Journal of Physical Education and Sport ® (JPES), 15(2), Art 43, pp. 287 - 290, 2015
online ISSN: 2247 - 806X; p-ISSN: 2247 – 8051; ISSN - L = 2247 - 8051 © JPES

Original Article

Control of general and special physical preparedness by qualified handballers

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Published online: June 26,2015
(Accepted for publication May 17, 2015)
DOI:10.7752/jpes.2015.02043;

Abstract:
The features of control of general and special physical preparedness by qualified handballers. The necessity to use facilities during workout sessions in professional sports and particularly in handball has been ascertained. Novel informative testing techniques using flashlight tests have been discussed. Application of test exercises, aimed at evaluation of psychomotor system by qualified handball players of the Ukrainian Super League, has been analyzed. .
Key words: handball, control, psychomotor system, physical, special.

Introduction

The developed test battery uses relatively simple, handball-specific field-testing to evaluate the performance potential. These tests are specially designed to measure the predominant actions during the game. The tests will be used as a comparison and standardized tool providing valuable information to the coaching staff during the preparatory phase. Generalized present-day knowledge of fundamentals of facilities allows us to choose the most advanced applications of exercise machines or new generation devices for workout process (Vodlozerov V.Ye. 2011). The issue is that correct goal-oriented use of exercise machines brings positive results and great achievements in sports (Alabin, V.G. et al. 1979). We can assume that the correct choice of exercise machines for workout sessions or testing is an important stage in the use of facilities. They are indispensable for the management and efficient workout process, which gives opportunity to promptly and objectively collect information about readiness of a sportsman's body (Platonov, V. N. 2004; Yushkevich, T.P.et al. 1979).

Analysis of recent research and publications.

These tests and minimum requirements have been designed to help qualified handballers understand exactly how to prepare themselves and improve their performance on the team.

It has already been said a lot and a number of studies have been performed as to the importance of facilities use in sportsmen training (Leykin, M.G. 2008; Shukshunov, V.Ye. i etc. 2011). Nowadays, when the amount of training load comes to quite high values, further improvement of sportsmanship in many aspects depends on intensification of the workout process. Skilled application of exercise machines and training devices plays an important role in intensification and improvement of performance during the workout process. Thus, training devices hold a prominent place in teaching sportsmen the handball playing technique (Mizkher Khayder, SH. 2011). The one help acquire separate elements of the technique. For instance - the so-called "impact movement" (throws or shots on a goal, passing a ball). The others unite separate elements of the technique into a whole movement. When specific capacity is developed properly and training devices are used skillfully, sportsmen acquire reasonable technique. In case there are mistakes during technique attainment, then the training devices are used for their elimination (with the selective influence on separate elements or the whole technique) (Matveyev, L. P. 2001; Popov, G.I. 1999).

The aim of the research. Justification the control of training by qualified handballers with special tests.

The object of research. The system of training in handball.

The subject of the research. The technical devices for the technical, tactical and theoretical training of handball.

Results

The intensification of competitive activity in handball and general trends of increasing sporting achievements have led to necessity of development technical devices for improving the process of technical and tactical training of highly skilled handballers. The following tests are included in the minimum requirements and producing a test result within the required range for each test is mandatory for each player regardless of age, years of experience, and position played.

1). *The 30-meter sprint.* The best 30-meter sprint result is used to determine maximum running velocity (the best of two sprints).

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2). The next *shuttle run* 30 m x 10 repetitions with maximal speed was used to define lactic (glycolytic) skills of the sportsman or the special speed endurance (Godik, M.A. 1981).

3). *T-test.* Action speed – is the defining factor in the sport games. Speed can be in the movement (cyclical run, a-cyclical during the throw, deking and jump in motion) and complex speed reaction and speed endurance. It belongs to the complex ability to realize technical-tactical actions in the needed situation, to perform it effectively and precisely, within the optimal time and with corresponding intensity. Thus, we offered the following T-test (*Fig.1*).

Fig.1. Test № 3 performance scheme

The sportsman should run to token I on the maximal speed, touch it with the right hand. Then he has to move to the token II, touch it with the left hand. After this follows movement to the token III, touching it with the right hand. Then returning to the token I, touching and acceleration onto start-finish in the reverse direction. With the help of the criteria one defines the level of the special preparation of the sportsmen.

In order to evaluate special condition (psychomotor function) of handball players, analysis of standard practices and specific character of competition-based activity in handball allowed us to propose and implement the following test exercises into the workout process of qualified teams of the Ukrainian Super League: the Flashlight Handball Test (FlHT) and the Complex Flashlight Handball Test (CFFlHT). They are of crucial importance in most game situations and to the full extent reflect the following technical and tactical actions of players and a team during competitions:

- ✓ active counteract to the attack of the opponents,
- ✓ correction of technical and tactical actions in response to the change of the system of offense,
- ✓ switch of defensive players while marking offense,
- ✓ performance of backup and parallel movement in defense,
- ✓ performance of attacks and defensive technical and tactical actions in the setting of numerical disadvantage, majority in number etc. (Ignat'yeva, V.YA. i etc. 2005).

4). *Test 4.* The *Flashlight Handball Test (FlHT)* allowed us to determine the attention switch rate and special capacity of handball players under conditions of active choice of useful information. The structure of exercise performance was the following: 5 stands with LED lamps were located in the center of the 9-meter line (line of active defense) (Fig. 2). It should be noted that LED lamps have been used as a signal stimulus during performance of an exercise. The flash of one or another lamp was controlled by computer application of basic random numbers. The distance between the stands was 1 m. A handball player started doing the exercise from the middle of the 6-meter line (the goal line). On a coach signal, the sportsman dashed from the standing start to the stand, where the light flashed. When he touched the stand, he ran back to the starting place. During the exercise performance the number of touches of the stand during 30 second has been counted. To get the better result qualified handball players had two tries for the performance of this exercise.

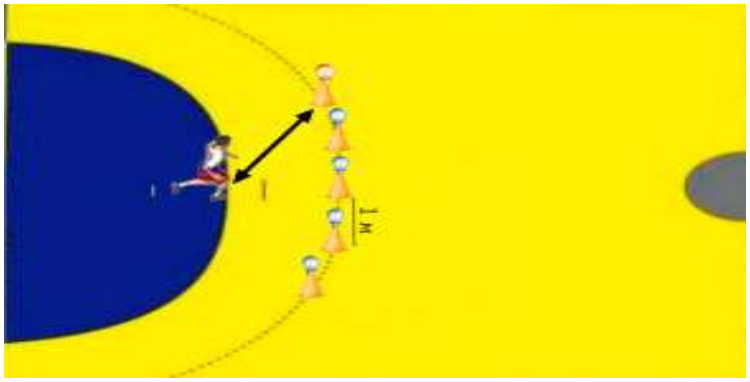

Fig. 2. Flashlight Handball Test (FlHT) performance scheme

This test exercise simulates the moments of the game, when:

- the players of defense need to react actively to movement of the players of offense considering the ball location.
- to realize the pre-agreed group and team link-up, offensive players need to act at the instance of conditioned signals when drawing the set pieces etc.

5) *Test 5*. Complex Flashlight Handball Test (CFlHT). The sportsmen have performed the *Complex Flashlight Handball Test (CFlHT)* from the standing start on the signal of a coach (Fig.3). It involved performance of the basic technical and tactical actions in handball: movement with change of direction, ways of movement (forward and backward, sidesteps and cross steps), ball pickup and dribbling throw of the ball on the goal square, above which the light flashed. To provide performance of the exercise in the middle of the 6-meter line (goal line) and 9-meter line (active defense line) the stands (4 in all) have been located on the both sides of the playground. The performance of this exercise started from the 6-meter line and involved three runs around the first couple of stands on the first half of the playground acceleration to the second half of the playground (B) and tree runs around the second couple of stands. After this, the ball, located near the stand at the 6-meter line of the second half of the playground, was picked up, then - dribbling from the 9-meter line of the first half of the playground, and the jump shot was performed on the same half of the playground. It should be noted that the stands have been run around (on the A and B halves of the playground) forward to the central line. In this wise the sportsman ran forward from the 6-meter line to the 9-meter line, and backward from the 9-meter line to the 6-meter line. Running in this section from the one half of the playground to the second one and dribbling were forward. The time for performance of the test exercise has been registered from the moment the sportsman started the movement on the 6-meter line until the ball crossed the goal line.

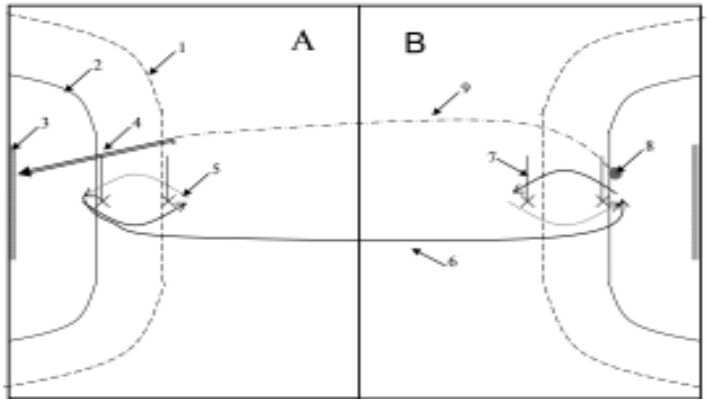

Fig. 3. Complex Flashlight Handball Test (CFlHT) performance scheme:
A, B – halves of the playground, 1 – 9-meter line (line of active defense), 2 – 6-meter line (goal zone), 3 – goal, 4 – throw, 5 - backward run, 6 – forward run, 7 – stands, 8 – ball, 9 – dribbling.

Effectiveness of the educational-training process within the preparation of the higher qualification handball teams is based on usage of models of physical and special preparation (Blokhin, A.V. 2003). It is known that the successful realization is possible only on the objectification basis of qualitative and quantitative information about the peculiarities of motion activity. This allows to outline managing ways of their qualitative sides, secure and ground its reasonability. Thus, estimation of the special preparation of the qualified handball players should be treated as an informative goal of the complex control. Analysis of the obtained material allowed to form model characteristics of the special physical preparation of the qualified handball players (table 1).

Table 1. Model characteristics indicators of preparedness by qualified handballers

PERFORMANCE INDICATORS	**LEVEL**		
	MIDDLE	**GOOD**	**EXCELLENT**
	TEST 1		
Time, s	4.35-4.30	4.29-4.2	< 4,1
	TEST, 2		
Time, min	2,10-2,25	2,00-2,10	□ 2,00
		TEST 3	
Time, s	56-58	53-55	□ 53
	TEST 4		
Qt. touches	□ 15	16-19	□20
	TEST 5		
Time, s	38,7-40,1	37,5	□36,4

Conclusions

The study of various types of psychomotor response of sportsmen has not only theoretical, but, in the first place, practical importance in the selection of space-time regimens for movements management when teaching techniques of new exercises and performing set of exercises. In the psychomotor system of sportsmen, apart from complex coordinated responses, various kinds of sensomotor reactions of parts of the sportsman's body are also distinguished. The two components can be distinguished in the motor response: sensor, which is characterizing information perception, and motor, which is directly responsible for the movement. However, in the setting of competition-based activity, handball players must display the complex of these components in a good manner. In this wise, we can state that training facilities for improvement of significant number of specific physical properties (coordination, speed endurance, technical endurance etc) can be used to enhance overall performance of special condition of qualified handball players. In addition, efficient training facilities, aimed at improvement of coordination skills of sportsmen, should be used. During CFlHT, orientation in mid-air, balance in combination with speed performance (agility) are dominating and for performance of FlHT latent time of complex reaction and the time of single movement have the same significance. Coordination skills and the extent to which they are developed are closely connected with formation of technique for sport exercises (Portnov, YU.M. 1996; Bulkin, V.A. 1983). Taking this into consideration, it can be assumed, that the use of facilities, aimed at development of special coordination skills, shall have positive effect on the level of technical competence of sportsmen and, particularly, the realizable component of technical and tactical actions of qualified handball players.

Prospective of the further researches.

Performed research does not cover all the sides of the analyzed problem. It confirms the necessity of precise attention to the further deep theoretical-methodological work and improvement of realization practice for the innovative control system into the preparation system of the higher qualification handball teams. The main goal for the further usage of this information – definition of the potential possibilities, their correspondence to the demands and correction of the preparation process.

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