

# **CONTROL AND ASSESSMENT OF THE PHYSICAL CAPABILITIES OF THE STUDENT FOOTBALL TEAMS OF THE SOFIA UNIVERSITY AND THE NATIONAL SPORTS ACADEMY**

*Preliminary communication*

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## **Abstract**

*The study was conducted in March 2016, during the pre-season training of the football teams of the SU and the NSA. 36 students were the object of the study - 18 of the SU and 18 of the NSA. All students were male - 1st - 5th year. By applying this test we established who the best and worst prepared athletes in the two teams were. The results of the study were processed using variation analysis and the index method. The results showed that the NSA students were better prepared compared to those of the SU, There is a logical explanation for this, which is included in the article. Based on the results of the study, we would recommend searching for ways to optimise the training process in the future work with the students. Also, ways to achieve better homogeneity of the physical condition of the students from the two teams by optimising the training process and improving their physical capabilities. The main goal of the control is to optimise processes of training and competing based on objective information which presupposes the conducting of a second test (6 - 8 weeks after the first one), which would lead to increasing of the motivation of the athletes during the training process.*

**Keywords:** *motor tests, IRST test, training process, physical condition, motivation, initial measurement, final measurement, physical development, variation analysis, index method*

## **INTRODUCTION**

*In the current stage of sports development, controlling the momentary condition of the athletes is crucial. Through the control process, the processes of training and competing are optimised based on objective information on the effect of the applied training impacts on the respective athletes.*

At the current stage of development of sports it is more and more often that the term "physical qualities" is replaced with "motor skills (capabilities)" i.e. the skill of the individual at performing movements. Regarding the term "quality", it is advisable to use it when comparing two athletes or a group of athletes. Thus, when comparing the strength capabilities of two athletes we say that the quality of the presence of a movement in one of them is higher than in the other. (Dimov (Димов), 2013).

Physical development is an aggregation of morphological and morphology-derived functional features of the organism, which characterise the sides of the form and build of the human body which prepossess certain physical and functional qualities and give an idea about the health and capacity for work of the person. (Petkova & Kvartirnikova (Петкова & Квартирникова), 1985).

According to many authors the main goal of the control process is to optimise the processes of training and competing based on objective information on the effect of the applied training impacts on the respective athletes. The subject of the control are the main factors involved in sporting achievements i.e. the parameters (characteristics, qualities, properties) of the human motor activity which are significantly correlated with sporting achievements and could be developed and managed to some degree through tra-

ining methods and tools (Zheliakov (Желязков), 1998; Atanasov (Атанасов), 2013; Nikolov (Николов), 2015).

A number of authors have performed physical condition experiments with students and athletes from different kinds of sports by means of physical condition tests. (Bachvarova, Petkova, Simeonova, Vasilev, Mustafa, 2014; Nikolov, 2014; Yazarer & Tzankov, 2014).

Another author (Ignatov (Игнатов), 2015), presents the main contemporary norms for evaluating the physical condition of football referees, as well as the physical condition tests which are used for checking the physical fitness of football referees – which have been used recently, namely: "T-Drill", "CODE" and "Box to Box", which can be used at any time at the specialised seminar for international referees organised by FIFA and UEFA, as well as at the local football association after a decision of the respective refereeing boards.

According to a number of football experts physical qualities make up about 47% of the total amount of qualities which a top footballer should possess. Football is a sport which necessitates intensive actions from a physical point of view, and these actions are to be performed for a relatively long period of time at a constant work regime, which leads to the necessity of the athlete to deal with these requirements by: extraordinary aerobic capacity, strength, explosion in segments, extraordinary speed, rapid comeback after intense and repeated actions. Training sessions should be planned and structured so that they contribute to the increasing of the aerobic capacity for the improving of recovering, development of the maximum aerobic power, training on intervals-intermittently training, improving of spring (force and speed), coordination/technique improving (Cărăbas, 2013).

All of this requires the football training process to be properly guided and effective and the coach to control the physical development of the athletes.

The goal of the scientific article is to determine the physical condition of the footballers from the representative football teams of the Sv. Kliment Ohridski Sofia University (SU) and the Vasil Levski National Sports Academy (NSA, Sofia, Republic of Bulgaria) by using the IRST test. Our goal is to compare results of the two teams and to look for ways of optimising their training processes on the basis of the data gathered during the study the

To reach the assigned goal we set the following tasks for ourselves:

1. To understand the current physical condition of the footballers from the two teams by using the IRST test;
2. To determine which are the best prepared and the worst prepared athletes;
3. To improve player motivation (if the athletes know that this test will take place on a regular basis, it is logical that they will be motivated in the period of time between the tests are held - every 6 weeks for example);
4. To optimise the training process on the basis of the gathered results.

## METHODS

The study was conducted in March 2016, during the pre-season training of the football teams of the SU and the NSA.

The *subject* of the study were the athletes from the representative student football teams of the NSA and the SU.

The *topic of the study* was the level of physical fitness of the students from the representative football teams of the SU and the NSA.

The study had 36 *participants*, 18 of whom were SU students and 18 of whom were NSA students. All students were male - 1st - 5th year.

The students took the IRST test for determining whether they are within the norms for physical fitness. The test took place on football fields with artificial surfaces (the Geo Milev Academic Sports Complex in the town of Sofia in the case of the SU and the field with an artificial surface

at the National Sports Academy in the town of Sofia in the case of the NSA) and the participants wore suitable shoes (track shoes with spikes)

Technical equipment which were necessary for conducting the test:

- 2 high cones for each athlete;
- 4 small cones for each athlete;
- Sound system;
- Protocol for conducting the test;
- A coach overseeing the correct conducting of the test.

The IRST test which we used gave us information about the aerobic endurance - this is the capability of the persons who took part to run for a longer period of time at a different pace (for more than 10 minutes). The Maximum test option was used - each athlete ran until he couldn't run anymore.

Description of the test: The distance between point A and point B is 20 m. Two cones are placed between A and B at a distance of 3 m. from A and B respectively, with the distance between the internal cones being 14 m. The test begins by starting at point A when the athletes hear the sound signal from the prepared sound system. If the athlete reaches the cone and sound signal has not sounded yet, the participant should wait until it sounds. If the athlete hears the sound signal and is at the 3 meters zone, the test continues, but if he is at the 14 meters zone at the time he is given a penalty point. If an athlete collects 2 penalty points, his participation in the test is over.

The test includes a rest period. During this rest period the athletes walk to the cones and back to the small cones which are at a distance of 8 m. from the large cones (the outside ones) regardless of the track side (Figure 1).

One coach is required to be present for every 4 athletes and his job is to oversee the correct performance of the test, count the covered segments and encourage the athletes.

To determine the physical development of the athletes we used 3 morphological indicators- height, weight and age, as well as the main parameters of the test: speed (km/h), number of segments covered, total number of segments covered.

The results of the study were processed using variation analysis and the index method.

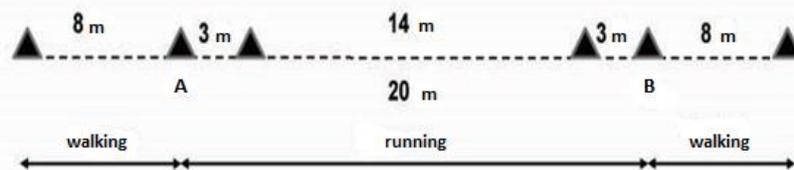


Figure 1. Test „IRST“

## RESULTS

The following results were found during the study of the students who take part in the representative football teams of the Sv. Kliment Ohridski Sofia University (SU) and the Vasil Levski National Sports Academy (NSA): the average age of the NSA athletes is 22.13 and it varies between 21 and 25. The average age of the SU athletes is 21.67 and it varied between 19 and 26 (Table 1). The dispersion (V) of the age of the NSA footballers is 1.31%,

while for the SU footballers its value is 5.29%, which means that the students from the two teams who took part in this study are homogeneous according to this indicator ( $V < 12\%$ ).

The height of the NSA students who took part varies between 173 cm and 188 cm, while the average height is 188 cm. The coefficients of skewness and kurtosis show the distribution of the element is normal ( $As = 0,21 < 1,160$ ). The standard deviation is 4.35 cm. The data for the height

of the SU students show that it varies between 169 cm and 190 cm. The average height is 180.11 cm. The standard deviation is 5.42 cm.

The variation coefficients for both groups show that they are almost homogeneous in regards to height ( $V=18.9\%$  for the NSA students and  $V=29.39\%$  for the SU students). The coefficients of skewness and kurtosis show the distribution of the element is normal at significance level of 0.05 (Table 2).

The weight of the NSA athletes is between 64 and 85 kg. The average value is 74.63 kg. The standard deviation is 6.72 kg. The weight of the SU athletes is between 60 and 88 kg. The average value is 74.56 kg. The standard deviation is 7.49 kg. The coefficients of skewness and kurtosis show the distribution of the element is normal at signi-

ficance level of 0.05 ( $As = -0,17 < 1,160$ ) in the NSA students and ( $As = -0,16 < 1,160$ ) in the SU students (Table 3).

The average number of segments covered during the IRST test by the NSA athletes was 92.06 (15.5 km/h). The worst registered result was 73 segments covered (14.5 km/h), while the best result was 111 segments (16.0 km/h); the standard deviation is 13.18. The average number of segments covered by the SU students is 70.11 (14.5 km/h). The results were between 56 (14.0 km/h) and 98 (15.5 km/h) segments covered. The standard deviation is 13.54. The coefficients of skewness and kurtosis show the distribution of the element for the students of the two teams is normal (Table 4).

Table 1. Age of the respondents

Years	n	Xmin	Xmax	Xmean	R	As	Ex	V	STDV
NSA	18	21	25	22,13	4	1,23	1,45	1,31	1,14
SU	18	19	26	21,67	7	0,82	-0,58	5,29	2,3

Table 2. Growth of the tested athletes in football (cm)

Growth	n	Xmin	Xmax	Xmean	R	As	Ex	V	STDV
NSA	18	173	188	180,63	15	0,21	-0,48	18,9	4,35
SU	18	169	190	180,11	21	-0,09	-0,04	29,39	5,42

Table 3. Weight of the surveyed students (kg)

Weight	n	Xmin	Xmax	Xmean	R	As	Ex	V	STDV
NSA	18	64	85	74,63	21	-0,17	-1,06	45,18	6,72
SU	18	60	88	74,56	28	-0,16	-0,51	56,02	7,49

Table 4. Minimum, maximum and average values of IRST at students from NSA and SU (flit)

IRST/Flit	n	Xmin	Xmax	Xmean	R	As	Ex	V	STDV
NSA	18	73	111	92,06	38	0,29	-1,36	173,9	13,18
SU	18	56	98	70,11	42	1,22	0,03	183,5	13,54

## DISCUSSION AND CONCLUSIONS

By using an IRST test we determined the current physical condition of the students from the representatives teams of the NSA and the SU. The results show that the NSA students are better prepared physically than the SU students. This has a logical explanation since the NSA students have more practical sessions in their curriculum which help them improve their physical condition. By applying this test we established who the best and worst prepared athletes in the two teams were. The average number of segments covered was 92 for the NSA students and 70 for the SU students.

On the basis of the results of the study we would recommend to our colleagues from the Sofia University to increase the number of practical sessions in order to improve the functional condition of the students from their representative football team. Thus by optimising the training process and improving their physical capabilities a better homogeneity of the physical condition would be achieved.

The main goal of the control is to optimise the training and competing process based on objective information which presupposes the conducting of a second test (6 - 8 weeks after the first one), which would lead to increasing of the motivation of the athletes during the training process.

## REFERENCES

- Петкова, Л., & Квартирникова, М. (1985). *Тестове за оценяване на физическата дееспособност* [Tests for evaluating physical fitness. In Bulgarian.] София: Медицина и физкултура.
- Желязков, Цв. (1998). *Основи на спортната тренировка* [Fundamentals of sports training. In Bulgarian.] София: НСА Прес.
- Димов, Д. (2013). Възможност за контрол и оценка на двигателните способности на млади футболни вратари (15 – 18 г.) в тренировъчния процес [Ability to control and evaluation of motor abilities of young football goalkeepers (15-18 years) in the training process.] *Сборник, Пета международна научна конференция „Съвременни тенденции на физическо-*

- то възпитание и спорта“ (pp.398-40). София: Университетско издателство „Св. Климент Охридски“.
- Игнатов, Г. (2015). *Съвременни нормативи за оценка на физическата подготовка на футболните съдии*. [Current standards for assessing the physical training of football referees.] *Спорт и наука*, 59 (5), 195-206.
- Cărăbas Ionică. (2013). Aspects Regarding the Role and the Importance of Physical Preparation in the Modern Football Game. *Timisoara Physical Education and Rehabilitation Journal. Versita*. (10), 61-65. doi: 10.2478/tpej.2013.0009.
- Атанасов, Е. (2013). *В света на женския футбол* [In the world of women's football.] София: НСА Прес.
- Николов, Ю. (2015). *Обучение и тренировка на млади футболисти* [Education and training of young players.] София: НСА Прес.
- Bachvarova, D., Petkova, P., Simeonova, T., Vasilev, P., & Mustafa, M. (2014). The basketball game and the physical experiment. *Proceedings, 9 th FIEP European Congress 7 th international Scientific Congress "Sport, Stress, Adaptation", Sofia, 2014, Scientific Journal*. (1), 935-937.
- Nikolov, Y. *Endurance development during the preparatory period in 17-18 year-old footballers. Proceedings, 9 th FIEP European Congress 7 th international Scientific Congress "Sport, Stress, Adaptation", Sofia, 2014, Scientific Journal*. (1), 1014-1019.
- Ilkay Yazarer, & Tzanko Tzankov. (2014). *Specific workability of the students-basketball players from the high schools in Turkey. Proceedings, 9 th FIEP European Congress 7 th international Scientific Congress "Sport, Stress, Adaptation", Sofia, 2014, Scientific Journal*. (1), 1028-1033.

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