

Definition and assessment of physical efficiency of students – basketball players

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Purpose: assess the level of physical efficiency of students – basketball players by using the Harvard step test.

Material & Methods: the analysis of scientific-methodical literature, educational testing, pedagogical experiment, methods of mathematical statistics. For determination and assessment physical efficiency of students – basketball players used the Harvard step test. In pedagogical testing for assessing special performance was attended by 14 students – basketball players (n=14) men's teams of the Medical Institute of Sumy State University.

Results: the analysis of scientific and technical literature showed gaps in training basketball players, namely, to improve the physical performance. Especially these problems are when basketball training sessions combine with study in higher educational institutions. The load that caused a combination of mental and physical labor is enough to affect on the performance, develop resistance to fatigue. Still need to look for approaches that can help in conditions of single 3–4 workouts per week to maintain a high level of physical capacity of basketball players.

Conclusions: analyzing the test results of basketball team players at Medical Institute of Sumy State University, we can say that the level of physical performance is satisfactory and functional status is mediocre. Players need more regular training which includes special exercises with high intensity close to competitive conditions.

Keywords: basketball, physical efficiency, index of Harvard step test.

Introduction

Training loads of a basketball player throughout the training period provide mastering or improvement of the range of technical and tactical actions, increase and optimization of functional preparedness and special working capacity along with the development of special physical qualities. In this regard the most effective realization of game abilities of a basketball player is possible only on condition of a rather high level of his functional preparation, optimum adaptation to training and competitive loadings (M. M. Bulatova, 1999; A. A. Viru, 1982; V. M. Volkov, 1992).

The increase in the competition on the international sports scene forces to look for additional reserves for the subsequent improvement of skill, the growth of sporting achievements at all stages of long-term training of sportsmen at the present stage of the development of sport. One of such reserves as most of researchers mark out (S. I. Guskov, V. N. Platonov 2000; P. K. Anokhin 1990), is the optimization of training loads in long-term training of sportsmen. Different in volume of preparation training loads, are used practically in all sports. Their size is defined by the number of classes, their duration, and total amount of work, intensity and intensity of a training load. Researchers and practical men turn special attention to the character and the maintenance of loadings which use in the training process when training sportsmen.

In modern basketball the competitive period lasts till 8–9 months that demands from a sportsman of high level of functional preparedness and special working capacity.

All this has a significant effect on the level of a condition of

sportswear of a player, substantially component of which are its indicators of special physical working capacity.

The higher the level of functional reserves of the main physiologic systems of an organism of a sportsman is, the more prerequisites for the subsequent growth of his special working capacity are.

Considering the above stated, carrying out special researches that are directed to the interconnected analysis of the system of estimation of special efficiency of students-basketball players, is worth of attention.

Communication of the research with scientific programs, plans, subjects

The research is executed according to the Thematic plan of the research work in the sphere of physical culture and sport for 2011–2015 by a subject 2.4 “Theoretical-methodical bases of individualization of the educational and training process in game sports”.

The purpose of the research

To estimate the level of special efficiency of students-basketball players due to the Harvard step-test.

Research tasks:

1. To analyze data of modern literature on a condition of the problems which are connected with special efficiency of students-basketball players.

2. To define a condition of physical efficiency of students-basketball players by the Harvard step-test.

3. To analyze results of testing of special efficiency of students-basketball players.

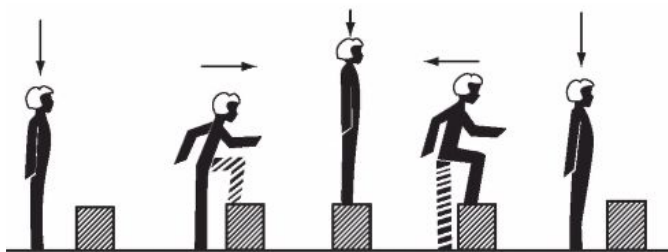
Material and Methods of the research

Research methods: analysis of scientifically-methodical literature, pedagogical testing, pedagogical experiment, methods of mathematical statistics.

14 students-basketball players (n=14) of a men's team of Medical institute of Sumy state university of Sumy took part in the pedagogical testing for an assessment of special working capacity.

It was used the Harvard step-test for the definition and assessment of special efficiency of students-basketball players, which is offered by scientists of Harvard university of the USA in 1942.

Physical activity happened in the form of ascensions on a step 50 sm high. The rate of ascension is constant and equaled 120 steps in 1 minute. Each cycle of rise made 4 steps: one – a rise by one leg on a step; two – an investigated becomes both legs on a step; three – an investigated lowers a leg from which he began ascension on a floor; four – an investigated lowers the second leg on a floor (pic. 1). The duration of execution of the test made 5 minutes. If a sportsman was tired and didn't owe an opportunity to maintain the set speed, the test stopped and then was fixed operating the time by the time of decrease in speed.



Pic. 1. Scheme of the test of "ascension on step 50 sm high"

The index of the Harvard step-test (IHST) was defined by a mathematical method by a formula:

$$IHST = \frac{t \cdot 100}{2(f_1 + f_2 + f_3)}$$

where t – ascension time for a step, s ; f_1, f_2, f_3 – pulse for 30 s in the 2, 3 and 4 minutes of renewal.

Results of the research and their discussion

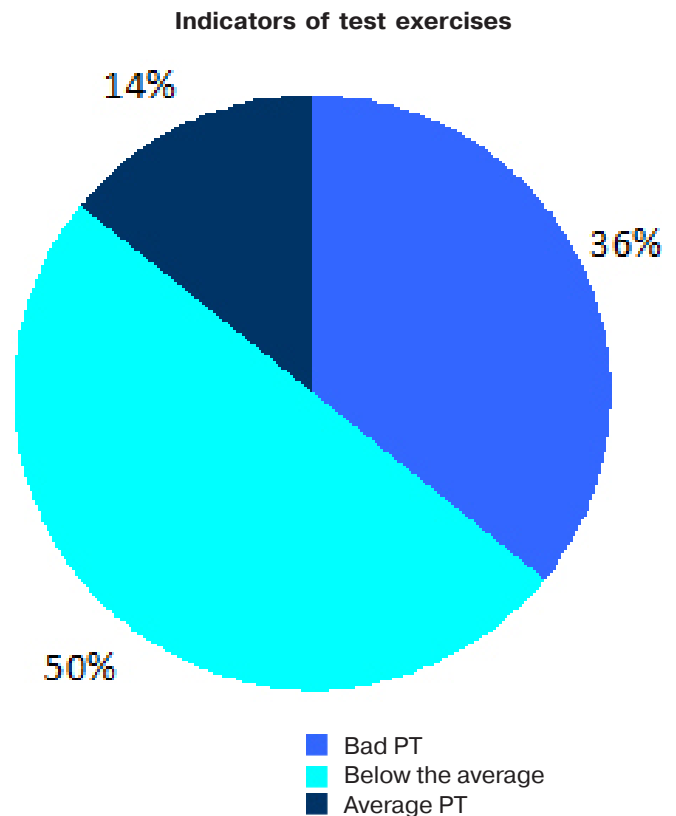
Results of an assessment of physical efficiency of students-basketball players are reported in tab. 1.

The assessment of results of sportsmen was carried out in comparison with average sizes of the index of the Harvard

step-test which are specified in table 2.

Thus, the results of the research showed that the Harvard step-test is heavy physical activity for students-basketball players of Medical institute.

The analysis of the received test results found the insufficient level of physical efficiency of students-basketball players. So, the average result was shown by only 14,3% of students, below the average – 50% of students, and 35,7% of students (pic. 2) have bad result. Estimating the received results, one may say, that the volume and intensity of the training process are not sufficient at the moment.



Pic. 2. Results of testing of physical efficiency of students-basketball players

Conclusions

Analyzing results of testing of students-basketball players of the team of Medical institute of Sumy state university, we can claim that the level of physical working capacity is satisfactory, and the functional state – average. The average result was shown by only 14,3% of students, below the average – 50% of students, and 35,7% of students have bad result. Thus, it is possible to draw a conclusion that team players need more regular trainings with inclusion of special exercises with the increased intensity and approximate to competitive conditions.

Prospects of the subsequent researches. Our subsequent researches will be directed to the search for new means and methods of physical training for the purpose of support of rather high level of physical efficiency of students-basketball players.

Table 1
Results of an assessment of physical efficiency of students-bas all players

№ sportsmen	Results of execution of the Harvard step-test	Level of working capacity
1	60	Bad
2	80	Average
3	79	Average
4	71	Average
5	59	Bad
6	66	Below the average
7	57	Below the average
8	63	Below the average
9	73	Average
10	74	Average
11	80	Average
12	64	Below the average
13	72	Average
14	70	Below the average
Md	69,1	
S	7,8	

Table 2
Assessment of physical working capacity by size IHST

Physical working capacity	IHST for representatives of acyclic kinds of sport
Bad	Less than 61
Below the average	61–70
Average	71–80
Above the average	81–90
Good	91–100
Excellent	More than 100

Conflict of interests. The author declares that there is no conflict of interests.

Financing sources. This article didn't get the financial support from the state, public or commercial organization.

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Received: 01.03.2016.

Published: 30.04.2016.

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