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Conflict of interest: None declared. Received: 30.05.2013. Revised: 30.09.2013. Accepted: 05.10.2013.

## Special and physical fitness of footballers at age of 13

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### Abstract

The purpose of this study was analyzing the physical, special fitness of boys at the age of thirteen years, trained soccer.

The study was conducted on the group of 20 boys aged 13 years training soccer in the sports club "Legia" Chełmża.

The study was based on method for observing teaching. As a method of research was used an assessment of physical development, physical and special fitness. Used basic statistical methods.

It was found out that players with better fitness achieve better results in tests of special fitness.

**Keywords:** physical development, physical fitness, special fitness, football.

### Introduction

The constant increase athletic performance is dependent on the circumstances of the process of training athletes at all phases is based on assumptions leading processes (Harre, 1994; Naglak, 1991; Sozański, Zaporozhanow, 1993, and others).

Very important role in the sports training process plays complex control. The objective is to demonstrate the possible preparation of totality of sports players, the character of work practice and participate in sports. In order to accomplish this task using the appropriate methods in research indicators which are relevant to the circumstances of individual sports (Bułgakowa, 1986; Godik, 1988, Płatonow, 1984). Process of the control, in addition to physical fitness also includes a special assigned a specific discipline or sporting competition.

According to Talaga (1999 ) controlling the effects of training is defined as evaluating and test the work made by the athletes conducted trainers and experts in the particular sport. One of the methods of analysis and control the effects of training are the attempt of physical fitness on the basis of specially designed tests. In football, most are evaluated - the level of general fitness, special and emotional. Special Efficiency includes technical and tactical performance. Good physical fitness footballers play key role in controlling the technical "craft" football.

Naglak (2002) indicates that at the initial phase player applies organizational forms of collective training, because their purpose is, inter alia, to determine suitability for a particular team game (in this case football). For this purpose, the most often used in technical efficiency tests include elements of the game such as: precision strikes, receptions and running the ball (Talaga, 1999).

**The aim of the study** was the analysis of physical and special fitness of boys at the age of thirteen years training soccer.

**Materials and methods.** Tests were performed on 20 athletes aged 13 years trained soccer ball in the Sports Club "Legia" Chelmża. Players attended training for three years three times a week, three times a week. Every unit of training lasted 60 minutes. Young players are playing in the regional league footballers. The boys in school are followed a program of physical education, 4 lessons hours per week with an accent to develop overall physical fitness.

To demonstrate somatic features are used measurements of weight and height of body. Body height was measured with an altimeter, weight with medical scales. The research was conducted in a doctor's office.

To determine the body slenderness on examined boys were used Rohrer index calculated by the following formula:

body weight in grams x 100

(body height in centimeters) <sup>3</sup>

Using Kretschmer's typology according to the scale given by E. Curtius assumes that individuals are characterized by a structure based on the indicator:

- X - 1.28 represent the leptosomatic type,
- 1.29 - 1.48 represent the athletic type,
- 1.49 - X represent pyknic type.

In order to determine the level of physical fitness were used "International Physical Agility Test ICSPFT for people aged from 6 to 32 years," consisting of eight trials.

- 1) The attempt of speed - running at 50 m (s).
- 2) The attempt of power (jumping ability) - the long jump from standstill (cm).
- 3) The attempt of strength - running at 1000 m (s).
- 4) Measurement of the strength of hand - the dynamometer squeeze test (kg).
- 5) The attempt of the strength - Lifting the overhang on the shoulders (number).
- 6) The attempt of agility - shuttle run 4 x 10 m (s).
- 7) The strength of abdominal muscle - The sit-up from the lying position 30 seconds
- 8) the attempt of flexibility - The lying waist bend forward (cm).

In the working used The Test of technical efficiency (for boys aged 10-14 years) Jerzy Talaga (2006). This test consists of seven attempts of which were used the following four:

- foot juggling balls,
- slalom shooting,
- long-distance kick ,
- target passing of the ball.

The tests were conducted according to the recommendations of the creator.

Before carrying out research thoroughly acquainted the players with the objectives of the trial and the specific role played by the applicable tests in each cycle training. Players began to try the dress sport - football.

Starting the test Was preceded by warm-up tests carried out by the coach. Time measurement was done with a stopwatch with an accuracy of 0.1 seconds, weight of body medical scales with an accuracy of 0.1 kg, body height with an altimeter.

.....The research results were evaluated and assigned to the number of points specified in the tables compiled by the authors of the tests.

Achieved results of players in the research are subjected to statistical analysis referred to the relevant formula:

a) arithmetic mean

$$\bar{x} = \frac{\sum x}{n}$$

where:

$\bar{x}$  -The symbol of the arithmetic mean,

n - the number of results,

$\Sigma$  - the sum of the results.

b) The average standard deviation.

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$$

where:

$\sigma$  - the average standard deviation,

$\bar{x}$  - Arithmetic mean,

x - the result obtained by one person.

## Results

.....A noticeable manifestation of human biological development is the construction of the body, which contributes with the correct way to perform the physical activity.

Body type man is a component of several parameters. One of them is the height of the body. This factor, which the vast majority of sports plays a very important role and because it has a large influence on the choice of discipline and competitive sports for young people. In the case of football, inter alia, determines the position of player on the court, or usefulness in particular parts of the game.

On the ground of carried out measurements which showed that the lowest height of the body which has one of the tested 13-year-old boys is 145 cm, while UJ is the highest (171 cm). Average body height of the study group is 159.3 cm (Table 1, 2).

Body weight soccer players in many cases, plays a very important role, since it is affected by, among other things, its strength, especially speed. Football is a game of contact, (where weight plays a major role), but heavy weight has negative influences for example on agility contestant For this reason should be such that the player can fulfill the tasks which will order a coach ..

The minimum weight was one of the test (38 kg), whereas the biggest 80 kg another, with the average examined 51.1 kg. (Table 1, 3).

**Table 1. Height and weight 13-year-old players.**

L.p.	Year of birth	The subjects	Height of body (cm)	Weight of body (kg)
1.	2000	A. Ł.	156	50
2.	2000	B. K.	169	55
3.	2000	C. A.	151	42
4.	2000	D. J.	156	50
5.	2000	G. O.	165	56
6.	2000	J. K.	167	50
7.	2000	K. M.	154	45
8.	2000	K. K	145	40
9.	2000	K. Ł.	162	48

<b>10.</b>	2000	K. J.	167	53
<b>11.</b>	2000	L. D.	148	38
<b>12.</b>	2000	M. O.	158	65
<b>13.</b>	2000	N. K.	160	80
<b>14.</b>	2000	P. J.	156	54
<b>15.</b>	2000	S. M.	160	49
<b>16.</b>	2000	U. J.	171	55
<b>17.</b>	2000	W. W.	157	46
<b>18.</b>	2000	Z. S.	165	50
<b>19.</b>	2000	Z. D.	160	45
<b>20.</b>	2000	Ż. K.	159	51

**Table 2. Characteristics of body height with the examined group of players.**

<b>Number of the subjects (n)</b>	<b>Min-Max (cm)</b>	<b>Average value (cm)</b>
20	145-171	159,3

**Table 3. Characteristic of body weight with the examined group of players.**

<b>Number of the subjects (n)</b>	<b>Min-Max (kg)</b>	<b>Average value (kg)</b>
20	38-80	51,1

Comparing these data with the research that conducted on a 13 year jumpers, pole vault Klimczyk (2012), and Napierała (2008) in Kujawsko-Pomorskie Voivodeship on boys from the countryside and the city, also of the same age, can be observed that the 13-year-old players are taller than pole vaulter (Klimczyk: 13 years 159.19 cm), and also the boys from the village (Napierała: 158.65 cm 13.5 years), whereas are lower than boys in town (Napierała: 13.5 years 161 , 07). Players have a higher body mass both than pole vaulter (Klimczyk: 13 years 43 kg) and boys from the town and the village, (Napierała 13.5 respectively - 49.54 kg, 48.65 kg).

Measurement of height and weight of body used to determine body type by Ernst Kretschmer.

Football Players (of twenty) were characterized by the following type of body:

- leptosomatic - 14 players;
- athletic- 4 players;
- pyknic- 2 players.

Rohrer has the highest rate of N.K. (1.95) and lowest J.K. (1.07).

Average of indicator in the examined group was 1.31.

### **Analysis of physical fitness**

*Speed* is a person's ability to perform the movements with minimal for the conditions period of time (W.M. Zaciorski).

On the ground of the test it was found that the minimum value of speed was 8.9 s (45 points), maximum 5.6 s (74 points), and average 63.20 points.

*Power* is defined as the ability of an individual to deliberately of liberation maximum force in the shortest possible time. Physically, this would be a product of force and velocity (Wolański, 1970). Power is measured by skokiem dosiężnym lub skokiem w dal z miejsca. Power is measured by vertical jump or long jump from standstill.

Based on the carrying out test it was found that the furthest long jump from standstill of D.J, 193 cm (57 points), and the shortest distance N.K. (140 cm) for which he received 34 points, with an average of 47.30 points group.

*Stamina* is the ability to prolonged exertion without reducing its efficiency. There are general and special strength, The concept of the overall endurance mean strength in relation to the prolonged exercise of moderate intensity, incorporating funkcjoning most of the muscular system. However in the concept of special endurance means the endurance in relation to a define activity, sport discipline (Wolański, 1970).

In determining the strength test should be stated that ran through the fastest 1000 m W.W. 190 s. (77 points), while the slowest N.K. 362 s (23 points), theteam average is 53.40 points.

*Strength* according to Wolański (1970) is the ability to overcome resistance or countering of muscular effort at the expense of its.

In the examines ability many times bent hands in the overhang on the stick, because seven times the L.D. for whot he received 64 points, whereas seven players not perform even

one pull up on the stick (eg, M.O, N.K.) without getting for the test point. Point Average of in terms of the group was 32.80 points.

*Dynamometry.* Based on the test it was found that the maximum value obtained G.O. 37 kg (62 points), and the lowest K. K. 13 kg (30 points) and the standard of group points is 42.85 points.

*Agility* According to W. Zaciorski (1970) is ability to adapt rapidly physical activity to the requirement of the changing conditions.

In a test of agility consisting on the running 4 x 10 m the best time achieved C.A. (10.6 s) receiving 62 points, while the weakest M.O. (13.7 sec) 35 pts. Average of team in this attempt is 51.15 points.

*The sit-up from the lying position in time 30 seconds* give a solid opportunity to verify the strength of abdominal muscle. On the ground of the test it was found that the most - 30 times done this exercise W.W. obtained 60 points, and the least N.K. 15 times (30 points), and the group average is 43.80 points.

*Flexibility* include inter alia, the ability to perform movements with large amplitude (Wolański, 1970).

Based on carried out the test it was found that the best result in this attempt reached B.K. (11 cm) to give 63 points, while the weakest the L.D. (-15 Cm) 25 points. Whereas teams average in this test in terms of point is 48.80.

**Table 4. Classification Standards MTSF.**

<b>Level of efficiency</b>	<b>Numer of points</b>
<b>High</b>	481 and more
<b>Average</b>	320 – 480
<b>Low</b>	319 and less

Statement of the results of the physical fitness examined footballers.

Group of 20 of players is characterized by the following level of physical fitness:

- the average level of fitness obtained by 15 players,
- low level of physical fitness - 4 players,



- high level of physical fitness - 1 player.

**Table 5. The result set of physical fitness in the study group points footballers.**

<b>Attempt</b>	<b>Number of examined</b>	<b>Min (pkt.)</b>	<b>Max (pkt.)</b>	<b>The average value of (pkt.)</b>	<b>The standard deviation</b>
<b>Speed</b>	20	45	74	63,20	7,86
<b>Power</b>	20	34	57	47,30	6,14
<b>Stamina</b>	20	23	77	53,40	13,24
<b>Strenght</b>	20	0	64	32,80	24,66
<b>Strenght-hand muscle</b>	20	30	62	42,85	7,56
<b>Agility</b>	20	35	62	51,15	7,05
<b>Strenght-abdominal muscle</b>	20	30	60	43,80	7,03
<b>Nimbleness</b>	20	25	63	48,80	9,35

### **Special analysis of efficiency**

#### *Foot juggling balls 30 s.*

This is elementary and the simplest form of checks technical skill player.

Based on carried out the test it was found that the lowest score (1 pt.) Received one of the player, while the other received the largest number of five points. The average score of the test was 2.6 points.

#### *Slalom shooting*

The main attempt which evaluating composure and control to the lead the ball by the player and its capabilities to competition and dribbling.

As a result carried out of the test, it was observed that the minimum number of points in the slalom ball with a shot (time) was 3, maximum 5 and the standard 4.3. However, in the slalom with the ball with a shot (marksmanship) the minimum number of points scored was 0, maximum 5, and average 2.7 points.

*Long-distance kick*

In addition to strength which a player has to put the ball in the strike need a proper stroke technique, proper positioning of the foot to the ball.

.....Based on carried out the test it was found that the least number of points obtained by footballer was 4, maximum 10 and average 8.6 points.

*Target passing of the ball*

.....The marksmanship and accurate skills to cross by the test player, demonstrate its capabilities through which may be a good wingman.

.....The test showed that the minimum number of points in the trial consisting of cross balls to the target have acquired one of the practitioner was 2, maximum 15, and the average 7.95 points.

The highest number of points in a special fitness test (35 points) reached Z.D., the second result was achieved by W.W. (34 points) and the least because only 12 points scored by two of players (K.J. and M.O.).

**Table 6. The result set physical fitness tested special group of footballers.**

Attempt		Number of subjects	Min	Max	Average value	The standard deviation
Foot juggling balls 30 s		20	1	5	2,6	1,62
slalom shooting	Time	20	3	5	4,3	0,64
	Marksmanship	20	0	5	2,7	1,76
long-distance kick		20	4	10	8,6	1,90
target passing of the ball		20	2	15	7,95	3,38

## **A summarisation**

Trials and controls tests are essential in directing and controlling the process of training at various phases of training. Development study the biological, physical fitness and a special young footballers contributing to the optimization of the training loads possibilities tailored to individual exercisers, as well as determine their prognosis. Coach with a constant control over the team in the form of test results may more effectively lead sports activities and observe the proper development of motor skills. Tests shows the characteristics of players that are not so apparent in the course of exercise training in daily units. They allow to perceive better individual motor skills distinguishing one from another. The results show us that motor characteristics and technical skills are at appropriate level, and what needs to be improved. This approach gives the possibility to optimize the trainer program content in the micro and macro cycles, resulting in improvement in the achievements of individual players.

## **Conclusions**

- Physical tests presents that subjects the players have in the vast majority of the average level of physical fitness.
- The team has achieved the highest average value in the speed and the lowest power.
- List of special fitness results showed that the team achieved a good result in the slalom with the ball with a shot and hit the ball properly from a distance.
- Definitely less presented in juggling, accuracy in the slalom with the ball and cross to the target (is list shows that many players on the team is struggling with the basic technical elements on which to work on future training
- Players with better physical fitness perform better on tests of a special skills (eg W.W. in physical fitness took first place / 484 points /, and a special second / 34 pts /).
- The overall efficiency of these young players is the basement of development of technical efficiency.
- In the process of training of young players must remember not only the specific exercises but also a suitable development of motor skills.

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