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IMPORTANCE OF TRAINING LOADS IN BASKETBALL.

(Literature Review)

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ABSTRACT:
Anthropometric and physiological characteristics of players play a key role in achieving success in performance basketball. The data regarding the activity requirements in the European youth basketball competitions at different competitive levels are a big contrast with the Albanian reality. Thus, the goals of this thesis are a) to design and develop specific loads to guarantee the growth of the level of young Albanian basketball players in relation to the demands of the activity of basketball games at different competitive levels and b) to describe the physical profile of young Albanian basketball players in a full basketball season. Methods: This literature review was conducted in accordance with the guidelines to address the research questions. To collect the data for our study we have used bibliographic databases (PubMed, Scopus, Web of Science, ProQuest) were used using the JabRef program. Results: From 70 articles the most frequently studied capacities in the literature are jumping (N.=21), aerobic capacity (N.=17) and anaerobic capacity (N.=16). On the contrary, the least commonly assessed capacities are speed and agility (N=14).Conclusions: This review collects a good portion of the tests and outcome variables used to assess the physical characteristics of basketball players in the literature to date. All of the aforementioned findings play an important role in the research of men's and women's elite, semi-professional, and youth basketball.

KEYWORDS: anthropometric, physiological characteristics, specific loads

I. INTRODUCTION

Basketball is one of the most popular team sports in the world. Every day, it is turning into a sport that is both competitive and fun as the spectacle it offers is holding many people in front of the screens and filling most of the game halls all over the world. Many NBA and EUROLIGUE players have become the idols of today's generation and a source of inspiration for them. As for women's basketball, the first basketball game was played in 1893, when Senda Berenson adapted James Naismith's rules of basketball for women. The professional Women's National Basketball Association (WNBA) was founded in 1996, attracting great interest worldwide. The Albanian reality, as far as the massiveness of this sport is concerned, appears positive because it ranks second in the country after football, but in terms of the level and quality of the players, we can say that we are at the lowest point of all time. There are many problems and this sport is going through its most difficult days. The missing infrastructure, the elements of organization, the lack of attention from the state, especially in terms of finances, the lack of a genuine sponsorship law that would make it possible to increase quality and increase more the interest of young people to deal with this sport, are some of the factors of the situation we are in. During the last years, team sports have increased the amount of physical demand and its importance. Therefore, working on physical fitness and assessing it is essential to achieving success. (David Mancha &Triguero, 2020). According to (Marcelo Saldanha Aoki1, 2017) a major challenge in sports is to properly prescribe training loads in order to maximize the physical performance of athletes while avoiding overtraining and/or injury during the season competitive. A 1445 general conclusion is that periodization is a key factor in achieving optimal performance results. However, limited empirical evidence supports this statement in team sports. To maintain performance in these physical demands, proper assessment and adequate periodization are essential. Similar to other team sports, monitoring physical loads in basketball is particularly important. During the advancement of knowledge about the

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periodization of physical loads, it has been noticed that periodized training in team sports is of great importance and is a concept that should be recognized by all coaches. As the number of available studies increases, specific analyzes can be made considering these factors that provide important practical applications available to basketball coaches, athletic trainers, strength and conditioning practitioners, and sports scientists in women's basketball. Basketball is a dynamic team sport that is played at high speed and that includes physical, mental, technical and tactical elements. Recently, the rules of basketball have changed in relation to time (eg game segmentation, from 2 halves of 20 min to 4 halves of 10 min, duration of possession of the ball), shooting spaces (eg 3-point zone), reflecting on significant consequences in tactics and physical demands, as well as in the physiological profiles of the players (N Mateus *, 2020) . Basketball research has shown that players tend to be taller and heavier, with higher fitness levels, and the game has become more strategic as a result of teams built and developed with multiple offensive and defensive plays. sophisticate (Calleja & González1, 2015). However, the regular pitch (28m long x 15m wide) still has the same dimensions. Consequently, the player/space ratio is decreasing, especially in professional basketball, as the court often appears to be overcrowded. Basketball players must have high levels of motor skills and athletic performance to be successful in the various games and tournaments that take place during a season. The intermittent, dynamic and intense nature of basketball requires athletes from an early age to combine expressions of many and different of their physical physique, biological maturity, physiological and psychological attributes as well as tactical skills. However, adequate levels of physical performance and tactical knowledge are apparently not enough to nurture a successful basketball career. In a sport mainly characterized by the execution of actions such as catching, shooting, passing, dribbling and reorganizing, it is essential that players have excellent technical skills from an early age (Eduardo Guimarães, 2021). Success in basketball depends on the sum of several factors, including morphological attributes, physical and technical skills and tactical actions. Achieving success therefore requires a meticulous and individualized process in which competition plays a fundamental role. Competition analysis provides great insight into training planning as athletes reach their peak level and performance during competition; thus, these values can be taken into account as a reference to adapt and plan the training. Regarding the physiological aspects of the sport, basketball can be defined as a hybrid sport since, during practice, the athletes alternate the moments in which energy is obtained through aerobic metabolism and others in which energy is obtained through the anaerobic pathway. Compared to other team sports, the aerobic demand in basketball is less than in football, but greater than in baseball and volleyball. While the demands and characteristics of athletes vary by position, they are not as different as a sport like football (Ransone, 2016). Analyzes of the physiological demands of basketball in the last 20 years have shown a heavy reliance on anaerobic metabolism in all positions with secondary reliance on the aerobic energy system (Gillam, 1985).

II. METHODS

This literature review was conducted in accordance with the guidelines to address the research questions. To collect the data for our study we have used bibliographic databases (PubMed, Scopus, Web of Science, ProQuest) were used using the JabRef program. From 70 articles the most frequently studied capacities in the literature are jumping (N.=21), aerobic capacity (N.=17) and anaerobic capacity (N.=16). On the contrary, the least commonly assessed capacities are speed and agility (N=14).

III. DISCUSSION

LOAD MONITORING IN BASKETBALL

Basketball is a sport team with high physical demands, characterized by high intensity in short periods of play (10 min), but also with changes in the type of physical activity (effort) every 2-3s (Ben Abdelkrim et al. 2007, McInnes et al. 1995, Scanlan et al. 2011) Knowledge of the physical and physiological load placed on athletes during competitive games is necessary to develop sport-specific training protocols. Although research is abundant in some ball games, such as soccer and rugby, the understanding of the metabolic demands of basketball players during competition is limited (Ben Abdelkrim, Castagna, Jabri, Battikh, El Fazaa, & Ati, 2010). Neuromuscular abilities (peg power, strength, speed) are in very continuous performance during a basketball game. Specifically, jumping performance, the ability to accelerate instantaneously, decelerate, and change direction appear to be key components of competition (McInnes et al. 2005, Scanlan et al. 2015, Ziv and Lidor 2016). Because of these demands, both aerobic and anaerobic mechanisms are highly activated to provide 1446 energy during the basketball game (Ziv and Lidor 2014). Anthropometric and physiological

characteristics of players have been shown to play a key role in basketball success (Drinkwater et al. 2008, Ziv and Lidor 2009). Thus, a large number of studies have described the physical profile of basketball players at different competitive levels, geographic locations, gender, and age (Drinkwater et al. 2008, Ziv and Lidor 2009). The importance of resistance training in increasing strength levels in children and young people is great. Various studies have made it possible to conclude that the muscular strength of children and young people has increased due to resistance training programs (Janeira, 2012). The study of (Janeira, 2012) showed that a 10-week in-season upper and lower body resistance training program increased vertical jump and performance in adolescent male basketball players. Coaches should be aware that such a short, resistance training program designed specifically for young basketball players with no experience in resistance, plyometric, or combined training causes increased explosiveness in levels of bounce and explosive strength. These increases are essential for better basketball performance. This program did not include an additional overload on the skeletal muscle development of adolescents which would be harmful to them. Furthermore, coaches must be aware of this resistance. Training at these ages familiarizes young basketball players with a methodology that will be part of their training routine. This type of physical training program clearly contributes to the motor learning process with positive consequences on future motor performance. In basketball practice, motor tests are the most appropriate and applicable, because they are applied under conditions similar to those of training or competition (Erculj et al., 2010). The evaluation of the physical capacities of athletes is one of the most important issues in today's times. Many tests are used for selection methods and procedures, to screen candidates, or to monitor the effectiveness of training programs (Norkowski, 2002). An insufficient number of studies have been conducted on basketball players (Alemdaroğlu, 2012). Although these studies have provided important insights into this topic, research comparing the anthropometric and physiological characteristics of young female players at different levels of play is limited (Ben Abdelkrim et al. 2010, Delextrat and Cohen 2008, Koklu et al).

All of the aforementioned findings play an important role in the research of men's and women's elite, semi-professional, and youth basketball. This review collects a good portion of the tests and outcome variables used to assess the physical characteristics of basketball players in the literature to date. The number of tests and outcome variables identified confirm that a gold standard test battery for assessing the physical characteristics of basketball players does not exist. While it appears that basketball practitioners are prioritizing the assessment of specific physical characteristics (eg, anthropometry, muscle strength, linear speed, speed of change of direction, agility, strength, anaerobic capacity, and anaerobic capacity). Assessment methods often differ with respect to the technology used (eg, force platform vs. jumping mat), the variables reported (eg, average jump height from multiple attempts vs. peak jump height) and the test protocols implemented (eg, the number of jumps allowed during a jump test). Further, the varying levels of validity and reliability inherent across the spectrum of reported tests make it difficult to establish challenging normative data and compare physical characteristics across studies for all basketball players. To develop meaningful normative data, basketball practitioners must develop standardized testing protocols that are reproducible and reflective of game demands. The development of league-wide and confederation-wide test batteries would enable the longitudinal evaluation of players in large cohorts and the establishment of minimum physical standards for playing positions and levels of competition. Considering the limited amount of research investigating agility in basketball players, further research is needed to explore potential differences between playing positions and levels of competition to develop an efficient and ecologically valid test. The limited evidence available hinders the ability to distinguish whether lower body strength can differentiate between playing positions in basketball players. Consequently, the actual positional demands and minimum physical thresholds of lower body strength required by each playing position and level of competition are unknown in age group basketball. The results and discussion showed that some specific tests are used to assess these qualities in athletes. The bibliography analyzed reveals the lack of design and use of specific tests to highlight the qualities involved in the target sport. To address these gaps, basketball researchers and practitioners are encouraged to report strength testing 1447 results by playing position to clarify any positional variation that may be present. This thesis aims to provide an overview of the activity demands of Albanian basketball for youth, their anthropometric and physiological characteristics throughout an entire basketball season, highlighting the differences between competitions and different levels of play. In addition, this thesis provides new insight into the relationship between training loads and changes in physical fitness in youth basketball.

IV. CONCLUSION

This review collects a good portion of the tests and outcome variables used to assess the physical characteristics of basketball players in the literature to date. All of the aforementioned findings play an important role in the research of men's and women's elite, semi-professional, and youth basketball.

Conflict of Interest

The authors declare no conflict of interest.

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