Article

Developing Psycho-Behavioural Skills: The Talent Development Coach Perspective

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Abstract: A large body of evidence highlights the importance of psycho-behavioural skills as a key feature of talent development in sport. The purpose of this study was to explore pedagogic intentions of coaches in the psychological development of athletes. Eleven coaches were purposefully sampled for interview based on a track record of expert practice. Using reflexive thematic analysis, three overarching themes were generated as representing the coaches' work: knowing and shaping the athlete's needs, purposeful breadth and flexibility of teaching approaches, using challenge to test skill development, and the necessity of review and refinement. Reflecting these data, we suggest the need for an increased appreciation of the role of the sports coach beyond the technical and tactical, with the recommendation that coaches build their knowledge and skillset across a breadth of domains to support the psychological development of athletes more effectively.

Keywords: psychological skills; talent development environment; challenge; coaching; high performance

1. Introduction

There is growing consensus that psychological factors play a critical role in the process of talent development (TD), e.g., [1]. In several studies, psycho-behavioural factors appear to discriminate between eventual performance levels [2,3]. Outside of the sporting literature, various psychological factors have been proposed as being facilitative of development across fields. Some have been based on single constructs seen as critical for promoting development. As examples, constructs such as growth mindset [4] and grit [5] represent more single-factor approaches to psychological development, both achieving popularity across fields. Yet, these approaches have been subject to increasing criticism when seen as single-construct answers [6,7]. In contrast, a range of multidimensional approaches has been developed that emphasise a range of psycho-behavioural factors, as opposed to emphasising a single construct. As an example, Kelly and colleagues [8] found evidence for the ability to cope with performance and developmental pressures and engage in quality practice were key contributing factors in predicting the progress of academy footballers to senior professional football. These findings are mirrored at the senior elite level, with more-successful athletes demonstrating a breadth of psychological characteristics [9].

1.1. Psycho-Behavioural Skills

To support the development of talent in the sporting domain and beyond, cf. [10], a variety of conceptual framings have been suggested to frame the breadth of psycho-behavioural factors necessary. For example: personality and psychosocial resources [11],

psychological skills and characteristics [12], psychological competencies [13] and Psychological Characteristics of Developing Excellence—PCDEs [14,15]. Despite differences in approach, we will refer to this group of characteristic and skills-based approaches as psycho-behavioural. Reflecting the work of these authors, our use of the term emphasises the possession of psychological skills that are effectively and, with confidence, combined and applied to address various challenges (the behavioural element).

As a means of distinguishing between constructs, Collins and colleagues [16] proposed the Process, Outcome, Performance, or POP, model; performance being the ultimate aim, outcome being the global deliverables that help the athlete achieve the targeted performance, and process being the factors that help the performer make the most of developmental opportunities by achieving the outcome deliverables through different subsets of skills. Under this approach, constructs such as grit and growth mindset are classified as outcomes: deliverables that aid the achievement of performance but are not universally appropriate. Conceptualised in the process category are those skills-based approaches offering contextual flexibility, cf. [17]. In essence, psycho-behavioural skills are best combined in different blends to realise various desired outcomes, helping performers to navigate the rocky road of development and make the most of their experiences and opportunities.

1.2. The Role of Challenge

Running parallel to a greater understanding of the role of psycho-behavioural factors, an emerging area of interest is the challenge dynamics involved in the developmental process; the notion of challenge being recognised as the affective response of the individual to external events, e.g., [18]. Although a growing body of evidence points to the necessity of pathway-based challenges through engagement with their sport [19,20], there is also agreement that chronically high challenge levels are inappropriate [21,22]. The challenge experience is increasingly recognised as highly individual, with athletes showing significant variability in their responses to similar events [23]. Theoretically, it has been suggested that emotional disturbance in response to the challenge experience confers different reflective patterns [24,25]. Thus, individual differences notwithstanding [26], positive affective responses seem to confer enhanced self-efficacy and motivation, with negative affect promoting more detailed reflection [27].

Consequently, it is seen as desirable for athletes to experience variability of affect, so long as they have the skills to cope and the resources, or relevant support to subsequently debrief [22]. In essence, proactively preparing to both cope with and learn from the inevitable 'rocky road' that athletes will have to navigate [28]. This would suggest that challenging experiences are not intrinsically developmental. Rather, challenges offer opportunities for testing previously developed psycho-behavioural skills or provoking further development and refinement [28]. This has led to an emphasis on a skills-based approach, framed around the proactive development of psycho-behavioural skills *before* the challenge experience, then using these experiences as a platform for reflection and development [29]. The role of reflection, e.g., [30,31] and supportive debrief following challenge is generating increasing research attention as promoting further development, cf. [32]. Thus, it is suggested that the combination of psycho-behavioural skills and the use of challenging experiences forms an essential part of effective TD.

1.3. The Role of the Coach

This psycho-behavioural emphasis in TD coaching practice is something that has been examined through different conceptual lenses, e.g., [33,34]. Empirically, a lack of psycho-behavioural focus in TD coaching has been found to characterise unsuccessful practice [35] and limit the progress of high-potential athletes [36,37]. Accordingly, explicit development of psycho-behavioural skills has consistently been identified as being a feature of effective coaching practice, e.g., [38,39]. To promote the development of psycho-behavioural skills, Collins and MacNamara [40] (p. 4) suggested that Talent Development Environments adopt a cyclic 'Teach-Test-Tweak-Repeat' approach, where taught psycho-behavioural

skills are subsequently tested by challenging experience, then refined through debrief and adjustment.

In addition, there is increasing interest in the direct role of the coach in challenging athletes [41], with evidence suggesting an active role in offering interpersonal challenge [42]. To this point, most empirical investigations have tended to consider how coaches pressurise athletes within training sessions. For example, through the use of 'planned disruptions', or: "deliberate training activities whereby athletes are exposed to increased and/or changing demands under controlled circumstances" [43] (p. 29). From this perspective, coaches manipulate day-to-day, within-session variables to encourage athletes to become familiar with discomfort, create awareness, develop personal resources and promote team processes. This pressure training perspective has considered how coaches can introduce pressure within training sessions [44] as a novel stimulus to help athletes to practice coping skills and become accustomed to the demands of performance [45,46].

Evidence would suggest that effective 'in session' pressure training approaches rely on a level of realism and understanding on behalf of the athlete [47]. This would mirror evidence from the TD literature, suggesting that those events perceived to be challenging also need to be recognised as appropriate, coherent, and genuine if they are to promote adaptive reflection by the athlete [23]. Unfortunately, however, this is often made more difficult by the variety of different support figures that might impact the athlete [48,49], with the potential for mixed messages. Hence, effective TD systems should engage in tightly integrated working practice, both within and beyond the coaching setting [50].

In recognition of the need for this type of approach, coaching is increasingly recognised as an interdisciplinary endeavour, e.g., [51,52]. Yet, historically, coach education has been critiqued for a lack of depth and failure to meet the needs of practice, e.g., [53]. This critique may be a consequence of the misalignment between research and practice [54] as well as the limited attention given to 'ologies' fields, such as psychology, social psychology, physiology, and skills acquisition [51,55]. Consequently, the coach's capacity to act in an interdisciplinary fashion may have been limited, cf. [56]. In addition, extending beyond formal education, there is increasing recognition of the role of informal and unmediated learning for the coach [57]. Thus, there is a clear need to equip coaches to critically engage with learning beyond the qualification setting [58]. In response to these concerns, it does appear that some coach-education curricula are viewing psychology as a more prominent knowledge base for coaches to draw from. For example, the English Football Association's use of psychological theory as a central feature of their coach-education curricula [59]. Despite this, however, there is limited research that directly informs how the development of psycho-behavioural skills can be embedded into the coaching process alongside other elements of performance. Indeed, much of the focus in the literature has been on either the education of coaches or the specific work of the psychologist, e.g., [60,61]. Although both inform coaching, there is an opportunity to take advantage of the coach as a valuable empirical source [62]. Thus, our intention was to understand the approaches taken by high-level TD coaches with a significant track record of developing athletes for the senior level; the specific aim being to explore the pedagogic intentions of expert coach practitioners for the psychological development of TD athletes as a part of their broader practice.

2. Materials and Methods

2.1. Research Design

Given the aims of the research and professional focus of the researchers, a pragmatic research orientation was adopted [63]. The problem of offering implications for applied practice is ongoing across professions and there is a need for rigorous and applicable research designs [64]. Rather than being an 'anything goes' philosophy, Pragmatism allows the researcher to make decisions regarding the best fit of methods to ensure coherence with research aims [65]. Pragmatism challenges the epistemological dichotomy between total neutrality and subjectivism; instead, seeking a "substantive, low profile conception of truth and objectivity, a conception which nonetheless can guide us in inquiry" [66] (p. 14). We

also sought to take advantage of the working biographies of all authors as TD coaches, along with the second and third authors as experienced coach developers. This 'insider' status allowed a deeper interrogation of the data by harnessing applied experiences [67]. It should also be recognised as a feature of the interpretive process [68].

2.2. Participants

Taking account of debates in the wider literature, e.g., [69], we employed a rigorous selection criterion to ensure the expert status of our sample. Following ethical approval through the University of Edinburgh Institutional Ethics process, we approached National Sporting Organisations and National Governing Bodies (NGBs) and coach developers within these organisations to nominate coaches, cf. [33]. In order to sample appropriate participants, nominations were sought on the basis of the criteria for identifying expertise in coaching developed by Nash et al. [70]. Firstly, we asked for the recommendation of coaches perceived to be expert talent developers with a record of supporting performers moving to the elite level. Secondly, we actively recruited coaches who had demonstrated novel and innovative approaches to the development of psycho-behavioural skills in their athletes. Finally, those who were full-time professional coaches working with athletes who were one level away from the elite level of their sport. Following receipt of nominations, a further set of criteria were applied to ensure that coaches had at least 3 years' experience in their current role and held or were approaching completion of a coaching qualification that was the highest possible in their sport.

Following this, a range of TD coaches (n = 11, M_{age} = 33.8, SD = 5.5) from a variety of sports were contacted, either personally or through an institutional gatekeeper. At this initial contact, participants received an information sheet with details of the research aims and were assured of anonymity. All subsequently agreed to be participants and completed informed consent before interview. All were British and had been in their current coaching role for several years (M_{years} = 7, SD = 3.4). Table 1 offers further participant demographics.

Table 1. Participant demographic information.

Name	Sex of Coach	Sport	Sex of Athletes	Age of Athletes Coached	Academic Qualification
Coach 1	M	Rowing	F	18–24	MSc
Coach 2	M	Swimming	M and F	18–24	MSc
Coach 3	M	Canoe Slalom	M and F	18–22	MSc
Coach 4	M	Mountain Bike	M and F	15–24	BSc
Coach 5	M	Field Hockey	M	18–23	MSc
Coach 6	M	Sailing	M and F	16–18	BSc
Coach 7	M	Judo	M and F	18–24	MSc
Coach 8	M	Rugby Union	M	16–23	BSc
Coach 9	M	Football	M	16–18	MSc
Coach 10	F	Sprint Cycling	M and F	16–21	BSc
Coach 11	F	Diving	F	11–18	BSc

2.3. Data Collection

A semi-structured interview guide with general questions and follow-up probes was prepared. This allowed for an appropriate balance between the necessary focus and consistency across interviews, whilst enabling the participant to share their lived experience in an appropriate manner. Core questions and prompts were informed by the existing TD literature, specifically using Martindale et al. [33], as an empirically grounded set of principles for practice. This ensured that participants were asked to consider all aspects of their coaching situation, with a specific focus on pedagogic methods. Examples of core questions included: "what is your approach to the development of mental skills in your athletes", "do you deliberately engage in the teaching of mental skills?", "how and what do you communicate with stakeholders around the athlete?", "to what extent do you individualise your approach to mental skill development?", "do you deliberately challenge

your athletes?" and "how do you understand the psychological needs of your athletes?". The structure of the interview guide allowed for participants to be guided from the general to the specific, whilst retaining the flexibility for the raising of unanticipated issues [71]. To assist with the shaping of the interview process, pilot interviews were conducted with two junior international-level coaches (rowing and hockey). Feedback was obtained and critical appraisal was used to refine the interview guide. This led to the removal of one question due to a lack of clarity, whilst other questions were refined for the purpose of comprehension, and additional probes were added.

All interviews were conducted by the first author between June and July 2021 and were subject to COVID-19 health and safety guidelines. Thus, Microsoft Teams video conferencing was used to conduct all interviews and for recording. Given the potential for the medium to be perceived as impersonal, the first author deliberately engaged with each participant, discussing their sport and coaching at the start of each interview to develop trust and rapport with participants [72]. Following this, interviews lasted between 48 and 77 min (M = 61_{mins}).

2.4. Data Analysis

All interviews were transcribed verbatim before analysis was conducted using Reflexive Thematic Analysis [73]. Coherent with the aims of the study and the 'Big Q' qualitative research approach, we adopted an active role, with researcher subjectivity being embraced rather than a problem to be managed [71]. This paradigm acknowledges that analysis cannot be purely deductive (theoretically driven) or inductive (data-driven) as researchers cannot separate their knowledge, values and experience from the interpretative process of data analysis [74]. Specifically, therefore, the six phases of data analysis were conducted flexibly and systematically, allowing for non-linear movement between stages [75]. The first stage began with the lead author becoming familiarised with the data, by transcribing interviews, re-listening, then reading and re-reading all transcripts; throughout, noting observations of commonalities, familiarities and surprising data. At stage two, codes were generated in a systematic, comprehensive and inclusive manner using QSR NVivo software. This coding was both semantic (explicit—"understanding athlete") and latent (underlying—"challenge testing skills"), with participant meaning being critically considered against the knowingness of the researchers [74]. In this regard, the first author called upon their experience as a former Olympic athlete and 10 years' experience as an international TD coach. Codes were then clustered into generated themes as a creative and interpretive process. These were organised in a thematic table, before being reviewed by the second author (as a critical friend) challenging the quality, boundary and depth of theme generation. At this stage, we also completed deductive analysis to examine sub-themes in relation to the guidance offered by Collins, MacNamara [29] in relation to the development of psycho-behavioural skills. Subsequent discussion was focused on a "richer more nuanced reading of the data" [75] (p. 594) rather than seeking consensus. As a result, themes and sub-themes were defined and named as a collaborative process (presented in Table 2), with each of the themes representing patterns of shared meaning organised around a central organising concept [76]. Finally, the report was written, with themes presented in a logical order with examples of data used to illustrate each. Given the pragmatic orientation of the paper, the report is also written to make the findings accessible to practicing coaches, without unduly simplifying [77].

Table 2. Analysis themes and sub-themes.

Themes	Sub Themes	Raw Data Exemplar
Knowing and shaping the athlete's needs	Top-down approaches	"We undertook a project where we created a curriculum from U16 to the podium and it's that has really given us the key things: 'What do they need to do to get you to here?' So we've got the physical performance times, but we've also got psychological skills, the technical/tactical . . . we review athletes against these skills" (Coach 10) "The [NGB] are very explicit on exactly the mental skills that they want the athletes to develop" (Coach 7)
	Bottom-up needs	"I need to know them [athletes] and have a sense of who they are, like I guess more trying to get an understanding of the athletes and what it looks like for them" (Coach 1) "We have conversations . . . in terms of a feeling you're getting other issues in their life and that kind of stuff. Also, when we're looking at metrics and tiredness levels, then we're much more aware of other stressors affecting training. So for example, school, or relationships, or whatever" (Coach 4)
	Individual Development Planning	"I want to coach the individual, I want to coach the mind, I want understand where they are, what makes them tick as a human being . . . Your main goal might be further down the line, but we're going to start with the behaviours and traits I want to see today" (Coach 2) "We build a plan of what they need and how we will do it . . . the IDP process that we do, we will involve other coaches and school teachers in that as well so everyone is on board with what's been said . . . they see the lads more than we do . . . we value their opinion" (Coach 8)
Purposeful breadth and flexibility of teaching approaches	Explicit approaches	"I might miss stuff, but we always do individual mentoring. I'm mentoring (player) at the moment. I speak to them once a week, and it's all about skill development. Where's your plan for the week?...It's a goal setting meeting" (Coach 5) "When they get to us, they just want to [race]. We will sit down and help them plan it out, image it, visualise and think . . . It isn't the firefighting approach, which you get quite often with psychology. The case of: 'are you struggling? Yes, well let's just send you off to the psychologist'. We don't do that. I've got enough knowledge to be deliberate and teach" (Coach 3) "Personally, I think that they [psycho-behavioural skills] are there to be trained and developed. Actually, they are as important to explicitly train and develop as anything else and say: 'this is what we're working on today'" (Coach 7)
	Implicit approaches	"Everything we do, whether you're looking at nutrition, S&C [strength and conditioning] it's all based on mental skills . . . there's a real focus on developing ownership and taking responsibility. I guess it's kind of how culture works" (Coach 4) "There's quite a lot of independent learning that we try and facilitate, to kind of generate that curiosity and ownership and in terms of personal goal setting... We will often find within that [squad] there will be people that it's their first year of the squad or the third year. It's not an age group squad, there is a range of ability within that squad. So, using to peer learning really helps with some of these mental skills, psychological and social sort of aptitude, seeing others, or just discussing with others and self-reflecting" (Coach 6)
	Graduated teaching	"Progressing to the junior selection level. We start making sure that they are doing visualisation. You're only allowed one practice of the course before you go. It requires an element of visualisation. So, it's also a skill you're trying to develop bit by bit" (Coach 3) "Doing that sort of competition routine is something we've always worked on in session" (Coach 11)

Table 2. em Cont.

Themes	Sub Themes	Raw Data Exemplar
Using challenge to test skill development	Systemic challenge	"They will do a lot of the same schedule as the first team. We'll use that as a basic structure for what they're doing and then we will fit extra elements of their training in. Generally, the under 19 guys won't have much game time in their first year just because of the step up, just getting used to senior rugby training is pretty difficult. From their under 20 year, they'll have like a playing programme at a loan club" (Coach 8) "The toughest transition is probably . . . going from a very good junior, to training with good senior athletes. That's really tough, because the people you race against are 10 years older than you and they've done an extra 10 years training . . . It's going to be a real grind, and it's hard to find that, you know, that's when people drop out, because no one has prepared them for that". (Coach 3)
	Coaching approach	"I like to create situations or environments where I get responses. I might create tasks, were I put them under more pressure or something that needs them to deploy a skill, or you know, I might also leave bits of information out to see if they're gonna ask questions" (Coach 2) "If anybody thinks coaching is a journey full of positivity and when everything that happens with the athlete is positive, they are unrealistic. That's not to say that people are negative with their athletes all the time, but it's being realistic about what gets the most out of them" (Coach 11)
	Factors influencing use of challenge	"This led to athletes finding the step up into their programme a challenge beyond what they had been prepared for. We often find that people coming into our squad from junior programmes having been the top of their squad. All of a sudden, they're nowhere near the top" (Coach 1) "You can push someone, but the way things are going, you have to be very careful about how you do the pushing" (Coach 9)
The necessity of review and refinement	Motivating further refinement	"At the end, I'd go very individual. If somebody just performed badly and has a reaction, then you might say: 'oh, what did you find difficult about it? how can we work past that?'" (Coach 3) "[Post session], what we do is sit around . . . as a team, we go through the goals, did we achieve them today, hence the vicarious learning, seeing other people achieve goals in the environment should create a motivation to achieve more" (Coach 7)
	Feedback and debrief	"I'd say the review is where results are made" (Coach 1) "We'll put them under physical or tactical pressure. For example, we do a lot of fatigue descending... then we will split into groups, send one group into the woods to, to watch the other group and then feedback to that other group, and then flip it around . . . They're not only using some of those key self-awareness type skills, but also review skills as well" (Coach 4)
	Formal Review processes	"All the players get reviewed back individually every six weeks. Then, at Christmas and the end of the season in May, we then have a formal, parents meet and report as well" (Coach 9) "We have regular formal reviews, definitely when we pick people up in the programme, or when we start a new year or block we'll sit down and have a formal review. We'll take goals and it obviously includes the mental side . . . just that plan, do review cycle" (Coach 3)

2.5. Trustworthiness

As with all pragmatic research, rather than being concerned with positivist notions of generalisability, the findings presented in this research cannot be considered the sole truth. Instead, we ask the reader to consider the potential of transferability, offering a thick description of the participant's context to judge this [78]. In addition, several processes

were implemented to ensure a level of critical reflexivity on behalf of the research team. The second author, an experienced qualitative researcher, acted as a critical friend throughout the process from research design to write-up [79]. Secondly, in recognition of the role of the researcher as an active agent, the first author maintained a reflexive journal keeping a self-critical account of the research process, their internal dialogue and external dialogue with the second author. This approach allowed for a critical engagement with methodological decisions and rationale throughout the research process [78].

Finally, in line with the intended aims of the research and supportive of a desire to include coaches as genuine participants, all participants were contacted to gather member reflections following data analysis [79]. Taking account of recent critiques of the underpinning of member reflections on a pragmatic basis, the approach was perceived as a useful means of guarding against the limitations of data collection methods and to engage with the participants over a prolonged period [80]. Feedback from these conversations was positive, with all coaches seeing a significant utility in reflecting on their practice.

3. Results

Four themes were generated following data analysis: (1) knowing the athlete's needs, (2) purposeful breadth and flexibility of teaching approaches, (3) using challenge to test skill development and (4) the necessity of review and refinement. The developed themes are presented in Table 2 and all sub-themes are presented in italics.

3.1. Knowing and Shaping the Athlete's Needs

As a means of effective individualization, for both progression and welfare purposes, coaches perceived the requirement for identification and monitoring of athlete needs. This appeared to be driven by a tension between the characteristics that young athletes arrived with and those they would need to be successful later in their careers. As a means of managing this tension, coaches saw a place for a needs analysis to be conducted from the top down and the bottom up.

Top-down approaches were perceived necessary to understand organizational needs and what it would take to be successful at the highest level as competitive standards increased over time:

> (Sport governing body) has a values and behaviour model . . . from Junior, Youth up to Olympic level . . . . almost everything we do is designed around creating independent decision makers, adaptable athletes who are mentally robust, passionate, professional, and have a performance mind-set (Coach 6)

Where organisations spent deliberate time generating common definitions and jargon, participants believed this supported their coaching practice: "you need a shared mental model of how you behave, how you assess what is expected . . . that doesn't come from me, that comes from the whole club" (Coach 9). This clarity seemed to allow coaches to form intentions and meet the needs of individual athletes within an appropriate bandwidth.

Coaches sought to understand the *bottom-up needs* of their athletes on an individual basis. This helped build an understanding of an athlete's development at a given point and notice day-to-day variability. Supportive of this bottom-up profiling, coaches described a tacit sense of normality and situational awareness that informed their intentions: "I'll pick up a couple of things before they even tell me about them . . . I spend 20 plus hours a week with them" (Coach 2).

Coaches also worked towards a breadth of perspective of athlete needs, engaging in evaluative and goal-setting processes to understand the athlete's perceptions. This was achieved through regular two-way communication and processes such as self-assessment: "I use a form . . . getting them to input each PCDE and rate the level of importance where they are currently, just to understand their level of need" (Coach 8). Individualised approaches such as this, both formally and informally were used to establish individual athlete needs.

These bottom-up needs were used to inform a process that coaches referred to using a variety of terms, but most commonly as *Individual Development Planning*. In the context of the age and stage of athletes being coached, coaches reflected on the risks conferred by the apparent lack of a long-term outlook. A commonly held view was that the role of this stage of performance was to prepare athletes for the long term and the demands of being a senior elite athlete. Without the ability to project these needs against current deficiencies, coaches worried that their athletes would lack the characteristics necessary for later performance:

> It's like the IKEA wardrobe. You buy it and you have all these little wooden doweling things that you think these are completely irrelevant. Two years later, the wardrobe falls down. I think that's the thing with mental skills, a lot of it is unseen, but the value is infinite (Coach 2)

This planning process appeared to support coaches in managing the tension between short- and long-term needs. All coaches in the sample worked with some athletes who had progressed to their level of performance, despite having significant skills gaps, typically described as being psycho-behavioural in nature. Coaches, therefore, reflected on development planning that offered short-term rewards to maintain a level of motivation but was also aligned with longer-term concerns. Coaches felt that this was especially important to manage expectations for early high achievers:

> One of the lads is already within half a second of an Olympic time ... some coaches are already jumping up and down over him ... I'm going: 'hang on a minute. Go back to the plan, is he doing the basic things psychologically?' We were doing a really basic drill with him, he was just petrified, nearly in tears ... And you're like: 'there's so much for him to work on' (Coach 10)

For this reason, coaches also reflected on the necessity for development plans to encourage a sense of realism, keeping the athlete's needs as priorities. This was often challenged by the athlete, whose developmental needs could contrast with their wants. For some, there was a desire to perform, without the preparation or follow-up needed to maximise their long-term development: "all they want to do is just go and do it and then they don't think about what they did, beforehand, or after ... very often they'll just go and do the same mistake over and over. They need a 'plan, do and review'" (Coach 4). In this sense, development plans were seen as a tool to engage the athlete in self-regulated and self-directed learning.

3.2. Purposeful Breadth and Flexibility of Teaching Approaches

The second generated theme related to coaches' reflections on their use of a wide range of different methods and approaches for the graduated teaching of psycho-behavioural skills. These approaches were both explicit and implicit, the former relating to coaches directly referencing the type of skill they were teaching and engaging the athlete in, and the latter typically involving the manipulation of social dynamics and deliberate steps being taken to engineer an environment that promoted particular skills being deployed.

Across a breadth of *explicit approaches*, coaches seemed to reflect more on their efforts to remediate identified deficits, or where skills were perceived to be essential: "we do workshops like prep funnels ... they go through actions on a competition day ... 'what am I thinking to go down into that fight?' so 90% of them have [pre performance routines]" (Coach 7). Whilst methods such as workshops were considered useful in raising understanding across larger groups, one-to-one teaching was seen as the most impactful way to explicitly teach: "I spend a lot more time talking to them individually ... I've gotten better at doing that over the years" (Coach 1). For those with larger groups of athletes, although a significant time burden, it was perceived to be important for coaches to devote significant time to the planning and delivery of one-to-one explicit teaching methods. In the case of coach 10, reflecting on the planned use of senior athletes in a question and answer session to explicitly address how athletes might use psycho-behavioural skills to meet the challenge of pre-race preparation:

> We've done quite a bit with the seniors . . . particularly the ones that were just a year or two older, not bring in (senior Olympic medallist) . . . We ask them to talk about things like pre-race preparation . . . and the psychological prep that they go through (Coach 10)

Other explicit strategies included worked examples to make 'thinking visible' showing athletes how skills might be used in context alongside other elements of performance: "I use peer to peer coaching . . . I make the more experienced athlete think of what they're actually doing and to tell somebody" (Coach 3). Where coaches had athletic experience, they offered worked examples themselves, articulating how they might use a particular approach.

In addition to these more explicit approaches, coaches also perceived a need for more *implicit approaches*. Mirroring coaching pedagogy, there was a view that coaches couldn't be explicit about all necessary elements of performance, nor was it considered desirable to do so. Instead, coaches reflected on the need for impactful teaching of skills to also be based on the manipulation of social dynamics and environment. For example, coaches reflected on the need to consistently role-model the skills they were aiming to teach, without necessarily drawing attention to their behaviour:

> If I'm saying that it [coping with pressure] is important and I'm chucking my notebook around and booting the water bottles every time something isn't quite right, then I'm not getting it right (Coach 8)

Implicit modelling was also a feature of coaching intentions, with coaches deliberately pairing more and less experienced athletes to act as what Coach 10 referred to as "buddy systems". This type of proximal role modelling was used to promote target behaviour, without coaches necessarily guiding the attention of the athlete. Coaches saw significant value in engineering the social environment, but in a manner that appeared organic to the athlete. Coaches also took steps to do the same outside of the local coaching environment by engaging a range of stakeholders: "parents are a massive part of it...we'll sit down and say: 'this is what we're working to, these are the goals'" (Coach 4). The same view was taken in cases where athletes were engaged in more than one coaching environment: "we have done a lot of stuff, we've invited [club coaches] into a training day. I think . . . you need good messaging" (Coach 5). Thus, often including the deliberate engineering of the wider social support network of the athlete.

Taking account of the breadth of skillset with which athletes arrived in their programme, coaches also perceived a necessity to engage in *graduated teaching strategies* with their athletes. Coaches seemed to reflect on a more 'linear style' approach to the pedagogy of psycho-behavioural development. There was a view that athletes needed to progress from an understanding of skills to an understanding of their situated use. Coaches appeared to favour more explicit approaches earlier in skill development, using more implicit strategies later: "we layer things on throughout . . . and then by the end of the year, you need to perform this PCDE" (Coach 10). This approach contrasted with some of the practices that coaches had historically observed, such as isolated workshops as an abstract exercise. For example, coach 4 suggested: "you could give the athletes a talk on nutrition, but if they don't cook any of their own meals yet. It's a waste of time". There was a belief that psycho-behavioural skills needed to be practiced in context and a graduated move from the explicit to the implicit as a feature of the training and competition environment. It was for this reason that, in addition to reflecting on the utility of workshops to present ideas, coaches' teaching reflections were situated in the training context, seemingly acting as a means of bridging from the workshop setting and ultimately reducing transfer distance for athletes.

3.3. Using Challenge to Test Skill Development

Beyond the teaching of skills, a feature of all coaches' practice was the deliberate use of challenge as a fundamental element of the development of psycho-behavioural skills.

This was seen on a number of levels, firstly, the perceived need for the athlete's pathway to present them with a level of *systemic challenge*. That there was a need for the fluctuation of challenge to be embedded in programme design. Consequently, coaches worked with administrators to shape activity to meet the needs of most athletes in a squad, including entries to different competitions, timing of selection and travel to training camps. Coach 1 reflected on the desire for qualification in an event that would expose athletes to world-class opposition, knowing they would be uncompetitive:

> You're like . . . let's get New Zealand, they do and you're like 'yes'! You know you're gonna get absolutely ****ed, but it's all about the experience. It's that feeling of seeing (New Zealand), racing alongside them and watching them

Here, there was a sense that the coach strongly valued the opportunity for observation and reflection on world-level junior competition. This single experience was valued as a key vehicle to influence further development. Where coaches lacked the flexibility to expose athletes to significant and real-world challenges, it was considered a rate-limiter for development. For example, when coaches were only able to manipulate training sessions: "they only get these two key races a year . . . I think this creates a gap . . . 'I've never been here before, I've never done this" (Coach 10).

Coaches also perceived the need to not only design challenging experiences but change their *coaching approach* to challenge athletes. This manifested in what coaches described as 'push'-like behaviour where, under certain circumstances, coaches chose to temporarily take more control of the athlete's journey. This often manifested in deliberately holding athletes accountable to progressively higher standards against agreed aims: "once they want to be the best in the world, you can usually start pushing them a little bit harder, it's not saying it's not good enough just to be okay, but sometimes you need to push" (Coach 3). A prominent feature of these 'push' behaviours was the use of selection as a developmental tool, as a means of increasing athlete accountability, not just as a punitive measure. Selection and deselection were also used to moderate the challenge levels. That is, if athletes were perceived to lack the necessary skills, or were fatigued, their challenge load was adjusted:

> We decided that, in 2016 (Olympic Games), [athlete] wasn't going to be ready but 2020 was a real possibility. So, in 2018 we went to Commonwealth Games and we did a schedule of more events and tried to expose her to as many finals as possible with an Australian crowd . . . after that, she ended up a wee bit fatigued, and had a really bad Europeans. I could see the dream was going to be dead if we kept pushing, so we didn't pick her to allow her to refresh mentally after 2018 (Coach 2)

This also meant that planning for challenge was individualised as appropriate to athlete needs. For example, coach 3 discussed reducing athletes' psychological safety, exposing them to the perception of judgement in a training session: "we've always tried to create some form of pressurised training . . . You bring in (senior coach) to come and watch the session because you bring in that judgment factor".

Coaches also reflected on a range of *factors influencing the use of challenge*. A common perception was that their ability to cater to the longer-term needs of athletes was hindered by a lack of prior challenge:

> I think the best players in (age groups) are treated like little superstars . . . they have it a bit easy and in (age groups) they don't have great strength in depth . . . giving them a rocky road and make their pathway, it just doesn't happen . . . the difference between them and the next one is so vast, that's an issue . . . Elite sport is a very tough business and I think in the modern day culture . . . you have to be very careful with everything and pushing people to their limits to be the best, there can be a very fine balance (Coach 5)

Against this background, coaches also believed there was an ethical imperative to prepare athletes for the rigours of elite sport. However, expressed a fear of wider perceptions and a general fear of malpractice accusations. This was perceived to hinder their ability to make decisions aligned to athlete needs. In response to this concern, coaches deployed a range of strategies to ensure a broad understanding of the need for challenge. Strategies supportive of this included seeking informed consent from the athlete "I make sure I get consent, basically, to say, you're unhappy to do this, and just say and we won't do it" (Coach 3). For the coaches of younger athletes, consent was sought from parents: "I've called a parent and said: 'it's too easy for him, how do we create some failure?' We work together, but the player being aware of why we're doing it" (Coach 9). Ensuring buy-in from stakeholders was perceived to generate a coherent drive, avoiding one group working to undermine the messaging of another. Indeed, this element of the process was a prominent feature of member reflections with coaches sensing an absolute necessity of understanding an athlete's needs and their psycho-emotional state, against the sources of support they might employ.

3.4. The Necessity of Review and Refinement

The final generated theme concerned the perceived necessity of review and refinement following challenge. Challenge was perceived by coaches to confer an opportunity to *motivate further refinement*, with events such as underperformance enabling increased focus on elements of development that had previously been undervalued: "normally they say they don't need it until it all f**s up and then they need it" (Coach 7). Thus, in some cases, coaches saw challenging experiences as encouraging a new perspective for the athlete. This was especially the case where athletes didn't perceive the need to engage in building their psycho-behavioural skillset until a difficult experience highlighted the need. In this regard, rather than seeing poor performance as wholly negative, many of the coaches in the sample suggested that under- or poor performance instead presented the opportunity to focus the attention of the athlete, so long as the review process was supported.

To manage this support process, a variety of *feedback and debrief* methods were discussed by coaches. The intentions discussed by coaches often related to their day-to-day practice, with coaches utilising a continuum of more-or-less direct means to engage the athlete, seemingly based on the extent of challenge experienced. Where the challenge experience was moderate, debrief was considered more appropriate; for example, coaches often used peers for reflective purposes:

> We did a really tough session and after the warm down we got them in pairs. One of the questions they had to chat about, was: 'what was the most stupid thing they did at the end of the session when they were fatigued?' And: 'if you're in that situation again, what skills would you draw on?' (Coach 5)

When the challenge level was perceived to be higher, based on the emotional disturbance experienced by the athlete, coaches felt there was a need to offer more direct feedback and input:

> The difficult ones to debrief are if it hasn't gone to plan. There'll be the conversation that puts things in context for them, where they're going, what they're doing and what's expected of them, focusing on themselves and on what is next (Coach 1)

This type of approach was also adopted by coaches as part of a broader cycle, using review processes to feedforward to future skill development:

> So we did a workshop in the morning and kind of just getting over the concept of it [mental skill] to the lads. How you are in those pressure moments basically: 'do you go emotional? Do you go over the top? Can you think clearly?'. Then we did a pitch session where we had three different types of games, we manipulated it to try and get them wound up. The first game the umpires umpired appallingly, and not just terrible decisions, I made a big thing before saying 'do not give away

a corner, this is a most important thing'. And of course, they were just giving corners when it wasn't a corner. The second round, I just got stuck into them. Every time they got the ball, I just put them under loads of pressure . . . And then after each section to kind of bring the mental skills to practice, we would do 10 min of feedback it was really good" (Coach 5)

Beyond sessional approaches, coaches also saw significant value in using *formal review processes*, often embedded in their programmes: "we do a six-week review . . . I'll have technical, tactical objectives, physical objectives and psychological objectives" (Coach 9). The formality of these sessions was perceived to enable coherent communication, helping the athlete to harness their emotional state and engage stakeholders in the process:

Keeping people on the same page is massive . . . I've been doing formal meetings with parents as well as [athletes] to let them know: 'this is what we're working towards and where we think they need to go . . . we say to them: 'let us do the coaching, but at the same time you know your kids better than anyone, if there's something that you think would be helpful for us to know, then please tell us (Coach 11)

Given the recognition of the impact of other figures in athlete development, it was this type of communication was seen to be a core feature of practice, even where there were a limited number of involved support figures.

4. Discussion

The specific aim of this research was to explore the pedagogic intentions of high-level coach practitioners in the psychological development of TD athletes. The coaches in this study reflected on a holistic approach to their practice in which the psycho-behavioural development of athletes was seen as fundamentally intertwined with technical, tactical, lifestyle and social performance factors. Indeed, in their reflections, many of the coaches struggled to separate the psychological from other dimensions of performance, with psycho-behavioural skills fundamentally entwined with technical, tactical, physical and lifestyle elements. Reflecting this, rather than segmenting different elements of performance and training, coaches perceived their role as contributing to the overall coherence of the athlete's experience [22,34]. To achieve this, coaches used a variety of formal and informal means, to curate the athlete experience and orchestrate their social milieu [49,81].

As a feature of this holistic approach, and perhaps as a consequence of asking coaches to reflect on coaching beyond the session, the methods they used seemed to match the thematic categories of the teach, test, tweak approach advocated by Collins et al. [29]. Indeed, whilst the approach was not explicitly referenced by any of the participants, the methods described by coaches, some of the terms used and targets for activities reflected an approach to the development of psycho-behavioural skills that went beyond the context of the individual training session. As such, the findings of the paper build from the existing evidence base that describe the approaches that coaches have used within training sessions [43]. Furthermore, reflecting the messy reality of professional practice. the narratives offered by coaches didn't fit neatly into the categories of teaching, testing and reviewing. Rather than distinct phases, activities seemed to form overlapping cyclical patterns that were driven by broader intentions, rather than a distinct categorisation of approach. It seems that, whilst coaches may aim to initiate a cycle of profiling, teaching, testing and tweaking at the micro level, this micro cycle might also form part of a broader meso cycle aimed at a distinct phase of teaching, testing, or reviewing. For example, a conversation prior to a training session might aim to prime the use of imagery, the session being used to integrate the imagery in skill refinement and post-session mobile communications employed for review. This 'micro' cycle could form part of a broader six-week focus on the development of imagery. Coaches reflected on how these strategies could be used over longer periods, using multiple cycles building towards significant developmental challenges, for example international competition.

An area in which the present research builds from existing models was the emphasis put on profiling individual psycho-behavioural needs to inform further development. This individualisation put a significant cognitive load on the coaches. To manage this load, coaches used a variety of mechanisms to enhance their decision-making. This included needs analysis conducted through both top-down and bottom-up mechanisms, cf. [82]. From the top-down, processes such as review and needs analyses were deployed, often driven by NGBs. These allowed both coach and athlete to understand where the athlete was, appreciate risk factors [83] and formulate plans for future development [84]. These more formal strategies were married with bottom-up profiling, with coaches referring to 'knowing the athlete' [85], with an emphasis on the psycho-emotional state of the athlete, drawing on a sense of typicality, comparing how the athlete was on a given day in comparison to the norm. This suggests the need for well-developed social intuition, the "evaluation of another person's cognitive and/or affective state through the perception and nonconscious processing of verbal and/or nonverbal indicators" [86] (p. 308). Supported by regular communication and informal debriefing, this empathic understanding enabled coaches to make decisions about how best to shape the experience of athletes on a given day [87]. It was on this basis that coaches worked with longer-term plans, generated in slower time, with more intuitive judgements based on changes in the athlete's circumstances [88].

With reference to the 'teaching' of skills, although not always using a theoretical base, coaches suggested the use of a broad range of pedagogic strategies, including both explicit, "practiced and talked about" and implicit, "indirectly practiced and talked about" approaches [38] (p. 51). Consequently, pedagogic strategies ranged from the didactic (e.g., workshops, instruction) to more situated approaches requiring authentic activities (e.g., role modelling). In this regard, coaches drew on a range of methods, using those that were deemed most appropriate for the athlete at a given time [89,90]. Notably, this seemed to contrast with coaches' perceptions of a progressive building of complexity in their teaching of skills. On the one hand, they seemed to discuss a more linear approach, one that required athletes to be taught skills from a base level and gradually made more complex. This seemingly reflected the perception that athletes arriving in their environments lacked the necessary psycho-behavioural skillset, something not necessarily supported in the literature [91]. Yet, on the other hand, the coaches also reflected on the use of explicit and implicit teaching being used in conjunction to coherently reinforce [85]. This may reflect a difference between the notion of espoused theories and those in use [92]; or, despite coaches reflecting on the necessity of a needs analysis, the lack of valid tools to do so beyond the intuition of the coach, e.g., [84].

Building on the notion of coaches' pedagogic theories informing practice, matching previous findings, coaches put significant value on the teaching of skills within the context that athletes needed to deploy them. Whilst not explicitly stating so, coaches seemed to draw on the notion of situated cognition [93] as a means of bridging the abstract nature of the psycho-behavioural skill as defined, and its use in practice. This 'bridging' approach could also be framed in terms of near-transfer from the conditions of practice to deployment [94]. Regardless of theoretical framing, coaches strongly perceived the need for skill development to be embedded in the life of the athlete, being actively prompted and tested [95].

The coaches in this sample seemed to support the perspective that challenge tested previously developed skills and promoted potentially adaptive post hoc reflection, cf. [30,96]. Coaches were also highly conscious of non-sports-related stressors and how these might impact the athlete. This informed awareness of when coaches felt able to stretch or push the athlete, and when to pull back [42]. Consequently, the data support some of the conclusions of Book et al. [21], who suggested a similar need for the coach to be aware of the background of the athlete and their psycho-emotional state. Perhaps importantly, for coaches cognisant of the challenge presented by elite sport, there was also a perception that a challenge-less pathway presented a risk for the athlete's later wellbeing and performance [37]. Thus, coaches felt that for proactive skill development, the experience of

both positive and negative emotions in response to pathway events had the potential to be beneficial over the long term [19,96]. There appeared to be a difficult dynamic for coaches to manage around the balance of developing psycho-behavioural skills for performance or using performance as a vehicle to test skillset. In essence, the relative weighting of focus on current versus longer-term performance [33]. This dilemma was managed in multiple ways. In instances where a broader developmental focus was adopted, lower-level competitions were used to test and promote the development of weaker skillsets. In contrast, however, where competitions were seen as more important for performance reasons, for example, key system staging posts, athletes were primed and developed to express strengths and maximise their chances of success. Thus, coaches prioritised different psychological skill development at different times alongside competitive demands [97]. This differential also points to the interaction that these individual coaches experienced with the broader TD system of which they were a part [82]. Whilst more research needs to be conducted, the evidence presented here builds on our understanding of how the dynamics of challenge play a critical role in development at all levels of performance. In addition to other findings, our data outline ways that coaches can use challenge as an element of proactive skill development. This study builds on evidence demonstrating how coaches use challenge within training sessions, e.g., increasing the level of pressure [43] but also, as a novel feature, how this could be nested within a broader approach to the development of psycho-behavioural skills.

Finally, the underpinnings of this study are at odds with a search for 'best practice', rather a move toward 'evidence informed practice' [98]. Consequently, there appear several implications for coach development. Firstly, by highlighting that the problems coaches face are truly interdisciplinary in nature and that the abstract categories that surround academic disciplines are not those presented to coaches in the real world [51]. As such, coach development should aim more towards expertise in coaching practice, rather than a narrower, and often short-term focus on competence. This necessitates coaches acquiring knowledge across domains and developing the adaptive skill to operate under uncertain conditions, making sense of problems and acting flexibly to find solutions [99].

Whilst positive steps are being taken to approach the need for coaches to have the requisite declarative knowledge [59], the data presented here support the conclusions of others in coach education research pointing to the need for coaches to not only acquire knowledge but also know how to use it [100]. This only points to the need for more attention to be paid to the development of expertise in coaching practice and how various bases of knowledge might underpin coach decisions and actions [70]. This study only further highlights the need for coaches to see their role as not being confined to the technical and tactical elements of performance. This seems especially important in the TD domain where coaches are unable to draw on the knowledge of a variety of specialists. We would also point to the need for coach development to pay attention to the ability of coaches to forecast the needs of athletes over time, especially for those working with younger athletes [101].

5. Limitations

In any research that seeks to understand the practice of experts, there is a need to ensure that participants appropriately represent a population of expert practitioners. This risk was mitigated by the extent and nature of the sampling process used by the research team. Similarly, by asking participants to comment on their working practice, there is a risk that the quality of data is diluted by self-presentation. Based on the methods used, we cannot know whether the coaches in this sample actually use the strategies that they discuss, cf. [102]. This risk of self-presentation may have been compounded by the position of the interviewer as a former Olympic athlete and international TD coach. Importantly, rather than invalidate the findings, it is important to note that the research question aimed to understand pedagogic intentions, rather than investigate the enactment of strategies. Indeed, the approach adopted mitigates against the limitations of single observations in TD research, cf. [103]. In addition, despite a significant diversity of coaching context, nine

of the coaches were male and only two were female. Although this is representative of the coaching population in UK elite sport, it is a clear limitation. Similarly, there was a lack of coaches working with disabled athletes, perhaps indicating the limited number of coaches that work exclusively with sub-elite disabled athletes.

6. Conclusions

By exploring the intentions of high-level TD coaches in relation to the development of psycho-behavioural skills, this paper highlights the complex and interconnected nature of the coaching process. Coaches in this sample discussed a range of approaches and methods that went beyond the didactic, representing a breadth of pedagogic intentions. In doing so, discussing the intent to draw on a range of strategies aimed at the development of psycho-behavioural skills. These methods went beyond individual coaching input, with a focus on the orchestration of the environment and use of the wider TD system. Coaches also approached their practice with multiple nested objectives. Rather than working on a psychological factor in one session and a technical element in another, coaches aimed for multiple objectives according to circumstance. These methods were supportive of a 'teach-test-tweak-repeat' heuristic approach to developing psychological skills, but also highlighted the complexity and non-linearity when applied in practice. An apparent core feature being the perception that challenge is central to the process of TD, so long as athletes are sufficiently prepared and subsequent review processes promote further development. Along with systemic and individual profiling of need, we suggest that coaches and talent systems can draw on the notion of the teach, test, tweak, repeat heuristic model to enhance practice.

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