SHORT REVIEW

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Resistance training in football

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Abstract
Among the methods that can improve football players' motor skills, resistance training plays an important role, being one of the components of functional training in which players use their own body weight in all planes of movement. Currently in football, refining motor skills takes place on many levels, for instance, through resistance training. Optimal performance of a specific motor pattern and development of specific dominants such as stability, mobility and neuromuscular coordination increases the chance of improving the level of fitness. While discussing the importance of soccer training, attention was paid to the specific nature of work performed as well as the intensity and volume of applied effort during the broadly understood training process in football. In the aspect of developing motor skills, the role of functional loads in resistance training was emphasized which has a beneficial effect on improving speed, strength, coordination and endurance in football.

KEYWORDS: functional training, football, speed.

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Introduction

Football belongs to one of the most popular disciplines in the world [12, 20] in which the development and search for new factors that determine success seems not so much a duty as a necessity. The role of comprehensive fitness preparation in team sports games is indisputable [7]. Excellent technical and tactical, mental and motor preparation are required [12]. It is worth noting that motor preparation has a considerable impact on the use of technical and tactical skills during the match. As the discipline develops, the pace and intensity of the game are constantly increasing [20]. The purpose of the work was to attempt to define the factors influencing the development of footballers' speed and strength abilities.

Motor preparation

The work performed on the pitch is characterized by a large number of leaps, starts, accelerations, braking, jumps, turns, changes of direction and performing movement tasks with the ball [8]. The determinant for assessing endurance training is the distance covered by a player during a match. According to Bompa et al. [3], a high level of aerobic endurance is necessary to increase the efficiency of speed training, develop high activity during the game and to rebuild energy resources after sprints [6].
In the analyzed motor aspect, it is worth paying attention to the efforts made with maximum intensity and speed of traveled distances [21]. In football, speed plays an important role which should be understood as a comprehensive ability to perform the fastest and most effective technical and tactical action during the game

under time pressure and the pressure coming from an opponent [3]. The competitor performs about 100 sprints during one meeting, the running speed for the sprint is from 23 km/h (6.4 m/s) to 30 km/h (8.3 m/s) [3] in time from 3 to 6 seconds which is approximately 2500-3000 meters. Another variable determining the level of speed abilities is the number of sprints performed by players during the match [13]. Relying on data generated with the help of the Amisco-Pro system, it was found that in the English league this value is on average 11.5, while in the Spanish league it is 10.5 (24 km/h is the sprint). Due to the changing intensity of the game, running at maximum speed alternates with activities of medium and low intensity. These types of activities are on average 40-50 minutes during which players cover a distance of 4-8 km, the remaining distance of about 1-2 km is covered for 30-35 minutes. A football player covers a distance of around 9-13 km in one meeting [2, 25, 26]. During the application of effort in march all metabolic transformations are exploited. For example, aerobic, aerobic-anaerobic, anaerobic-phosphagenic and anaerobic-glycolytic [3]. Oxygen processes allow players to move with moderate intensity. Approximately 2% of the energy used is covered by anaerobic processes during which explosive activities such as jumps, slides, sprints or tactical activities such as counterattack occur. The average footballer's heart rate during a game is between 156 and 171 bpm. In the competitors' individual analysis, these values range from 140 to even 195 bpm [4]. Szwarc [23] shows that the efforts shaped in the first and second intensity range on average 27-30% of the total load. Cometti [9] in his work showed that players in the French league defeat 40% of effort with low intensity, 35% rest, 20% effort with medium intensity, and 5% is high intensity work. Therefore, it can be assumed that football players should be prepared for maximum efforts in each part of the match. Bangsbo [2] assumes that one of the basic goals of the training process is to shape and maintain "ability to exercise with varying intensity (running speed) over long periods of time (endurance)" [pp. 87-88]. Hence, it can be assumed that the formation of anaerobic endurance, speed and explosive strength is of fundamental importance in football.

Functional training and its role in football

We can categorize the athlete's physical activity in four types such as locomotion, lowering/lifting, pushing/pulling and rotational movements. These four types can be considered fundamental for all other activities performed on a daily basis [22]. Functional training plays a significant role among methods that can improve the football players' speed and strength which is perceived as performing a specific sequence of isolated exercises using their own body weight in all movement planes [27]. The premise of functional training is shaping motor skills through optimal performance of a specific motor pattern and the development of specific dominants like stability, mobility and neuromuscular coordination. Functional exercises support the stabilization of body segments and play a role in controlling the athletes' fitness [1, 15, 19, 28]. They are also used as exercises that are important for the development of motor skills such as speed, strength, endurance and coordination [24]. The proposed exercises in which the FMS test is used are applied to maintain mobility, stabilization and prepare the player for specific tasks related to the performance of technical and tactical activities during the game. Brake movements, acceleration and dynamic direction changes are very important for football players. They depend on mobility and stability in the ankle joint [10]. To sum up, the introduction of systematic functional training has a positive effect on the correct and comprehensive work of muscles and joints in all planes of movement [14, 17]. Functional training can be a supplement to the training process because it is focused on making a movement that activates and synchronizes the activity of the myofascial chain in an appropriate way without the need to train a specific sports skill. Another task of functional training is to increase developed strength without increasing body weight. Activation of entire muscle groups causes the load to be distributed over a larger number of muscles so that a single muscle that is less strained adapts to it but without much growth [7].

Summary and conclusions

The level of football in the world is constantly increasing. Therefore, the search for new factors conditioning success in football is justified. It should be mentioned that details determine the final results at the highest level. Sports practitioners and theorists still recognize the fundamental importance of speed and strength parameters. This work focuses on searching for training methods and means to shape selected motor skills. In the motor aspect, these are variables related to game time as well as to dynamic change of game conditions in different intensity ranges [12]. In the methodological aspect, it is suggested to look for measures to enrich the training process. Functional training is important for shaping and developing motor skills. The analysis of the impact of functional loads on the ability of motion speed in their works was shown by Haycraft et al. [11] on Australian league players in the U14 and U16 categories and Köklüa et al. [16] on

players training in Turkey in the selected U16 team. In the research of Tunisian players conducted by Chaalali et al. [5], the positive impact of functional training on improving the results of speed abilities was demonstrated based on a 5-0-5 trial [18] in a 6-week program aimed at changing direction and acceleration. In addition, taking into account the constantly growing area of resistance training, it is worth looking for more predictors that have a positive impact on the result of competition in football. Based on the study, the following final conclusions were formulated:

Referring to motor preparation in a team play which is football, speed and strength skills among players play an extremely important role.

It can be assumed that functional training supplements the broadly understood training process.

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