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Abstract

There is an increasing awareness of the importance of the environment in academy players' development, yet limited research has investigated players' perceptions of their talent development environments (TDE). This study focused on academy soccer players' perceptions of their TDE and compared perceptions across the English soccer academy categorization (CAT) system. A total of 136 UK-based male soccer players ($M_{\text{age}} = 17.7$, $SD = 1.03$ years) representing all four categories (1 = Highest to 4 = Lowest) of soccer academies aligned to professional soccer clubs completed the Talent Development Environment Questionnaire-5 (TDEQ-5). Players within CAT1 academies had significantly more positive perceptions of their Support Network ($p = 0.01$) and Holistic Quality Preparation ($p = 0.03$) than their CAT3 counterparts. Across CAT2-CAT3, Holistic Quality Preparation was the least positively perceived subscale within the TDEQ-5 suggesting the need for additional coach education in this area. Soccer academies should consider how they ensure all areas of their service are associated with optimal TDEs by offering a well communicated and holistic development experience for their players to enhance effective personal and player development. The findings may have implications for player experience and associated progression rates of lower categorized soccer academies.

Key words: Talent Development, Environment, Transition, Youth Development

Introduction

The landscape of professional soccer is arguably now the most competitive it has ever been, with large financial and commercial rewards for winning competitions or avoiding relegation (e.g., from divisions such as the Premier League). Consequently, substantial resources are invested by clubs to achieve success (Federation Internationale de Football Association, FIFA, 2018; Mills, et al., 2014; Till, et al., 2019). Soccer academies in England are one of the most popular types of Talent Identification (TID) systems with ~12,000 targeted players from the ages of 9-18 years old involved and are partially designed on the basis of a ‘grow your own’ ethos. Although there are no official statistics available, Green (2009) estimated that less than 1% of the boys playing in academies would sign a professional playing contract. There are potential negative consequences of leaving an academy setting which include identity disruption due to players sacrificing social and education aspects of their lives in favor of a professional football career (Brown & Potrac, 2009; Mitchell et al., 2014).

Gagne, (1999) defined as ‘the superior mastery of systematically developed abilities (or skills) and knowledge in at least one field of human activity to a degree that places an individual within at least the upper 10% of age peers who are or have been active in that field or fields’ (pp. 230). To develop talent, there are a range of perspectives available for researchers and practitioners to consider when designing TID systems. Such perspectives include the genetic basis for variations in sport performance (MacArthur & North, 2005), psychological characteristics (MacNamara, et al., 2010) and the environment (Martindale, et al., 2005). Talent development environments (TDEs) have the capacity to support the development of youth athletes (Henriksen, et al., 2010a, 2010b; Martindale, et al., 2010). A successful TDE is one that continually produces top-level athletes from their junior ranks

(Seiler, 2013) and provides them with the resources for coping with future transitions within and outside the sport (Alfermann & Stambulova, 2007). Operationally, the development of talent can be expensive and relies on the interplay between many different factors including natural abilities, intrapersonal characteristics, environmental features, learning opportunities and chance (Gagné, 2004; Rongen, et al., 2018). Given these suggested facets, it can be suggested that environmental factors are one of the areas that are controllable by the staff who operate within them. Furthermore, it has been suggested that they should be evaluated and continually enhanced to support the effective development of athletes (Bailey, et al., 2011). Given the financial investment, regulatory requirements and potential rewards, the process of talent development within English soccer has become a focus of attention for research (e.g., Gledhill, et al., 2018; Noon, et al., 2015; Pain & Harwood, 2008; Read, et al., 2018). Soccer specific research into the TDEs has advocated that successful environments offer a cohesive organization structure, prioritize player welfare and advocate developing the player on a holistic level (Ivarsson, et al., 2015; Larsen, et al., 2013; Mills, et al., 2014).

English professional soccer academies are largely guided by the Elite Player Performance Plan (EPPP, 2010), which provides regulatory guidance, a grading system (CAT1-4) and good practice support to soccer TDEs (EPPP, 2010). Upon its inception, this meant the introduction of age-related ‘phases’ in which to categorize players, required staffing levels alongside guidelines on how to monitor and evaluate the progression rates of their systems through a points-based system to track player journeys across their development. Players within academies typically receive around 12 hours of coaching per week including a games programme (Elite Player Performance Plan, 2010). Within each club, players are aligned to different phases according to their age; Foundation Development Phase (9-11 years), Youth Development Phase (12-16 years) and Professional Development Phase (17-21 years). At the age of 18 years, players are typically offered a professional

playing contract or released from the system. Upon periodic ‘audits’, clubs can be assigned an academy ‘category’ from CAT1 (highest level) to CAT4 (lowest level) with the main differentiators between academy categories surrounding funding received, full time staffing, infrastructure and the age of player selection. For example, CAT1-3 academies would operate an early specialization model and be required to employ a full-time match analyst, strength and conditioning coach, head of recruitment, head of education, lead sport scientist, goalkeeping coach and phase lead coaches working with players from the age nine years old. Alternatively, a CAT4 academy would operate a late specialization model (i.e., from 17 years old) and have specialized roles full-time, part-time, or not at all (EPPP, 2010). Within this staffing guidance clubs can offer services beyond this as they see fit. For example, a CAT4 club may operate a late specialization model through a lack of finance (e.g. Tranmere Rovers FC, 2018) however, another CAT4 club may choose to meet the requirements of a late specialisation model but heavily resource this with bespoke infrastructure (e.g. Huddersfield Town FC, 2017). As a result of such classification, it could be argued that different categories may offer a differentiated experience for players within them. Furthermore, this may influence their perceptions of the environment they operate in.

To further support stakeholders (e.g., coaches, sport scientists and welfare officers) in this structure, the Premier League has invested in a range of quality enhancement initiatives which include, the Elite Heads of Coaching (EHOC) development programme, Elite Coach Apprentice (ECAS) Scheme, a Coach Competency Framework (CFF) and an annual conference (The Premier League, 2020). Such support mechanisms are employed to create the best possible environment for the development of talent and subsequent progression rates.

Despite the large-scale investment in academy systems there are relatively few studies within English soccer academies that evaluate player’s perceptions of their TDE (Gledhill et al., 2017). Such understanding of players' perceptions of the TDE could inform applied

practice for staff and stakeholders. One such study that did seek to give players a voice in this respect (Mills et al., 2014) noted that despite English academies being generally perceived as having a long-term development focus over half of players felt that academy players were written off before having the opportunity to fully develop. Whilst offering an initial valuable insight into this area, Mills and colleague's work was limited to a relatively small sample size of 50, it was also unclear which category of academy players were recruited from and no differences between different levels of category were explored. Given the importance of the environment in talent development (Gledhill & Harwood, 2018; Larsen et al., 2013, Mills et al., 2014) and the EPPP (2010) categorization of soccer club academies, it appears intuitive to explore perceptions of players from different categories of academy, to highlight any differences between those academies and further refine and advance our existing understanding. Increased infrastructure associated with higher category status is likely to come with higher running costs and is therefore important to see if this is translated to perceptions of higher quality TDEs by players operating within them. Only Ivarsson and colleagues (2015) attempted to undertake an inter level analysis of TDEs which reported those in 'high quality' Swedish TDEs had higher self-reported levels of general wellbeing. However, the authors categorized the quality of TDEs by the responses of the players and not by any regulatory requirements (e.g., academy category). Therefore, the aim of this study was to assess elite youth academy soccer players' perceptions of their TDE and compare differences in the perceptions of the TDE across the EPPP academy categorization system.

Materials and Methods

Participants

A total of 136 male youth soccer players ($M_{\text{age}} = 17.7$, $SD = 1.03$ years, $\text{Age}_{\text{range}} = 16\text{-}18$ years) within the Professional Development Phase which is the stage of development prior

to being offered a professional playing contract or release from the football club. The sample included eight soccer clubs, with players from CAT1 (3 clubs, $n = 51$), CAT2 (2 clubs, $n = 32$), CAT3 (3 clubs, $n = 53$). We chose not include data from CAT 4 clubs to this study as club structures vary too much across this category for CAT4 clubs to be considered a homogenous group. For example, Club A may have a highly resourced late specialization model out of choice, and Club B may have one through a lack of resource.

Procedure

Soccer clubs were invited to express interest being part of the study by replying to an initial recruitment email sent out. After obtaining gatekeeper consent from the relevant Academy manager, written informed consent was obtained from all participants, arrangements were made to visit the respective soccer clubs training facility, in season, to administer the Talent Development Environment Questionnaire (TDEQ-5, Li, et al., 2015). Completion was undertaken in a range of spaces such as the canteen, classrooms and communal areas. Players were asked to leave adequate space between each other to support individual completion. To meet our inclusion criteria, players had to be in the Under 18's side, typically consisting of players aged between 16-18 years old who train daily as well as undertaking further education on part time basis. We also did not want to confuse matters by seeking to recruit younger participants as they typically operate on an after-school model and may vary in the amount of contact from club to club. This stage also represents a key transitional period where the next phase could be competing for a professional playing contract.

Instrumentation

The TDEQ-5 (Li et al., 2015) consists of 25 items across 5 subscales and has been shown to be a valid and reliable scale. The subscales are, 1. Long-Term Development, the extent to

which developmental programmes are specifically designed to facilitate athletes' long-term success (e.g., fundamental training and rounded development, ongoing opportunities, and de-emphasis of winning). 2. Holistic Quality Preparation; the extent to which intervention programmes are prepared both inside and outside of sports settings (e.g., caring coach, clear guidance, mental preparation, and balanced life). 3. Support Network; the extent to which a coherent, approachable, and wide-ranging support network is available for the athlete in all areas (e.g., professionals, parents, coaches, and schools). 4. Communication; the extent to which the coach communicates effectively with the athlete in both formal and informal settings (e.g., development path, rationale for training, and feedback). 5. Alignment of Expectations; the extent to which goals for sport development are coherently set and aligned (e.g., goal setting, goal review, and individualized goals). The items were measured using a 6-point Likert-type scale, labelled with "strongly disagree" (1) and "strongly agree" (6).

Statistical Analysis

Data analysis was undertaken using SPSS (version 25) and was undertaken at four different levels. Firstly, a descriptive analysis at item-level using means and standard deviations was conducted to identify areas of perceived strength and areas for development for the TDEs for the whole group (Gledhill & Harwood, 2018; Mills et al., 2014). Secondly, in a similar fashion to Gledhill and Harwood (2018) we conducted a subscale-level analysis to identify areas of perceived strength and areas for development (cf. Gledhill; & Harwood, 2018). Thirdly we undertook a quintile-level analysis taking the top and bottom 20% item scores to further identify areas of perceived strength and development respectively. Cronbach alpha scores were calculated as a method for assessing subscale reliability $\alpha = 0.70$ as a cut off (DeVellis, 2003). Finally, we compared the TDEQ-5 subscales between academy categories, using a multivariate analysis of variance with Pillai's trace. Statistical significance was set at 0.05. Pairwise comparisons analysis using Bonferroni adjustment were used when

significant results were identified. Estimates of effect size were reported as a partial eta squared value. Partial eta squared values of 0.0099, 0.0588, and 0.1379 were benchmarks for small, medium, and large effect sizes, respectively (Cohen, 1969; Richardson, 2011).

Results

The results are reported in two parts aligned with previous TDEQ research (Gledhill & Harwood, 2018; Mills et al., 2014). Firstly, item level to include a quintile analysis of strength and areas for development is presented and second a subscale-level analysis of the TDEQ-5 was used. After checking for missing data, we identified and removed 3 data sets from participants who did not answer all questions. That is, 98% of the data collected was fully complete. We then progressed onto checks for data normality. For the data as a whole and for each subscale, skewness (< 2) and kurtosis (< 3) indicated limited deviation from normality (West, 1995).

Item-level analysis

Table 1 presents the descriptive data for the 25 TDEQ-5 items across academy categories to identify strengths and areas for development as well as the item level analysis using the top five and bottom 5 items. These are indicated by **+1** for the most positively perceived item and **+5** for the fifth most positively perceived item and **-1** for the least positively perceived question and **-5** for the fifth least positively perceived item. The five most positively perceived items (20%) comprised of items from Long Term Development ($n = 3$) and Support Network ($n = 2$). The least positively perceived (20%) comprised of items from Holistic Quality Preparation ($n = 4$) and Alignment of Expectation ($n = 1$).

INSERT TABLE ONE

Subscale-level analysis

The subscales that participants had the most positive perceptions of were Long Term Development ($M = 4.72$, $SD = 0.66$, 4 items, $\alpha = 0.70$) and Support Network ($M = 4.68$, $SD = 0.84$, 5 items, $\alpha = 0.76$); second was Alignment of Expectations ($M = 4.45$, $SD = 0.83$, 4 items, $\alpha = 0.75$); third was Communication ($M = 4.40$, $SD = 0.91$, 5 items, $\alpha = 0.86$) and the subscale that participants scored lowest was Holistic Quality Preparation ($M = 4.11$, $SD = 0.99$, 7 items, $\alpha = 0.76$). Table 2 provides descriptive data for the subscale analysis.

Multivariate analysis using Pillai's trace reported significant differences in TDEQ-5 subscales between the different academy categories ($V = 0.29$, $F(10, 262) = 4.402$, $p < 0.001$, $\eta^2 p = 0.14$). Tests of between subject effects showed differences for Holistic Quality Preparation, ($F(3, 135) = 9.78$, $p < 0.001$, $\eta^2 p = 0.16$), and Support Network ($F(3, 135) = 3.45$, $p = 0.02$, $\eta^2 p = 0.06$). Pairwise comparisons analysis using Bonferroni adjustment reported CAT1 players had significantly more positive perceptions than their CAT3 counterparts for the Holistic Quality Preparation subscale ($p = 0.03$) and for Support Network subscale ($p = 0.01$). No significant differences were shown for the Alignment of Expectation, Communication or Long Term Development between academy categories.

INSERT TABLE TWO

Discussion

The aim of this study was to present elite youth academy soccer players perceptions of their TDE and compare differences in the perceptions of the TDE across the EPPP academy categorization system. The most positive perceptions of the academy environment were within the Long Term Development and Support Network subscales. The least positively perceived aspects of academy environments are within the Holistic Quality Preparation and Alignment Of Expectation subscales. The main differences occurred between CAT1 and CAT3 clubs, specifically in the areas of Holistic Quality Preparation and Support Network

with CAT1 players more offering more positive perceptions of their environment within these subscales. From the results, the study offered key areas for support largely around the Holistic Quality Preparation subscale.

An item-level, whole group analysis was employed to offer greater insight into the specific questions seen as strength or areas for further development. For this exercise we took the highest and lowest scoring five questions. The more positively perceived questions were around long-term development and access to other specialists to support such development. The least positively perceived questions were around a lack of support for wellbeing, mental toughness and life outside support. The questions seen as perceived strengths of the programme came from the Long Term Development and Support Network subscales. This may reflect the range of staff involved in soccer clubs and the broader influence of the development of sports science, coaching practice and match analysis within modern day academy systems. Similar findings have been seen in women's soccer (Gledhill & Harwood, 2018) and males soccer environments (Mill et al., 2014). We interpreted this as that players felt they were on a programme that effectively supported the development of skills and competencies aligned to their developmental needs. Long term development has received a great deal of research attention, especially within the athletic domain over several years (e.g. Bompa, 2000; Balyi & Hamilton, 2004; Lloyd & Oliver, 2012) as a vital component of TDEs.

The questions which were least positively perceived were from the Holistic Quality Preparation and Alignment of Expectation subscales. This presented a sense of incongruence within the data. Players perceived that they are well supported in their sporting development via a range of practitioners in their academy environment (seen in the Support Network subscale) but at the same time didn't as strongly perceive such work was necessarily aligned (Alignment of Expectation). When exploring the data at item level it can be seen that the

lowest scoring item within the Alignment of Expectation subscale was; ‘My coaches make time to talk to my parents about me and what I am trying to achieve’. (AOE1). Interactions between coaches and parents play an important role in shaping participant positive youth development (PYD) outcomes in swimming contexts (Fraser-Thomas & Strachan, 2015). Additionally, with high school sport settings, Camiré et al., (2013) found that coaches emphasized the importance of engaging parents and align both parent and coach intentions. One coach said, ‘I tell parents at the start of the year, our interventions with your child have to complement yours. Our common goal must be the optimal development of your child’ (p. 195). Previous works around TDEs supports the need for a clear view of what TDEs are trying to do, for example, when exploring characteristics of the TDE, Henriksen, Stambulova and Roessler (2010a, 2010b, p. 157-158) proposed eight characteristics which included ‘strong and coherent organization’ and ‘integration of efforts’. This integration of efforts is something that could be communicated to parents. However, research within soccer environments has suggested that professional soccer is a performance-driven, high-pressure environment that places a short-term focus on achieving immediate results (Champ, et al., 2018; Knapp, 2014; Mitchell, et al., 2014). The challenges of aligning the efforts of multidisciplinary teams within performance environments has been identified to include silo working (Springham et al., 2018).) [over] specialization and fragmentation of support services (Hristovski et al., 2017) that may lead to leading to poor athlete development practices and performance outcomes (Rothwell et al., 2020). Resultantly, these well-known environmental features which include parent and coach communication, might not be optimized towards the holistic development youth players as they progress in their developmental pathway within a professional soccer setting.

The inter-category analysis also revealed that CAT1 players had significantly more positive perceptions of Support Network than their CAT3 counterparts. This finding could be

due to the larger, fulltime, staffing infrastructure required at CAT1 clubs when compared to requirements at CAT2 and CAT3 clubs. For example, a CAT3 club requires sport science and match analysis staff at part time levels whereas CAT1 are required to have such roles at full time. At CAT1, clubs are also expected to offer more coaching time than their CAT3 counterparts (8500 vs 3600 hours per annum, EPPP, 2010). As a result of increased amount of time in the programme and interacting with full-time staff, players may perceive there is a greater level of support. This is a notable finding on multiple levels. First, soccer players have previously reported that a strong support network was associated with higher well-being and less stress (Ivarsson et al., 2015). Social Support has also been reported as vital for TD and career progression by coaches and academy players (Gledhill et al., 2017; Holt & Mitchell, 2006; Mitchell, et al., 2020).

Consistent with findings from soccer research using previous iterations of the TDEQ (e.g., Ivarsson et al., 2015; Gledhill & Harwood, 2018; Mills et al., 2014), HQP was perceived as an area where most developmental opportunities are (i.e. this was the lowest scoring subscale). Holistic Quality Preparation is associated with caring coaches, clear guidance, mental preparation, and balanced life (Martindale et al., 2010). Successful TDEs are characterized in part by their ability to provide resources for coping with future transitions, including a broad set of psychosocial skills that may facilitate successful transitions into senior environments (Alfermann & Stambulova, 2007; Larsen, et al., 2013; Martindale & Mortimer, 2011; Reeves, et al, 2009). A whole person approach to development has also been advocated in the transitions literature where it has been recommended that support practitioners, such as sport psychologists, should seek to assist athletes in relation to balancing lifestyle, stress management, career planning and recovery (EPPP, 2010; Stambulova, et al., 2009). The inter-level analysis reported that players within CAT1 academies have significantly more positive perceptions of the Holistic Quality

Preparation aspect than their CAT3 counterparts. Such a finding suggests that CAT1 clubs, due to larger full-time staffing infrastructure, may be better placed to offer a more holistic development experience. If soccer clubs are unable to offer such holistic development within their environments, it is feasible to suggest that a range of positive outcomes such as psychosocial development, mental health as well as progression rates of the TDE may be compromised. In addition, TDEs have been shown to have potentially negative consequences for example the range of monitoring and surveillance involved in TDEs can have negative consequences such as anxiety and performance fatigue (Manley & Williams, 2019) as well more broadly concerns around the development of an overly strong athletic identity (Mitchell et al., 2014; Rongen et al., 2020). This notion has been supported by soccer academy practitioners who cited a lack of further holistic development, isolation, and lack of coaching as barriers to successful youth-to-senior transitions (Mitchell et al., 2020).

Applied implications

The findings of this study have several applied implications. First, given the strength of perception towards Long Term Development and lowest levels of positive perceptions around HQP, coaches and other relevant stakeholder should seek to refine and continuously improve in both areas. For example, Miller and Kerr (2002) argued that striving for performance excellence co-exists in the same environment as striving for personal excellence. Staff, including coaches, within UK academy soccer should therefore seek to support players personal and social excellence as well as physical, technical, and tactical aspects. Second, education in the area of aligned and all-inclusive ways of working should be undertaken a clear integration of efforts by multidisciplinary teams towards common goals (Henriksen et al., 2010a, 2010b). This could be done by promoting shared ways of working across such teams. There have also been calls for transdisciplinary approaches to fully understand and provide solutions to optimize the quality of interactions between person and environment

(Vaughan et al., 2019). Third, given that there are significant differences between CAT1 and CAT3 for Support Network and Holistic Quality Preparation, those staff working within lower categorized clubs should seek to explore how they can further optimize their return on investment in such areas within their budgetary and staffing restrictions. Fourth, given the scale of investment in talent development programmes, clubs at the lower end of categorization may wish to consider if they can truly offer effective talent development processes. Fourth, researchers wishing to use the TDEQ-5 should seek to employ more stringent data analysis techniques to include multi-level modelling to offset potential underestimation of standard errors, which may result in higher type I error rates. More broadly, this study has shown that the TDEQ-5 can offer clear insight into perceptions of the TDE. In a Rugby Union context, Hall, et al., (2019) used the TDEQ as a tool for coaching teams to evaluate their environment, reflect upon and collate results, before designing interventions appropriate to their context and resource. This may provide a fruitful revenue for other sports, including football academies to drive evidence-based interventions as well as monitor their impact.

Strengths and limitations

This study offers new insight into TDEs within English academy soccer by comparing players' perceptions across different categories of EPPP academy. That is, Holistic Quality Preparation and Support Network are significantly higher in CAT1 compared to CAT3 academy environments. This study also offers further refinement into what specific areas should be focused upon to drive excellence in soccer TDEs. More specifically this relates to Holistic Quality Preparation, Communication and Alignment Of Expectation . Finally, given the sample size, composition and geographical dispersion, this is the most representative and generalizable study of its kind to date.

Despite these strengths, this study is subject to certain limitations. First, the TDEQ-5 is a validated general sport measure (Li et al., 2015). Consequently, it may not capture the unique cultural, subcultural and micro political climate within professional soccer environments (Parker, 2001, Richardson, et al., 2006) as well as the complex interactive relations within dynamic environments that have been deemed essential for human development, in this case, in sport. The work of Davids and Araújo (2010) refer to this an Organismic Asymmetry. The sole use of a validated scale such as the TDEQ-5 may be insufficient to fully capture such complex interactions. Defending this limitation, in the absence of a soccer-specific measure, we adopted to utilize the most structurally robust version of the TDEQ-5 available. Second, another limitation of this study is that it does not include players from CAT4 soccer academies and as such this data does not represent the entire football industry. However, given the wide range of structures within clubs that may choose to operate at CAT4 we felt that it was not possible to include this category. Third, more sophisticated data analysis methods such as multilevel modeling or some other adjustments, where appropriate, could benefit the analysis by more rigorously estimating standard errors. Correctly estimating standard errors is important, because when the multilevel (nested) nature of the data is not taken into account, standard errors could be under-estimated, resulting in higher type I error rates. This is something for future researchers to be aware of when undertaking studies of a similar nature.

Future research directions

To extend the body of research further, we offer four recommendations. First, we echo calls for a soccer-specific version of the TDEQ (Gledhill & Harwood, 2018; Mills et al., 2014). Second, multi-wave, longitudinal research is required to examine the temporal changes in perceptions over time, as critical moments during the season could influence player perceptions. Longitudinal research using a range of data collection methods such as

interviews, scales and observations could mitigate any positive or negative impact of these critical moments on perceptions, as well as signpost staff and stakeholders towards any key times during the season where there are fluctuations in perceptions. Third, research should explore relationships between perceptions of soccer TDEs and player-level outcomes longitudinally (e.g., do players who have better perceptions of Holistic Quality Preparation progress further in their soccer careers, demonstrate greater wellness etc.). The relationship between TDE and progression from academy to elite status has been seen in rugby and swimming contexts (Martindale et al., 2012). Appropriately designed TDEs have been associated with a range of positive outcomes such as motivation (Wang et al., 2011), mental toughness (Li et al., 2019) and psychological and social wellbeing (Rongen et al., 2020). Finally, these three future directions could then give rise to a fourth, whereby findings are used to inform environment-level interventions aimed at enhancing players' perceptions of their TDEs as previously seen in a Rugby Union context (Hall et al., 2019)

Conclusion

This study offers one of the largest (in number) and most representative (different levels of category) data sets of perceptions of the talent development environment across youth soccer academy players using the TDEQ-5. Strengths perceived by players in this context were Support Network and Long Term Development. Despite being a key aspect of TDEs, the main area least positively perceived was Holistic Quality Preparation. CAT1 clubs were perceived to offer significantly better Support Network and Holistic Quality Preparation than their CAT3 counterparts. This may have implications for optimal positive outcomes such as psychosocial development and mental health of players as well as progression rates in lower categorized clubs. Future applied research should seek to elicit the views of other stakeholders in the process such as coaches and support staff and adopt other methods of

research including holistic ecological approach to offer real time insight into how the environments and athletes within them interact.

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Table 1. TDEQ-5 Item-Level analysis

	Whole		CAT1		CAT2		CAT3	
	M	SD	M	SD	M	SD	M	SD
1. My training is specifically designed to help me develop effectively in the long term (LTD1) +1	5.26	0.74	5.20	0.83	5.41	0.67	5.25	0.70
2. My coach emphasizes that what I do in training and competition is far more important than winning. (LTD2)	4.31		4.12	1.11	4.22	0.87	4.55	1.08
3. I spend most of my time developing skills and attributes that my coach tells me I will need if I am to compete successfully at the top/professional level. (LTD3) +5	4.97	0.78	4.90	0.83	5.13	0.66	4.94	0.79
4. My coach allows me to learn through making my own mistakes. (LTD4) +3	5.06	0.87	5.08	0.89	5.28	0.63	4.91	0.95
5. I would be given good opportunities even if I experienced a dip in performance. LTD5	4.07	1.22	3.75	1.28	4.34	1.00	4.23	1.23
6. My coaches make time to talk to my parents about me and what I am trying to achieve. (AOE1) -1	3.64	1.49	2.98	1.32	3.78	1.34	4.19	1.52
7. The advice my parents give me fits well with the advice I get from my coaches. (AOE2)	4.63	1.05	4.51	1.25	4.94	0.88	4.57	1.05
8. My progress and personal performance is reviewed regularly on an individual basis. I am involved in most decisions about my sport development. (AOE3)	4.76	1.10	4.69	1.05	4.97	0.74	4.70	1.03
9. I am involved about most decisions about my development (AOE4)	4.66	1.07	4.67	1.13	4.84	0.99	4.55	1.07
10. I regularly set goals with my coach that are specific to my individual development. (AOE5)	4.68	1.13	4.73	0.98	4.97	1.23	4.47	1.19
11. My coach and I regularly talk about things I need to do to progress to the top level in my sport (e.g. training ethos, competition performances, physically, mentally, technically, tactically). (COM1)	4.83	1.06	4.76	1.14	5.19	0.69	4.68	1.14
12. My coach and I talk about what current and/or past world-class performers did to be successful. (COM2)	4.06	1.28	4.14	1.36	4.22	1.16	3.89	1.27
13. My coach and I often try to identify what my next big test will be before it happens. (COM3)	4.08	1.21	3.96	1.34	4.13	1.21	4.17	1.07
14. My coach explains how my training and competition programme work together to help me develop. (COM4)	4.55	1.05	4.51	1.14	4.59	0.91	4.57	1.05
15. My coach rarely talks to me about my well-being. (HQP1) -4	3.88	1.32	3.94	1.29	3.53	1.41	4.02	1.28
16. My coach doesn't appear to be that interested in my life outside of sport. (HQP2) -3	3.85	1.30	4.35	1.18	3.34	1.29	3.66	1.27
17. My coach rarely takes the time to talk to other coaches who work with me. (RHQP3)	4.15	1.51	4.88	1.07	3.06	1.68	4.11	1.37
18. I don't get much help to develop my mental toughness in sport effectively. (HQP4) -2	3.69	1.54	4.67	1.05	3.16	1.82	3.08	1.30
19. I am rarely encouraged to plan for how I would deal with things that might go wrong. (HQP5)	4.06	1.37	4.53	1.12	3.72	1.61	3.81	1.32
20. The guidelines in my sport regarding what I need to do to progress are not very clear. (HQP6)	4.14	1.49	4.69	1.21	3.16	1.65	4.21	1.36
21. I am not taught that much about how to balance training, competing, and recovery. (HQP7) -5	3.99	1.62	5.00	1.15	2.69	1.62	3.79	1.38

22. Currently, I have access to a variety of different types of professionals to help my sports development (e.g. physiotherapist, sport psychologist, strength trainer, nutritionist, lifestyle advisor). (SN1) +4	4.98	1.26	5.20	1.18	5.41	0.95	4.51	1.37
23. I can pop in to see my coach or other support staff whenever I need to (e.g. Physiotherapist, psychologist, strength trainer, nutritionist, lifestyle advisor). (SN2) +2	5.11	1.05	5.29	1.06	5.44	0.67	4.75	1.14
24. My coaches talk regularly to the other people who support me in my sport about what I am trying to achieve (e.g. physiotherapist, sport psychologist, nutritionist, strength and conditioning coach, lifestyle advisor). (SN3)	4.55	1.05	4.51	1.22	4.84	0.92	4.34	0.90
25. Those who help me in my sport seem to be on the same wavelength as each other when it comes to what is best for me (e.g. coaches, physiotherapists, sport psychologists, strength trainers, nutritionists, lifestyle advisors). (SN4)	4.57	1.15	4.69	1.27	4.88	0.87	4.28	1.12

Table 2. TDEQ Subscale Analysis

Subscale	Whole Group			CAT1			CAT2			CAT3		
	<i>M</i>	<i>SD</i>	95% CI	<i>M</i>	<i>SD</i>	95% CI	<i>M</i>	<i>SD</i>	95% CI	<i>M</i>	<i>SD</i>	95% CI
LTD	4.75	0.66	4.63, 4.86	4.61	0.69	4.72, 5.10	4.89	0.46	4.71, 5.06	4.74	0.70	4.56, 4.93
AOE	4.45	0.83	4.33, 4.62	4.31	0.88	4.45, 4.85	4.63	0.54	4.43, 4.84	4.49	0.89	4.25, 4.73
COM	4.40	0.91	4.28, 4.61	4.34	1.08	4.46, 5.02	4.65	0.66	4.40, 4.90	4.33	0.85	4.10, 4.56
HPQ*	4.11	0.99	3.97, 4.30	4.58	0.84	3.92, 5.21	4.16	1.19	3.71, 4.61	3.66	0.81	3.45, 3.88
SN*	4.69	0.84	4.54, 4.83	4.95	1.01	4.45, 5.30	4.68	0.72	4.41, 4.95	4.46	0.68	4.29, 4.65

* denotes a significant difference between levels ($p < 0.05$)