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Applying an individualized psychosocial skills and characteristics development programme into an English male professional soccer academy

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ABSTRACT

Although psychosocial skills and characteristics (PSCs) drive development in soccer academies limited research exists documenting processes of applying PSC assessment and development. This study aimed to explore effectiveness of a PSC programme applied in a Category 3 soccer academy with nine volunteer U13 players (age 12.63 ± 0.18 years). The lead researcher co-created the programme alongside coaches ($n = 2$). Data were gathered pre- and post-intervention using the psychological characteristics of developing excellence questionnaire version 2 (PCDEQ2) and performance profiles. Changes in PSCs were analyzed using paired samples *t*-tests (Cohen's *d* effect size determined magnitude of change). For PCDEQ2 scores, small effects were noted for self-directed control and management ($p = 0.11$, $d = 0.31$) and active coping ($p = 0.17$, $d = 0.27$). Imagery and active preparation ($p = 0.18$, $d = -0.42$), perfectionistic tendencies ($p = 0.05$, $d = -0.43$). Seeking and using social support ($p = 0.27$, $d = -0.22$) showed negative small effects. For performance profile scores, medium effects were observed on emotional control ($p = 0.05$, $d = 0.76$), self-awareness ($p = 0.00$, $d = 0.52$), and good learner ($p = 0.02$, $d = 0.47$). Medium negative effects were observed for commitment ($p = 0.04$, $d = -0.56$), and concentration ($p = 0.02$, $d = -0.79$). Main findings were that a 21-week PSC programme had positive and negative effects on player PSCs, which maybe enhanced through a carefully designed programme. Future research should explore effectiveness of different approaches to embedding PSC programmes into soccer academies.

Lay summary: This study offers insight into the effectiveness of a 21-week programme embedding PSC assessment and development into an English under-13 Category 3 soccer academy curriculum. The findings highlight the potential opportunity and challenges for practitioners to integrate PSC development into their own practice.

IMPLICATIONS FOR PRACTICE

- A carefully planned PSC programme can have benefits for holistic player development
- Positive increases in self-directed control and management, active coping, emotional control, being a good learner and self-awareness highlight the importance of autonomy and providing suitable challenges on the pathway

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- Negative changes highlight the importance of regular monitoring of individual's PSCs throughout the season

Introduction

Alongside the development of technical, tactical and physical attributes a plethora of recent research demonstrates that psychosocial skills and characteristics (PSCs) are also vital for progression along the academy soccer pathway (Collins et al., 2019; Moodie et al., 2023; Till & Baker, 2020,). Psychosocial characteristics are traits that a player possesses innately (e.g., resilience, motivation) or that can be developed through psychological skills training (i.e., learned methods that can regulate psychological and social characteristics) (Dohme et al., 2017). Importantly, PSCs have the wider purpose of developing aspiring soccer players as people as well as athletes, capable of functioning in the world away from soccer, at whatever point they transition out of that environment (Stambulova et al., 2021).

The elite player performance plan (EPPP) was introduced by the English Premier League (EPL, 2011) in 2012 to revolutionize the academy system for EPL and English Football League (EFL) soccer academies. A key aim of the EPPP is to facilitate the holistic (i.e., physical, technical, tactical, psychosocial) development of players across each academy phase (i.e., Foundation Phase; U9-U11, Youth Development Phase; U12-U16 and Professional Development Phase; U17-U21) to ensure optimal player development, and, health and wellbeing (Roe & Parker, 2016). EPPP academies are categorized from 1 (highest) to 4 (lowest), with higher categories demonstrating the highest quality of coaching, equipment and facilities and receiving more contact time with players, funding and staff (Premier League, 2011). Although the EPPP was designed to develop players holistically (Jones, 2018), psychological profiling and support were only made mandatory at Category 1 academies with lower categories relying on external organizations for support or even going without (Barraclough et al., 2024; Dean et al., 2022). Even at Category 1, McCormick et al. (2018) reported that some clubs just do the bare minimum in terms of sport psychology services, with sessions often being confined to basic classroom-based workshops. Although these workshops are extremely important in disseminating information to players, coaches and parents, there has also been a recent call to also integrate PSC on the pitch, delivered through coaches (Mitchell et al., 2022, 2025). These sessions often depend on buy-in from coaches who in turn can have a major impact on how players perceive them. This could be problematic as Champ et al. (2020) and Crawley (2021) suggest that coaches are not always receptive to new ideas and may maintain the hyper-masculine premise that psychology is for the weak. In addition, Gibson and Groom (2019) claim that micropolitics may come into play whereby individual coaches' self-interest leads to them manipulating the environment to their own needs, with less regard for the players.

Additionally, at a macro level, lower Category academies lack specialist staff and must balance time and budgetary constraints (Barraclough et al., 2024). High staff turnover and a need to stay in employment (i.e., professional self-interest) may be factors that also prevent new ideas taking root (Gibson & Groom, 2019). Furthermore,

Barraclough et al. (2024) found that academies may not be formally employing psychosocial development despite academy managers recognizing the importance of PSCs, with time and financial constraints being cited as restrictive factors, alongside difficulties in delivering effective staff development sessions. Furthermore, some coaches may be reluctant to explore means of implementing PSCs as they find this too demanding and time-consuming and may be more prone to focusing on winning over development (Santos et al., 2018). To ensure optimal delivery of PSCs and overcome some of these challenges collaboration between key stakeholders (i.e., coaches, parents and academy management staff) is seen to be vital in this process (Barraclough et al., 2024; Mitchell et al., 2022, 2025).

Although many frameworks exist with the best intentions of implementing PSC development (Collins et al., 2019), many practitioners struggle to operationalize theory into practice by not effectively transferring theory from classroom-based sessions to practical sessions on the pitch (Mitchell et al., 2022, 2025). Some notable exceptions in soccer include work by Diment (2014), Harwood and Anderson (2015), and Mitchell et al. (2022) where PSC training has been periodised into academy curricula and delivered by coaching staff. Diment (2014) applied a "drill-based approach" involving educating coaches on how to integrate seven psychological skills (e.g., concentration, self-talk, communication) into players' daily training using sport-specific drills. Harwood and Anderson (2015) approach prescribed practical sessions to be delivered by coaches around the 5Cs of commitment, communication, concentration, (emotional) control, and confidence. Mitchell et al. (2022) developed an "8 pillar" approach which incorporated the 5Cs with an additional three pillars including resilience, presence and self-awareness, again to be delivered by academy coaching staff with support from sport psychology consultants. This is a useful method when time constraints are a factor but one possible limitation of these three approaches was their programme-centred nature where the same content was delivered to all the players by staff. This does not allow for any differentiation and presumes all players will need the same content for the same PSC to be developed. An alternative suggested by Mitchell et al. (2022) would be to tailor the PSC programme to a more player-centred approach by implementing long-term individual assessments, such as an observational checklist and performance profiling to measure baseline scores compared to post-intervention scores (Butler & Hardy, 1992). Having an observational checklist such as that produced by Mitchell et al. (2022, 2025) could help inform coaches as to which behaviors correspond to which PSC, in turn informing how coaches would score the players on the performance profiles. At the start of the process, ideally in pre-season, the mean scores taken from coaches and players would provide a baseline to compare to post-intervention scores.

Additionally, questionnaires such as the psychological characteristics of developing excellence questionnaire (PCDEQ; MacNamara & Collins, 2011) have been developed and used to assess psychological characteristics of developing excellence (PCDEs), which are PSCs deemed by MacNamara and Collins (2011) to be important for success in talent development environments. The PCDEQ was deployed by Kelly et al. (2022) across two seasons working with a Category 3 academy's foundation (i.e., U9 to U11s) and youth development phases (i.e., U12 to U16s). Scores were taken in pre-season, and two factors (coping with performance and developmental pressures and ability to organize

and engage in quality practice) were positively associated with progression along the pathway. Similarly, Saward et al. (2019) tracked youth development phase (under-13 to under-16) players' PCDEs at a Category 2 academy over a 20-month period using the PCDEQ and what category level (i.e., 1–4) they subsequently reached at youth team level (i.e., indicator of successful career progression). The authors observed that coping with performance and developmental pressures and evaluating performances and working on weaknesses scores increased with age at higher category levels, whereas imagery use during practice and competition scores decreased. When applied to career progression, it was suggested that for players in the YDP, coping with performance and developmental pressures was particularly important to develop resilience on the pathway and to cope with transitions. It also implies that effective, bespoke assessment methods are vital. Without measuring individual baseline scores and reassessment at specified points, it would be difficult to judge the effectiveness of any intervention, other than by using the coach's eye which is fraught with issues around cognitive bias (Sieghartsleitner et al., 2019).

Despite the widespread use of the PCDEQ for tracking PCDE development, only Mitchell et al. (2025) have deployed the more recent version of this inventory (i.e., PCDEQ2; Hill et al., 2019) in soccer as a pre- and post-intervention assessment in their study with a Category 3 academy. An 8 Pillars (communication, control, commitment, confidence, concentration, resilience, presence, and self-awareness) programme was delivered via player workshops and age-group coaches across a 36-week period (Mitchell et al., 2025). Significant differences were reported in imagery and active preparation, seeking and using social support and active coping. In addition, significant improvements in players communication, control, commitment, concentration, and resilience were observed.

Performance profiling has been advocated as an alternative or complementary method of measurement (Butler & Hardy, 1992) as it gives players the opportunity to be involved in the assessment process (Deci & Ryan, 1985; Visek et al., 2013) and could enhance self-regulation (Toering & Jordet, 2015). This form of assessment involves players rating themselves and coaches also rating the players (both out of 10) on technical, tactical, physical and psychosocial factors, with the particular emphasis in this instance on the latter. For the purpose of the current study, the PSCs were selected based on the findings of Barraclough et al. (2024) to include teamwork and leadership as well as Mitchell et al. (2022, 2025) 8-pillars (see electronic supplementary file S1 for a completed example). The process of self-evaluation has also been argued to act as an intervention in itself as it encourages performers to self-reflect (Hemmings & Holder, 2009), although self-report bias may be a factor with subjective scores obtained. Another method that can be used to assess PSCs is observation, providing more ecological validity by monitoring players in their natural environment (i.e., on the pitch) (Mitchell et al., 2022). This could also avoid the self-report bias potentially present in performance profiling and questionnaires but could be prone to observer bias (Ashdown et al., 2025).

Mitchell et al. (2022) suggested a number of observable behaviors for each of their 8 pillars across the three phases of academy soccer. For example, in the youth development phase, effective commitment can be observed in players who are "staying involved

in the play, looking to create opportunities in training and games, showing for teammates" (Mitchell et al., 2022, p. 40).

When collecting data, triangulation is important when assessing individual PSCs with each measure having inherent strengths and limitations. Using more than one assessment method means that the strengths of one can mitigate the weaknesses of another (Collins et al., 2019).

According to academy managers who have an overriding influence on player curricula and developmental processes PSCs are deemed to be some of the most important catalysts for player development as they can help develop more rounded people capable of thriving outside of the football bubble (Barraclough et al., 2024). This can be achieved by facilitating essential life skills and managing emotional wellbeing and hopefully avoiding the risks of developing an exclusive athletic identity (Stambulova et al., 2021). Furthermore, PSC development can also help players overcome some of the challenges that occur within academy settings and associated transitions by equipping them with a "toolbox" of appropriate responses including self-awareness, coping with pressure and seeking social support (Collins & MacNamara, 2017b, p. 5). Despite this there is still little research investigating how PSCs are effectively assessed and developed in academy settings. Although many coaches will be incorporating PSC elements into their planning implicitly, there is a need to make this more explicit so that specific PSCs can be assessed and targeted for development more effectively. Therefore, the aim of this study was to explore the effectiveness of an individualized PSC assessment and development programme in a male Category 3 soccer academy with players in the youth development phase. An action research methodology was employed whereby the lead researcher co-created session content in collaboration with two academy coaches based on an individual needs analysis of participating players. Data were gathered pre- and post-PSC intervention using the psychological characteristics of developing excellence questionnaire version 2 (PCDEQ2) and performance profiles, the latter of which was informed by player self-report and coach observation. Sessions were then designed accordingly either at individual, small group or whole team levels.

Method

Study design

An action research (AR) methodology was used to embed the first researcher directly within the context of their inquiry. AR is a method originally developed in the 1940s through the work of Lewin (1946) and is characterized by its cycles or spirals of research and action. It can be defined as "analysing the world but also trying to change it" (Gray, 2022, p344) whereby action and research take place concurrently in a cyclical process with four distinct phases per cycle (i.e., plan, act and observe, reflect, revise the plan) (Koshy et al., 2010). Action in this context is applying evidence-based findings via interventions to develop PSCs in players. According to Cushion and Jones (2006), a power imbalance will always exist between those in an authoritative position (i.e., coaches and in this instance researchers) and players in a more submissive position. Therefore, for the purpose of the current study, participatory action research (PAR) was deemed most appropriate to attempt more of a collaborative share of power between

researcher and participants (i.e., coaches and players) and to apply and extend upon previous research during action in an applied field-based setting (Boyle, 2012). More specifically, session design (e.g., practical content on the pitch in training and games) was co-created between researcher and the two age-group academy coaches based on the individual needs for participating players gleaned from the assessment process. At times players were also given more of a voice during the delivery of PSC the development activities outlined in Tables 1 and 2. For example, in block 1, week 5, session 1 (Table 1) the theme was on autonomy where players worked in small groups, with the support of the coaches and the principal researcher to plan their own sessions based on their individual needs. Additionally, players were given complete control over selection, tactics and briefing/debriefing during an inter-academy tournament (block 2, week 2 – Table 1). The reason for including autonomy as an important PSC came from previous research by Barraclough et al. (2024) that highlighted this characteristic as being an essential factor in progression within the football academy pathway and life beyond. Autonomy is also one of the major parts of self-determination theory (Deci & Ryan, 1985) and self-regulation (Toering & Jordet, 2015).

In the current study the seven-phase model outlined by Thomas (1990) was used to continuously refine the methods, data, and interpretation based on what has been gleaned from previous cycles.

Table 1. Timeline for delivery of psychological skills and characteristics (PSCs).

PSC	Timepoint	Topic/overview of content
Concentration	B1 W4 S2	Workshop 1 (10 players, 5 parents) on goal setting/concentration/self-awareness. Distinguish between long/medium/short term and outcome/performance/process goals. Played goal setting 'points game' on pitch.
Self-awareness/autonomy	B1 W5 S1	Workshop 2 on flipped learning i.e., player-led (autonomy). Players (8) planned sessions based on ILPs then delivered on pitch. Group session but BPs in same ILP group and monitored/supported by coach B.
Communication/autonomy/leadership	Cat 3 game (3–2 W)	BPs led warm-up and BP1 made captain to improve communication/leadership. Also, both BPs led feedback during break periods and at end of game. Responsible for ensuring all kit neat after game & changing rooms tidy/clean.
Commitment/concentration	B1 W6 S2	Pitch session based on ILPs to demo to coaches with emphasis on concentration/commitment. Did 2 × Coerver practices (box & recovering def) focusing on BPs. Man marking game at the end (concentration).
Resilience	B2 W1 S2	Pitch session based on ILPs. Defender on side warm-up, practice with BP1 receiving a long pass then playing into BP2 (1 v 1 defender behind to score). Individual constraints in game at end BP2 could only pass forward, BP1 could only pass long (30+ yards).
Control/teamwork/leadership	B2 W2 S1 indoor	Workshop 3 on self-talk/emotional control followed by indoor session (capture the flag & 4-ball). Players to explore how positive/negative thinking can affect performance and how negative thoughts can be restructured. 4-ball also for development of awareness skills and communication (verbal/eye contact). BPs team captains.

(*continued*)

Table 1. Continued.

PSC	Timepoint	Topic/overview of content
Communication/autonomy/resilience/ leadership/teamwork	Festival (H)	Player-led from start to finish. Players picked teams & tactics for four group games. BP1 & BP2 took turns to be captain/spokesperson. Lots of different challenges (winning, losing, penalty shootout).
Communication/autonomy/ leadership/teamwork	B2 W4 S1 indoor	Players planned ILP session. BPs worked on confidence, 1 v1 attacking & shooting. Lots of positive reinforcement, reference to goal in festival and technical feedback. Coach B engaged really well and led this superbly.
Control/resilience	B2 W5 S1	2 BPs worked on emotional control. Both given constraints throughout (weak foot only, underloaded team, bad ref). Both debriefed after.
Confidence/resilience/control	B2 W6 S1 indoors	Workshop 4 on confidence & imagery. How different forms of visualization used to improve performance. 3Fs to correct mistakes. Gathered feedback sheets from players and verbal recordings from coaches. BP1 worked on confidence (1 v 1 defender in front situations with lots of success, lots of positive reinforcement); BP2 worked on resilience (played in underloaded team).
Confidence/communication/ resilience/leadership	Cat 3 game (1–6 L)	Did imagery before the game to music. BP1 worked on confidence (played whole game in preferred position, given lots of positive reinforcement throughout game); BP2 made captain (communication/leadership) & played out of position for one period (resilience).
Control/resilience/autonomy/ leadership/teamwork	B3 W2 S2 indoors	Workshop 5 on emotional control. Players learned about fear of failure & choking. Concept of "mistakes are brilliant". Also, how to cope with stressful situations such as injury (relaxation techniques, thought re-structuring). Awareness of arousal levels & psyching up/down strategies. Used footage from weekend away game to demonstrate good progress followed by player led ILP session indoors. Coach B led an excellent session with both BPs on scanning, passing/ receiving & finishing (confidence/awareness).
Communication/teamwork/ autonomy/leadership	B3 W4 S1 indoors	Workshop 6 on communication and teamwork. Players identified types of communication (verbal, non-verbal, listening) & when/why each are important. Also, what is teamwork & why important? Then, played silent/blindfold football to relate this to game specific situations and to demonstrate importance of verbal communication/scanning. Both BPs made captain/ spokesperson for each team and led de-briefs.

B: block; BP: bullseye player; ILP: individual learning plan; S: session; W: week.

Setting and participants

Ethical approval was granted from the University's institutional ethics committee (Reference: BAHSS2 0305) and informed consent was obtained from all participants and their parents prior to participation. Twelve Category 3 EPPP academy players (age 12.63 ± 0.18 years) from the U13s youth development phase squad volunteered to participate in the study. This sample of players represented the squad size at the time of inception (trialists were not included in case they were not later signed). One

Table 2. Example of individual player psychosocial challenges planned across a six-week block of the curriculum.

Name	Super strength	Areas for improvement	Position	Bullseye Week	Training/match day challenges
Player 1	Enjoy challenge (PS)	Long passing, tackling (TT), Communication (PS)	FB	1	Captain, lead team talk/warm-up Long passing, driven, lofted, whipped
Player 2	Confidence (PS)	Non-dominant foot, turning, 1 v 1 defender behind (TT)	CM	1	Turning unopposed, semi-opposed, opposed (defender behind)
Player 3	Enjoy challenge, commitment, resilience (PS), turning, pressing, playing forward (TT)	Short passing, finishing, counter-press, (TT), communication, awareness (PS)	CM	2	Captain, lead team talk/warm-up Shooting/pressing practice Checking shoulder (4-ball)
Player 4	Emotional control, teamwork, enjoy challenge, commitment (PS), Short passing, tackling (TT)	Long passing, turning (TT), leadership, communication (PS)	CB	2	Captain, lead team talk/warm-up Short/long passing both feet, driven, lofted, whipped Turning unopposed, semi-opposed, opposed (defender behind) 4-ball
Player 5	Commitment, resilience, emotional control (PS), first touch (TT)	Enjoy challenge, communication (PS), switching play (TT)	GK	3	Captain, lead team talk/warm-up Shooting practice Passing & receiving
Player 6	Finishing, dribbling, cross/cutback, 1 v 1 defender in front (TT), teamwork, good learn, concentration, enjoy challenge (PS)	Non-dominant foot, tackling (TT) confidence, leadership, communication (PS)	WM	3	Captain, lead team talk/warm-up 1 v 1 to finish, defender in front for confidence
Player 7	Dribbling, finishing, pressing (TT), enjoy challenge, commitment, confidence, leadership (PS)	Short passing, tackling (TT), emotional control, resilience (PS)	WM	4	Play underloaded, bad referee, Rock-Paper-Scissors game, short passing/tackling
Player 8	Short passing (TT), commitment, concentration (PS)	Finishing, 1 v 1 defending, movement to create space (TT), emotional control, communication, good learner, enjoy challenge (PS)	ST	5	Captain, lead team talk/warm-up play underloaded, bad referee, Rock-Paper-Scissors game
Player 9	Commitment, emotional control, enjoy challenge (PS)	First touch, tackling, counter press, playing forward (TT), resilience, communication (PS)	CM	5	Captain, lead team talk/warm-up play underloaded, bad referee, Rock-Paper-Scissors game

PS: Psychosocial; TT: Technical/Tactical: FB: Full-back; CM: Central midfielder; CB: Center back; GK: Goalkeeper; WM: Wide midfielder; ST: Striker.

participant did not complete the pre- and post-intervention PCDEQ2 questionnaires, and two additional participants withdrew from the study due to personal reasons, meaning data is presented from nine players. Two part-time age-group coaches were involved in the implementation of the PSC programme: coach A (aged 22) who held the UEFA "C" license and a BA in Football Coaching and Talent Development; and coach B (aged 28) who held the UEFA "B" License and a BSc in Sports Science and Coaching. The under 13s youth development phase squad were chosen as this was the youngest age group that the PCDEQ2 was validated with, and it was thought beneficial to start with a younger age group that could be more receptive to psychosocial training (Laureys et al., 2021).

For the current study, the lead author provided workshops to the age-group coaches, players and parents in the capacity as performance psychology consultant and researcher.

Developing and evaluating a psychosocial intervention programme

The framework used to develop and evaluate the PSC intervention programme was Thomas (1990) seven-phase model, similar to the periodised approach used by Beauchamp et al. (2012) when deploying a psychological skills training programme with Canadian Olympic speedskaters. Previously, no such framework existed in this academy due to budgetary constraints which provided an opportunity to embed PSCs into the curriculum, delivered by coaches, and supported by the lead author.

The seven phases consisted of orientation (initial meetings with academy staff), sport analysis (familiarisation with academy procedures/curriculum), assessment of players (through use of the PCDEQ2 and performance profiling), conceptualization (periodisation of player interventions), psychological skills education (for coaches and players), implementation (workshops and on-pitch delivery) and evaluation (reflection on what went well and what could be improved). The model was cyclical in nature meaning that following the final phase, previous phases were returned to.

Phase 1: Orientation

An initial meeting was held between the lead author, academy manager and head of coaching toward the end of the season before the consultation took place (March 2023). The purpose of this meeting was to establish the structure of the academy season and how the research could fit within that. It was also a chance for the first researcher to build rapport and share ideas of what could be developed based on previous research (Barraclough et al., 2024; Mitchell et al., 2022). This meeting went well and both the academy manager and head of coaching seemed very receptive. A second meeting followed with the head of coaching and phase lead for the age group that would be participating – the under-13s. Again, this was positive and both parties seemed interested and committed to the process.

Phase 2: Sport analysis

Although the first researcher had knowledge about practices at a Category 3 academy (i.e., 10 years' coaching experience in the youth development phase at this level), it was

still necessary to become familiar with procedures at this academy. A third meeting took place between the first author, head of coaching and youth development phase lead in May 2023 to establish a timeline for the upcoming season and which PSCs academy staff believed should be developed. Areas that the staff requested included having player-led sessions to develop autonomy, using the 5Cs (i.e., commitment, communication, concentration, control, and confidence), having mixed age groups and improving communication in players. This was based on their subjective opinions and experience but tied in with much of the theory around PSCs that currently exists.

The academy season was periodised into six blocks, each six weeks in length (i.e., 36 weeks in total), preceded by a brief pre-season block (three weeks). The four cycles for the current study consisted of pre-season and the first three six-week blocks. During each block a plan, act and observe, reflect, and revise the plan process was followed, with the final revision part feeding into the planning part of the next cycle (Koshy et al., 2010). Data from field notes, questionnaires and other resources such as presentations and handouts were gathered continuously during this time by the lead author. The information collected was then used to identify and maintain good practice and adapt areas that required improvement, based on personal reflections and feedback from others involved in the process (i.e., players, coaches and other academy staff such as phase leads and head of coaching).

Phase 3: Assessment of player psychosocial skills and characteristics

Performance profiles. Performance profile data were collected prior to the start of the first cycle (i.e., pre-season) to assess players' current PSC strengths and weaknesses focusing specifically on 12 PSC items recommended by Mitchell et al. (2022, 2025) and Barraclough et al. (2024) (i.e., commitment, resilience, confidence, emotional control, communication, concentration, good learner, enjoys challenge, teamwork, leadership, presence, self-awareness). Players rated themselves on a Likert scale ranging from 1 (lowest) to 10 (highest), with coaches doing the same thereby creating a mean score to represent players "super strengths" and areas to develop (Ludlam et al., 2016). During this assessment, neither the players nor coaches were aware of the other person's score with a mean score calculated in an attempt to reduce bias between athlete and coach scores. The same method was redeployed at the end of the consultation period to compare pre- to post-intervention scores as advocated by Mitchell et al. (2022). Data from the performance profiles that was deemed relevant to PSC session design (i.e., psychosocial strengths and areas to develop) was shared with coaches to inform their planning.

Observations of players. The importance of noting observable psychosocial behaviors was emphasized by Mitchell et al. (2022) but as Christensen (2009) points out, this is only effective if the observer knows what they are looking for. For this purpose, coach education workshops were provided prior to the start of the intervention period (i.e., pre-season). Accordingly, in the current study, weekly "bullseye" players were observed in training and games by both age-group coaches (initially alongside the lead researcher who provided guidance) based on recommendations from Mitchell et al. (2022, 2025) 8-pillars programme. These observations were used to inform coaches when completing

their sections of the performance profile, in order to triangulate the data given by players and to counteract any self-report bias from this process (also note that observer bias would exist here instead). For example, when visually assessing emotional control, the coach can observe how the player in question responds both after successful actions or making mistakes and whether they argue with officials after a controversial decision against them. This should inform coach scores on performance profiles and improve ecological validity to the assessment process by detecting psychosocial skills and characteristics as they would occur in the most natural environment (i.e., on the soccer pitch).

Psychological characteristics of developing excellence questionnaire version 2 (PCDEQ2). The PCDEQ2 (Hill et al., 2019) was used to assess pre- and post-intervention PCDE scores. The questionnaire consists of 88 items and has been validated with the under-13 age group, with similarity responses marked on a 6-point Likert scale from 1 ("very unlike me") to 6 ("very like me") to measure seven PCDE factors: (1) adverse response to failure, (2) imagery and active preparation, (3) self-directed control and management, (4) perfectionistic tendencies, (5) seeking and using social support, (6) active coping, and (7) clinical indicators. Both positively framed ($n = 72$) and negatively framed ($n = 16$) items were used to reduce response bias (Field, 2018) and acquiescence bias (Horn & Smith, 2019). Previously, Hill et al. (2019) have reported the internal consistency of the PCDEQ2 as good ($\alpha = 0.88$) also with individual PCDE factors as good ($\alpha = 0.72$–0.91). Data collected from the PCDEQ2 was stored securely and not shared with academy staff to ensure confidentiality.

Although the current PSC programme was not specifically aimed at the seven PCDEQ2 factors, it was nonetheless seen as a valid and reliable measure of change over this particular timeframe, as previously advocated by Mitchell et al. (2025). Furthermore, the PCDEQ2 provides a more objective measure to evaluate the effectiveness of the PSC intervention implemented in the current study. In accordance with Mitchell et al. (2025), it is suggested that development of the PSCs in the current programme would also potentially benefit the areas identified in the PCDE approach (MacNamara et al., 2010a, 2010b).

Phase 4: Conceptualization

Once player PSC baseline data were collected via performance profiles and the PCDEQ2, each player's PSC strengths and areas for improvement were identified and a periodised plan was devised to embed psychosocial challenge into session design using guidelines from Thomas (1990). In the context of the current study these included using player-led games (i.e., with minimal coach input), creating scenarios in training where players are working under fatigue and strategic stress (e.g., in underloaded games or giving deliberately poor refereeing decisions in training games), playing for the year above, or out of position, or being substitute (see Table 2 for specific examples used in this study). It also emphasized that players should be supported through this process which was achieved by briefing and de-briefing them individually and collectively when required (Collins & MacNamara 2017).

Phase 5: Psychological skills education for coaches and players

Coach education workshops were used to disseminate information around integration of psychosocial factors into training sessions and matches as recommended by Harwood (2008). Workshops are thought to be useful due to their interactive nature giving coaches a chance to provide input, which should hopefully improve the chances of coaches buying in to the process (Mitchell et al., 2025). During pre-season, a continuous professional development (CPD) session was delivered aimed at all coaches in the foundation and youth development phases discussing why PSCs are important and how they could be developed. The session consisted of 45 minutes in a seminar setting. This was followed by a 45-minute practical session, led by the lead author, on the pitch with the under-13 age group demonstrating how PSCs could be developed using games (see electronic supplementary file S2 for an example). The final 30 minutes of the practical session was delivered by the academy coaches for them to demonstrate their understanding of the subject.

A resource pack was produced and sent to the under-13 age-group coaches and phase lead via e-mail. The lead author was available via telephone, text or e-mail for any queries as well as setting up a WhatsApp group for the same purpose to encourage dialogue.

Six additional workshops were conducted (see Table 1) with players in a classroom setting (lasting no more than 30 minutes each) to explain the importance of PSCs (e.g., goal setting, self-talk and imagery), and how they might be deployed to develop psychosocial characteristics related to each pillar (i.e., concentration, self-awareness, autonomy, communication, leadership, commitment, resilience, control, teamwork, and confidence) following previous work by Mitchell et al. (2022, 2025). General principles were delivered en masse to the group and individualized to players during these sessions through activities such as completing self-talk exercises to tie in with current curricular requirements. Coaches were also encouraged to attend and offer their own experiential insights as well as gaining a furthermore opportunity to engage with the psychosocial content. As the season progressed, the workshops were made to coincide with the players' fortnightly indoor sports hall sessions as this was adjacent to the classroom, allowing minimal time lag between theory and practice.

Phase 6: Implementation

Key psychosocial areas were identified, and development needs were prioritized for development on the pitch in training and games. In line with previous research by Mitchell et al. (2022) coaching staff were also consulted at this stage to co-create input as "critical friends" from a coaching perspective which then fed into session design. Following guidelines by Papastaikoudis et al. (2024) and Wixey et al. (2023) a plan was produced to "bullseye" players within the periodised curriculum (i.e., training and games), whereby two to three players were selected each week (Renshaw et al., 2019) (Table 2). This was achieved by the first author working alongside one of the two coaches (who took turns at this), in order to for them to deliver targeted one-to-one or small group sessions (Gearing & Bridge, 2024). Whilst this was occurring the other coach worked with the other squad members on the academy curriculum. Players were also "bullseyed" through practice design in the main squad sessions by them having

individual constraints or having the games planned around their individual needs (such as the "bas ref" game to test and develop their emotional control). This continued on match day for that week whereby these players were still targeted so as to improve their PSCs. This may include challenges such as being captain and delivering team talks before, during and after games to develop leadership and communication, for example.

A "super strengths" approach has been suggested by Ludlam et al. (2016) whereby athletes' strengths are the main focus of development with weaknesses only being addressed if they present a barrier to progression. However, Ludlam et al. (2016) also noted that at lower levels of performance (e.g., Category 3 academies), there may indeed be more of a focus on weaknesses. Regardless of which of these becomes the focus, the environment should be designed to challenge players at the optimum level (Papastaikoudis et al., 2024). This could be achieved by exposing players to a variety of periodised highs and lows, allowing them to experience contrasting emotions, alongside appropriate support from staff and reflection from players (Moodie et al., 2023), supporting Williams and MacNamara's (2022) view that differentiation is essential in planning. The lead author led sessions on the pitch to demonstrate to the two age-group coaches what was required in terms of embedding PSC development into practical sessions.

Phase 7: Evaluation

To collect data from a reflective perspective, McNiff and Whitehead (2005) suggest a number of methods including field notes, personal logs/diaries, interviews and video recordings. Accordingly, for the current study, coaches were observed at training once a week and informal reflective conversations followed between them and the lead researcher based around "psychosocial session objectives, practice design, participant engagement, and coach behaviours" (Mitchell et al., 2022, p16). Additionally, the effectiveness of the programme was assessed at the end of each of the three curriculum blocks (i.e., weeks 6, 12 and 18) through feedback from coaches (see electronic supplementary file S3 for final coach evaluation post-intervention) and self-reflection by the first researcher using a template (see supplementary material 1) devised using guidelines from Anderson et al. (2004). Responses were recorded using the memo function on the first researcher's iPhone which was later deleted after being transcribed and securely stored. The individualized challenge could then be adjusted for the next stage using the "teach-test-tweak" approach recommended by Collins and MacNamara (2017, p4). An example of how this informed practice in the next cycle came from Coach A in his feedback from block 1:

> "For example, with communication, instead of just throwing them in charge of the whole group, hand pick certain players so they can then target those players to communicate with them and then adding more players to start with: two, three, four … put them in positions where it's required for them to communicate a bit more"

The first researcher also attended four home games and a festival to see how well the PSC principles transferred to game situations. Again, informal discussions were held with coaches after each game along with notes also made by the lead researcher. Differences between pre- and post-programme PCDEQ2 and performance profile were analyzed at the end of the final cycle (i.e., the end of block 3).

Trustworthiness

When discussing validity in action research, Burns (2015) suggest that this is not an appropriate term to address the highly dynamic nature of the process. Instead, trustworthiness or credibility which both roughly translate to whether the end product is a true and believable representation of the research process. With this in mind, Burns (2015) suggests a number of approaches that can enhance credibility. Triangulation involves multiple data collection methods. In the current study questionnaires, performance profiles and coach/researcher observations were used. Member checking requires participants/stakeholders to verify data for accuracy (cognitive biases notwithstanding), which was done by obtaining secondary scores on the performance profiles from coaches and also via short interview with them at the end of each block using the self-reflective diary template as a guide. Cyclical iteration concerns data from each cycle (in this case pre-season and three blocks of the curriculum) being compared to that of previous cycles which may help reduce researcher bias. This was achieved by the lead author completing a reflective diary after every interaction with staff and players both pre- and in-season. The same format was used to audio record age-group coach feedback at the end of each six-week block.

Data analysis

All statistical analysis was conducted using Statistical Package for Social Sciences (SPSS, Version 29). Descriptive statistics were calculated for each factor on the PCDEQ-2 and for performance profiles scores at pre- and post-intervention. Tests of normality (Shapiro-Wilk) showed normal distribution as all scores above 0.05 except "perfectionistic tendencies" which was 0.044 on the PCDEQ2 and "enjoying challenge" for the performance profile. This is thought to not be an issue as the sample was homogenous (Pallant, 2016). Paired sample *t*-tests were used to explore any changes in PCDEQ-2 factors and performance profile scores from pre- to post-intervention period. The level of significance was set at $p < .05$. Cohen's d was calculated by transformation of partial eta squared to obtain the magnitude of differences through the effect size calculator for parametric tests and interpreted using the scale from Cohen as: trivial (0–0.2), small (0.2–0.5), medium (0.5–0.8), and large (>0.8) (Cohen, 1988).

Results

PCDEQ2 pre- to post-intervention changes

Table 3 illustrates PCDEQ2 scores from pre- to post-intervention period. The only significant difference between pre- and post-intervention scores was for perfectionistic tendencies with a significant and small decrease in scores ($p = 0.05$, $d = -0.43$). The PCDE factors self-directed control and management ($p = 0.11$, $d = 0.31$) and active coping ($p = 0.17$, $d = 0.27$) had small positive effect size changes meaning increases in scores. Imagery and active preparation ($p = 0.18$, $d = -0.42$), and seeking and using social support ($p = 0.27$, $d = -0.22$) all demonstrated small negative effects i.e., scores went down. Table 3 illustrates PCDEQ2 and individual change scores between pre- and post-intervention. Figure 1 illustrates group and individual change scores for each

Table 3. Pre-to post-intervention PCDEQ2 scores.

Factor	Pre mean (SD)	Post mean (SD)	*t*	*df*	*p*	Cohen's *d*
Adverse response to failure	3.06 (1.14)	3.2 (0.96)	−0.51	8	.31	0.13 (T)
Imagery and active preparation	3.91 (0.48)	3.73 (0.38)	0.99	8	.18	**−0.42 (S)**
Self-directed control and management	4.33 (0.70)	4.52 (0.50)	−1.33	8	.11	**0.31 (S)**
Perfectionistic tendencies	3.22 (0.80)	2.88 (0.78)	1.83	8	.05*	**−0.43 (S)**
Seeking and using social support	4.37 (0.52)	4.26 (0.46)	0.64	8	.27	**−0.22 (S)**
Active coping	4.42 (0.43)	4.54 (0.47)	−1.01	8	.17	**0.27 (S)**
Clinical indicators	2.20 (0.57)	2.28 (0.60)	−0.62	8	.27	0.14 (T)

S: small effect size; T: trivial effect size.
*Significant change from pre to post intervention ($p = \leq 0.05$).

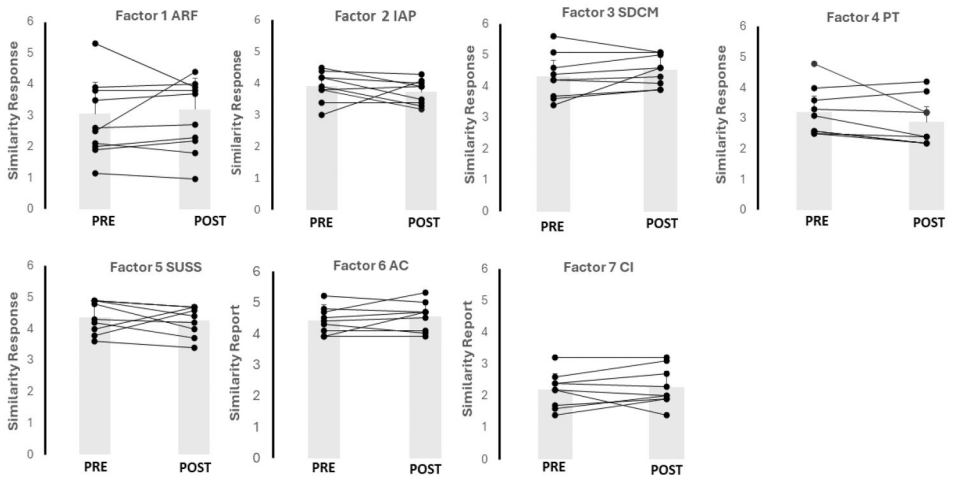

Figure 1. Group and individual change scores for each psychological characteristics of developing excellence (PCDEQ2) factor from pre- to post-intervention. ARF: adverse response to failure; IAP: imagery and active preparation; SDCM: self-directed control and management; PT: perfectionistic tendencies; SUSS: seeking and using social support; AC: active coping; CI: clinical issues.

psychological characteristics of developing excellence (PCDEQ2) factor from pre- to post-intervention.

Table 4 illustrates the performance profile scores from pre- to post-intervention period. Significant and medium increases were identified for emotional control ($p = 0.05$, $d = 0.76$), self-awareness ($p = 0.00$. $d = 0.52$) and good learner ($p = 0.02$, $d = 0.47$). Nonetheless, it should be noted that commitment ($p = 0.04$, $d = -0.56$), and concentration ($p = 0.02$, $d = -0.79$) demonstrated significant and medium to large negative effects across the intervention period, indicating a decrease in player ratings. All other effect sizes were trivial. Table 4 illustrates performance profile and individual change scores between pre- and post-intervention. Figure 2 illustrates group and individual change scores for each performance profile factor pre- and post-intervention.

Discussion

The aim of this study was to explore the effectiveness of an individualized PSCs development programme in a male Category 3 soccer academy. This is the first study to

Table 4. Mean pre- to post-intervention performance profile scores.

PSC factor	Pre- mean (SD)	Mid- mean (SD)	*t*	*Df*	*p (one-sided?)*	Cohen's *d*
Commitment	8.35 (0.58)	7.96 (0.80)	2.06	9	.035*	**−0.56 (M)**
Resilience	7.40 (1.02)	7.55 (1.07)	−0.64	9	.271	0.14 (T)
Confidence	7.35 (1.25)	7.55 (1.57)	−0.94	9	.187	0.14 (T)
Emotional control	7.15 (0.63)	7.75 (0.92)	−1.86	9	.048*	**0.76 (M)**
Teamwork	8 (0.62)	8 (0.62)	0.00	9	.500	0 (T)
Leadership	6.85 (0.88)	7 (0.67)	−0.36	9	.365	0.19 (T)
Communication	6.3 (0.68)	6.3 (0.98)	0.00	9	.500	0 (T)
Concentration	7.8 (0.63)	7.25 (0.75)	2.28	9	.024*	**−0.79 (M)**
Presence	7.5 (1.35)	7.65 (1.29)	−1.41	9	.097	0.11 (T)
Self-awareness	7.1 (1.54)	7.8 (1.14)	−3.50	9	.003*	**0.52 (M)**
Good learner	7.55 (0.9)	8 (1.03)	−2.59	9	.015*	**0.47 (M)**
Enjoy challenge	7.95 (0.83)	8.1 (0.74)	−0.76	9	.234	0.19 (T)

M: medium effect size; T: trivial effect size.
*Significant change from pre to post intervention ($p = \leq 0.05$).

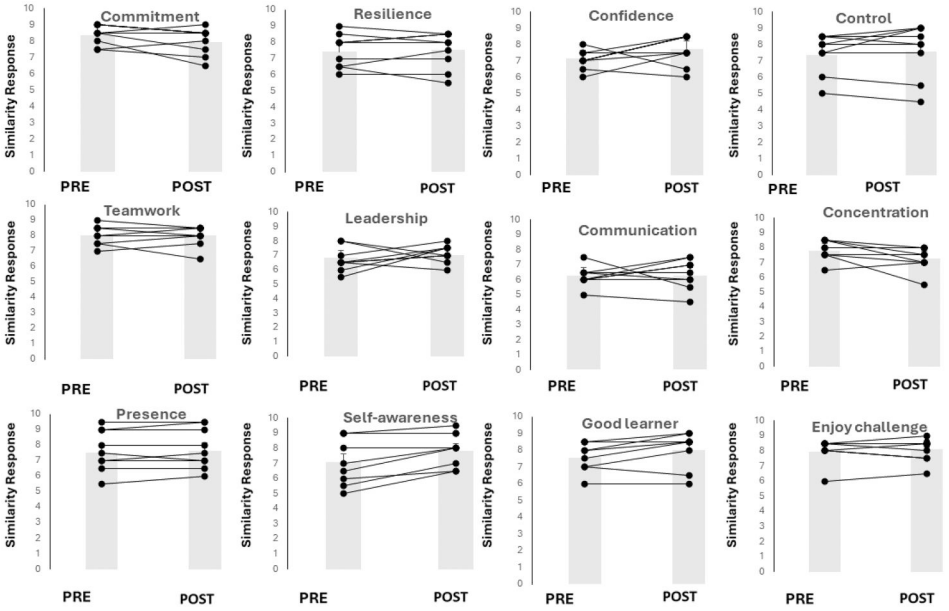

Figure 2. Group and individual change scores for each performance profile factor pre- and post-intervention.

deploy individualized methods of assessing pre- and post-intervention scores on players' PSC levels in academy football. The key findings of this study were that across a 21-week PSC programme both small-to-medium positive and negative effects on player PSC were observed. For PCDEQ2 scores, small positive effects were noted for self-directed control and management and active coping whilst imagery and active preparation, perfectionistic tendencies and seeking and using social support all showed small negative effects. For the performance profile scores, medium positive effects were observed for emotional control, self-awareness, and being a good learner, whereas medium negative effects were observed on commitment and concentration.

The 21-week PSC intervention programme used in the current study demonstrated ability to have positive changes on a number of PSCs deemed to be important for

successful player development (Hill et al., 2019) and for transitioning out of soccer into other careers (Lavallee, 2019; Stambulova et al., 2021). These included self-directed control and management which involves strategies such as metacognition and deliberate practice (Hill et al., 2019). There was also a positive increase in active coping defined as proactively deploying coping mechanisms and the ability to learn from challenging situations (Hill et al., 2019). To the authors' knowledge, only two studies have previously explored PCDEQ2 scores on a repeated measures basis (Laureys et al., 2023; Mitchell et al., 2025). The only study in EPPP academy soccer by Mitchell et al. (2025) also found increases in self-directed control and management and active coping. In contrast, Laureys et al. (2023) measured PCDEQ2 scores in gymnasts and discovered that the majority of participants displayed steady state profiles (i.e., 12 out of 14) for both self-directed control and management and active coping when tested 12 months apart. Mitchell et al. (2025) suggested that increases in active coping occurred as this is skill related and more easily teachable than the other factors.

In the current study, increases in self-directed control and management could have been down to the nature of how challenges were set to players in training and games such as increased emphasis on autonomy supportive coaching (Gledhill et al., 2017), whereby players were encouraged to take ownership of their individual learning plans and to lead briefings, debriefings and even an entire tournament. Setting individual challenges in the form of constraints for players (Renshaw et al., 2019) and the use of isolated or small-sided practices (Gearing & Bridge, 2024) may also have been instrumental. The structure of these practices was based on player "super strengths" and developmental areas (Ludlam et al., 2016) gleaned from the profiling process (Mitchell et al., 2022). Furthermore, the metacognitive nature of this self-assessment could explain increases in active coping (Hemmings & Holder, 2009). Early work by Deci and Ryan (1985) has posited the positive impact of autonomy on intrinsic motivation, with more recent studies (Gledhill et al., 2017; Mitchell et al., 2025; Toering & Jordet, 2015) also advocating its merit in academy soccer settings to develop skills to aid progression on the pathway and transition off it.

Significant positive changes in PSCs were also observed from performance profiles for emotional control, self-awareness and being a good learner. For emotional control, this may have been down to the constraints imposed on players in training and games (i.e., playing underloaded, "bad ref" and playing out of position) and the subsequent support from coaches. Increases in self-awareness and being a good learner may have been down to the nature of asking performers to self-reflect, which is thought to be an intervention in itself (Hemmings & Holder, 2009). Using a different self-report measure Mitchell et al. (2025) noted a large effect increase in emotional control and medium effect in self-awareness over five time points across their 36-week programme. To our knowledge, no previous study has deployed performance profiles in this context, so no comparative data is available for being a good learner as this is novel to the current study based on recommendations from academy managers (Barraclough et al., 2024). However, the positive increases are encouraging and potential links to active coping and self-directed control and management may warrant furthermore investigation. Interestingly, Mitchell et al. (2025) proposed hypothetical links between PCDE factors and those on their 8-pillars programme. In their study, Mitchell and colleagues

suggested that the PCDEQ2 factor of active coping was aligned with two of their eight pillars (emotional control and self-awareness) which would be supported by the results from the current study. It was also suggested that self-directed control and management was linked to control, self-awareness, and concentration, all vital in allowing players to accurately set and adhere to goals in order to progress along the development pathway. However, these links were only partly supported in the current study with positive improvements in self-directed control and management, control and self-awareness, with a negative change in concentration.

The PCDE factors of imagery and active preparation, perfectionistic tendencies and seeking and using social support all demonstrated small negative effects. Previous research by Mitchell et al. (2025) also noted small decreases in perfectionistic tendencies although significant large and medium effect increases were noted in seeking and using social support and imagery and active preparation, respectively. A decrease in perfectionistic tendencies scores could be attributed to this particular factor not yet being active in under-13 players at Category 3 level. Previous research by Barraclough et al. (2024) suggests that perfectionistic tendencies may develop later on in the pathway, as scores on perfectionistic tendencies on the PCDEQ2 were higher in older age groups and also notably in higher category academy players. It should also be taken into account that the participants were going through adolescence and experiencing the associated trials and tribulations of various competing pressures at athletic, psychosocial and academic levels (Wylleman & Lavallee, 2004). Possible reasons behind decreases in imagery and active preparation scores in the current study may include a lack of understanding by players and a lack of emphasis of the importance of this skill by coaches. In addition, the workshop on imagery and active preparation was delivered two days after the players had been heavily defeated in a game so their focus levels may not have been optimum. This highlights the importance of careful consideration of timing of when workshops are delivered.

Decreases in seeking and using social support may be down to players taking more ownership of their learning through the autonomy-supportive approach (Gledhill et al., 2017), whereby they attempted to solve problems themselves before seeking support from significant others. This could also be furthermore evidenced by increased scores in self-directed control and management and self-awareness. Furthermore negative changes in PSCs were also noted in the current study for commitment and concentration. In contrast, Mitchell et al. (2025) reported positive significant increases across five measurement points with commitment and concentration. Hypothetical links between imagery and active preparation, control and concentration were suggested by Mitchell et al. (2025). Findings of the current study, however, would suggest furthermore research is necessary to establish these links.

Limitations and future research directions

A limitation of the current study was the absence of a control group meaning that there was no secondary group that data could be compared to. Only a small sample size ($n = 9$) was used, in a single club over a relatively short period of time, meaning less opportunity to generalize results to other academies operating in different contexts.

However, despite limited power of statistical analysis in the outcomes, this is counterbalanced by novelty of the current investigation, conducted in a traditionally hard-to-reach population. It provides detailed descriptions of the processes involved which could be advantageous for future investigations with larger and more varied samples conducted over longer time periods. A furthermore potential limitation which has also been highlighted in previous studies (Champ et al., 2020; Crawley, 2021) are potential issues with coach buy-in to integrating PSC programmes meaning a lack of acceptance to their importance. Despite the best of intentions to implement a holistic approach (Simmons, 2004) at an academy-wide level, when it comes to educating coaches at phase and age-groups levels, this is often overlooked in favor of technical and physical components (Champ et al., 2020). PSCs have often been seen as unimportant both on the pitch and for preparing players for life beyond soccer (Crawley, 2021). Future research should explore best practice as to how and when to embed PSC development into coach education. This could be considered through national governing body courses or in-house academy CPD sessions, although some quality control would be needed with the latter to ensure that it was not merely a box-ticking exercise. Refining observable behavior checklists, performance profiles and suitable questionnaires would all be interesting lines of inquiry to pursue. It would also be interesting to explore the impact of player care officers because their introduction across Categories 1–3 in the 2022/23 season (Premier League, 2011). To the author's knowledge only one paper has so far been produced on this subject as an undergraduate dissertation (Holmes, 2024). Lastly, although this study focused on individual player PSC development, future research should investigate refinement of position specific PSCs (Najah & Rejeb, 2015).

Conclusion

The current study aimed to investigate the effectiveness of a bespoke, individualized PSCs development programme in a EPPP Category 3 soccer academy setting. The main findings of the study were that a 21-week PSC programme had both small-to-medium positive and negative effects on player PSCs. These findings highlight the potential positive changes that can be made on player PSCs following a carefully designed PSC programme with negative changes highlighting the importance of regular monitoring of individual PSCs throughout the season. Furthermore research is needed to explore effectiveness of approaches for delivering PSCs in soccer academy environments in conjunction with academy coaches.

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