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Analysis of the Training Model for the Individual Physical Training of Junior Strikers in the Football Game

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Abstract
This research explores the individualised physical training of junior football strikers, emphasising the importance of a well-structured training plan, particularly during the winter season. Effective training planning in football requires a thorough understanding of the content, effects, and application of various methods, techniques, and training forms. These elements must align with the specific demands and characteristics of the game at the junior level.
Individualised physical training plays a crucial role in enhancing a striker's performance, contributing significantly to overall sports achievement. The study aims to identify the most effective training model for junior strikers, optimising their physical development and game readiness. To ensure the validity and accuracy of the research, several scientific methods were employed. These include the study of bibliographical materials to establish a theoretical foundation, the documentation method for gathering relevant data, and the experimental method to assess the practical application of training techniques. Additionally, statistical-mathematical methods were used to analyse the collected data, while graphical methods provided a clear visual representation of the results. By integrating these research approaches, the study seeks to offer valuable insights into improving the individualised physical training of junior strikers, ultimately enhancing their speed, endurance, and overall effectiveness on the field.

Keywords: football, physical training, planning, strikers, juniors.

Introduction

The most objective and profound knowledge of physical training, a complex and dynamic process, represents one of the most current problems of sports performance.

Currently, the planning football training documents contain a series of quantitative and qualitative parameters of training, mainly in the sense of planning and less or not at all in the sense of following their evolution during the winter training, before the start of the football championship (L. Antohi, N. Antohi (1998)). Due to the lack of objective knowledge of the quantity in training, we refer to the need to know the volume of physical training.

An important place in sports training must be assigned to training management, so we propose to create some ways to design the model for organizing the physical training

program, as well as its planning in a differentiated way depending on the training period in which the players are, respectively, planning the training model for the preparatory stage, the pre-competitive period and the competitive period.

The research hypothesis assumes that the individualised physical training of football players specialising in the striker position (juniors) during the winter period constitutes one of the most important components of training and must be carried out based on a well-structured training plan, which, as a result, will contribute to achieving sports performance.

The approach to individualised physical training of football players specialising in the striker position during the winter period must be achieved through both specific and non-specific means of action, with ball exercises starting to be dominant from the pre-competitive period.

In order to achieve the proposed goal, the following tasks were established:

- ✓ Consulting and selecting bibliographic material, focused on specific elements related to the research topic.
- ✓ Finding optimal, new means of action, useful in the specific training of the physical training of football strikers.
- ✓ Identifying the basic components of the strikers' physical training, components that in turn can be creatively applied by teachers or coaches.
- ✓ Establishing the respective value on the elements pursued, maintaining them and formulating proposals regarding the improvement of the strikers' physical training in the training process.
- ✓ Developing the training model for juniors regarding the physical training of strikers.

Methodology

The football game requires a large degree of physical factors, determined by the amount of effort made. The increase in motor density in each unit of time is expressed by a high volume of game actions. General physical training is a "spatial-temporal quality of movements", which cannot be discussed without referring to other temporal characteristics of movements, such as:

- ✓ tempo;
- ✓ rhythm.

General physical training constitutes the basis of special physical training, through which the formation and development of movement skills specific to football are ensured. In the football game, the effort is not uniform and prolonged, alternating with those of low effort (G. Balint, 2008; V. Cojocaru, 2000).

Speed, ability, endurance and *strength* are the four basic motor qualities, which in practice cannot be separated, being permanently in a close interdependence and correlation.

Specific physical training has a content oriented mainly towards the development of the effort capacity specific to a branch of sport, as well as the combined motor qualities involved in a priority and differentiated manner, ultimately determining the specific performance. In some branches of sport, performance is strictly determined by the level of motor quality development (in weightlifting, in rowing, etc.), or of a complex of motor qualities (sports games, combat sports). As sports mastery increases, the "specific weight" of specific physical training also increases (A. Bichescu (2013), T. Bompa (2003)).

Specific physical training is carried out with strictly specialized means that develop the combinations of qualities primarily determined by the particularities of the sport

branches, by the muscle groups engaged in the effort, such as the type of demand, etc. (G. Balint, 2008).

There is a close relationship between the two types of physical training (from general to particular), both of which condition the player's performance. To achieve a higher level of physical training, additional factors are used, such as recovery procedures (vitaminization, nutrition, training at medium and high altitudes) and appropriate equipment (simulators, trainers, etc.).

Physical training methods are divided into a) methods for general physical training; b) methods for specific physical training (S. Sîrghi, 2014; S. Sîrghi, I. Carp, 2016; Carp, S. Sîrghi, C. Ciorbă, 2018).

General physical training methods can be all those used to develop motor qualities, especially those aimed at endurance and strength, as well as those for physical and motor development [7]. However, those that determine the general basic effects are the following:

- the method of long-term effort;
- the method of segmental efforts;
- the method with weights;
- the method of acquiring basic motor skills;
- the method of practicing complementary sports.

Specific physical training methods are determined by the specific (physical) components of the football game. Although the methods are multiple and diverse, we will consider the following methods:

- the method of specific running and jumping;
- the method of specific physical development related to performing technical and tactical actions;
- The game method.

Results

The study was conducted in the period of October 2023 - March 2024 and had as subjects the strikers of the junior team (15-16 years old) of the Radu Rebeja Football Academy.

The experimental group and the codes that are used throughout this work are included in the following table, which contains: the subjects' codes that are used throughout the research, the year of birth, and the specialization.

Table 1. The structure of the experimental group

No.	Subjects	COD	Year of birth	Specialization
1.	Subject 1	V.G.	2008	Striker
2.	Subject 2	B.I.	2008	Striker
3.	Subject 3	M.S.	2009	Striker
4.	Subject 4	S.N.	2009	Striker
5.	Subject 5	T.V.	2009	Striker

The subjects were informed that about the conduct study and they agreed to participate.

The actual experiment took place between January and March 2024, a period that consisted of a cycle of 20 complete training sessions, for the winter period, before the start

of the football championship return.

In the current experiment, at the first stage (preparatory stage and training camp stage), the effort capacity was gradually increased, for general physical development and improvement of basic motor qualities – endurance and strength, especially for improving some basic technical procedures. To verify the physical potential accumulated during the winter training period, tests were held in the form of control samples. There were three tests: initial testing after the first week of training, intermediate testing in the last days of training camp, and final testing one week before the start of the football championship return.

INITIAL TESTING

Table 2. Initial testing results obtained during the experiment

COD	30 m/s	60 m/s	100 m/s	400 m/s	800m/s	1000 m/s
V.G.	4”82	9”74	14”2	1’32”	3’21”	4’23”
B.I.	4”83	9”72	14”2	1’36”	3’18”	4’24”
M.S.	4”80	9”71	14”0	1’37”	3’29”	4’24”
S.N.	4”80	9”71	14”2	1’39”	3’27”	4’22”
T.V.	4”83	9”77	14”3	1’36”	3’28”	4’22”

INTERMEDIATE TESTING

Table 3. Intermediate testing results obtained during the experiment

COD	30 m/s	60 m/s	100 m/s	400 m/s	800m/s	1000 m/s
V.G.	4”72	9”49	13”7	1’28”	3’21”	4’18”
B.I.	4”73	9”50	13”7	1’32”	3’14”	4’15”
M.S.	4”71	9”53	13”9	1’33”	3’24”	4’13”
S.N.	4”71	9”47	13”6	1’37”	3’22”	4’16”
T.V.	4”73	9”49	13”8	1’31”	3’32”	4’13”

FINAL TESTING

Table 4. Final testing results obtained during the experiment

COD	30 m/s	60 m/s	100 m/s	400 m/s	800 m/s	1000 m/s
V.G.	4”68	9”39	13”4	1’25”	3’20”	4’15”
B.I.	4”68	9”40	13”4	1’30”	3’12”	4’13”
M.S.	4”67	9”40	13”3	1’29”	3’22”	4’12”
S.N.	4”67	9”38	13”3	1’33”	3’22”	4’13”
T.V.	4”68	9”38	13”2	1’27”	3’27”	4’13”

To interpret the results obtained during the experiment, a graphical presentation of the results is proposed.

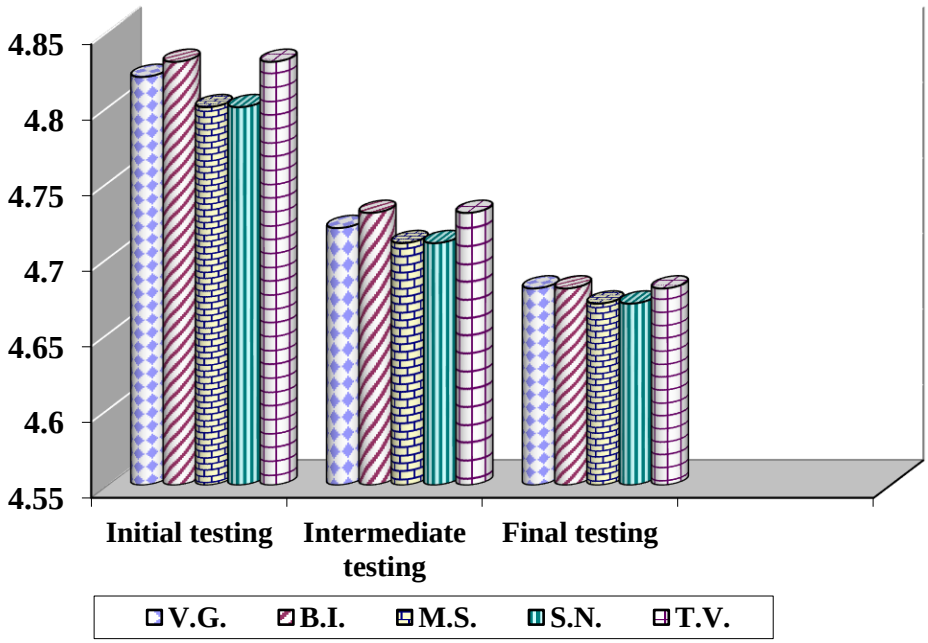

Figure 1. The dynamics of the results obtained during the 30 m running experiment

From the graphic presentation above, it is easy to see that all the subjects of the experiment managed to improve their results in the 30 m running test.

This improvement in results was constant throughout the experiment, which allows us to state that the means of actuation used achieved their intended purpose.

From the following graphic, we can easily see that all the subjects of the experiment managed to improve their results in the 60 m running test.

Our attention is drawn to subject T.V. who managed a remarkable improvement in time – from 9”77 to 9”38.

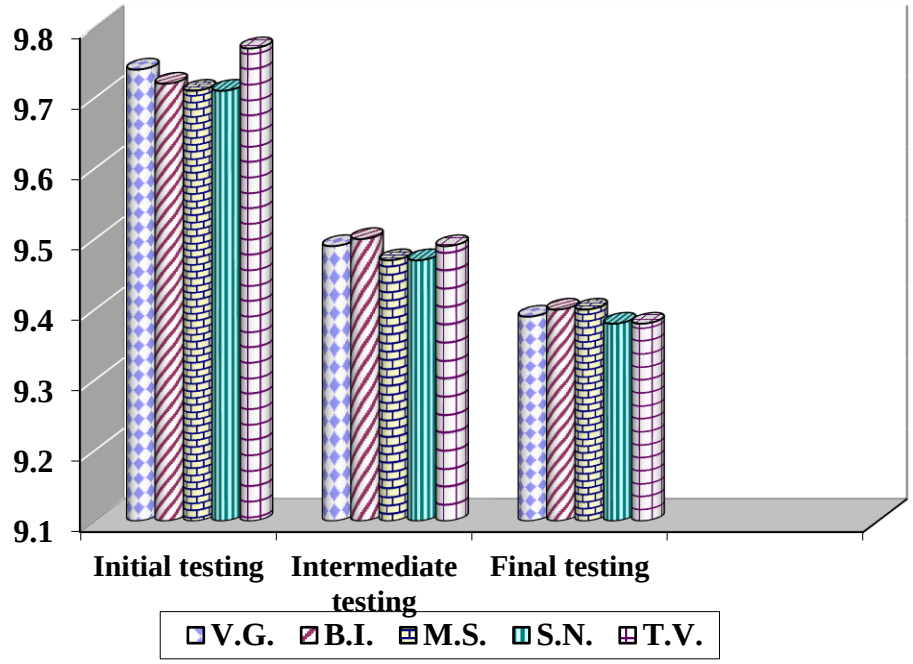

Figure 2. The dynamics of the results obtained during the 60 m running experiment

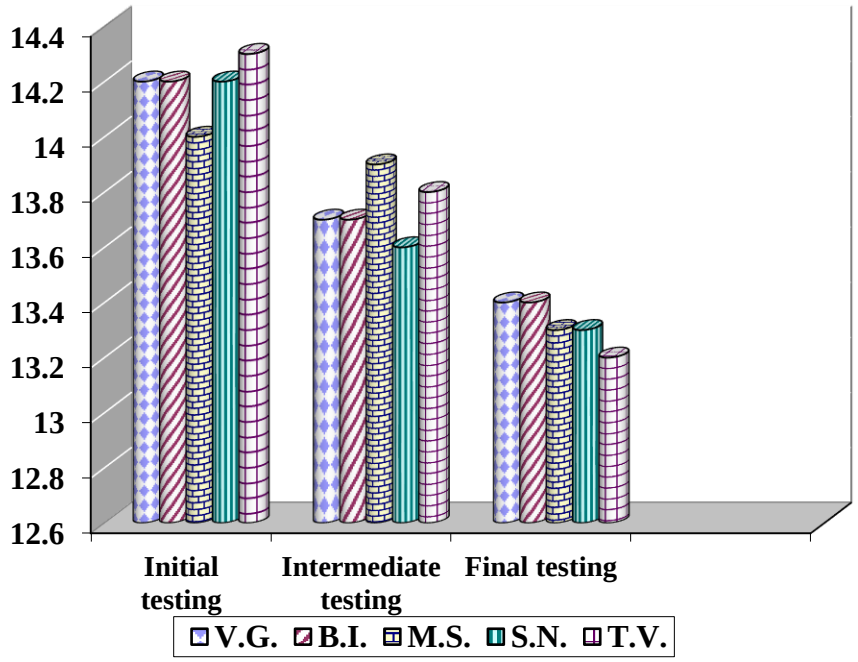

Figure 3. The dynamics of the results obtained during the 100 m running experiment

From the graph above we can see that all the subjects of the experiment managed to improve their results in the 100 m race. We again are drawn to subject T.V. who managed a remarkable improvement in time – from 14”3 to 13”2.

From the following graphic presentation we can see that all the subjects of the experiment managed to improve their results in the 400 m race as well.

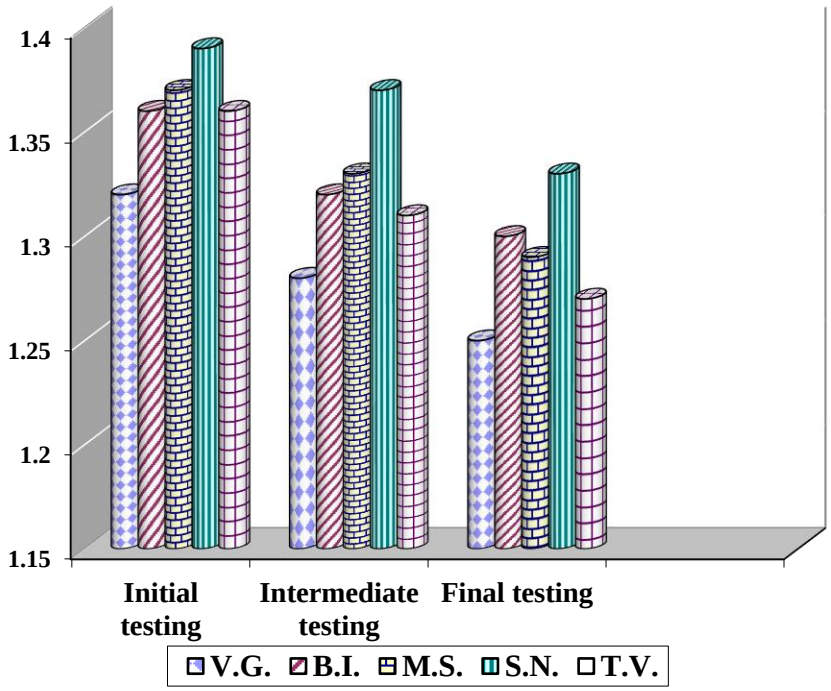

Figure 4. The dynamics of the results obtained during the 400 m running experiment

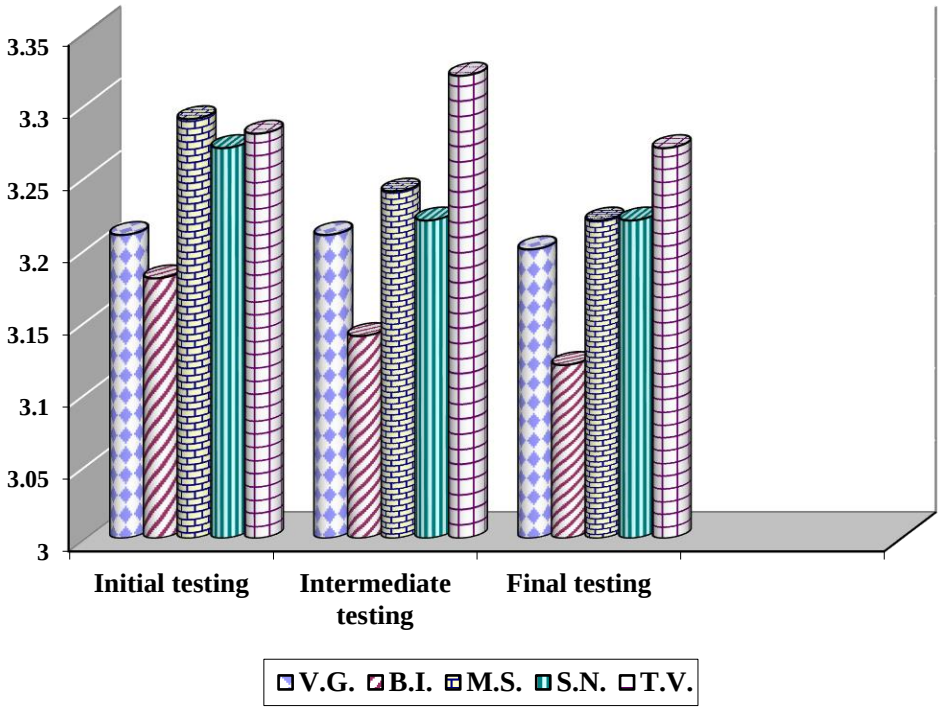

Figure 5. The dynamics of the results obtained during the 800 m running experiment

The graphical representation above clearly illustrates that not all participants in the experiment showed improvement in their 800m run test results. The average performance suggests that the experimental group lacks adequate preparation for endurance efforts.

This stagnation indicates that the training methods employed did not fully achieve their intended objective. However, considering the subjects' specialization as strikers, we can still view these results as satisfactory, as our primary focus remains on developing speed in all its forms.

It is important to highlight the underwhelming performance of subject T.V., whose intermediate test results (3'28" – 3'32" – 3'27") did not show significant progress. However, we attribute this outcome to accumulated fatigue over the course of the experiment.

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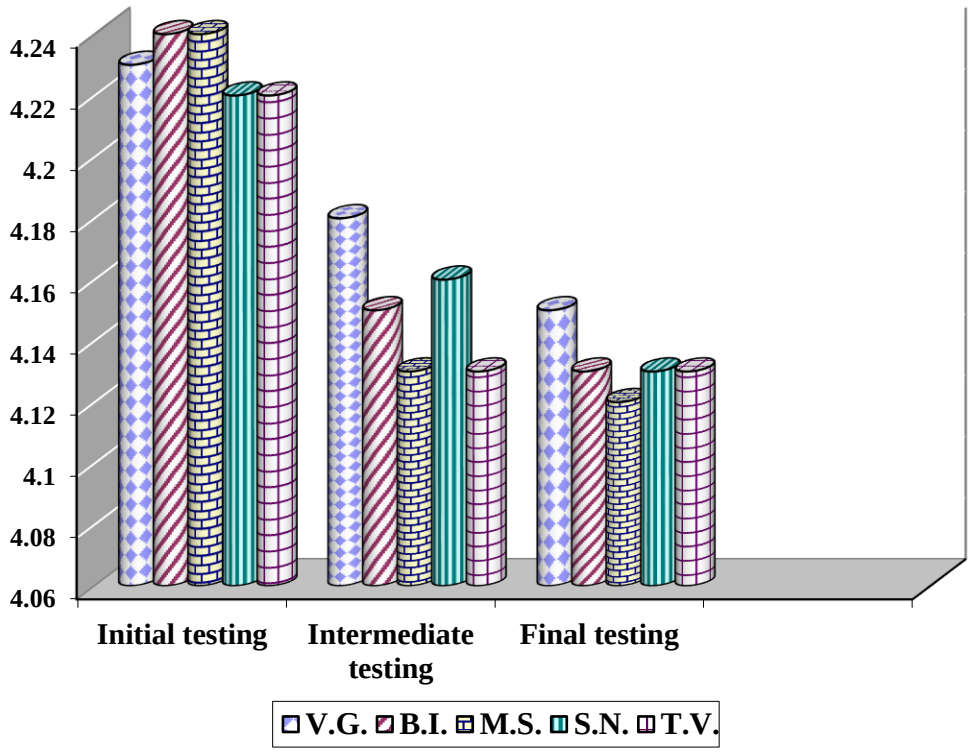

Figure 6. The dynamics of the results obtained during the 1000 m running experiment

The graphical representation above clearly shows that all participants in the experiment improved their performance in the 1000m run test. The average results indicate that the experimental group achieved a solid performance in this test, taking into account their specialization and age. These outcomes are satisfying, as our primary objective was to enhance the speed of the strikers in all their forms.

Conclusions

Based on the experiment conducted and the analysis of the results obtained, several key conclusions have been established regarding the role of physical training in football, particularly for strikers during the winter preparation period.

- ✓ Physical training in football is one of the most important components of the training process. How it is carried out depends on the sports performance achievement. This statement is based on the results obtained in the control tests during the experiment, highlighting a close dependence between the results obtained in the motor capacity test and the results obtained in friendly games.
- ✓ The individualized physical training of football players specializing in the striker position during the winter period can and must be carried out based on a training plan, its proportion being determined in the preparatory period but being found in all other periods in different forms as an energetic substrate of motor acts.
- ✓ The clear distinction of physical training is not advisable to be made except in the preparatory period, where general physical training is predominant and non-specific means dominate, although even in this period physical training must be carried out by specific means, respecting work with the ball and bilateral play.

- ✓ The clear distinction of physical training from the other components of training is not beneficial for training in performance football, because physical training must always be understood as the substrate of each motor act.
- ✓ Excellent physical training can sometimes make up for the lack of special technical training, especially for defensive play in which good specific physical training can lead to the achievement of a tight marking on a larger area and thus prevent the development of the attack by the opposing team.
- ✓ The level of physical training is deficient at the beginning of the football championship round, due to a generally insufficient preparatory period, and is often treated superficially.

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