



Theoretical Study of the Determinants of Weightlifting Success in a Postmodern Approach

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Abstract

Determinants of athletic success can positively or negatively influence the final performance of an athlete. In weightlifting, these determinants have been broadly categorized into internal (for example; motivation, self-efficacy, psychological resilience level etc.) and external (for example: cultural and social factors, family etc.) components, each representing distinct but interconnected aspects of athletic development. The concept emphasizes the interconnected nature of these factors, emphasizing that success in weightlifting cannot be attributed to a single variable, but rather to the complex interaction of multiple elements operating in a coherent system. Recent literature has explored these interactions in greater depth, revealing that the dynamic integration of these determinants is essential for sustained progress and peak performance in elite-level weightlifting. The importance of these external and internal factors should be taken into account. In this direction, strategies should be implemented to provide a suitable environment for the development of the weightlifting branch. Therefore, by making weightlifting more equitable and accessible, the chance to discover potential talents on a global scale can be increased.

Keywords: Performance, sport selection, strategy, talents, weightlifting

INTRODUCTION

Weightlifting is an Olympic discipline that seamlessly combines strength, technique and explosive power, demonstrating the athlete's ability to move maximum loads with precision and speed. As a cornerstone of the modern Olympic Games since their revival in 1896, the sport has evolved into a highly technical and regulated competition governed by the Federația Internațională de Haltere (IWF) (International Weightlifting Federation, 2021). Unlike other strength-based disciplines such as powerlifting or bodybuilding, competitive weightlifting is distinguished by its unique emphasis on explosive power generation in two distinct events: the snatch and the clean and jerk. These lifts require not only brute strength but also exceptional mobility, coordination, and a deep understanding of biomechanics (Haff & Triplett, 2015; Guilherme et al., 2024). In the case of weightlifting, an Olympic sport that combines explosive strength, technique, and speed, identifying and understanding the determinants of performance becomes crucial for both optimizing training and developing early talent selection strategies (Storey & Smith, 2012; Haff & Triplett, 2015). These determinants do not operate in isolation, but interact in a complex way, shaping the athlete's trajectory from novice to elite level (Mizuguchi et al., 2021). Understanding these factors, as well as how they influence each other, is essential for building predictive models to ensure more effective selection and preparation of future generations of weightlifters (Baker & Newton, 2005; Matthys et al., 2012).

External determinants include contextual and environmental variables that influence an athlete's development and performance trajectory. These factors include access to qualified coaches, quality training facilities, specialized equipment, family and social support systems, cultural influences and the competitive ecosystem to which the athlete is exposed. These are often referred to as the external 'scaffolding' that supports the athlete's internal potential, enabling or constraining the achievement of elite performance.

Sporting success, in its broadest sense, results from the interplay of various of factors that manifest physically, psychologically, socially and environmentally (Plisk & Stone, 2003; Morris et al., 2020). Socio-economic and cultural factors play a critical role in shaping the opportunities available to athletes. In this context, some authors (Freeman et al., 2014; Rees et al., 2016) highlight the significance of community and family support in fostering emotional stability and resilience, which in turn helps athletes sustain focus and engagement throughout demanding training cycles. For example, studies from regions with established traditions in weightlifting, such as Eastern Europe and China, demonstrate how national support systems, including funding and talent identification programs, create a robust leadership for developing champions. Conversely, athletes from resource-constrained backgrounds may struggle to access even basic training facilities or skilled preparation, as detailed by some (Malina, 2011), who reported significant disparities in international weightlifting participation due to unequal access to resources.

In competitive sports, athletes internal factors are an important determinant of performance. In this context, internal factors include genetic predisposition, motivation, personality traits, and psychological resilience. Individuals' biological and psychological characteristics play a

critical role in achieving success in challenging sports (Bollók et al., 2007; Davids & Baker, 2007).

Finally, external determinants act as multipliers or inhibitors of an athlete's innate attributes. A gifted weightlifter with an ideal internal profile may not reach his or her potential without external support, whereas a less genetically gifted athlete may excel through superior training environments, mentorship and resources (Kerstajn et al., 2018). Recognizing the synergistic role of these determinants, coaches, policy makers and sport scientists can design more equitable and effective frameworks to support weightlifting talent worldwide.

The opinion of specialists is generally focused on the concrete situations found in the selection and training processes. They indicate problems that are considered essential for the perspective of obtaining notable results in training and competitions. The authors have separately studied aspects considered essential, at a certain moment of the training or preparation process. From this perspective, we considered that these aspects, presented distinctly, can be synthesized and presented unitarily, for a greater relevance to the weightlifting sports phenomenon.

METHOD

Systematic literature review method was used in the study. The systematic literature review method is a popular research approach that critically reviews and analyzes the literature on a particular topic (Liberati et al., 2009). The novelty of the article consists in synthesizing the literature on the subject of weightlifting sports performance, of the factors that are considered by specialists to be significant, which have contributed to training, selection, training or performance. The current evolution of society, which today offers material possibilities, equipment, genetic investigation techniques and training methods or means that want performance to be obtained as quickly as possible, at the youngest ages, also contributes to this. The study was conducted from March to May 2024 by studying the literature on the subject of weightlifting. The working method was represented by literature sources from the period 2010-2023 which were analyzed. International databases were accessed to find the articles. These were Web of Sciences, Scopus, Ebsco, CrossRef, ProQuest. These were selected because they are part of the standard of the field of Sport Science and Physical Education in Romania approved by the National Commission for the Attestation of University Degrees, Diplomas and Certificates (CNATDCU). Google Scholar and Index Copernicus databases were also queried as accessible databases for the study of the literature. The inclusion criterion was that the topics addressed by the research were related to factors contributing to success in weightlifting. From the total results found in the international database platforms, applying the inclusion criterion, 68 articles were identified related to factors that could condition success in practicing this sport. In the end, 14 articles were selected and included in the research because those with the same topic and the same categories of analyzed factors were eliminated. The search was performed with the following words: 'weightlifting', 'performance', 'selection in sport', 'social factors', 'strategy', 'talent', 'environmental factors', 'determinants of weightlifting'. The identified factors were assigned a score that created a score that could be used to rank them and present them as results found.

Explaining these determinants may be important not only to explain differences in performance between athletes with similar potential, but also to inform policies and strategies for the selection, development and promotion of young talent in weightlifting.

RESULTS

From the study of selected literature, factors were identified that are considered determinants by specialists. These were access to quality training; the importance of specialized weightlifting coaches; equipment and facilities; family and community support; the role of parents in supporting a sporting career; cultural and social implications on athlete selection; sporting history; playing strength and coordination sports prior to weightlifting; economic factors and opportunities; regional inequalities in access to training.

Access to quality training: The quality and availability of specialized training is one of the most important environmental factors. Even an athlete with a favorable internal profile (adequate anthropometry, high intrinsic motivation, excellent cognitive skills) may have difficulties in reaching the elite level if he/she lack competent coaches, adequate equipment and adequate infrastructure.

The importance of specialized weightlifting coaches: Coaches play a central role in athlete development, being responsible for selecting, planning, and monitoring training programs, as well as correcting technique and providing feedback (Malina et al., 2004; Malina, 2011; Hornsby et al., 2020; Comfort et al., 2023). A weightlifting coach with a sound knowledge of biomechanics, physiology, nutrition, and sport psychology can identify an athlete's weaknesses and tailor training to optimize performance.

In addition, the coach also provides emotional support, helping the athlete manage competitive stress, set realistic goals, and maintain a high level of motivation (Weinberg & Gould, 2023). The literature suggests that the human factor - the coach's competence and experience - influences the athlete's long-term development.

A good coach can accelerate motor learning, prevent injuries through technical corrections, and foster a growth-oriented, progress-oriented, problem-solving mindset. Likewise, coaches who are aware of international trends, modern methodologies, and can utilize technology (video analysis, digital feedback tools) will increase the athlete's chances of integrating into the weightlifting elite (Baker & Newton, 2005; Baker et al., 2009; Haff & Triplett, 2015).

Equipment and facilities: impact on performance development: Access to standardized equipment, lifting platforms, quality weightlifting (with high-performance bearings), discs, bars, and speed or force measurement systems has a direct influence on the athlete's progress. A training environment that mimics the conditions of international competition allows the athlete to familiarize himself/herself with the specific sensations and challenges, reducing uncertainty and stress in competition (Gourgoulis et al., 2002; Stone et al., 2002; Gourgoulis et al., 2004; Stone et al., 2021).

Well-maintained facilities, adequate lighting, air-conditioned gymnasiums and the availability of recovery areas (massage, swimming pool, sauna) can also contribute to increasing the quality of training and reducing injuries. Without quality equipment, athletes may develop

sub-optimal motor patterns, suffer frequent injuries or have to correct costly technical errors later. Investments in infrastructure at national and local levels, as well as partnerships with elite training centers, can improve the overall level of weightlifting and create a broader base of talented athletes who have the opportunity to develop to their full potential (Vaeyens et al., 2009; Rees et al., 2016).

Family and community support: Family, friends, the sporting community and society as a whole can shape a young weightlifter's journey, influencing the availability of resources, attitudes towards sport and the level of emotional support. Unconditional parental support, for example, can encourage the athlete to devote more time to training, overcome moments of difficulty, and prioritize a weightlifting lifestyle (Côté, 1999; Côté & Fraser-Thomas, 2007; Côté & Hancock, 2016).

The role of parents in supporting a sporting career: Parents can play a multiple role: they financially support the costs of training, equipment and travel to competitions; they provide emotional support in the face of setbacks and injuries; they can shape the athlete's attitudes towards hard work, perseverance and fair play (Wuerth et al., 2004; Harwood & Knight, 2015).

Parents who encourage the development of autonomy, responsibility, and intrinsic motivation, while avoiding excessive pressure or unconstructive criticism, contribute to resilient and emotionally stable athletes (Knight et al., 2018).

Cultural and social implications on athlete selection: Cultural and social factors may influence public perception of weightlifting, children's willingness to participate in the sport, and how the community recognizes and rewards performance. In some regions, weightlifting may be viewed as a traditional sport that enjoys prestige and institutional support, while in others it may be undervalued or even discouraged (Rees et al., 2016).

Federal policies, government initiatives, and the media can play a significant role in shaping these attitudes, which can either encourage or constrain the emergence of a culture conducive to talent development.

Sporting history: A person's sporting background - that is, the sports played before they began specializing in weightlifting - can influence their physical, motor; and psychological qualities. Studies on talent development show that a diverse base of sporting experiences in childhood and adolescence can contribute to the formation of generalized neuromotor skeletons, facilitating the later acquisition of weightlifting-specific techniques (Côté & Fraser-Thomas, 2007; Baker et al., 2009).

Strength and coordination sports before weightlifting: Sports that develop strength, balance, coordination and flexibility, such as gymnastics, athletics (especially short sprints and jumps), rowing or even team sports with strength and speed components, can prepare the ground for weightlifting (Haff & Triplett, 2016).

An athlete who has participated in gymnastics, for example, may have better body control, greater joint mobility and advanced spatial awareness, which allows them to more easily learn complex snatching and throwing techniques (Norton & Olds, 1996; Vaeyens et al., 2009).

Economic factors and opportunities: Financial resources and regional opportunities can determine access to training, participation in national and international competitions, and the opportunity to work with elite coaches. Limited access to infrastructure or lack of financial resources can deter talented athletes, making it difficult to maximize their potential (Cobley et al., 2009; Rees et al., 2016).

Families that cannot afford the high costs associated with advanced training (special equipment, nutrition, travel to competitions, specialized services such as physiotherapy or sports psychology) may have to forgo supporting their children's sporting dreams. Thus, economic factors can create artificial barriers to talent identification and development, limiting the social diversity of weightlifters and reducing the chances of discovering exceptional athletes (Baker & Newton, 2005; Vaeyens et al., 2009).

Regional inequalities in access to training: Geographical differences in sports infrastructure, quality of coaches and access to competitions can lead to significant disparities in performance. Regions with a tradition in weightlifting, benefiting from centres of excellence and national development programs, often produce more elite athletes. In contrast, rural or underdeveloped areas, where specialized gyms are scarce and experienced coaches are hard to find, can severely limit the prospects of a talented young athlete (Côté & Hancock, 2016).

Internal factors: Weightlifting is a branch in which intrinsic factors are as important as physical strength factors. In addition to physiological and external factors, internal psychological factors are also determinant for athletes to perform at a high level. At this point, it is important to evaluate the contribution of intrinsic factors such as motivation, self-efficacy, psychological resilience level and individual beliefs to performance (Gould et al., 2002; Baptistella do Nascimento et al., 2022).

DISCUSSION AND CONCLUSION

Correlation between social and physical factors: Social factors, such as family support, access to resources, quality of infrastructure, and the sporting tradition of a particular region, can influence how an athlete's physical qualities develop and manifest (Côté & Hancock, 2016; Rees et al., 2016). An environment that provides access to specialized coaches, well-equipped gyms and regular competitions creates the optimal conditions for an athlete's physical attributes to be exploited to their full potential.

How family support influences adaptability and resilience: Family and community support can increase an athlete's mental resilience and willingness to work hard, which indirectly leads to improved physical performance. In addition, family support may be associated with better psychological performance by increasing the athlete's self-confidence (Marcen et al., 2013).

An athlete who receives encouragement, emotional support, and practical help from his or her family will have more time and energy for training, overcome obstacles more easily, and maintain a mental state conducive to increased physiological adaptations (Harwood & Knight, 2015; Horn & Smith, 2018). In this way, social factors - seemingly external to biological

performance - directly influence the use and enhancement of physical, psychological, and technical attributes.

Environmental predictors: access to resources, family support: Access to competent coaches, appropriate facilities, family and community support, and economic opportunities can significantly influence a child's developmental trajectory (Côté & Hancock, 2016; Rees et al., 2016). Although more difficult to integrate numerically, these factors can be assessed through family questionnaires, interviews, or analysis of training conditions. Indicators such as the number of hours devoted to supervised training, the quality of equipment, or parental involvement in supporting the child's sport career can complete the child profile.

The desire to improve performance in Olympic weightlifting has placed increasing emphasis on early identification and systematic development of talent. As the sport becomes increasingly competitive on a global scale, the success of national weightlifting programs depends on their ability to cultivate potential champions from an early age (Anderson et al., 2022). Achieving this goal, however, requires moving beyond traditional approaches to talent identification, which often rely on intuition or generalized physical tests, to methods based on the knowledge and expertise of experienced practitioners.

The ultimate aim is to lay the foundations for a future where the identification of Olympic weightlifting talent is not only systematic, but also rooted in the collective experience of those closest to the demands of the sport. By extracting and synthesizing expert knowledge, this research seeks to transform talent identification from an intuitive process into a scientifically grounded practice, paving the way for more targeted and effective athlete development strategies.

Environmental and societal factors play a significant role in shaping an athlete's trajectory in weightlifting and complementing internal attributes. Access to quality training, family and community support, athletic history, and economic and regional opportunities influence not only the absolute level of performance, but also the ability to sustain progress and maintain in international competition.

By recognizing the importance of these external factors and implementing strategies to ensure an enabling environment for development, the sport of weightlifting can become more equitable and accessible, increasing the chances of discovering and nurturing potential talent globally.

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