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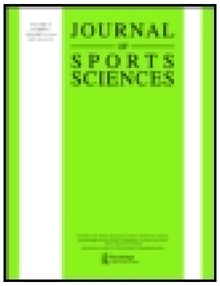

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Talent identification in youth soccer

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Abstract

The purpose of this review article was firstly to evaluate the traditional approach to talent identification in youth soccer and secondly present pilot data on a more holistic method for talent identification. Research evidence exists to suggest that talent identification mechanisms that are predicated upon the physical (anthropometric) attributes of the early maturing individual only serve to identify current performance levels. Greater body mass and stature have both been related to faster ball shooting speed and vertical jump capacity respectively in elite youth soccer players. This approach, however, may prematurely exclude those late maturing individuals. Multiple physiological measures have also been used in an effort to determine key predictors of performance; with agility and sprint times, being identified as variables that could discriminate between elite and sub-elite groups of adolescent soccer players. Successful soccer performance is the product of multiple systems interacting with one another. Consequently, a more holistic approach to talent identification should be considered. Recent work, with elite youth soccer players, has considered whether multiple small-sided games could act as a talent identification tool in this population. The results demonstrated that there was a moderate agreement between the more technically gifted soccer player and success during multiple small-sided games.

Keywords: *physiologic predictors, small-sided games, youth soccer*

Introduction

Talent identification can be defined as the process of recognising current participants with the potential to become elite players (Williams & Reilly, 2000), whereas talent development aims at providing the most appropriate learning environment to realise this potential (Reilly, Bangsbo, & Franks, 2000a). In recent years, the process of identifying young talent has become a significant issue in soccer (Carling, Le Gall, Reilly, & Williams, 2009; Reilly, Williams, Nevill, & Franks, 2000b). Early recruitment into a professional soccer academy is important in the long-term development of footballing expertise (Le Gall, Carling, Williams, & Reilly, 2010; Meylan, Cronin, Oliver, & Hughes, 2010). Furthermore, the competitive (Vaeyens, Lenoir, Williams, & Philippaerts, 2008) and financial gains (Reilly et al., 2000a) associated with the early identification of gifted youngsters has led to a growing number of "centres of excellence" throughout the world (Reilly et al., 2000a).

Historically, the identification and selection of promising individuals into youth soccer academies has been linked to a coach or talent scouts' subjective, preconceived image of the ideal player (Williams & Reilly, 2000). However, it is now accepted, that when used in isolation, this approach can result in repetitive misjudgments in talent identification processes (Meylan et al., 2010) and can lack consistency (Williams & Reilly, 2000). As such, over recent years, there has been an increasing emphasis in the use of science-based support systems offering a more holistic approach to talent identification in soccer (Reilly et al., 2000b; Waldron & Worsfold, 2010). Outcome measures stemming from physiological (Le Gall et al., 2010), anthropometrical (Gil, Ruiz, Irazusta, Gil, & Irazusta, 2007), psychological (Williams, 2000), sociological (Meylan et al., 2010) and technical skills (Figueiredo, Goncalves, Silva, & Malina, 2009) have all been used, in either isolation or combination as predictors of expertise and talent development, (see Figure 1).

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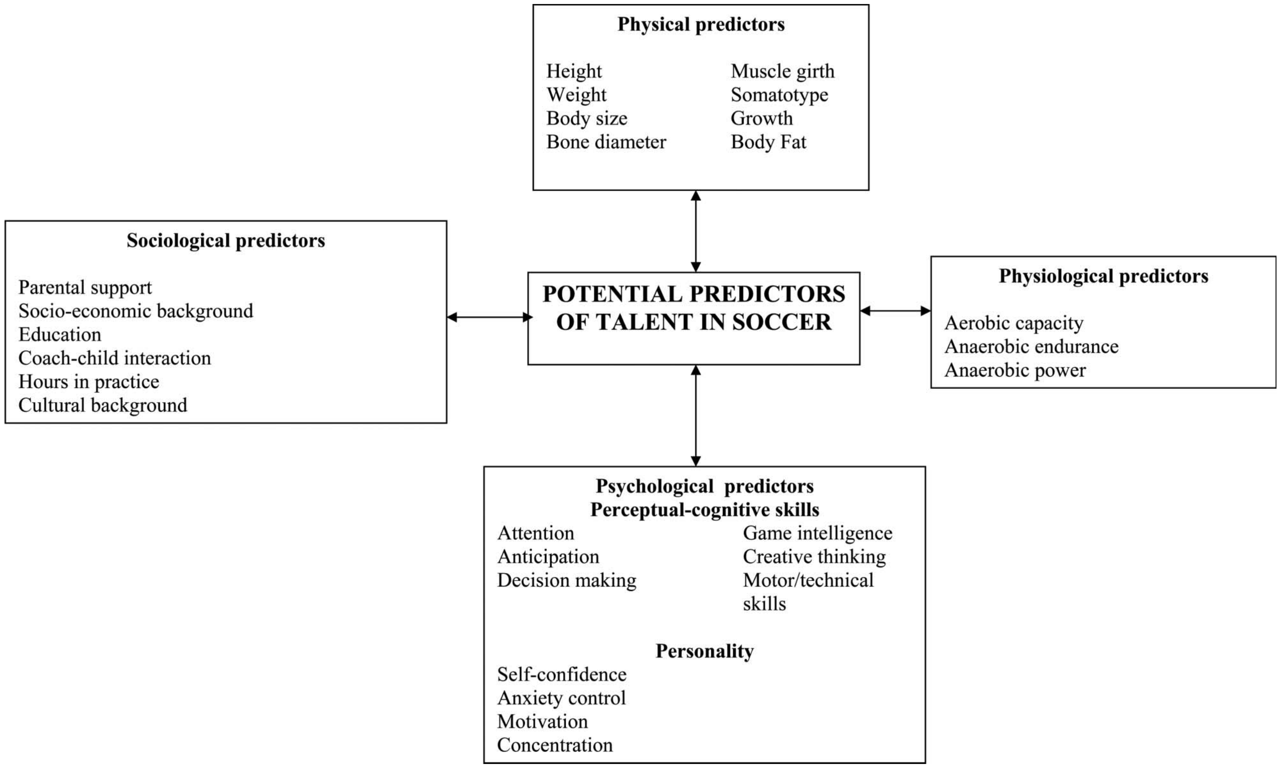

Figure 1. Potential predictors of talent in soccer (source: Williams & Reilly, 2000).

The shift in focus is considered important in supplementing intuitive decisions of coaches (Williams & Reilly, 2000), as well as providing a greater degree of objectivity to the complex process of talent identification (Vaeyens et al., 2008). Although, there is a general acceptance in the professional ranks for a more scientific approach to talent identification, the practical interpretation of multifaceted models is far from a routine process (Carling et al., 2009; Reilly et al., 2000b). A youth's talent potential is not a stable trait (Abbott & Collins, 2002), but is constantly evolving throughout the developmental phases (Vaeyens et al., 2008). Talent identification should be a continuous procedure, and form the initial stage of a dynamic talent development model (Burgess & Naughton, 2010). The evolving nature of talent predicates the need for talent identification and talent development being used in tandem (Vaeyens et al., 2008). Many of the characteristics that discriminate elite and sub-elite players may not come to fruition until late adolescence, confounding the early selection of performers (Williams & Reilly, 2000). As such, talent identification and talent development should reflect the long-term athlete development perspective, as opposed to short-term success (Burgess & Naughton, 2010; Reilly et al., 2000b).

The ability to obtain information beyond a subjective analysis allows coaches to recognise potential elite performers that may fit into the style of play at their club. It may be, that certain clubs identify size, strength and speed as paramount for success at their club and may only want to select individuals with these physical prerequisites of performance. Conversely, other clubs may strive to adopt a more "creative" style of play with greater emphasis on skill and technique. Ajax FC, a successful club in the Netherlands, famed for its production line of young talent, encourages coaches to use the acronym TIPS (technique, intelligence, personality and speed) within their talent identification practices (Brown, 2001). Similarly, other acronyms like TABS (technique, attitude, balance and speed) and SUBS (speed, understanding, personality, skill) have been used by coaches in England (Stratton, Reilly, Williams, & Richardson, 2004) to assist intuitive judgements with scientific rationale. In many team sports, and soccer in particular, there is an appreciation for the need of a talent identification model that better represents the demands of actual competition (Vaeyens et al., 2008). Soccer is a complex sport, where the required skills have to be performed in a rapidly changing environment (Williams, 2000), under fatiguing conditions (Ali, 2011). Therefore, to reliably identify capability within a specific sport domain, a move towards a more game-specific protocol is warranted. This review evaluates the role that small-sided games may play in addressing this concern.

Consequently, the purpose of this article will be twofold: Firstly, the traditional approach to talent identification and talent development using anthropometric and physiological characteristics will be discussed. Secondly, to address the concern with respect to the lack of "real-task models", the article will present pilot work on a new paradigm exploring the use of small-sided games as a talent identification mechanism within elite youth soccer.

Maturation

Since the ultimate aim of a club's youth academy is to identify and develop promising young players who can later progress to the first team, it is crucial that talent models have the ability to distinguish between an athlete's adolescent performance level and future potential (Vaeyens et al., 2008). As most talent identification approaches are employed during adolescence, realising potential for a given sport, offers a degree of uncertainty (Pearson, Naughton, & Torode, 2006). This uncertainty stems from the rapid changes in physiological and anthropometric characteristics that can occur during this period of growth, which can ultimately make talent identification an extremely difficult task during this period (Helsen, Hodges, van Winckel, & Starkes, 2000; Meylan et al., 2010; Pearson et al., 2006; Vaeyens et al., 2008).

Skeletal maturation is recognised as the best method for assessing biological maturity states. It is an ideal marker of maturity, as its maturation spans the entire growth period (Malina, 2011). A single skeletal age (SA) measurement in isolation, has limited usefulness, but used in conjunction with a chronological age measurement, it has value in identifying early vs. late biological maturity states. Directly assessing maturity status by body (somatic) measurement is not possible, because body size is not an indicator of maturity. Indirectly, however, it is possible to identify maturity indicators from body dimensions, particularly stature. If longitudinal stature data are available, then the point at which there is an inflection in the growth curve marks the adolescent growth spurt. This information can also be used to derive indicators of maturity such as the age at the onset of the growth spurt and the age at the maximal rate of growth during the spurt (age at peak height velocity). The major limitation of this approach is the need for serial measurements, this present a problem in the context of talent identification, where players are typically newly recruited into clubs. The assessment of sexual maturity in growth studies is based on secondary sex characteristics, which will be penis and testes development in boys. It is worth acknowledging, at the outset, that the role of secondary sex characteristics as maturity indicators is limited to the pubertal period of growth and development. Consequently, the application of this technique over the course of growth is limited, in contrast to skeletal maturation, which can be tracked from infancy into young adulthood.

In many team sports, children are commonly grouped into chronologically matched age-groups for competition (Campo, Vicedo, Villora, & Jordan, 2010; Mujika et al., 2009; Vaeyens, Philippaerts, & Malina, 2005). However, in adolescents, the range in variation of biological age for a given chronological age is likely to exceed the designated 12 month age bracket (Carling et al., 2009; Helsen, van Winckel, & Williams, 2005; Hirose, 2009; Malina et al., 2005). Since chronological age and biological maturity rarely progress at the same degree (Vaeyens et al., 2008), research has demonstrated that early maturers can possess greater muscular strength (Vaeyens et al., 2005) and speed (Malina, Eisenmann, Cumming, Ribeiro, & Aroso, 2004) over their late-developing peers. Nevertheless, the extent to which these physical superiorities experienced in youth, translate through to success at the senior level is unsubstantiated (Le Gall, et al., 2010). Consequently, identification policies based solely on physical attributes may serve only to identify current performance levels and may prematurely exclude those who have the potential to excel in the future (Williams & Reilly, 2000). Such an approach would lead to late-maturing players, who are not necessarily shorter and weaker as adults (Hirose, 2009; Reilly et al., 2000a), missing out on specialised training.

During adolescence, late maturing children can compensate for any physical shortcomings in size and strength by focusing on their technical capabilities (Williams & Reilly, 2000). Since individual differences in physical performance are generally attenuated in young adulthood (Malina et al., 2005), the increased emphasis on technical skills experienced in youth may allow late maturers to develop into more talented performers at the senior level (Carling et al., 2009).

Therefore, it is important that the identification policies employed by clubs are not overly biased toward the early maturing individuals (Williams & Reilly, 2000).

Relative age effect

Parallel to this talent identification problem, is the well-reported relative age effect (Helsen et al., 2005; Mujika et al., 2009). Chronologically, there seems to be a greater predominance of players born early in the selection year within youth (Helsen et al., 2005; Vaeyens et al., 2005; Williams, 2010) and adult soccer (Campo et al., 2010). The relative age effect is particularly prevalent during the adolescent years (Jiminez & Pain, 2008). Cross-sectional studies carried out by Gil et al. (2007) and Carling et al. (2009) suggested that 79% and 72% of players respectively were born within the first 6 months of the selection year within elite U-14 soccer clubs. These observations provide evidence to suggest that potentially promising young players are overlooked at youth level (Campo et al., 2010). It should be noted, however, when expressed relative to actual playing minutes, the sensitivity of this phenomenon is diminished (Vaeyens et al., 2005). A disconnect appears to exist between the criteria used for talent identification and the applicability of this information for predicting future playing time. It is possible to speculate, that match- related variables may provide a much more accurate marker of the true extent and effect of the relative age effect in soccer.

Based on the assumption that early maturers are preferentially selected into "elite programmes" over their late maturing counterparts (Jimenez & Pain, 2008; Williams, 2010), this "residual bias" of a relative age effect cannot be held solely accountable for the lack of late-developers breaking into senior first team ranks, the effect has been repeatedly described as a probable cause of wasted potential (Jiminez & Pain, 2008). The relative age effect would suggest that the boy born earlier in the selection year may experience up to 12 months more physical, emotional and psychological development than then his counterparts born later in the selection year. These advantages may manifest themselves in the individual's performance, influencing the identification and selection processes. A residual bias exists and those players that are selected into youth academies are more likely to receive specialised training than their late-maturing counterparts, therefore increasing the likelihood that they may become future elite performers.

A reduction in age-band range and closer matching of groups synonymous with biological rather than chronological age may provide a more accurate index of performance potential (Vaeyens et al., 2008; Williams & Reilly, 2000). Determination of biological maturity through invasive (X-ray) or non-invasive (peak height velocity) protocols would provide coaching personnel with a clear reference of an individual's maturity status compared to chronologically-matched peers (Meylan et al., 2010). The determination of biological age, would allow the coaching staff to evaluate the confounding effect of maturity on talent identification, resulting in a more informed decision making process when identifying promising youngsters. It is, however, recognised, that creating biological homogeneity, can in some cases, be impractical.

Anthropometric and physiological predictors

Anthropometric

There is a tendency for coaches and talent scouts to either subconsciously or consciously favour anthropometric characteristics rather than technical capabilities in young players (Carling et al., 2009). If the aspiration is short-term success, then selecting individuals with respect to their anthropometric attributes may confer competitive advantages at youth level. Greater body mass was positively related to faster ball shooting speed ($r = 0.58$ $P < 0.001$) and inversely related to 30 -m sprint times ($r = -0.54$ $P < 0.001$) in a cohort of elite, U-14's ($n = 70$), (Wong, Chamari, Dellal, & Wisloff, 2009). Furthermore, in the same group of players, greater stature was significantly correlated to superior vertical jump performance ($r = 0.36$ $P < 0.01$). While these findings may tentatively suggest relationships between particular anthropometric measures and performance benefits at this stage of development, from a selection standpoint, no significant inter-group anthropometrical differences have been detected between selected and non-selected adolescents in older U-16 or U-17 teams (Gil et al., 2007). These findings are of particular relevance, as this is the age in the UK, where athletes are judged and recruited into full-time systematic training. It is possible to speculate that the physical superiorities previously experienced in youth, plateau, reducing the ability of these players to influence match situations as they once could. These players may then be subsequently deemed "less talented" and removed from the development process. Therefore, as previously stated, caution is warranted when basing selection and identification policies on performance data that is dependent on anthropometric traits.

Physiological

The physiological loading of professional soccer players is extremely high during match-play, imposing a strain on both aerobic and anaerobic metabolic systems (Bangsbo, Iaia, & Krustrup, 2007; Hill-Hass, Dawson, Coutts, & Rowsell, 2009; Reilly & Ekblom, 2005). It has been reported that aerobic metabolism accounts for 80–90% of the energy cost in soccer play (Bangsbo, 2005), whereas the remaining 10–20% are anaerobic activities (Bloomfield, Polman, O'Donoghue, & McNaughton, 2007). As football requires elements of walking, jogging, running, sprinting and jumping, players must be competent across several fitness domains (Bloomfield et al., 2007).

Many physiological measures have been used in an effort to identify key predictors of performance. In appreciation of the need for a multivariate approach to identifying talent in soccer, Reilly et al. (2000b) adopted a comprehensive, field-based, test battery, in an attempt to distinguish between elite ($n = 16$) and chronologically matched sub-elite players ($n = 15$). Elite players (mean age: 16.4 years, range 16.2–16.6) were categorised as those who had signed for a professional club and played international youth soccer. Accordingly, sub-elite players (mean age: 16.4 years, range 15.8–16.7) were classed as those who were not signed for a professional club, but had played regularly at a recreational or school standard. The authors isolated eight key performance parameters (aerobic field performance, velocity over 5 m, 15 m, 25 m and 30 m, agility over a 40 -m sprint, a speed-endurance and vertical-jump test). Multivariate analyses of variance revealed significant group differences on both sprint tests and speed endurance variables. Additionally, separate analyses of variance indicated significant inter-group differences for agility, VO_{2max} and vertical jump, with the elite players performing better in all domains. Utilising a forward, stepwise, discriminant analysis, the authors concluded that agility (standard coefficient = -2.51), 15 -m sprint time (standard coefficient = -2.35) and anticipation skill on the 1 vs. 1 simulation (standard coefficient = -0.51) were the pre-eminent subset of variables to successfully distinguish between the two groups. Although, the aforementioned results, successfully distinguished between elite and sub-elite counterparts, it is difficult to ascertain whether expert vs. novice differences are a representation of experts' genes or of increased familiarity with the task due to increased training (Williams, 2000).

Players already exposed to systemised training may not be so easily separated (Reilly et al., 2000a). Franks, Williams, Reilly and Nevill, 1999 retrospectively evaluated a cohort of players ($n = 64$) selected to play at England U-14 to U-16 level over a 12-year period. All players had previously undertaken a minimum of 2 years of specialised training. Through group specific analyses, two competitive age groups were assessed in detail, and were categorised according to whether they had been offered a professional contract (i.e. successful vs. unsuccessful). The groups could not be discriminated with respect to physical and physiological performance. The authors concluded that in a highly elite group of under-16 players, other more complex factors, determined the players' employability as professionals. It is reasonable to assume, that players selected to represent England at youth level are extremely talented and are considered the most elite cohort within soccer. Therefore, given the likely homogenous nature of the population analysed, with respect to their physical and physiological profiles, detecting sensitive distinctions in performance would be difficult (Williams & Reilly, 2000).

Sport-specific skills

Possessing the physical and physiological attributes required for success is insufficient unless they are supplemented by an adequate grounding in the skills of the game (Reilly et al., 2000b). One of the main components in identifying sporting excellence is from sport-specific measures (Malina et al., 2005). Advances in technical skill capabilities and inventive play, may allow late-maturing players to compensate for any disadvantages in size and strength (Williams & Reilly, 2000). The evidence, however, is limited with respect to the impact of maturity status on sport specific skill (Malina et al., 2005). In a group of 13–15 year old chronologically matched boys, maturity status contributed relatively little (8–21%) to variation in performance in four out of six soccer-specific skill tests (Malina et al., 2005). Stepwise, discriminant analysis has revealed that closed-skill protocols such as slalom dribbles (Reilly et al., 2000b; Vaeyens et al., 2006) have successfully distinguished between elite and sub-elite samples. These findings are equivocal, however, as Coelho e Silva et al. (2010) demonstrated no significant differences across a range of soccer specific skills (dribbling, shooting, passing) when comparing regionally selected vs. non-selected under-14 soccer players.

Although presenting noticeable benefits to talent identification processes (Waldron & Worsfold, 2010) the degree to which "closed" skill sets transfer into actual competition is uncertain. Soccer requires skills to be performed under pressure in a rapidly changing environment, with constant restrictions in time and space (Vaeyens et al., 2006). As such, it is clear, that the methodological protocols of the previously stated studies lack ecological validity as the "closed set" nature of the tests fails to mimic that of match-play (Waldron & Worsfold, 2010). Given the physically demanding nature of the game, it is important players have the ability to carry out sport-specific skills under fatigued conditions (Mohr, Krustrup, & Bangsbo, 2003). Hence, isolating and executing one aspect of the game (passing or shooting) from a static position may merely be a representation of learned "technique" rather than "skill" (Ali, 2011).

The explicit positional demands in soccer dictate that fundamental skills are not equally distributed across all playing positions (Vaeyens et al., 2008), although at a high level, players must possess a minimum competency level across all core skills (Williams & Reilly, 2000). It is possible to speculate, that midfield players in particular, have to repeatedly perform a vast array of technical actions (pass, control the ball, dribble and turn) in small, congested areas. It is a challenge, therefore, for researchers to develop performance measures more representative of the competitive and "open" nature of soccer (Vaeyens et al., 2008; Waldron &

Worsfold, 2010). Additionally, having players perform sequences of movements that reflect positional requirements would serve to enhance the ecological validity of talent identification models.

Small-sided games: A match-play model for talent identification

The current research paradigm that is used in talent identification takes a reductionist approach. The elements required for successful soccer performance are evaluated as discrete components and their predictive power for talent identification and talent development are examined in isolation from one another. It is clear, that successful soccer performance is the product of multiple systems interacting with one another. Logic, therefore, suggests, in order to identify talent and track development within soccer, an approach that allows the simultaneous evaluation of both intra-individual and inter-individual contributions to soccer performance should be used. The role of small-sided games may have a significant role to play in this context.

Performance in soccer is a consequence of an individual's tactical and technical ability, their psychological skills and their physiological attributes (Reilly & Gilbourne, 2003). Data exists on the technical aspects of small-sided games, the activity profiles of the players and the physiological loads imposed during youth soccer (Hill-Haas et al., 2009). Small-sided games are currently used as a useful way of training because of the multiple benefits achieved. These types of games combine technical, tactical and physiological training (Drust, Reilly, & Cable, 2000). The broader benefit for the player is that they acquire skills (technical/tactical) of real match-play situations in a small-sided game situation. Jones and Drust (2007) have shown that the work-rate profiles observed in 4 vs. 4 small-sided games seem to be similar in pattern to those observed in elite, 11-a-side match-play. Therefore, the evidence suggests, that good ecological validity exists with using this format of soccer as a surrogate for the physiological loading of 11-a-side match play. The ultimate goal of any talent identification mechanism is to identify individuals with the capability to perform well at the 11-a-side level. Therefore, it would appear that the smaller-game approach could be used as a holistic mechanism to achieve this objective. Recent work from our laboratory, investigated whether multiple, small-sided games could act as a talent identification tool in elite youth soccer.

Sixteen male, elite young (age: 15.4 $\pm$ 0.8 years, stature: 176.3 $\pm$ 5.5 cm and mass: 68.9 $\pm$ 9.0 kg) soccer players from an English Premier League club participated in a multiple, small-sided games talent identification study. Participants were randomly allocated into two groups of eight players. Each group played six (4 vs. 4) matches, each of 5 minutes duration, on a pitch 25 x 35 m in dimension. A 3-min rest period was given between matches, at which time, the players were reorganised into different 4 vs. 4 combinations. Each combination was different, therefore, no player, played with the same three team-mates on two occasions. Telemetric heart rate data were obtained from all players (Activio Monitoring system, Stockholm, Sweden). The movement characteristics of the players were also obtained using Global Positioning Systems data (Minimaxx, Catapult Innovations, Melbourne, Australia). Each player was awarded 2 points for a win, 1 point for a draw and 0 points for a loss during each match.

The football coaches completed a game technical scoring chart based on the performance of each player, during each 4 vs. 4 game and a comprehensive technical football scoring chart that evaluated the players' performances during all matches and training. All players were evaluated with regard to their performance on 10 football elements. Each element had a range of points between 0–5. Each point described a player's performance on a certain skill as follows: 1-poor, 2-below average, 3-average, 4-very good, 5-excellent. Two undergraduate students with FA (Football Association) qualifications (level 1), and one coach (UEFA (Union of European Football Associations) 'A' coaching licence), technically evaluated the players throughout the games using the previously stated scale. Inter-tester reliability was conducted to ensure that there was consistency in the technical evaluation between the coach and both students' scores. Inter-tester reliability was 0.828 and 0.715 for Cronbach's Alpha between coach and student 1 and coach and student 2 respectively.

There were no significant inter-team differences for heart rate; heart rates ranged between 196–184 beats $\cdot$ min^{-1} for the winning and losing teams across all 12 matches. With respect to the time-motion characteristics of the teams across all 12 matches, there were no significant inter-team differences with respect to: total distance covered (winning: 546 $\pm$ 33 m vs. losing: 506 $\pm$ 27 m), number of high speed runs ($>$15 km $\cdot$ h^{-1}), (winning: 45 $\pm$ 15 vs. losing: 46 $\pm$ 11), and number of accelerations $>$ 2 m $\cdot$ s^{-2} (winning: 28 $\pm$ 3 vs. losing: 29 $\pm$ 2) when comparing the winning and losing teams from games 1 to 12. The relationship between total points and the game technical scoring chart approached significance ($r = 0.39$, $P = 0.07$) and between the game technical scoring chart and the comprehensive technical football scoring chart was $r = 0.55$, $P < 0.05$.

Physiological responses during the 4 vs. 4 small-sided games were similar to previous studies (Hill-Haas et al., 2009; Jones & Drust 2007). The physiological and movement characteristics of the winning teams were not significantly different to the losing teams during any of the small-sided games. These findings suggest that the structure of the multiple small-sided games generated a similar physiological load for all participants and that these criteria did not appear to discriminate between the more or less talented individuals during small-sided games. There did appear to be, however, a low, but meaningful association between the players who were more successful in small-sided games and the coaches' technical evaluation of their skills during the small-sided games. The implications of these findings are that with a larger cohort of performers, the more talented individuals could emerge simply on the basis of their success in multiple small–sided matches. This approach could be used in conjunction with the subjective views of the coach or scout at the elite level. Further work is required to determine the usefulness of small-sided games as a talent identification tool at the sub-elite level. If this is achieved, then it is possible that individuals without soccer coaching qualifications, such as physical education teachers in schools, could use the outcome of multiple small-sided games as a simple talent identification mechanism.

Two possible limitations exist with this initial pilot work. Firstly, the elite status of the footballers may have led to a relative homogeneity of their technical skills, thereby reducing the predictive power of small-sided games. Consequently, the real utility of small-sided games as a talent identification tool may be for those individuals who are aspiring to reach the elite level and who have not yet been exposed to systematic training within the academies. Secondly, while the small-sided games model may have some utility as a talent identification tool, longitudinal studies are required to establish whether the successful traits demonstrated within small-sided games at this age-group can act as a predictor of future playing success.

Areas of potential future research

An underlying assumption that underpins most talent identification models is that the characteristics that differentiated the youth soccer players at the time of identification are retained and enhanced throughout the maturation period; providing a marker for those players that go on to be successful at the adult level. There is a paucity of data in this area and longitudinal studies that track the stability and changes in these attributes are warranted. Also, it is clear that talent in soccer cannot be determined only from closed soccer skills, measured in isolation from the actual demands of the game. Further research is required to look at the way closed skill data can be integrated with more real world approaches to identify talent in the youth soccer player.

Conclusions

There exists an array of anthropometric and physiological predictors of talent in youth soccer that can be used at or around the time of adolescence. These determinants may have value, when used in conjunction with talent identification models that have greater ecological validity. The impact of maturation upon the physiological trainability and subsequent development of the youth soccer player also needs to be considered in any talent identification or talent development programme. The identification of key outcome measures that can be used as talent identification and talent development tools within match-play settings also warrants further investigation.

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