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Junior-elite Football: Time to Re-position Talent Identification?

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There remains limited understanding of the processes and factors which contribute to young footballers being identified as talented. Talent identification is imperative for the development of future elite performers. However, the underlying issue is most studies conflate talent identification and talent development. Moreover, within the literature there is a lack of operational or procedural distinction for talent identification, causing issues for those researching and working within applied contexts. This paper sought to clarify issues related to talent identification in junior-elite football, offering a review of the extant literature and proposing future directions for applied research. There are unanswered questions associated with how scouts, recruitment staff, and coaches decide what constitutes talent and the importance placed on particular attributes during that process. By developing a greater understanding of this process, we may be able to evidence that talent identification is a case of being in the right place, at the right time, with the right eye watching.

Keywords: talent, soccer, recruitment, coaching, scouts, youth

Introduction

As we were planning and drafting this piece, the world of football talent took an unprecedented turn. The world record transfer fee for a professional footballer was taken to levels never seen before. On Friday 4th August 2017, Paris Saint Germain FC signed Neymar da Silva Santos Júnior (Neymar Jr), meaning they had triggered the reported £200 million release clause in his contract with Barcelona FC. Such large sums of money for a 25-year-old footballer are unprecedented, and the sum looks more like the gross domestic product (GDP) of a small country than what might be expected to pay for someone's sporting abilities.

Neymar's transfer dwarfs that of the previous title holder of 'the world's most expensive footballer', Paul Pogba, whose £89 million move to Manchester United FC in 2016 stunned many who believed the price was exorbitant; especially when Manchester United had allowed the same player, a product of their academy system, to leave the club four years earlier on a free transfer. But, whilst the price for the very highest footballing talents has more than doubled in one year, it is also worth considering how we have arrived at this position.

To consider football as only just being a business-orientated activity would be naïve. Indeed, one of the very earliest recorded transfers of a player, Willie Groves, in 1893 between British clubs West Bromwich Albion FC and Aston Villa FC for £100, was probably considered a substantial amount at that time. Furthermore, the UK football league founder, William McGregor, wrote in 1905 that football "is big business. The turnover of some of our clubs is considerably larger than the turnover of many an important trading concern." (McGregor, 1905, Cited in Vamplew, 2010: p77).¹ Moreover, debt has also been a constant part of football. In 1905, Middlesbrough FC were reported to be £1,035 2s 5d (2s 5d being old English money) in debt, having made the

first £1,000 signing, and becoming the first club to evidence living beyond their means (McGregor, 1905, Cited in Vamplew, 2010: p77).²

Considering the events of over 120 years ago, perhaps we should not be surprised when sums upwards of £100 million pounds are now being pushed as the new norm for exceptional talent. That feeling of vulgarity and resentment toward the amount of money that now appears commonplace in professional football is, after all, something that has been ever-present. Despite the vast sums of money being spent on highly talented players by the largest clubs around the world, all clubs still spend money on their academy system with the hope of unearthing or developing potential world class players, without having to spend the large amounts of money in the current transfer market. From a practical perspective, talent identification is imperative for the development of future elite level performers; however, there is still limited understanding and empirical knowledge to guide or inform this process for all interested parties. Therefore, to make significant steps in this area, we need to understand the current research landscape associated with talent identification.

From an academic perspective, talent has been described in many ways such as a “special, natural ability” and a “capacity for achievement or success” (Brown, 2002: p.3);³ the “likelihood of becoming exceptionally competent in certain fields depends on the presence or absence of inborn attributes variously labelled as talents or gifts” (Howe, Davidson & Sloboda, 1998, p. 399).⁴ In addition, researchers have also described talent by the expression of natural abilities in a specific domain, which “places a child among the top 10% of his or her age peers” (Gagné, 2000, p. 67),⁵ provided appropriate task-specific training and environmental conditions (Singer & Janelle, 1999).⁶ In addition, identification refers to the process of recognising current athletes and making predictions about who has the best potential for future success as an elite adult athlete (Baker, Schorer

and Wattie, 2017; Sæther, 2014; Vaeyens, Gullich, Warr, & Philippaerts, 2009).⁷ Therefore, based on these descriptions, talent identification maybe understood as a concept whereby youth athletes possess innate abilities not expressed by the majority of individuals, whereby current performance levels are recognised and interpreted by experienced individuals and provide some advance indication of future domain-specific potential. Therefore, the overarching aim of the talent identification process is to identify and select athletes who will demonstrate potential and theoretically outperform athletes not identified or selected (Johansson & Fahlén, 2017).⁸

The Landscape of Football Academies

The landscape of professional sport, particularly football, has such appeal, largely financial, that players and parents are often willing to do whatever is possible to ‘help’ their child become a professional player. Many European academies operate around 10 age groups, usually starting at under nine (i.e. 8-9 years old); though many also operate pre-academies which serve children from as young as four years old. This state is relatively homogenous, and one which is largely focused on the notion of early specialisation (Côté, 1999),⁹ despite a continually growing body of literature that has suggested fundamental issues with such approaches (Malina, 2010; Jayanthi et al., 2013; Wojtys, 2013).¹⁰ Indeed, the process of early identification has low levels of ability to predict future adult success (Baker, Schorer, & Wattie, 2017; Barreiros et al., 2013).¹¹ However, with ever-increasing globalisation, professionalism, and investment in football, elite clubs are continually striving to find a unique edge to gain an advantage on their rivals both domestically and internationally.

The current academy landscape, particularly around Europe is, indeed, one of significant investment of time and resource. Thus, there are expectations for a return on investment. Consequently, the process of identifying and developing youth talent has

become a significant issue in soccer (Carling, Le Gall, Reilly, & Williams, 2009; Reilly, Williams, Nevill, & Franks, 2000);¹² as clubs aim to identify and develop talented players in order to balance financial constraints while remaining competitive (Reilly, Bangsbo, & Franks, 2000; Vaeyens, Lenoir, Williams, & Philippaerts, 2008; Williams & Reilly, 2000).¹³ To achieve this, elite clubs have attempted to create environments for athlete development, aiming to attract the best young players with the ultimate goal of producing world-class players (Radoman & Voia, 2015; Williams & Reilly, 2000).¹⁴ The measure of success in this complex situation is also difficult to accurately position. For example, one club might measure success by the number of players who break into the first team and maintain a position within the squad; another club might decide making a single first team appearance is a suitable measure of success; and a final club might suggest that playing professional football, even if that is away from the club responsible for their development and training, is a successful outcome. This serves to highlight that, much like the process of talent identification, measures of how successful identification processes are is complicated by each individual clubs' measure of its success.

It is worth highlighting, however, that player development is a long-term process and one of the challenges in traditional development systems is the difficulty balancing a club's short-term and long-term goals (Vaeyens et al., 2008; Baker et al., 2017).¹⁵ As a result, teams and organisations cannot always make talent selection decisions in terms of what is best for future athlete development. This means in many cases, there are limited opportunities for youth athletes to make the transition from junior-elite to first team player at some of the world's leading clubs. Therefore, early identification may de-select athletes from the development system (Robinson, Baker, Wattie, & Schorer, 2017),¹⁶ and potentially impact young athletes' careers and possible life directions (Johansson & Fahlén, 2017).¹⁷

A by-product of the early specialisation approach to identifying and developing talent in football has been the increased number of ‘professional academies’ being established around the world. From well-developed (i.e. England, Germany) to less-well-developed football territories (i.e. Australia, USA, China, India), these academies are either franchise operations linked to professional clubs or, more typically, companies that are concerned with making profit. There are relatively low entry standards, if any, and so consumers of these private academies are further fed falsehoods of the potential of entering a professional football environment, where such possibilities and transitions often don’t exist.

The Terminology of Talent

There have long been contentious issues surrounding the terminology associated with talent in sport. Perhaps the most enduring is the lack of a universally applicable and agreed definition of talent itself (Miller, Cronin & Baker, 2015).¹⁸ In addition, there are issues in the terminology that has been used to describe the levelness of talent. For example, a recent scoping review, that examined the sociological predictors of talent in junior-elite football, highlighted that the vast array of terms used to describe participant groups made it difficult to draw any meaningful conclusions, as there was no consistent use of terms to describe the level of talented participant sampled (Reeves et al., In Press).¹⁹ The difficulty in defining levels of talent is further complicated by there being no agreed definition for talent, and different structures across sports, such as amateur status (e.g. athletics). For example, a junior-elite footballer, playing academy-level football, at 16-years-old may be selected to play for a national representative squad; a talented 800 metre runner may also be selected to represent their national age group. In both cases, the performers are chosen to represent their respective national squads, yet the footballer will have passed through two levels of ‘talent identification’ (i.e. being

identified for their academy, and secondly selected for their national squad), whereas the 800 metre runner will have only passed through one (i.e. being selected for their national squad). Such differences raise questions around the perceived, or actual, differences in levelness of talent.

Recently, there have been attempts to delineate between elite and super-elite performers (Rees et al., 2016; Swann, Moran & Piggot, 2015).²⁰ Rees and colleagues' broad review of the talent literature considered three key issues: (1) the performer; (2) the environment; and (3) practice and training. Their findings are calibrated against four levels of performance: non-elite; junior-elite; elite; and super-elite (Rees et al., 2015: p.1042).²¹ Whilst Swann and colleagues offer an excellent review of literature pertaining to expert performance and how elite performers can, potentially, be categorised they do not offer definitional clarity for talent identification purposes. Therefore, the two best efforts to categorise talent have still left us with no practical or theoretical clarity. This lack of operational or procedural distinction causes issues for those researching talent identification but also for those working within applied talent identification and talent development.

We propose that given football's unique position within the world of sport, there are a number of issues, which suggest that football would be better served with its own bespoke taxonomy of talent. That is, a football-specific language that speaks (no pun intended), to the complexities of talent within football directly; removing or reducing the issues highlighted earlier.

Talent Identification Practice

In a similar manner to the definition of talent identification being contentious and subjective, traditional talent identification processes are also subjective and not informed by scientific evidence. Traditionally, coaches and scouts identify talented player's and

predict potential future development and success from viewing players in a trial or training session environment, and in some cases only on one occasion (Larkin & O'Connor, 2017).²² While it is widely believed coaches and scouts expertise and experience in identifying potential talent is an important tool in the process (Gil, Zabala-Lili, Bidaurrezaga-Letona, Aduna, Lekue, Santos-Concejero, & Grandos, 2014; Johansson & Fahlén, 2017),²³ researchers have also attempted to understand more objective measures that may contribute to a player being identified. To investigate this, researchers have used the expertise approach (i.e. sport-specific variables are investigated across several levels of participation) to investigate the potential predictors of talent in soccer (i.e. physical; physiological; psychological; sociological) (Williams & Franks, 1998; Williams & Reilly, 2000)²⁴ to determine whether a particular variable/ability provides an advantage to the athlete. Findings from cross-sectional, quasi-experimental designs have identified characteristics and performance differences of elite, sub-elite, and novice players in all of the identified potential predictors, including, physical, physiological, psychological and sociological predictors of football talent (Williams & Reilly, 2000).²⁵

With respect to some of these findings, researchers have indicated players selected for professional youth clubs perform better on 15 and 30 metre agility runs, and the yo-yo intermittent recovery test (Gil et al., 2014).²⁶ Also, elite youth players are generally found to be heavier, taller and faster than matched less skilled players (Coelho e Silva et al., 2010; Deprez, Fransen, Boone, Lenoir, Philippaerts, & Vaeyens, 2015; Gonaus & Muller, 2012; le Gall, Carling, Williams & Reilly, 2010; Rebelo et al., 2012; Vaeyens et al., 2006).²⁷ In addition, a substantial body of research indicates technical skills, such as, passing; ball control; dribbling; and shooting; can differentiate between skilled and less-skilled youth soccer players (Ali et al., 2007; Coelho e Silva et al., 2010; Figueiredo et

al., 2009; le Moal et al., 2014; Höner & Votteler, 2016; Malina, Ribeiro, Aroso, & Cumming, 2007; Russell, Benton, & Kingsley, 2010; Vaeyens et al., 2006).²⁸ Further, researchers have indicated elite level players possess greater domain-specific information processing abilities such as decision-making, anticipation, situational probability and pattern recognition when compared to lesser skilled players (O'Connor, Larkin, & Williams, 2016; Reilly, Williams, Nevill, & Franks, 2000; Vaeyens, Lenoir, Williams, Mazyn, & Philippaerts, 2007; Ward, Ericsson, & Williams, 2013; Ward & Williams, 2003; Williams, Hodges, North, & Barton, 2006).²⁹ Also, from a sociological perspective, retrospective analysis has enabled researchers to analyse differences between elite and sub-elite athletes in the time invested in sport-specific activities during development, with elite athletes investing greater amounts of time in sport-specific activities (Ford, Ward, Hodges, & Williams, 2009; Ford & Williams, 2012; Haugaasen, Toering, Jordet, 2014; Hornig, Aust, & Güllich, 2016; Ward et al., 2013; Ward, Hodges, Starkes, & Williams, 2007; Zibung & Conzelmann, 2013).³⁰ While these findings have demonstrated some of the factors that may contribute to elite performance (i.e. participation or selection for youth football academies), due to the cross-sectional nature of the investigations, there is still limited understanding of the predictive value of these tests for applied talent identification purposes.

An early focus on talent identification is fraught with limitations, most significantly, the assumption that early indicators are valid predictors of future potential (Baker et al., 2017; Barreiros et al., 2013).³¹ This assumption suggests talent is a fixed capacity that (a) can be identified early; and (b) does not change over developmental time. To date, however, there are no reliable tests or indicators of future talent. In an attempt to address these issues, researchers have conducted prospective or longitudinal studies, to identify what performance variables at a youth level may contribute to selection in elite

late adolescence or adult teams. Höner and colleagues³² (2016; 2016; 2017) have conducted several longitudinal studies with the aim to understand the prognostic relevance of youth psychological and motor skill predictors on future elite adolescence and adult soccer performance. These studies have assessed the performance of under-12 players from German talent development programs (between 2,677 and 22,843 male players) and tracked their progression to late adolescence (i.e. under-16 to under-19 competition) and professional adult competitions. The findings have demonstrated prognostic relevance of several psychological (i.e. hope for success; fear of failure; competition, goal and task orientation; self-optimisation; general and specific self-concept; self-efficacy; worry) (Höner & Feichtinger, 2016)³³ and motor skill (i.e. agility; dribbling; sprinting; ball control; shooting) (Höner & Feichtinger, 2016; Höner, Leyhr, & Kelava, 2017; Höner & Vottelr, 2016) attributes.³⁴ These findings have indicated attributes assessed at the under-12 level may predict selection into elite older program (i.e. academy selections; elite adult competition). While these longitudinal investigations have built on the cross-section research knowledge, based on the current conclusions identifying soccer talent remains a complex problem, with multi-dimensional research approaches required (Höner, Leyhr, & Kelava, 2017).³⁵

As indicated in the presented research, there have been numerous attempts to identify potential markers of talent in youth athletes, mainly from a quantifiable, positivist position (e.g. Ford & Williams, 2012; Gil et al., 2014; Höner & Votteler, 2016; O'Connor, Larkin, & Williams, 2016).³⁶ While these studies provide an indication of the attributes that can differentiate skilled performance and provide a profile of elite level youth and adult performance, there is still limited understanding of how talent identifiers may use this information to conceptualise ability when identifying elite youth talent.

Coaches, Scouts, Recruiters and Talent Identification

To date, there has been little empirical work considering talent identification from the perspective of the key stakeholders, such as coaches, scouts and recruitment staff. While there is an extensive body of research exploring the attributes that may discriminate elite and sub-elite performance (e.g. Ford & Williams, 2012; Gil et al., 2014; Höner & Votteler, 2016; O'Connor, Larkin, & Williams, 2016),³⁷ there is still limited understanding of how coaches, scouts and recruitment staff make talent selections and the importance they place on certain attributes when identifying talent. Researchers have attempted to understand the perceptions and observations of elite youth talent identifiers, and in particular, the processes and attributes they consider important when identifying and predicting potential future elite players (Christensen, 2009; Larkin & O'Connor, 2017).³⁸

A key aspect of talent identification is the process by which coaches and scouts identify talent. In a qualitative study, Christensen (2009),³⁹ conducted in-depth interviews focussed on the talent identification process of eight Danish national team coaches. The findings indicated coaches valued soccer skills and personal qualities when making informed judgements on talented players. With respect to soccer skills, coaches regarded game intelligence (i.e. tactical and mental ability to read and predict game-play) and peak competences (i.e. sport-specific physical and technical skills) as the most important variables when assessing talented players. In addition, personal qualities, such as character, attitude, drive to succeed, and willingness to learn were also considered important by the coaches. It should be noted that coaches did not conduct specific objective tests of these abilities, but rather used their personal ability and intuition to subjectively identify talented players. Therefore, practical experience of watching thousands of games provided a foundation and repertoire of experiences related to the

concept of a talented player, which is subjectively used to benchmark players they are watching.

In an attempt to identify specific attributes talent recruiter's consider making judgements on youth players, Larkin and O'Connor⁴⁰ (2017) conducted a study whereby youth coaches and scouts discussed and ranked the attributes they perceived as important when identifying skilled youth soccer players in Australia. Using a modified Delphi method, the findings indicated a hierarchy of attributes perceived as important when identifying elite under-13 soccer players. The participants indicated technical (i.e. first touch; striking the ball; one-versus-one ability; technical ability under pressure), tactical (i.e. decision-making ability) and psychological attributes (i.e. coachability; positive attitude) were weighted highly when assessing player performance. Interestingly, while researchers have conducted extensive research exploring performance differences associated with physiological and anthropometrical variables (Coelho e Silva et al., 2010; Deprez, Fransen, Boone, Lenoir, Philippaerts, & Vaeyens, 2015; Gonaus & Muller, 2012; le Gall, Carling, Williams & Reilly, 2010; Rebelo et al., 2013; Vaeyens et al., 2006),⁴¹ the participants indicated they do not consider/weight them highly when identifying talent. Similar to Christensen's⁴² (2009) findings, the results indicate coaches and scouts adopt a more holistic multidisciplinary approach to talent identification.

Conclusion

While Williams and colleagues⁴² (1998; 2000) presented their model of predicting factors of talent identification almost 20 years ago, there still appears to be a limited understanding of the processes and factors which contribute to players being identified as talented. The problem with the majority of studies that concern talent identification and talent development is that they treat both issues, that is identification and development as synonymous with one another, intertwined in some way as to not be discernible from each

other. We contend that this is not the case. We do so based on recent studies that have clearly delineated the two issues, but also based on examples drawn from applied practice. For example, after over 150 years of existence, the English Football Association established a talent identification department, highlighting a renewed philosophical alignment of talent identification within the organisations philosophy.

Within the football talent identification system, coaches and scouts are selecting players based on current performance levels and who will perform or develop the best in a relatively short period. These practices create contexts that can result in biases toward advanced growth and maturation, which are counter intuitive to athlete development. If this is the case, then it may be better to describe this process as performance identification rather than talent identification (Barker et al., 2017).⁴³ An important question to understand is whether coaches and scouts at youth football clubs actually associate current performance with future performance and potential. Therefore, as a research community, maybe we should consider further investigation into the key stakeholders charged with the responsibility of identifying and selecting the talent, the scouts and recruitment staff. As these individuals are the ones setting the criteria, weighting the performance attributes, and making the judgements of (non)selection for further development. Perhaps, further research into the ascribed processes, observations, and perceptions are needed to provide more sound understanding of the talent identification process in football. In doing so, as researchers we may be able to develop more applied, objective measures which, in turn, improve the overtly subjective talent identification process football is laden with. This would, potentially, improve the clarity associated with talent identification for all invested individuals, including, coaches, scouts, players, and parents. As in the real world of football talent identification, it can still be a process of a player being in the right place, at the right time, with the right eye watching.

Notes

1. Vamplew, "Profits or premierships?", 77.
2. Ibid.
3. Brown, "Sports Talent", 3.
4. Howe, Davidson and Sloboda, *Innate talents*, 399.
5. Gagné, *Understanding the complex*, 67.
6. Singer and Janelle, *Determining sport expertise*.
7. Baker, Schorer and Wattie, "Compromising talent"; Sæther, "Identification of talent"; Vaeyens et al., *Talent identification and promotion*.
8. Johansson and Fahlén, *Simply the best*.
9. Côté, *The influence of the family*.
10. Malina, *Early sport specialization*; Jayanthi et al., *Sports specialization*; Wojtys, *Sports specialization vs diversification*.
11. Baker, Schorer and Wattie, "Compromising talent"; Barreiros, Côté and Fonseca, *Training and psychosocial patterns*.
12. Carling et al., *Do anthropometric and fitness characteristics*; Reilly et al., *A multidisciplinary approach*.
13. Reilly, Bangsbo, & Franks, *Anthropometric and physiological predispositions*; Vaeyens et al., *The effects of task*; Williams & Reilly, *Talent identification and development*.
14. Radoman and Voia, *Youth training programs*; Williams & Reilly, *Talent identification and development*.
15. Vaeyens et al., *The effects of task*; Baker, Schorer and Wattie, "Compromising talent".
16. Robinson et al., *Talent identification in sport*.
17. Johansson and Fahlén, *Simply the best*.
18. Miller, Cronin and Baker, *Nature, nurture*.
19. Reeves et al., A scoping review.
20. Rees et al., *The great British medalists*; Swann, Moran and Piggot, *Defining elite athletes*.
21. Rees et al., *The great British medalists*, 1042.
22. Larkin and O'Connor, *Talent identification and recruitment*.
23. Gil et al., *Talent identification and selection*; Johansson and Fahlén, *Simply the best*.
24. Williams and Franks, *Talent identification in soccer*; Williams & Reilly, *Talent identification and development*.
25. Williams & Reilly, *Talent identification and development*.
26. Gil et al., *Talent identification and selection*.
27. Coelho e Silva et al., *Discrimination of U-14 Soccer*; Deprez et al., *Characteristics of high-level*; Gonaus and Muller, *Using physiological data*; le Gall et al., *Anthropometric and fitness characteristics*; Rebelo et al., *Anthropometric Characteristics, Physical Fitness*; Vaeyens et al., *A multidisciplinary selection model*.
28. Ali et al., *Reliability and validity*; Coelho e Silva et al., *Discrimination of U-14 Soccer*; Figueiredo et al., *Characteristics of youth soccer*; Le Moal et al., *Validation of the Loughborough*; Höner and Votteler, *Prognostic relevance of motor talent*; Malina et al., *Characteristics of youth soccer*; Russell, Benton and Kingsley, *Reliability and construct validity*; Vaeyens et al., *A multidisciplinary model*.

29. O'Connor, Larkin and Williams, *Talent identification and selection*; Reilly et al., *A multidisciplinary approach*; Vaeyens et al., *The Effects of Task*; Ward, Ericsson, and Williams, *Complex perceptual-cognitive expertise*; Ward and Williams, *Perceptual and cognitive skill*; Williams et al., *Perceiving patterns of play*.
30. Ford et al., *The role of deliberate*; Ford and Williams, *The developmental activities engaged*; Haugaasen, Toering, and Jordet, *From childhood to senior*; Hornig, Aust and Güllich, *Practice and play*; Ward, Ericsson, and Williams, *Complex perceptual-cognitive expertise*; Ward et al., *The road to excellence*; Zibung and Conzelmann, *The role of specialisation*.
31. Baker, Schorer and Wattie, "Compromising talent"; Barreiros, Côté and Fonseca, *Training and psychosocial patterns*.
32. Höner and Feichtinger, *Psychological talent predictors*; Höner and Votteler, *Prognostic relevance of motor talent*; Höner, Leyhr and Kelava, *The influence of speed*.
33. Höner and Feichtinger, *Psychological talent predictors*.
34. Höner and Feichtinger, *Psychological talent predictors*; Höner and Votteler, *Prognostic relevance of motor talent*; Höner, Leyhr and Kelava, *The influence of speed*.
35. Höner, Leyhr and Kelava, *The influence of speed*.
36. Ford and Williams, *The developmental activities engaged*; Gil et al., *Talent identification and selection*; Höner and Votteler, *Prognostic relevance of motor talent*; O'Connor, Larkin and Williams, *Talent identification and selection*.
37. Ford and Williams, *The developmental activities engaged*; Gil et al., *Talent identification and selection*; Höner and Votteler, *Prognostic relevance of motor talent*; O'Connor, Larkin and Williams, *Talent identification and selection*.
38. Christensen, "An eye for talent"; Larkin and O'Connor, *Talent identification and recruitment*.
39. Christensen, "An eye for talent".
40. Larkin and O'Connor, *Talent identification and recruitment*.
41. Coelho e Silva et al., *Discrimination of U-14 Soccer*; Deprez et al., *Characteristics of high-level*; Gonaus and Muller, *Using physiological data*; le Gall et al., *Anthropometric and fitness characteristics*; Rebelo et al., *Anthropometric Characteristics, Physical Fitness*; Vaeyens et al., *A multidisciplinary selection model*.
42. Williams and Franks, *Talent identification in soccer*; Williams and Reilly, *Talent identification and development*.
43. Baker, Schorer and Wattie, "Compromising talent".

References

- Ali, Ajmol, Clyde Williams, Mark Hulse, Anthony Strudwick, Jonathan Reddin, Lee Howarth, John Eldred, Matthew Hirst, and Steve McGregor. "Reliability and Validity of Two Tests of Soccer Skill." *Journal of Sports Sciences* 25, no. 13 (2007): 1461–70. doi:10.1080/02640410601150470.
- Araya, J, and Paul Larkin. "Key Performance Variables between the Top 10 and Bottom 10 Teams in the English Premier League 2012/13 Season." *University of Sydney Papers in Human Movement, Health and Coach Education* 2, no. 175 (2013): 17–29.
- Baker, Joseph, Jörg Schorer, and Nick Wattie. "Compromising Talent: Issues in Identifying and Selecting Talent in Sport." *Quest iFirst* (2017): 1–16. doi:10.1080/00336297.2017.1333438.
- Barreiros, André, Jean Côté, and António Manuel Fonseca. "Training and Psychosocial Patterns during the Early Development of Portuguese National Team Athletes." *High Ability Studies* 24, no. 1 (2013): 49–61. doi:10.1080/13598139.2013.780965.
- Brown, Jay. *Sports Talent: How to Identify and Develop Outstanding Athletes*. Champaign, IL: Human Kinetics, 2002.
- Burns, S. "Talent Identification and Development in Soccer." *Coaching Focus*, 1996.
- Carling, Chris, Franck Le Gall, Tom Reilly, and A. Mark Williams. "Do Anthropometric and Fitness Characteristics Vary according to Birth Date Distribution in Elite Youth Academy Soccer Players?" *Scandinavian Journal of Medicine & Science in Sports* 19, no. 1 (2009): 3–9. doi:10.1111/j.1600-0838.2008.00867.x.
- Christensen, Mette Krogh. "'An Eye for Talent': Talent Identification and the 'practical Sense' of Top-Level Soccer Coaches." *Sociology of Sport* 26, no. 3 (2009): 365–82.
- Coelho e Silva, Manuel J., António J. Figueiredo, F Simões, André Seabra, A. Natal, Roel Vaeyens, Renaat Philippaerts, Sean P. Cumming, and R. M. Malina. "Discrimination of U-14 Soccer Players by Level and Position." *International Journal of Sports Medicine* 31, no. 11 (2010): 790–96. doi:10.1055/s-0030-1263139.

- Côté, Jean. "The Influence of the Family in the Development of Talent in Sport." *The Sport Psychologist* 13, no. 1995 (1999): 395–417. doi:10.1177/1527002502003003001.
- Deprez, Dieter, Job Fransen, Jan Boone, Matthieu Lenoir, Renaat Philippaerts, and Roel Vaeyens. "Characteristics of High-Level Youth Soccer Players: Variation by Playing Position." *Journal of Sports Sciences* 33, no. 3 (2015): 243–54. doi:10.1080/02640414.2014.934707.
- Figueiredo, António J., Carlos E. Gonçalves, Manuel J. Coelho e Silva, and Robert M. Malina. "Characteristics of Youth Soccer Players Who Drop Out, Persist or Move up." *Journal of Sports Sciences* 27, no. 9 (2009): 883–91. doi:10.1080/02640410902946469.
- Ford, Paul R, Paul Ward, Nicola J Hodges, and A Mark Williams. "The Role of Deliberate Practice and Play in Career Progression in Sport: The Early Engagement Hypothesis." *High Ability Studies* 20, no. 1 (2009): 65–75. doi:10.1080/13598130902860721.
- Ford, Paul R., Christopher Carling, Marco Garces, Mauricio Marques, Carlos Miguel, Andrew Farrant, Andreas Stenling, et al. "The Developmental Activities of Elite Soccer Players Aged under-16 Years from Brazil, England, France, Ghana, Mexico, Portugal and Sweden." *Journal of Sports Sciences* 30, no. 15 (2012): 1653–63. doi:10.1080/02640414.2012.701762.
- Ford, Paul R., and A. Mark Williams. "The Developmental Activities Engaged in by Elite Youth Soccer Players Who Progressed to Professional Status Compared to Those Who Did Not." *Psychology of Sport and Exercise* 13, no. 3 (2012): 349–52. doi:10.1016/j.psychsport.2011.09.004.
- Gagné, François. "Understanding the Complex Choreography of Talent Development Through DMGT-Based Analysis." In *International Handbook of Giftedness and Talent*, edited by Kurt A. Heller, Franz. J. Mönks, Robert Sternberg, and Rena Subotnik, 2nd ed., 67–79. Oxford: Elsevier Science, 2000. doi:10.1016/B978-008043796-5/50005-X.
- Gil, Susana María, Jon Zabala-Lili, Iraia Bidaurrezaga-Letona, Badiola Aduna, Jose Antonio Lekue, Jordan Santos-Concejero, and Cristina Granados. "Talent Identification and Selection Process of Outfield Players and Goalkeepers in a Professional Soccer Club." *Journal of Sports Sciences* 32, no. 20 (2014): 1931–39. doi:10.1080/02640414.2014.964290.

- Gonaus, Christoph, and Erich Müller. "Using Physiological Data to Predict Future Career Progression in 14- to 17-Year-Old Austrian Soccer Academy Players." *Journal of Sports Sciences* 30, no. 15 (2012): 1673–82. doi:10.1080/02640414.2012.713980.
- Gucciardi, Daniel F., Sandy Gordon, and James A. Dimmock. "Towards an Understanding of Mental Toughness in Australian Football." *Journal of Applied Sport Psychology* 20, no. 3 (2008): 261–81. doi:10.1080/10413200801998556.
- Haugaasen, Mathias, Tynke Toering, and Geir Jordet. "From Childhood to Senior Professional Football: A Multi-Level Approach to Elite Youth Football Players' Engagement in Football-Specific Activities." *Psychology of Sport and Exercise* 15, no. 4 (2014): 336–44. doi:10.1016/j.psychsport.2014.02.007.
- Hoare, D. G., and C. R. Warr. "Talent Identification and Women's Soccer: An Australian Experience." *Journal of Sports Sciences* 18, no. 9 (2000): 751–58. doi:10.1080/02640410050120122.
- Höner, Oliver, and Philip Feichtinger. "Psychological Talent Predictors in Early Adolescence and Their Empirical Relationship with Current and Future Performance in Soccer." *Psychology of Sport and Exercise* 25 (2016): 17–26. doi:10.1016/j.psychsport.2016.03.004.
- Höner, Oliver, Daniel Leyhr, and Augustin Kelava. "The Influence of Speed Abilities and Technical Skills in Early Adolescence on Adult Success in Soccer: A Long-Term Prospective Analysis Using ANOVA and SEM Approaches." *PLOS ONE* 12, no. 8 (2017). doi:10.1371/journal.pone.0182211.
- Höner, Oliver, and Andreas Votteler. "Prognostic Relevance of Motor Talent Predictors in Early Adolescence: A Group- and Individual-Based Evaluation Considering Different Levels of Achievement in Youth Football." *Journal of Sports Sciences* 34, no. 24 (2016): 2269–78. doi:10.1080/02640414.2016.1177658.
- Hornig, Manuel, Friedhelm Aust, and Arne Güllich. "Practice and Play in the Development of German Top-Level Professional Football Players." *European Journal of Sport Science* 16, no. 1 (2016): 96–105. doi:10.1080/17461391.2014.982204.
- Howe, Michael J. A., Jane W. Davidson, and John A. Sloboda. "Innate Talents: Reality or Myth?" *Behavioural and Brain Sciences* 21, no. 3 (1998): 399–442.
- Huijgen, Barbara C. H., Marije T Elferink-Gemser, Wendy J. Post, and Chris Visscher. "Soccer Skill Development in Professionals." *International Journal of Sports Medicine* 30, no. 8 (2009): 585–91. doi:10.1055/s-0029-1202354.

- Jayanthi, Neeru, Courtney Pinkham, Lara Dugas, Brittany Patrick, and Cynthia LaBella. "Sports Specialization in Young Athletes." *Sports Health: A Multidisciplinary Approach* 5, no. 3 (2013): 251–57. doi:10.1177/1941738112464626.
- Johansson, Annika, and Josef Fahlén. "Simply the Best, Better than All the Rest? Validity Issues in Selections in Elite Sport." *International Journal of Sports Science & Coaching* 12, no. 4 (2017): 470–80. doi:10.1177/1747954117718020.
- Johansson, Annika, and Josef Fahlén. "Simply the Best, Better than All the Rest? Validity Issues in Selections in Elite Sport." *International Journal of Sports Science & Coaching* 12, no. 4 (2017): 470–80. doi:10.1177/1747954117718020.
- Jones, P. D., Nic James, and Stephen D. Mellalieu. "Possession as a Performance Indicator in Soccer." *International Journal of Performance Analysis in Sport* 4, no. 1 (2004): 98–102.
- Lago-Peñas, Carlos, and Alexandre Dellal. "Ball Possession Strategies in Elite Soccer According to the Evolution of the Match-Score: The Influence of Situational Variables." *Journal of Human Kinetics* 25 (2010): 93–100. doi:10.2478/v10078-010-0036-z.
- Larkin, Paul, and Donna O'Connor. "Talent Identification and Recruitment in Youth Soccer: Recruiter's Perceptions of the Key Attributes for Player Recruitment." *PLOS ONE* 12, no. 4 (2017). doi:10.1371/journal.pone.0175716.
- le Gall, Franck, Chris Carling, A. Mark Williams, and Tom Reilly. "Anthropometric and Fitness Characteristics of International, Professional and Amateur Male Graduate Soccer Players from an Elite Youth Academy." *Journal of Science and Medicine in Sport* 13, no. 1 (2010): 90–95.
- Le Moal, Emmeran, Olivier Rue, Ali Ajmol, Abderaouf B Abderrahman, Mohammed A Hammami, Omar B Ounis, Wiem Keksi, and Hassane Zouhal. "Validation of the Loughborough Soccer Passing Test in Young Soccer Players." *Journal of Strength and Conditioning Research* 28, no. 5 (2014): 1418–26. doi:10.1519/jsc.0000000000000296.
- Malina, Robert M. "Early Sport Specialization." *Current Sports Medicine Reports* 9, no. 6 (2010): 364–71. doi:10.1249/JSR.0b013e3181fe3166.
- Malina, Robert. M, Basil Ribeiro, João Aroso, and Sean P. Cumming. "Characteristics of Youth Soccer Players Aged 13-15 Years Classified by Skill Level." *British Journal of Sports Medicine* 41, no. 5 (2007): 290–95. doi:10.1136/bjism.2006.031294.

- Miller, Paul K., Colum Cronin, and Graham Baker. "Nurture, Nature and Some Very Dubious Social Skills: An Interpretative Phenomenological Analysis of Talent Identification Practices in Elite English Youth Soccer." *Qualitative Research in Sport, Exercise, and Health* 7, no. 5 (2015): 642–62. doi:10.1080/2159676X.2015.1012544.
- O'Connor, Donna, Paul Larkin, and A. Mark Williams. "Talent Identification and Selection in Elite Youth Football: An Australian Context." *European Journal of Sport Science* 16, no. 7 (2016): 837–44. doi:10.1080/17461391.2016.1151945.
- Radoman, Mihailo, and Marcel C. Voia. "Youth Training Programs and Their Impact on Career and Spell Duration of Professional Soccer Players." *Labour* 29, no. 2 (2015): 163–93. doi:10.1111/labr.12049.
- Rebelo, António, João Brito, Maia J., Manuel Coelho-e-Silva, António Figueiredo, Jens Bangsbo, Robert M. Malina, and André Seabra. "Anthropometric Characteristics, Physical Fitness and Technical Performance of Under-19 Soccer Players by Competitive Level and Field Position." *International Journal of Sports Medicine* 34, no. 4 (2012): 312–17. doi:10.1055/s-0032-1323729.
- Reeves, Matthew J., Allistair McRobert, Martin Littlewood, and Simon J. Roberts. "A Scoping Review of the Potential Sociological Predictors of Talent in Junior-Elite Football: 2000-2016." *Soccer & Society*.
- Rees, Tim, Lew Hardy, Arne Güllich, Bruce Abernethy, Jean Côté, Tim Woodman, Hugh Montgomery, Stewart Laing, and Chelsea Warr. "The Great British Medalists Project: A Review of Current Knowledge on the Development of the World's Best Sporting Talent." *Sports Medicine* 46, no. 8 (2016): 1041–58. doi:10.1007/s40279-016-0476-2.
- Reilly, Tom, Jens Bangsbo, and Adele Franks. "Anthropometric and Physiological Predispositions for Elite Soccer." *Journal of Sports Sciences* 18, no. 9 (2000): 669–83. doi:10.1080/02640410050120050.
- Reilly, Tom, A. Mark Williams, Alan Nevill, and Adele Franks. "A Multidisciplinary Approach to Talent Identification in Soccer." *Journal of Sports Sciences* 18, no. 9 (2000): 695–702. doi:10.1080/02640410050120078.
- Robinson, Kathryn, Nick Wattie, Jorg Schorer, and Joe Baker. "Talent Identification in Sport: A Systematic Review of 25 Years of Research." *In Review*.
- Russell, Mark, David Benton, and Michael Kingsley. "Reliability and Construct Validity of Soccer Skills Tests That Measure Passing, Shooting, and Dribbling." *Journal*

- of Sports Sciences* 28, no. 13 (2010): 1399–1408. doi:10.1080/02640414.2010.511247.
- Sæther, Stig Arve. “Identification of Talent in Soccer - What Do Coaches Look For?” *Idrotts Forum*, 2014. <http://idrottsforum.org/wp-content/uploads/2014/03/saether140319.pdf>.
- Singer, Robert N., and Christopher M. Janelle. “Determining Sport Expertise: From Genes to Supremes.” *International Journal of Sport Psychology* 30, no. 2 (1999): 117–50.
- Swann, Christian, Aidan Moran, and David Piggott. “Defining Elite Athletes: Issues in the Study of Expert Performance in Sport Psychology.” *Psychology of Sport and Exercise* 16, no. 1 (2015): 3–14. doi:10.1016/j.psychsport.2014.07.004.
- Toering, Tynke T., Marije T. Elferink-Gemser, Gier Jordet, and Chris Visscher. “Self-Regulation and Performance Level of Elite and Non-Elite Youth Soccer Players.” *Journal of Sports Sciences* 27, no. 14 (2009): 1509–17. doi:10.1080/02640410903369919.
- Vaeyens, Roel, Arne Güllich, Chelsea R. Warr, and Renaat Philippaerts. “Talent Identification and Promotion Programmes of Olympic Athletes.” *Journal of Sports Sciences* 27, no. 13 (2009): 1367–80. doi:10.1080/02640410903110974.
- Vaeyens, Roel, Matthieu Lenoir, A. Mark Williams, Liesbeth Mazyn, and Renaat M. Philippaerts. “The Effects of Task Constraints on Visual Search Behavior and Decision-Making Skill in Youth Soccer Players.” *Journal of Sport and Exercise Psychology* 29, no. 2 (2007): 147–69. doi:10.1123/jsep.29.2.147.
- Vaeyens, Roel, Robert M. Malina, Melissa Janssens, Bart Van Renterghem, Jan Bourgois, Jacques Vrijens, and Renaat M. Philippaerts. “A Multidisciplinary Selection Model for Youth Soccer: The Ghent Youth Soccer Project.” *British Journal of Sports Medicine* 40, no. 11 (2006): 928–34. doi:10.1136/bjism.2006.029652.
- Van Yperen, Nico W. “Why Some Make It and Others Do Not: Identifying Psychological Factors That Predict Career Success in Professional Adult Soccer.” *The Sport Psychologist* 23, no. 3 (2009): 317–29. doi:10.1123/tsp.23.3.317.
- Ward, Paul, K. Anders Ericsson, and A. Mark Williams. “Complex Perceptual-Cognitive Expertise in a Simulated Task Environment.” *Journal of Cognitive Engineering and Decision Making* 7, no. 3 (2013): 231–54. doi:10.1177/1555343412461254.

- Ward, Paul, Nicola J. Hodges, Janet L. Starkes, and Mark A. Williams. "The Road to Excellence: Deliberate Practice and the Development of Expertise." *High Ability Studies* 18, no. 2 (2007): 119–53. doi:10.1080/13598130701709715.
- Ward, Paul, and A. Mark Williams. "Perceptual and Cognitive Skill Development in Soccer: The Multidimensional Nature of Expert Performance." *Journal of Sport and Exercise Psychology* 25, no. 1 (2003): 93–111. doi:10.1123/jsep.25.1.93.
- Williams, A. Mark, and Adele Franks. "Talent Identification in Soccer." *Sports, Exercise and Injury* 4 (1998): 159–65.
- Williams, A Mark, Nicola J Hodges, Jamie S North, and Gabor Barton. "Perceiving Patterns of Play in Dynamic Sport Tasks: Investigating the Essential Information Underlying Skilled Performance." *Perception* 35, no. 3 (2006): 317–32. doi:10.1068/p5310.
- Williams, A. Mark, and Tom Reilly. "Talent Identification and Development in Soccer." *Journal of Sports Sciences* 18, no. 9 (2000): 657–67. doi:10.1080/02640410050120041.
- Wojtys, Edward M. "Sports Specialization vs Diversification." *Sports Health: A Multidisciplinary Approach* 5, no. 3 (2013): 212–13. doi:10.1177/1941738113484130.
- Zibung, Marc, and Achim Conzelmann. "The Role of Specialisation in the Promotion of Young Football Talents: A Person-Oriented Study." *European Journal of Sport Science* 13, no. 5 (2013): 452–60. doi:10.1080/17461391.2012.749947.