

Impact of a 30 day training process on the changes of some anthropometrical measurements, motor abilities and the Beep-test

Fadil Nika, Georgi Georgiev, Naser Rashiti, Miodrag Mircevski

Impact of a 30 day training process on the changes of some anthropometrical measurements, motor abilities and the Beep-test: *Subject* of this study are basketball players of 14 years of age (male) from KK "SKUPY 2020" and their anthropometrical characteristics, motor and functional abilities. **Goal** of this research is to establish which are the effects (changes) from a 30 day training process of anaerobic and aerobic capacities and the explosive power and speed as motor abilities of the basketball players. Upon gained results we can conclude: 1. Between the initial and the final measurement of treated variables is established high and positive statistical correlation, 2. Between the initial and the final measurement of treated variables is established statistically significant difference in direction of improvement of the results in the variables: Height jump (HJU), Standing long jump (SLJ), Running at 20m (R20) and the Beep-test (BTT).

Key words: basketball players, anthropometrical space, explosive power, speed, endurance.

INTRODUCTION

Basketball is a team sport with two teams by 5 players trying to win by achieving a point. The winner of the game is the team which has scored more points. The basket ring is placed at height of 3.05m. This sport is played by a ball (called basketball) which is being transferred from one to another side by players with dribbling- bouncing the ball with 1 hand using your fingertips instead of your palm so that it rebounds back to yourself and passing it to the co-players. There are very strict rules and methods for leading the ball. Body contacts among the players which can lead to an injury are not allowed.

The basketball was invented by the Canadian James Naismith. Today, the basketball is spreaded on all continents and is treated as one of the most popular sports.

The basketball represents a complex sport activity where the quality of the game depends on large number of factors which significantly contribute to the success of the game. The goal of the training process is if possible in the shortest period of time to lead to a transformation and optimal effects [4].

The technical preparation of the basketball players is the main precondition for effective development of the player's performances. The basketball player's maximum motor potentials are also dependent on this.

Used literature also leads us to the acknowledgement that the anthropometrical and the motorics, as segments (subspaces) of the anthropometrical status of the mankind are very much studied areas, and yet, we can state that they are not completely studied. This leaves an opportunity for further researches of this subspaces which are particularly important for the kinesiology (the physical culture) [1, 2].

EXPOSITION

Subject of this study are basketball players of 14 years of age (male) from KK "SKUPY 2020" and their anthropometrical characteristics, motor and functional abilities.

Goal of this research is to establish which are the effects (changes) from a 30 day training process of anaerobic and aerobic capacities and the explosive power and speed as motor abilities of the basketball players.

According to the subject and the goal of this research a hypothesis is established – we expect positive changes in the whole analyzed anthropometrical space as a result of the realized training process.

METHODS

The sample is consisted of 14 basketball players of 14 years of age who train and play for KK "SKUPY 2020".

This research has used the following 5 (five) anthropometrical measurements:

1. Body weight (BWE), 2. Body height (BHE), 3. Spreader arm height (SAH), 4. Volume of the upper arm (VUA) and 5. Volume of the thigh (VTH); 2 (two) motor tests of explosive power: 6. Height jump (HJU) and 7. Standing long jump (SLJ); 1 (one) for speed - 8. Running at 20m (R20); and 1 (one) for endurance - 9. Beep-test (BTT) [3, 5].

The measuring of the anthropometrical measurements, motor tests and Beep-test were realized at the beginning and the end of executed 30 day training process in the sport hall in which the team of KK "SKUPY 2020" has realized its regular training activities.

From the anthropometrical measures, the Body height (BHE) was measured ones – the initial (first measurement) because the training process was realized for a short period of time and significant changes were not expected between the initial and the final measurement of the subjects (basketball players). For the anthropometrical measurement Spreaded arm height (SAH), were established the same results in the both measurements.

The training process was realized with 30 combined trainings in which dominant were loading of aerobic and anaerobic intensity.

At odd days were realized trainings with running 2 times by 1600m to 2000m with a break between the runs of 10 minutes active rest.

20 jumps were performed with a break plus 20 jumps. That was repeated in 3 series (three repeats).

Three series joined legs jumps with the hands on the back of the head by 20 steairs+20 steairs.

At the end, running upwards 300 steairs, one by one. The height of one stair is 18cm.

Also the exercises for an active rest were executed. The time span of this exercise outdoors was between 90 and 100 minutes.

At even days trainings were executed in a sport hall with aerobic and anaerobic character, with execution of jumps. More precisely, the subjects performed side jumps over 6(six) Swedish Beams and each of them made between 3 and 5 jumps. The jumps were repeated by 5 times with a break of 10 to 15 minutes that was one series. After a break of 15 minutes the same series was repeated.

Also the exercises for technical elements with ball from the game basketball were executed and implemented. The time span were of these trainings was 90 minutes.

The trainings were organized in a manner that odd days were days with extreme loading, but the even days were with downloading.

This training program (described above) and the very measurements were realized immediately after the finish of the championship.

For the applied anthropometrical measures, motor tests and Beep-test were established the following statistical variables: arithmetic mean (Mean), standard deviation (SD), minimal result (Min) and maximum result (Max).

These parameters were calculated at the initial and final measurement (with exception of the body height which was measured ones-at the initial measurement).

The connection between the applied anthropometrical measures, motor tests and Beep-test, between the initial and final measurement is established with the Pirson's coefficient of correlation (Correlation). Every coefficient which is equal or bigger than 0.53 (for 5 %) and 0.66 (for 1%) is taken as statistically significant.

The difference between the arithmetic mean from the initial and the final measurement is established with the Student's t-test for small dependant samples. For statistically significant difference is taken if the t-test is with equal or bigger value than 2.16 (for 5%) or 3.01 (for 1%).

RESULTS AND DISCUSSIONS

Upon the data processing, in the table 1, were shown the basic statistical parameters for the nine applied variables at the initial and the final measurement.

From the gained results, according to the values of the arithmetic mean we can notice that they are real. The results upon the values of the standard deviation, as well as

the minimum and the maximum result are in the expected borders of expectancy. That is related completely on anthropometrical measures, motor tests and the Beep-test.

In the Table 2, are shown the Pearson's coefficients of correlation between the initial and final measurement of the variables. Upon them we can state a very high level of connectivity between the variables from the both measurements. Their coefficients of connectivity are with values from 0.68 to 0.98.

All coefficients are positive and very high. That is in direction of positive impact on the applied experimental program with used basketball players of KK "SKUPY 2020". All established coefficients of the correlation are significant, and at more strict level of assessing of 0.01 (1%).

Table 1
Basic statistical parameters for the applied variables

Descriptive Statistics	N	Mean	SD	Min	Max
BWE1	14	77,18	13,10	64,30	106,20
BWE2	14	75,27	12,20	62,10	100,10
BHE1	14	177,43	7,71	170,00	192,00
SAH1	14	234,14	10,60	221,00	252,00
SAH2	14	234,14	10,60	221,00	252,00
VUA1	14	28,68	3,30	23,50	35,50
VUA2	14	29,14	2,66	24,00	34,00
VTH1	14	56,96	4,47	49,50	67,50
VTH2	14	56,96	4,14	50,00	65,00
HJU1	14	274,71	9,53	260,00	291,00
HJU2	14	277,71	10,23	262,00	295,00
SLJ1	14	180,43	25,11	134,00	215,00
SLJ2	14	186,64	23,08	149,00	218,00
R201	14	3,76	0,23	3,31	4,06
R202	14	3,63	0,22	3,31	3,99
BTT1	14	40,92	3,65	35,84	45,25
BTT2	14	44,03	2,84	39,52	47,72

Table 2
The Pearson's correlation between the initial and the final measurement

Paired Samples Correlations	N	Correlation	Sig.
Pair 1 BWE1 - BWE2	14	0,98	0,00
Pair 4 VUA1 - VUA2	14	0,68	0,01
Pair 5 VTH1 - VTH2	14	0,81	0,00
Pair 6 HJU1 - HJU2	14	0,93	0,00
Pair 7 SLJ1 - SLJ2	14	0,98	0,00
Pair 8 R201 - R202	14	0,89	0,00
Pair 9 BTT1 - BTT2	14	0,92	0,00

In the Table 3, where is shown the testing of the differences between the arithmetic means for the applied variables in the initial and the final measurement, is established statistically significant difference between the variables: Body weight (BWE), Height jump (HJU), Standing long jump (SLJ), running at 20m (R20) and the Beep-test (BTT).

Table 3

t-test between the initial and the final measurement of variables

Paired Samples Test		t-test	df	Sig. (2-tailed)
Pair 1	BWE1 - BWE2	2,81	13	0,01
Pair 4	VUA1 - VUA2	-0,71	13	0,49
Pair 5	VTH1 - VTH2	0,00	13	1,00
Pair 6	HJU1 - HJU2	-2,95	13	0,01
Pair 7	SLJ1 - SLJ2	-4,70	13	0,00
Pair 8	R201 - R202	4,42	13	0,00
Pair 9	BTT1 - BTT2	-7,64	13	0,00

CONCLUSIONS

Upon gained results we can conclude:

1. Between the initial and the final measurement of treated variables is established high and positive statistical correlation.
2. Between the initial and the final measurement of treated variables is established statistically significant difference in direction of improvement of the results in the variables: Height jump (HJU), Standing long jump (SLJ), Running at 20m (R20) and the Beep-test.
3. Upon gained results, we can conclude that the executed training procedure has improved the explosive power and speed as motor abilities and the same happened in the Beep-test (BTT), which was applied for maximum oxygen consumption.

LITERATURE

- [1] Ahmaidi, S., K. Collomp, C. Caillaue, C. Prefaut. Maximal and functional aerobic capacity as assessed by two graduated field methods in comparison to laboratory exercise testing in moderately trained subjects. *International Journal of Sports Medicine* 1992, 13 (3), 243-248.
- [2] Čoh, M. Razvoj brzine u kondicijskoj pripremi sportaša. [Development of speed in the fitness preparedness of athlete]. *International Science Professional Meeting Kondicijska priprema sportaša (Conditional Preparation of Athletes)*. Zagreb, 2003.
- [3] Eurofit. Eurofit test of physical fitness. (2nd Edition). Strasbourg, 1993.
- [4] Ismaili, H. Transformacioni efekti bazično-motoričkih i situaciono-motoričkih sposobnosti kod nogometaša uzrasta 12 – 14 godina. [Transformational effects of basic-motor and situational-motoric abilities of football players aged 12-14 years]. Master's Thesis. Tuzla: Faculty of Physical Education and Sport, University of Tuzla, 2010.
- [5] Kurelić, N., K. Momirović, M. Stojanović, J. Šturm, Đ. Radojević, N. Viski-Štalec. Struktura i razvoj morfoloških i motoričkih dimenzija omladine. [The structure and development of morphological and motor dimensions of youth]. Belgrade: Institute for Scientific Research of the Faculty of Physical Education, 1975.
- [6] Pejčić, A., M. Žvan, S. Krstulović. Relationships between muscular strength, anthropometric characteristics and motor abilities in children 11-12 years of age. *Kinesiology Slovenica*, 2004, 10 (1), 48-56.

For contacts:

Prof. dr. Fadil Nika, Faculty of Physical Education, Tetovo, Macedonia. Ass. Prof. Georgi Georgiev, PhD, University "Ss. Cyril and Methodius", Faculty of Physical Education, Skopje, Macedonia; e-mail: ggeorgiev2005@yahoo.com

Prof. aso. Dr. Naser Rashiti, University of Prishtina, Faculty of Physical Education and Sports, Kosovo; e-mail: naserrashiti@hotmail.com Prof. Miodrag Mircevski, Bsc, Faculty of Physical Education, Tetovo, Macedonia.

The report has been reviewed.