

DEVELOPMENT OF STRENGTH IN THE GAME OF SOCCER THROUGH SPECIFIC MEANS AND METHODS ON SMALL SIDED GAMES (SSG)

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Abstract

In this paper we set out to address some aspects of strength development in junior footballers aged 17-19 by using effective methods and means specific to this motor quality. These means were performed in the form of combined exercises with games, respecting the age peculiarities of the players. The final goal of our scientific approach is to establish and apply a didactic strategy specific to sports training aimed at developing the strength of motor skills at the level of junior footballers. In order to carry out research on the dynamics of strength development, we started from the hypothesis that a training program in the preparatory and competitive period focused on small sided game (SSG), which engages the main muscle groups, increases the efficiency of physical training and football player participation in training and official competitions. The research took place over 5 months, the research subjects ($n = 15$, aged 17-19 year) being tested pre and post intervention. The tested parameters focused on speed, agility and explosive force in the lower limbs, the progress being statistically significant ($p < 0.05$). At the same time, a positive correlation was identified between the evolution of the speed on 10 m and the agility test ($r = 0.74$), the program based on SSG having a positive impact on the training of footballers.

Keywords: *football, training, model, duel, strength.*

Introduction

Tactical periodization is a modern training model in which the main element is the preparation of all training factors under the incidence of tactical training. Practically, the physical, technical, theoretical and psychological factors are worked on in the tactical training (Barbu & Stoica, 2020-1). The long-term goal is expressed through abilities, technical-tactical skills, basic and combined motor qualities, psychic qualities, all of them both at the level of training and performance. By training objectives is meant which must be mastered by the players and the team in terms of physical, mental, functional and motor development at each stage of preparation, until the final goal is reached, which is in fact the goal of performance. (Barbu & Stoica, 2020-2). Therefore, we aim to train strength development, especially in the lower limbs using specific exercises in the context of using the training model through tactical periodization.

Each training model should be chosen accordingly, depending on the needs of a group or individual athletes. For players who

holds a well-mastered exercise technique, but without the necessary strength base, specialists recommend to start with the combined training model. In this case, it would be used to develop a sufficiently fundamental level of strength and then to finish with the complex training model. On the order of the preparatory period, it would move from general exercises to specific ones. (Pacholek et al., 2020).

Ball and ball tactical actions performed at a speed appropriate to each situation can create an important advantage for the team, which leads to the idea that choosing the optimal solution to solve the situation is extremely important (Barbu&Stoica, 2020-3). Thus, the technical-tactical executions in which the muscle contraction is high will have the effect of developing the football player' power of participation of the in the competition.

The workload increases as the number of players decrease, for the same relative pitch area. This effect has only been studied in SSGs involving regulation goals and goalkeepers, there being no research in relation to other training situations as a

collective ball conservation (Castellano et al., 2013).

Hammami et al. (2017), suggest that performing 2-3 SSG training sessions per week induced large improvements in specific skills and moderate to large improvements in physical fitness related to team sports, such as VO₂max, speed, agility, jumping and repeated sprint performance. These improvements seem to be independent of the level of play and can occur either in the pre-season or during the season. Given the time constraints of team sports and the extensive benefits of SSG, in addition to the specificity and greater pleasure of the game, SSG training may be suggested as an alternative or complementary form of training to traditional fitness training during team sports. . sessions. Further research is needed to isolate the long-term effects of handling SSG training variables, such as terrain volume and size, to optimize training prescribing based on level, sport, nature, and season. (Hammami et al., 2017).

A lot of specialized work indicates that the use of SSGs contributes to a good development of the football player and obviously the specific strength of the football player.

In every weekly lesson cycle, even over the competition period the techniques and fundamental tactical actions will be repeated and with the same consistency, the basic exercises for developing motor skills and morphological indices corps. Simultaneously with the repeating of these basic elements in the system of lessons , they will include continuous enrichment of arsenal technical and tactical, through the acquisition of new executions and actions, and improving those processes favorite players that enable them to capitalize on the higher efficiency conditions, their individual skills (Barbu &Stoica, 2016).

For exemple, implementing a regular 4-week SSG training intervention can improve the fitness characteristics of professional elite football players during the season break. The ability to develop the physical profile of the players in a relatively short period of time, including both technical and tactical elements, makes SSG an attractive proposition for fitness coaches, players and coaches alike. Subsequently, the ability to perform repeated

sprints is considered important during intermittent sports, such as football, and the ability to improve the ability to repeat sprints during specific football games can positively promote the need to integrate SSGs as part of seasonal conditioning of elite football clubs. program instead of non-specific generic exercises or sessions, when there is no officially scheduled match (Owen et al., 2012).

The combined training program that includes SSGs and strength and power sessions, may promote a significant improvement in players' body composition, vertical performance, maximal strength, aerobic capacity and agility. Moreover, coaches should consider using a combined SSG-based program, strength and power-based program and velocity-based program in order to also improve the players' velocity (Querido et al., 2020).

Tactics will be the basic component, the central element of building the game model for each age. Such a methodical route, scientifically directed in an obviously modernized and constantly updated version, is the key to success in achieving football performance (Barbu & Stoica, 2018).

The multi-factorial constructs of soccer performance (technical, tactical, and physical performance) and their associated components bring a higher complexity to the designing of the training process. In fact, professionals involved in the preparation of soccer teams have to reflect on several questions associated with the manipulation of the individual variables that affect each of these relevant constructs and how they can affect each other. With regard to physical performance, several potential questions arise: What are the most beneficial movement patterns and type of training? How many sessions do athletes need to improve and maintain the performance outcome? (Silva et al., 2015).

In all cases it is necessary to know to what extent the motor possibilities of the individual are determined by his hereditary, biological factor and to what extent, we can influence his skills through a specific and appropriate activity in training. Recent research in genetics has shown that indices (qualities) are

not inherited as such, but transmit certain specific traits, predispositions for those indices, encoded in genes (Barbu, D., 2012). The aim of the research was to observe the abilities of the junior football players A, within the CSM Alexandria football club, and to try to increase their performance in order to develop specific strength through small spaces games (SSG), used especially on day 4, before the game (MD4), for their participation in the official competitions at the highest level. In the paper we used some SSG tools for player development.

Materials and method

In order to validate the purpose of the research, we developed work programs, to be applied to the athletes included in the research, to contribute to the development of the football player's specific strength with direct effect in direct combat with the opponent and in achieving a better manifestation of the player in all situations. The exercises proposed to improve the player in conditions of maximum specific muscle contraction, were applied in almost all team training lessons during a competitive season. In all cases, the coaching point aimed at specific demarcations, slots of all kinds, driving the ball at maximum speed for the attack phase, but also the correct application of ball dispossession, dubbing, defensive balance and a permanent communication between players in case of defense. The research subjects were tested before and after the application of the work programs.

The subjects of the research (n=15) were the 17-19-year-old juniors in CSM Alexandria Football Club, who participated in the National Championship, 2020-2021 edition, organized by the Romanian Football Federation.

The training program designed for strength training was carried out in optimal conditions according to the principles of tactical

periodization starting from July 2021 and until December 2021, for a period of five months in which specific work was done. In juniors, the planning, scheduling and record documents are mandatory throughout the selection, growth and training of the young player for great performance. The training and performance objectives took into account the development of strength in almost all training situations depending on the means, methods and forms of organization regarding the development of motor strength organized in specific micro-cycles. For strength development we used exercises with our own body weight, low weights but also with elastic bands for the development of general strength, speed in speed and strength in endurance.

The specific technical-tactical means used for the development of the force were the following:

- *1 vs 1 Duels;*
- *2 vs 1 Positional Play;*
- *2 vs 2 Positional Play;*
- *3 vs 2 Positional Play;*
- *3 vs 3 Positional Play;*
- *4 vs 2 Positional Play;*
- *4 vs 3 Positional Play;*
- *4 vs 4 Positional Play;*
- *5 vs 4 Positional Play;*
- *Match Specific 5 vs 5 Small Sided*

Games.

Description of the motor tests of the experiment

- Speed test on 10 m and 30 m;
- Agility test;
- Explosive force testing: Long jump from the spot and Triple jump.

Results

Table 1. Results before and after applying the program

	10m T1	10m T2	30m T1	30m T2	Agility T1	Agility T2	Long jump T1	Long jump T2	Triple jump T1	Triple jump T2
Mean	1.87	1.82	4.40	4.22	15.15	14.85	2.37	2.46	6.99	7.18
Stdv	0.10	0.06	0.29	0.19	0.60	0.52	0.17	0.14	0.27	0.18
Max	2.12	1.92	5.00	4.50	16.00	15.87	2.80	2.80	7.67	7.50
Min	1.70	1.68	3.94	3.92	14.38	14.06	2.10	2.30	6.50	6.90
p	0.03		0.00		0.00		0.01		0.00	

The results recorded at the end of the 5 months in which the training program was applied showed a progress in what means the parameters of speed, agility, and explosive force of the lower limbs. Thus, the 10m running speed was obtained at the initial test of 1.87 ± 0.10 s and 1.82 ± 0.06 at the final one. The mean difference between the two tests was statistically significant ($p = 0.03$). At the 30m running speed it was obtained at the initial test of 4.40 ± 0.29 s and 4.22 ± 0.19 at the final one. The difference between the two tests is statistically significant ($p = 0.001$). The agility test was 15.15 ± 0.60 s at the initial test and 14.85 ± 0.52 at the final test. The mean difference between the two tests is statistically significant ($p = 0.001$).

The tests targeting the explosive force of the lower limbs also identified a significant impact of the programs applied in the 5 months, the difference in averages being statistically significant. Also, the increase in travel speed by 10m strongly correlates with the result of the agility test ($r = 0.74$).

Discussions

Strength training increases the thickness of the muscle fiber. For general muscle training, relatively fast movements are recommended, with resistance or loads being chosen according to age. In the game of football, the effort of force is manifested in three distinct forms (fig.1):

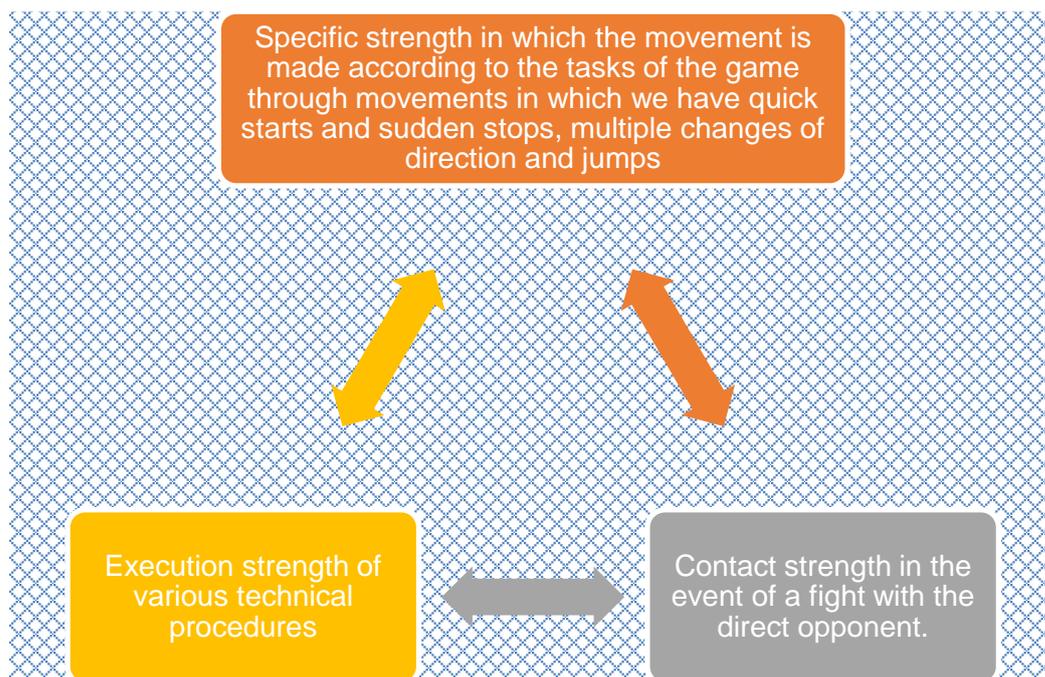


Figure 1. Forms of manifestation of the effort of strength

In all cases we will perform an individual strength training for the development of the muscle groups involved and possibly undeveloped. Used correctly and systematically, specific strength exercises can have an extraordinary positive influence on the development and improvement of other motor skills, but especially with spectacular results in increasing the quality of technical performances (Cosma et al., 2017). Strength exercises should be varied, alternating with active breaks and dynamic exercises, especially coordination, mobility, flexibility, able to create a positive emotional environment.

Lack of strength, especially in the lower limbs, is a limiting factor in technical performance due to the fact that the inability to produce adequate tension prevents efficient and continuous movement. Insufficient strength delays the correct execution, accelerates the appearance of fatigue and affects the accuracy of gestures (Stănculescu, 1999). Strength determines the speed of movements in football, being the motor quality that is most easily gained, but also easily lost. It follows from this that strength exercises should not stop at all, it is recommended to work in the competitive period, through maintenance training, necessary in the 1vs1 fight to win the ball.

The football player needs a certain specific strength, but this will develop if the player does not first acquire the general strength, both for the lower and the upper split. The development of analytical strength can be done using the method of repeated efforts by engaging in each exercise 20-25 repetitions in a series, with 2-3 sets (alternating different muscle groups) made in the form of a circuit, with a break between repetitions and between circuits. Within strength training, intensive training is what improves the synchronization of motor units, and it seems that the most effective form of developing specific strength is fast contractions using different loads. We can say that it is important for the subjects to be endowed with those abilities that would favor the realization of high-intensity efforts, in the shortest time, because the numerous physical and sporting activities involve this

capacity of strength with a high speed of execution. The strength training of children and juniors aims at 2 main directions: the analytical development of the strength of different muscle groups, the development of explosive force (of relaxation). The force required to lift increasing weights is different from that which allows, for example, the execution of a shot at the goal at high speed.

The methods used especially for the development of explosive force are the combined method, plyometrics and the game-based method. In juniors, the plyometrics used 2-3 times in weekly workouts will allow the transformation of slow fibers into fast fibers. The combined method is to combine different contraction regimes in the same training session. Thus, a "combined" circuit can include isometry, isotonic contractions, jumps, and sprints followed even by shots at goal. In relation to the motor action in which it acts, the force can manifest itself in several forms. Among the physical actions that require maximum strength in the game, we list:

- direct confrontation or 1vs1 fight to win the ball.
- the sprint with the ball at the foot at the moment of the first impulses of the start (departure from the spot).
 - high jumps on the spot (jumps on the head of two players in a static position).
 - specific jumps for the goalkeeper (dive, exit to a high cross). The strength of the footballer can be analyzed in the following cases:
 - slots with a change of running direction.
 - hitting the ball for passes or fixed phases.
 - detachment from the ground at full speed.
 - overtaking the opponent followed by the sprint, etc.

Conclusions

Following the results obtained and after analyzing them, we found that the use of small sided games in preparation led to significant progress. Competition and training on a reduced football pitch, represents a significant means of increasing the indices of the motor qualities and the proper acquisition of the technical elements and procedures specific to the football game (Stoica &

Barbu., 2019). The development of the specific strength needed by the football player through small sided games meant a greater force to hit the ball, a greater force of contact in conditions of adversity and a greater force in resistance. Given the special importance of strength development and education, we consider the following aspects to be important:

- precise determination of the work volume (number of series and repetitions), of the intensity and of the pauses between repetitions.
- clearly establishing the muscle groups, we work with, especially through specific exercises and games;
- special attention will be paid to exercises that strengthen the large muscle groups (back and abdomen) on the development of which depends on the correct posture.

The training program has positive effects in improving the level of physical training and especially the strength of the lower limbs. A training program based on dueling exercises, with frequent changes of direction, accelerations and decelerations increases the speed of the game and the power of manifestation of the player in direct contact with the opponent.

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