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Characterizing Sports Talent - Important Variables and Different Pathways



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Abstract

Talent research isn't new to the scientific community, namely in sport. The first appearance in the literature refers to Galton's study of 1869. Although it is undeniable that the understanding of what talent is has advanced significantly over the years, it's also clear that there's a need to continue the research about this concept. In this short review, the aim was to understand the evolution of the conceptualization of talent in sport, as well as the main variables that can influence it, to which is added the relevance of understanding which development paths seem to be appropriate to achieve high levels of performance. Were analysed seven different studies, chosen by their diverse analysis focus and designs, that allow us to conclude that it is crucial to recognize the interaction between different influential factors for an adequate conceptualization of the term that allows, as a consequence, the structuring of profitable paths to promote sporting excellence.

Keywords: Talent; Talent Development; Sport; Football

Introduction

The concept of talent, although quite debatable, has been subject of attention from the scientific community, particularly regarding sports, and it can even be assumed as being central to many models and policies relating to athlete development, as well as reflected in the practice of identifying and selecting athletes at early ages in order for them to develop in the most beneficial environments Baker et al. [1]. From the genetic argument (which points to the relevance of factors such as heredity, for example) to environmental factors (in which training time and its quality can emerge as determining variables) Gullich et al. [2], the definition of talent, from our point of view and considering the sociocultural context in which we operate, tends to assume a meaning that refers to innate abilities. Over time, extreme positions and conclusions have been adopted about this topic and generally points to favor one or another of the listed perspectives, instead of the interaction between them Barreiros et al. [3], which has made the debate around this issue inconclusive and non-profitable. If it's about human behavior that we are referring when we talk about talent, and if this behavior presents itself in the form of

actions/intentions where the most diverse processes can exercise their predominance, it's not enough to limit ourselves to the isolated analysis of physiological or biomechanical variables to better understand it Sérgio [4]. Although it's undeniable that the understanding of what constitutes high-level performance, particularly in sport, has advanced significantly over the years, it's also clear that there's a need to continue the research about this concept, assuming that exists enough evidence that support the arguments that the development of talent in sport begins in childhood and results from a long-term investment Barreiros et al. [3]. Therefore, understanding the evolution of the conceptualization of talent in sport, as well as the main variables that can influence it, is necessary and one of the aims of this study, to which is added the relevance of understanding too, as a consequence of the adopted definition, which development paths seem to be appropriate to achieve high levels of performance. This maybe highlights the need of a deeper perspective and global vision about talent that considers the inherent complexity of this phenomena.

State of Art

Both the definition of talent and the study around this concept have led to the production of a wide range of evidence resulting from different experimental designs, different samples and, also, different theoretical bases. In the exploration carried out in this study, the intention is to broaden the spectrum of analysis and include different types of research work on this topic, trying to cross references so that the relevance of some variables can be identified in the construction of a more robust scientific construct. We started with the study by Baker et al. [1], a review that analyzes research on talent in sport, covering a period of 28 years (1990-2018), with the aim of identifying trends and knowledge gaps in this field. The study analyzed 1899 articles published in English and found that most research focuses on male athletes, football, perceptual-cognitive variables, developing athletes, adult samples and cross-sectional designs. The authors highlight the need for more research on female athletes and younger athletes, as well as in less studied contexts, such as Africa, Asia and South America. They also emphasize the importance of using alternative methodologies to address under-researched areas. This first approach reveals the enormous need for research to better understand a topic of such complexity, exposing the biggest gaps in the area and pointing out ways for the evolution of research in this regard.

However, there are already some published works, such as that of Gullich et al. [2], which investigated the relations between sports practice and sports performance, analyzing whether early specialization in a single sport is more profitable in order to achieve high sports performance than a diversified practice in several sports. To do this, the authors carried out a meta-analysis of 51 studies, with a total of 6096 athletes, including olympic champions and national level athletes. The results demonstrate that multisport practice during childhood and adolescence is associated with more sustainable elite performance in the long term, while early specialization in a single sport can lead to rapid initial progress but is associated with a greater risk of injuries and burnout. The conclusions suggest that existing theories on the development of expertise should be reviewed according to these new data, and that talent development programs should consider the importance of multisport practice during childhood and adolescence. In the same thought line, with an emphasis on environmental factors that can lead to high performance, Machado et al. [5] attempted to compare in their study the football talent development paths of elite under-18 youngsters from Brazil and Spain, analyzing the sporting activities in which players engage during childhood and adolescence and the practice structure used by clubs. The results show that Spanish players start playing football at an earlier age, while Brazilians participate in a greater variety of sports in childhood and preadolescence. Regarding the structure of training, the study states that it's similar between the two countries, but Brazilians tend to accumulate a greater volume

of training. It's concluded that the talent development path in football in Spain can be characterized by early involvement, while in Brazil it's characterized by a specialized sampling model that includes futsal as an important component of training. This fact can highlight the cultural differences that must be considered when approaching such a complex concept. Pereira et al. [6] present us with a study on the factors that influence sporting excellence, focusing on Brazilian Olympic medal-winning athletes. The objective of the study is to identify and understand the factors that these elite athletes consider most important for developing and maintaining excellence in sport. The research uses the Life Stories technique, through semi-structured interviews with 9 Brazilian athletes who won medals at the 2012 and 2016 Olympic Games. The results demonstrate that athletes value, mainly, personal factors, such as willpower, passion and discipline, and environmental factors, such as family, coaches, financial support and school. The study concludes that sporting excellence results from the successful interconnection between these factors, both primary and secondary, over time, corroborating the thesis that dialectical relations between different variables may be the key to an adequate interpretation of these issues, requiring the construction of an open and dynamic reference framework that embraces the complexity attached to this phenomenon.

In turn, Sarmento et al. [7] carried out a systematic review of the literature on the identification and talent development in men's football. The authors analyzed more than 2900 articles, focusing on studies about factors that influence success in football, such as specific practice, psychological factors, technical and tactical skills, anthropometric and physiological characteristics, the effect of relative age and sociocultural influences. Through the analysis of these factors, the authors conclude that the identification of talent in football is a complex and multidimensional process, influenced by the interaction of several variables, and that talent development programs must be dynamic and adaptable to the different phases of the athlete's development. In line with the conclusions of Pereira et al. [6], the review also identifies some research gaps, such as the need for longitudinal studies that follow players' careers and investigation of the influence of genetic factors on success in football. With a similar design, Mendes et al. [8] carried out a systematic review of the literature on identifying and developing talents in men's futsal. The authors analyze the most relevant characteristics that influence players' success, grouping them into four main categories: task constraints, performer constraints, environmental constraints and multidimensional analysis. The review examines studies that analyze the impact of specific practice and training volume (task constraints), psychological factors, technical and tactical skills and anthropometric and physiological characteristics (performer constraints), effect of relative age (RAE) and sociocultural influences (environmental constraints). It concludes that elite players stand out for their early dedication to training, decision-making skills, creative actions, concentration, reaction time,

superior technical skills and better levels of body composition, aerobic power, abdominal strength, speed, power and lower limb strength. The article also highlights the significant impact of the RAE on talent identification, revealing that the selection of players can be biased, favoring older players over younger ones, also pointing to the need to further investigate the role of sociocultural influences, such as the built environment and family influence.

In line with what has been concluded, this systematic review emphasizes the complexity of the interaction between the different factors that influence success in futsal, recommending that coaches consider this complexity when defining talent identification and development strategies. The article invites future research that explores the influence of genetic factors, the interaction between different elements and the psychological and environmental aspects that influence the development of talent in futsal. With a different approach, which we can place within the scope of Psychology, Barreiros et al. [3] explores the development of talent in sport, analyzing the evolution of thinking in this field over the last few decades. It begins by outlining a historical overview, showing how the vision moved from an approach focused on detecting innate talent to a talent development perspective, recognizing the importance of context and continuous investment. The article presents a synthesis of the main theoretical models of sports development, focusing later on the Sports Participation Development Model (MDPD), which defends the importance of diversification and deliberate practice, together with psychosocial influences, as crucial factors in the athletes' development.

Methods and Samples

The different considered sources for this work use different methodological approaches to investigate the concept of sporting talent that is important to scalp to assess the quality of the produced evidence. Baker et al. [1], in a review that included a total of 1,899 articles, with the aim to better understand what others have done in this field of research, accurately portrayed research trends about this topic. This kind of analysis, and the inclusion of systematic reviews Sarmiento et al. [7]; Mendes et al. [8] offers a valuable overview of the existing literature on talent development, in the case of these last two studies, respectively, in football and futsal, identifying research gaps and highlighting future directions. In the first work, Sarmiento et al. [7] fully reviewed a total of 70 manuscripts, while Mendes et al. [8] did it in a total of 32 manuscripts. Narrowing the focus, Gullich et al. [2] carried out a meta-analysis with the clear objective of synthesizing the existing literature on deliberate practice and its relationship with exceptional performances, emphasizing the influence of context as a variable to consider in this issue. 51 international study reports with 477 effect sizes from 6,096 athletes were considered, including 772 of the world's top performers. With a different approach but aligned with the premise of the contextual influences in talent development, Machado et al. [5] build a

comparative study using questionnaires to map the paths of youth football talents, documenting participation in various sporting activities and development milestones, in 131 male football players from different origins (68 from Brazil, 63 from Spain). A broader intention is brought by Pereira et al. [6] using qualitative methods, such as interviews, to explore athletes' perspectives on the factors that contribute to excellence, employing content analysis to identify key themes exposed by 9 olympic brazilian athletes. Finally, and because the theoretical foundation is also decisive for scientific evolution, in an attempt to synthesize the concepts that are linked to this area, Barreiros et al. [3] provide a historical review on the topic, helping to understand the influences that different currents exerted on sporting talent and the path to develop it.

Discussion

As can be identified, the used references explore, in different ways, various aspects related to the identification and development of talent in sport, particularly in football and futsal. The conjunction of these sources, purposefully included because each of them has a distinct nature, allows a comprehensive discussion on the multifaceted nature of talent and sporting excellence, highlighting the interaction of individual, contextual and sociocultural factors that result in the need for a conceptualization that embraces the complexity and globality inherently linked to this area. This need appears to align with an approach that helps to overcome a 'narrow and asymmetrical' view of human performance, which focuses excessively on physiological and technical aspects while neglecting the psychological, sociocultural, and historical factors that may influence the athlete O'Sullivan et al. [9,10]. Additionally, by considering the athlete as a complex and dynamic system, it is essential to recognize the non-linear interactions among physical, psychological, technical, social, and cultural factors McLean et al. [11], integrating different fields of knowledge and fostering dialogue between sports sciences, psychology, sociology, anthropology, and other relevant disciplines O'Sullivan et al. [10]. Across different sports, investigation tends to be shown that athletes develop in different - often nonlinear- ways, and that reliable indicators of future elite performance are often not yet present or developed in young players Bergkamp et al. [12], reinforcing the idea that its urgent to shift our notions about this issue.

Seeming to corroborate each other, despite the use of different references frameworks and experimental designs, the sources converge on the idea that sporting excellence is shaped by a complex interaction of factors (individual, task and context), of which we highlight:

- i. Psychological factors: psychological attributes such as willpower, passion and discipline are consistently highlighted as being crucial. Athletes emphasize the importance of willpower to overcome challenges and achieve goals. Passion is seen as

a motivational engine, driving athletes to dedicate themselves to practicing and improving their skills. Discipline, manifested through commitment and the search for perfection, is considered essential in the demanding context of high-performance sport Sarmiento et al. [7]; Mendes et al. [8]; Pereira et al. [6].

ii. Contextual Factors: The role of coaches is emphasized in several sources, recognizing their influence on talent development through planning, providing support and building solid relationships with athletes Pereira et al. [6].

iii. Sociocultural Factors: The family emerges as a fundamental pillar in supporting the talents development. Family support, both emotional and logistical, encourages athletes to pursue their dreams and provides a solid foundation for their success. A country's sports culture, including the structure of sports development systems and the prevalence of specific sports, also shapes the opportunities and pathways available. The influence of the school is recognized as a space for sports initiation, development of motor and social skills, and promotion of important values such as respect and fair play Gullich et al. [2]; Pereira et al. [6]; Machado et al. [5].

Different theoretical models seem to underlie the sources here used and the direction of the carried studies, emphasizing differently the constraints inherent to the individual and the constraints related to the task and the context. What seems mostly assumed is that it's the relation between these factors that can make it possible to coherently explain the concept of talent and provide the basis for the construction of development paths for it. Moreover, since the attributes needed for excellence are often unstable, develop non-linearly over time, and may not even be present in young players Bergkamp et al. [12], it's necessary to be particularly aware of the complex and dynamic character of this relation. The sources also point to areas that require greater investment by research. There's a need to explore the generalizability of research findings to different cultural contexts, particularly in underrepresented regions and, additionally, more studies should be conducted to assess the preponderance of different factors and variables in very specific contexts like, for instance, distinct sports Baker et al. [1].

Conclusions

In summary, the combination of references presented here seems to provide a sufficiently solid basis for understanding that multiple factors may contribute to the definition of the concept of talent, its identification Bergkamp et al. [12] and its development in sport. It's crucial to recognize the dynamic interaction between these different influential factors, namely individual, task and contextual factors for an adequate conceptualization of the term that allows, as a consequence, the structuring of profitable paths to promote sporting excellence. The development of instruments capable of addressing the inherent complexity of this field is

already possible and necessary. Such tools must produce effects on both a micro (for improved diagnosis and intervention with practitioners, for example) and a macro scale (in structuring pathways for participation that promote adequate developmental opportunities, for instance). This requires a collaborative effort to ensure that scientific research achieves the desired practical outcomes. Finally, it's also important to note that the areas of future research identified by these works offer opportunities to deepen knowledge and improve strategies for identifying and developing talent in sport, with the aim of holistically understanding such an influential issue in this area.

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