "TV time." These performative ways of presenting women as technical staff members were misguided attempts to show nations were focused on gender equity. Although the International Biathlon Union (IBU) mandates a gender equity approach, it has yet to create an inclusive, diverse, and equitable sporting environment. Over the past 10 years, only 8% of senior national team coaches and 16% of junior national team coaches were women (IBU Gender Equality, 2021). Although the IBU is aiming to increase women coaching positions to 30% by 2026, it is still difficult for women to be seen as an equal to their men colleagues. Since the focus of my PhD was personal development in high-performance sport environment, my experiences around diversity, equity, and inclusion are important to consider in shaping the participants' and my own perceptions as the researcher.

As a member of the population to which these studies were conducted (Biathlon Canada), I conducted *insider* research (Dwyer & Buckle, 2009). As an insider (i.e., possessing deeper insights about the people, places, and events), I had to reflect upon the methodological and epistemological issues that arose throughout this research (Chavez, 2008). This included being a *reflexive* researcher, and being attentive to how and why the interpretations and decisions were made in every aspect of the studies (Berger, 2015). A research journal was used to reflect upon how I used my researcher positionality, and how my role influenced the interactions with the participants (Bourke, 2014). Through my research, I strived to conduct studies that were athlete-centered and sport-specific, aiming to develop collective and constructive knowledge that can be used to create change (Corbin & Strauss, 2015; Goldkuhl, 2012). In this PhD dissertation research, knowledge was created *with* athletes and their key stakeholders, not *for* them (Hodge et al., 2012).

Purpose and Dissertation Overview

The overall purpose of this dissertation was to create new understandings of how to promote personal development in high-performance sport environments. This dissertation includes three studies, presented in paper format. Prior to presenting the studies, a general literature review is provided (Chapter 2). Then, each of the studies are presented (Chapters 3-5). The purpose of the first study (Chapter 3) was to develop a grounded theory (Corbin & Strauss, 2015) of how to promote personal development in high-performance sport environments. In Chapter 4, a study describing the co-design of the AHEAD intervention is presented. This study involved focus groups and individual interviews to engage athletes and their stakeholders as co-designers of the intervention. The third and final study is presented in Chapter 5. This study was an evaluation of the AHEAD intervention and used mixed methods and a multiple-baseline across behaviours single-case study design (Kazdin, 2021). Finally, a general discussion and conclusion is provided in Chapter 6, which outlines the empirical, methodological, and practical contributions of this research program, along with the strengths and limitations of the research. Future directions are also discussed, followed by my concluding remarks.

CHAPTER 2: Literature Review

Literature Review

Personal Development

Personal development is a priority in the Canadian High-performance Sport Strategy (2019) and one of the most important factors to advance sport in the next 10 years (SIRC, 2022). In the sport psychology literature, a variety of terms have been used to describe concepts relating to personal development. For instance, in their review of high-performance sport and personal development, Miller and Kerr (2002) used the terms "personal excellence" (p. 140) and "personal development" (p. 141) interchangeably. Terms such as "holistic developmental approach" (Martindale et al., 2005, p. 370), "psychosocial development" (Larsen et al., 2014, p. 92), and "life skills development" (Gould & Carson, 2008, p. 72) have also been used to describe personal development in sport. Fraser-Thomas et al. (2017) broadly described personal development through sport as the acquisition of healthy psychological, emotional, and social outcomes. This description of personal development through sport focuses on outcomes, but in my dissertation, I conceptualize personal development as a continual and individualized process whereby athletes strive to improve across life contexts (Jørgensen et al., 2023).

Personal development arises from interactions between the individual athlete and the sport environment. At the individual level, researchers have examined ways athletes' may promote their personal development by becoming active agents in their own development (Jordalen et al., 2020). Researchers have suggested that experiential learning (Rongen et al., 2021), acting autonomously (Jordalen, et al., 2020), and reflecting (Nunes et al., 2021) may help athletes actively process personal development experiences. Ronkainen et al. (2022) found that questioning and reflecting processes contributed to athletes' personal development. However, research has also shown that high-performance athletes may lack abilities and strategies to reflect upon and enhance their personal development (Jordalen et al., 2020). As such, creating new understandings of how to promote personal development in high-performance sport environments may be useful for enhancing athletes' experiences in sport.

Interactions between athletes and other stakeholders in the high-performance sport environment can also contribute to athletes' personal development. For example, Strachan et al. (2011) explored the role of coaches in supporting talented athletes' (ages 10–16) athletic and personal development. They highlighted the importance of providing athletes with an appropriate training environment, supportive interactions, and opportunities for gaining social, physical, and personal outcomes. In Pierce et al.'s (2016) study of a youth wrestling camp environment, coach-created challenges, goal setting, and guided reflection activities were systematically used to facilitate performance and personal development. Other stakeholders, such as technical leaders and mentors, can also promote personal development through sport (Holt et al., 2017). For instance, Sandardos and Chambers (2019) found that mentors identified personal development as a key component to support high-performance athletes' (ages 24–27) well-being. Specifically, the mentors promoted personal development by teaching athletes self-improvement skills (e.g., self-awareness, reflection, self-exploration techniques) and life skills.

Life skills acquisition is one aspect of athletes' personal development process (Holt et al., 2017; Pierce et al., 2017). Whereas early life skills research focused on youth participating in high-school or club levels of sport (e.g., Holt et al. 2008), more recently researchers have begun to focus on the development of life skills among high-performance athletes (e.g., Jørgensen et al., 2020; Nunes et al., 2021). A study by Jørgensen et al. (2020) demonstrated a high-performance sport environment can facilitate life skills development. Nine members (ages 17–21) of the Canadian junior national biathlon team were interviewed. The athletes highlighted specific self-directed cognitive learning strategies, including observation and reflection, that they used to develop life skills. For example, athletes used observation to learn how to balance biathlon with involvement in other life contexts (i.e., sport, school, work, family). However, Jørgensen et al.'s study focused on life skills rather than personal development per se. Furthermore, developing life skills may not sufficiently contribute to personal development as

high-performance athletes want support that can help them with personal, psychological, and emotional challenges (Devaney et al., 2018).

Positive Youth Development

Some researchers have situated personal development in a *positive youth development* (PYD) perspective. PYD is a broad umbrella term that encompasses research and practice and includes an array of topics, conceptual frameworks, and models (Holt, 2016). PYD through sport research takes a strength-based approach to examine development experiences that enable participants to gain transferable skills and competencies (Holt, 2016). Personal development in sport is a component in all these approaches to PYD. In the following section, I discuss the frameworks and models of PYD through sport that conceptually informed my dissertation.

Sport-specific PYD frameworks highlight features of the sport environment as ways to promote personal development. Gould and Carson (2008) proposed a heuristic model of coaching for life skills and personal development. They highlighted the need to consider athletes' internal and external assets, because athletes' existing skills and resources influence the outcomes they can acquire. Hodge et al. (2012) proposed a framework for structuring life skills interventions based on the life development intervention (LDI; Danish et al., 1984, 1993) and basic needs theory (BNT; Deci & Ryan, 2000). The LDI/BNT framework predicts that successful interventions must satisfy the three basic needs (i.e., autonomy, competence, relatedness), which in turn promotes athletes' well-being, life skills development, and personal development. Hodge et al. recommended collaborating with athletes and stakeholders to understand their needs and "plan intervention *with* them, not *to* or *for* them" (p. 1143). However, the effectiveness of such collaborative approach in high-performance sport contexts is unknown as few interventions have targeted high-performance athletes' personal development (Hodge et al., 2016).

The personal assets framework (PAF) for sport was developed by Côté et al. (2014, 2016) to show how a sport environment can lead to positive long-term outcomes. They proposed

three dynamic features of personal factors, relational factors, organizational environments are necessary to develop personal assets. In turn, personal assets are proposed to influence three long-term outcomes of sport: participation, performance, and personal development. From the PAF perspective, personal development and performance can co-exist if the sport environment is designed to develop the athletes' life skills. Specifically, life skills may evolve into personal development if the positive sport environment is sustained over time.

Two PYD models that informed this dissertation include life skills as an aspect of the personal development process (Holt et al., 2017; Pierce et al., 2017). Holt et al. (2017) presented the model of PYD through sport to explain how the sport environment can support PYD outcomes. The model proposes supportive and empathic relationships in a PYD climate are required to create PYD outcomes in the personal, social, and physical domain. Holt and colleagues also suggested that PYD can be supported by implicit processes (i.e., creating a PYD climate) and/or explicit processes (i.e., implementing specific life skills activities). Pierce et al. (2017) also presented a life skills model that focused on the interactive developmental process of life skills transfer. Their model proposes that the individual learner develops and transfer life skills across multiple contexts. Individuals have distinct set of autobiographic experiences, as well as external and internal assets. The model presents eight psychological processes that can enhance the likelihood of life skills transfer. For instance, athletes could work on conscious awareness and perceive support from stakeholders as ways to promote their own development. Pierce et al. advised that using an athlete-centered approach to examine psychological processes could help to promote personal development more effectively.

Reflecting the breadth of PYD, results of a recent scoping review revealed a total of 243 unique operational definitions of PYD that were broadly organized into 10 categories of PYD outcomes (Bruner et al., 2022). Personal development is conceptually located within the umbrella of PYD and can be conceived as a narrower concept. However, it is worth noting that these abovementioned PYD frameworks were not developed for high-performance sport

environments. Rather, these frameworks focused on recreational or competitive youth sport settings. Thus, it is necessary to develop a theory depicting the ways in which high-performance sport environments can promote key components of PYD, such as personal development.

In focusing on personal development, I positioned my PhD dissertation at the intersection of PYD and research on high-performance sport environments, which typically use the term "talent development environment" (TDE). PYD research and TDE frameworks both highlight (a) the importance of supportive relationships between athletes and stakeholders (e.g., coaches, technical leaders, parents), (b) the influence of organizational structures surrounding the athlete, and (c) the focus on positive outcomes (Côté et al., 2016; Holt et al., 2017). Conceptually, personal development and talent development can co-exist when the sport environments focus on developing skills and competencies that can benefit the development of an athlete as a person and as a performer, both within and outside of sport (Devaney et al., 2018).

High-Performance Sport Environments

According to Sport Canada, a high-performance sport environment should provide athletes with resources and support to help them in their pursuits of the highest level of international performance (CHPSS, 2019). The TDE literature has examined various features of high-performance sport environments, which tends to focus on understanding the ways sport environments are designed to facilitate the development of talented youth athletes into successful senior elite athletes (Martindale et al., 2005). From a TDE perspective, the sport environment can thus be conceptualized as the overarching context, which includes the people, facilities, and organizational culture of a particular sport setting (Hauser et al., 2022). Most of this research stream has focused on describing key features of effective or successful TDEs.

Information about *effective* TDEs can be used as guidelines to enhance the quality of programs that aim to develop talented youth athletes to the senior elite level (Martindale et al., 2005, 2007). Martindale et al. (2005) proposed five key features of effective TDEs: (a) long-term aims and methods; (b) coherent support and messages; (c) emphasis on appropriate

development; (d) individualized and ongoing development; and (e) integrated, holistic, and systematic development. To examine the goals and systems of effective TDEs, Martindale et al. (2007) interviewed 16 coaches. The coaches proposed ways to create effective TDEs, including promoting athletes' self-awareness, goal setting, and offering interventions that target personal development and performance. In turn, these strategies could help talented youth athletes to reach the levels of learning, hard work, and commitment required at the senior elite level.

Based on the findings of effective TDEs (Martindale et al., 2005, 2007), Martindale et al. (2010) developed the Talent Development Environment Questionnaire (TDEQ). The TDEQ encompasses 59-items, using a seven-factor structure: (a) long-term development focus, (b) quality preparation, (c) communication, (d) understanding the athlete at a holistic level, (e) support network, (f) challenging and supportive environment, and (g) long-term development fundamentals. In a follow-up study, Martindale et al. (2013) investigated whether the TDEQ could distinguish between effective (i.e., higher quality) and less effective (i.e., lower quality) TDEs. The sample included 99 talented youth and junior athletes (ages 11–21) who were categorized into effective and less effective TDEs based on independent evaluators from various sports. To assess the overall quality of their TDE, all participants completed the TDEQ, whereby lower scores indicated positive perceptions of the sport environment (i.e., strengths). TDEQ scores were significantly different between athletes in the two groups. Particularly, participants' scores on understanding the athlete at a holistic level (i.e., considering athletes' lives outside of sport) was one of the factors that was most predictive of the differences between effective TDEs (M = 2.94, SD = 0.89) and less effective TDEs (M = 3.55, SD = 1.02). Martindale et al. noted holistic athlete development appears to be one of the most important features of effective TDEs.

Drawing on conclusions from Martindale et al.'s (2005, 2007, 2010, 2013) body of work, there is a need to ensure stakeholders within TDEs understand athletes' needs at a holistic level to create effective sport environments. The term "holistic" is nebulous and frequently used in the TDE literature. According to Martindale et al. (2010), holistic refers to understanding the athletes'

world and their needs, which is necessary to provide the "right support at the right time" (p. 1215). However, more applied research is needed to explore what strategies could work within TDEs to promote athletes' personal development because of the lack of a precise conceptualization of the notion of holistic development.

Another stream of TDE research has focused on examining shared features of *successful* TDEs. Henriksen and Stambulova (2017) conceptualized successful TDEs as programs with a record of developing talented youth athletes to the senior elite level. They also argued that a key marker of successful sport environments is the facilitation of transferable skills and competencies to help athletes deal with challenges in sport and life. They proposed eight features of successful TDEs: (a) positive relationships, (b) proximal role models, (c) non-sport environment support, (d) personal development opportunities, (e) diversified training, (f) long-term development, (g) coherent organizational culture, and (h) integrated efforts across contexts. These features were based on a series of case studies examining successful TDEs in Scandinavian sport (Henriksen et al., 2010a, 2010b, 2011; Larsen et al., 2013). The researchers used a holistic ecological approach to study the TDEs. Henriksen et al. (2010a) described the term holistic as encompassing the micro- and macro-levels, athletic and non-athletic domains, and the given timeframe (past, present, and future) in which athletes find themselves.

The holistic ecological approach was introduced and examined by Henriksen et al. across three case studies of successful TDEs. In their first case study, Henriksen et al. (2010a) examined key features that supported the development of talented youth athletes in a sailing TDE. Data were collected via seven individual interviews – including a coach, technical leader, and high-performance athletes – participant observations, and document analysis. The results were arranged around two working models called the *athletic talent development environment* (ATDE) model, which explored the various components of the TDE, and the *environment success factors* (ESF) model that explained the processes and outcomes of the TDE. The two models showed that individual development and organizational culture were key features of the

successful sailing TDE, focusing on the athletic and personal development of each member. Henriksen et al. (2010b, 2011) also used the ATDE and ESF models to identify key features of successful TDEs in track and field and flat-water kayaking. Henriksen et al. (2010b) attributed the success of the track and field TDE to the organizational cohesion, senior role models, and focusing on athletes' personal development by supporting their long-term development and acquisition of psychosocial skills. A coach explained "every day we work with their personal development finding a balance between helping and not helping too much" (p. 130). In the flat-water kayak TDE study, Henriksen et al. (2011) discussed how researchers and practitioners should look beyond the individual athlete to explore the ways in which TDEs can effectively promote and support athletes' personal development. They proposed exploring the TDE surrounding the athletes is a useful steppingstone for future interventions because information about the TDE can inform intervention strategies that match the sport and organizational culture.

The abovementioned studies of successful TDEs (Henriksen et al., 2010a, 2010b, 2011) informed Larsen et al.'s (2012, 2013) studies that explored psychosocial development in a soccer TDE. Larsen et al. (2012) studied which psychosocial skills are important for talented youth athletes, and how these skills are practiced within a successful soccer TDE. Essentially, Larsen et al. explored skills associated with talented youth athletes' personal development, and how a soccer TDE promoted personal development. Data were collected by primarily using participant observations, field notes, informal talks, and individual interviews with 15 participants. A range of psychosocial skills (e.g., self-awareness, goal setting) were developed both explicitly (i.e., skills were practiced and talked about) and implicitly (i.e., skills were practiced indirectly and rarely talked about) within the soccer TDE. Larsen et al. stated that knowing what psychosocial skills were taught, and how they developed within TDEs are important to equip talented youth athletes with skills and competencies to successfully deal with challenges and transitions in TDEs. However, there is a need for more research to understand what strategies can be taught to promote athletes' personal development more consistently.

In a follow-up study, Larsen et al. (2013) explored the key features influencing the success of the same Danish soccer TDE (under-17 team). Data from participant observations and 15 individual interviews with athletes, coaches, and technical leaders in school and sport contexts were analyzed to describe the TDE using the ATDE and ESF models (Henriksen et al., 2010a). Larsen et al. found that several features of the soccer TDE were similar to TDEs examined in other studies (e.g., Henriksen et al., 2010a, 2010b, 2011), including but not limited to, focusing on the athletes' long-term development, establishing a strong and coherent organizational culture, and recognizing athletes' personal development. Although personal development was acknowledged as important for athletes to facilitate a balanced lifestyle and within-career transitions, these skills and competencies were mostly indirectly practiced and talked about within the soccer TDE.

Research examining effective and successful TDEs have been useful to identify common features of TDEs (Henriksen et al., 2010a; Larsen et al., 2012; Martindale et al., 2005). However, there are some important limitations to the studies. As most TDE research focused on understanding the organizational culture of effective and successful TDEs, these TDEs were selected based on the production of elite senior athletes and medals (Feddersen et al., 2021). Classifying TDEs as either effective or successful may not fully consider the various features that contribute to athletes' development (Feddersen et al., 2021). Although several of the studies identified that effective and successful TDEs promote athletes' personal development (e.g., Henriksen et al., 2010a, 2010b, 2011; Larsen et al., 2012, 2013; Martindale et al., 2007, 2013), these studies did not involve the in-depth analysis of specific strategies to promote personal development due to their focus on the broader organizational culture of the TDEs.

Some scholars have argued that stakeholders within TDEs might overlook high-performance athletes' perceptions and needs. For instance, Mills et al. (2014) examined a men's soccer TDE and found that the strengths were the support network, long-term development focus, and effective communication. In contrast, athletes believed their TDE stakeholders lacked

an understanding of the athletes at a holistic level. Gledhill and Harwood (2019) found similar results in their study of women's soccer TDEs. Key strengths of the women's soccer TDEs were athletes' long-term development focus and support network. In contrast, athletes reported communication and understanding the athlete at a holistic level were the TDEs' area for improvement. Both studies suggest that the athletes' needs appeared to be compromised, despite the agenda of governing professional soccer in the UK (The Football Association and English Premier League) noting the importance of athletes' personal development and welfare.

A recent review of the TDE literature summarized factors that may promote *and* constrain athlete personal development. Hauser et al. (2022) presented a conceptual framework of functional and dysfunctional TDE features. This framework places athletes' sport and personal development, along with their health and wellbeing, at the core of any talent development process. Athletes' holistic development is influenced by functional and dysfunctional features in four categories: (a) preconditions of the TDE, (b) organizational culture of the TDE, (c) integration of efforts between the TDE and other life contexts, and (d) holistic quality preparation for life in and outside of sport. It is hypothesized that functional and dysfunctional features can exist simultaneously, and taken together, determine the quality of athletes' holistic development. Hauser et al. (2022) highlighted that most TDE research has adopted a performance-oriented perspective, whereby TDEs were selected for analysis based on the number of elite athletes and medals that have been produced. Selecting TDEs based on performance may not be an optimal approach because such sport environments can be highly unsuccessful in promoting athletes' broader personal development (Feddersen et al., 2021). To address limitations in the literature, Hauser et al. (2022) called for scholars to take a person-oriented approach that pays attention to athletes' health, wellbeing, and personal development.

In summary, scholars have highlighted several features of effective and successful TDEs. In particular, understanding the athletes' personal development needs is a key feature of high quality TDEs, which "may be particularly powerful when implemented successfully" (Martindale

et al., 2013, p. 45). However, understanding and promoting personal development seems to be an ongoing challenge within TDEs, whereby studies have shown that athletes feel their needs are compromised (Gledhill & Harwood, 2019; Mills et al., 2014). An athlete-centered approach could address the athletes' needs by promoting personal development (Hauser et al., 2022). However, future studies on TDEs are warranted to understand athletes' personal development needs and strategies to promote personal development in high-performance sport environments.

Interventions for Personal Development

Researchers have aimed to support high-performance athletes by delivering interventions focused on life skills (e.g., Hardcastle et al., 2015; Jones et al., 2011) and psychological skills (Harwood & Thrower, 2019). It is important to note how previous personal development interventions were developed, and subsequently evaluated, as the effectiveness of interventions relies on collaborating with athletes and stakeholders to plan interventions that fits participants' needs (Hodge et al., 2012). Most of this research has focused on the evaluation of the effectiveness of the interventions, rather than actively including athletes and stakeholders in the *creation* of interventions. However, some personal development interventions in sport have been developed with involvement of athletes and stakeholders. These studies can be broadly grouped into two categories. First, some interventions have been developed based on a needs assessment. Second, other interventions have used feedback from end-users (i.e., athletes) and other stakeholders (e.g., coaches) to inform and evaluate the intervention. In the following sections I review studies that reflect these approaches.

Life skills interventions have been developed and evaluated to promote personal development in high-performance sport environments. For example, Jones and Lavallee (2009) explored British adolescents' life skills needs through focus groups with athletes (ages 15–22) and stakeholders (coaches and technical leaders). The findings informed the design and evaluation of the *Enhancement of Leadership Intercommunication Teamwork and Excellence* (ELITE) intervention (Jones et al., 2011), which aimed to promote athletes' communication and

organizational skills by using reflection. The intervention was delivered to five high-performance athletes from tennis and field hockey (ages 18–20). The evaluation showed that the tennis players had the greatest benefits in terms of their perceived use of life skills, whereas the field hockey players only achieved trivial benefits. Jones et al. suggested "establishing the needs of each sample should be the first step of future intervention research" (p. 174). In other words, designing interventions to target the athletes' needs and their sport environment is necessary. Although the targeted life skills were based on a needs assessment, Jones et al. did not include athletes and stakeholders as co-designers in the creation of the ELITE intervention.

In another life skills intervention, Hardcastle et al. (2015) conducted an independent evaluation to examine the perceived effectiveness of the *Developing Champions* intervention for talented youth athletes (ages 13–18). The *Developing Champions* intervention targeted a range of life skills. The intervention was evaluated via individual interviews and focus groups with athletes, coaches, parents, and technical leaders from six different sports. Results showed that the intervention was moderately successful, whereby some participants reported developing self-awareness, goal setting, reflection, and evaluation. A potential explanation of these outcomes could be the sessions were too long, not engaging, and included too much information. Although obtaining feedback after the delivery of an intervention is an important feature of intervention research, it may be more effective to include athletes as the end-users and their stakeholders in the initial design (and later evaluation) of interventions (Henriksen et al., 2019). Another potential explanation of these outcomes could be the population of athletes – recruiting participants from a variety of sports and levels – which may have limited the intervention effectiveness. Instead of including athletes from various sports, future interventions could be sport-specific and targeted to athletes' needs.

Psychological skills interventions have also been designed and evaluated to promote athlete personal development. Based on two case studies of a successful soccer TDE (Larsen et al., 2012, 2013), Larsen et al. (2014) developed an intervention for the same under-17 team.

The intervention design and evaluation were informed by the findings of Larsen et al. (2012, 2013), whereby three identified weaknesses were targeted: (a) lack of role models and relations, (b) lack of sport psychology, and (c) lack of personal development opportunities. To refine the intervention, Larsen et al. (2014) met with an unspecified number of coaches and technical leaders that provided feedback on the intervention objectives. The intervention included a series of personal development workshops focusing on psychosocial skills, both on and off the soccer field, as well as ongoing coach supervision to integrate the skills between the workshops. Based on informal meetings with an unspecified number of athletes and stakeholders, the intervention was evaluated as successful because it created relations between the under-17 team and elite senior athletes. The talented youth athletes and coaches also described goal setting as important for personal development by giving athletes a sense of control of their own development. Larsen et al. outlined how to develop and deliver a personal development intervention within a TDE. However, their study design did not involve quantitative assessments or control groups, which could be addressed using a single-case design whereby multiple assessments occur over time, using the participants as their own controls (Kazdin, 2011).

Another example of a personal development intervention used a qualitative action-research approach to design and evaluate an intervention delivered to competitive tennis players (ages 8–15). First, Dohme et al. (2020) completed a needs assessment of competitive tennis players to inform the development and delivery of an intervention on emotional control and focus. Then, the participants' behaviour changes were assessed using informal chats with athletes and an interview with their coach post-intervention. The intervention was evaluated as successful in increasing participants' understanding and use of psychological skills and characteristics, which was credited to the thorough needs assessments. Including athletes and stakeholders in intervention design may also promote enthusiasm, buy-in, rapport, and appropriate means of intervention delivery (Dohme et al., 2020; Larsen et al., 2014).

Responding to calls for more interventions that target both personal development and performance, Devaney et al. (2018) integrated the *Personal Development and Welfare* (PDW) program to support talented youth athletes (aged 15–19) in a cricket TDE. The study examined athletes and stakeholders' perceptions of the PDW, noting the usefulness of the intervention in supporting athletes' personal development and performance. An athlete in this study explained "I would even say it is linked to performance. The stuff you (PDW) help us with is not performance, but by helping us it directly helps" (p. 308). As most interventions in high-performance sport tend to focus on either psychological skills (i.e., performance support) or life skills (i.e., lifestyle support), Devaney et al. argued that high-performance athletes often need help to deal with personal, psychological, and emotional challenges, which are not necessarily supported in interventions that target performance or life skills. Additionally, the key stakeholders in their study struggled to identify strategies to promote athletes' personal development. These findings underline the usefulness of a personal development intervention in a high-performance sport environment, and the need to develop more knowledge about strategies that stakeholders can use to support athletes' personal development.

Harwood and Thrower (2019) suggested that future intervention programs should take a sport-specific approach and promote a *holistic multimodal PST package* (i.e., transferable life skills and psychological strategies). By taking a sport-specific approach, researchers could identify effective intervention strategies that are relevant for the athletes' age and stage of development within a particular sport. Such information can be used to enhance the delivery of interventions. Personal development interventions are an example of a holistic multimodal PST package, which can positively influence talented youth athletes' performance, well-being, within-career transitions, and overall sport experience.

One way to promote personal development in high-performance sport environments is by involving athletes and stakeholders in the design *and* evaluation of interventions. In the public health literature, such an approach is suggested to help design interventions that aligns with the

experiences and needs of the *end-users* (i.e., the intervention target-group) and *stakeholders* (i.e., the group of people who are interested/involved in the intervention; Leask et al., 2019). The involvement of end-users and stakeholders in intervention development has been referred to as co-creation (Leask et al., 2019). Several different approaches can be used for intervention co-creation, including co-design, co-production, and co-evaluation, all of which are intended to ensure end-users' and stakeholders' engagement (Vargas et al., 2022).

Engaging athletes and stakeholders in co-design of an intervention can help ensure that their needs are directly addressed and that interventions are delivered in a manner that suits the end-users (Henriksen et al., 2019). Although sport psychology researchers do not appear to have specifically used a co-design approach to inform the on-going design and delivery of interventions, some work reflects principles of co-design. For instance, Hall et al. (2019) created and implemented an intervention that was informed by a working group of athletes and stakeholders. The TDEQ (Martindale et al., 2010) was used as a pre- and post-test to plan and evaluate a 12-month intervention. Based on the TDEQ pre-test results and the working group's feedback, a coach-driven intervention was designed to target 16 areas for improvement (e.g., psychological skills, welfare management). After the intervention, results from the TDEQ post-test showed 15 of the 16 areas had improved. The effectiveness of this intervention was credited to the working group, which appeared to increase participant buy-in and helped to ensure that the intervention aligned with the wider sport environment (Hall et al., 2019). Although the coach-delivered intervention showed positive results, Hall et al. argued "it may be ideal, or in some circumstances necessary for an external practitioner with strong evidence-based knowledge and expertise to help drive intervention strategies within TDEs" (p. 197).

In summary, this review of relevant literature shows there is a need to develop knowledge about the strategies to promote personal development. Scholars have argued that such interventions should be athlete-centered and sport-specific, involving strategies based on athletes' needs (Jones et al., 2011) and their sport (Harwood & Thrower, 2019). In this

dissertation, after completing a grounded theory study which informed the subsequent research, I developed an athlete-centred, sport-specific intervention. This intervention was then delivered to high-performance athletes in the sport of biathlon and evaluated using mixed methods.

CHAPTER 3: Study 1 – A Grounded Theory

A Grounded Theory of Personal Development in High-Performance Sport Environments

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I designed the study; collected, analyzed, and theorized data; and prepared the initial draft of the manuscript. My committee-member, A. D. Mosewich, and co-supervisor, T.-L. F. McHugh, provided feedback on the manuscript and signed off prior to all submissions. N. L. Holt was the supervisory author and gave feedback on the developing concepts, categories, and core category; propositions and theory; and contributed to the manuscript preparation and revisions.

A Grounded Theory of Personal Development in High-Performance Sport Environments

High-performance sport environments should nurture athletic potential and offer opportunities for the development of competencies that enable athletes to meet the challenges of sport and life (Henriksen & Stambulova, 2017). Hauser et al. (2022) proposed that athletes' personal development should be one of the core elements of any talent development process. That is, high-performance sport environments can – and perhaps should – be structured in ways that facilitate both performance and personal development (Harwood & Johnston, 2016). However, some athletes have reported that their personal development needs are not sufficiently addressed in the sport environment (Gledhill & Harwood, 2019). Key stakeholders in sport may not have sufficient knowledge to promote athletes' personal development (Larsen et al., 2012). Therefore, on-going research is needed to identify the features of sport environments that support high-performance athletes' personal development (Hauser et al., 2022). This study was designed to develop a grounded theory to better understand how to promote personal development in high-performance sport environments.

In focusing on high-performance sport environments, I positioned my study at the intersection of talent development environments (TDEs) and positive youth development (PYD) research. TDE frameworks and PYD research both highlight (a) the importance of supportive relationships between athletes and key stakeholders (e.g., teammates, parents, coaches, technical leaders), (b) the influence of organizational structures surrounding the athlete, and (c) the focus on positive outcomes (Côté et al., 2016; Holt et al., 2017). Conceptually, personal development and talent development can co-exist when the sport environments focus on developing skills and competencies that can benefit the development of an athlete as a person and as a performer, both within and outside of sport (Devaney et al., 2018).

There is a body of literature that has examined various features of high-performance sport environments, typically using the term "talent development environment." From a TDE perspective, the sport environment can be conceptualized as the overarching context, which

includes the people, facilities, and organizational culture of a particular sport setting (Hauser et al., 2022). TDE research tends to focus on understanding sport environments that are designed to facilitate the development of talented young athletes into successful senior elite athletes (Martindale et al., 2005). Martindale et al. (2005) proposed five key features of *effective* TDEs: (a) long-term aims and methods; (b) coherent support and messages; (c) emphasis on appropriate development; (d) individualized and ongoing development; and (e) integrated, holistic, and systematic development. Similarly, Henriksen and Stambulova (2017) argued that shared features of *successful* TDEs include (a) positive relationships, (b) proximal role models, (c) non-sport environment support, (d) personal development opportunities, (e) diversified training, (f) long-term development, (g) coherent organizational culture, and (h) integrated efforts across contexts.

Most TDE research has focused on understanding the organizational culture of effective (Martindale et al., 2005) and successful TDEs (Henriksen et al., 2010a), whereby the TDEs have been selected based on the production of elite senior athletes and medals (Feddersen et al., 2021). Classifying TDEs as either effective or successful may not fully consider the various features that contribute to athletes' development (Feddersen et al., 2021). Furthermore, although lists of features of TDEs are valuable, it should be noted that in the broader management literature, the concept of using lists of features and factors to depict organizational effectiveness has largely been abandoned in favour of approaches that focus more on person-environment interactions (e.g., Alvesson, 1990).

There may be specific features of TDEs that both promote and constrain athlete personal development. Hauser et al. (2022) presented a conceptual framework of functional and dysfunctional TDE features. This framework places athletes' sport and personal development, along with their health and wellbeing, at the core of any talent development process. Athletes' holistic development is influenced by functional and dysfunctional features in the following categories: (a) preconditions of the TDE, (b) organizational culture of the TDE, (c) integration of

efforts between the TDE and other life contexts, and (d) holistic quality preparation for life in and outside of sport. It is hypothesized that functional and dysfunctional features can exist simultaneously, and taken together, determine the quality of athletes' holistic development. Hauser et al. (2022) highlighted that the majority of TDE research has adopted a performance-oriented perspective, whereby TDEs were selected for analysis based on the number of elite athletes and medals that have been produced. Selecting TDEs based on performance may not be an optimal approach because such sport environments can be highly unsuccessful in promoting athletes' broader personal development (Feddersen et al., 2021). To address limitations in the literature, Hauser et al. (2022) called for scholars to take a person-oriented approach that pays attention to athletes' health, wellbeing, and personal development.

PYD is a broad umbrella term that encompasses research and practice and includes an array of topics, conceptual frameworks, and models (Holt, 2016). PYD through sport research takes a strength-based approach to examine individuals' developmental experiences that enable participants to gain transferable skills and competencies (Holt, 2016). Holt et al. (2017) presented the model of PYD through sport to explain how the sport environment can support PYD outcomes. The model proposes that supportive and empathic relationships in a PYD climate are required to create PYD outcomes in the personal, social, and physical domain. Holt and colleagues also suggested that PYD can be supported by implicit processes (i.e., creating a PYD climate) and/or explicit processes (i.e., implementing specific life skills activities). However, the model of PYD through sport was not developed to apply to high-performance sport. Thus, it is necessary to develop a theory depicting the ways in which high-performance sport environments can promote key components of PYD, such as personal development.

Reflecting the breadth of PYD, results of a recent scoping review revealed a total of 243 unique operational definitions of PYD that were broadly organized into 10 categories of PYD outcomes (Bruner et al., 2022). Personal development is conceptually located within the umbrella of PYD and can be conceived as a narrower concept. Fraser-Thomas et al. (2017)

broadly described personal development through sport as the acquisition of healthy psychological, emotional, and social outcomes. This description focuses on outcomes, but personal development may also be thought of as a process. Hence, within the context of the current study, I broadly conceptualized personal development as a process whereby athletes strive to learn and improve across life contexts.

Personal development arises from interactions between the individual athlete and the sport environment. At the individual level, experiential learning (Rongen et al., 2021), acting autonomously (Jordalen, et al., 2020), and reflecting (Nunes et al., 2021) may help athletes actively process personal development experiences. In Jørgensen et al.'s (2020) study of life skills development among Canadian junior national team biathletes, cognitive processes of observational learning and reflecting were used by athletes to develop life skills across learning contexts. Ronkainen et al. (2022) found that questioning and reflecting processes can contribute to athletes' personal development. However, research has also shown that high-performance athletes may lack abilities and strategies to reflect upon and enhance their personal development (Jordalen et al., 2020).

Challenges (e.g., conflict, pressure, setbacks; Rongen et al., 2021), negative experiences (e.g., injuries, sports frustrations, living away from family; Nunes et al., 2021), and coach-created adversity (Pierce et al., 2016) can be opportunities for life skills learning and personal development in high-performance sport environments. Furthermore, research beyond the realm of high-performance sport has shown that challenging and negative experiences, such as youth learning from their own mistakes, can contribute to the development and transfer of life skills (Newman et al., 2021). Although negative experiences can lead to life skills learning, this is not to suggest that researchers and coaches should intentionally promote negative experiences in an attempt to foster personal development. Rather, it remains important to foster positive experiences, facilitated by supportive interpersonal relationships with and among key stakeholders (Henriksen & Stambulova, 2017; Holt et al., 2017). However, the quality of the

high-performance sport environment varies (Rongen et al., 2021), and some sport environments fail to support athletes' personal development needs (Gledhill & Harwood, 2019).

The acquisition of life skills may be thought of as an aspect of the personal development process (Holt et al., 2017; Pierce et al., 2017). Whereas early life skills research focused on youth participating in high-school or club levels of sport (e.g., Holt et al. 2008), some scholars have examined PYD within high-performance sport environments (e.g., Strachan et al., 2011). More recently researchers have begun to focus on the development of life skills among high-performance athletes (e.g., Jørgensen et al., 2020; Nunes et al., 2021). However, developing life skills may not sufficiently contribute to personal development as high-performance athletes want support that can help them with personal, psychological, and emotional challenges (Devaney et al., 2018). As such, rather than focusing entirely on the more limited concept of life skills, the current study utilized TDE research to conceptualize the high-performance sport environment, PYD to build the conceptual context, and personal development (which may include life skills) to inform my analytic approach.

In adopting a person-oriented approach that focuses on athletes' personal development, it is important to identify and examine interactions between athletes and key stakeholders that occur in specific high-performance sport environments. The current study was conducted in the sport environment of high-performance biathlon in Canada. This sport was selected because of its stated focus on the personal development of athletes. A priority in the Canadian High Performance Sport Strategy (2019) is to ensure that "athletes are prepared for their high-performance pathway through mandatory onboarding [of] education and personal development plans" (p. 8). Specifically, biathlon presented a relevant context to study personal development because Biathlon Canada values an "athlete-centered" approach that is "directed at the holistic development and support of the athletes and their performance" (Biathlon Canada, 2022).

Biathlon Canada has several teams as part of its national programming. Athletes are recruited based on their performance outcomes from across Canada into Junior National Teams

(i.e., U24 Team, U20 Team, NextGen Team, and Prospects Team) and a Senior National Team. There are two residential training centres in Western Canada. Athletes typically begin their careers training with a club in their home location and move to a training centre once they are eligible (ages 18-23). Relocating to a training centre can be a major life transition that many biathletes face around age 18 where they move away from home, start work and/or studies, and commit to full-time training. Furthermore, these athletes are in the period of emerging adulthood (roughly ages 18-25); an age of instability, identity exploration, and self-focus when individuals are making important choices across life contexts (Arnett, 2010). Although this period has been subject to negative associations and difficult experiences (e.g., "quarter-life crisis"), emerging adulthood is also a time when individuals progress to understand themselves better (Arnett, 2004). As such, emerging adulthood is an important period for personal development.

The Current Study

The current study focused on creating further understandings of how features of high-performance sport environments may promote personal development (Nunes et al., 2021; Rongen et al., 2021) and how athletes can be active learners in their own personal development (Jordalen et al., 2020; Jørgensen et al., 2020; Pankow et al., 2021). Grounded theory methodology (GTM) was used, which is an approach to construct theories that are grounded in data (Corbin, 2021). GTM is generally used to study phenomena that have received little previous theoretical attention. In the case of the current study, although there are existing theories and models of TDE, PYD, and personal development, with certain exceptions (e.g., Hauser et al. 2022), there is arguably limited theoretical understanding of how to promote personal development in high-performance sport contexts (i.e., the intersection of TDE, PYD, and personal development research and theory). Developing a grounded theory was helpful to address some of the limitations of the literature by offering explanations and identifying ways to promote athlete personal development in high-performance sport contexts. As such, the purpose

of this study was to develop a grounded theory of how to promote personal development in high-performance sport environments.

Method

Grounded Theory Methodology

I used Straussian GTM (Corbin & Strauss, 2015). A foundational feature of GTM is theoretical sensitivity, which is the researcher's ability to conceptualize data in theoretical terms (Glaser & Strauss, 1967). Theoretical sensitivity, therefore, is about the abilities and skills of the researcher rather than merely applying techniques. In Straussian GTM, researchers are encouraged to use their personal or professional knowledge and previous research to build their theoretical sensitivity (Strauss, 1987).

The Researcher's Philosophical Perspective and Positionality

A pragmatic philosophical perspective guided this study, which is consistent with Strauss' worldview (Strauss, 1993). The essence of pragmatic ontology (i.e., the philosophical assumptions about the nature of reality) is to view action as a way to change existence (Dewey, 1931). The ongoing action processes must be captured to generate meanings to inform change (Goldkuhl, 2012). Further, pragmatic epistemology (i.e., the nature of knowledge and how knowledge is created) emphasizes constructive knowledge (i.e., provide guidelines and suggest possibilities; Goldkuhl, 2012), which is gained through a flexible and interactive approach to data collection and analysis (Corbin & Strauss, 2015). In the present study, GTM was used to accumulate "collective knowledge" (Corbin & Strauss, 2015, p. 19) by acting on participants' meanings throughout the data collection and analysis to develop a theory that can be used to inform high-performance sport environments about promoting athlete personal development.

The researchers' positionality is an important starting point in the development of theoretical sensitivity (Corbin & Strauss, 2015), as it can reveal how the research has been influenced by their various identities and roles (Chavez, 2008). My scholarly journey has been shaped by experiences as a former biathlete and current coach. Personal development is

something I experienced as a former athlete, and it now inspires my coaching philosophy. I could be considered an intimate insider (Taylor, 2011) because of my prolonged engagement in biathlon. Being an intimate insider meant that the I had pre-established relationships with some of the participants. The pre-established relationships may have been reassuring for participants, knowing that I understood their context, language, and culture (Dwyer & Buckle, 2009). On the contrary, being an intimate insider may make it hard to distinguish what are the researcher's views versus participant's experiences (Taylor, 2011). To engage in the iterative data collection and analysis, I focused on using reflexivity to become more aware of my relationships and experiences within the context, how to engage in relational ethics, and how all actions have consequences (Ellis, 2007; Etherington, 2007). Being reflexive enabled me to adopt an analytic perspective, which balanced my personal experience and bias with an intentional focus on listening to and understanding the participants' experiences.

The other members of the study team were outsiders, none of whom had any experience with the sport of biathlon. The other research team members had specific areas of conceptual knowledge (e.g., PYD, psychosocial development), methodological expertise (e.g., qualitative research, grounded theory), and personal experiences in sport. Each research member therefore brought perspectives that further contributed to the theoretical sensitivity that underpinned this study. The combination of insider and outsider perspectives also helped to ensure analytic decisions (e.g., naming of concepts, presentation of final grounded theory) were relevant both within the biathlon context and relatable to a more general audience. That is, I sought to balance the insider/outsider perspectives within my research team as we conducted the analysis and presented the results, which reflects the fluid and interactive approach to GTM that is consistent with a pragmatic epistemology (Corbin & Strauss, 2015).

Participants and Theoretical Sampling

A total of 32 participants (8 senior national team athletes, 10 junior national team athletes, 5 coaches, 3 technical leaders, 6 parents) were recruited from Canadian junior and

senior national biathlon teams (see Table 3.1). In designing the sampling approach for this study, I assumed that junior athletes could provide perspectives of personal development experiences in the moment (e.g., moving to training centres). Senior athletes may have accrued similar experiences to the junior athletes but can have gained new perspectives through reflection and on-going efforts to engage in personal development. Coaches were invited because they can influence the athlete personal development process (Devaney et al., 2018). Technical leaders (i.e., staff within the national sport organization) were included because, to some extent, they create the high-performance sport environment at a more general or distal level, which can also impact personal development (Holt et al., 2017). Additionally, parents were included based on the concepts identified in the dataset and theoretical sampling, as well as their important role in influencing personal development (Jørgensen et al., 2020).

Table 3.1

Grounded Theory Participant Characteristics

Participant	Interview time (min)	Gender	Ethnicity	Age	Experience in high-performance sport (years)	Highest competition level
Phase 1						
SA1	72	W	White	29	11	Olympics
SA2	86	W	White	23	5	World Championships
SA3	93	M	White	27	13	Olympics
SA4	130	M	White	22	6	World Championships
SA5	79	M	White	20	2	Youth Junior World Championships
*SA6	83	W	White	18	4	Youth Olympics
JA7	102	M	White	21	4	Youth Junior World Championships
JA8	83	M	Asian and White	20	3	Youth Junior World Championships
C1	69	M	White	27	3	
*C2	74	M	White	59	38	
C3	84	M	White	35	12	
JA9	57	W	Asian	18	1	Youth Junior World Championships
SA10	53	M	White	21	3	Youth Junior World Championships
Phase 2						
TL1	52	W	White	30	3	
JA11	72	W	White	19	5	Youth Junior World Championships
JA12	73	M	Asian and White	18	2	Youth Olympics
TL2	80	M	White	39	13	
*TL3	62	W	White	32	2	
C4	74	M	White	35	3	
C5	90	W	White	28	2	
JA13	53	W	White	21	4	Youth Junior World Championships
*JA14	56	W	White	19	2	Youth Junior World Championships
JA15	66	W	White	21	4	Youth Junior World Championships
JA16	58	M	White	19	3	Youth Olympics
JA17	82	M	White	19	10	Youth Junior World Championships
SA18	65	W	White	20	3	Youth Junior World Championships
Phase 3						
P1	108	W	White	51		
P2	68	M	White	60		
P3	59	M	White	61		
*P4	63	W	White	52		
P5	54	W	White	58		
P6	61	M	White	56		

Note. *Participants SA6, C2, TL3, JA14, and P4 completed a follow-up interview (Phase 4) 6 months after their initial interviews.

Participant recruitment occurred in four phases (see Figure 3.1). In Phase 1, 13 participants were interviewed (7 senior team athletes, 3 junior team athletes, 3 coaches). Initial analysis led to a decision to broaden the sample to technical leaders, more coaches, and junior athletes. Accordingly, in Phase 2, 13 participants were interviewed (3 technical leaders, 2 coaches, 7 junior athletes, 1 senior athlete). Participants in Phases 1 and 2 talked about parents' role in promoting athlete personal development. The research team followed "the leads in the data" (Corbin, 2021, p. 30) and broadened the sample to include parents. Therefore, in Phase 3, six parents of athletes on the senior team (n = 4) and the junior teams (n = 2) were interviewed. By the end of Phase 3, the grounded theory was initially established. The fourth and final stage involved interviewing five key participants from the early stages of data collection (2 athletes, 1 coach, 1 technical leader, and 1 parent) to solicit feedback on the initial grounded theory. Their feedback helped me to clarify the meaning of words, reflect on certain analytic decisions, and ensure that the final grounded theory resonated with my participants (Etherington, 2007).

Consulting key participants also align with the pragmatic approach to search for practical solutions within the existing research context through collaborative efforts with participants. The key participants were selected based on the quality of insight they provided in their initial interviews. They were asked to elaborate on certain categories, comment on my interpretations of relationships between categories, and to give their opinions about the evolving theory. The key participants' feedback helped refine the grounded theory by, for example, ensuring the visual representation of the theory was easy to understand. The findings were deemed, by the research team, to be sufficiently saturated (a) once the categories were well-developed in terms of their properties, dimensions, and variations; and (b) if the final grounded theory resonated with key participants' perspectives and they had little further information to add (Corbin, 2021). That said, I acknowledge that data – and final grounded theories – are never fully saturated and therefore, data saturation is a relative concept. I deemed that I had sufficient data and theoretical saturation to produce a well-developed grounded theory.

Figure 3.1

Theoretical Sampling Process
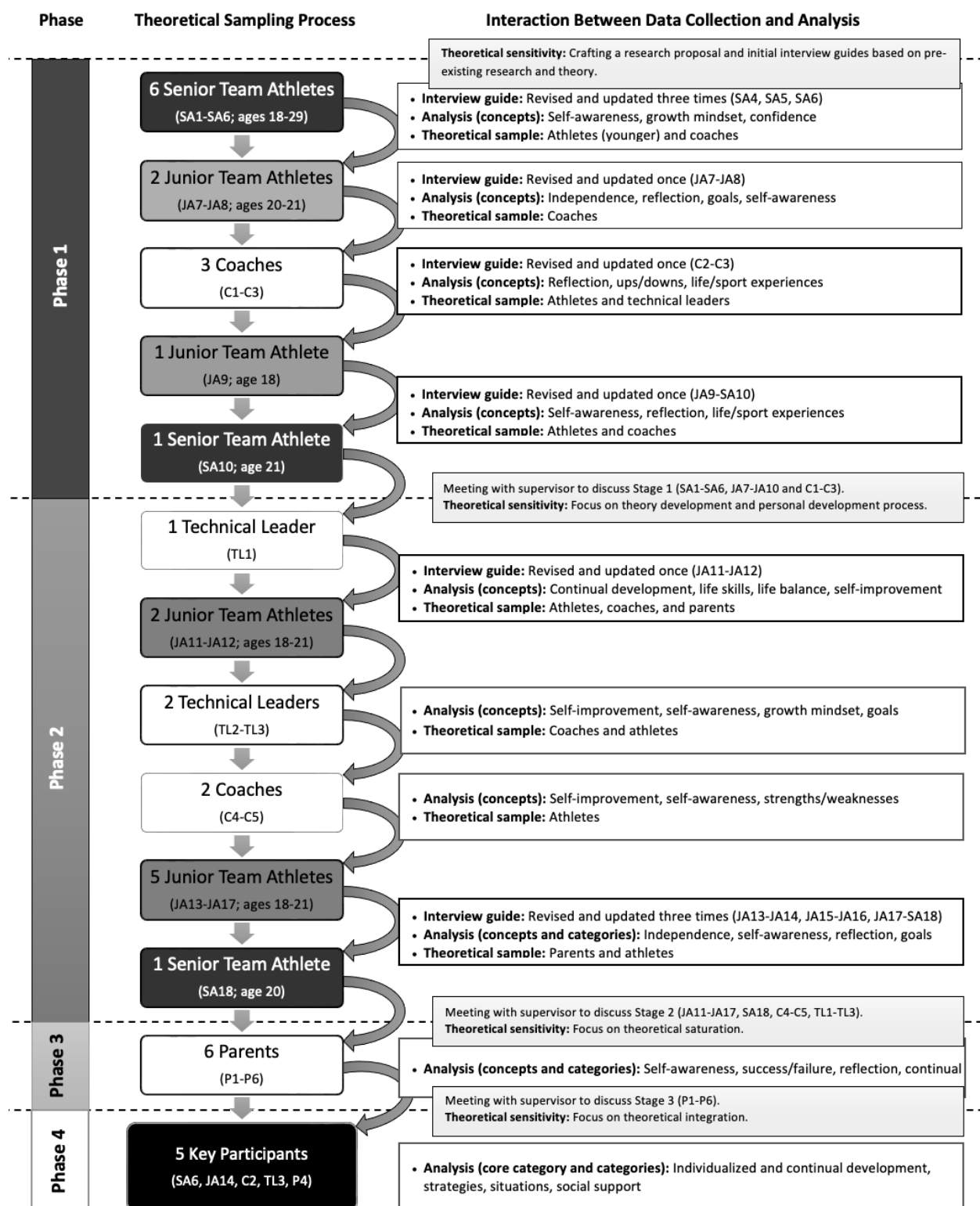
Data Collection

Individual Semi-Structured Interviews

Institutional research ethics board approval was obtained prior to data collection. Semi-structured interview guides (see Appendix A) were created following Rubin and Rubin's (2012) guidelines and tailored to the participants. Although the interview guides were updated following concepts derived from the data to determine what data to be collected next, all participants were asked to describe what personal development meant to them. The guides were broadly structured around three main topics (i.e., personal development, high-performance sport environment, and promoting personal development), and included follow-up questions and probes. Overall, the early phases of data collection tended to be broad conversations, whereas later interviews focused more on elements of the evolving theory. One-on-one interviews were conducted online via Zoom (n = 29) and in-person (n = 8). The online interview participants provided oral informed consent and the in-person interview participants gave written informed consent. Interviews conducted in Phases 1-3 ranged from 52 to 130 min in duration (M interview duration = 74.0 min, SD = 19.6). The follow-up (Phase 4) interviews ranged from 24 to 57 min, lasting on average 38 min (SD = 14.6).

Data Analysis

Interviews were audio recorded and transcribed verbatim. Data analysis started as soon as the first data were collected. Consistent with Straussian GTM, I took a flexible approach to analysis and selected procedures that best served the process of developing theory. The analytic approach involved fundamental coding procedures (i.e., open coding, microanalysis, coding for context, theoretical integration) along with more advanced techniques (i.e., posing questions, constant comparisons, field notes, memos, diagrams, delayed literature review). Such GTM analysis, while presented as distinct sections below, is interactive and fluid and cannot be separated from other aspects of the analysis and methodology.

In terms of the fundamental coding procedures – after transcribing, listening to the

audio recordings, reading, and re-reading the transcripts – I initially engaged in open coding. Open coding is intended to break the data down and identify salient concepts that inform theory development (Corbin & Strauss, 2015). A coding scheme was generated and updated throughout the coding process. Early in the open coding process, "microanalysis" (i.e., detailed coding around a concept to look for properties and dimensions; Corbin & Strauss, 2015, p. 57) was used to explore specific concepts (e.g., personal development). A necessary step to move the findings from description to theory is coding for context by examining conditions, actions-interactions, and consequences/outcomes (Corbin, 2021). The conditions encompassed examining participants' perceived reasons for personal development (e.g., why). Coding for actions-interactions involved identifying participants' responses to various situations (e.g., how, what). Coding for outcomes involved examining the consequences of participants' action-interactions, which could be positive or negative.

As part of the process of building theoretical sensitivity, previous theory and research informed the study before data collection started and at the early stages of analysis (e.g., Holt et al., 2017; Pierce et al., 2017). The theories were not explicitly used in the analysis, but informed elements of the analysis in terms of linking the concepts, such as, the connection between supportive relationships and positive outcomes through sport (e.g., Holt et al., 2017). Theoretical integration involved connecting concepts into categories and linking the categories around the core category. As such, theoretical integration is an essential step in moving from description to theory building (Corbin, 2021). Analytic procedures of writing summary memos, reviewing memos, conducting member reflections, talking with colleagues, and using integrative diagrams were used to facilitate theoretical integration. Ultimately, theoretical integration (and its associated analytic procedures) led to the identification of the core category, which is the main theme of the study that provides the structure of the theory (Corbin, 2021). Theoretical integration also helped create propositions to connect the categories (strategies, situations,

social support) around the core category, which suggests ways the categories can promote the continual and individualized personal development process.

Throughout the coding process, I also used analytical strategies of asking questions and constant comparison. Questions were asked about the dataset (e.g., what is going on here?) to elicit the implied meaning, properties, and dimensions of concepts (Corbin, 2021). Constant comparisons were made both between and within participants' data to examine similarities of concepts. For example, I compared what strategies (i.e., realistic self-evaluation and goal setting) athletes used to enhance their personal development process.

I also wrote field notes (60 pages) and memos (41 pages) throughout the study to keep track of properties, dimensions, and relationships. Field notes are conceptualizations and thoughts about the dataset, including observational and methodological notes about data and the next steps of the study (e.g., what concepts to explore). In my field notes, properties (i.e., characteristics that describe a concept) were further explored, such as the properties of situations (e.g., positive, negative, failures, setbacks, successful situations) that were deemed to influence athletes' personal development process. Memos informed the analysis, including theoretical notes and in-depth thinking of concepts from the dataset (Corbin & Strauss, 2015). The memos were written after the interviews whereby I explored my thoughts and in-depth ideas of the concepts (e.g., self-awareness, goal setting, reflecting, moving, working).

Diagramming was used to identify what concepts to follow up on and to explore the relationships between concepts and categories (Corbin & Strauss, 2015). A diagram of the grounded theory was also presented to the participants in the follow-up interviews, during which they were invited to discuss their views of the personal development process. At the latter stages of the study, a delayed literature review was conducted by reading and comparing findings with literature that was not part of the initial concepts but related to various topics identified in the dataset (Corbin, 2021). This process helped to refine the concepts and categories. For instance, participants talked about self-awareness and reflection in personal development, which seemed

to be consistent with the term "realistic self-evaluation" used by Dohme et al. (2019). Similarly, the relevant social support literature (e.g., Williams et al., 2004) helped me become sensitive to nuances in the dataset regarding ways social support was described as promoting personal development.

Evaluation of the Methodology

I followed Corbin and Strauss' (2015) 16-checkpoints (pp. 350–351) to evaluate the methodological consistency of my study: (a) choose a target sample population (b) include multiple comparative groups; (c) collect and analyze data iteratively; (d) reflect on ethical considerations throughout the study; (e) derive concepts from the data; (f) follow principles of theoretical sampling; (g) explore and describe sensitivity; (h) write field notes and memos; (i) consider when to end data collection; (j) detail coding procedures; (k) identify a core category; (l) describe changes in the design; (m) mention negative cases; (n) outline methodological decisions; (o) receive feedback from key participants; and (p) keep a research journal.

Assessment of the Theory

There are two main types of grounded theories produced using GTM: formal (concept focused) or substantive (topic focused; Glaser & Strauss, 1967). I developed a substantive grounded theory focused on the topic of personal development. Glaser and Strauss' (1967) four criteria of fit, work, relevance, and modifiability were used to assess the applicability of my theory. To ensure the theory fit, diverse data were used to highlight the properties and dimensions of how to promote personal development. To ensure the theory worked, I conducted follow-up interviews with key participants to receive their feedback, ensuring the grounded theory model was understandable to athletes and stakeholders. To enhance the theory's relevance, I considered various situations athletes encounter in their lives, not just related to sport. Finally, the grounded theory is modifiable by suggesting several strategies, situations, and types of social support that can promote athletes' personal development.

Results

The grounded theory of personal development in high-performance sport environments (see Figure 3.2) is based on the core category that personal development is a continual and individualized process. The theory postulates three propositions on how athletes' personal development can be promoted: Proposition 1: Athletes use realistic self-evaluation and goal setting. Proposition 2: Athletes experience different situations and reflect on their areas for personal development. Proposition 3: Athletes perceive and receive social support.

Figure 3.2

A Grounded Theory of Personal Development in High-Performance Sport Environments
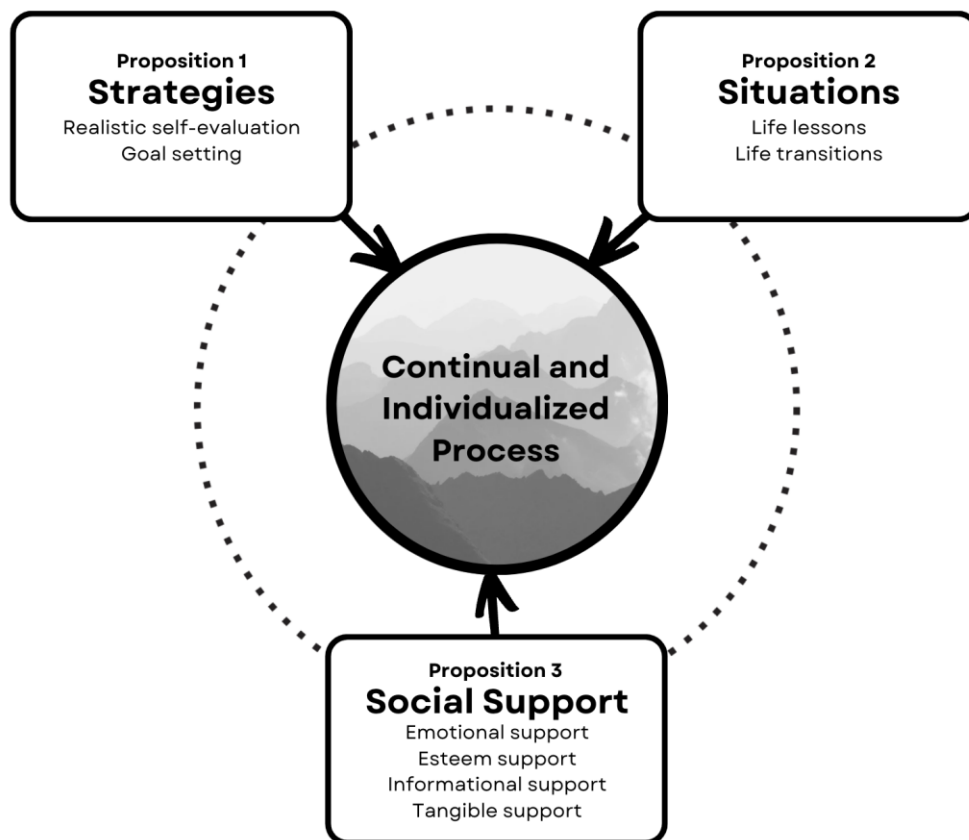
Core Category: Personal Development is a Continual and Individualized Process.

I posit that personal development is a continual and individualized process whereby athletes strive to improve across life contexts. I used "individualized" rather than "individual" to describe the personal development process because the term individual means being

distinctively associated with/related to an individual, whereas the term individualized refers to adapting to the needs or special circumstances of an individual (Merriam-Webster, n.d.). As well as being individualized, personal development also appeared to be a multi-faceted and complex process rather than a linear developmental trajectory. Nonetheless, two common elements of the personal development process were that it was continual and individualized depending on athletes' needs. As stated by Junior Athlete #17 (JA17), personal development was a continual process of "striving to improve yourself in all aspects of your life." Similarly, Senior Athlete #3 (SA3) described personal development as a "never-ending journey to improve." Throughout this process, personal development involved "change over the course of time as you get to know yourself better, learn new skills, have new experiences, take in new information, and work your way to become the best version of yourself" (SA2).

Changes in personal development were seen as "something you accumulate over time with your experiences through life. … You can teach [athletes] the steps and give them the tools they need. But the only way they're going to achieve [personal development] is through time and their own effort" (JA12). Junior and senior athletes emphasized subtle differences in experiences of personal development. For example, junior athletes highlighted how their stage of development made them particularly impressionable for personal development. JA9 said:

> At this age, you're very impressionable. … Making that transition to being independent and going into adulthood. … I've learned a lot of important big lessons and worked on a lot of things on myself in the last little while, but I don't think that really goes away. As you get older, as well, I would say it continues.

The continual personal development process was echoed by JA15 who said it took years before she recognized that dealing with concussions provided a way for her to experience personal development:

> A lot of times you might want [personal development] to happen overnight, but it doesn't really. Like with me in the concussions, I think that it took three years until I was

recognizing "I'm learning more from this." … I think it just depends on the situation.

Personal development was an individualized process; different athletes engage in personal development in different ways, depending on the situation. Parent #5 (P5) said:

[Personal development] is different for every single person. It doesn't mean getting to a certain level, it just means … getting better at what you're doing. … There's lots of different facets of it, but it always centers on how you can do things better.

Similarly, Technical Leader #1 (TL1) explained "we would all have to go through [personal development] individually to identify; 'OK, what is it that I want to improve on?' … The way in which we go about working on that thing is probably very different."

Although the personal development process was individualized, it is worth noting that "identifying areas of improvement" (TL1) was a common step. Coach #3 (C3) said that personal development involved "always looking for improvements and finding new ways to do things that would be more efficient." To explain personal development as an individualized and continual process of self-improvement, C4 used the metaphor of a wood sculpture. He said:

Self-improvement is kind of this artist making a sculpture where your daily path to self-improvement goes through simplicity. So, it's hacking away just a little bit of wood every day to get to the sculpture, rather than adding onto it and layering onto it.

From these perspectives, personal development was a continual process of identifying athletes' areas of improvement. To promote this process, athletes individualized their use of strategies, learned from situations, and perceived and received social support.

Proposition 1: Athletes use Realistic Self-Evaluation and Goal Setting to Promote Their Personal Development Process.

Strategies of realistic self-evaluation and goal setting were individualized and used by athletes to enhance their personal development process. Therefore, the theory predicts that athletes continually used realistic self-evaluation strategies to understand what and how to

promote their personal development. Athletes also used goal setting to have an intention with their overall personal development and to establish manageable steps to work on this process.

Realistic Self-Evaluation

Athletes appeared to use a range of strategies to engage in realistic self-evaluation – developing self-awareness, reflections, questions, and perspectives – all of which are predicted to promote personal development. Self-awareness was described as a critical first step to explore what areas athletes had to develop to promote their personal development. For instance, SA3 viewed self-awareness as a "tool" for personal development. JA9 explained "[you] evaluate where you are to begin with. I think that's the first step and the most important step in being able to improve … [and] understand what it is that you need to work on." Thus, it was critical for athletes to individualize what they want or need relating to personal development.

It appeared that athletes could improve self-awareness by continually engaging in reflection. SA10 provided the following view, "self-awareness … [is] something happening right now, whereas reflection is you looking back at it, … getting to know yourself, and just learning." To further this point, JA9 said that, to build self-awareness, it was important to "reflect on how you handled things in the past, so you are better prepared to deal with them in the future." Journaling was perceived as a tool to enhance both self-awareness and reflection. TL2 explained journaling "is putting someone through an exercise of reflection to know what went on, what happened, and how we can go forward." In addition to reflection, asking questions was another aspect of realistic self-evaluation. As C4 said, "it's very hard to know what you need to improve if you're not questioning what you're doing and analyzing what you're doing."

Finally, perspective taking was identified as a strategy "to acknowledge it didn't go the way you wanted but once you use [the failure] to help you in the future, then you're completely switching the narrative" (SA10). P4 argued that "personal development is tooling the athlete to be able to respond to experiences … that is coming in the future … after they gain perspective of what happened in the past." Moreover, having a growth mindset was seen as a helpful

perspective. TL2 shared personal development "is that process of being open to change, being open to improving yourself. [Personal development] to me is living with the growth mindset."

Goal Setting

In addition to realistic self-evaluation, the theory predicts that goal setting is a strategy athletes can use to individualize their personal development process. Realistic self-evaluation enabled athletes to set goals that guided their personal development process. Goal setting was a useful strategy to individualize the personal development process by "beginning with the end in mind" (P2). TL3 articulated the connection between self-awareness and goals, saying, "I would say awareness is number one, and then having goals definitely helps knowing … what you're gonna do to then do it." TL3 further explained that goal setting could help with personal development by identifying "your next steps to get that goal or achieve whatever you're pursuing."

From a senior athlete's perspective, SA3 described how his goal setting process for personal development had changed over the years as he gained more experience from being a junior athlete to becoming an established senior athlete:

> The older I get, and the more experience I have, I think that even my process around goal setting changed were when I was younger, I was all about results. … It's important to think about results and progression and stuff, but I think that you can end up being too focused on results and then not kind of do the right things that aren't going to [help you] get there. … You know, how do you get there, where [do] you have to put the focus.

SA2 said it is possible to have "multiple bigger goals or multiple smaller goals." She added that "being able to go back to a main goal and think about that … is a pretty good way of working on personal development." Going back to a main goal was explained as a "guide" (e.g., JA16, JA17, TL1) and a "sense of purpose" (e.g., JA14, JA16, JA17) related to personal development. SA10 emphasized the value of using different types of goal setting strategies: "The purpose is what keeps you going. A goal is something that you're shooting for. But a

purpose is the 'why.' Goal is [the] 'what.' … You have to really know what you want and why you're doing things." JA16 noted the importance of individualizing the strategies: "Figuring out your purpose and then finding a way to manage that. For me it's writing day-to-day goals. For other people [it] might be something else." TL3 clarified the role of goal setting in the personal development process, saying "[goal setting] is a big part of it. But I don't know about goal setting regimen; having those things where you have to write down what exactly your goal is because I think [personal development] does change."

Proposition 2: Athletes Experience Different Situations and Reflect on Their Areas for Personal Development.

Situations in sport and life contexts were opportunities for athletes to reflect on their areas for improvement relating to personal development. The theory predicts that experiencing situations facilitated athletes' continual reflection to individualize their personal development. Life lessons and life transitions are situations that benefit athletes' personal development.

Life Lessons

Athletes were able to draw life lessons from experiences of failures, setbacks, and successes as opportunities for personal development. C1 explained that athletes "have to go through those cycles of success and failure to really, truly, develop and to find that person's growth." Participants also said athletes could learn resilience from failures. C3 elaborated:

> [Resilience] is an ability to have as an athlete, but also as a person. We all have ups and downs anyway, and I think as athletes [are] learning to deal with that, it's going to help them in their personal life or professional life later.

JA15 also shared that "dealing with something, overcoming, and then learning from it" was part of her process of personal development. P3, JA15's dad, explained that through JA15's setbacks, he tried to reinforce personal development by emphasizing the continual process:

> I said: "(JA15), high-performance [sport] is just going from one setback to another. And

the sooner you figure that out the better it's going to be for you because you won't get

as discouraged. You realize [setbacks] as part of the process.

To further this point about a continual process, JA8 said "you have to look at things not purely as

a success and failure, you have to look at it as the process." Thus, the theory predicts that from

continually reflecting on life lessons, athletes individualized their personal development.

Life Transitions

Life transitions, such as moving and new living situations, were opportunities for personal

development. Specifically, moving away from their family made athletes more independent and

improved their interpersonal competencies. SA2 shared that she experienced personal

development when she: "graduated high school, moved to [training centre], started training full

time, learn[ed] how to live alone, cook for myself, support myself … and live in a house with

three other people." During transitions of moving, SA6 shared "I'm learning more about myself

from it. … I don't realize how much I changed until I look back on it." SA6 also said she learned

about personal development as an individualized process because "[transitions] forced me to

learn more about how I deal with certain situations; being in a new city and moving into a new

house. … Learning about how I react and how I cope with it."

Learning from life transitions was a continual process. C2 noted that personal

development "might not be obvious or might not come right away. ... I think with athletes,

especially when things come up quite a bit later when they have another transition to their

career, education, or something else." JA8 summarized life transitions is "a driving factor that

influenced everything leading up to here. I think [transitions] is the driving factor in my personal

development today, as well as probably in the future." These quotations highlight that personal

development is a continual and individualized process of learning from different situations.

Proposition 3: Athletes Perceive and Receive Social Support That Benefit Their Personal

Development Process.

The theory posits that athletes perceive and receive individualized support that can be

useful to continually promote their personal development. Coaches, parents, teammates, technical leaders are the key stakeholders that provide support for athlete personal development. Types of social support that help athletes' personal development are emotional, esteem, informational, and tangible support.

Emotional Support

Emotional support is multifaceted and includes helping the athlete master their emotional burdens and making them feel loved, cared for, and a sense of belonging (Williams et al., 2004). Coaches, teammates, and parents provided emotional support, which is predicted to benefit athletes' personal development by helping them learn from life lessons and transitions. JA14 emphasized the importance of continually receiving emotional support. She said that "people need emotional support all the time, but I think through transitions. … I think that mix of emotions can be amplified a lot in transition periods." TL3 noted that coaches should continually provide emotional support "any time an athlete doesn't make a team or is graduating from high school, deciding that transition to university, quitting sports, or continuing the sport. That's where the coach can make a big difference for that athlete." SA6 explained that emotional support was particularly helpful during stressful situations with "getting clarity and saying … 'I'm listening, I understand' … and working through problems. I think a lot of it for me was about learning for the future." Although personal development is an individualized journey, SA3 indicated that teammates' emotional support is essential because they "share that experience … instead of you feeling you're the only one that feels that way or experiences that." P3 said emotional support is the best way to continually support his daughter's personal development: "I've always tried to have in the back of my mind; 'be JA15's biggest cheerleader.' … The most important thing they need is someone just cheering them on and encouraging them along the way." Thus, the theory predicts that emotional support is helpful in situations of life lessons and transitions to benefit athletes' personal development.

Esteem Support

Esteem support includes information and validation that helps athletes' confidence and self-esteem (Williams et al., 2004). Esteem support is predicted to benefit athletes' personal development by building their belief in themselves as an individual. Coaches and parents were the main providers of esteem support. SA2 shared how her coach had boosted her confidence:

[Coach] had such a high degree of confidence in all his athletes' capabilities, even if we didn't have it. He had it so much that we're like, "maybe we're actually capable of this thing that you seem to believe we're capable of." … I think that was huge.

Parents also tried to promote athletes' personal development by building their confidence through reassurances. P3 said "most people want confirmation if I'm on the right path. They don't necessarily want to be told what to do, but they just want confirmation that they're doing the right thing." P5 tried to build her son's (SA4) confidence by "helping him stand back and see the bigger picture of all the things. … [I] just try to help [SA4] see that [he] can be confident." P4 said that esteem support is important to promote her daughter's [SA6] personal development, "because then she would build the desire to believe in herself. … It's a capacity building thing that can transfer to anything she does. … I think esteem support would build her resilience to be able to problem solve." Esteem support is predicted to benefit the personal development process by continually building athletes' confidence and belief in themselves.

Informational Support

Informational support refers to provisions of feedback and guidance regarding the athlete or their situation (Williams et al., 2004). The theory predicts that informational support helps athletes use strategies (i.e., realistic self-evaluation and goals-setting) to promote their personal development. Teammates, parents, and coaches offered informational support to help athletes engage in realistic self-evaluation. SA2 explained "there's times where [teammate] puts things into perspective or just '(SA2), let's think about this for one minute.'" Similarly, JA8 noted his teammate "is the one who drove my personal development in the sense that he was that pivotal figure that showed me there was room to grow. ... He shaped me and put me on that

path." Parents offered informational support during life lessons or transitions. P4 shared

following a setback "I'll ask, 'what do you think you should do?' … I do ask the reflection

questions, … I don't give [SA6] the answer." JA8 said that prior to a life transition, "[mom]

influenced me by being the devil's advocate in life and trying to take my views and put them in

her perspective. … [Those are] the questions that we should learn to ask ourselves." Coaches

were the main providers of informational support that facilitated athletes' personal development.

JA14 shared that C2 "has helped a lot with my personal development. … He's super

approachable for asking questions. … You just need to ask him, and he'll give you advice." JA13

explained how coaches could provide informational support by "help[ing] with a little bit of praise,

but I think it also needs to be 'but you can still do this.'" In sum, the theory predicts that

informational support helps athletes use their strategies to continually promote and individualize

their personal development.

Tangible Support

Tangible support refers to sharing supportive resources, such as tools and skills (Williams

et al., 2004). Parents, coaches, and technical leaders were the main providers of tangible

support, sharing resources and educational materials to benefit athletes' personal development.

JA7 said that parents could individualize athletes' personal development process when they

"help you find the resources to grow and become your own person." Participants also talked

about the usefulness of personal development courses (e.g., JA17, C5, TL3, P2). C2 offered

concrete assistance and resources to his athletes' following transitions to the training centre,

"Whether that's making a schedule so that they can manage time between training, work, and

recovery. ... But also giving them courses, … for example cooking and shopping." TL3

emphasized the importance of providing personal development education to athletes:

> A lot of athletes aren't going to search [resources] out on their own. The education aspect
>
> should or could very easily be incorporated into the development program or an athlete's
>
> training plan. … I think the first step to personal development is education.

Discussion

The purpose of this study was to develop a grounded theory of how to promote personal development in high-performance sport environments. The grounded theory predicts that personal development is a continual and individualized process, including three propositions of how athletes' personal development can be promoted: (a) athletes use strategies of realistic self-evaluation and goal setting; (b) athletes experience situations that enable them to reflect on their personal development; and (c) athletes perceive and receive social support. These findings may be valuable for informing the establishment of high-performance sport environments that promote personal development. The grounded theory also provides a better understanding of how stakeholders can support athlete personal development. Such support can be instrumental to help athletes deal with personal, psychological, and emotional challenges – within and outside of sport – as well as maintaining well-being and improving performance (Devaney et al., 2018; Hauser et al., 2022).

Personal development was described as a continual and individualized process. This is broadly consistent with other research that has examined how athletes may develop as a person in sport, including studies on stress-related growth (e.g., Howells et al., 2017), life skills (Jørgensen et al., 2020), and psychological skills and characteristics (e.g., Pankow et al., 2021). Furthermore, I presented personal development as a multi-faceted process. Such an approach would consider development as a process of becoming and adjusting to change based on the athletes and their interactions in sport and other life contexts (Feddersen et al., 2021).

Previous research leads to the suggestion that high-performance athletes may lack abilities and strategies to reflect upon and enhance their personal development (Jordalen et al., 2020). Proposition 1 of the theory described strategies athletes could use to promote their personal development. Realistic self-evaluation may help athletes to assess their performance and progress, identify strengths and areas of improvement, and generate new goals for personal development (Dohme et al., 2019). Realistic self-evaluation strategies include developing self-

awareness, reflections, questions, and perspectives. Specifically, several participants spoke about the importance of reflecting. There are different levels of reflection, including Schön's (1991) concepts of reflection-in-action (i.e., occurring during an action) and reflection-on-action (i.e., taking place after an event has occurred). Although both types of reflection may have been used, it seems that the majority of the examples I reported were reflection-on-action. That is, athletes reflected on experiences and such reflection was a means of adding meaning or drawing life lessons from those experiences. I was unable to discern whether participants used a particular type of reflection to reflect upon specific experiences or situations. Rather, it appeared that reflection more generally was a useful and important skill that helped athletes to engage in actively processing personal development. Understanding the value of different types of reflection for personal development, and the precise ways in which athletes reflect on specific types of events, remains an important issue for future study, particularly given there are potential applied implications for the work of practitioners.

Goal setting is the most common skill taught to high-performance athletes from a performance-perspective and goals may help athletes remain motivated and determined during their personal development journey (Dohme et al., 2019). My results highlight that goals can be important from a personal development perspective. Rather than merely establishing performance goals, it seemed that some goals (e.g., "figuring out your purpose and then finding a way to manage that" JA16) focused on athletes having a sense of purpose. Encouraging athletes to reflect on the meaning they derive and purpose of why they are involved in sport (Ronkainen et al., 2022) may help athletes live authentically and embrace life lessons (Nesti & Ronkainen, 2020). Such goals might be particularly helpful for high-performance athletes to navigate situations as opportunities for personal development.

High-performance athletes are likely to face several challenging situations during their career (e.g., transitions, injuries, stress, performance setbacks; Nunes et al., 2021; Rongen et al., 2021). Proposition 2 of the grounded theory describe how different situations presents

opportunities for personal development. For example, participants highlighted the importance of learning about and developing resilience as a part of personal development. Resilience is an important factor for performance success at the highest level (Sarkar & Fletcher, 2014). Furthermore, studies of life skills have also suggested that negative experiences in sport present some unique opportunities for personal development (e.g., Nunes et al., 2021; Rongen et al., 2021). My findings propose that athletes can bring about meaningful change if they use proactive and reactive strategies to learn from their experiences (Sarkar & Fletcher, 2014). An area of future study could be to explore the connection between athletes' ability to use and apply resilience to benefit their personal development in sport and across life contexts. Using a quantitative and longitudinal approach would be helpful to explore resilience as an ongoing process in response to adversities (Bryan et al., 2019).

Finally, proposition 3 is that athletes perceive and receive social support, which benefits their personal development. Previous studies have identified that social support can benefit high-performance athletes' psychological well-being (Sandardos & Chambers, 2019), mental health (Poucher et al., 2021), and performance (Gould et al., 2002). However, coaches have reported that they do not always know how to support their athletes (Poucher et al., 2018). My findings extend the literature by describing how the different types of support can be used by coaches and other key stakeholders to guide athlete personal development. Regarding the personal development process, it appeared that parents were the main providers of esteem support, teammates contribute with emotional support, coaches are the main providers of informational support, and technical leaders provide tangible support.

Although my findings may not reveal particularly new insights into social support in sport more generally, they do help to show how certain aspects of emotional, esteem, informational, and tangible support can be used to enhance athlete personal development. These findings may be valuable for researchers and applied sport practitioners who work with coaches and other key stakeholders on ways to facilitate the athletes' personal development process. Since participants

were asked explicitly about what key stakeholders do to support personal development, and

what athletes find helpful for their personal development process, there is reason to believe the

social support was intentional. However, I did not examine whether the key stakeholders give

consistent support with the athletes' needs, or if/how the evolution of support for athletes related

to personal development.

A strength of this study was selecting a high-performance sport environment based on

personal development rather than successful performance outcomes (Feddersen et al., 2021;

Hauser et al., 2022). That is, Biathlon Canada embraces an athlete-centered approach that

supports athletes' holistic development and performance (Biathlon Canada, 2022). Biathlon

Canada could utilize the grounded theory to inform ways to promote athletes' personal

development. For example, the strategies proposition may inform the development of a personal

development intervention targeted towards training centre athletes (ages 18-23), especially as

they are facing the period of emerging adulthood while training and competing in biathlon. The

situations proposition could help the key stakeholders become aware of life transitions and life

lessons that can be used as personal development opportunities. The social support proposition

could inform and educate stakeholders on different ways to support personal development.

Another important feature was this study responded to calls for the use of a person-oriented

approach (cf. Feddersen et al., 2021; Hauser et al., 2022) when studying personal development

in high-performance sport.

One limitation of this research is that, whereas biathlon was selected due to its focus on

personal development, I did not specifically sample individuals with exceptional personal

development. That is, if personal development can be conceptualized as the acquisition of

healthy psychological, emotional, and social outcomes (Fraser-Thomas et al., 2017), it may be

possible to identify athletes based on these outcomes and retrospectively examine their

developmental experiences. While personal development is associated with the

abovementioned outcomes, the current study focused more on the process of personal

development rather than these outcomes per se. In the future it may be useful to more explicitly focus on outcomes to gain a more complete picture of personal development through high-performance sport. Although I had an equal sample size of women and men, my theory does not specifically portray the potential gender differences, or the specific challenges and personal development opportunities women athletes may experience. Furthermore, the theory was entirely based on the sport of biathlon, and the sample was dominated by white people. Further research is required to examine the applicability of this grounded theory to other sport environments and sports that have greater racial and ethnic diversity.

Because a great deal of high-performance sport research has adopted cross-section, snapshot, or retrospective approaches (Hauser et al., 2022), the future use of longitudinal and intervention studies may shed light on more and less effective and individualized personal development approaches. For instance, a single-case research design (e.g., Kazdin, 2011) could be used to measure athletes' personal development over time. Single-case designs can be used to assess behavior changes at an individual level (Barker et al., 2013, 2020). Specifically, the single-case across behaviours design could be beneficial to measure personal development because the strategies can be introduced gradually, followed by measures to evaluate athletes' personal development across time.

Conclusion

The grounded theory presented in this study provides a framework for the promotion of personal development in high-performance sport environments. The grounded theory may guide future applied research and the delivery of sport psychology support for high-performance athletes. It can also be used to inform key stakeholders about their role in athlete personal development, by identifying situations as personal development opportunities and providing social support to guide athletes' personal development process.

References

Alvesson, M. (1990). On the popularity of organizational culture. *Acta Sociologica*, *33*(1), 31-49.

    https://doi.org/10.1177/00016993900330010

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? *Child Development*

    Perspectives, *1*(2), 68-73. https://doi.org/10.1111/j.1750-8606.2007.00016.x

Arnett, J. J. (2010). Emerging adulthood (s). In L. A. Jensen (Ed.), *Bridging cultural and*

    developmental approaches to psychology: New syntheses in theory, research, and policy

    (pp. 255-275). Oxford.

Biathlon Canada. (2022, November). *Mission, Vision, & Values of Biathlon Canada*.

    https://www.biathloncanada.ca/about

Bruner, M. W., McLaren, C. D., Sutcliffe, J. T., Gardner, L. A., & Vella, S. A. (2022).

    Conceptualizing and measuring positive youth development in sport: A scoping review.

    International Review of Sport and Exercise Psychology, 1-49.

    https://doi.org/10.1080/1750984X.2022.2070861

Bryan, C., O'Shea, D., & MacIntyre, T. (2019). Stressing the relevance of resilience: A systematic

    review of resilience across the domains of sport and work. *International Review of Sport*

    and Exercise Psychology, *12*(1), 70-111. https://doi.org/10.1080/1750984X.2017.1381140

Canadian High Performance Sport Strategy. (2019). *Canadian High Performance Sport Strategy.*

    https://www.canada.ca/content/dam/pch/documents/services/sport-policies-acts-

    regulations/HighPerSportStrat-eng.pdf

Chavez, C. (2008). Conceptualizing from the inside: Advantages, complications, and demands

    on insider positionality. *The Qualitative Report*, *13*(3), 474–494.

Côté, J., Turnnidge, J., & Vierimaa, M. (2016). A personal assets approach to youth sport. In K.

    Green & A. Smith (Eds.), *Routledge handbook of youth sport* (2nd ed., pp. 243–255).

    Routledge. https://doi.org/10.4324/9780203795002

Corbin, J. M. (2021). Strauss's grounded theory. In J. M. Morse, B. J. Bowers, K. Charmaz, A. E.

    Clarke, J. Corbin, C. J. Porr, & P. N. Stern (Eds.), *Developing grounded theory: The*

    second generation revisited (2nd ed., pp. 25–44). Routledge.

Corbin, J. M., & Strauss, A. L. (2015) *Basics of qualitative research: Techniques and procedures*

    for developing grounded theory (4th ed.). Sage.

Devaney, D. J., Nesti, M. S., Ronkainen, N. J., Littlewood, M., & Richardson, D. (2018). Athlete

    lifestyle support of elite youth cricketers: An ethnography of player concerns within a

    national talent development program. *Journal of Applied Sport Psychology*, *30*(3),

    300–320. https://doi.org/10.1080/10413200.2017.1386247

Dewey, J. (1931). *Philosophy and civilization.* Minton.

Dohme, L. C., Piggott, D., Backhouse, S., & Morgan, G. (2019). Psychological skills and

    characteristics facilitative of youth athletes' development: A systematic review. *The*

    Sport Psychologist, *33*(4), 261–275. https://doi.org/10.1123/tsp.2018-0014

Dwyer, S. C., & Buckle, J. L. (2009). The space between: On being an insider-outsider in

    qualitative research. *International Journal of Qualitative Methods, 8*(1), 54–63.

    https://doi.org/10.1177/160940690900800105

Ellis, C. (2007). Telling secrets, revealing lives: Relational ethics in research with intimate

    others. *Qualitative Inquiry*, *13*(1), 3-29. https://doi.org/10.1177/1077800406294947

Etherington, K. (2007). Ethical research in reflexive relationships. *Qualitative Inquiry*, *13*(5), 599-

    616. https://doi.org/10.1177/1077800407301175

Feddersen, N. B., Morris, R., Ronkainen, N., Sæther, S. A., Littlewood, M., & Richardson, D.

    (2021). A qualitative meta-study of a decade of the holistic ecological approach to talent

    development. *Scandinavian Journal of Sport and Exercise Psychology*, *3*, 24–39.

    https://doi.org/10.7146/sjsep.v3i.128317

Fraser-Thomas, J., Beesley, T., Dickler, L., Harlow, M., Mosher, A., Preston, C., & Wolman, L. (2017). Developing talent while promoting positive youth development: A balancing act. In J. Baker, S. Cobley, J. Schorer, & N. Wattie (Eds.), *Routledge handbook of talent identification and development in sport* (pp. 377–393). Routledge.

Glaser, B. G, & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Aldine de Gruyter.

Gledhill, A., & Harwood, C. G. (2019). Toward an understanding of players' perceptions of talent development environments in UK female football. *Journal of Applied Sport Psychology*, *31*(1), 105–115. https://doi.org/10.1080/10413200.2017.1410254

Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems*, *21*(2), 135–146. https://doi.org/10.1057/ejis.2011.54

Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology*, *14*(3), 172–204. https://doi.org/10.1080/10413200290103482

Harwood, C. G., & Johnston, J. (2016). Positive youth development and talent development: Is there a best of both worlds? In. N. L. Holt (Ed.), *Positive youth development through sport* (2nd ed., pp. 113–125). Routledge.

Hauser, L. L., Harwood, C. G., Höner, O., O'Connor, D., & Wachsmuth, S. (2022). Talent development environments within sports: A scoping review examining functional and dysfunctional environmental features. *International Review of Sport and Exercise Psychology*, 1–27. https://doi.org/10.1080/1750984X.2022.2129423

Henriksen, K., & Stambulova, N. (2017). A holistic ecological approach. In J. Baker, S. Cobley, J. Schorer & N. Wattie (Eds.), *Routledge handbook of talent identification and development in sport* (pp. 271–284). Routledge.

Henriksen, K., Stambulova, N., & Roessler, K. K. (2010a). Holistic approach to athletic talent

    development environments: A successful sailing milieu. *Psychology of Sport and*

    Exercise, *11*(3), 212–222. https://doi.org/10.1016/j.psychsport.2009.10.005

Holt, N. L. (2016). *Positive youth development through sport* (2nd ed.). Routledge.

    https://doi.org/10.4324/9781315709499

Holt, N. L., Neely, K. C., Slater, L. G., Camiré, M., Côté, J., Fraser-Thomas, J., MacDonald, D.,

    Strachan, L., & Tamminen, K. A. (2017). A grounded theory of positive youth

    development through sport based on results from a qualitative meta-study.

    International Review of Sport and Exercise Psychology, *10*(1), 1–49.

    https://doi.org/10.1080/1750984X.2016.1180704

Holt, N. L., Tink, L. N., Mandigo, J. L., & Fox, K. R. (2008). Do youth learn life skills through their

    involvement in high school sport? A case study. *Canadian Journal of Education*, *31*,

    281–304.

Howells, K., Sarkar, M., & Fletcher, D. (2017). Can athletes benefit from difficulty? A systematic

    review of growth following adversity in competitive sport. *Progress in Brain Research*,

    234, 117–159. https://doi.org/10.1016/bs.pbr.2017.06.002

Jordalen, G., Lemyre, P. N., & Durand-Bush, N. (2020). Interplay of motivation and self-

    regulation throughout the development of elite athletes. *Qualitative Research in Sport,*

    Exercise and Health, *12*(3), 377–391. https://doi.org/10.1080/2159676X.2019.1585388

Jørgensen, H., Lemyre, P. N., & Holt, N. L. (2020). Multiple learning contexts and the

    development of life skills among Canadian junior national team biathletes. *Journal of*

    Applied Sport Psychology, *32*(4), 392–415.

    https://doi.org/10.1080/10413200.2019.1570570

Larsen, C. H., Alfermann, D., & Christensen, M. K. (2012). Psychosocial skills in a youth soccer

    academy: A holistic ecological perspective. *Sport Science Review*, *21*, 51–74.

    https://doi.org/10.2478/v10237-012-0010-x

Martindale, R. J., Collins, D., & Daubney, J. (2005). Talent development: A guide for practice and research within sport. *Quest*, *57*(4), 353–375. https://doi.org/10.1080/00336297.2005.10491862

Merriam-Webster. (n.d.). Individual. In *Merriam-Webster.com dictionary*. Retrieved February 10, 2023, from https://www.merriam-webster.com/dictionary/individual

Nesti, M. S., & Ronkainen, N. J. (2020). Existential approaches. In D. Tod & M. Eubank (Eds.), *Applied Sport, Exercise, and Performance Psychology* (pp. 87-100). Routledge.

Newman, T. J., Santos, F., Black, S., & Bostick, K. (2021). Learning life skills through challenging and negative experiences. *Child and Adolescent Social Work Journal*, *39*, 1-15. https://doi.org/10.1007/s10560-021-00739-y

Nunes, E. L. G., Ciampolini, V., Santos, F., Palheta, C. E., Nascimento, J. V. D., & Milistetd, M. (2021). Composite vignettes of former Brazilian high-performance volleyball athletes' perspective on life skills learning and transfer. *Journal of Sports Sciences*, *39*(23), 2674–2682. https://doi.org/10.1080/02640414.2021.1951054

Pankow, K., Fraser, S. N., & Holt, N. L. (2021). A retrospective analysis of the development of psychological skills and characteristics among National Hockey League players. *International Journal of Sport and Exercise Psychology*, *19*(6), 988–1004. https://doi.org/10.1080/1612197X.2020.1827003

Pierce, S., Gould, D., & Camiré, M. (2017). Definition and model of life skills transfer. *International Review of Sport and Exercise Psychology*, *10*(1), 186–211. https://doi.org/10.1080/1750984X.2016.1199727

Pierce, S., Gould, D., Cowburn, I., & Driska, A. (2016). Understanding the process of psychological development in youth athletes attending an intensive wrestling camp. *Qualitative Research in Sport, Exercise and Health*, *8*(4), 332–351. https://doi.org/10.1080/2159676X.2016.1176067

Poucher, Z. A., Tamminen, K. A., & Kerr, G. (2018). Providing social support to female Olympic

    athletes. *Journal of Sport and Exercise Psychology*, *40*(4), 217–228.

    ttps://doi.org/10.1123/jsep.2018-0008

Poucher, Z. A., Tamminen, K. A., Sabiston, C. M., Cairney, J., & Kerr, G. (2021). Prevalence of

    symptoms of common mental disorders among elite Canadian athletes. *Psychology of*

    Sport and Exercise, *57*, 1–10. https://doi.org/10.1016/j.psychsport.2021.102018.

Rongen, F., McKenna, J., Cobley, S., & Till, K. (2021). Do youth soccer academies provide

    developmental experiences that prepare players for life beyond soccer? A retrospective

    account in the United Kingdom. *Sport, Exercise, and Performance Psychology, 10*(3),

    359–380. https://doi.org/10.1037/spy0000259

Ronkainen, N., Aggerholm, K., Allen-Collinson, J., & Ryba, T. V. (2022). Beyond life-skills:

    Talented athletes, existential learning and (un)learning the life of an athlete. *Qualitative*

    Research in Sport, Exercise and Health, 1–15.

    https://doi.org/10.1080/2159676X.2022.2037694

Rubin, H. J., & Rubin, I. (2012). *Qualitative interviewing: The art of hearing data* (3rd ed).

    Sage.

Sandardos, S. S., & Chambers, T. P. (2019). "It's not about sport, it's about you": An

    interpretative phenomenological analysis of mentoring elite athletes. *Psychology of*

    Sport and Exercise, *43*, 144–154. https://doi.org/10.1016/j.psychsport.2019.02.003

Sarkar, M., & Fletcher, D. (2014). Psychological resilience in sport performers: A review of

    stressors and protective factors. *Journal of Sports Sciences, 32*(15), 1419–1434.

    https://doi.org/10.1080/02640414.2014.901551

Schön, D. (1991) *The reflective practitioner* (2nd ed.). Jossey Bass.

Strauss, A. (1987). *Qualitative analysis for social scientists.* Cambridge University Press.

Strauss, A. (1993). *Continual permutations of action*. Aldine de Gruyter.

Taylor, J. (2011). The intimate insider: Negotiating the ethics of friendship when doing insider

research. *Qualitative Research*, *11*(1), 3–22.

https://doi.org/10.1177/1468794110384447

Williams, P., Barclay, L., & Schmied, V. (2004). Defining social support in context: A necessary

step in improving research, intervention, and practice. *Qualitative Health Research,*

4(7), 942–960. https://doi.org/10.1177/1049732304266997

CHAPTER 4: Study 2 – A Co-Design Approach

Co-Designing with High-Performance Athletes and Stakeholders:

The AHEAD Intervention for Personal Development

A version of this chapter is being prepared for submission to the Journal of Applied Sport Psychology: Jørgensen, H., McHugh, T.-L. F., Mosewich, A. D., & Holt, N. L., entitled "Co-designing with high-performance athletes and stakeholders: The AHEAD intervention for personal development."

I designed the AHEAD intervention, logic model, timeline, activity bank, intervention content, and prepared an initial draft of the manuscript. My co-supervisor, T.-L. F. McHugh, and committee member, A. D. Mosewich, will be given the opportunity to provide feedback and edits to the manuscript, and sign off prior to submission to JASP. N. L. Holt was the supervisory author and provided feedback on the methodology and study design, as well as contributed to the manuscript preparation.

Co-Designing with High-Performance Athletes and Stakeholders:

The AHEAD Intervention for Personal Development

High-performance sport environments should nurture athletic potential *and* offer opportunities for personal development that enable athletes to meet the challenges of sport and life (e.g., Hauser et al., 2022; Henriksen & Stambulova, 2017). Illustrating the importance of personal development in high-performance sport, a survey used to inform Canadian sport policy showed that 45% of respondents think "personal development" is the most important consideration to advance sport in the next 10 years (SIRC, 2022). Indeed, high-performance athletes may need to deal with personal, psychological, and emotional challenges to perform at their best (Devaney et al., 2018). Thus, high-performance sport environments should be structured in ways that facilitate both performance and personal development, which can be conceptualized as the acquisition of healthy psychological, emotional, and social outcomes (Fraser-Thomas et al., 2017; Harwood & Johnston, 2016).

One way to promote personal development in high-performance sport environments is by involving athletes and stakeholders in the design and delivery of interventions. In the public health literature, researchers have suggested that interventions should be designed to align with the experiences and needs of the *end-users* (i.e., the intervention target-group) and *stakeholders* (i.e., the group of people who are interested/involved in the intervention; Leask et al., 2019). The involvement of end-users and stakeholders in intervention development has been referred to as co-creation (Leask et al., 2019). Several different approaches can be used for intervention co-creation, including co-design, co-production, and co-evaluation, all of which are intended to ensure end-users' and stakeholders' engagement (Vargas et al., 2022).

In co-design studies, researchers pre-determine the intervention with a clear outcome in mind (Vargas et al., 2022). Then, end-users and stakeholders are involved in co-designing the intervention, with the goal of improving the intervention outcomes. Such engagement can help optimize the design, implementation, and evaluation of interventions to produce context-specific,

practical, and relevant new knowledge (Vargas et al., 2022). In the current study, participants were engaged as co-designers of a personal development intervention (called AHEAD) that was tailored to the sport of biathlon and targeted to high-performance athletes (ages 18-25). The name "AHEAD" was my idea; meant as an analogy for athletes to picture the continual personal development process of learning and using strategies in the future as they develop through sport and other life contexts.

Some personal development interventions in sport have been developed with the involvement of athletes and stakeholders. Although previous studies do not appear to have used a specific co-design framework, these studies can be broadly grouped into two categories. First, some interventions have been developed based on a needs assessment. Second, other interventions have used feedback from end-users (i.e., athletes) and other stakeholders (e.g., coaches) to inform and evaluate the intervention. In the following sections I review studies that reflect these approaches.

Personal development interventions have involved some form of needs assessment to identify the needs of the athletes (e.g., Dohme et al., 2020; Jones et al., 2011), stakeholders (e.g., Barker et al., 2014; Pain & Harwood, 2009), and/or other aspects of the sport environment (e.g., establishing a team culture; Henriksen, 2015; Larsen et al., 2014). For example, Jones and Lavallee (2009) explored British adolescents' life skills needs through focus groups with athletes (ages 15-22) and stakeholders (coaches and technical leaders). The findings informed the design of the ELITE intervention (Jones et al., 2011), which aimed to increase the use of communication and organizational skills. The intervention was delivered to five high-performance athletes from tennis and field hockey (ages 18–20). However, results revealed minimal meaningful benefits in communication and organizational skills (Jones et al., 2011). Although the targeted life skills were based on a needs assessment, Jones et al. did not include athletes and stakeholders as co-designers in the creation of the ELITE intervention.

Other researchers have assessed and targeted the needs within the broader sport environment. Larsen et al. (2014) developed an intervention to support within-career transitions in soccer. The intervention was derived from two needs assessments of an under-17 soccer team, which explored psychosocial skills and factors that influenced the team's success (Larsen et al., 2012, 2013). In another example, Barker et al. (2014) created and delivered a team building intervention based on the needs of competitive cricketers (aged 14-18) and coaches in a pre-season tour setting. Similarly, Dohme et al. (2020) completed a needs assessment of competitive tennis players (ages 8-15) to inform the development and delivery of an intervention on emotional control and focus. The interventions were successful, which was credited to the thorough needs assessments. Including athletes and stakeholders in intervention design may also promote enthusiasm, buy-in, rapport, and appropriate means of intervention delivery (Barker et al., 2014; Dohme et al., 2020; Larsen et al., 2014).

Another approach to intervention development involves seeking participants' feedback in the implementation phase or after the delivery of a program. For example, Wagstaff et al. (2013) initially developed their sport psychology intervention on emotion abilities and regulation based on relevant literature, then used participants' feedback to inform and refine the workshop design and implementation (e.g., timeframe, workshop length, time of day, venue, facilities). Pain and Harwood (2009) noted that the success of their team building intervention with a soccer team (ages 18-24) was largely influenced by utilizing end-users' feedback in the intervention design – giving participants a sense of input, control, and empowerment – which in turn, positively impacted and explained some of the observed positive effects. Hardcastle et al. (2015) conducted an independent evaluation of the *Developing Champions* intervention for youth athletes (ages 13-18). In this case, results showed that sessions were too long, not engaging, and included too much information. Although obtaining feedback after the delivery of an intervention is an important feature of intervention research, it may be more effective to include

athletes as the end-users and their stakeholders in the initial design (and later evaluation) of interventions (Henriksen et al., 2019).

Engaging athletes and stakeholders in co-design of an intervention can help ensure that their needs are directly addressed, and interventions are delivered in a manner that suits the end-users (Henriksen et al., 2019). Although sport psychology researchers do not appear to have specifically used a co-design approach to inform the on-going design and delivery of interventions, some work reflects principles of co-design. For instance, Hall et al. (2019) created and implemented an intervention that was informed by a working group of athletes and stakeholders. The TDEQ (Martindale et al., 2010) was used as a pre- and post-test to plan and evaluate a 12-month intervention. Then, based on the questionnaire and the working group's feedback, a coach-driven intervention was designed to target 16 areas for improvement (e.g., psychological skills, welfare management). Having a working group was critical for the success of the intervention, increasing participant buy-in, and helping to ensure that the intervention aligned with the wider sport environment (Hall et al., 2019).

The purpose of the current study was to engage high-performance athletes and stakeholders in the co-design of a personal development intervention for high-performance sport, called AHEAD. Such an approach is consistent with recommendations from sport psychology practitioners that athletes and stakeholders should be involved in the decision-making process (Henriksen et al., 2019). The intervention can still be informed by the literature; however, participants' feedback and knowledge contribute to the intervention design. As such, co-design is proposed as an efficient solution to achieve positive change by generating context-specific, practical, and relevant knowledge (Vargas et al., 2022).

Method

Methodological Approach

A co-design approach was used to create the AHEAD intervention. As noted earlier, co-design involves a collaboration with end-users, stakeholders, and researchers to design

solutions to a pre-specified intervention (Vargas et al., 2022). The focus is to gain participants'

insights to establish plans and strategies for improvement (Vargas et al., 2022). Co-designing

the AHEAD intervention was a suitable approach to produce actionable and usable knowledge.

Methodologically, qualitative description (QD; Sandelowski, 2000) was used. QD is a

flexible approach to data generation and analysis that can be used to inform the development

and refinement of interventions (e.g., Doyle et al. 2020; Neergaard et al., 2009). More

specifically, Sullivan-Bolyai et al. (2005) argued that QD can be helpful as a "a vehicle for

establishing interventions that are acceptable and understandable … [by] using participants'

straightforward suggestions to develop specific intervention strategies" (p. 132). Therefore, QD

was an appropriate methodological choice for my second PhD study.

Pragmatic Research Philosophy

The QD methodology can be aligned with pragmatism (Neergaard et al., 2009).

Originating in the work of William James (1907) and John Dewey (1931), a pragmatic research

philosophy focuses on finding practical solutions to applied research questions. Pragmatism can

be helpful to bridge the gap between academic and applied sport psychology because it allows

the researcher to focus on practical problems within the specific sport context (Giacobbi et al.,

2005). As study findings are contextual, research is unable to describe truth and reality (i.e.,

ontology) conclusively (Giacobbi et al., 2005). Instead, pragmatists are interested in searching

for practical solutions through collaborative efforts and work. Pragmatic knowledge generation

(i.e., epistemology) is contextual in nature and includes both subjective and objective

approaches viewed on a continuum that is informed by the research question and the stage of

the research process. In the current study, the use of a pre-determined framework (i.e., Template

for Intervention Description and Replication for Population Health and Policy [TIDieR-PHP];

Campbell et al., 2018), was used to analyze participants' feedback, which could be considered a

more objective approach. In contrast, creating knowledge via individual interviews and focus

groups could be considered a more subjective aspect of the overall research approach.

Finally, it is important to situate myself as the researcher to demonstrate critical reflection and clarify the various roles affecting me as a researcher (Chavez, 2008). In addition to research expertise in personal development and the high-performance sport environment, I had extensive experience in high-performance biathlon as an international coach (e.g., World Championships), a training centre coach, and as a sport psychology consultant. In May 2023, I was hired as a national team coach with Biathlon Canada.

Intervention Development

The AHEAD intervention was developed through four iterative and cyclical steps (see Figure 4.1). Phase 1 (November 2021-November 2022) involved constructing a grounded theory of personal development (see Chapter 3) that was used as a theoretical framework for the AHEAD intervention. The current study focuses on Phases 2-4, which were guided by the TIDieR-PHP checklist (Campbell et al., 2018). The TIDieR-PHP is a tool that ca be used to provide clear and comprehensive reporting of intervention development, involving nine items: (1) brief name, (2) why, (3) what materials, (4) what and how, (5) who provided, (6) where, (7) when and how often, (8) planned/unplanned variations, and (9) how well.

In Phase 2 (April-June 2022), I started initial work on the AHEAD intervention by reviewing the literature and drafting the AHEAD intervention's logic model (based, in part, on the grounded theory that had been previously created). Phase 3 (June-October 2022) encompassed further developing the AHEAD intervention through seven focus groups (involving 10 athletes, 5 coaches, 2 technical leaders) and eleven individual interviews (5 athletes, 3 coaches, 3 technical leaders). Last, Phase 4 (November 2022-April 2023) involved refining the AHEAD intervention and its supporting documents (i.e., overview, activity bank) based on participants' input.

Figure 4.1

The 4-Step Process of Developing the AHEAD Intervention
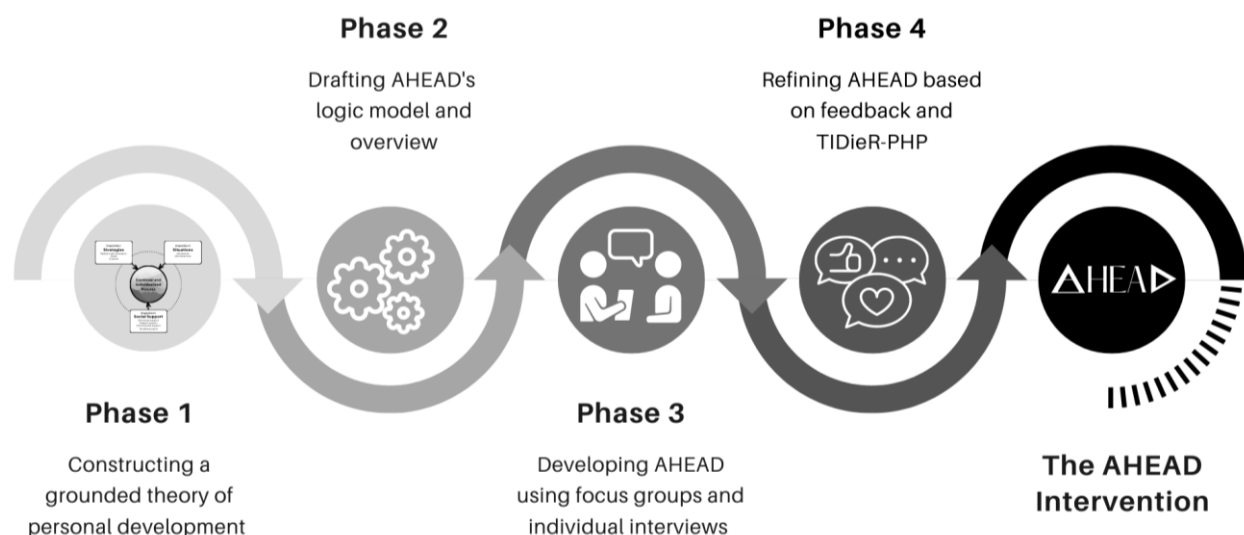
Logic Model

The initial logic model was drafted in a flow chart format (see Figure 4.2) prior to seeking

end-users' and stakeholders' feedback. Logic models describe and graphically represent an

intervention's (a) objective, (b) inputs, (c) activities, (d) outputs, (e) outcomes, and (f) impact

(Fraser et al., 2009). The *objective* depicts the intervention focus and specific actions. The *inputs*

delineate the resources needed to operate the intervention. The *activities* outline what

participants will do as part of the intervention. The *outputs* illustrate what activities are likely to be

explored after the intervention delivery. The *outcomes* and *impact* are the expected results at the

end of intervention. The initial logic model (i.e., prior to participants' feedback) was drafted in

Phase 2. It was further developed and refined in Phases 3-4, informed by the focus groups,

individual interviews, and the TIDieR-PHP checklist (see Results).

Figure 4.2

Initial Logic Model of the AHEAD Intervention

Objectives. To develop knowledge, skills, and competencies related to personal development.

Inputs.	Activities.	Outputs.	Outcomes.	Impact.
• Participants (high performance athletes) • Workshop facilitator (lead researcher) • Location (meeting room at training centre) • Supplies (e.g., power point, athlete personal development plan)	Behavior #1 Behavior #2 Behavior #3	• # of attendance • # of hours in workshop • # of time point scores from the personal development measure • # of pages with reflective diaries • # of pages with individual interview data	Increased knowledge, skills, and competencies related to personal development	Personal Development

External Factors   Assumptions

Participants

A total of 28 participants were involved in this study, including 15 end-users (i.e.,

biathletes) and 13 stakeholders (8 coaches and 5 technical leaders from biathlon; see Table

4.1). The participants self-identified as 15 women and 13 men. The participants were recruited

from my professional network. A purposeful criterion-based sampling technique (Patton, 2015)

was used to recruit participants. The eligibility criteria for athletes were that they had to be (a) 18

years (or older) and (b) be a current/former member of a biathlon high-performance training

center. The coaches and technical leaders must have been in coaching or an administrative role

at a high-performance level (i.e., national/international level) in biathlon.

Seven small-sized focus groups (i.e., 2-3 people; Krueger, 1998) were conducted with a

total of 17 participants (10 athletes, 5 coaches, 2 technical leaders), involving four athlete focus groups and three stakeholder focus groups. Of the athletes, two were Olympians, five were international senior biathletes (i.e., International Biathlon Union [IBU] Cup, World Cup, World Championships), two were international junior biathletes (i.e., Junior IBU Cup, World Youth and Junior Championships), and one was a national-level biathlete. Of the stakeholders, all the coaches had international coaching experience, and four had past or current coaching experience from a high-performance training centre. The two technical leaders were a retired Olympian and a staff member, both of whom held administrative roles focused on the high-performance programming. A total of 11 individual interviews were conducted with another set of participants: five athletes, three coaches, and three technical leaders. The five athletes were one Olympian, two international senior biathletes, and two international junior biathletes. The three coaches had international coaching experience as well as current or previous experience coaching at a training centre. The three technical leaders in the individual interviews were a sport psychology consultant, one retired Olympian, and a staff member.

Table 4.1

Co-Design Participant Characteristics

Athletes (*n* = 15)	
Age, years (range)	22.3 ± 4.5 (ages 17–31)
Retired	13% (*n* = 2)
Gender	
Women	60% (*n* = 9)
Men	40% (*n* = 6)
Elite sport participation (years)	4 ± 3
Highest level of competition	
Olympic Games or World Championships	26.7% (*n* = 4)
IBU Cup, Junior IBU Cup, World Youth and Junior Championships and Nationals	73.3% (*n* = 11)
Coaches/Technical Leaders (*n* = 13)	
Age, years (range)	35 ± 11.5 (ages 23–61)
Gender	
Women	46% (*n* = 6)
Men	54% (*n* = 7)
Elite sport work experience (years)	8.6 ± 11.4

Procedures and Data Generation

Ethical approval was obtained from the researchers' institutional research ethics board. Participants provided written informed consent and completed a brief demographics survey. Data generation, which took place during the COVID-19 pandemic, was conducted virtually, and was audio-recorded using the Zoom video conferencing platform. Utilizing both focus groups and individual interviews helped generate a broad range of data to provide straight descriptions of phenomena (Sandelowski, 2000). I conducted all the interviews.

Focus Groups

The focus groups lasted 47 minutes on average (range 32-56 minutes). Prior to the focus groups, participants were sent an overview of the initial version of the AHEAD intervention via email as a reference point to facilitate discussions (see Appendix B). A questioning route (see Appendix C) was created following Krueger's (1998) guidelines and informed by program evaluation research (e.g., Gitlin & Czaja, 2016), and the TIDieR-PHP checklist (Campbell et al., 2018). Five types of questions were used to sequence the interviews (Krueger, 1998): Opening questions (e.g., years of competing/coaching in sport), introductory questions (e.g., do you think personal development can help high-performance athletes, if so, how?), transitioning questions (e.g., what do you think of the initial draft of the AHEAD intervention?), key questions (e.g., what changes would you make to the AHEAD intervention?), and ending question (e.g., what are the AHEAD intervention's strengths/rooms for improvement?).

Individual Interviews

The individual interviews lasted 45 minutes on average (range 30-63 minutes). Prior to the interviews, participants were sent an overview of the AHEAD intervention via email. The individual interview guide was a modified version of the focus group questioning route, which incorporated TIDieR-PHP checklist (Campbell et al., 2018) items to collect specific feedback about the AHEAD intervention.

Data Analysis

Following each focus group and individual interview, I crafted a summary of the interview to keep track of the evolving AHEAD intervention. The audio recordings were transcribed using an automated transcription software (sonix.ai) and then checked for accuracy. Any identifying information was removed from the transcripts and all participants were assigned codes. Focus group participants were denoted as "FG" and their group number (e.g., Focus Group #1 was coded FG1). In addition, all participants from the focus groups and individual interviews were assigned codes: Athlete #1 was coded as A1, coach #1 was coded as C1, and technical leader #1 was coded as TL1, and so on.

Consistent with the QD methodology, a three-phased content analysis procedure of preparing, organizing, and reporting was used to analyze and organize the data (Elo & Kyngäs, 2008). In the preparing phase, I read and re-read the transcripts, wrote summaries, and engaged in open coding. In the organizing phase, the transcripts were colour-coded based on the TIDieR-PHP checklist (Campbell et al., 2018) and an unconstrained categorization matrix (Elo & Kyngäs, 2008). The TIDieR-PHP was used as a coding framework to organize and cluster data into concepts, facilitating interpretation and representation of the data (Sandelowski, 1993). The categorization matrix was used to identify concepts that did not necessarily fit with the TIDieR-PHP checklist but appeared to be useful for co-designing the AHEAD intervention draft. In the *reporting* phase, quotes from participants were extracted to describe and support each of the TIDieR-PHP items. Based on the analysis of participants' feedback, I finalized the AHEAD intervention and refined the logic model.

Optimizing Validity

Validity in QD is associated with transparency throughout the study process that allows the readers to evaluate the credibility and internal consistency of the study's design (Kim et al., 2017). QD researchers should aim to optimize validity before, during, and after data generation (Milne & Oberle, 2005). Before data generation, I used a flexible purposeful sampling plan and followed a simultaneous data generation and analysis process to remain open to the changing

sampling needs. Analytic tools (i.e., TIDiER-PHP checklist, unconstrained categorization matrix) were used to achieve specific analytic aims. Other research team members reviewed the coding and asked questions to help ensure that my coding was coherent and logical. Throughout the study process, I kept a journal about the interviews and research context, which can improve understanding of the participants' meanings (Milne & Oberle, 2005). Paying attention to the context is also an important aspect of intervention design (Henriksen et al., 2019).

<div align="center">**Results**</div>

Logic Model of the AHEAD Intervention

A refined logic model of the AHEAD intervention (see Figure 4.3) was produced following the analysis of the participants' feedback. Briefly, the objective of the AHEAD intervention is to provide high-performance athletes (ages 18-25) with opportunities to develop knowledge and strategies related to personal development. The inputs for the AHEAD intervention include a series of six in-person workshops of 8-10 athletes. Following an introduction session, the remaining five workshops focussed on self-awareness, goal setting, reflection, perspective, and evaluation. The outputs outline the result of the AHEAD intervention and explore whether the activities occur as intended. The outcomes are the expected results at the end of AHEAD intervention (i.e., knowledge and strategies related to personal development). In addition, the logic model also delineates the overall impact of the AHEAD intervention, namely personal development.

Figure 4.3

Refined Logic Model of the AHEAD Intervention
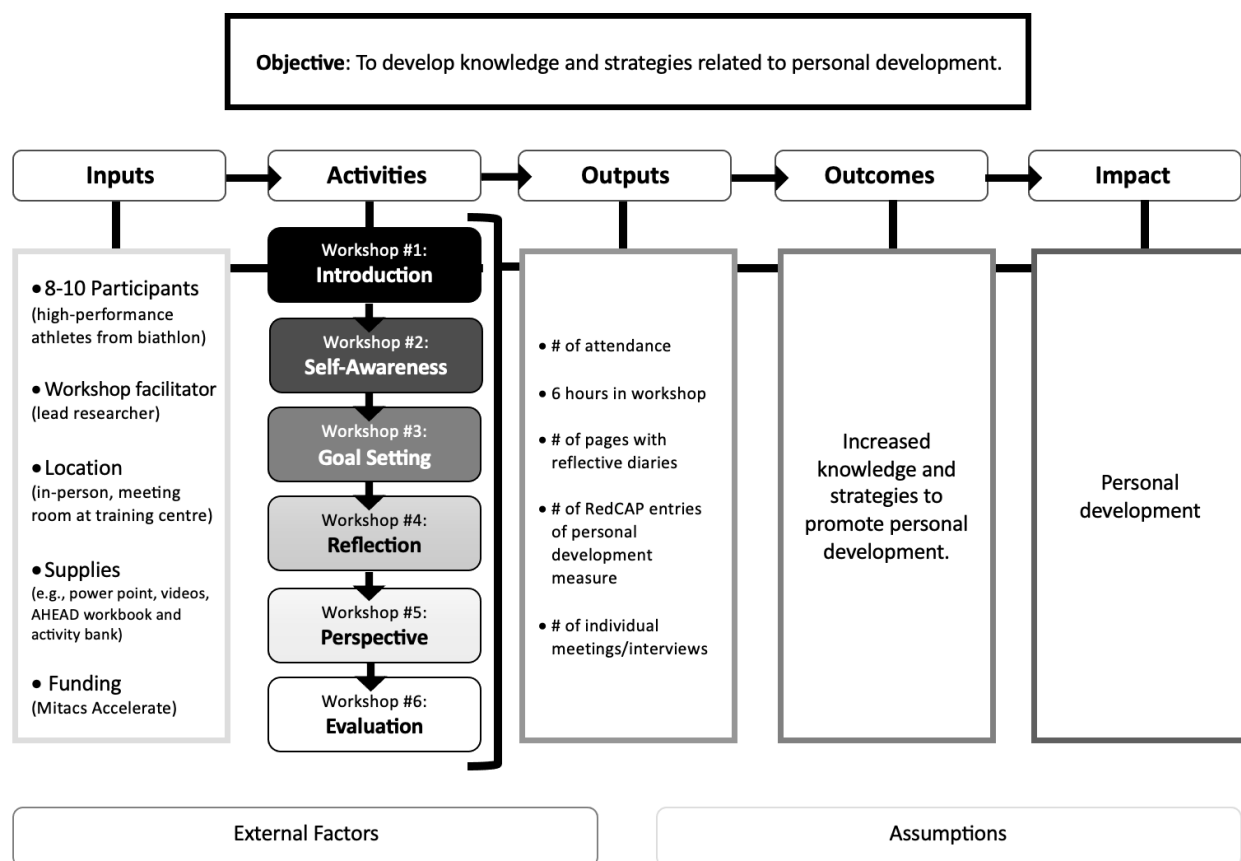
TIDieR-PHP Checklist and Description of the AHEAD Intervention

In the following sections, data aligning with the 9-items TIDieR-PHP checklist are presented, with a particular focus on ideas that helped to refine the AHEAD intervention.

Item 1: Brief Name

The first item addresses the intervention name and a brief description of the intervention (Campbell et al., 2018). The AHEAD intervention name and description was seen as "very self-explanatory, and like, flows. It makes sense. You go step by step, by step by step. I think that those are all important things" (A12, FG6). Furthermore, A3 (FG3), commented:

I like how [AHEAD] is looking at things from more of a holistic perspective. It's addressing all life contexts. I think a lot of the issues that people have as athletes … comes more

from your "overall" load, not just your training load. And I think that kind of gets ignored in

a lot of interventions. … Whereas [AHEAD] seems like it's more looking at how are you

going to operate with your mindset within your lifestyle, and I like that.

In addition to discussing the name and brief description, several participants also

commented on the AHEAD logo (which is a reflection of my attempts to capture relevant

feedback from participants who did not necessarily neatly fit with the TIDiER-PHP checklist).

There were some mixed opinions about the first draft of the logo. Although some participants

liked it, others were more critical. As A14 (FG6) put it: "The AHEAD logo definitely took me a

minute to read. In terms of just like the graphic design." Based on this feedback and other

comments provided by participants, I decided to retain the AHEAD name but modified the logo to

improve its readability and visual appeal (see Appendix D).

Item 2: Why

This item refers to the description of the logic and rationale of the intervention (Campbell

et al., 2018). Participants shared their thoughts about the general logic of the AHEAD

intervention. For example, TL2 (FG1) said that personal development "seems like a very needed

thing right now, especially with the school age athletes that are saying, 'well, can I be an athlete

and a student?'"A1 identified an (intended) link between the intervention logic and the

intervention elements (i.e., workshop topics). She said:

I think the biggest thing is [AHEAD] gives you a sense of purpose, but then a sense of

direction. … You're working towards something that will allow for improvement, which is, I

think once you're becoming a high-performance athlete, that's what you want. … And

that's why I think with the activities you have; it sets benchmarks.

Participants also discussed the proposed content of the workshops. Following the

introduction session, the first AHEAD strategy athletes learn is self-awareness. C8 (FG7) said

"the biggest first step in any mental training program is making sure … the athlete is self-aware

of what's happening in their mind and how their mind is working." The second strategy of goal

setting was somewhat debated. TL1 shared the following perspective on goal setting:

> I don't think you always have to write [goals] down, but I think for some people at least,
>
> writing it down cements it; makes it more real. But you need have something. You can't
>
> just go out willy-nilly and just hope it all works out or something. I just don't think that's an
>
> effective strategy [to personal development].

The third strategy was intended to teach about reflection. A15 said:

> I really like the reflection workshop. … Honestly, the best way to do it is talking through it
>
> … with a group or talking through it with just one other person. Or just walking
>
> through things and being like, "Why did that happen? How could I have done different?"
>
> The fourth strategy of the AHEAD intervention is perspective, which tended to be viewed

as one of the more complicated strategies. As A2 (FG3) said, "perspective is a lot more difficult

… [Maybe it] is a bit easier once you've built those skills." The last strategy of AHEAD is

evaluating. A2 (FG3) also believed evaluation would be useful because:

> Having an understanding [of] what evaluating is and then coming back at the end of the
>
> season and looking at it. Then, it would be really productive coming back into next
>
> season because you've evaluated what worked and what didn't work from last season,
>
> and you can build on it again in the self-awareness.

Item 3: What Materials

This item refers to the materials to be used in the intervention (Campbell et al., 2018).

Participants discussed the AHEAD intervention documents, online versus handouts, activities/

activity bank, homework, as well as commenting on how the materials should be used. In terms

of the AHEAD documents, C3 (FG2) shared: "I just love how every page is structured as a visual

learner." Participants liked that the initial overview of the AHEAD intervention (see Appendix B)

was a "neatly summarized version" (TL1), that could provide an opportunity to see the "program

that's laid out [in] very simple terms. For [athletes] to see what [they]'re getting out of [AHEAD]: … Here's what I will work on, here's an overview. It's catchy, it's done right." (C5, FG2).

Most participants suggested that both hard-copy materials (i.e., handouts) and access to an online version of the AHEAD intervention presentations would be useful. A6 explained that if the materials were only provided online, she would actually "just bring my iPad because if you email it to us first, then I can just download it and then take my notes on it. … But I think paper is better. And if we have stickers that'll be sweet."

Many coaches were particularly curious about the AHEAD intervention activities, which resulted in the creation of the AHEAD activity bank (see Appendix E). C5 (FG2) said she would "definitely use [the activity bank] in a heartbeat." A6 said that the activity bank "is really something that's valuable, especially for coaches because as coaches we are used to using tools … and I think that this could be a similar idea. … I think would be really valuable and impactful for the athletes."

There was quite a lot of discussion about the use of homework in the intervention. C7 supported the idea of using homework and said: "Maybe there's homework or a little takeaway that they have to come back to the next [workshop] that they've thought through and reflected … and bring something to the next one that then it's like extends the learning." However, A2 (FG3) cautioned against having mandatory homework, but nonetheless suggested that "having the option" would be valuable. A12 (FG6) furthered this perspective saying "if people want to do [homework], that's awesome. But yeah, if it's pivotal for the next session, that could be problematic." The terminology of "homework" was also challenged, as A1 noted "I wouldn't use the word 'homework' because that just makes it sound like a chore." Participants suggested that activities scheduled outside of the AHEAD intervention workshop setting could be called "mental workouts" (TL5), "daily practice" (C8), or "bonus activity" (A4).

Item 4: What and How

This item describes what and how the intervention was planned to be delivered (Campbell et al., 2018). Participants highlighted what they liked about AHEAD and how aspects (e.g., activities, Personal Development [PD] Buddy idea, group size) may help promote athletes' personal development. In terms of the activities, A12 (FG6) addressed how he preferred several hands-on activities "that by the end of [AHEAD] you're like, 'Oh, I understand what you're trying to say.' It can be [activities] you do as a group, like team building, group discussions, or learning." TL3 added the idea of an "application piece" as part of the activities, including something tangible and actionable. He said: "If they walk out with something tangible and action that they can do for the next week, like, 'hey, for the next three days, here is a practice or whatever it is,' … They'll come back if they see that [AHEAD] is having an impact."

Participants spoke about the PD Buddy system, an idea that I came up with in the early stages of data generation. As part of the PD Buddy system, athletes will be assigned into pairs, with one participant that will be their PD Buddy; a person they will work with throughout the workshop activities. Athletes liked the PD Buddy idea "for bouncing ideas" (A12, FG6), having "another set of eyes to help out with reminders" (A9), as well as "someone to talk to about [personal development]. [PD Buddy] almost creates a better team atmosphere" (A7).

Lastly, participants shared their views on an ideal group size for in-person workshops. A1 said she would prefer a "smaller group, like 10 or less. Just because if you're talking about your own experiences and stuff in a big group and depending on who's in the group, you might not want to open up as much." The risk of having too many workshop participants is that "people aren't sharing because they don't want to share in front of that many people" (A14, FG6).

Item 5: Who Provided

This item refers to the person who will provide (i.e., deliver) the intervention and their expertise and training (Campbell et al., 2018). At the point when the participants in the current study co-designed the interventions it had yet to be decided who would lead the intervention. Participants discussed the value of having me – who was familiar as a high-performance coach,

the training centre, and the sport of biathlon – as the AHEAD facilitator. A8 (FG4) talked about the

benefits of my biathlon background. She said, "You're in a unique position where you actually

understand biathlon. … I think that's where athletes might find [AHEAD] a lot more applicable and

valuable and want to be, 'OK, I actually am going to like do the practice.'" Similarly, TL3 shared

his perspective about me providing the intervention, suggesting that, "You'll have good buy in

from the athletes who know you that work with you with [team]. They'll be like 'She's great. She

listens to us.'" However, this participant also cautioned that "it'll be daunting for athletes that you

don't have a personal relationship with to ask for that kind of time commitment. … I think there's

going to be challenges around that, around people you don't have a personal connection with."

Item 6: Where

Item 6 refers to the type of location and the scope of the intervention, such as focusing

nationally or regionally (Campbell et al., 2018). In general, participants found that an in-person

AHEAD intervention would mean a regional focus with better impact, whereas an online version

of AHEAD could potentially have a better national reach but less impact. Nonetheless, overall,

the athletes' preference was unanimously in favour of having in-person workshops, which

perhaps was related to the extensive use of online meetings during the COVID-19 pandemic. C6

said, "I've noticed in the last year the attendance and just engagement with Zoom has been a lot

harder. So, I would say in-person would be preferable." In-person delivery was also viewed as

an opportunity for athletes to build better "relationships with their teammates" (TL2, FG1) and

that it was "easier to feel connected and be vulnerable when you're in-person because [the

computer] is not going to freeze. You can get their feeling and stuff and be more personal" (A5).

Item 7: When and How Often

The following item describe the number, duration, and scheduling of the intervention

(Campbell et al., 2018). C8 (FG7) said: "You don't want to overwhelm them with [AHEAD]. So, I

think it's just being careful and finding the right dose of it because if you give it too much, … too

quickly, it can quickly turn into a new crutch." Meeting for one hour, once per week, was the

favored option as it was argued as "one hour is probably the attention limit or the information intake limit" (C7). Furthermore, participants suggested that the timing of the workshops should consider the phase of the season. A5 shared that it would be ideal to plan the AHEAD workshops "around what's going on in training. … Being aware of the load of training, mental load, physical load, and tying it in that way. So, it's not adding too much more on what's already happening." Based on the participants feedback, the AHEAD intervention was refined to be one-hour workshops, once per week, over six consecutive weeks, during the preparation phase of the season to help the athletes learn strategies they could use during the competitive phase.

Item 8: Planned Variations

This item refers to variations that are planned as part of designing of the intervention (Campbell et al., 2018). The main topic relating to variations of the AHEAD intervention were finding ways of taking an individualized approach. Participants recommended "having the whole [AHEAD] feel somewhat self-guided" (A3). One way of making AHEAD self-guided was to "customize" by "showing them multiple ways … to do that strategy" (A5) and providing "options of what they would prefer to do that would be the most meaningful for them" (C7).

Item 9: How Well

The final item describes strategies or actions to maintain fidelity of the intervention (Campbell et al., 2018). Participants discussed the importance of establishing buy-in from the athletes even before the AHEAD intervention starts to maintain fidelity throughout the intervention. C8 (FG7) noted that "helping them realize the importance of mental training and then getting them excited about [AHEAD] or interested, at least before you start the program, I think is key. … Having the athletes being open and receptive before you even start." Sharing a similar view, A7 (FG4) said "you can tell an athlete, 'Oh, it's going to really help you' and they'll never do it. … But making a way … to try to motivate someone to do [AHEAD]." Explain "why" or offering exercises could help in establishing buy-in from athletes. "Presenting [AHEAD] to the

athletes of why they need to work on it beforehand" (C8, FG7) as well as "doing an exercise, it kind of proves a point. … A wakeup call exercise [is] a good way to engage people" (A8, FG4).

Discussion

The purpose of this study was to engage athletes and stakeholders in the co-design of a personal development intervention for high-performance sport, called AHEAD. This study is one of the first direct demonstrations of using a co-design approach and TIDieR-PHP checklist to design and improve a sport psychology personal development intervention. In this regard, participants involvement as co-designers of the AHEAD intervention is hypothesized to increase the intervention effectiveness by establishing buy-in and insights into new intervention priorities, plans, and strategies (Leask et al., 2019).

The current study findings initiated several changes to the intervention design, including revision of the AHEAD logo to increase its readability and visual appeal. I did not change the intervention name or brief description (item 1), which contrasts with the outcome of a study by Cumming et al. (2022) that revised the intervention name to fit participants' needs. Item 2 (why) discussed the logic and rationale of the AHEAD intervention. There is a need to balance the feedback of end-users and stakeholders with the researchers' knowledge and use of the literature (Pain & Harwood, 2009). This reflects the notion of intervention "fit" whereby end-user and stakeholder feedback are most valuable for ensuring the design, content, and activities fit the athletes' needs (Randall & Nielsen, 2012).

Participants shared their perspectives regarding who should provide the AHEAD intervention (item 5). The consensus was that it should be provided by myself, and some participants cautioned that the intervention could be daunting for athletes who did not have a pre-established relationship with me. This is not to suggest an intervention can only be delivered by someone with experience in a sport. Rather, it highlights the importance of establishing authentic and trusting relationship between the athlete and intervention facilitator in sport psychology settings (e.g., Dohme et al., 2020; Henriksen et al., 2019).

Regarding the materials to be used in the AHEAD intervention (item 3), researchers (e.g., Dohme et al., 2020) have suggested that it is important to find relatable workshop materials, such as photos, videos, and specific examples based on the participants' feedback. My findings highlighted a preference for both online and hardcopy access to workshop materials. Furthermore, participants (especially the athletes themselves) unanimously expressed a preference for in-person delivery (item 6). I speculate that the desire for in-person interaction may be related to the fact that many interpersonal interactions were curtailed or restricted during the COVID-19 pandemic. Furthermore, with reference to item 6 (location), participants provided insightful comments indicating that while in-person delivery would be limited to a regional scope, it would facilitate better impact. In contrast, online delivery could potentially have a better national reach but less impact. This is intriguing from an intervention research perspective. Online sport psychology interventions are gaining traction (see Price et al., 2022), but some researchers have suggested that in-person delivery will enhance the likelihood of a successful intervention (Henriksen et al., 2019). Perhaps the most relevant implications are that it is important to assess end-users' and stakeholders' preferences when designing an intervention, to consider the context, and to balance scope (e.g., regional versus national) with impact.

Item 7 (when and how often) considers the intervention dosage, including the number, duration, and scheduling of the AHEAD intervention. By consulting end-users and stakeholders, I found that the optimal AHEAD dosage was one-hour workshops, scheduled weekly, over six consecutive weeks. Although some personal development interventions have delivered up to 4 hours long workshops (e.g., Dohme et al., 2020), participants in the current study preferred shorter sessions. The resulting modifications to the AHEAD intervention based on this feedback highlights the value of tailoring interventions to the sport contexts, as well as the athletes' and stakeholders' preferences (Henriksen et al., 2019). Results on item 8 (planned variations) mainly focussed on taking an individualized approach to successfully promote personal development. Feedback suggested the intervention could be individualized by offering options for self-guided

activities that are customized to the participants and their sport. Finally, item 9 (how well) considered what actions the AHEAD intervention could take to maintain fidelity. As unsuccessful interventions struggle to maintain participation rates (Henriksen et al., 2019), it was particularly important to find ways to make athletes motivated to participate in the AHEAD intervention.

Although this study provides an example of incorporating end-users' and stakeholders' feedback in the co-design of a sport psychology intervention, it is important to acknowledge that the AHEAD intervention has yet to be delivered and evaluated in a high-performance biathlon context. As such, it is not known whether the co-design approach leads to improved outcomes. It would be possible to deliver the initial and final versions of the AHEAD to assess differences in outcomes. However, this may not be practically or logistically feasible, or fair to athletes. Rather, it would be more logical to evaluate the refined AHEAD intervention. Potential approaches could include mixed methods evaluation and/or single-case research design because it would be difficult to achieve randomization in a high-performance sport setting. Another issue to consider is the specific focus on the AHEAD intervention on the sport of biathlon. Whereas this is likely a strength in the context of the current research, it does likely mean that – beyond imagery and graphics – the content and delivery may not appeal to other groups.

Conclusion

The present study suggests several practical implications to co-design interventions using end-users' and stakeholders' feedback. Specifically, this study represents a first attempt towards developing a sport psychology intervention by integrating several tools for intervention development – co-design, logic model, TIDieR-PHP checklist – that to my knowledge, have not been directly linked to sport psychology interventions.

References

Barker, J. B., Evans, A. L., Coffee, P., Slater, M. J., & McCarthy, P. J. (2014). Consulting on

tour: A dual-phase personal-disclosure mutual-sharing intervention and group

functioning in elite youth cricket. *The Sport Psychologist*, *28*(2), 186–197.

https://doi.org/10.1123/tsp.2013-0042

Campbell, M., Katikireddi, S. V., Hoffmann, T., Armstrong, R., Waters, E., & Craig, P. (2018).

TIDieR-PHP: A reporting guideline for population health and policy

interventions. *BMJ*, *361*, 1–5. https://doi.org/10.1136/bmj.k1079

Cumming, J., Whiting, R., Parry, B. J., Clarke, F. J., Holland, M. J., Cooley, S. J., & Quinton, M.

L. (2022). The My Strengths Training for Life™ program: Rationale, logic model, and

description of a strengths-based intervention for young people experiencing

homelessness. *Evaluation and Program Planning*, *91*, 1–12.

https://doi.org/10.1016/j.evalprogplan.2021.102045

Devaney, D. J., Nesti, M. S., Ronkainen, N. J., Littlewood, M., & Richardson, D. (2018). Athlete

lifestyle support of elite youth cricketers: An ethnography of player concerns within a

national talent development program. *Journal of Applied Sport Psychology*, *30*(3),

300–320. https://doi.org/10.1080/10413200.2017.1386247

Dewey, J. (1931). *Philosophy and civilization.* Minton.

Dohme, L. C., Bloom, G. A., Piggott, D., & Backhouse, S. (2020). Development, implementation,

and evaluation of an athlete-informed mental skills training program for elite youth

tennis players. *Journal of Applied Sport Psychology*, *32*(5), 429–449.

https://doi.org/10.1080/10413200.2019.1573204

Doyle, L., McCabe, C., Keogh, B., Brady, A., & McCann, M. (2020). An overview of the

qualitative descriptive design within nursing research. *Journal of Research in

Nursing*, *25*(5), 443–455. https://doi.org/10.1177/1744987119880234

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced*

Nursing, *62*(1), 107–115. https://doi.org/10.1111/j.1365-2648.2007.04569.x

Fraser, M. W., Richman, J. M., Galinsky, M. J., & Day, S. H. (2009). *Intervention research: Developing social programs*. Oxford University Press.

Fraser-Thomas, J., Beesley, T., Dickler, L., Harlow, M., Mosher, A., Preston, C., & Wolman, L. (2017). Developing talent while promoting positive youth development: A balancing act. In J. Baker, S. Cobley, J. Schorer, & N. Wattie (Eds.), *Routledge handbook of talent identification and development in sport* (pp. 377–393). Routledge.

Giacobbi, P. R., Poczwardowski, A., & Hager, P. (2005). A pragmatic research philosophy for sport and exercise psychology. *The Sport Psychologist*, *19*(1), 18–31. https://doi.org/10.1123/tsp.19.1.18

Gitlin, L., & Czaja, S. (2016). *Behavioral intervention research: Designing, evaluating, and implementing*. Springer Publishing Company.

Gledhill, A., & Harwood, C. G. (2019). Toward an understanding of players' perceptions of talent development environments in UK female football. *Journal of Applied Sport Psychology*, *31*(1), 105–115. https://doi.org/10.1080/10413200.2017.1410254

Hall, A. J., Jones, L., & Martindale, R. J. (2019). The Talent Development Environment Questionnaire as a tool to drive excellence in elite sport environments. *International Sport Coaching Journal*, *6*(2), 187–198. https://doi.org/10.1123/iscj.2018-0041

Hardcastle, S. J., Tye, M., Glassey, R., & Hagger, M. S. (2015). Exploring the perceived effectiveness of a life skills development program for high-performance athletes. *Psychology of Sport and Exercise*, *16*(3), 139–149. https://doi.org/10.1016/j.psychsport.2014.10.005

Harwood, C. G., & Johnston, J. (2016). Positive youth development and talent development: Is there a best of both worlds? In. N. L. Holt (Ed.), *Positive youth development through sport* (2nd ed., pp. 113–125). Routledge.

Hauser, L. L., Harwood, C. G., Höner, O., O'Connor, D., & Wachsmuth, S. (2022). Talent

development environments within sports: A scoping review examining functional and dysfunctional environmental features. *International Review of Sport and Exercise Psychology*, 1–27. https://doi.org/10.1080/1750984X.2022.2129423

Henriksen, K., & Stambulova, N. (2017). A holistic ecological approach. In J. Baker, S. Cobley, J. Schorer & N. Wattie (Eds.), *Routledge handbook of talent identification and development in sport* (pp. 271–284). Routledge.

Henriksen, K., Storm, L. K., Stambulova, N., Pyrdol, N., & Larsen, C. H. (2019). Successful and less successful interventions with youth and senior athletes: Insights from expert sport psychology practitioners. *Journal of Clinical Sport Psychology*, *13*(1), 72–94. https://doi.org/10.1123/jcsp.2017-0005

Henriksen, K. (2015). Developing a high-performance culture: A sport psychology intervention from an ecological perspective in elite orienteering. *Journal of Sport Psychology in Action*, *6*(3), 141–153. https://doi.org/10.1080/21520704.2015.1084961

James, W. (1907). *What Pragmatism Means.* Longmans Green Co.

Jones, M. I., & Lavallee, D. (2009). Exploring the life skills needs of British adolescent athletes. *Psychology of Sport and Exercise*, *10*(1), 159–167. https://doi.org/10.1016/j.psychsport.2008.06.005

Jones, M. I., Lavallee, D., & Tod, D. (2011). Developing communication and organization skills: The ELITE life skills reflective practice intervention. *The Sport Psychologist*, *25*(2), 159–176. https://doi.org/10.1123/tsp.25.2.159

Kim, H., Sefcik, J. S., & Bradway, C. (2017). Characteristics of qualitative descriptive studies: A systematic review. *Research in Nursing & Health*, *40*(1), 23–42. https://doi.org/10.1002/nur.21768

Krueger, R. A. (1998). *Developing questions for focus groups.* Sage.

Larsen, C. H., Alfermann, D., & Christensen, M. K. (2012). Psychosocial skills in a youth soccer academy: A holistic ecological perspective. *Sport Science Review*, *21*, 51–74.

https://doi.org/10.2478/v10237-012-0010-x

Larsen, C. H., Alfermann, D., Henriksen, K., & Christensen, M. K. (2013). Successful talent

development in soccer: The characteristics of the environment. *Sport, Exercise, and*

Performance Psychology, 2(3), 190–206. https://doi.org/10.1037/a0031958

Larsen, C. H., Alfermann, D., Henriksen, K., & Christensen, M. K. (2014). Preparing footballers

for the next step: An intervention program from an ecological perspective. *The Sport*

Psychologist, *28*(1), 91–102. https://doi.org/10.1123/tsp.2013-0015

Leask, C. F., Sandlund, M., Skelton, D. A., Altenburg, T. M., Cardon, G., Chinapaw, M. J., De

Bourdeaudhuij, I., Verloigne, M., & Chastin, S. F. (2019). Framework, principles and

recommendations for utilising participatory methodologies in the co-creation and

evaluation of public health interventions. *Research Involvement and Engagement*, *5*(1),

1–16. https://doi.org/10.1186/s40900-018-0136-9

Milne, J., & Oberle, K. (2005). Enhancing rigor in qualitative description. *Journal of Wound*

Ostomy & Continence Nursing, *32*(6), 413–420.

https://doi.org/10.1097/00152192-200511000-00014

Neergaard, M. A., Olesen, F., Andersen, R. S., & Sondergaard, J. (2009). Qualitative

description – The poor cousin of health research? *BMC Medical Research Methodology*,

9(52), 1–5. https://doi.org/10.1186/1471-2288-9-52

Pain, M., & Harwood, C. (2009). Team building through mutual sharing and open discussion of

team functioning. *The Sport Psychologist*, *23*(4), 523–542.

https://doi.org/10.1123/tsp.23.4.523

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Sage.

Price, D., Wagstaff, C. R., & Thelwell, R. C. (2022). Opportunities and considerations of new

media and technology in sport psychology service delivery. *Journal of Sport Psychology*

in Action, *13*(1), 4-15. https://doi.org/10.1080/21520704.2020.1846648

Randall, R., & Nielsen, K. (2012). Does the intervention fit? An explanatory model of intervention success and failure in complex organizational environments. In C. Biron, M. Karanika-Murray, & C. Cooper (Eds.), *Improving organizational interventions for stress and well-being* (pp. 120–134). London: Routledge.

Sandelowski, M. (1993). Theory unmasked: The uses and guises of theory in qualitative research. *Research in Nursing & Health*, *16*(3), 213–218. https://doi.org/10.1002/nur.4770160308

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health*, *23*(4), 334–340. https://doi.org/10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-G

Sport Information Resource Centre (2022). *What we heard: Findings of government consultations and a national survey to inform the Canadian Sport Policy 2023-2033.* https://sirc.ca/canadian-sport-policies/what-we-heard/

Sullivan-Bolyai, S., Bova, C., & Harper, D. (2005). Developing and refining interventions in persons with health disparities: The use of qualitative description. *Nursing Outlook*, *53*(3), 127–133. https://doi.org/10.1016/j.outlook.2005.03.005

Vargas, C., Whelan, J., Brimblecombe, J., & Allender, S. (2022). Co-creation, co-design, co-production for public health: A perspective on definition and distinctions. *Public Health Research & Practice*, *32*(2), 1–6. https://doi.org/10.17061/phrp3222211

Vealey, R. S., Cooley, R., Nilsson, E., Block, C., & Galli, N. (2019). Assessment and the use of questionnaires in sport psychology consulting: An analysis of practices and attitudes from 2003 to 2017. *Journal of Clinical Sport Psychology*, *13*(4), 505–523. https://doi.org/10.17061/phrp3222211

Wagstaff, C. R., Hanton, S., & Fletcher, D. (2013). Developing emotion abilities and regulation strategies in a sport organization: An action research intervention. *Psychology of Sport and Exercise*, *14*(4), 476–487. https://doi.org/10.1016/j.psychsport.2013.01.006

CHAPTER 5: Study 3 – A Mixed Methods Evaluation

A Mixed Methods Evaluation of the AHEAD Intervention

Using a Multiple-Baseline Across Behaviours Single-Case Design

A version of this chapter is being prepared for submission to the journal Psychology of Sport and Exercise: Jørgensen, H., Mosewich, A. D., McHugh, T.-L. F., Koster, Y., & Holt, N. L. entitled "A mixed methods evaluation of the AHEAD intervention using a multiple-baseline across behaviours single-case design."

I delivered the AHEAD intervention; designed the evaluation; collected, analyzed, and interpreted the data; and prepared the initial draft of the manuscript. A. D. Mosewich provided feedback on the quantitative measures and qualitative interview guide, in addition to providing feedback on the mixed methods results and the manuscript. My co-supervisor, T.-L. F. McHugh provided feedback on the initial evaluation design. Y. Koster was my research assistant and served as a discussion partner regarding the workshop materials. He also provided feedback on the quantitative measures and conducted all the post-intervention interviews. N. L. Holt was the supervisory author and provided feedback on the evaluation design, interpretation of the mixed methods results, and helped to improve and prepare the manuscript. All co-authors will be offered to provide feedback and edits on the manuscript prior to submission to the journal.

A Mixed Methods Evaluation of the AHEAD Intervention

Using a Multiple-Baseline Across Behaviours Single-Case Design

Personal development can be conceptualized as a continual and individualized process whereby athletes strive to improve across life contexts (Jørgensen et al., 2023), which can help high-performance athletes deal with transitions, performance issues, and personal challenges (Devaney et al., 2018). Finding ways to promote personal development is an essential issue for sport organizations. For instance, a recent survey showed that 45% of sport participants and stakeholders in Canada think personal development is an important consideration to advance sport in the next 10 years (SIRC, 2022). To date, Canadian athletes have been encouraged to create personal development plans to prepare for the high-performance sport pathway (CHPSS, 2019). However, scholars have argued that more attention must be paid to personal development in sport, especially in high-performance sport environments (Hauser et al., 2022). In the current study, I conducted a mixed methods evaluation of a personal development intervention for high-performance athletes (ages 18-25), called AHEAD.

Personal development is a complex process that requires athletes to actively use strategies to process their experiences (Jørgensen et al., 2023). Strategies to promote personal development may include increasing self-awareness, goal setting, reflection, perspective (i.e., growth mindsets), and evaluation (Hardcastle et al., 2015; Jørgensen et al., 2023; Pierce et al., 2016). For example, a study conducted in a wrestling context showed that competitive youth athletes (ages 14-17) used reflection and growth mindset to acquire and transfer life skills and promote personal development (Pierce et al., 2016). Awareness and reflection are strategies that can facilitate life skills transfer across multiple contexts (Pierce et al., 2017). A study conducted with young high-performance biathletes (ages 17-21) showed that they used observational learning and reflection to develop life skills (Jørgensen et al., 2020). However, some high-performance athletes may lack the ability to engage in strategies such as awareness and reflection, which may constrain their personal development (Jordalen et al., 2020).

Some personal development interventions have been implemented in high-performance sport environments. Generally, such interventions have either focused on teaching life skills (Hardcastle et al., 2015; Jones et al., 2011) or psychological skills (Dohme et al., 2020; Larsen et al., 2014) as a means to promote personal development. For example, Larsen et al. (2014) developed and delivered an intervention to players on an under-17 soccer team. The intervention was informed by the findings of Larsen et al.'s (2012, 2013) case studies that identified three weaknesses of the same soccer team: (a) lack of relations and role models, (b) lack of sport psychology, and (c) lack of personal development opportunities. The intervention included a series of personal development workshops focusing on psychological skills, both on and off the soccer field. To evaluate the intervention, informal meetings were arranged with an unspecified number of athletes and key stakeholders. The intervention was evaluated as successful because it created relations between players on the under-17 team and elite senior players. Further, participants described goal setting as important for personal development, supporting the athletes' motivation, and giving them a sense of control of their own development. Whereas the intervention revealed some positive results, the evaluation was methodologically limited in that it did not involve quantitative assessments.

Hardcastle et al. (2015) examined the perceived effectiveness of the *Developing Champions* intervention, which targeted a range of life skills. This intervention was delivered to competitive youth athletes (ages 13-18) and evaluated via individual interviews and focus groups with athletes, coaches, parents, and technical leaders from six different sports. The intervention was moderately successful, whereby some participants reported developing self-awareness, goal setting, reflection, and evaluation. A potential explanation of these outcomes could be the population of athletes – recruiting participants from a variety of sports and levels – which may have been a limitation of their intervention. The issue of recruiting athletes from multiple sports and levels may be that the intervention was not able to address the unique needs within the

group. Instead, future interventions could be sport-specific, targeted to athletes' personal development needs, and relevant to the sport environment.

Another example of a personal development intervention used a qualitative action-research approach to evaluate an intervention delivered to competitive tennis players (ages 8-15), which aimed to improve emotional control and focus (Dohme et al., 2020). Participants' behaviour changes were assessed using informal chats with athletes and an interview with their coach post-intervention. The intervention was successful in increasing participants' understanding and use of psychological skills and characteristics. Although most personal development interventions have used qualitative methods to evaluate intervention effectiveness, Jones et al. (2011) employed a single-case research design to evaluate the ELITE intervention. The ELITE intervention aimed to increase the use of communication and organizational skills by engaging participants in reflection. The intervention was delivered to five high-performance athletes from tennis and field hockey (ages 18-20). The evaluation found overall a positive effect. Specifically, reflection in-action and on-action were highlighted as useful strategies for developing life skills. However, a limitation of their intervention was that Jones et al. did not analyze how participants' reflection behaviours changed throughout the ELITE intervention. As such, the effectiveness of specific elements of their intervention remains unknown.

The current study was designed to address three main limitations of the existing personal development literature. First, although there are some personal development interventions in place, it is necessary to evaluate its effectiveness by including repeated measurements and control groups (Larsen et al., 2014). Such an evaluation could be performed by utilizing Kadzin's (2021) evaluation criteria of single-case design whereby multiple assessments occur over time and "using the subjects as their own controls" (p. 57). Second, mixed methods approaches can provide nuanced data about intervention effectiveness (Onghena et al., 2019). Third, implementing idiographic and nomothetic analysis may help to provide insights into changes arising from an intervention at both individual and group levels.

The current evaluation of the AHEAD intervention also incorporated ideas from reviews of factors contributing to successful sport psychology interventions. For instance, Henriksen et al. (2019) argued that interventions should promote participants' self-awareness, in-action reflection, and goal setting to enhance both performance and personal development. Sport psychology scholars (e.g., Barker et al., 2013; Harwood & Thrower, 2019) have also stressed that interventions should be sport-specific and include a holistic multimodal package of skills and strategies. A sport-specific approach could help researchers identify effective strategies that are relevant for the athletes' age and development stage within a particular sport.

Methodologically, the current study was guided by a single-case research design (Kazdin, 2021), and used a mixed methods approach (Onghena et al., 2019). Single-case designs are useful in applied research to evaluate intervention effectiveness by assessing behaviour changes at an individual level over time (Barker et al., 2013). Specifically, a mixed methods approach to single-case design (Onghena et al., 2019) was used to evaluate the effectiveness of the AHEAD intervention. Mixed methods research can be defined as integration of quantitative and qualitative data to generate insights that would otherwise be inaccessible (Poth, 2018). Single-case research resembles a sequential mixed methods design (Onghena et al., 2019), using quantitative data for numerical precision and qualitative data for descriptive precision by examining participants' changes (Kitchenham, 2010).

The purpose of this study was to evaluate the effectiveness of the AHEAD intervention. Three research questions were addressed: (a) Do participants in the AHEAD intervention improve behaviours associated with personal development (quantitative)? (b) What are the participants' experiences of participating in the AHEAD intervention (qualitative)? (c) How does the AHEAD intervention contribute to the participants' personal development (mixed methods)?

Method

Design

A multiple-baseline across behaviours single-case study design (Kazdin, 2021) was used to examine changes in personal development across five behaviours (self-awareness, goal setting, reflection, perspective, and evaluation). Intervention effectiveness was assessed within the confines of the single-case study design (Barker et al., 2020; Kazdin, 2021). That is, the intervention evaluation is based on inferences that are drawn by using the participants as their own control. This means that the impact of the intervention was examined in relation to the participants' behaviour changes over time (Kazdin, 2019). Using this approach, an intervention is deemed to be effective if changes are observed in the targeted behaviours while the other behaviours remain at baseline levels (Kazdin, 2019). Data were collected using mixed methods, which allowed me to develop a comprehensive and nuanced understanding of the intervention's effectiveness (Onghena et al., 2019). The study design consisted of a baseline, intervention, and post-intervention phase (see Figure 5.1).

Figure 5.1

A Multiple-Baseline Across Behaviours Single-Case Study Design Incorporating Mixed Methods
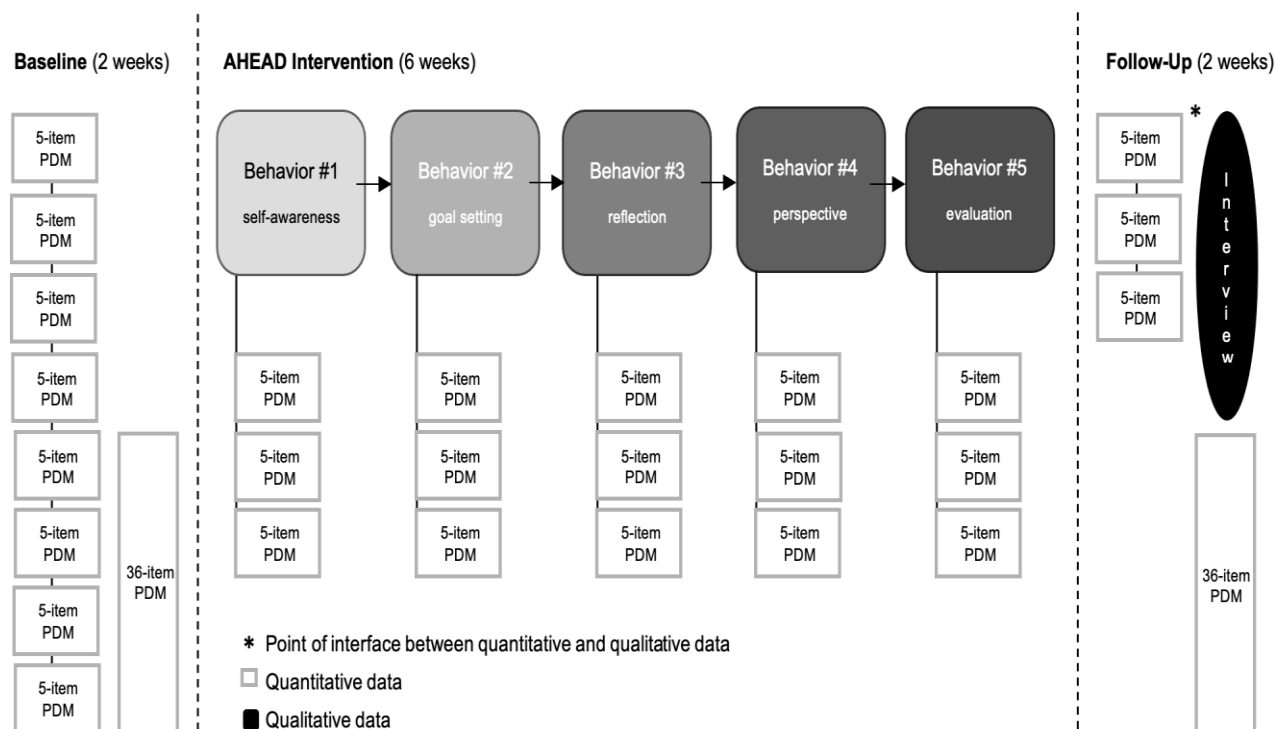
Intervention

The AHEAD intervention was developed using a co-design process, which is presented in Chapter 4. The intervention was comprised of one-hour workshops, scheduled weekly over six consecutive weeks (see Appendix F). After the introduction workshop, the remaining workshops each focused on one of five baseline behaviours. In addition to the weekly workshops, participants were encouraged to engage in "mental workouts" at home, by completing activities outlined in the AHEAD activity bank (see Appendix E).

Participants

To be eligible to participate in this study, participants must (a) have been members of a high-performance biathlon training centre, and (b) participate in more than half of the workshops. Research Ethics Board approval was obtained. Participants were recruited from a biathlon training centre in Canada. All the 16 athletes at the training centre initially agreed to participate in this study, however, not all participants were able to partake in all the workshops. Specifically, nine participants (A2, A5, A7, A8, A10, A11, A12, A13, A14) attended all the workshops, five participants (A1, A4, A6, A9, A16) missed one workshop, and two participants (A3 and A15) were excluded from the study because they missed three (of the six) workshops due to conflicting schedules or sickness. In terms of previous intervention experience, 15 participants stated having experience with mental training from the past, but only six participants had attended a personal development workshop. Participants provided written informed consent before the study started and completed a demographics information form (see Appendix G), which is outlined in Table 1.

Table 5.1

AHEAD Intervention Participant Characteristics

Participant	Age	Gender	Cultural Background	Student and/or Work	Years in Biathlon	Years at a High-Performance Training Centre	International Competition Experience	Experience with Mental Training	Experience with PD Workshops	Workshop Attendance					
										1	2	3	4	5	6
A1	18	M	European	W	10	2	Y	Y	Y	X	X	X		X	X
A2	19	W	European	S	7	1	Y	Y	N	X	X	X	X	X	X
A3	18	W	European	W	10	1	Y	Y	N	X	X			X	
A4	22	W	European	S/W	6	4	Y	Y	N	X		X	X	X	X
A5	18	W	European	S/W	8	1	Y	N	N	X	X	X	X	X	X
A6	17	M	European	n/a	5	1	Y	Y	N	X	X			X	X
A7	18	M	European	S	8	1	N	Y	Y	X	X	X	X	X	X
A8	18	M	European	S	8	1	N	Y	N	X	X	X	X	X	X
A9	18	M	European	W	9	1	Y	Y	N	X	X			X	X
A10	23	M	European	W	14	5	Y	Y	N	X	X	X	X	X	X
A11	19	W	European	W	10	1	Y	Y	Y	X	X	X	X	X	X
A12	18	M	European	n/a	14	1	Y	Y	N	X	X	X	X	X	X
A13	18	W	European	S/W	8	1	Y	Y	Y	X	X	X	X	X	X
A14	19	M	European	W	10	1	Y	Y	Y	X	X	X	X	X	X
A15	25	W	European	n/a	15	8	Y	Y	Y	X		X	X		
A16	19	W	European	S	7	1	Y	Y	N	X	X	X		X	X

Quantitative Data Collection

Quantitative data were collected using the REDCap online platform. Two quantitative measures were used: a 5-item Personal Development Measure (PDM) and a 36-item PDM. The 5-item PDM was the primary measure (see Appendix H), which aimed to detect changes throughout the intervention by using time-series data (Kazdin, 2011). The secondary measure was a 36-item PDM (see Appendix I), used for baseline and post-intervention assessment (Kazdin, 2021). During the baseline phase (2 weeks), participants were asked to complete eight entries of the 5-item PDM and one entry of the 36-item PDM. The number of measurements in the baseline phase was based on recommendations for establishing a lengthy and stable baseline before intervention delivery (Barker et al., 2020). During the intervention (6 weeks), all participants completed up to 15 entries of the 5-item PDM (three times per week). Post-

intervention (2 weeks), participants completed up to three entries of the 5-item PDM and one entry of the 36-item PDM. Thirteen participants had one (or more) 5-item PDM entries, and 13 participants completed the 36-item PDM in the post-intervention phase. The total study duration was 10 weeks (April-June 2023).

5-Item PDM

The 5-item PDM was created based on a review of the literature relating to the five targeted behaviours (Biddle et al., 2003; Cronin & Allen, 2017; Love et al., 2019; Silvia, 2020). The 5-item PDM was comprised of five questions related to participants' personal development behaviours: (a) *I was aware of my inner world and how I felt* (self-awareness; Silvia, 2020); (b) *I set goals so I could stay focused on improving* (goal setting; Cronin & Allen, 2017); (c) *I was interested in reflecting on my thoughts, feelings, and behaviours* (reflection; Silvia, 2020); (d) *I have a certain amount of sport ability, and I really can't do much to change it* (perspective; Biddle et al., 2003), and; *I evaluated my thoughts, feelings, and behaviours so I could improve for next time* (evaluation; Love et al., 2019). Participants responded to the 5-item PDM daily during the baseline phase, and three times per week during the AHEAD intervention and post-intervention using a Likert-scale from 1 (strongly disagree) to 10 (strongly agree).

36-Item PDM

Self-Awareness. Self-awareness was assessed using the short Self Reflection and Insight Scale (SRIS; Silvia, 2020), which contains two factors: insight and self-reflection. The SRIS insight subscale (SRIS-IN) comprises 6-items for which participants indicate their agreement to self-awareness statements on a 7-point Likert-scale from 1 (strongly disagree) to 7 (strongly agree). Mean subscale scores were calculated for the baseline and post-intervention phases to provide an overall composite score, whereby lower mean scores indicated better self-awareness. As the items were stated negatively in the original subscale, mean scores were reversed and converted to a 10-point scale for comparison to other positively scaled measures. Although the SRIS has yet to be used in sport settings, Silvia (2020) showed that the SRIS-IN

short version is an effective tool to study young college-aged adults' individual differences in self-awareness, with good reliability (α = .83) and lack of gender-based item bias.

Goal Setting. Goal setting was assessed using the goal setting subscale from the Life Skills Scale for Sport (LSSS; Cronin & Allen, 2017). Participants responded to 7-items on a 5-point Likert scale ranging from 1 (not at all) to 5 (very much) and converted to a 10-point scale for comparison to the other scaled measures. Higher total across all items are indicative of higher levels of goal setting. Acceptable discriminant, structural, and convergent validity, as well as test-retest reliability have been shown for the LSSS (Cronin & Allen, 2017).

Reflection. Reflection was assessed using the self-refection subscale from the SRIS short version (SRIS-SR; Silvia, 2020). Participants indicated their agreement to 6-item statements regarding their engagement in and need for reflection using a 7-point Likert-scale from 1 (strongly disagree) to 7 (strongly agree) and converted to a 10-point scale for comparison to the other scaled measures. Mean subscale scores were calculated to baseline and post-intervention phases to provide an overall composite score, whereby higher scores indicate higher levels of reflection. Silvia (2020) demonstrated that the short SRIS-SR has good reliability criterion (α = .87 for the composite score) with good item discrimination.

Perspective. Perspective was assessed using the Conceptions of the Nature of Athletic Ability Questionnaire-2 (CNAAQ-2; Biddle et al., 2003), which assesses growth and fixed mindset perspectives. Individuals' mindset influences their beliefs and perspectives, which guides their interpretation process (Dweck, 2006). This measure was selected because growth and fixed mindsets were identified as being the central features of perspective during the co-design of the AHEAD intervention (see Chapter 4). For this reason, I called the fourth behaviour "perspective." Using the CNAAQ-2, participants rated 12-items on a 5-point Likert scale anchored by 1 (strongly disagree) to 5 (strongly agree). Of the 12, six items gaged growth (i.e., "I need to learn to work hard to be good at sport") and six items measured fixed (i.e., "It is difficult to change how good I am at sport"). Higher scores indicated higher beliefs in that perspective.

As the fixed mindset items were stated negatively, mean scores were reversed to facilitate the analysis, and both subscales were converted to a 10-point scale for comparison to other positively scaled measures. The CNAAQ-2 proved acceptable internal consistency for growth (α = .74) and fixed (α = .76) in an athlete sample and was an appropriate measure for assessing growth and fixed mindset in high-performance athletes (McNeil et al., 2023).

Evaluation. Evaluation was assessed using the cognitive evaluation subscale of the Metacognitive Processes during Performance Questionnaire (MPPQ-CE; Love et al., 2019). The MPPQ-CE measures participants ability to evaluate their cognitive processes. Minor revisions were made to the subscale's instructions, stem, and wording of two items to also capture the training context. Participants completed 5-items using a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) and were converted to a 10-point scale for comparison. Higher total scores were indicative of the higher levels of evaluation. The MPPQ-CE has shown sound reliability, adequate internal consistency estimates (α = .85), and evidence of concurrent and convergent validity (Love et al., 2019).

Qualitative Data Collection

Qualitative data were collected via semi-structured interviews post-intervention. The qualitative data was useful to examine participants' views on the intervention goals, procedures, and outcomes. By seeking participants' views of whether the intervention created behaviour changes, the qualitative data was useful to serve as social validation of the intervention effects (Kazdin, 2021). A total of 13 participants took part in interviews and one participant (A14) was not available post-intervention. In the post-intervention interview, participants were shown their visual displays from the primary measure and asked to comment on their own changes related to the intervention (Dunn, 1994). To minimize social desirability bias (e.g., Knapp et al., 2023), the post-intervention interviews were led by my research assistant for this project (Yanik Koster) who was not involved in the intervention delivery. The post-intervention interviews ranged from 33 to 65 min (M_{time} = 46.1 min, SD = 8.9). The post-intervention interview guide (Appendix J)

included main questions, follow-up questions, and probes (Rubin & Rubin, 2012) and was informed by relevant social validity guidelines (Kazdin, 2021). Each interview was audio recorded and transcribed verbatim.

Data Analysis

Quantitative Analysis

I used a blend of visual and statistical analyses to assess changes across time for each participants' quantitative data. Visual inspection of graphs is the dominant method of evaluating single-case design interventions (Kazdin, 2019). All 14 participants were included in the visual inspection analysis of the 5-item PDM data. In addition, all participants' 5-item PDM data were analyzed using descriptive (i.e., *M*, *SD*, effect size) statistics. Inferential (i.e., *t* test) statistics of the 36-item PDM were only completed for 12 participants to gauge the magnitude of the AHEAD intervention effectiveness at a nomothetic level. Two participants (A1 and A14) were not included in the *t*-test since they did not complete the post-intervention 36-item PDM.

Visual Inspection. Graphical displays of all participants' 5-item PDM data (see Figures 5.2-5.6) were created for each behaviour. The displays allowed the visual inspection of behaviour changes over time. Data entry was lined up according to the phase (baseline, intervention, post-intervention) of the study, and mean scores for the baseline (dotted line) and post-intervention (solid line) were plotted. Visual inspection of the graphed data focussed on judging participants' changes across phases, using seven criteria for visual inspection outlined by Kazdin (2021): (a) mean changes, (b) trend changes, (c) discontinuity or abrupt change, (d) latency of change, (e) overlap of datapoints, (f) variability differences, and (g) consistency in the overall pattern.

Statistical Analysis. Descriptive statistics (i.e., mean, *SD,* effect size) were calculated to give a complementary perspective on all the participants' behaviours changes as assessed by the 5-item PDM. Descriptive statistics were calculated by computing the participants' 5-item PDM mean scores from baseline and post-intervention to provide an estimate of their average

level of performance within the phases, which could then be compared across phases (Kazdin, 2021). Effect sizes (see Table 5.3), which provide data on the magnitude of change, were calculated for each of the five behaviours from the 5-item PDM by adhering to a standardized mean difference formula applied to single-case studies (Kazdin, 2021): First, baseline and post-intervention 5-item PDM means were calculated separately for each participant and for each behaviour. Then, baseline mean scores were subtracted from post-intervention mean scores and divided by the pooled standard deviation of both phases. In line with previous single-case studies, t-test was used for inferential statistical significance testing (Kazdin, 2021). Responses from 12 participants (A2, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A16) that completed the 36-item PDM were used to identify changes in the five behaviours from baseline to post-intervention. Specifically, 36-item PDM data from participants who attended the workshop were analyzed as six independent-samples t-tests for each behaviour and interpreted in reference to a set criterion ($p < .05$). The t-tests are feasible statistical analysis for small samples sizes (de Winter, 2013) and can be used to indicate whether a change have occurred (Kazdin, 2019). I recognize that the paired t-tests have limited statistical power, but I am reporting these results with an awareness of this limitation. This is but one of many analytic results taken into account.

Qualitative Analysis

The audio-recorded interviews were transcribed verbatim and subjected to a three-phased qualitative content analysis procedure: preparing, organizing, reporting (Elo & Kyngäs, 2008). The *preparing* phase involved selecting the units of analysis and becoming familiar with participants' data by reading, re-reading, and open coding. Specifically, for the post-intervention interviews, the analysis focused on participants' experiences of the AHEAD intervention. The *organizing* phase involved establishing an unconstrained categorization matrix (Elo & Kyngäs, 2008), with the aim of organizing participants' data relating to the goals, procedures, and outcomes (i.e., the five targeted behaviours) of the intervention (Kazdin, 2021), as well as

examine participants' experiences with the intervention. The *reporting* phase included presenting the most prominent findings from the interviews and add value to the mixed methods findings.

Mixed Methods Analysis and Integration

Qualitative and quantitative data are reported in an equal-status crossover analysis (Hitchcock & Onwuegbuzie, 2020) to triangulate the data, intended to help draw stronger conclusions about the intervention's effectiveness (Barker et al., 2013). The mixed methods procedures involved combining the visual inspection of the 5-item PDM, descriptive statistics of the 36-item PDM, and the content analysis of the post-intervention interviews, with the purpose of optimally addressing the research questions (Hitchcock & Onwuegbuzie, 2020). These results are presented in Table 5.2 as well as a narrative format to demonstrate the extent to which the AHEAD intervention contributed to the participants' personal development.

Results

The results are presented in two main sections. First, I briefly present an overview of the participants' behaviour changes by outlining their triangulated data. Second, I discuss the effectiveness of the AHEAD intervention by presenting seven aspects from Kazdin's (2021) visual inspection criteria for the five behaviours: mean changes, trend changes, pattern consistency, variability differences, overlap in datapoints, latency changes, and abrupt changes.

Data from the 5-item PDM, 36-item PDM, and qualitative (qual) post-intervention interview data indicated that all participants reported some behaviour changes throughout the AHEAD intervention. A summary of the triangulated data is provided in Table 5.2. Overall, these data suggest that perspective was the most effective workshop (with increased behaviours reported by 10 participants), followed by self-awareness and evaluation (increased behaviours reported by 9 participants), goal setting (increased behaviours reported by 8 participants), and reflection (increased behaviours reported by 6 participants) workshops. In addition, effect size calculations for all the five behaviours from the 5-item PDM are presented in Table 5.3.

Table 5.2

Triangulated Data on Overall Effectiveness of the AHEAD Intervention

Participant	Self–Awareness			Goal Setting			Reflection			Perspective			Evaluation		
	5 PDM	36 PDM	Qual	5 PDM	36 PDM	Qual	5 PDM	36 PDM	Qual	5 PDM	36 PDM	Qual	5 PDM	36 PDM	Qual
A1	+	ND	+	+	ND	O	A			O	ND	+	ND	ND	−
A2	+	+	+	+	−	+	+	−	+	+	O	+	−	+	+
A4	A			+	−	+	−	−	+	−	O	+	−	−	−
A5	−	−	+	+	−	−	−	−	+	+	−	+	+	+	O
A6	+	−	+	A			+	+	+	+	+	+	+	O	+
A7	+	+	O	+	+	+	−	+	+	+	+	+	+	−	+
A8	−	+	+	+	−	+	−	−	+	−	+	+	−	−	+
A9	O	+	O	−	+	−	+	O	+	O	−	O	−	+	+
A10	+	−	+	+	−	O	+	O	O	+	+	+	+	−	+
A11	−	−	+	−	+	+	−	−	+	−	+	+	−	+	+
A12	+	+	O	+	+	−	+	O	+	O	+	+	+	−	+
A13	+	+	+	+	+	+	+	O	+	+	+	+	+	+	+
A14	+	ND	ND	−	ND	ND	−	ND	ND	+	ND	ND	ND	ND	ND
A16	+	+	O	+	−	+	A			+	O	+	ND	O	+
# of behaviour increase	9/13	7/11	8/12	10/13	5/11	7/12	6/12	2/11	10/11	8/14	7/12	12/13	6/11	5/12	10/13
% of behaviour increase	69%	63%	67%	77%	45%	58%	50%	18%	91%	57%	58%	92%	55%	42%	77%
Average % of behaviour increase	66%			60%			53%			69%			58%		
Total	9 participants increased			8 participants increased			6 participants increased			10 participants increased			9 participants increased		

Note. + = increase, − = decrease, O = no change, ND = no data, A = absent

Table 5.3

Effect Size Calculations From the 5-Item PDM and the AHEAD Intervention

Participant	Self-Awareness M (SD) Baseline	Post	ES	Goal Setting M (SD) Baseline	Post	ES	Reflection M (SD) Baseline	Post	ES	Perspective (Fixed Mindset) M (SD) Baseline	Post	ES	Evaluation M (SD) Baseline	Post	ES
A1	5.00(2.65)	6.50(0.71)	0.73	7.25(1.26)	9.00(n/a)	1.31		absent		1.00 (0)	1.00 (n/a)	0	6.80(2.28)	n/a (n/a)	n/a
A2	8.40(1.08)	9.00(0.96)	0.58	8.38(1.85)	8.82(1.17)	0.28	8.40(2.00)	9.25(0.89)	0.49	2.05(0.78)	1.00 (0)	-1.28	8.50(1.54)	8.00(1.41)	-0.33
A4		absent		7.29(1.14)	7.80(0.92)	0.48	5.00(1.66)	6.47(1.41)	-0.86	4.35(1.87)	4.50(1.29)	0.09	7.00(1.36)	7.14(1.41)	-0.11
A5	7.27(0.79)	7.00(0.77)	-0.35	6.21(1.31)	6.58(0.90)	0.33	6.18(0.95)	6.11(0.60)	-0.08	2.85(0.67)	1.50(0.55)	-1.56	6.67(0.78)	5.83(1.16)	1.00
A6	6.64(1.29)	6.77(0.93)	0.12		absent		5.88(1.02)	7.00(1.07)	0.97	1.58(1.74)	1.00 (0)	-0.37	6.86(0.99)	8.00 (0)	1.14
A7	7.50(1.90)	7.93(1.14)	0.29	5.39(2.10)	6.46(3.08)	0.41	6.50(2.22)	6.25(1.67)	-0.12	3.32(1.73)	1.20(0.45)	-1.19	5.14(2.03)	9.00(1.41)	1.72
A8	5.91(1.70)	4.82(1.25)	-0.70	5.29(1.68)	5.88(1.36)	0.38	5.47(1.46)	5.00(1.22)	-0.34	3.95(0.62)	5.00(2.00)	1.14	5.19(1.50)	5.00 (n/a)	-0.13
A9	5.91(0.54)	5.86(0.77)	-0.07	6.36(0.84)	5.55(0.93)	-0.84	5.12(0.99)	5.63(0.92)	0.52	6.95(0.22)	7.00 (0)	0.25	5.96(0.84)	5.50(0.71)	-0.54
A10	6.63(0.74)	7.14(0.90)	0.61	5.90(1.10)	8.20(0.84)	1.53	5.36(1.50)	6.00(0)	0.49	2.92(1.00)	2.33(0.58)	-0.63	5.77(1.36)	6.50(0.71)	0.56
A11	9.67(0.82)	9.50(071)	-0.23	9.89(0.33)	9.00(0.58)	-1.41	9.73(0.65)	9.00(1.22)	-0.82	1.54(0.88)	2.33(0.58)	0.91	9.47(0.92)	8.00(n/a)	-1.53
A12	9.64(0.81)	10.00(0)	0.67	1.93(0.92)	4.58(2.07)	1.31	7.47(1.84)	9.44(1.33)	1.03	1.00 (0)	1.00 (0)	0	6.52(2.09)	10.00 (0)	1.54
A13	5.54(1.29)	6.73(1.16)	0.94	5.93(1.54)	6.50(1.45)	0.38	5.29(1.26)	6.00(2.12)	0.44	2.30(0.47)	2.17(0.41)	-0.29	5.48(1.41)	7.00(1.00)	1.06
A14	6.50(0.71)	7.00(0)	0.75	5.40(0.84)	5.00(0)	-0.51	6.09(0.54)	6.00(n/a)	-0.17	2.09(0.30)	1.00(n/a)	-2.53	5.92(1.00)	n/a (n/a)	n/a
A16	7.89(0.60)	8.13(0.64)	0.39	6.73(0.65)	7.50(0.84)	0.98		absent		4.80(0.86)	4.50(0.71)	-0.36	7.82(0.53)	n/a (n/a)	n/a

Self-Awareness: *"To look at myself, think of, and figure out what I need to work on."*

Thirteen participants attended the self-awareness workshop (see Table 5.2). One participant (A4) was absent, and her data is not included in the results for self-awareness. All 13 participants who attended the self-awareness workshop completed the 5-item PDM (see Figure 5.2). Eleven of these participants completed the 36-item PDM twice, during baseline and post-intervention, and 12 provided post-intervention interview data. Based on the results provided by these participants, the workshop was effective in improving self-awareness behaviours for most participants, but there were individual differences.

With respect to nomothetic (i.e., group level) mean changes from baseline to post-intervention, the AHEAD intervention indicated an overall increase in self-awareness behaviours in the 11 participants who provided 36-item PDM data. Specifically, nomothetic mean scores increased from 6.83 (*SD* = 1.69) to a post-intervention score of 7.74 (*SD* = 0.93) on a 10-point Likert-scale.[1] Of the 13 participants who completed the 5-item PDM, visual inspection of their idiographic (i.e., individual level) data indicated that nine participants increased in self-awareness mean scores (A1, A2, A6, A7, A10, A12, A13, A14, A16). However, some individual variations were observed in the 5-item PDM data. Three participants (A5, A8, A11) had a decelerating mean change (e.g., behaviour decreasing), which indicates that the intervention did not increase self-awareness for them. Additionally, one participant (A9) reported no mean change. During the post-intervention interview, he explained that parts of the workshop "left me more confused than knowledgeable about self-aware[ness]" and that "some strategies … I didn't really grasp [or] understand. I guess that's pointing to a bit of lack of self-awareness" (A9).

Trend changes were observed between baseline and post-intervention with an accelerating trend (e.g., behaviours improving) for six participants (A1, A2, A5, A6, A7, A13). In

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[1] The self-awareness subscale from the 36-item PDM was converted from a 7-point to a 10-point Likert-scale and was reverse scored, with higher scores indicating higher levels of self-awareness. The conversion of the self-awareness measure was helpful for interpretability purposes, as this made it easily comparable with the results from the other instruments (Dawes, 2002; Holmes & Mergen, 2014).

her post-intervention interview, A2 noted: "I've used self-awareness just to be a better person. I think you need to be at least a little self-aware, so I've used it often." Six participants (A9, A10, A11, A12, A14, A16) had no directional trend, whereas one participant (A8) had a decelerating trend from baseline to post-intervention.

With respect to the consistency in the overall pattern of scores for self-awareness, 11 participants from this workshop provided full datasets by completing both the 5-item PDM and 36-item PDM from baseline to post-intervention. Of these 11 participants, there was consistency between the 5-item PDM visual displays and 36-item PDM statistical analysis for seven participants: Five participants (A2, A7, A12, A13, A16) reported increases and two participants (A5 and A11) reported decreases in self-awareness. However, four participants (A6, A8, A9, A10) reported inconsistent results between their visual displays and statistical scores. Interview with A6 clarified that his self-awareness changed "in a in a good way, as in I became more self-aware. And [my scores] did vary a lot, but I became more self-aware." Statistical analysis of the 36-item PDM characterizes the magnitude of the intervention effects. The t-test results indicated that the workshop did not significantly improve self-awareness behaviours from baseline to post-intervention, $t(10) = 1.58$, $p > .05$ (two-tailed). However, the workshop still indicated meaningful benefits in stabilizing participants' self-awareness and a short latency change after the workshop.

In terms of variability differences, most participants reported less variability (A1, A6, A7, A12, A14) or no variation (A2, A8, A9, A10, A11, A13, A16) in the post-intervention phase compared to their baseline scores. These scores suggest a positive change in self-awareness because there was a change (i.e., reduction) in variability, and as a result, the behaviour became more consistent. Abrupt changes between the baseline and post-intervention were low for nine participants, whereas four participants (A6, A7, A8, A13) had large variability in their scores throughout the AHEAD intervention, ranging from 3 to 10 (10-point Likert-scale).

Although all the participants had some overlap in datapoints from baseline to post-intervention, nine participants (A1, A2, A7, A9, A10, A11, A12, A13, A16) reported increases in their 5-item scores after the workshop, which indicates intervention effectiveness as per Kazdin's (2021) evaluation criteria. A short latency (i.e., immediate change) in self-awareness was indicated in four participants (A6, A7, A10, A13) post-intervention. One of the participants, A7, described using self-awareness more actively. He said, "I was starting to use conscious thoughts in my workouts if that makes any sense. I was, I guess, self-aware." In contrast, three participants (A2, A5, A8) had an immediate decelerating change post-intervention. For example, A5 said that after the workshop, "I was like, 'whoa! I know nothing!' … It definitely got better, and it sort of pointed out questions to ask and how to go about being more self-aware, which it kind of stabilized after." In sum, most participants reported the self-awareness workshop as useful, potentially because it was a new behaviour to some, as expressed by A7 who shared "I guess I didn't really use it before."

Figure 5.2

Baseline and Post-Intervention Self-Awareness Data

Goal Setting: *"It drops because I've been reminding myself that I'm not just a constant self-improving machine."*

Thirteen participants attended the goal setting workshop (see Table 5.2). One participant (A6) was absent, and his data are not included in the results for the goal setting behaviours. All 13 participants who attended the goal setting workshop completed the 5-item PDM (see Figure 5.3). Eleven of these participants completed the 36-item PDM twice, during baseline and post-intervention, and 12 provided post-intervention interview data. Based on the data provided by these participants, the goal setting workshop indicated mixed effectiveness; some participants felt it was redundant and others highlighted inspiring goal setting activities.

With respect to nomothetic mean changes from baseline to post-intervention, the AHEAD intervention indicated an overall increase for goal setting behaviours in the 11 participants who provided 36-item PDM scores. Specifically, nomothetic mean scores increased from 7.48 (SD = 1.49) to 7.61 (SD = 0.90).[2] Of the 13 participants who completed the 5-item PDM, visual inspection of their idiographic data indicated that 10 participants (A1, A2, A4, A5, A7, A8, A10, A12, A13, A16) reported an overall increase in the 5-item PDM mean scores. Of them, A16 shared particularly helpful was "learning another way to set goals and to plan goals with the ladder. … I thought that was really helpful and it probably will be my biggest takeaway." However, three participants (A9, A11, A14) reported a decreased goal setting mean from baseline to post-intervention. The trends indicate that 10 participants either had an accelerating trend (A1, A4, A8, A10, A13, A12, A16) or no directional trend (A2, A9, A11), whereas three participants (A5, A7, A14) had a decelerating trend after the workshop.

With respect to the consistency in the overall pattern of scores for goal setting, 11 participants provided full datasets by completing both the 5-item PDM and 36-item PDM in

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[2] The goal setting subscale from the 36-item PDM was converted from a 5-point to a 10-point Likert-scale. The conversion of the goal setting measure was helpful for interpretability purposes, as this made it easily comparable with the results from the other instruments (Dawes, 2002; Holmes & Mergen, 2014).

relation to the goal setting workshop. Of these 11 participants, there was an inconsistent pattern in more than half of the participants (A2, A4, A5, A6, A8, A9, A10, A11) between the visual inspections of the 5-item PDM data and statistical analysis of the 36-item PDM dataset. As shown in the t-test results, the intervention did not significantly improve goal setting behaviours from baseline to post-intervention, $t(10) = 0.35$, $p > .05$, two-tailed. Noting on his decreased goal setting scores, A10 said "yeah, that's interesting. I mean, but it did start at ten," which reflects a ceiling effect and that some participants initially rated their baseline behaviours very high.

In terms of variability differences, eight participants (A1, A2, A4, A5, A8, A10, A13, A14) indicated less variability post-intervention. In examining her own scores, A13 said, "goal setting is something I need to work on still. But they seem more consistently higher towards the end." Two participants (A9 and A16) had no variation and three participants (A7, A11, A12) reported more variability post-intervention. One of them, A11, said that goal setting "was really depending on the day." A12 also reported more variability after the workshop. He shared, "I get really anxious about setting them. ... Half the time I do utilize them because it is helpful to be like, 'Oh, I achieved them' or I just ignore them because I don't want to be anxious about it."

The 13 participants had some overlap in datapoints in their 5-item PDM visual display between baseline and post-intervention. However, 11 participants (A1, A2, A4, A5, A7, A8, A10, A12, A13, A14, A16) increased after the workshop. Specifically, after the workshop, five participants (A4, A5, A7, A12, A16) reported a short latency change in goal setting. Of them, three participants (A4, A7, A12) had an abrupt positive change immediately post-intervention (A4's scores increased from 4 to 8, A7's scores increased from 4 to 8, and A12's scores increased from 1 to 6). Reflected on these results, A4 commented, "I think it was through those activities we did because now I'm just going to do that with every goal that I write down." Hence, it appeared that the abrupt change was caused by the workshop activities. In contrast, one participant (A8) had an immediate decelerating change post-intervention. A8 said "the goal setting is kind of surprising that it went down" right after the workshop. But over time, A8 noticed

his scores went up again, and he said that, "I know that I should set short-term goals. I've been doing that a little bit, but I still have to work on it. I think that's why it went up."

In sum, the goal setting workshop had mixed effectiveness where some participants believed goal setting "wasn't really anything new" (A1) and "found it harder to set short term goals – it just didn't sit well" (A5), whereas others said they found the intervention helpful, to "write my goals in a more effective way" (A4), "splitting goals into smaller sections" (A7), and "having that ladder and then actually writing down the steps" (A16). As such, the goal setting workshop promoted higher mean scores and less variability for some participants, while others had lower mean scores and more variability following the workshop.

Figure 5.3

Baseline and Post-Intervention Goal-Setting Data
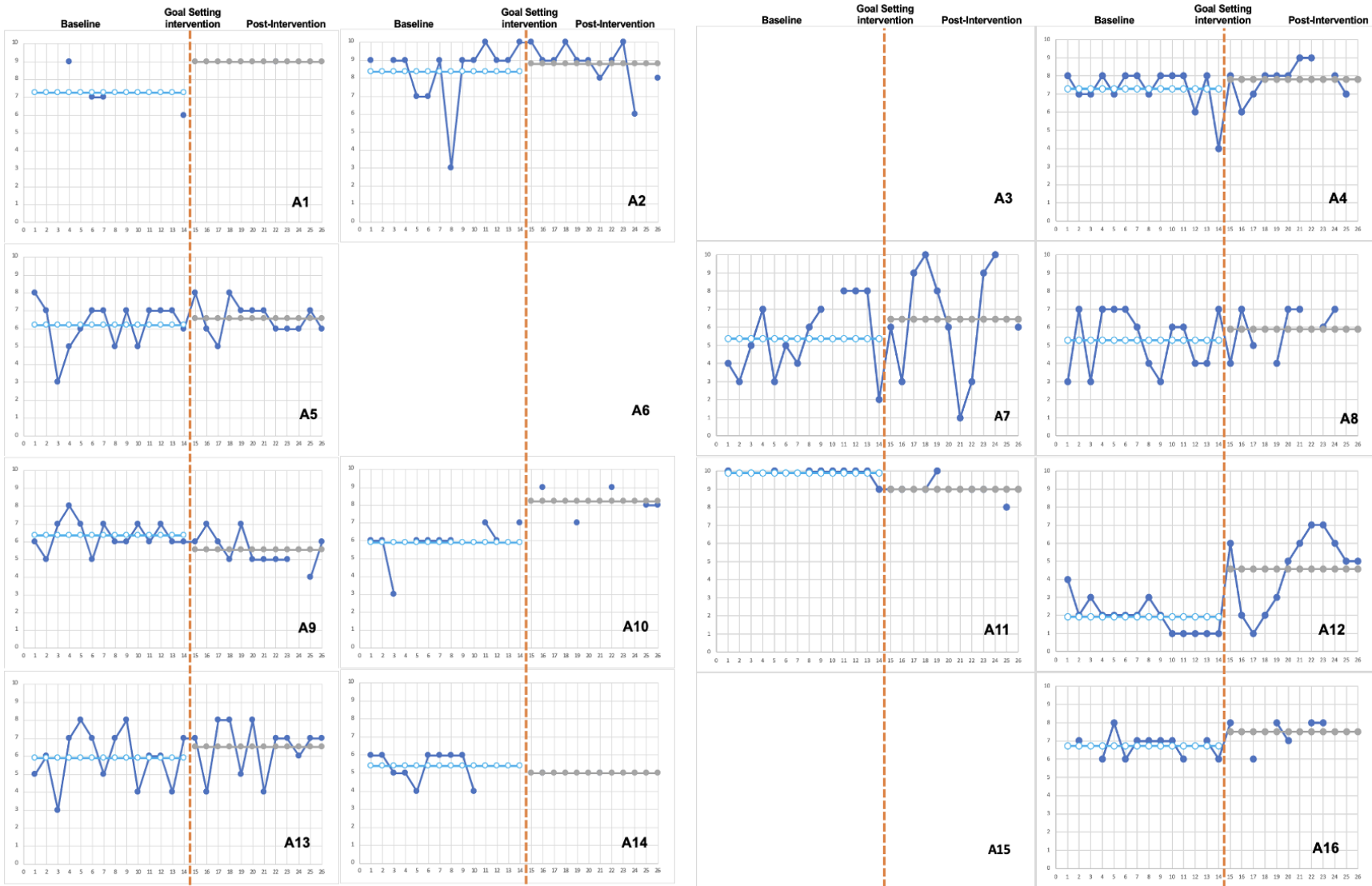
Reflection: *"More subconscious before. And now I'm actually thinking about reflecting. And it's helping."*

Twelve participants attended the reflection workshop (see Table 5.2). Two participants (A1 and A16) were absent, and their data are not included in the results for the reflection behaviours. All 12 participants who attended the reflection workshop completed the 5-item PDM (see Figure 5.4). Eleven of these participants completed the 36-item PDM twice, during baseline and post-intervention, and 11 provided post-intervention interview data. Based on these participants' data, the reflection workshop had mixed effectiveness with some participants reporting an increase in reflection, and others decreased reflection behaviours post-intervention.

With respect to nomothetic mean changes from baseline to post-intervention, the AHEAD intervention indicated an overall decrease for reflection behaviours in the 11 participants who responded to the 36-item PDM. Specifically, nomothetic mean scores decreased from 7.96 (*SD* = 1.63) to 7.44 (*SD* = 1.65).[3] Of the 12 participants who completed the 5-item PDM, visual inspection of their idiographic data indicated that six participants (A2, A6, A7, A10, A12, A13) had an overall mean increase, whereas six participants (A4, A5, A7, A8, A11, A14) reported a mean decrease. The overall trends indicate 10 participants either had an accelerating trend (A6, A7, A8, A12, A13) or no directional trend (A2, A5, A9, A10, A14) after the workshop. A9 noticed his reflection scores "move around a fair bit. It definitely looks like there's a bit of an upward trend." He continued explaining that "instead of just like having that moment of reflection and having it pass me by, I'd have that moment of reflection and be able to recognize that and realize that." Two participants indicated a decelerating trend (A4 and A11) between baseline and post-intervention in their 5-item PDM data. A11 said, "some days I wouldn't reflect, other days I was like, 'Oh yeah, I really reflected' or I was too busy to reflect."

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[3] The reflection subscale from the 36-item PDM was converted from a 7-point to a 10-point Likert-scale. The conversion of the reflection measure was helpful for interpretability purposes, as this made it easily comparable with the results from the other instruments (Dawes, 2002; Holmes & Mergen, 2014).

With respect to the consistency in the overall pattern of scores for reflection behaviours, 11 participants provided full datasets by completing both the 5-item PDM and 36-item PDM in relation to the reflection workshop. Of these 11 participants, there was only one participant (A6), who reported a consistent pattern of increasing both his 5-item PDM and 36-item PDM scores. Four participants (A9, A10, A12, A13) remained the same in their baseline and post-intervention statistical scores but reported an increase in reflection in their visual displays. A10 noticed his scores were "somewhat up and down. ... Doesn't seem to change a lot after the workshop. ... I'd say this one probably changed the least because I tend[ed] to reflect [even before the intervention]." Two participants (A2 and A7) had inconsistent reflection scores between visual displays and statistical analysis from baseline to post-intervention. Finally, four participants (A4, A5, A8, A11) reported a consistent decreased pattern in both the visual displays and statistical analysis. Providing some nuance, A11 shared post-intervention that she was able to consider reflection behaviours "more strategically, like not just a thought that passes by. Just sit down [and] really analyze." Thus, while *t*-test results indicate that reflection scores decreased from baseline to post-intervention, $t(10) = -1.48$, $p > .05$ (two-tailed), participants in the workshops perceived that their levels of "conscious" reflection had improved (A4, A7, A11).

In terms of overlap in datapoints, six participants (A2, A6, A9, A10, A12, A13) indicated an increase in reflection behaviours post-intervention. However, six participants scored within the same range (A5, A8, A14) or lower range (A4, A7, A11) in reflection. A common theme was to change reflection from being "subconscious" (A4) to "being able to do them consciously" (A7). A4 shared that after the workshop, she was not "that interested in reflecting on my thoughts, feelings, and behaviours just because I didn't really need it. But I think we all need it eventually, but I just didn't need it at that time." As these quotes suggest, the intervention appeared to teach participants how to be intentional and conscious in reflecting.

With regards to variability differences in participants' scores, 10 participants (A2, A4, A5, A6, A7, A8, A9, A10, A12, A14) had little variability, which indicated more consistent reflection

behaviours post-intervention. A5 had noticed that her scores "definitely more up and down before the workshop than they are after." In contrast, two participants (A11 and A13) reported more variability. A13 shared that her scores "seems, again, very volatile. And some days I was too tired to be interested in reflecting. I think towards the end, it got a little better."

A short latency and abrupt change in reflection was reported by three participants (A2, A6, A12). A6 said, "I reflected more. And it was more so consistent after [the intervention]." In contrast, two participants (A4 and A13) had an immediate decelerating change post-intervention. A4 shared that the workshop made her realize that "I overthought a lot of stuff during events and training and stuff, so okay, that just made me aware of it. ... It was kind of like a learning thing, but it just made me aware." This quote suggests that although the behaviour decelerated, it was not necessarily perceived as a negative change in reflection.

Overall, the reflection workshop indicated mixed effectiveness, with A2 who stated the workshop "was my favorite one. I like the on-reflection and in-reflection difference," which A9 also found helpful to have "more intention behind the reflection." In contrast, reflection was also the behaviour many participants (A4, A11, A12, A13) openly shared they were more selective about. At times, they preferred not to reflect due to "bad mood" (A12), "tired" (A13), and "overwhelmed" (A2). For example, A12 said that the 5-item PDM made him realize "I'm not interested in reflecting on my thoughts because I'm already reflecting too much." Although the intervention promoted a more "conscious thought process" (A7) for some, reflection was also a debated behaviour in terms of its application.

Figure 5.4

Baseline and Post-Intervention Reflection Data
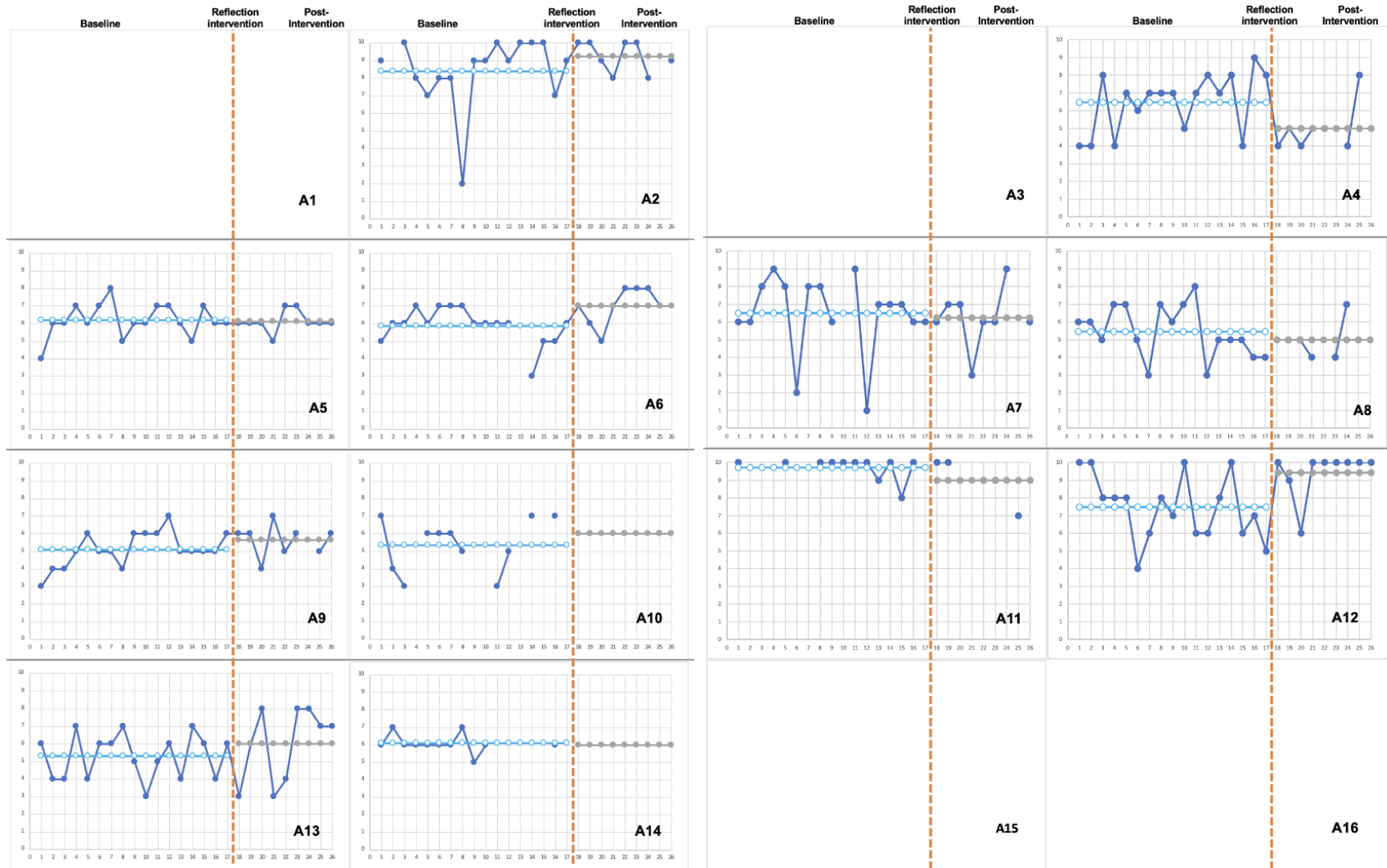
Perspective: *"The biggest takeaways – Being able to get out of my fixed mindset."*

All 14 participants attended the perspective workshop (see Table 5.2), and all attendees of the perspective workshop completed the 5-item PDM (see Figure 5.5). Twelve of these participants completed the 36-item PDM twice, during baseline and post-intervention, and 13 provided post-intervention interview data. Based on the data provided by these participants, the perspective workshop was the most liked amongst the participants, highlighting the workshop as relatable and applicable as main reasons for its effectiveness.

With respect to nomothetic mean changes from baseline to post-intervention, the AHEAD intervention indicated an overall increase in perspective behaviours in the 12 participants who responded to the 36-item PDM. Specifically, nomothetic mean scores for fixed mindset increased from 7.11 (*SD* = 1.36) to 7.72 (*SD* = 1.60) and growth mindset means from 9.56 (*SD* = 0.41) to 9.58 (*SD* = 0.60).[4] Of the 14 participants who completed the 5-item PDM, visual inspection of their idiographic data indicated that three participants (A4, A8, A11) had a mean increase, indicating more fixed mindset post-intervention, and eight participants (A2, A5, A6, A7, A10, A13, A14, A16) had a mean decrease. One of them, A13 shared "fixed and growth mindsets are probably the areas of most improvement or that are strong right now." Three participants (A1, A9, A12) had no mean changes. A9 stood out with a noticeable higher fixed mindset mean, saying the scores "really makes sense. ... Perspective is going to take a little bit longer to wrap my head around, kind of get used to and implicate those." In terms of trends, six participants (A1, A6, A9, A12, A13, A16) did not indicate any trend throughout the intervention. Two participants (A4 and A11) had an accelerating trend, which indicated they became more fixed minded. In contrast, six participants (A2, A5, A7, A10, A14, A8) had a decelerating trend, which indicates lower fixed mindset post-intervention.

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[4] The growth mindset and fixed mindset subscales from the 36-item PDM were converted from a 5-point to a 10-point Likert-scale. The fixed mindset subscale was also flipped to indicate higher scores the better. The conversion of these measurements was helpful for interpretability purposes, as this made it easily comparable with the results from the other instruments (Dawes, 2002; Holmes & Mergen, 2014).

With respect to the consistency in the overall pattern for perspective behaviours, 12 participants provided full datasets by completing both the 5-item PDM and 36-item PDM in relation to the perspective workshop. Of these 12 participants, four participants (A6, A7, A10, A13) reported consistent findings in that they had decreased scores in their visual displays and statistical analysis. There were inconsistencies in eight participants' (A2, A4, A5, A8, A9, A11, A12, A16) pattern between their 5-item PDM and 36-item PDM scores. Specifically, three participants (A4, A8, A11) reported an increase in fixed mindset in their visual display but had no change (A4) or a decrease (A8 and A11) in their post-intervention 36-item scores. Three participants (A2, A5, A16) indicated a decrease in fixed mindset in their visual displays but had no change (A2 and A16) or an increase (A5) in fixed mindset in the 36-item PDM statistical scores. A5 commented on her scores: "I think they're a good representation of my mindset about the sport ability part. I think that's what it represents. I think the pre and post was a bit more general and there were just more questions," which shed light on the importance of triangulating data for a more nuanced understanding of participants' changes. Finally, two participants (A9 and A12) indicated no change in their visual displays but reported an increase (A9) and a decrease (A12) in fixed mindset 36-item PDM scores. While t-test results indicated that the intervention did not significantly improve the athletes' perspective scores from baseline to post-intervention (fixed mindset: $t[11] = 1.58$, $p > .05$ [two-tailed]; growth mindset: $t[11] = 0.14$, $p > .05$ [two-tailed]), several participants had their biggest take-aways from the perspective workshop. Post-intervention, A7 said, "I felt that change in my fixed mindset because of the way I thought of training and progressing in biathlon. I really felt the change in fixed and growth mindset for sure."

Of all the behaviours in the AHEAD intervention, perspective was the one with most overlap in datapoints. Three participants (A1, A12, A13) reported their fixed mindset within the same range for baseline and post-intervention, which indicated no change in fixed mindset. Two participants' (A8 and A9) reported increased fixed mindset scores. Nine participants (A2, A4, A5, A6, A7, A10, A11, A14, A16) had decreased scores. One of them, A16, said "I'm definitely more

aware of it and of that mindset; what to think about and why I think about it. But I think I still have a work to do to actually change that mindset." This quote indicates that A16 noticed her changes, but also recognized the time it would take to change her fixed mindset.

In terms of variability differences, all the participants except from A8 reported no variability or less variability in fixed mindset scores. A8 explained that the variability differences in his scores was a mistake, saying he went into the AHEAD intervention thinking he had a certain amount of support ability, but "after the session, ... I definitely changed my mind about that. Maybe a missed input on my part." An immediate change in fixed mindset was observed in three participants (A5, A7, A8). A5 shared that she experienced an abrupt change, as her perspective "became more front of mind" and it was "easier to have a thought and be like, 'okay, that was fixed. How do I make it growth?' And I think that's why it got better."

Twelve participants also scored themselves on growth mindset in the 36-item PDM for baseline and post-intervention. Inferential statistics indicated that six participants (A6, A7, A8, A9, A11, A13) increased in growth mindset. Of them, A13 shared "I think that was a big thing that improved over the course." Four participants (A2, A5, A10, A16) decreased in growth mindset. One of them A10, scored himself a 10 out of 10 at the baseline, and decreased to 9.34 post-intervention. He said: "I feel like it has changed throughout the program. ... I'm surprised the growth mindset has decreased because ... I feel like if anything, it would have increased." Two participants (A4 and A12) also reported a score of 10 in growth mindset, indicating a ceiling effect. A12 said, "the perspective has changed in how I use it, or use it at all, to change my perspective on certain things. ... And fixed mindset went down. Growth mindset stayed all the way at the top." Overall, perspective was the most liked workshop. A8 said it "really stuck to me the most." A1 said he would "genuinely use it whenever those thoughts kind of pop up. I think it's a strategy that is maybe not [used] every day, but really often."

Figure 5.5

Baseline and Post-Intervention Perspective (Fixed Mindset) Data
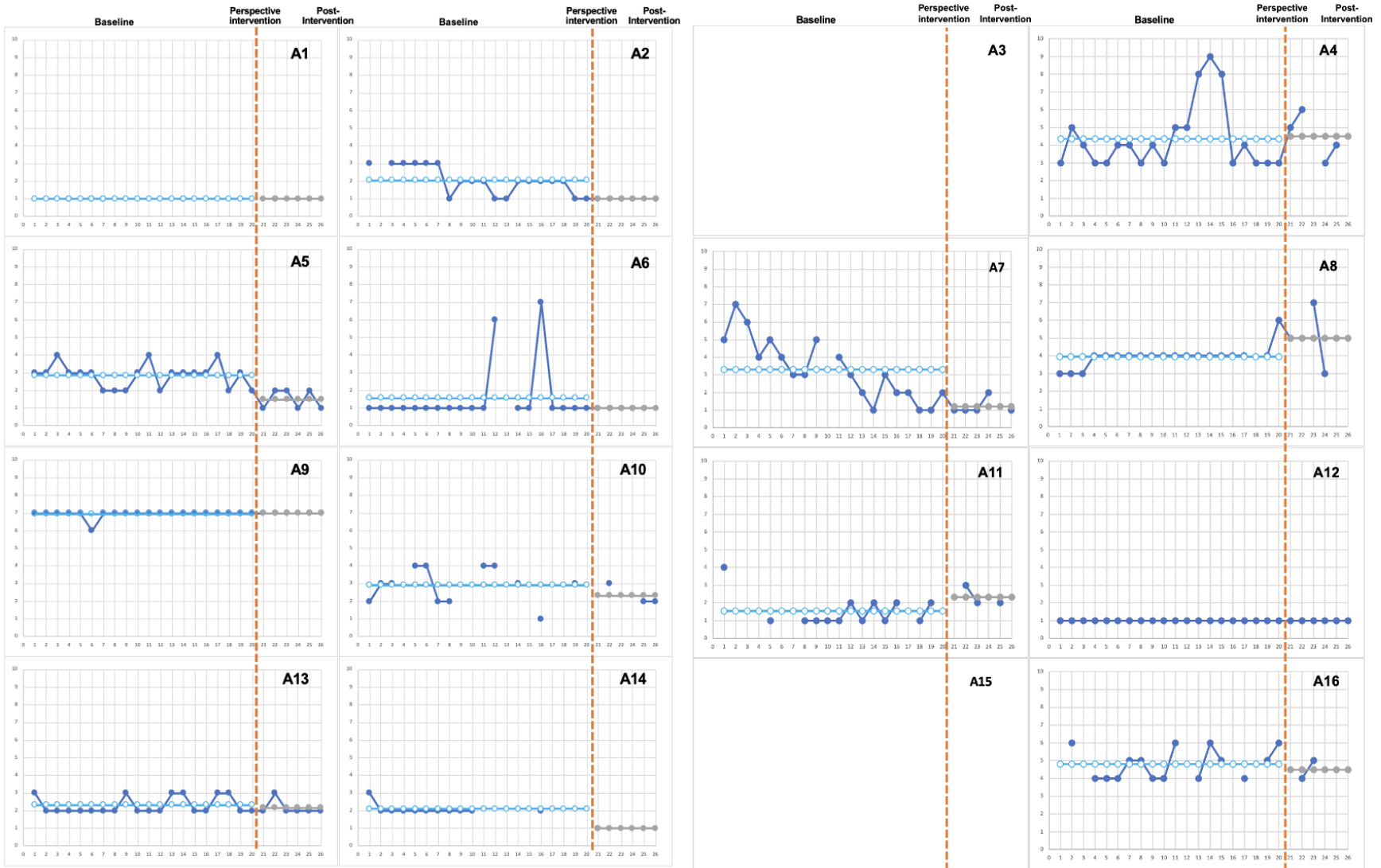
Evaluation: ***"I do evaluate them. I just don't act upon them."***

All the 14 participants attended the evaluation workshop (see Table 5.2). However, only 11 of the participants who attended the evaluation workshop completed the 5-item PDM (see Figure 5.6). Twelve participants completed the 36-item PDM twice, during baseline and post-intervention, and 13 provided post-intervention interview data. Based on these participants' data, the evaluation workshop presented mixed effectiveness with some using evaluation to improve for next time and others struggling to implement the behaviours.

With respect to nomothetic mean changes from baseline to post-intervention, the AHEAD intervention indicated an overall decrease for evaluation behaviours in the 12 participants who responded to the 36-item PDM. Specifically, nomothetic mean scores decreased from 7.90 (*SD* = 1.12) to 7.73 (*SD* = 1.19).[5] Of the 11 participants who completed the 5-item PDM, visual inspection of their idiographic data indicated that six participants (A5, A6, A7, A10, A12, A13) increased and five participants (A2, A4, A8, A9, A11) decreased in means. However, in the post-intervention phase, six participants (A2, A6, A9, A10, A12, A13) had an accelerating trend in evaluation behaviours. One of them, A9, said the evaluation workshop taught him "to be able to look back and see how you did in whatever you were doing. I think it's a really powerful way to be able to figure out what you need to do next time to improve." Four participants (A4, A5, A7, A11) had a decelerating trend, and one participant (A8) had no directional trend.

With respect to the consistency in the overall pattern of scores for evaluation, 11 participants from this workshop provided full datasets by completing both the 5-item PDM and 36-item PDM from baseline to post-intervention. Of these 11 participants, seven participants (A2, A6, A7, A9, A10, A11, A12) indicated inconsistent patterns in their 5-item PDM and 36-item PDM datasets. In examining his scores, A12 rationalized "evaluation went down, which I think is

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[5] The evaluation subscale from the 36-item PDM was converted from a 5-point to a 10-point Likert-scale. The conversion of the evaluation measure was helpful for interpretability purposes to facilitate the comparison of survey data with the different scales (Dawes, 2002; Holmes & Mergen, 2014).

probably better because I had a problem with over-evaluating things." As such, A12 did not necessarily see the decreased pattern of scores as negative. Two participants (A5 and A13) reported a consistent mean increase, and two participants (A4 and A8) had a consistent pattern that decreased across the data. The *t*-test results indicated that the athletes' evaluation scores did not significantly change from baseline to post-intervention, $t(11) = –0.62$, $p > .05$ (two-tailed). However, most participants scored themselves in the higher ranges, and many had an immediate increase in evaluation behaviours after the workshop.

The 11 participants with 5-item PDM datapoints scored themselves in the higher ranges (5 or higher) and with little variability post-intervention. In terms of the variability differences from baseline to post-intervention, five participants (A2, A4, A5, A7, A13) reported their scores within a range of 3 points, two participants (A9 and A10) within 2 points, and four participants (A6, A8, A11, A12) within the same score, which signify more consistent evaluation behaviours post-intervention for all participants except from one (A13), who said that despite variability, "I think overall [evaluation] is kind of like up. ... I got more intentional throughout the course of it."

An immediate change in evaluation behaviours were reported by five participants (A5, A6, A7, A8, A13). Two participants (A5 and A7) had a particularly positive trend post-intervention. Especially, A7 made an abrupt change scoring his first "10" in evaluation right after the workshop. Throughout the AHEAD intervention, A7 said he had "a couple of moments that were personal breakthroughs that I never thought I would have." He elaborated that in the workshop, he realized "that I evaluated my thoughts in a way that I've never really done before. I think the picture really helped and then the mind map." Only one participant, A2, had a noticeable decelerating change post-intervention, going from scoring herself a 9 down to a 7 after the workshop. She explained "I think that day was like, 'I don't want to think' [and] 'I'm done with this. I'm just gonna do whatever,' you know? I'm just gonna be."

Overall, the evaluation workshop presented mixed effectiveness with A9 explaining his evaluation as "a more linear path now. It just kind of smooth that out instead of being like a little

bit more wishy washy. It's more defined." Similarly, A16 shared that since the workshop, "I've been pretty good at evaluating my thoughts and feelings. And then I think the step two of how to change them for next time is more where I probably lack in." However, A11 said her evaluation depends on the day: "Sometimes I was feeling more negative than positive. And I was like, 'Oh, I don't want to evaluate my feelings today.' ... But sometimes it's like, 'Oh, I had a really good day' [and] I really evaluated my feelings." As these quotes demonstrate, evaluation behaviours varied amongst the participants post-intervention, which illustrate the mixed effectiveness.

Figure 5.6

Baseline and Post-Intervention Evaluation Data
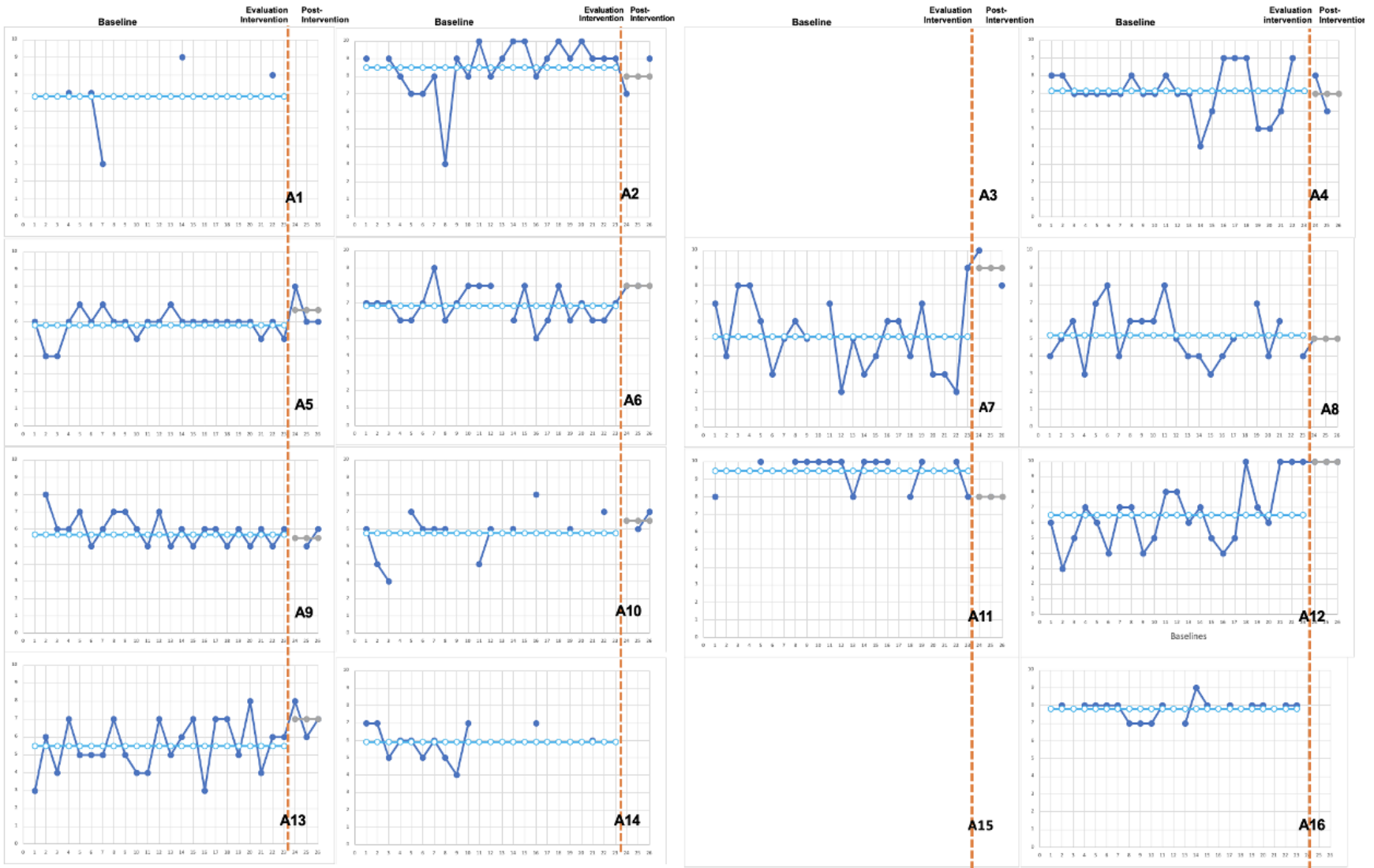
Discussion

The purpose of the current study was to evaluate the effectiveness of the AHEAD intervention, as referenced by Kazdin's (2021) evaluation criteria. In light of the quantitative research question, the AHEAD intervention improved 13 participants' behaviours associated with personal development, with changes in one or more of the five targeted behaviours. In terms of the qualitative research question, participants reported overall positive experiences of participating in the AHEAD intervention. The mixed methods research question indicated that the AHEAD intervention had mixed effectiveness in that the triangulated dataset (i.e., results from the 5-item PDM, 36-item PDM, and post-intervention interviews) showed different effects (Kazdin, 2008). That is, some of the workshops contributed to some participants' personal development. At a nomothetic level, it appeared that perspective was the most effective workshop, followed by self-awareness, evaluation, goal setting, and reflection. The idiographic data indicates a more nuanced view of participants' changes, ranging from improving all the behaviours (reported by 4 athletes), improving four behaviours (reported by 1 athlete), improving three behaviours (reported by 4 athletes), improving two behaviours (reported by 2 athletes), and improving one behaviour (reported by 2 athletes). Overall, the mixed methods findings indicate the AHEAD intervention contributed to some of the participants' personal development by teaching them about strategies that can be used to deal with career transitions, performance issues, and personal challenges across sport and other life contexts (Devaney et al., 2018).

Based on participants' triangulated self-awareness data, the self-awareness workshop indicated effectiveness at a nomothetic level by improving nine participants' behaviours between baseline and post-intervention. The nomothetic data showed an overall increase in self-awareness mean scores in the 36-item PDM data. It is important to note that many participants' responses to the 36-item PDM baseline measure indicated relatively low self-awareness scores. This finding generally supports previous research that has suggested that high-performance athletes need help to develop their self-awareness (Jordalen et al., 2020). The idiographic 5-item

PDM data indicated that nine participants increased, three participants decreased, and one participant reported no changes in self-awareness. In their post-intervention interviews, eight participants reported that the workshop was useful whereas four reported no change in self-awareness. Overall, the results suggest that self-awareness was the behaviour that improved the most – potentially because self-awareness was a new behaviour to some participants as indicated by their relatively low baseline scores – and that the workshop helped participants use self-awareness more consistently. The positive findings in relation to self-awareness are noteworthy since improving self-awareness can be challenging for athletes (Larsen et al., 2012).

The triangulated goal setting data showed that the goal setting workshop had mixed effectiveness at a nomothetic level by improving eight participants' behaviours between baseline and post-intervention. The nomothetic changes showed a small increase in goal setting mean scores in the 36-item PDM data. The idiographic 5-item PDM data indicated that 10 participants increased, and three participants decreased in goal setting scores. In the post-intervention interviews, seven participants reported an increase in goal setting, emphasizing inspiring activities, whereas five reported no change or a decrease in goal setting. Overall, the results suggest that the goal setting workshop had mixed effectiveness because the workshop promoted higher mean scores and less variability for some participants, while others had lower mean scores and more variability after the session. Similarly, Hardcastle et al. (2015) observed mixed effectiveness of their goal setting workshop in that only some of their participants reported using goal setting. I speculate that since the AHEAD participants were high-performance athletes (ages 17-25), some were already familiar with goal setting. Indeed, some participants reported very high baseline scores for goal setting on the 36-item baseline PDM.

Based on participants' triangulated reflection data, the reflection workshop indicated low effectiveness at a nomothetic level by improving only six participants' behaviours between baseline and post-intervention. However, the triangulated data showed high discrepancy between the quantitative and qualitative results, which is referred to as "dissonant data" in mixed

methods research (O'Cathain et al., 2010). Specifically, the nomothetic data showed an overall decrease in reflection mean scores in the 36-item PDM data. I speculate the reason reflection was the strategy with biggest nomothetic-level decrease was that many participants scored themselves high in reflection in their 36-item PDM baseline scores. For example, two participants (A2 and A12) scored 7 out of 7 at baseline. The idiographic 5-item PDM data indicated that six participants' scores increased, and six participants decreased post-intervention. However, in the post-intervention interviews, all participants, except from A10 (who reported no change), indicated that reflection improved post-intervention. In contrast to some scholars suggesting high-performance athletes need to reflect more (e.g., Jones et al., 2011; Jordalen et al., 2020), four participants (A4, A5, A8, A11) reported they reflected "too much" and became more selective or critical of their reflection post-intervention. Overall, the 5-item and 36-item PDM results suggests the reflection workshop had low effectiveness, however, based on post-intervention interviews, I speculate that participants took some time to engage in reflection, which may not have been captured in their responses to the measures completed.

The triangulated perspective data indicated effectiveness of the perspective workshop at a nomothetic level by improving 10 participants' behaviours between baseline and post-intervention. Furthermore, the nomothetic data showed an overall increase in growth and fixed mindset mean scores in the 36-item PDM data post-intervention. Whereas past research suggest growth mindset is a strategy for personal development (Pierce et al., 2016), the current findings indicate that both mindsets influenced the participants. The idiographic 5-item PDM only focused on participants' fixed mindset and showed that three participants increased, and eight participants decreased in fixed mindset. These results are consistent with McNeil et al. (2023) who found high-performance athletes' mindset profiles are generally high in growth and low in fixed mindsets. However, the 5-item PDM findings also shed light on some participants (A4, A8, A9, A16) who scored relatively high in fixed mindset. In the post-intervention interviews, participants indicated the usefulness of becoming aware of both mindsets. Overall, the results

suggest that the perspective workshop was the most liked because it was applicable and relatable. Instead of just focusing on growth mindset (e.g., O'Sullivan & Baxter, 2023), my results indicate the effectiveness of a simultaneous approach to growth and fixed mindset in personal development interventions for high-performance athletes.

Participants' triangulated evaluation data indicated mixed effectiveness of the evaluation workshop at a nomothetic level by improving nine participants' behaviours between baseline and post-intervention. Furthermore, the nomothetic data showed an overall decrease in evaluation mean scores in the 36-item PDM data. One reason why evaluation did not show nomothetic-level improvement post-intervention could be due to the variance in participants' (A2, A4, A7, A8, A10, A12, A13) evaluation, as demonstrated in their idiographic 5-item PDM. Specifically, the 5-item PDM data indicated that six participants increased, and five participants decreased post-intervention. Love et al. (2019) also noticed significant amount of variance in evaluation scores in a sample of triathletes. Interestingly, findings indicated that participants showed less variance in evaluation post-intervention, which suggests the workshop contributed to more consistent evaluation behaviours. In the post-intervention interviews, 10 participants reported an increase in evaluation. Three participants indicated no change or a decrease in evaluation. Two of them reported that they were more selective about when and how they evaluated post-intervention, which might describe their decreasing patterns. Overall, the results suggest that the evaluation workshop had mixed effectiveness; some had an immediate increase in evaluation behaviours after the workshop, whereas others indicated more variability.

Overall, findings suggest that at the nomothetic-level, perspective was the most effective workshop (with increased behaviours reported by 10 participants), followed by self-awareness and evaluation (9 participants increased), goal setting (8 participants increased), and reflection (6 participants increased). However, at the idiographic level, a more nuanced perspective of 13 of the participants changes indicate that four participants (A2, A7, A12, A13) increased in all behaviours, one participant (A6) increased four behaviours, four participants (A8, A10, A11, A16)

increased three behaviours, two participants (A5 and A9) increased two behaviours, and two participants (A1 and A4) increased one behaviour. Of the participants with four to five behaviours increasing, 60% identified as men (ages 17-18), which suggest young men reported more positive effects. Future research is needed to understand gender-differences in personal development, as the AHEAD intervention was delivered to a mixed-gendered group.

Previous personal development interventions focused on nomothetic analysis of personal development strategies (e.g., self-awareness, goal setting, reflection, evaluation), and questioned the best way to promote behaviour change in interventions (e.g., Hardcastle et al., 2015). The visual inspections shed lights on participants' idiographic changes after each workshop. The findings indicate separate workshops for each strategy can be a beneficial approach to target personal development behaviours. However, the intervention design could be further improved by taking an individualized approach by, for example, having the participants select what workshops they would like to attend based on their needs.

Most single-case research design studies in sport psychology have typically focused on an individual mental skill (50%), targeted to one gender (women = 20%, men = 59%), at a recreational or competitive level (76%) (Barker et al., 2020). The AHEAD intervention contributes to the area of studies with a smaller evidence base by focusing on multiple strategies, to a mixed-gendered audience, at an international level (Barker et al., 2020). To advance single-case research design studies and allow for stronger conclusions of intervention effectiveness, researchers should triangulate data (Barker et al., 2013). I triangulated a 5-item PDM, 36-item PDM, and post-intervention interviews to examine participants' changes. However, a closer look at each of the data sources indicate vastly different results: The 5-item PDM indicated 61.6% of the behaviours increased, the 36-item PDM indicated 45.2% increased, and the post-intervention interviews indicated 77.0% increased. Although there are limitations of using questionnaires in sport psychology interventions (see Vealey et al., 2019), my findings suggest that only relying on quantitative or qualitative data is also a risk of underestimating or

overestimating intervention effectiveness. As the present study respond to calls for more mixed methods evaluations of sport psychology interventions (e.g., Dohme et al., 2020), it also demonstrates how triangulation can help to present a more nuanced understanding of the overall effectiveness (Barker et al., 2013).

Although the AHEAD intervention increased many of the participants' behaviours, there are several limitations of the present study that must be acknowledged. A 10-week intervention might not be enough to examine long-term changes in some aspects of personal development. For instance, participants indicated learning about reflection in the post-intervention interviews, but that it took participants some time to engage in reflection. A follow-up later in a season could be used to understand long-lasting intervention effects. Another limitation is that there is no clear supported personal development measure. Thus, there are limitations to the subscales, particularly the SRIS short scales (Silvia, 2020) that, to my knowledge, never has been used in sports contexts. Furthermore, it is important to emphasize that the paired samples t-tests for the 36-item PDM exhibit limited statistical power because of the study's small sample size. However, it is essential to acknowledge that although a small sample size aligns with the recommendations for single-case design studies (Barker et al., 2020), it inherently limit the generalizability of findings to a larger population. Researchers need to recognize this limitation and interpret the results with caution, considering that the primary strength of single-case designs lies in their capacity to provide detailed insights into individual experiences and behavior changes rather than drawing broad statistical conclusions. Although I followed Kazdin's (2021) recommendations and evaluation criteria and used ongoing assessment of each participant to establish the effectiveness of the intervention; it is noteworthy that single-case designs sharply contrast traditional use of big sample sizes and control groups in between-group intervention research. As such, there are limitations in assessing causation with participants serving as their own controls because there is no control or comparison group per se (Kazdin, 2021). Another limitation is the ceiling effect on participants' responses for some of the measures (e.g.,

reflection, growth mindset) that were very high. The low number of increases in some of the behaviours could be explained by a ceiling effect, as at least one participant in all the workshops (except self-awareness) scored maximum during the baseline. As such, these participants either decreased or scored the same score post-intervention. Ceiling effects have been observed in other personal development interventions (e.g., Jones et al., 2011), and is common in high-performance athletes who tend to make smaller gains due to less room for improvement over time compared to novices (Lochbaum et al., 2022).

Conclusion

The findings of this mixed methods study contribute to a growing body of literature that aims to gain a nuanced understanding of how personal development interventions can be integrated into high-performance sport environments to support athletes. Results suggest that the AHEAD intervention had mixed effectiveness. That is, nomothetic results indicated that 13 participants had changes in one or more of the five targeted behaviours, while idiographic results implied the importance of an individualized approach when addressing athletes' personal development. Furthermore, my findings suggest that the perspective, self-awareness, and evaluation workshops affected the participants most, potentially because these workshops were more applicable and relatable to the athletes within their sport context. In contrast, the two workshops on goal setting and reflection showed less effectiveness, perhaps because participants already engaged in these types of behaviours regularly prior to the implementation of the intervention or required more time to engage effectively with the strategies. As such, more research is necessary to better understand the application and long-term benefits of learning about personal development strategies and how these can be used by high-performance athletes who are facing career transitions, performance issues, and personal challenges across sport and other life contexts.

References

Barker, J. B., Mellalieu, S. D., McCarthy, P. J., Jones, M. V., & Moran, A. (2013). A review of

single-case research in sport psychology 1997–2012: Research trends and future

directions. *Journal of Applied Sport Psychology*, *25*(1), 4–32.

https://doi.org/10.1080/10413200.2012.709579

Barker, J. B., Slater, M. J., Pugh, G., Mellalieu, S. D., McCarthy, P. J., Jones, M. V., & Moran,

A. (2020). The effectiveness of psychological skills training and behavioursal

interventions   in sport using single-case designs: A meta regression analysis of the

peer-reviewed studies. *Psychology of Sport and Exercise*. Advanced online publication.

https://doi.org/10.1016/j.psychsport.2020.101746

Biddle, S. J., Wang, C. J., Chatzisarantis, N. L., & Spray, C. M. (2003). Motivation for physical

activity in young people: Entity and incremental beliefs about athletic ability. *Journal of

Sports Science*, *21*(12), 973-989. https://doi.org/10.1080/02640410310001641377

Canadian High Performance Sport Strategy. (2019). *Canadian High Performance Sport Strategy.*

https://www.canada.ca/content/dam/pch/documents/services/sport-policies-acts-

regulations/HighPerSportStrat-eng.pdf

Cronin, L. D., & Allen, J. (2017). Development and initial validation of the Life Skills Scale for

Sport. *Psychology of Sport and Exercise*, *28*, 105–119.

https://doi.org/10.1016/j.psychsport.2016.11.001

Dawes, J. (2002). Five point vs. eleven point scales: Does it make a difference to data

characteristics. *Australasian Journal of Market Research*, *10*(1).

Devaney, D. J., Nesti, M. S., Ronkainen, N. J., Littlewood, M., & Richardson, D. (2018). Athlete

lifestyle support of elite youth cricketers: An ethnography of player concerns within a

national talent development program. *Journal of Applied Sport Psychology*, *30*(3),

300–320. https://doi.org/10.1080/10413200.2017.1386247

De Winter, J. C. (2019). Using the student's t-test with extremely small sample sizes. *Practical Assessment, Research, and Evaluation*, *18*(10), 1-10. https://doi.org/10.7275/e4r6-dj05

Dohme, L. C., Bloom, G. A., Piggott, D., & Backhouse, S. (2020). Development, implementation, and evaluation of an athlete-informed mental skills training program for elite youth tennis players. *Journal of Applied Sport Psychology*, *32*(5), 429–449. https://doi.org/10.1080/10413200.2019.1573204

Dweck, C. S. (2006). *Mindset. The new psychology of success.* Ballantine Books.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, *62*(1), 107–115. https://doi.org/10.1111/j.1365-2648.2007.04569.x

Hardcastle, S. J., Tye, M., Glassey, R., & Hagger, M. S. (2015). Exploring the perceived effectiveness of a life skills development program for high-performance athletes. *Psychology of Sport and Exercise*, *16*(3), 139–149. https://doi.org/10.1016/j.psychsport.2014.10.005

Harwood, C. G., & Thrower, S. N. (2019). Performance enhancement and the young athlete: Mapping the landscape and navigating future directions. *Kinesiology Review*, *8*(3), 171–179. https://doi.org/10.1123/kr.2019-0026

Hauser, L. L., Harwood, C. G., Höner, O., O'Connor, D., & Wachsmuth, S. (2022). Talent development environments within sports: A scoping review examining functional and dysfunctional environmental features. *International Review of Sport and Exercise Psychology*, 1–27. https://doi.org/10.1080/1750984X.2022.2129423

Henriksen, K., Storm, L. K., Stambulova, N., Pyrdol, N., & Larsen, C. H. (2019). Successful and less successful interventions with youth and senior athletes: Insights from expert sport psychology practitioners. *Journal of Clinical Sport Psychology*, *13*(1), 72–94. https://doi.org/10.1123/jcsp.2017-0005

Hitchcock, J. H., & Onwuegbuzie, A. J. (2020). Developing mixed methods crossover analysis approaches. *Journal of Mixed Methods Research*, *14*(1), 63-83.

https://doi.org/10.1177/1558689819841782

Holmes, D. S., & Mergen, A. E. (2014). Converting survey results from four-point to five-point scale: A case study. *Total Quality Management & Business Excellence*, *25*(1-2), 175-182. https://doi.org/10.1080/14783363.2013.799330

Jones, M. I., Lavallee, D., & Tod, D. (2011). Developing communication and organization skills: The ELITE life skills reflective practice intervention. *The Sport Psychologist*, *25*(2), 159–176. https://doi.org/10.1123/tsp.25.2.159

Jordalen, G., Lemyre, P. N., & Durand-Bush, N. (2020). Interplay of motivation and self-regulation throughout the development of elite athletes. *Qualitative Research in Sport, Exercise and Health*, *12*(3), 377–391. https://doi.org/10.1080/2159676X.2019.1585388

Jørgensen, H., Lemyre, P. N., & Holt, N. L. (2020). Multiple learning contexts and the development of life skills among Canadian junior national team biathletes. *Journal of Applied Sport Psychology*, *32*(4), 392–415. https://doi.org/10.1080/10413200.2019.1570570

Jørgensen, H., Mosewich, A. D., McHugh, T.-L. F., & Holt, N. L. (2023). A grounded theory of personal development in high-performance sport environments. *Psychology of Sport & Exercise* [MS# PSE-D-22-00723. Submitted November 23, 2022]

Kazdin, A. E. (2008). Evidence-based treatment and practice: New opportunities to bridge clinical research and practice, enhance the knowledge base, and improve patient care. *American Psychologist, 63*(3), 146–159. https://doi.org/10.1037/0003-066X.63.3.146

Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings* (2nd ed.). Oxford University Press.

Kazdin, A. E. (2019). Single-case experimental designs. Evaluating interventions in research and clinical practice. *Behaviour Research and Therapy*, *117*, 3-17. https://doi.org/10.1016/j.brat.2018.11.015

Kazdin, A. E. (2021). *Single-case research designs: Methods for clinical and applied settings* (3rd ed.). Oxford University Press.

Kitchenham, A. (2010). Mixed methods in case study research. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 562–564). Sage. http://doi.org/10.4135/9781412957397.n208

Knapp, S., Miller, A., Outar, L., & Turner, M. (2023). Psychological well-being and exercise addiction: The treatment effects of an REBT intervention for females. *Psychology of Sport and Exercise*, *64*, https://doi.org/10.1016/j.psychsport.2022.102298

Larsen, C. H., Alfermann, D., & Christensen, M. K. (2012). Psychosocial skills in a youth soccer academy: A holistic ecological perspective. *Sport Science Review*, *21*, 51–74.

Larsen, C. H., Alfermann, D., Henriksen, K., & Christensen, M. K. (2013). Successful talent development in soccer: The characteristics of the environment. *Sport, Exercise, and Performance Psychology, 2*(3), 190–206. https://doi.org/10.1037/a0031958

Larsen, C. H., Alfermann, D., Henriksen, K., & Christensen, M. K. (2014). Preparing footballers for the next step: An intervention program from an ecological perspective. *The Sport Psychologist*, *28*(1), 91–102. https://doi.org/10.1123/tsp.2013-0015

Lochbaum, M., Stoner, E., Hefner, T., Cooper, S., Lane, A. M., & Terry, P. C. (2022). Sport psychology and performance meta-analyses: A systematic review of the literature. *PLOS ONE, 17*(2), 1-22. https://doi.org/10.1371/journal.pone.0263408

Love, S., Kannis-Dymand, L., & Lovell, G. P. (2019). Development and validation of the Metacognitive Processes during Performances Questionnaire. *Psychology of Sport and Exercise*, *41*, 91-98. https://doi.org/10.1016/j.psychsport.2018.12.004

McNeil, D. G., Phillips, W. J., & Scoggin, S. A. (2023). Examining the importance of athletic mindset profiles for level of sport performance and coping. *International Journal of Sport and Exercise Psychology*, 1-17. https://doi.org/10.1080/1612197X.2023.2180073

Onghena, P., Maes, B., & Heyvaert, M. (2019). Mixed methods single case research: State of

the art and future directions. *Journal of Mixed Methods Research*, *13*(4), 461–480.

https://doi.org/10.1177/1558689818789530

O'Sullivan, D., & Baxter, E. (2023). Using Lego® bricks to build a growth mindset: a case

study. *Journal of Sport Psychology in Action*, *14*(2), 86-96.

https://doi.org/10.1080/21520704.2022.2119317

Pierce, S., Gould, D., & Camiré, M. (2017). Definition and model of life skills transfer.

International Review of Sport and Exercise Psychology, *10*(1), 186–211.

https://doi.org/10.1080/1750984X.2016.1199727

Pierce, S., Gould, D., Cowburn, I., & Driska, A. (2016). Understanding the process of

psychological development in youth athletes attending an intensive wrestling

camp. *Qualitative Research in Sport, Exercise and Health*, *8*(4), 332–351.

https://doi.org/10.1080/2159676X.2016.1176067

Poth, C. N. (2018). *Innovation in mixed methods research: A practical guide to integrative

thinking with complexity*. Sage.

Silvia, P. J. (2020). The self-reflection and insight scale: Applying item response theory to craft

an efficient short form. *Current Psychology*, *41*(12), 8635-8645.

https://doi.org/10.1007/s12144-020-01299-7

Sport Information Resource Centre (2022). *What we heard: Findings of government

consultations and a national survey to inform the Canadian Sport Policy 2023-2033.*

https://sirc.ca/canadian-sport-policies/what-we-heard/

Vealey, R. S., Cooley, R., Nilsson, E., Block, C., & Galli, N. (2019). Assessment and the use of

questionnaires in sport psychology consulting: An analysis of practices and attitudes

from 2003 to 2017. *Journal of Clinical Sport Psychology*, *13*(4), 505-523.

CHAPTER 6: General Discussion

General Discussion

The overarching purpose of this dissertation was to develop new understandings of how to promote personal development in high-performance sport environments. To accomplish this goal, I designed a sequential PhD dissertation. Across three studies, I (a) developed a grounded theory which offered propositions of how to promote personal development, (b) engaged with athletes and stakeholders in co-designing the AHEAD intervention, and (c) evaluated the AHEAD intervention using mixed methods. The three studies offer extended knowledge and understanding of how personal development can be facilitated through high-performance sport.

This dissertation moves beyond the study of features of the sport environment (e.g., Hauser et al., 2022; Henriksen et al., 2010a) or high-performance athletes' outcomes (e.g., Jørgensen et al., 2020; Nunes et al., 2021). Instead, it focuses on the *interactions* between the athlete and their sport environment as a process that can promote personal development. At the intersection of PYD and TDE research, my dissertation further attempts to reinforce how personal development and athletic development can co-exist in high-performance sport environments. I adopted an athlete-centered approach, which is important for studying personal development and performance in high-performance sport (Hauser et al., 2022). For example, an athlete-centered approach informed the dissertation in developing a grounded theory focused on athletes' personal development needs, co-designing the AHEAD intervention by incorporating participants' feedback, and – based on these insights – delivering and evaluating an intervention that focused on athletes' individualized personal development process.

From a methodological perspective, I designed studies that were theoretically informed, participant-driven, and collaborative in nature. The underlying intent was that the findings were created *with* the participants, not *for* them (Hodge et al., 2012). For example, the AHEAD intervention itself was informed by participants' perspectives on personal development (Chapter 3) and created using a co-design approach (Chapter 4). The AHEAD intervention was therefore

based on athletes' needs, which was intended to ensure the findings had a real-world application and effectiveness (Ely et al., 2020).

From an applied perspective, some findings from this dissertation can provide athletes, coaches, parents, technical leaders, and sport psychology practitioners with information that can be used to promote personal development in the high-performance sport environment. For example, athletes may use the strategies presented in the grounded theory, such as self-awareness, perspective, and evaluation, to actively work on their own personal development. Coaches and parents can also facilitate personal development by taking advantage of the situations that arise in athletes' sport and other life contexts and offer social support. Technical leaders, often in charge of establishing the culture of an organization (Henriksen et al., 2010a), can support personal development by providing educational materials on strategies that enable athletes to maximize their personal development experiences. Finally, sport psychology practitioners could use the findings of this research and adopt the AHEAD intervention to support high-performance athletes' personal and athletic development.

Strengths and Limitations

As the strengths and limitations of the individual studies are discussed in each chapter, the present section focuses on the general strengths and limitations of my PhD dissertation. An overall strength was the sequential design, whereby the first study informed the co-design of the AHEAD intervention, which was then delivered to the population for whom it was developed. The sport-specific approach was another strength that allowed for a tailored intervention, which can enhance intervention effectiveness and reduce the research to practice gap (Ely et al., 2020; Harwood & Thrower, 2019). Taking this approach, I worked closely with participants from Biathlon Canada to establish their trust and engage in more "equal negotiations" (Etherington, 2007, p. 602) in designing the AHEAD intervention. Using mixed methods to evaluate the intervention was another strength that offered a comprehensive understanding of the

intervention effectiveness, focusing on ways the AHEAD intervention could be practically

significant, not only statistically significant (Ely et al., 2020).

However, I acknowledge that the sport-specific approach to my dissertation may have

drawbacks. For instance, the results arising from this dissertation research may have limited

applicability to athletes in other sports and settings (e.g., youth sport). Furthermore, this

dissertation did not include a diverse sample, with most participants across all the studies

coming from European backgrounds. This is indicative of a broader lack of diversity within

biathlon. The sport originates from northern Europe and most athletes, coaches, and officials are

white Europeans. Furthermore, most of the research that informed my dissertation was

conducted by white authors from North America or Europe, most of whom were men. The lack of

diversity among the researchers whose work I relied upon is problematic because it reinforces

and reproduces power, information, and knowledge asymmetries (Abimbola, 2019). Thus, the

lack of diversity among the people I sampled in this dissertation and the literature I used to

inform my work fails to capture the range of factors that might impact personal development in

other athletes within different contexts. Although some research has focused on personal

development in other cultures (e.g., Hayden et al., 2015; Zhu et al., 2023), there is a need for

further research across social contexts to promote culturally relevant initiatives to enhance

personal development through sport (Camiré et al., 2022).

There are both strengths and limitations associated with my role as a high-performance

coach that should be considered as impacting this research. Whereas being an insider can be

beneficial within the research process, it is also important to make transparent the possible

limitations and how they were mitigated (Etherington, 2007). Significantly, since 2020 I have

become increasingly involved with Biathlon Canada and was hired as the training centre

assistant coach in July 2022. While coaching with the training centre, I co-designed the AHEAD

intervention. At that point, a Mitacs Accelerate grant – which was co-funded by Biathlon Canada

– was offered to me to deliver the AHEAD intervention (May to June 2023). Being hired as a

national team coach for Biathlon Canada in the Spring of 2023 coincided with the delivery of the

AHEAD intervention. In all the ethics applications, my coaching roles with Biathlon Canada and

the training centre were transparently acknowledged, in addition to highlighting I was not

responsible for any team selections. However, my level of authority changed when I became a

national team coach. As a national team coach, I did have a say in team selections. As such, I

assumed a position of power and authority that may have impacted the athletes' participation in

the AHEAD intervention. Although it was made clear that participation in the intervention was

entirely voluntary, and there were no negative consequences if athletes chose not to participate,

it is plausible that some may have felt they had to participate in the research because of my role.

Beyond the power imbalances that emerged, I also became even more of an insider as

the research progressed. I took several steps to monitor and reflect upon my own positionality as

a researcher. I adopted a reflexive approach by diligently completing a research journal

(Etherington, 2007), which often included reflections on my position, authority, and preconceived

assumptions. I had ongoing dialogue on my thought processes with "invited critics" (Wolcott,

1994, p. 42). I reminded participants that participation was voluntary and shared ways to

withdraw from the studies. In addition, an external sport psychology consultant, Yanik, was

added to the Study 3 ethics application as a research assistant to complete the post-interviews.

Yanik had worked with the athletes in the past, and I felt this would allow the participants to

speak more freely about their intervention experiences.

Future Directions

Although my dissertation offers new understandings of how to promote personal

development in high-performance sport environment, it remains necessary to study actual

behaviour changes and outcomes as result of promoting personal development. That is, since

personal development has been conceptualized as acquiring healthy psychological, emotional,

and social outcomes (Fraser-Thomas et al., 2017), it may be possible to identify athletes based

on these outcomes and retrospectively examine their developmental experiences. While

personal development is associated with the abovementioned outcomes, my PhD studies

focused more on the *process* of personal development rather than these outcomes per se. In the

future it may be useful to more explicitly focus on both processes *and* outcomes to gain a more

complete picture of personal development through high-performance sport.

My dissertation led to the AHEAD intervention and its effectiveness was tested in a high-

performance sport environment. Although the AHEAD intervention showed mixed effectiveness,

the triangulated results suggest there were parts of the intervention that could continue to be

used. Specifically, my evidence suggests the perspective, self-awareness, and evaluation

workshops were the ones affecting the participants most. Although it is difficult to establish if the

intervention was *effective enough* to warrant continued research, I would argue there was some

promising evidence for its effectiveness and that continued research on the AHEAD intervention

would be worthwhile. It is likely that some modifications to the intervention would be useful. For

example, given that the workshops that focused on perspective, self-awareness, and evaluation

showed most effectiveness, one way to move forward would be to focus the AHEAD intervention

on these three behaviours. Alternatively, it is possible that the characteristics of the participants

influenced the results. The three workshops that showed most effectiveness could have been a

result of the sport context, as well as participants' experiences and readiness to learn.

Therefore, another approach could be to deliver the AHEAD intervention with younger athletes

(e.g., ages 14-16) to establish the relative effectiveness of the different workshops.

Some features of the intervention study design could also be modified in the future. For

example, delivering the intervention across a longer time period (e.g., an entire season) would

provide participants with more opportunities to engage in the strategies. Longitudinal

assessments, such as following-up with participants and using ongoing reflective diaries, could

be used to explore the participants' perceived changes in their everyday lives (Kazdin, 2011).

More specifically, online diaries could be an appropriate data collection strategy as "they can

provide deeper reflection on the discussed topics and help to create a non-threatening and comfortable environment" (Creswell & Poth, 2018, p. 160).

Further engaging stakeholders could also be a way to improve the effectiveness of the AHEAD intervention. One strategy could involve engaging a variety of stakeholders – including coaches and parents – to review the findings, assess the intervention materials, and provide guidance on ways to move forward. I would speculate that an educational approach, whereby coaches are taught how to deliver some of the principles of personal development revealed in this dissertation, could be beneficial. Some previous research suggests that athletes should be active agents in their own personal development (e.g., Jordalen et al., 2020). Thus, if coaches were equipped with the knowledge to teach athletes personal development strategies as part of their regular, everyday approach to coaching, it is possible that they would help athletes become more active agents in their own personal development journeys.

Concluding Remarks

This dissertation was theoretically informed, sport specific, and based on participants' needs. Throughout my PhD, I gained new understandings of how to promote personal development that has informed, and will continue to inform, my own coaching practices. Over the past months, and in the final stages of writing this dissertation, I have faced difficult situations with athletes. On several occasions, they have confided in me, sharing some deeply personal challenges that were not necessarily related to the sport context. I applied my coaching philosophy and attempted to work with them as people rather than just as athletes. However, I was unsure as to whether my approach truly helped. This reflects some of the complexities of engaging in personal development in real world settings: Some athletes may be more ready to engage in personal development than others. In fact, my own experience was that my own personal development was more fruitful *after* I finished my career as an athlete. Even among athletes who ask for help, it is hard to establish what strategies may be appropriate for them at that particular moment in time. Indeed, I have conceptualized personal development as an

individualized process. This means, in practice, that my efforts to promote personal development as a coach must be individualized to a particular athletes' needs at a given moment in their athletic journey. The mixed effectiveness of the AHEAD intervention may even be reflective of the individualized nature of personal development. Therefore, like personal development itself, my own approach to coaching personal development is likely an individualized process that emerges and improves as I engage in my own personal development journey.

WORKS CITED

Abimbola, S. (2019). The foreign gaze: Authorship in academic global health. *BMJ Global Health*, *4*, 1-5. http://dx.doi.org/10.1136/bmjgh-2019-002068

Alvesson, M. (1990). On the popularity of organizational culture. *Acta Sociologica*, *33*(1), 31-49. https://doi.org/10.1177/00016993900330010

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? *Child Development Perspectives*, *1*(2), 68-73. https://doi.org/10.1111/j.1750-8606.2007.00016.x

Arnett, J. J. (2010). Emerging adulthood (s). In L. A. Jensen (Ed.), *Bridging cultural and developmental approaches to psychology: New syntheses in theory, research, and policy* (pp. 255-275). Oxford.

Barker, J. B., Evans, A. L., Coffee, P., Slater, M. J., & McCarthy, P. J. (2014). Consulting on tour: A dual-phase personal-disclosure mutual-sharing intervention and group functioning in elite youth cricket. *The Sport Psychologist*, *28*(2), 186–197. https://doi.org/10.1123/tsp.2013-0042

Barker, J. B., Mellalieu, S. D., McCarthy, P. J., Jones, M. V., & Moran, A. (2013). A review of single-case research in sport psychology 1997–2012: Research trends and future directions. *Journal of Applied Sport Psychology*, *25*(1), 4–32. https://doi.org/10.1080/10413200.2012.709579

Barker, J. B., Slater, M. J., Pugh, G., Mellalieu, S. D., McCarthy, P. J., Jones, M. V., & Moran, A. (2020). The effectiveness of psychological skills training and behavioural interventions in sport using single-case designs: A meta regression analysis of the peer-reviewed studies. *Psychology of Sport and Exercise*. *51*. https://doi.org/10.1016/j.psychsport.2020.101746

Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research*, *15*(2), 219–234. https://doi.org/10.1177/1468794112468475

Biathlon Canada. (2022, November). *Mission, Vision, & Values of Biathlon Canada*.

https://www.biathloncanada.ca/about

Biddle, S. J., Wang, C. J., Chatzisarantis, N. L., & Spray, C. M. (2003). Motivation for physical

activity in young people: Entity and incremental beliefs about athletic ability. *Journal of*

Sports Science, *21*(12), 973-989. https://doi.org/10.1080/02640410310001641377

Bourke, B. (2014). Positionality: Reflecting on the research process. *Qualitative Report*, *19*(33),

1–9.

Bruner, M. W., McLaren, C. D., Sutcliffe, J. T., Gardner, L. A., & Vella, S. A. (2022).

Conceptualizing and measuring positive youth development in sport: A scoping review.

International Review of Sport and Exercise Psychology, 1-49.

https://doi.org/10.1080/1750984X.2022.2070861

Bryan, C., O'Shea, D., & MacIntyre, T. (2019). Stressing the relevance of resilience: A systematic

review of resilience across the domains of sport and work. *International Review of Sport*

and Exercise Psychology, *12*(1), 70-111. https://doi.org/10.1080/1750984X.2017.1381140

Camiré, M., Newman, T. J., Bean, C., & Strachan, L. (2022). Reimagining positive youth

development and life skills in sport through a social justice lens. *Journal of Applied Sport*

Psychology, *34*(6), 1058-1076. https://doi.org/10.1080/10413200.2021.1958954

Campbell, M., Katikireddi, S. V., Hoffmann, T., Armstrong, R., Waters, E., & Craig, P. (2018).

TIDieR-PHP: A reporting guideline for population health and policy

interventions. *BMJ*, *361*, 1–5. https://doi.org/10.1136/bmj.k1079

Canadian High Performance Sport Strategy. (2019). *Canadian High Performance Sport Strategy.*

https://www.canada.ca/content/dam/pch/documents/services/sport-policies-acts-

regulations/HighPerSportStrat-eng.pdf

Chavez, C. (2008). Conceptualizing from the inside: Advantages, complications, and demands

on insider positionality. *The Qualitative Report*, *13*(3), 474–494.

Côté, J., Turnnidge, J., & Evans, M. B. (2014). The dynamic process of development through sport. *Kinesiologia Slovenica*, *20*(3), 14–26.

Côté, J., Turnnidge, J., & Vierimaa, M. (2016). A personal assets approach to youth sport. In K. Green & A. Smith (Eds.), *Routledge handbook of youth sport* (2nd ed., pp. 243–255). Routledge. https://doi.org/10.4324/9780203795002

Corbin, J. M. (2021). Strauss's grounded theory. In J. M. Morse, B. J. Bowers, K. Charmaz, A. E. Clarke, J. Corbin, C. J. Porr, & P. N. Stern (Eds.), *Developing grounded theory: The second generation revisited* (2nd ed., pp. 25–44). Routledge.

Corbin, J. M., & Strauss, A. L. (2015) *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed.). Sage.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches (*4th ed.). Sage.

Cronin, L. D., & Allen, J. (2017). Development and initial validation of the Life Skills Scale for Sport. *Psychology of Sport and Exercise*, *28*, 105–119. https://doi.org/10.1016/j.psychsport.2016.11.001

Cumming, J., Whiting, R., Parry, B. J., Clarke, F. J., Holland, M. J., Cooley, S. J., & Quinton, M. L. (2022). The My Strengths Training for Life™ program: Rationale, logic model, and description of a strengths-based intervention for young people experiencing homelessness. *Evaluation and Program Planning*, *91*, 1–12. https://doi.org/10.1016/j.evalprogplan.2021.102045

Danish, S. J., D'Augelli, A. R., & Ginsberg, M. R. (1984). Life development intervention: Promotion of mental health through the development of competence. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (pp. 520-544). Wiley.

Danish, S. J., Petitpas, A. J., & Hale, B. D. (1993). Life development intervention for athletes: Life skills through sports. *The Counseling Psychologist*, *21*(3), 352–385. https://doi.org/10.1177/0011000093213002

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Devaney, D. J., Nesti, M. S., Ronkainen, N. J., Littlewood, M., & Richardson, D. (2018). Athlete lifestyle support of elite youth cricketers: An ethnography of player concerns within a national talent development program. *Journal of Applied Sport Psychology*, *30*(3), 300–320. https://doi.org/10.1080/10413200.2017.1386247

Dewey, J. (1931). *Philosophy and civilization.* Minton.

De Winter, J. C. (2019). Using the student's t-test with extremely small sample sizes. *Practical Assessment, Research, and Evaluation*, *18*(10), 1-10. https://doi.org/10.7275/e4r6-dj05

Dohme, L. C., Bloom, G. A., Piggott, D., & Backhouse, S. (2020). Development, implementation, and evaluation of an athlete-informed mental skills training program for elite youth tennis players. *Journal of Applied Sport Psychology*, *32*(5), 429–449. https://doi.org/10.1080/10413200.2019.1573204

Dohme, L. C., Piggott, D., Backhouse, S., & Morgan, G. (2019). Psychological skills and characteristics facilitative of youth athletes' development: A systematic review. *The Sport Psychologist*, *33*(4), 261–275. https://doi.org/10.1123/tsp.2018-0014

Doyle, L., McCabe, C., Keogh, B., Brady, A., & McCann, M. (2020). An overview of the qualitative descriptive design within nursing research. *Journal of Research in Nursing*, *25*(5), 443–455. https://doi.org/10.1177/1744987119880234

Dunn, J. G. H. (1994). Toward the combined use of nomothetic and idiographic methodologies in sport psychology: An empirical example. *The Sport Psychologist*, *8*(4), 376–392. https://doi.org/10.1123/tsp.8.4.376

Dweck, C. S. (2006). *Mindset. The new psychology of success.* Ballantine Books.

Dwyer, S. C., & Buckle, J. L. (2009). The space between: On being an insider-outsider in qualitative research. *International Journal of Qualitative Methods, 8*(1), 54–63. https://doi.org/10.1177/160940690900800105

Ellis, C. (2007). Telling secrets, revealing lives: Relational ethics in research with intimate others. *Qualitative Inquiry*, *13*(1), 3-29. https://doi.org/10.1177/1077800406294947

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, *62*(1), 107–115. https://doi.org/10.1111/j.1365-2648.2007.04569.x

Ely, F. O., O, J., & Munroe-Chandler, K. J. (2021). How intervention research designs may broaden the research-to-practice gap in sport psychology. *Journal of Sport Psychology in Action*, *12*(2), 101-113. https://doi.org/10.1080/21520704.2020.1798573

Etherington, K. (2007). Ethical research in reflexive relationships. *Qualitative Inquiry*, *13*(5), 599-616. https://doi.org/10.1177/1077800407301175

Feddersen, N. B., Morris, R., Ronkainen, N., Sæther, S. A., Littlewood, M., & Richardson, D. (2021). A qualitative meta-study of a decade of the holistic ecological approach to talent development. *Scandinavian Journal of Sport and Exercise Psychology*, *3*, 24–39. https://doi.org/10.7146/sjsep.v3i.128317

Fraser, M. W., Richman, J. M., Galinsky, M. J., & Day, S. H. (2009). *Intervention research: Developing social programs*. Oxford University Press.

Fraser-Thomas, J., Beesley, T., Dickler, L., Harlow, M., Mosher, A., Preston, C., & Wolman, L. (2017). Developing talent while promoting positive youth development: A balancing act. In J. Baker, S. Cobley, J. Schorer, & N. Wattie (Eds.), *Routledge handbook of talent identification and development in sport* (pp. 377–393). Routledge.

Giacobbi, P. R., Poczwardowski, A., & Hager, P. (2005). A pragmatic research philosophy for sport and exercise psychology. *The Sport Psychologist*, *19*(1), 18–31. https://doi.org/10.1123/tsp.19.1.18

Gitlin, L., & Czaja, S. (2016). *Behavioral intervention research: Designing, evaluating, and implementing*. Springer Publishing Company.

Glaser, B. G, & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Aldine de Gruyter.

Gledhill, A., & Harwood, C. G. (2019). Toward an understanding of players' perceptions of talent development environments in UK female football. *Journal of Applied Sport Psychology*, *31*(1), 105–115. https://doi.org/10.1080/10413200.2017.1410254

Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems*, *21*(2), 135–146. https://doi.org/10.1057/ejis.2011.54

Gould, D., & Carson, S. (2008). Life skills development through sport: Current status and future directions. *International Review of Sport and Exercise Psychology*, *1*(1), 58-78. https://doi.org/10.1080/17509840701834573

Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. *Journal of Applied Sport Psychology*, *14*(3), 172–204. https://doi.org/10.1080/10413200290103482

Hall, A. J., Jones, L., & Martindale, R. J. (2019). The Talent Development Environment Questionnaire as a tool to drive excellence in elite sport environments. *International Sport Coaching Journal*, *6*(2), 187–198. https://doi.org/10.1123/iscj.2018-0041

Hardcastle, S. J., Tye, M., Glassey, R., & Hagger, M. S. (2015). Exploring the perceived effectiveness of a life skills development program for high-performance athletes. *Psychology of Sport and Exercise*, *16*(3), 139–149. https://doi.org/10.1016/j.psychsport.2014.10.005

Harwood, C. G., & Johnston, J. (2016). Positive youth development and talent development: Is there a best of both worlds? In. N. L. Holt (Ed.), *Positive youth development through sport* (2nd ed., pp. 113–125). Routledge.

Harwood, C. G., & Thrower, S. N. (2019). Performance enhancement and the young athlete: Mapping the landscape and navigating future directions. *Kinesiology Review*, *8*(3), 171–179. https://doi.org/10.1123/kr.2019-0026

Hauser, L. L., Harwood, C. G., Höner, O., O'Connor, D., & Wachsmuth, S. (2022). Talent development environments within sports: A scoping review examining functional and dysfunctional environmental features. *International Review of Sport and Exercise Psychology*, 1–27. https://doi.org/10.1080/1750984X.2022.2129423

Hayden, L. A., Whitley, M. A., Cook, A. L., Dumais, A., Silva, M., & Scherer, A. (2015). An exploration of life skill development through sport in three international high schools. *Qualitative Research in Sport, Exercise and Health*, *7*(5), 759-775. https://doi.org/10.1080/2159676X.2015.1011217

Henriksen, K. (2015). Developing a high-performance culture: A sport psychology intervention from an ecological perspective in elite orienteering. *Journal of Sport Psychology in Action*, *6*(3), 141–153. https://doi.org/10.1080/21520704.2015.1084961

Henriksen, K., & Stambulova, N. (2017). A holistic ecological approach. In J. Baker, S. Cobley, J. Schorer & N. Wattie (Eds.), *Routledge handbook of talent identification and development in sport* (pp. 271–284). Routledge.

Henriksen, K., Stambulova, N., & Roessler, K. K. (2010a). Holistic approach to athletic talent development environments: A successful sailing milieu. *Psychology of Sport and Exercise*, *11*(3), 212–222. https://doi.org/10.1016/j.psychsport.2009.10.005

Henriksen, K., Stambulova, N., & Roessler, K. K. (2010b). Successful talent development in track and field: Considering the role of environment [Special issue]. *Scandinavian Journal of Medicine & Science in Sports*, *20*(2), 122–132. https://doi.org/10.1111/j.1600-0838.2010.01187.x

Henriksen, K., Stambulova, N., & Roessler, K. K. (2011). Riding the wave of an expert: A

    successful talent development environment in kayaking. *The Sport Psychologist*, *25*(3),

    341–362. https://doi.org/10.1123/tsp.25.3.341

Henriksen, K., Storm, L. K., Stambulova, N., Pyrdol, N., & Larsen, C. H. (2019). Successful and

    less successful interventions with youth and senior athletes: Insights from expert sport

    psychology practitioners. *Journal of Clinical Sport Psychology*, *13*(1), 72–94.

    https://doi.org/10.1123/jcsp.2017-0005

Hitchcock, J. H., & Onwuegbuzie, A. J. (2020). Developing mixed methods crossover analysis

    approaches. *Journal of Mixed Methods Research*, *14*(1), 63-83.

    https://doi.org/10.1177/1558689819841782

Hodge, K., Danish, S., Forneris, T., & Miles, A. (2016). Life skills and basic psychological

    needs: A conceptual framework for life skills interventions. In. N. L. Holt (Ed.), *Positive*

    youth development through sport (2nd ed., pp. 45–56). Routledge.

Hodge, K., Danish, S., & Martin, J. (2012). Developing a conceptual framework for life skills

    interventions. *The Counseling Psychologist*, *41*(8), 1125–1152.

    https://doi.org/10.1177/0011000012462073

Holt, N. L. (2016). *Positive youth development through sport* (2nd ed.). Routledge.

    https://doi.org/10.4324/9781315709499

Holt, N. L., & Dunn, J. G. H. (2004). Toward a grounded theory of the psychosocial

    competencies and environmental conditions associated with soccer success. *Journal of*

    Applied Sport Psychology, *16*(3), 199–219. https://doi.org/10.1080/10413200490437949

Holt, N. L., Neely, K. C., Slater, L. G., Camiré, M., Côté, J., Fraser-Thomas, J., MacDonald, D.,

    Strachan, L., & Tamminen, K. A. (2017). A grounded theory of positive youth

    development through sport based on results from a qualitative meta-study.

    International Review of Sport and Exercise Psychology, *10*(1), 1–49.

    https://doi.org/10.1080/1750984X.2016.1180704

Holt, N. L., Tink, L. N., Mandigo, J. L., & Fox, K. R. (2008). Do youth learn life skills through their involvement in high school sport? A case study. *Canadian Journal of Education*, *31*, 281–304.

Howells, K., Sarkar, M., & Fletcher, D. (2017). Can athletes benefit from difficulty? A systematic review of growth following adversity in competitive sport. *Progress in Brain Research*, *234*, 117–159. https://doi.org/10.1016/bs.pbr.2017.06.002

IBU Gender Equality. (2021) *IBU Gender Equality Strategy 2021-2026.* https://assets.ctfassets.net/cz0vl36hcq0x/HAeN2FAcUiOuIFihHBA/4a98b4f3772404f662 eea9ac8a90eb27/IBU_GE_Strategy_2021.2024.pdf

James, W. (1907). *What pragmatism means.* Longmans Green Co.

Jones, M. I., & Lavallee, D. (2009). Exploring the life skills needs of British adolescent athletes. *Psychology of Sport and Exercise*, *10*(1), 159–167. https://doi.org/10.1016/j.psychsport.2008.06.005

Jones, M. I., Lavallee, D., & Tod, D. (2011). Developing communication and organization skills: The ELITE life skills reflective practice intervention. *The Sport Psychologist*, *25*(2), 159–176. https://doi.org/10.1123/tsp.25.2.159

Jordalen, G., Lemyre, P. N., & Durand-Bush, N. (2020). Interplay of motivation and self-regulation throughout the development of elite athletes. *Qualitative Research in Sport, Exercise and Health*, *12*(3), 377–391. https://doi.org/10.1080/2159676X.2019.1585388

Jørgensen, H., Lemyre, P. N., & Holt, N. L. (2020). Multiple learning contexts and the development of life skills among Canadian junior national team biathletes. *Journal of Applied Sport Psychology*, *32*(4), 392–415. https://doi.org/10.1080/10413200.2019.1570570

Jørgensen, H., Mosewich, A. D., McHugh, T.-L. F., & Holt, N. L. (2023). A grounded theory of personal development in high-performance sport environments. *Psychology of Sport & Exercise* [MS# PSE-D-22-00723. Submitted November 23, 2022]

Kazdin, A. E. (2008). Evidence-based treatment and practice: New opportunities to bridge clinical research and practice, enhance the knowledge base, and improve patient care. *American Psychologist, 63*(3), 146–159. https://doi.org/10.1037/0003-066X.63.3.146

Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings* (2nd ed.). Oxford University Press.

Kazdin, A. E. (2019). Single-case experimental designs. Evaluating interventions in research and clinical practice. *Behaviour Research and Therapy*, *117*, 3-17. https://doi.org/10.1016/j.brat.2018.11.015

Kazdin, A. E. (2021). *Single-case research designs: Methods for clinical and applied settings* (3rd ed.). Oxford University Press.

Kazdin, A. E. (2021). Single-case experimental designs: Characteristics, changes, and challenges. *Journal of the Experimental Analysis of Behavior*, *115*(1), 56-85. https://doi.org/10.1002/jeab.638

Kim, H., Sefcik, J. S., & Bradway, C. (2017). Characteristics of qualitative descriptive studies: A systematic review. *Research in Nursing & Health*, *40*(1), 23–42. https://doi.org/10.1002/nur.21768

Kitchenham, A. (2010). Mixed methods in case study research. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 562–564). Sage. http://doi.org/10.4135/9781412957397.n208

Knapp, S., Miller, A., Outar, L., & Turner, M. (2023). Psychological well-being and exercise addiction: The treatment effects of an REBT intervention for females. *Psychology of Sport and Exercise*, *64*, https://doi.org/10.1016/j.psychsport.2022.102298

Krueger, R. A. (1998). *Developing questions for focus groups.* Sage.

Larsen, C. H., Alfermann, D., & Christensen, M. K. (2012). Psychosocial skills in a youth soccer

academy: A holistic ecological perspective. *Sport Science Review*, *21*, 51–74.

https://doi.org/10.2478/v10237-012-0010-x

Larsen, C. H., Alfermann, D., Henriksen, K., & Christensen, M. K. (2013). Successful talent

development in soccer: The characteristics of the environment. *Sport, Exercise, and*

Performance Psychology, 2(3), 190–206. https://doi.org/10.1037/a0031958

Larsen, C. H., Alfermann, D., Henriksen, K., & Christensen, M. K. (2014). Preparing footballers

for the next step: An intervention program from an ecological perspective. *The Sport*

Psychologist, *28*(1), 91–102. https://doi.org/10.1123/tsp.2013-0015

Leask, C. F., Sandlund, M., Skelton, D. A., Altenburg, T. M., Cardon, G., Chinapaw, M. J., De

Bourdeaudhuij, I., Verloigne, M., & Chastin, S. F. (2019). Framework, principles and

recommendations for utilising participatory methodologies in the co-creation and

evaluation of public health interventions. *Research Involvement and Engagement*, *5*(1),

1–16. https://doi.org/10.1186/s40900-018-0136-9

Lochbaum, M., Stoner, E., Hefner, T., Cooper, S., Lane, A. M., & Terry, P. C. (2022). Sport

psychology and performance meta-analyses: A systematic review of the literature. *PLOS*

ONE, 17(2), 1-22. https://doi.org/10.1371/journal.pone.0263408

Love, S., Kannis-Dymand, L., & Lovell, G. P. (2019). Development and validation of the

Metacognitive Processes during Performances Questionnaire. *Psychology of Sport and*

Exercise, *41*, 91-98. https://doi.org/10.1016/j.psychsport.2018.12.004

Martin, G. L., Thompson, K., & Regehr, K. (2004). Studies using single-subject designs in sport

psychology: 30 years of research. *The Behavior Analyst*, *27*(2), 263–280.

https://doi.org/10.1007/BF03393185

Martindale, R. J., Collins, D., & Abraham, A. (2007). Effective talent development: The elite

coach perspective in UK sport. *Journal of Applied Sport Psychology*, *19*(2), 187–206.

https://doi.org/10.1080/10413200701188944

Martindale, R. J., Collins, D., & Daubney, J. (2005). Talent development: A guide for practice and research within sport. *Quest*, *57*(4), 353–375. https://doi.org/10.1080/00336297.2005.10491862

Martindale, R. J., Collins, D., Douglas, C., & Whike, A. (2013). Examining the ecological validity of the Talent Development Environment Questionnaire. *Journal of Sports Sciences*, *31*(1), 41–47. https://doi.org/10.1080/02640414.2012.718443

Martindale, R. J., Collins, D., Wang, J. C., McNeill, M., Lee, K. S., Sproule, J., & Westbury, T. (2010). Development of the talent development environment questionnaire for sport. *Journal of Sports Sciences*, *28*(11), 1209–1221. https://doi.org/10.1080/02640414.2010.495993

McNeil, D. G., Phillips, W. J., & Scoggin, S. A. (2023). Examining the importance of athletic mindset profiles for level of sport performance and coping. *International Journal of Sport and Exercise Psychology*, 1-17. https://doi.org/10.1080/1612197X.2023.2180073

Merriam-Webster. (n.d.). Individual. In *Merriam-Webster.com dictionary*. Retrieved February 10, 2023, from https://www.merriam-webster.com/dictionary/individual

Miller, P. S., & Kerr, G. A. (2002). Conceptualizing excellence: Past, present, and future. *Journal of Applied Sport Psychology*, *14*(3), 140–153. https://doi.org/10.1080/10413200290103464

Mills, A., Butt, J., Maynard, I., & Harwood, C. G. (2014a). Toward an understanding of optimal development environments within elite English soccer academies. *The Sport Psychologist, 28*(2), 137–150. https://doi.org/10.1123/tsp.2013-0018

Milne, J., & Oberle, K. (2005). Enhancing rigor in qualitative description. *Journal of Wound Ostomy & Continence Nursing*, *32*(6), 413–420. https://doi.org/10.1097/00152192-200511000-00014

Neergaard, M. A., Olesen, F., Andersen, R. S., & Sondergaard, J. (2009). Qualitative description – The poor cousin of health research? *BMC Medical Research Methodology*, *9*(52), 1–5. https://doi.org/10.1186/1471-2288-9-52

Nesti, M. S., & Ronkainen, N. J. (2020). Existential approaches. In D. Tod & M. Eubank (Eds.), *Applied Sport, Exercise, and Performance Psychology* (pp. 87-100). Routledge.

Newman, T. J., Santos, F., Black, S., & Bostick, K. (2021). Learning life skills through challenging and negative experiences. *Child and Adolescent Social Work Journal*, *39*, 1-15. https://doi.org/10.1007/s10560-021-00739-y

Nunes, E. L. G., Ciampolini, V., Santos, F., Palheta, C. E., Nascimento, J. V. D., & Milistetd, M. (2021). Composite vignettes of former Brazilian high-performance volleyball athletes' perspective on life skills learning and transfer. *Journal of Sports Sciences*, *39*(23), 2674–2682. https://doi.org/10.1080/02640414.2021.1951054

O'Cathain, A., Murphy, E., & Nicholl, J. (2010). Three techniques for integrating data in mixed methods studies. *Bmj*, *341*. https://doi.org/10.1136/bmj.c4587

Onghena, P., Maes, B., & Heyvaert, M. (2019). Mixed methods single case research: State of the art and future directions. *Journal of Mixed Methods Research*, *13*(4), 461–480. https://doi.org/10.1177/1558689818789530

O'Sullivan, D., & Baxter, E. (2023). Using Lego® bricks to build a growth mindset: a case study. *Journal of Sport Psychology in Action*, *14*(2), 86-96. https://doi.org/10.1080/21520704.2022.2119317

Pain, M., & Harwood, C. (2009). Team building through mutual sharing and open discussion of team functioning. *The Sport Psychologist*, *23*(4), 523–542. https://doi.org/10.1123/tsp.23.4.523

Pankow, K., Fraser, S. N., & Holt, N. L. (2021). A retrospective analysis of the development of psychological skills and characteristics among National Hockey League players.

International Journal of Sport and Exercise Psychology, *19*(6), 988–1004.

https://doi.org/10.1080/1612197X.2020.1827003

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Sage.

Pierce, S., Gould, D., & Camiré, M. (2017). Definition and model of life skills transfer.

International Review of Sport and Exercise Psychology, *10*(1), 186–211.

https://doi.org/10.1080/1750984X.2016.1199727

Pierce, S., Gould, D., Cowburn, I., & Driska, A. (2016). Understanding the process of

psychological development in youth athletes attending an intensive wrestling

camp. *Qualitative Research in Sport, Exercise and Health*, *8*(4), 332–351.

https://doi.org/10.1080/2159676X.2016.1176067

Poth, C. N. (2018). *Innovation in mixed methods research: A practical guide to integrative*

thinking with complexity. Sage.

Poucher, Z. A., Tamminen, K. A., & Kerr, G. (2018). Providing social support to female Olympic

athletes. *Journal of Sport and Exercise Psychology*, *40*(4), 217–228.

ttps://doi.org/10.1123/jsep.2018-0008

Poucher, Z. A., Tamminen, K. A., Sabiston, C. M., Cairney, J., & Kerr, G. (2021). Prevalence of

symptoms of common mental disorders among elite Canadian athletes. *Psychology of*

Sport and Exercise, *57*, 1–10. https://doi.org/10.1016/j.psychsport.2021.102018.

Price, D., Wagstaff, C. R., & Thelwell, R. C. (2022). Opportunities and considerations of new

media and technology in sport psychology service delivery. *Journal of Sport Psychology*

in Action, *13*(1), 4-15. https://doi.org/10.1080/21520704.2020.1846648

Randall, R., & Nielsen, K. (2012). Does the intervention fit? An explanatory model of

intervention success and failure in complex organizational environments.

In C. Biron, M. Karanika-Murray, & C. Cooper (Eds.), Improving organizational

interventions for stress and well-being (pp. 120–134). London: Routledge.

Rongen, F., McKenna, J., Cobley, S., & Till, K. (2021). Do youth soccer academies provide developmental experiences that prepare players for life beyond soccer? A retrospective account in the United Kingdom. *Sport, Exercise, and Performance Psychology, 10*(3), 359–380. https://doi.org/10.1037/spy0000259

Ronkainen, N., Aggerholm, K., Allen-Collinson, J., & Ryba, T. V. (2022). Beyond life-skills: Talented athletes, existential learning and (un)learning the life of an athlete. *Qualitative Research in Sport, Exercise and Health*, 1–15. https://doi.org/10.1080/2159676X.2022.2037694

Rubin, H. J., & Rubin, I. (2012). *Qualitative interviewing: The art of hearing data* (3rd ed). Sage.

Sandardos, S. S., & Chambers, T. P. (2019). "It's not about sport, it's about you": An interpretative phenomenological analysis of mentoring elite athletes. *Psychology of Sport and Exercise*, *43*, 144–154. https://doi.org/10.1016/j.psychsport.2019.02.003

Sandelowski, M. (1993). Theory unmasked: The uses and guises of theory in qualitative research. *Research in Nursing & Health*, *16*(3), 213–218. https://doi.org/10.1002/nur.4770160308

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health*, *23*(4), 334–340. https://doi.org/10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-G

Sarkar, M., & Fletcher, D. (2014). Psychological resilience in sport performers: A review of stressors and protective factors. *Journal of Sports Sciences, 32*(15), 1419–1434. https://doi.org/10.1080/02640414.2014.901551

Schön, D. (1991) *The reflective practitioner* (2nd ed.). Jossey Bass.

Silvia, P. J. (2020). The self-reflection and insight scale: Applying item response theory to craft an efficient short form. *Current Psychology*, *41*(12), 8635-8645. https://doi.org/10.1007/s12144-020-01299-7

Sport Information Resource Centre (2022). *What we heard: Findings of government consultations and a national survey to inform the Canadian Sport Policy 2023-2033.* https://sirc.ca/canadian-sport-policies/what-we-heard/

Strachan, L., Côté, J., & Deakin, J. (2011). A new view: Exploring positive youth development in elite sport contexts. *Qualitative Research in Sport, Exercise and Health*, *3*(1), 9–32. https://doi.org/10.1080/19398441.2010.541483

Strauss, A. (1987). *Qualitative analysis for social scientists.* Cambridge University Press.

Strauss, A. (1993). *Continual permutations of action*. Aldine de Gruyter.

Sullivan-Bolyai, S., Bova, C., & Harper, D. (2005). Developing and refining interventions in persons with health disparities: The use of qualitative description. *Nursing Outlook*, *53*(3), 127–133. https://doi.org/10.1016/j.outlook.2005.03.005

Taylor, J. (2011). The intimate insider: Negotiating the ethics of friendship when doing insider research. *Qualitative Research*, *11*(1), 3–22. https://doi.org/10.1177/1468794110384447

Vargas, C., Whelan, J., Brimblecombe, J., & Allender, S. (2022). Co-creation, co-design, co-production for public health: A perspective on definition and distinctions. *Public Health Research & Practice*, *32*(2), 1–6. https://doi.org/10.17061/phrp3222211

Vealey, R. S., Cooley, R., Nilsson, E., Block, C., & Galli, N. (2019). Assessment and the use of questionnaires in sport psychology consulting: An analysis of practices and attitudes from 2003 to 2017. *Journal of Clinical Sport Psychology*, *13*(4), 505–523. https://doi.org/10.17061/phrp3222211

Wagstaff, C. R., Hanton, S., & Fletcher, D. (2013). Developing emotion abilities and regulation strategies in a sport organization: An action research intervention. *Psychology of Sport and Exercise*, *14*(4), 476–487. https://doi.org/10.1016/j.psychsport.2013.01.006

Walton, C. C., Gwyther, K., Gao, C. X., Purcell, R., & Rice, S. M. (2022). Evidence of gender imbalance across samples in sport and exercise psychology. *International Review of Sport and Exercise Psychology*, 1-19. https://doi.org/10.1080/1750984X.2022.2150981

Wasend, M., & LaVoi, N. M. (2019). Are women coached by women more likely to become sport coaches? Head coach gender and female collegiate athletes' entry into the coaching profession. *Women in Sport and Physical Activity Journal*, 27(2), 85-93. https://doi.org/10.1123/wspaj.2018-0043

Williams, P., Barclay, L., & Schmied, V. (2004). Defining social support in context: A necessary step in improving research, intervention, and practice. *Qualitative Health Research, 4*(7), 942–960. https://doi.org/10.1177/1049732304266997

Wolcott, H. F. (1994). *Transforming qualitative data: Description, analysis, and interpretation*. Sage.

Zhu, Q., Pynn, S. R., Holt, N. L., Huang, Z., & Jørgensen, H. (2023). Life skills development and learning contexts among members of China women's national soccer teams. *International Journal of Sport and Exercise Psychology*, 21(1), 15-32. https://doi.org/10.1080/1612197X.2021.2025137

APPENDICES

Appendix A

Grounded Theory Initial Interview Guide (Athletes)

Introduction Questions
1. Can you tell me about your background in biathlon, and why you wanted to compete at the high-performance level?

2. What qualities do you have as a person that have contributed to your development in biathlon? (Holt & Dunn, 2004)
   - What are your strengths as an athlete? (Holt & Dunn, 2004)

Main Questions: Personal Development
3. What does personal development mean to you?
   - Why or why isn't it important to you?
   - In your opinion, what kind of relationship exists between personal development and performance?
   - Do you think competing in high-performance sport can influence your personal development? If so, how?

4. Do you think you have experienced personal development through high-performance sport?
   - If 'yes', can you tell me about what things you encounter when you feel/experience personal development? (Sandardos & Chambers, 2019)
   - If 'no', why do you think you haven't experienced personal development?
   - Who helps you with your personal development?
   - Has anyone ever talked to you or taught you about personal development? [Probe: what have they told you?]

Main Questions: High-performance Sport Environment
I am interested in hearing more about the high-performance sport environment you are a part of. When I say your sport environment that can include your training center, Biathlon Canada, and other key stakeholders, such as coaches, technical leaders, parents, and teammates.
5. How would you describe the high-performance sport environment you are currently a part of? (Henriksen et al., 2010a)
   - What would you say are the overall strengths of your training environment? (Henriksen et al., 2011)
   - Do you think this strength might influence the athletes' performance and personal development? If so, how?
   - On the contrary, what would you say are some challenges that the training environment face? (Henriksen et al., 2011)

6. Do you think the high-performance training center has done anything to promote your personal development? If so, how?
   - Can you tell me a story of a time when people in your training center supported your personal development? (Larsen et al., 2013)
   - Who has been helpful to support you?
   - What are particularly helpful for your personal development?

Main Questions: Promoting Personal Development
I am interested in hearing more about how to promote personal development.

7. What are some things you do to promote your own personal development in high-performance sport?
    - Can you explain what strategies you used to promote your own personal development?
    - How did you learn these strategies?

8. Can you tell me about a time you think people in your training environment promoted your personal development?
    - How do you think they promoted your personal development?
    - Can you recall what strategies they used?
    - Do you think they used intentional or unintentional strategies to promote your personal development? [Probe: can you tell me more about that?]

9. What do you think your training center, including you, teammates, coaches, and other people could do to promote athletes' personal development?
    - Who do you think should be involved/responsible for making this change?
    - How do you think this would help?

Concluding Questions

10. To summarize, what is successful personal development in your opinion?
    - What could be done to make athletes' personal development more successful in high-performance sport?

11. Do you have anything else you want to talk more about, or something you want to discuss that I didn't ask about?

Initial Interview Guide (Coaches/Technical Leaders)

Introduction Questions
1. Can you tell me about your background in biathlon, and why you wanted to coach/work at the high-performance level?

2. What are the mental strengths you are looking for in high-performance athletes?

Main Questions: Personal Development
3. What does personal development mean to you?
   - Why or why isn't it important to you?
   - Do you think personal development can influence athletes' performance in biathlon? If so, how?
   - Do you think personal development can influence athletes' life outside of sport?

Main Questions: High-performance Sport Environment
I am interested in hearing more about the high-performance sport environment you are a part of and how it might support athletes' personal development. When I say your sport environment that can include the training center, Biathlon Canada, and other key stakeholders, such as coaches, technical leaders, parents, and teammates (just to mention a few).
4. How would you describe the high-performance sport environment you are currently a part of? (Henriksen et al., 2010a)
   - Who in the high-performance sport environment do you consider playing a significant role in athletes' development process? (Mills et al., 2014)
   - What is the structure and aim of your training center? (Holt & Dunn, 2004)
   - How do you try to develop athletes? (Holt & Dunn, 2004)

5. What would you say are the overall strengths of your training environment?
   - Do you think this strength might influence the athletes' performance and personal development? If so, how?
   - On the contrary, what do you think are some of the challenges faced by the high-performance training centers related to personal development?

Main Questions: Promoting Personal Development
I am interested in hearing more about how to promote personal development.
6. Do you think the high-performance training centers focus on promoting athletes' personal development? If so, how?
   - What role do you think high-performance training centers should have in promoting the personal development of athletes?
   - Who do you think should be involved/responsible for making this change?
   - How do you think this change would help athletes' development?

7. Do you think you have facilitated/supported personal development through sport?
   - If 'yes', can you tell me about what things/issues you discuss when talking about personal development with athletes? (Sandardos & Chambers, 2019)
   - If 'no', why do you think you haven't promoted personal development?

8. Do you feel like you know how to promote personal development through sport?
   - What are some things you do to promote your athletes' personal development?
   - Can you explain what strategies you use to promote personal development?
   - How did you learn these strategies?

- What strategies do you find most effective?
- On the contrary, what are some strategies you have found less effective?
- How do you think these strategies help athletes' personal development?

9. Can you tell me about a specific moment or experience in high-performance sport where you supported an athletes' personal development?
   - What made that event stand out?
   - What personal characteristics did you try to help the athlete with in that event?
   - How did you try to help?
   - Looking back, what did you think about the event at the time?
   - How did you know what strategies to use to promote the athlete's personal development?
   - Did someone teach you the strategy?

10. Can you tell me about a time when you forgot to support personal development?
    - What do you think could have been done differently?

Concluding Questions
11. To summarize, what is successful personal development in your opinion?
    - What could be done to make athletes' personal development more successful in high-performance sport?
    - Do you have anything else you want to talk more about, or something you want to discuss that I didn't ask about?

Initial Interview Guide (Parents)

Introduction Questions
1. Can you tell me about your own background in sport?
   - What are some of your own best memories from sport?
   - What is your best experience or memory of your child's sport career?

2. What personal qualities do you believe young biathletes require in order to make it to the senior elite level? (Holt & Dunn, 2004)

3. What are the mental strengths do you think are important for in high-performance athletes? (Holt & Dunn, 2004)

Main Questions: Personal Development
4. What does personal development mean to you?
   - Why or why isn't it important to you?
   - Do you think personal development can influence your child and other athletes' performance in biathlon? If so, how?
   - Can personal development influence athletes' life outside of sport? If so, how?

Main Questions: High-performance Sport Environment
I am interested in hearing more about the high-performance sport environment that your child is a part of and how it might support athletes' personal development. When I say "sport environment" that can include the training center, Biathlon Canada, and other key stakeholders, such as coaches, technical leaders, parents, and teammates (just to mention a few).
5. How would you describe the high-performance sport environment that your child is currently a part of? (Henriksen et al., 2010a)
   - Who in the high-performance sport environment do you consider playing a significant role in your child's development process? (Mills et al., 2014)

6. What would you say are the overall strengths of your child's training environment? (Henriksen et al., 2011)
   - Do you think this strength might influence your child's performance and personal development? If so, how?

7. On the contrary, what do you think are some of the challenges faced by the high-performance training center related to personal development? (Henriksen et al., 2011)
   - What are changes you think can be done to address these challenges?
   - How do you think the training centre could better support your child and other athletes' personal development? [probe for specific examples]

Main Questions: Promoting Personal Development
I am interested in hearing more about how to promote personal development.
8. Do you think the high-performance training centers focus on promoting athletes' personal development? If so, how?
   - What role do you think high-performance training centers should have in promoting the personal development of your child and other athletes?
   - What changes, if any, would you suggest that high-performance sport environment should make to promote athletes' personal development?
   - Who do you think should be involved/responsible for making this change?
   - How do you think this change would help athletes' development?

9. Do you think you have facilitated/supported your child's personal development through high-performance sport?
   - If 'yes', can you tell me about what things/issues you discuss when talking about personal development with your child? (Sandardos & Chambers, 2019)
   - If 'no', why do you think you haven't promoted personal development?

10. Do you feel like you know how to promote personal development in high-performance sport? [Probe: can you tell me more about that?]
    - What are some things you do to promote your child's personal development?
    - Can you explain what strategies you use to promote personal development?
    - How did you learn these strategies?
    - What strategies do you find most effective?
    - On the contrary, what are some strategies you have found less effective?
    - How do you think these strategies help your child's personal development?

11. Can you tell me about a specific moment or experience in high-performance sport where you supported your child's personal development?
    - What made that event stand out?
    - What personal characteristics did you try to help your child with in that event?
    - How did you try to help?
    - Looking back, what did you think about the event at the time?
    - How did you know what strategies to use to promote personal development?
    - Did someone teach you the strategy?

12. Can you tell me about a time when you forgot to support your child's personal development?
    - What do you think could have been done differently?
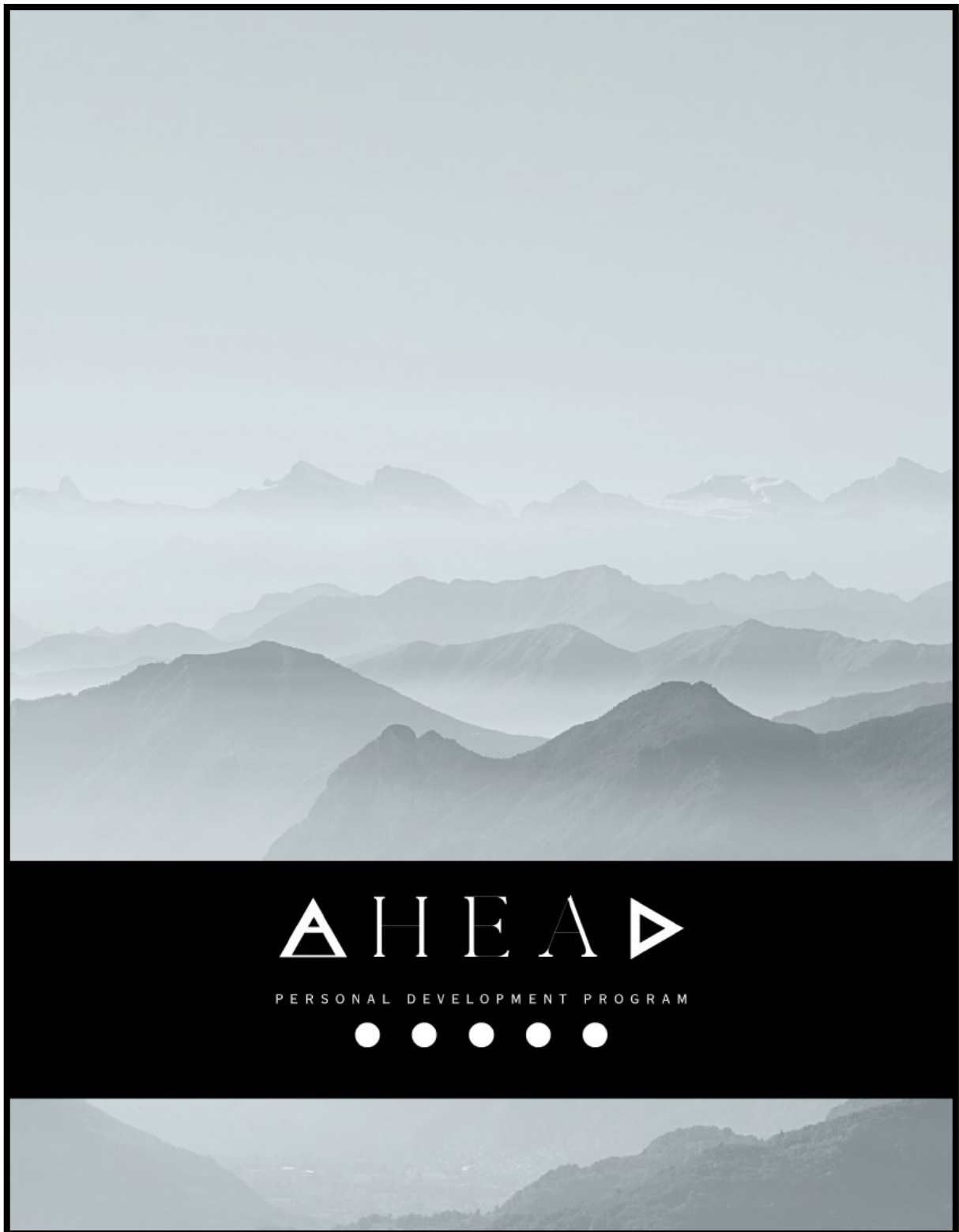
Concluding Questions
13. To summarize, what is successful personal development in your opinion?
    - What could be done to make athletes' personal development more successful in sport?

14. Do you have anything else you want to talk more about, or something you want to discuss that I didn't ask about?

Thank you!

Appendix B

Initial Overview of the AHEAD Intervention

PERSONAL DEVELOPMENT

WHAT? Personal development is an individual and continual process whereby athletes strive to learn and improve across life contexts.

HOW? Personal development includes learning strategies to improve life skills, psychological skills, and characteristics.

WHY? Personal development is important to help athletes address career transitions as well as performance and personal challenges.

▲HEA▶

1 SELF-AWARENESS

2 GOALS

3 REFLECTION

4 PERSPECTIVE

5 EVALUATION

▲HEA▶

OVERVIEW

▲HEA▶
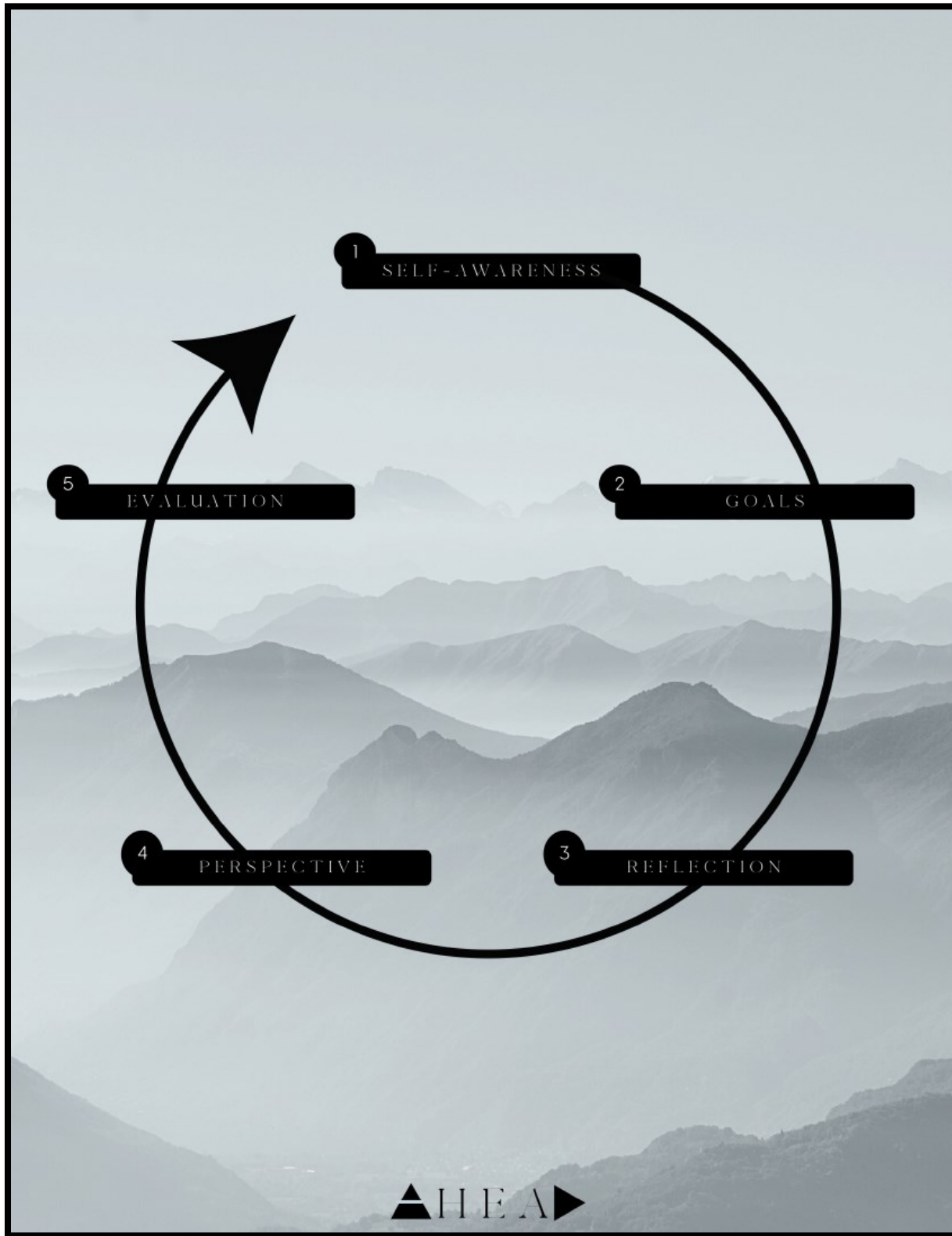
TARGET GROUP	High-performance athletes (ages +18)
OBJECTIVE	To develop knowledge and skills related to personal development.

1 INTRODUCTION

In workshop 1, athletes are introduced to personal development, and the 5 strategies they will develop throughout the AHEAD program.

2 SELF-AWARENESS

In workshop 2, athletes work on self-awareness; a critical first step to understand their inner world, and to get ready for the personal development process.

3 GOALS

In workshop 3, athletes identify a goal ladder; involving manageable goals as steppingstones to improve and work on personal development.

4 REFLECTION

In workshop 4, athletes learn to apply techniques to reflect on their thoughts, feelings, and behaviours to work on personal development.

5 PERSPECTIVE

In workshop 5, athletes learn perspective-taking techniques to gain insight into one's beliefs about growth and fixed mindsets, as well as how they see success and failure.

6 EVALUATION

In workshop 6, athletes learn about evaluating their thoughts, feelings, and behaviours so they can improve for the future.

NOTES

INTRODUCTION

TO-DO

In workshop 1, athletes are introduced to personal development, and the 5 strategies they will develop throughout the AHEAD program.

LEARNING OBJECTIVES

* Discuss the role of personal development in high-performance sport.

* Identify the reasons why you want to work on personal development.

* Appreciate the different strategies that can be used to work on personal development.

ACTIVITIES

WHY AM I HERE?

A LETTER TO THE FUTURE

THE PORTRAIT & 14-WORDS

REFLECTIVE DIARIES

NOTES

▲H E A▶

SELF-▲WARENESS

TO-DO

In workshop 2, athletes work on self-awareness; a critical first step to understand their inner world, and to get ready for the personal development process.

LEARNING OBJECTIVES

✦ Identify strengths and weaknesses relating to your personal development.

✦ Appreciate the importance of self-awareness in personal development.

✦ Assess where you are with your personal development, and where you want to go.

ACTIVITIES

INTERNAL TRAFFIC LIGHTS

WHO AM I?

S.W.O.T. ANALYSIS

U.S.E.D. ANALYSIS

BLINDSPOT WINDOW

REFLECTIVE DIARIES

NOTES

▲H E A▶

GO▲LS

TO-DO

In workshop 3, athletes identify a goal ladder; involving manageable goals as steppingstones to improve and work on personal development.

LEARNING OBJECTIVES

✴ Identify a goal ladder for your personal development.

✴ Create manageable short- and long-term goals.

✴ Recognize potential roadblocks for your personal development.

ACTIVITIES

DARE TO DREAM!

REACHABLE GOALS

GOAL LADDER

ROADBLOCKS

REFLECTIVE DIARIES

NOTES

▲H E A▶

REFLECTION

TO-DO

In workshop 4, athletes learn to apply techniques to reflect on their thoughts, feelings, and behaviours to work on personal development.

LEARNING OBJECTIVES

✶ Identify the role of reflection in personal development.

✶ Apply different reflecting and questioning techniques.

✶ Reflect on current and previous experiences.

ACTIVITIES

LEVELS OF REFLECTION

BOTTOM-UP / TOP-DOWN THINKING

ICEBERG ACTIVITY

3-MINUTE PAUSE

REFLECTIVE DIARIES

NOTES

PERSPECTIVE

TO-DO

In workshop 5, athletes learn perspective–taking techniques to gain insight into one's beliefs about growth and fixed mindsets, as well as how they see success and failure.

LEARNING OBJECTIVES

* Identify previous situations that had an impact on your personal development.

* Apply perspective-taking techniques.

* Discover new ways to look at previous life lessons and transitions.

ACTIVITIES

THE 3PS FILTER

RECORD YOUR "ABC"

SUNGLASSES ACTIVITY

"DEAR MY YOUNGER SELF"

REFLECTIVE DIARIES

NOTES

△ H E A ▶

EVALU▲TION

TO-DO

In workshop 6, athletes learn about evaluating their thoughts, feelings, and behaviours so they can improve for the future.
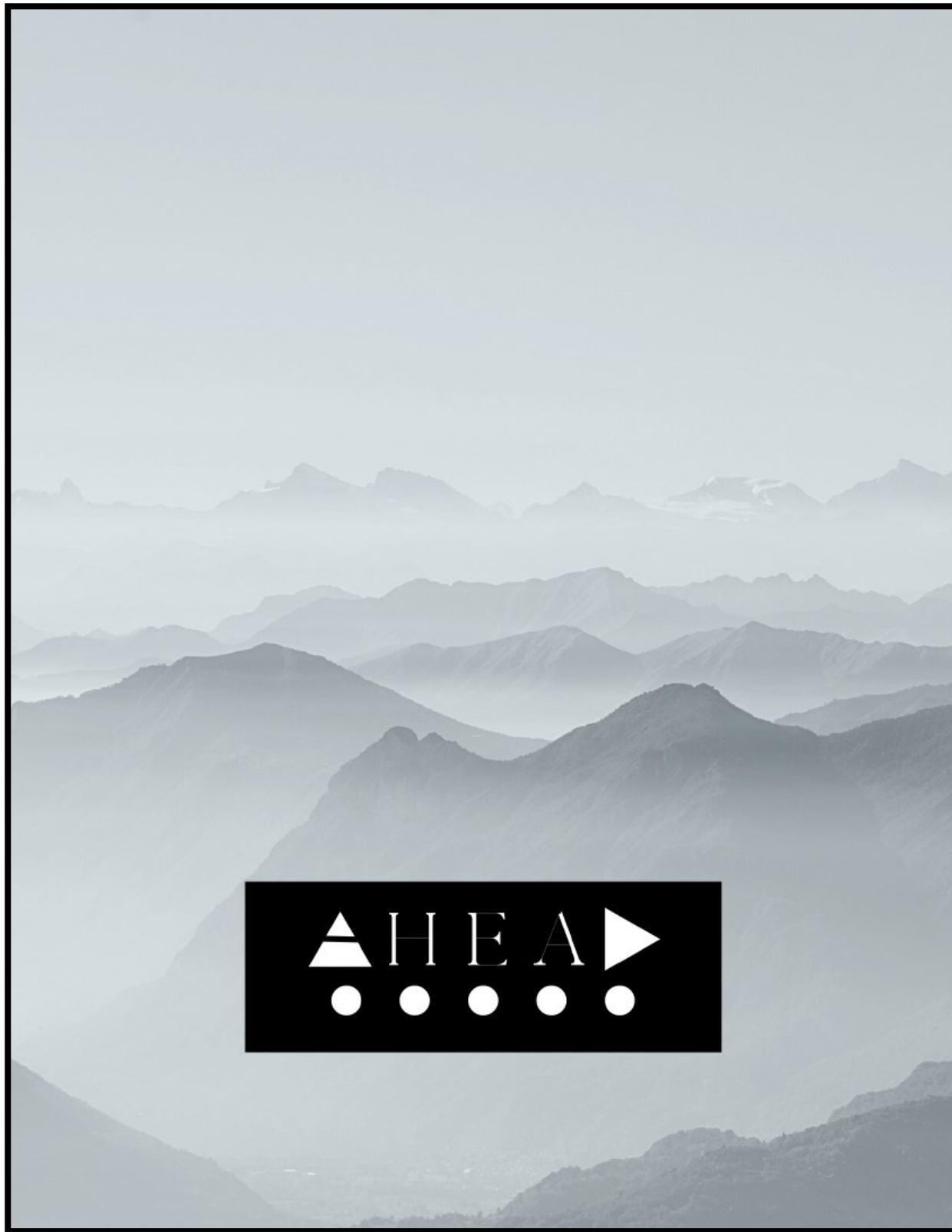
LEARNING OBJECTIVES

✴ Interpret your personal development journey throughout the AHEAD workshop series.

✴ Analyze what thinking strategies work best for your personal development.

✴ Discover your future area for personal development.

ACTIVITIES

"TOP 10" LIST

CONCEPT MAPPING

5X5 JOURNALING

3-2-1 ACTIVITY

REFLECTIVE DIARIES

NOTES

▲H E A▶

Appendix C

Co-Design Questioning Route

Please note: The follow-up questions/probes were revised throughout the interview process to reflect the TIDieR-PHP checklist (Campbell et al., 2018) items to collect more specific feedback about ways to improve the AHEAD intervention.

Preamble
Thank you for meeting with me today! For my PhD research, I am developing a mental training program, called AHEAD. I have asked you here today to provide your insight and opinions on the program because of your experience training and competing at the high-performance level. Your feedback is very important to me as I believe you can help to improve the program to meet high-performance athletes' needs. The information will be used to improve the AHEAD and I will also write a research paper about this process.

For this interview I would like to remind you that there are no right or wrong answers. I am interested in your views, experiences, and opinions. Ultimately, I want to use the information provided by you and other participants to improve the AHEAD. I will change your name, and the names of anyone else you may mention, when I write up the research paper. Do you have any questions before we begin?

This interview is meant to be a conversation rather than a strict 'question and answer' format. So, don't worry about going 'off topic' or talking about things I didn't specifically ask about.
- [Explain/review information letter with the participant]
- [Confirm completion of consent forms and demographic information]
- [Ask for permission to audio-record -> Turn recorder on]

I sent you an outline of the AHEAD, but in case you didn't have a chance to look at it, I also brought the material to today's session. Before we start our interview, I want to give you some time to quickly review the material and make a note of what you think could work and areas that need modifications. Please feel free to provide suggestions for change, circle around any parts that are unclear. You are also welcomed to ask any questions about the content and format of the AHEAD. [Give participants 5–10 min to review the handouts].

Opening Question
1. I would like to start by hearing more about your background in high-performance biathlon.
   - How long have you been involved in biathlon?
   - What is your favorite part about high-performance sport?

Introductory Question
2. To start off our discussion, do you think personal development can help high-performance athletes, if so, how? (Henriksen & Stambulova, 2017)
   - How is the training center currently promoting your personal development?
   - What kind of help do you need to support your personal development?

Transitioning Questions
3. As you know, I have been working on developing a personal development program for high-performance athletes called the Athlete Personal Development Program. You have had a

chance to look at the proposed outline and some activities. What do you think of the first draft of the AHEAD?

- What kind of activities do you think could help to promote personal development? [Probe for specific examples]

Key Questions
4. So, I am interested in hearing more about the strengths and weaknesses of the AHEAD. What do you like most about the program (i.e., program strengths)?
   - What do you think about the length/duration of the AHEAD? (Gitlin & Czaja, 2016)
   - How helpful do you think this program will be in supporting personal development?
     - Are there any concerns that are not being addressed that should be?

5. What do you like the least about the program?
   - What changes would you make to the AHEAD?
   - What are some things that might prevent you (or other athletes) from completing this program?

Ending Question
6. Please summarize what you think is the most important topic to cover in the AHEAD to promote athletes' personal development?

Thank you so much for providing feedback!

Appendix D

AHEAD Logo

Appendix E

AHEAD Activity Bank
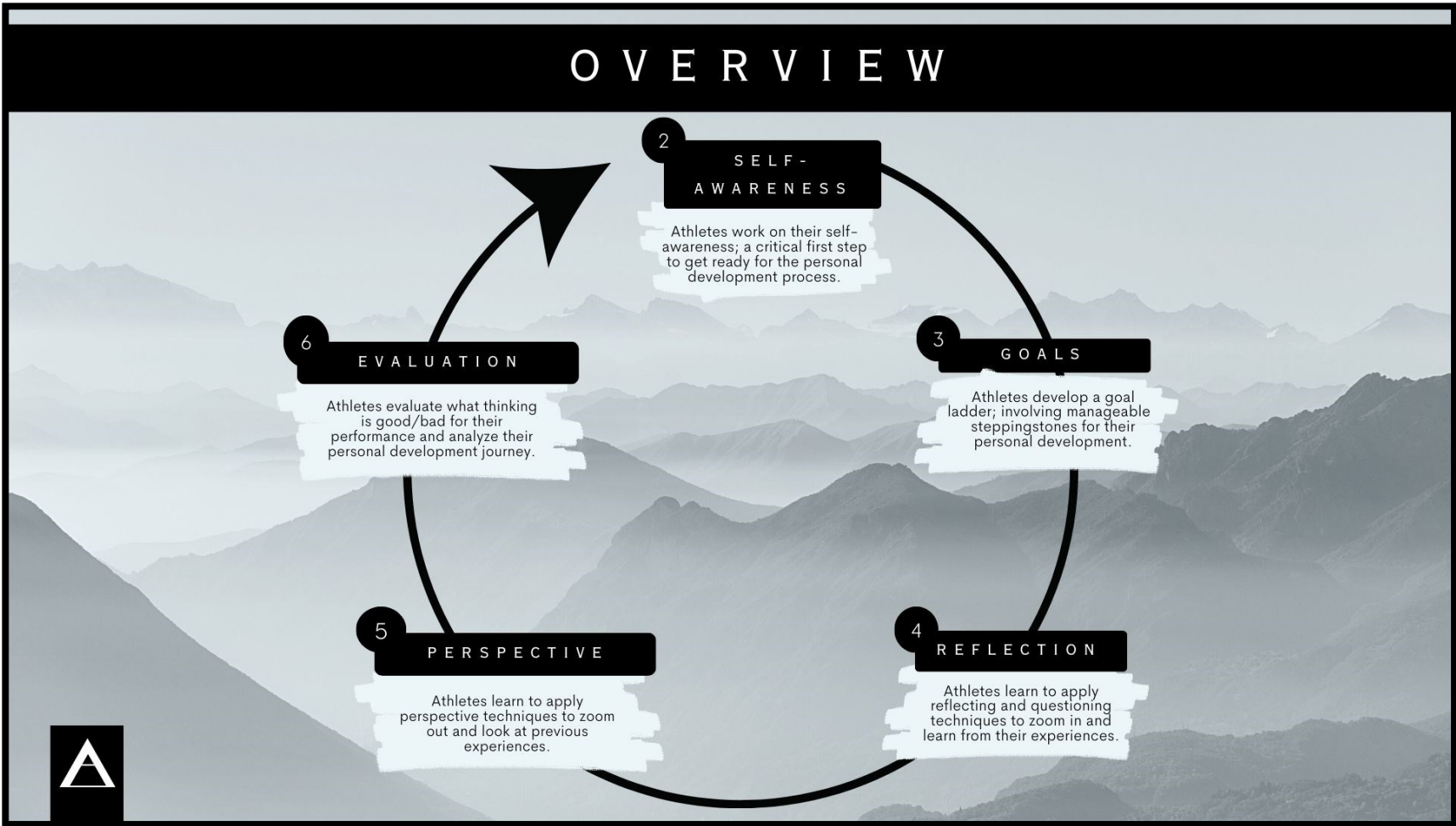
ACTIVITY BANK

workshop 1

INTRODUCTION

PERSONAL DEVELOPMENT

WHAT ? — Personal development is an individual and continual process whereby athletes strive to learn and improve across life contexts.

HOW ? — Personal development includes learning strategies to improve life skills, psychological skills, and characteristics.

WHY ? — Personal development is important to help athletes address career transitions as well as performance and personal challenges.

PROGRAM OBJECTIVE: To develop athletes' knowledge and strategies related to personal development.

INTRODUCTION

1

TOPIC: INTRODUCTION

In workshop 1, athletes will be introduced to personal development, and the 5 strategies they will develop throughout the AHEAD program.

LEARNING OBJECTIVES

★ Discuss the role of personal development in high-performance sport.

★ Identify the reasons why you want to work on personal development.

★ Appreciate the different strategies that can be used to work on personal development.

ACTIVITY	FORMAT	DESCRIPTION
THE COMPASS	Mental workout at home	Athletes identify a purpose of participating in the AHEAD program. Your purpose is your compass. It's your mission. It's what gives you direction and meaning. To support their purpose, athletes will throughout the AHEAD workshops have an opportunity to set up a personal development action plan built around a "goal ladder" (in the goal setting workshop) and learn about various strategies to work towards their purpose.
SAFE CONTAINER & BRAVE SPACE	Activity in workshop	Athletes are tasked with brainstorming what they need to feel open in our conversations about personal development and throughout the AHEAD program. They are introduced to the idea of "brave space" (not safe space). A brave space is a space where participants feel comfortable learning, sharing, and growing. A brave space is inclusive to everyone and their lived experiences.

A

INTRODUCTION

ACTIVITY	FORMAT	DESCRIPTION
A LETTER TO THE FUTURE	Activity in workshop + Mental workout at home	Athletes are asked to think about how they want to be remembered. In the form of a first-person letter, athletes will write a summary of their life, values, and accomplishments as they'd like them known to their descendants. In this activity, athletes share their "greatest hits" version of their personal story. To be sealed in an envelope and opened at a later point in the AHEAD program.
THE PORTRAIT & 14-WORDS	Activity in workshop + Mental workout at home	Athletes are instructed before the session to find a portrait/photo that best describe themselves. They will bring this photo to our workshop and guided through the following steps: 1. Athletes are asked to think about why they chose it. 2. Athletes will individually brainstorm as many words as possible to describe how this photo represents who they are. They should come up with a minimum of fourteen, but it's better to brainstorm more. It is not allowed to ask others to describe them! The aim is to describe themselves: How do you see yourself? 3. If they come up with more than fourteen words to describe themselves, athletes are tasked to narrow the list to only the fourteen that fit them best. 4. **For each word, athletes will write a short sentence, describing why they chose it. For instance, if one of the words was "athletic" the descriptive sentence might be, "I enjoy doing biathlon and being outdoors."**

A

ACTIVITY BANK

workshop 2

SELF-AWARENESS

WORKSHOP 2

SELF-▲WARENESS

WHAT?
Self-awareness is your ability to focus on your "inner world" and gain insight about your thoughts, feelings, and behaviours.

HOW?
Self-awareness includes working on both seeing yourselves clearly AND getting feedback to understand how others see you.

WHY?
Self-awareness is important to help you understand your experiences, focus on your emotions, build confidence and be more creative, and increases your ability to self-regulate.

SELF-AWARENESS

2

TOPIC: SELF-AWARENESS

Athletes work on their self-awareness; a critical first step to get ready for the personal development process.

LEARNING OBJECTIVES

★ Appreciate the importance of self-awareness in personal development.

★ Interpret your thoughts, feelings, and behaviours.

★ Discuss your "inner world."

ACTIVITY	FORMAT	DESCRIPTION
INTERNAL TRAFFIC LIGHTS	Activity in workshop	Athletes are tasked with identifying their red, yellow, and green lights. A simple way to think of self-awareness is to use the metaphor of a signal light. A signal light has three indicators telling us how to proceed. Athletes can think of these lights as indicators for themselves: • Red: Feel out of control (pressing, rushing, panicking) – stop and reset. • Yellow: Feel a little off (angry, nervous, fearful) – slow down to reset. • Green: Feel good (in control, confidence, focused) – good to go. Athletes will think of examples of their red, yellow, and green lights as they relate to themselves in biathlon and life.
WHO AM I?	Mental workout at home	Athletes are asked to create a mind map answering the question "who am I"? Answers will likely fall into different categories, including social roles (e.g., biathlete, daughter/son, sister/brother, friend), personal traits (e.g., happy, confident), and physical description (e.g., tall, strong). Then, athletes are asked to reflect on areas they may have overlooked or emphasized greatly (e.g., only describing themselves as an athlete).

SELF-AWARENESS

ACTIVITY	FORMAT	DESCRIPTION
S.W.O.T. ANALYSIS	Mental workout at home	Athletes are first asked to complete a profile of their S.W.O.T. analysis. Profiling is a useful technique to help athletes to become more self-aware. In this activity, athletes are first asked to think and write down their strengths, weaknesses, opportunities, and threats using a simple grid: Then, athletes are asked to schedule a meeting with Helene or their PD buddy to discuss their S.W.O.T. analysis. In their discussions, Helene/PD buddy will provide feedback on S.W.O.T. areas that might have been overlooked. Then, in their discussions, they will chat about how they can use their strengths, overcome weaknesses, and consider their opportunities and threats.
U.S.E.D. ANALYSIS	Mental workout at home	Athletes will take the S.W.O.T. analysis one step further. In this activity athletes will keep working with Helene/PD Buddy and analyze, plan, and create strategies that will get U.S.E.D. Athletes are reflecting on the four areas of the S.W.O.T. analysis and what they learned about themselves from this analysis. Next, athletes are instructed to discuss with Helene/PD Buddy about how they will use this information and generate strategies for: • How can you Use each Strength? • How can you Stop each Weakness? • How can you Exploit each Opportunity? • How can you Defend against each Threat?

The grid referenced in the S.W.O.T. description contains four quadrants labeled: strengths, weaknesses, opportunities, threats.

SELF-AWARENESS

	FORMAT	DESCRIPTION

Athletes are challenged to identify and recognize their blindspots, that is, hidden sides, attitudes, and/or beliefs. In this activity, athletes are guided through an activity of discovering aspects of themselves that they may have never fully appreciated (e.g., underestimated ability or skill). It may also be used to help build trust and open lines of communication, for example, when trying to improve relationships with coaches and teammates. The "Blindspot Window" involves a simple grid of four quadrants each representing a different area for athletes to consider about themselves as well as getting feedback from others:

BLINDSPOT WINDOW   **Activity in workshop**

open self	blind self
hidden self	unknown self

1. Open self: What is known by the athlete about themselves and is also known by other?
2. Blind self: What is unknown by the athlete about themselves, but which is known by others.
3. Hidden self: What the athlete knows about themselves that others do not know.
4. Unknown self: What is unknown by the athlete about themselves and is also unknown by others.

The athletes try to think-write about their "Blindspot Window," then receiving feedback from their PD Buddy (especially the "blind self"), as well as using their PD Buddy to brainstorm and explore the "unknown self."

ACTIVITY BANK

workshop 3

GOAL SETTING

WORKSHOP 3

GOALS

W H A T ?	Goal setting involves choosing specific goals that directs you to focus your efforts on actions towards something that matter to you and helps you ignore irrelevant activities.
H O W ?	Goal setting includes sting different goals (short/long-term) to help you stay focused on improving. <u>Five goal setting FACTS</u> directly impact the effect of goal setting.
W H Y ?	Goal setting is important to help you stay focused, energized, motivated, determined. Goals can help you to progress and evaluate yourselves.

A

GOAL SETTING

3

TOPIC: GOAL SETTING

Athletes explore 5 facts about goal setting and identify 2 reachable goals and a goal ladder for their personal development.

LEARNING OBJECTIVES

- Examine 5 FACTS about goal setting
- Identify two reachable goals, in life and sport (June 15th).
- Prepare short- and long-term goals so that you can stay focused on improving.

ACTIVITY	FORMAT	DESCRIPTION
REACHABLE GOALS	Activity in workshop	Athletes are instructed about setting goals through a 3-steps process: (1) Examine 5 FACTS about goal setting (2) Identifying people who support them in achieving their goals ("Goal Keepers") and people who may prevent them from achieving their goals ("Goal Busters"); (3) Learning four characteristics of a reachable goal: • Positively stated • Specific • Important to the goal setter • Under the goal setter's control Athletes practice distinguishing goals based on the four characteristics. As part of practicing reachable goals, athletes are tasked to set two 3-week goals; one sport and one personal life while applying the four characteristics.
DARE TO DREAM!	Mental workout at home	**Athletes learn about and discuss the importance of having dreams for the future. They then identify career, school, and sport dreams they have for 10 years in the future. The workshop facilitator also shares some dreams.**

GOAL SETTING

ACTIVITY	FORMAT	DESCRIPTION
GOAL LADDER	Activity in workshop	Athletes learn the importance of developing plans to reach goals, also called a "Goal Ladder." As part of their two reachable goals (see above), they will develop their goal ladder and plan how to reach the two goals they have set. Making a goal ladder involve placing the reachable goal at the top of the ladder and identifying six steps to reach their goal.
ROADBLOCKS	Activity in workshop + Mental workout at home	Athletes are introduced to the idea of success meaning different things to different people. Success takes time, planning, and a strong desire. Success is also taking action. Success is setting goals and working towards them, even when it gets tough. There will be challenges along the way, and athletes are asked to identify potential roadblocks that they may encounter. The workshop facilitator will also share ten general/typical roadblocks to look out for, and tie in the idea of resilience and self-compassion as important to navigate roadblocks along their goals-journey.
DETOURS	Mental workout at home	Athletes are tasked with brainstorming detours they may face while "climbing" their goal ladder. An example is the goal of qualifying to go on an international tour. In order to go on tour, athletes need to perform at trials. This is a high stress situation. Practicing high pressure situations in trainings with a more experienced athlete can reduce the stress and anxiety associated with a trial race.

GOAL SETTING

ACTIVITY	FORMAT	DESCRIPTION
DETOURS	Mental workout at home	Athletes will go back to their goal ladder. They will add a second column for "detours." Athletes are challenged to come up with potential detours and try to link them to certain steps of their ladder. Then, athletes will add a third column called "advice." The athletes will share their ladder and detours with their PD Buddy or Helene and have them complete the third column, offering advice to one another to navigate their detours in pursuit of climbing their goal ladder. This activity helps with collaboration and critical thinking.
ROADBLOCKS	Mental workout at home	Athletes are asked to create a visual representation of possible obstacles on their climb up the goal ladder, including ways to overcome them. Similarly to the "Detours" activity, the athletes will create three cells in their journal: • In the first cell, brainstorm your goal ladder one step further by creating a visual drawing. In addition to their goals, athletes are tasked to include a title of this step and a brief description of what this step will entail. • In the second cell, create a picture of an obstacle you may face when working towards your goals, with a title and description. • In your final cell, create a picture of how you can overcome that fear, roadblock, or obstacle. Title that cell and add a brief description. NOTE: Although this activity will be similar to the "Detour" activity, this task is more visual which can be beneficial for the visual learners in the workshop and the individuals that want to explore/develop their goal ladders further.

ACTIVITY BANK

workshop 4

REFLECTION

WORKSHOP 4

REFLECTION

W H A T ?	Reflection is the inspection of one's thoughts, feelings, and behaviours. Reflection is the ability to think about what you are doing (in-action) and what you have done (on action).
H O W ?	Ask yourself questions, use self-talk, free-write, seek feedback, and experiment with new methods, perspectives, and resources.
W H Y ?	Reflection is important to monitor your progress, identify your strengths and weaknesses, and develop your skills and strategies. Reflection also help you to connect your learning to your goals.

WORKSHOP 4

reflection IN-ACTION

WHAT?
Reflection in action is the ability to think about what you are doing while you are doing it, and to adjust your actions accordingly.

HOW?
To effectively reflect in action, you must be attentive, flexible, and creative. Pay attention to the situation, as well as your own thoughts and feelings. Be open to changing your plans and behaviours based on feedback and information.

EXAMPLE
For example, when you are doing a shooting drill, you are reflecting in action by listening, responding, and adapting to the cues and feedback of the coach.

REFLECTION

4

TOPIC: REFLECTION

In workshop 4, athletes will learn to apply reflection techniques to zoom in and learn from current and previous experiences.

LEARNING OBJECTIVES

* Interpret your thoughts, feelings, and behaviours.
* Apply on-action and in-action reflection techniques.
* Reflect on current and previous events.

ACTIVITY	FORMAT	DESCRIPTION
LEVELS OF REFLECTION: BOTTOM-UP / TOP-DOWN THINKING	Background information	There are to two different modes and speeds of thinking: bottom-up and top-down.Bottom-up thinking is faster, more involuntary, automatic, and impulsive, which is vitally important during competition, when stimuli are bombarding you at a rapid rate that you don't have time to ponder your reaction. During practice you will have a greater opportunity to consider your response a bit more carefully as you engage in deep learning."Top-down" thinking is the slower, more effortful, deliberative, and ruminative modes. Reflection comes into play here because when you set aside time to think slowly and assign meaning to events, such analysis is less likely to begin when you least want it to (e.g., during a race). Bottom-up processing is what's needed to tap into intuitive flow and the unhindered execution of behavior that is required for peak performance. Your perception is largely based on bottom-up thinking, and you need to challenge your immediate assumptions, consider your instinctive reactions and emotions in depth, and develop more organized ways of understanding how the brain is making meaning to improve performance.

A

REFLECTION

ACTIVITY	FORMAT	DESCRIPTION

ICEBERG ACTIVITY

Mental workout at home

Athletes are tasked with visualizing an iceberg and think about the difference between what the world sees and what lies beneath the surface. The task is to reflect on areas of self that others might see, what is hidden, and to normalize that everyone is feeling insecure and unsure about how well they manage life as a high-performance athlete:

1. Draw a picture of an iceberg.
2. Look at the top of the iceberg. This is what you will see if you look at yourself in the mirror: What do you see? What do other people see when they encounter you? Imagine someone who has never met you before. How would they describe you? Write your observations about what you see above the surface of the waterline. Don't skip this part! Jotting down your traits is an important part of the exercise. Describe what you see.
3. Now, think about all of your distinctive qualities that are NOT readily apparent to other's who encounter you. Write those characteristics on in your journal below the waterline. You might include your education, your employment, your religion, your relationships, etc.
4. Questions to ask yourself: Where do most of your characteristics about yourself fall– above or below the line? Where do your most valuable characteristics land; above or below the line? Do people ever make assumptions about "whom you are" using characteristics that they can only see? If so, how does that make you feel? What skills do you use to reveal what lies below the surface of the water to yourself and to others?

REFLECTION

ACTIVITY	FORMAT	DESCRIPTION
3-MINUTES PAUSE	Activity in workshop	Athletes are asked to take a 3-minute pause as an opportunity to stop, reflect on the concepts and ideas that have just been introduced, make connections to prior knowledge or experience, and seek clarification. Questions include: • I changed my attitude about… • I am more aware of… • I was surprised about… • I felt… • I related to… • I empathized with…
RECORD YOUR ABCs	Activity in workshop	Athletes are challenged to go back to an adverse event. The ABC is a helpful way to debrief yourself and get a chance to reflect and discover your beliefs after a big, negative incident occurs in your life. After every big negative life event, take time to reflect on the ABCs: • A – Activating event that triggers your inner dialogue • B – Belief you formed after the event • C – Consequences or how your new belief makes you feel Writing them down can help you move forward in your life. You will be able to look at things more positively, solve problems, and stay calm.

ACTIVITY BANK

workshop 5

PERSPECTIVE

PERSPECTIVE

5

TOPIC: PERSPECTIVE

In workshop 5, athletes will learn to apply perspective-taking techniques to zoom out and discover new ways to look at previous experiences.

LEARNING OBJECTIVES

- Categorize the terms: perspective, growth mindset, and fixed mindset.
- Question our beliefs about talent, skills, and abilities in sport/life.
- Apply perspective-taking techniques.

ACTIVITY	FORMAT	DESCRIPTION
"DEAR MY YOUNGER SELF..."	Mental workout at home	Athletes are encouraged to ponder on their accumulated wisdom as they write a letter to their 10-year-old younger self. As they embark on their high-performance athlete journey, they're likely to experience a gamut of emotions. By writing a letter to their younger self, they can more ably process these emotions and start to make sense of the twists and turns in their high-performance athlete journey so far. Athletes have experiences from their pasts that can help them grow. In this activity, athletes will use the "DEAR YOUNGER ME" handout to draft a letter to their younger selves, reflecting on a setback and how it helped them grow. If they can't think of a personal example, they can write a letter of advice to a younger athlete about something they wish they had known earlier.

**"The words you speak to yourself become what you believe.
Choose your words carefully."**

PERSPECTIVE

ACTIVITY	FORMAT	DESCRIPTION
SUNGLASSES ACTIVITY	Activity in workshop	Athletes are first asked to go back in time to a negative situation from their high-performance sport career. They will identify a situation, how it made them feel, and why they felt this way: • Situation: • "I feel…" • "Because…" HINT: Don't write "I feel tired." What emotions do you feel? Next, athletes will have brought sunglasses to the session. They will put them on and see the world through another person's eyes. Each pair of glasses belongs to a different person, which could be anyone the athletes are familiar with. Next, they will answer specific questions once they put on the glasses. Questions will be chosen to uncover the internal feelings, thoughts, and motivations of the glasses' owners. Questions may include: • How did you feel when… • Why did you decide to… • What will you do if… The activity will be debriefed as a group through guided reflections: • How did it feel to see the world through another person's eyes? • Were there things you felt or did that were different from how you would have responded? • How can seeing the world through another person's eyes help you better understand a situation?

PERSPECTIVE

ACTIVITY	FORMAT	DESCRIPTION
WHAT? SO WHAT? NOW WHAT?	Mental workout at home	The "what, so what, now what" questions facilitate critical analysis of a given experience. The exercise works in three phases: 1. Understanding the event (what?) 2. Making sense of the facts and implications (so what?) 3. Identifying the course of action or new solutions (now what?) What? – Each athlete work on their own, capturing their thoughts on post-its. The following questions will stimulate the process: • What is the problem or issue that you are facing? • What happened? • What was your reaction to the event? Athletes will consolidate their thoughts before sharing them with Helene or their PD Buddy. Helene/PD Buddy will create a visual display to capture all the key insights and information. NOTE: Athletes are reminded to focus on facts, not interpretations. So What? – The purpose of the second phase is to focus on the impact of the event. The following questions will encourage athletes' analysis: • How did this event/experience effect me? How did it affect my future? • Why is it important? • What emotions does the event evoke? How does it make me feel?

PERSPECTIVE

ACTIVITY	FORMAT	DESCRIPTION
		Athlete will work on their own before sharing with Helene or their PD Buddy. Key hypotheses, insights, and conclusions from Helene or PD Buddy pair are brainstormed.

Now What? – The third phase is about moving forward. The athletes will work on possible courses of action. Sometimes, the best way to move on is not necessarily implementing a new course. Upgrading their mindset or learning from an experience so that the athlete doesn't repeat the same mistake is also a key benefit of this practice. Athletes will individually brainstorm, then discuss with Helene or their PD Buddies to develop ideas together.

Cluster the ideas and decide what is a general theme of the next steps. The following questions are used to guide the brainstorm:
- What do you need to do to move forward?
- How can you turn this event into something positive?
- What have you learned?

The "what, so what, now what" questions allow the athletes to make meaning and take initial steps towards developing a plan of action to address the concern. This activity starts individually by writing down their responses, then discussing them with Helene or the PD Buddy.

PERSPECTIVE

ACTIVITY	FORMAT	DESCRIPTION
3Ps FILTER	Mental workout at home	Athletes apply the 3Ps filter to explore a situation more objectively and accurately assess this past experiences. Consider whether or not you're considering the outcome of an experience to be: **Permanent (lasting or remain unchanged indefinitely)** • Growth mindset: Recognizing that even if you lose, you've still got the skills you've worked hard to acquire. • Fixed mindset: Extrapolating a loss to the bigger picture – "It'll always be this way, so why even try anymore?" **Pervasive (existing in or spreading widely)** • Growth mindset: Viewing your skills, mindset, and resilience as transferable to other areas of your life. Belief in transferability is a huge part of improving one's self-efficacy. • Fixed mindset: Seeing one defeat as confirmation that you're a loser not just in sports, but in everything. **Personal (belonging to a particular person)** • Growth mindset: The opportunity to celebrate your unique skillset, the work that you put in, and the way you view the world. • Fixed mindset: Over-personalizing a loss, believing that things are always your fault, and catastrophizing.

ACTIVITY BANK

workshop 6

EVALUATION

EVALU▲TION

6

TOPIC: EVALUATION

In workshop 6, athletes will interpret their AHEAD journey and analyze what strategies works best for their personal development process.

LEARNING OBJECTIVES

- Identify what thoughts you're experiencing throughout a practice.
- Evaluate which thoughts are good and bad for your performance.
- Interpret your personal development journey throughout the AHEAD program.

ACTIVITY	FORMAT	DESCRIPTION
"TOP 10" LIST	Mental workout at home	**Athletes are asked to write out their ten most important takeaways from the AHEAD program. Top 10 should include learnings they have been able to apply. Try to create lists that are memorable, humorous, and fun.**
CONCEPT MAPPING	Activity in workshop	Athletes are introduced to concept maps: visual diagrams representing how a particular concept or idea is related to other ideas, terms, topics, or processes. Athletes will build concept maps that visually represent the ideas and information that was covered in AHEAD. Athletes will do this activity individually, then share it in their squares.
3-2-1 ACTIVITY	Activity in workshop	Athletes are tasked to write or talk about 3 things they learned, 2 things they still want to learn, and 1 question they have related to personal development.

A

EVALU▲TION

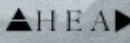| ACTIVITY	FORMAT	DESCRIPTION
5X5 JOURNALING	Mental workout at home	Athletes are introduced to the 5x5 journal technique. Athletes are tasked to journal about the five most interesting ideas they discovered during a training session, competition, and/or the AHEAD program. Next, they identify five things that resonate with them about each one. Then, ask Helene or your PD Buddy to provide feedback on your journal entry, and explain/discuss.
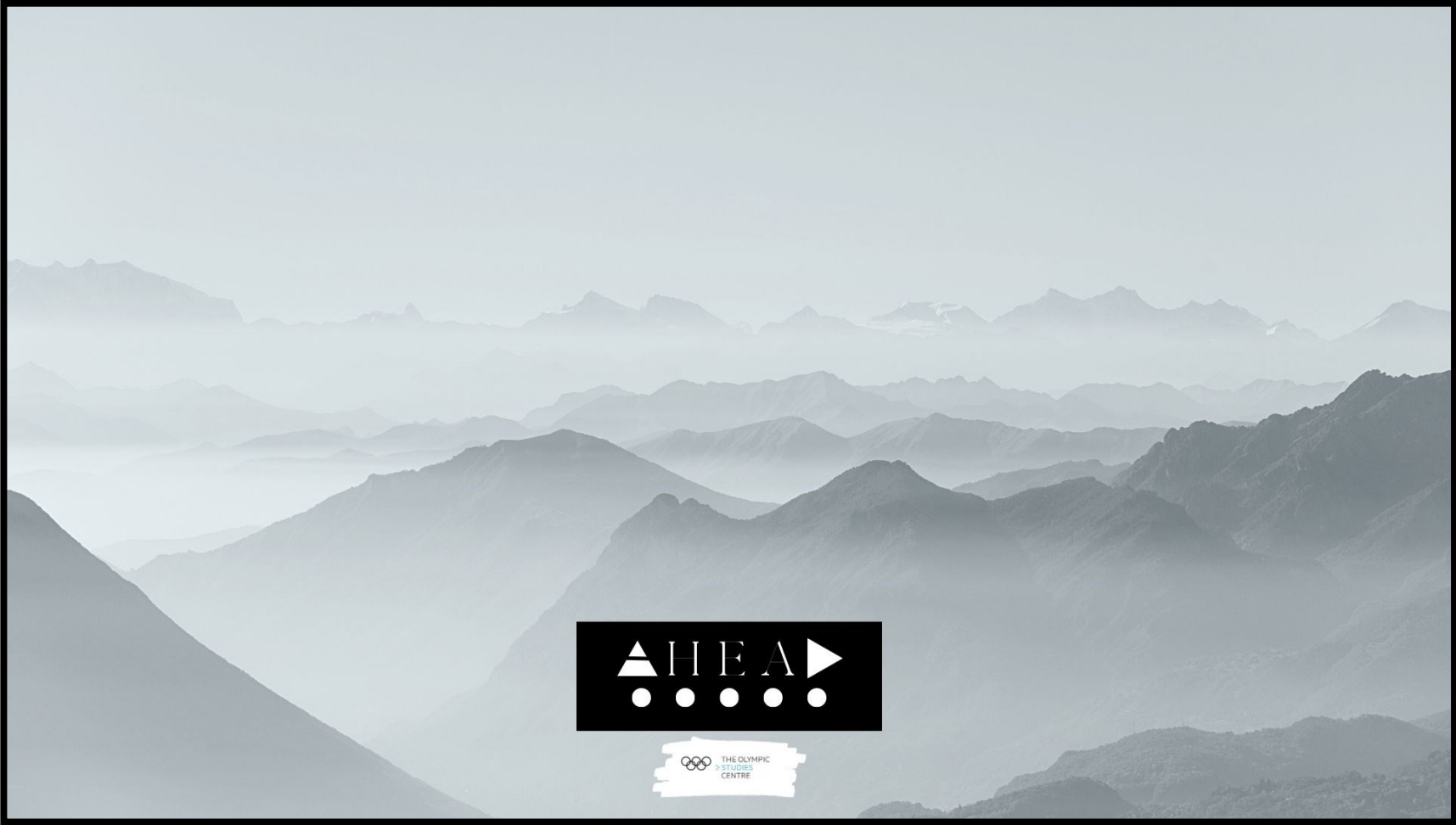
Appendix F

AHEAD Intervention Timeline

TIME	ACTIVITIES	DATE	DESCRIPTION
BEFORE	pre-survey (10 min)	APRIL 20 - 30, 2023	Athletes complete a survey to answer questions about their personal development before the AHEAD program.
	daily questionnaire (2 min x 8)	MAY 1 - 9, 2023	A big part of mental training is to get to know yourself and your current mental skill level. Athletes complete a small survey (5 questions) 8 times to assess their strategies before the AHEAD.
	individual pre-chat (15 min)	MAY 1 - 9, 2023	Athletes meet online, individually, with Yanik or Helene, to chat about their expectations for the AHEAD mental training program.
MENTAL TRAINING	workshop 1: introduction (1 hour)	MAY 10, 2023	In workshop 1, athletes are introduced to personal development, and the 5 strategies they will develop throughout the AHEAD program.
	workshop 2: SELF-AWARENESS (1 hour)	MAY 17, 2023	In workshop 2, athletes work on their self-awareness; a critical first step to get ready for the personal development process.
	workshop 3: goal setting (1 hour)	MAY 24, 2023	In workshop 3, athletes identify a goal ladder; involving manageable goals as steppingstones to evaluate one's personal development.
	workshop 4: reflection (1 hour)	MAY 31, 2023	In workshop 4, athletes learn to apply reflecting and questioning techniques to learn from current and previous experiences.
	workshop 5: perspective (1 hour)	JUNE 7, 2023	In workshop 5, athletes learn perspective-taking techniques to gain insight into one's beliefs about success and failure, learning and improving.
	workshop 6: evaluation (1 hour)	JUNE 14, 2023	In workshop 6, athletes observe their current thinking, evaluate actions, and determine what changes are necessary to improve, based on their AHEAD journey.
AFTER	post-survey (10 min)	JUNE 15 - 30, 2023	Athletes complete a questionnaire to answer questions about their personal development after the AHEAD program.
	individual post-chat (30 min)	JUNE 15 - 30, 2023	Athletes meet online and individually with Yanik to debrief their experiences and take-aways from the AHEAD program.

Appendix G

AHEAD Demographic Information Form

Demographic Information

Please complete the questions about you below.

Thank you!

How old are you (in years)?	○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22 ○ 23 ○ 24 ○ 25 ○ 26
What best describes your gender:	○ woman ○ man ○ non-binary ○ a gender not listed here ○ unsure how to describe myself ○ prefer not to say
What best describes your cultural background?	○ African ○ European ○ East Asian ○ South Asian ○ South East Asian ○ First Nations or Indigenous ○ Hispanic or Latin ○ Middle Eastern ○ Other ○ Prefer not to answer
Please indicate if you are a student and/or have a job:	☐ study (part-time) ☐ study (full-time) ☐ work ☐ not applicable ☐ prefer not to say
How many years have you competed in biathlon?	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15

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How many years have you been a part of a high-performance training center?	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10
Do you have experience competing internationally?	○ Yes ○ No
How many years?	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15
Have you worked with a mental trainer in the past?	○ Yes ○ No
Have you participated in sport psychology workshops in the past?	○ Yes ○ No
Have you ever participated in a personal development workshop or program before?	○ Yes ○ No

Today's Date (DD-MM-YYYY):

_____

Appendix H

AHEAD 5-Item Personal Development Measure

Daily "Check-in" Survey

Hi Athlete!

You will answer the following 5 questions multiple times before/during/after the AHEAD program.

Don't worry if you change your rating from time-to-time.

Just be honest with yourself and answer the questions based on your experiences from the past few day(s).

Thank you!

1) Both action tags take should be applied to the field that should hold the question order. It must be a field of type Text Box without any validation. It is recommended to apply the @HIDDEN-SURVEY and the @READONLY action tags to this field as well. @SHUFFLE-FIELDS-SURVEY @SHUFFLE-FIELDS-DATAENTRY

_____

2) I was aware of my inner world and how I felt.
- ◯ 1 (strongly disagree)
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5
- ◯ 6
- ◯ 7
- ◯ 8
- ◯ 9
- ◯ 10 (strongly agree)

3) I set goals so I could stay focused on improving.
- ◯ 1 (strongly disagree)
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5
- ◯ 6
- ◯ 7
- ◯ 8
- ◯ 9
- ◯ 10 (strongly agree)

4) I was interested in reflecting on my thoughts, feelings, and behaviours.
- ◯ 1 (strongly disagree)
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5
- ◯ 6
- ◯ 7
- ◯ 8
- ◯ 9
- ◯ 10 (strongly agree)

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5) I have a certain amount of sport ability, and I really can't do much to change it.

- ○ 1 (strongly disagree)
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 (strongly agree)

6) I evaluated my thoughts, feelings, and behaviours so I could improve for next time.

- ○ 1 (strongly disagree)
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 (strongly agree)

Appendix I

AHEAD 36-Item Personal Development Measure

Personal Development: Pre and Post Questionnaire

Hi Again,

Well done for completing all the survey questions so far!

The next few pages will ask you several questions about your personal development strategies.

Please read the following sentences below and select the answer that best describes the way you are - in biathlon and other life contexts - using the numbers in the drop-down list by each statement.

Please describe who you are, not how you want to be.

Thank you!

Please read the following questions and select the response that indicates how much you agree with the statements:

1 (strongly disagree) to 7 (strongly agree)

Try to be accurate, but work quite quickly. Do not spend too much time on any question.

I'm often confused about the way that I really feel about things.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)
My behaviour often puzzles me.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)
Often, I find it difficult to make sense of the way I feel about things.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)
Thinking about my thoughts makes me more confused.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)

I'm often aware that I'm having a feeling, but I often don't quite know what it is.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)
I usually know why I feel the way I do.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)

Please rate how much biathlon has taught you to perform the skills listed below, by choosing a corresponding number:

1 (not at all) to 5 (very much)

There are no right or wrong answers, so please answer as honestly as possible.

Set goals so that I can stay focused on improving.	○ 1 (not at all) ○ 2 (a little) ○ 3 (some) ○ 4 (a lot) ○ 5 (very much)
Set challenging goals.	○ 1 (not at all) ○ 2 (a little) ○ 3 (some) ○ 4 (a lot) ○ 5 (very much)
Check progress towards my goals.	○ 1 (not at all) ○ 2 (a little) ○ 3 (some) ○ 4 (a lot) ○ 5 (very much)
Set short-term goals in order to achieve long-term goals.	○ 1 (not at all) ○ 2 (a little) ○ 3 (some) ○ 4 (a lot) ○ 5 (very much)
Remain committed to my goals.	○ 1 (not at all) ○ 2 (a little) ○ 3 (some) ○ 4 (a lot) ○ 5 (very much)
Set goals for practice.	○ 1 (not at all) ○ 2 (a little) ○ 3 (some) ○ 4 (a lot) ○ 5 (very much)
Set specific goals.	○ 1 (not at all) ○ 2 (a little) ○ 3 (some) ○ 4 (a lot) ○ 5 (very much)

Please read the following items and select the response that indicates how much you agree with the statements:

1 (strongly disagree) to 7 (strongly agree)

Try to be accurate, but work quite quickly. Do not spend too much time on any question.

I frequently examine my feelings.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)
I am very interested in examining what I think about.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)
It is important to me to try to understand what my feelings mean.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)
I frequently take time to reflect on my thoughts.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)
I often think about the way I feel about things.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)
It is important to me to evaluate the things that I do.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 (strongly agree)

Please carefully read the items below, and indicate how much you agree with each of the statements.

My beliefs about ability in sport:

1 (strongly disagree) to 5 (strongly agree)

I have a certain level of ability in sport and I cannot really do much to change that level.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
To be successful in sport I need to learn techniques and skills, and practice them regularly.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
Even if I try, the level I reach in sport will change very little.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
I need to have certain "gifts" to be good at sport.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
I need to learn and to work hard to be good at sport.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
In sport, if I work hard at it, I will always get better.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)

Please carefully read the items below, and indicate how much you agree with each of the statements.

My beliefs about ability in sport:

1 (strongly disagree) to 5 (strongly agree)

To be good at sport, I need to be born with the basic qualities which allow me success.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
To reach a high level of performance in sport, I must go through periods of learning and training.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
How good I am at sport will always improve if I work at it.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
It is difficult to change how good I am at sport.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
To be good at sport I need to be naturally gifted.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)
If I put enough effort into it, I will always get better at sport.	○ 1 (strongly disagree) ○ 2 ○ 3 ○ 4 ○ 5 (strongly agree)

The following questions are concerned with the strategies that you may experience during a competition/training.

Please carefully read each item and indicate how much you agree with the statements, by choosing a corresponding number:

1 (strongly disagree) to 5 (strongly agree)

There are no right or wrong answers.

While performing, I evaluate which thoughts are good and bad for my performance.	○ 1 (strongly disagree) ○ 2 (disagree) ○ 3 (neither) ○ 4 (agree) ○ 5 (strongly agree)
After I perform, I ask myself how well I maintained my mental state.	○ 1 (strongly disagree) ○ 2 (disagree) ○ 3 (neither) ○ 4 (agree) ○ 5 (strongly agree)
After an event, I am able to determine what thinking strategies were good for my performance.	○ 1 (strongly disagree) ○ 2 (disagree) ○ 3 (neither) ○ 4 (agree) ○ 5 (strongly agree)
I monitor what thoughts I'm experiencing throughout the length of a competition/training.	○ 1 (strongly disagree) ○ 2 (disagree) ○ 3 (neither) ○ 4 (agree) ○ 5 (strongly agree)
I summarize what I've learned about my thinking strategies after a competition/training.	○ 1 (strongly disagree) ○ 2 (disagree) ○ 3 (neither) ○ 4 (agree) ○ 5 (strongly agree)

Appendix J

AHEAD Post-Intervention Interview

Preamble

Thanks for agreeing to participate in the AHEAD program and for taking time to debrief your time in the program with me. I have asked you here today because you have completed AHEAD workshops, and I would like to hear your thoughts about the program. I would like to remind you that there are no right or wrong answers. I am interested in your experiences and opinions of the AHEAD program. Your thoughts and feedback will be used to evaluate the program and may help improve the AHEAD program for the future.

This interview is meant to be a conversation rather than a strict 'question and answer' format. So, don't worry about going off topic or talking about things I didn't specifically ask about. Do you have any questions about the study or the interview before we begin?
- [Remind participants about the information letter, consent forms, audio recorder.

Introductory Questions
1. Can you tell me a bit about your experiences with the AHEAD program? (Hardcastle et al., 2015)
   - What has stuck in your mind? (Hardcastle et al., 2015)

Main Questions
1. The overall objective with the AHEAD program was develop your knowledge and strategies related to personal development. What do you think about the objectives of the AHEAD program? (Martin et al., 2004)
   - Do you think we met this objective?
   - If "yes," do you have some examples of what you are taking away?
   - what do you feel you still need to work on?
   - Was there a particular workshop you liked/disliked [Probe for each workshop]

2. The AHEAD program introduced 5 strategies over six weeks.
   - What is the key-take-away that you learned/took away from the AHEAD program?
   - Did you use any of the 5 strategies before the program? How so?
   - Did the program change your application of the skills after the program?
     - What has changed in your use of the skills?
     - How do you plan to use the skills moving forward?

3. What strategies or skills do you feel you developed from the AHEAD program?
   [NOTE: Interviewer makes a note of the strategies that the athletes mention]
   - What strategy do you feel changed the most compared to before the program?
   - How did you <u>develop</u> this strategy/skill? [Probe for each strategy/skill]
   - Have you <u>used</u> these strategies outside of the workshop? [Probe for examples]
     - If yes, how have you <u>applied</u> the strategy? [Probe for "evidence" of use]

4. Throughout the AHEAD Program, you were asked to complete online questionnaires. Here are your scores from the questionnaires. *[NOTE: Interviewer shares visual display and describe the axis, dots, lines, colours, and that it's normal to go up/down]* (Dunn,

1994). Based on what you see, and the description I gave you, what do you think about your [pre/post, self-awareness, goal setting, reflection, perspective, evaluation] scores? (Martin et al., 2004)

- How do you think these five strategies changed over time?
- Do you remember how you used [strategy] before the AHEAD program?
- What do you think are your strengths after the program?
- What areas will you continue to need to focus on after the program?
- How do you think you'll use [strategy] in the future

Summary questions

5. Overall, do you think the AHEAD helped your personal development? If so, how?
   - What parts of the program would you keep the same?
   - What parts of the program might you change?

Thank you so much for your time and participation in the AHEAD!
Helene wanted you to know she really enjoyed your contributions to the workshops 😊