

CONTROL OVER TRAINING PROCESS AS THE BASIS OF SUCCESSFUL REALIZATION OF ELITE HANDBALL TEAMS' TRAINING

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Abstract. *Purpose:* substantiation of control over elite handball players' training functioning with the help of special tests. *Material:* experiment covered 85 elite handball players of 18-32 yrs. old age (teams of Supreme League of Ukrainian championship). *Results:* effectiveness of different means and methods of control over sportsmen's fitness have been studied. The following tests have been offered: vertical jump, test-balance, shuttle run, test for accuracy of throws, «T-test», «Beep-тест». Model characteristics of indicators of qualified sportsmen's fitness have been determined. A list of test exercises, which are rather effective for control over handball training, has been recommended. *Conclusions:* testing of special workability of qualified handball players permitted to assess current condition of sportsmen, their functional potentials; it also allowed to determine symptoms of de-adaptation and to differentiate correction of training program.

Key words: handball, test, model, training, control.

Introduction

One of requirements to perfection of elite sportsmen's training system is optimizing of training process. Control over it permits to determine level of fitness, to detect presence of deviations and demand in corrections. It is of common knowledge that in training process level of fitness, functional condition and scope of loads are controlled [7,9]. At the same time, handball players' training is oriented on development of motor skills in compliance with requirements of competition functioning. Accordingly, quantity of different manifestations of different motor skills is rather great. That is why perfection of each of them requires differentiated methodic and control. It is well known that in training process coach shall promptly receive information about results of pedagogic influence. In this aspect the most significant is assessment of every player's fitness and the whole team in general as well as determination of training process's correctness. Concerning indicators of control they shall be in minimal quantity. But they shall carry effective information for correction of training process and game itself [5, 12].

Control of training process of elite players requires exact knowledge about their condition at certain stages of training on the base of methodically substantiated complex control over the whole process. There have been published some works, devoted to different kinds of handball players' training [3, 7]. Specificity of handball is in variable intensity of game, in quick and nearly continuous responding to varied situations. That is why it sets high requirements to control over speed power abilities of handball players [9]. In this game there appears a problem of instant responding to sudden actions in conditions of acute time deficit, of demonstration of high quickness, while fulfilling certain techniques, feints, complex group interactions with partners and opponents.

At the same time analysis of scientific-methodic literature witnesses that physical characteristics of players in handball have been studied [2, 6], as well as normative of special and physical fitness [9, 14] and some problems of technique and tactic [4, 11]. Works by T.A. Alizar, Ye.O. Nadezhdina, V.A. Tsapenko were devoted to special fitness of goalkeepers [1, 12, 15]. Kushniriuk S.G. presented results of practical work on organization of control over perfection of elite handball players' training in different stages of year training cycle [8]. However, formation and control over optimal informative tests for determination of elite handball players' fitness practically have not been studied. It justified urgency of our researches.

Purpose, tasks of the work, material and methods

The purpose of the research is substantiation of control over qualified handball players' training functioning with the help of special tests. *The methods of the research:* analysis and generalization of domestic and foreign scientific-methodic literature, pedagogic observations, generalization of handball coaches' advanced pedagogic experience, methods of mathematical statistics. Experimental researches were carried out on base of handball teams of Supreme League of Ukrainian championship "Motor", "ZRT", "ZNTU-ZAD", "Olympus-85". Experiment covered 85 sportsmen of 18-32 yrs. age in grades from CMS to IMS of Ukraine.

Results of the researches

With the help of well known procedure of determination of accuracy of physical qualities and abilities' phenotypical demonstration with authentic tests (calculation of correlation coefficients between tests' results and indicators of fitness and competition functioning) we composed a set of tests for control of qualified handball players' training functioning:

Test №1. The height of jump is a critically important component for increasing of efficiency in many kinds of sports. It is realized under different conditions in different forms: by one leg and two legs' push, from run or from the spot. For determination which factors of influence on vertical increment of efficiency we conducted research. Results were analyzed with deterministic model. This analysis showed that successful vertical increment of efficiency is a result

of reactive force, concentric actions, power of legs' flight, flexors of thighs, shoulders, body position, body mass. As a result we found normative marks [23].

Legs' power and strength are connected with ability for vertical jumps, which is an important parameter for some game roles. The purpose of the test is to jump vertically from immobile position, pushing by two legs (see fig.1). Reliability coefficient of this test is $r_{tt} = 0,92$.



Fig.1. Schema of test 1 fulfillment

Test №2. Ability to keep balance, coordination is very important in handball. Test-balance determines strength, balance and stability of sportsman's body. The exercise was fulfilled with the help of balance semi-sphere (boss). The test is started from right leg. Then it is necessary to turn back to left leg from number 12. Then, repeat it 3 times to each side. In case of mistake - add 3 seconds.



Fig.2. Schema of fulfillment of test-balance

Besides, instability of platform (boss) in some planes helps to develop pro-prioreceptive, kinesthetic links. Reliability coefficient of this test is $r_{tt} = 0,88$.

Test №3. During one game handball player changes rhythm about 190 times, 279 times – direction. Thus, in total he fulfills 485 movements of high intensity during 60 seconds (in average 8 movements per minutes) [16]. Character of competition actions requires from players: ability to quickly fulfill different by tension efforts; ability to fulfill many times “start” accelerations at short segments of distance; at first requirement of situation to change direction and speed of run and enter fight for ball in due time. That is why we offered and proved this test (reliability coefficient $r_{tt} = 0,97$).

During test acceleration by 15 meters is fulfilled (first time), then turn and finish in 5 meters (second time). Measurement is fulfilled with the help of two photo-finish devices and electric chronometers with accuracy up to 0.01sec.

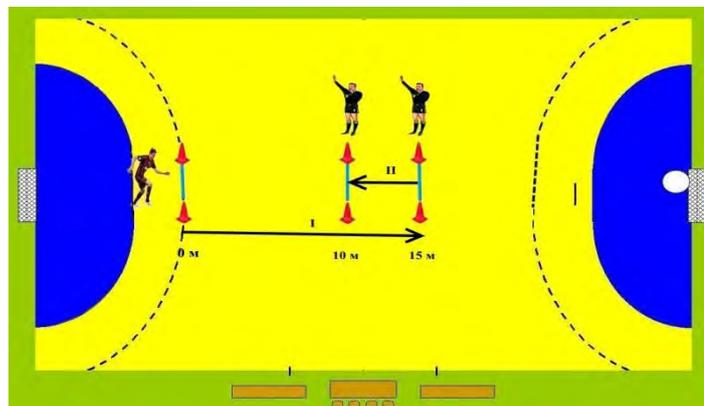


Fig.3. Schema of test №3 fulfillment

Test №4. Shuttle run 30 meters x 10 repetitions with maximal speed was intended for determination of lactate (hlycolitic) characteristics of sportsman. Analysis of received data witnessed confident interdependence between quickness and indicators of psycho motor abilities and adaptation potentials. Reliability coefficient of this test is $r_{tt} = 0,96$.

Test №5. Quickness is a determining factor in outdoor games. Quickness can be of movement (cyclic run, acyclic with throw, feint and jump in movement), complex quickness of responsiveness, speed endurance. It belongs to complex ability to realize technical-tactic actions in certain situation effectively and accurately in optimal time with certain intensity (see fig. 4). Reliability coefficient of this test is $r_{tt} = 0,94$.

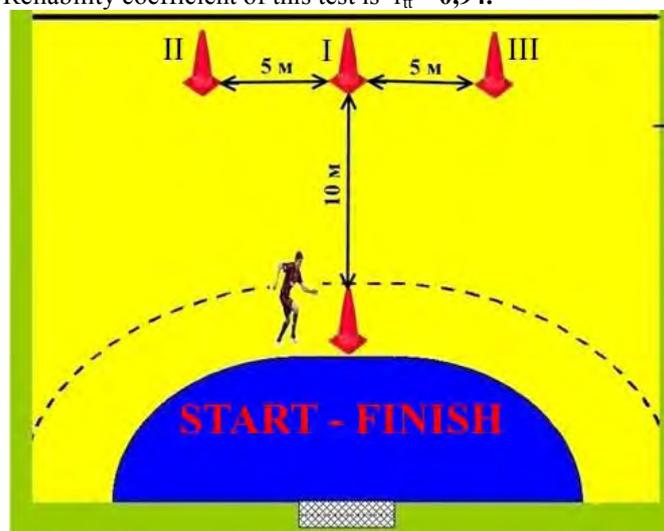


Fig.4. Schema of test №5 fulfillment

Sportsman shall run to mark 1 at maximal speed and touch it with right hand. Then he moves to mark 2 and touches it with left hand. Then – to mark 3 and touch it with right hand. After this – return to mark 1, touch it and accelerate at start-finish in reverse direction. With the help of criteria special fitness of sportsmen is determined.

Test №6. Test for accuracy of throws. Site is divided into six sectors. Zones 1, 2, 5, 6 shall be equal by size. Zones 3, 4 also shall be equal but be two times larger than zones 1, 2, 5, 6. Goal is divided in three sectors. Every sector is of 1 meter length. Handball player fulfills 12 throws (two throws from every zone) to line of free throws (9-meters' line). Three scores are gained if player hits the nearest to stand sector. One score – for hitting central sector. Maximal quantity of gained scores is 36. If sportsman oversteps with throw – no score is gained. Throws are fulfilled exactly in goal or with one jump from floor (see fig.5).

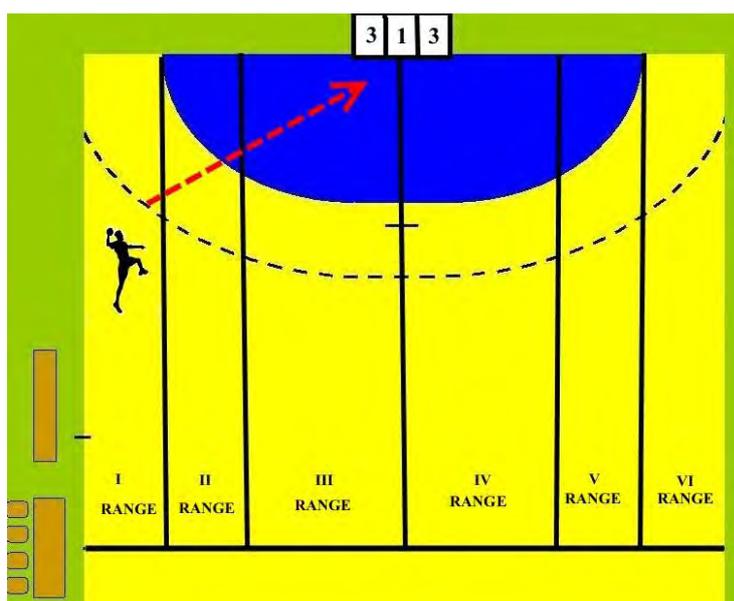


Fig.5. Schema of test №6 fulfillment

Test №7. Handball is a game, which is characterized by intermittent sprints of high intensity and very short rests. Player shall fulfill repeated intermittent accelerations. That is why special endurance is very important in match. One of maincomponents of handball players' fitness is high level of aerobic abilities. As on to day, traditionally one of

the most frequently used tests is multi-stage shuttle run test for 20 meters distance with sound signal («Beep-тест») by methodic of Leger. Time between signals for covering 20 meters segment gradually shortens. Reliability coefficient of this test is $r_{tt} = 0,95$.

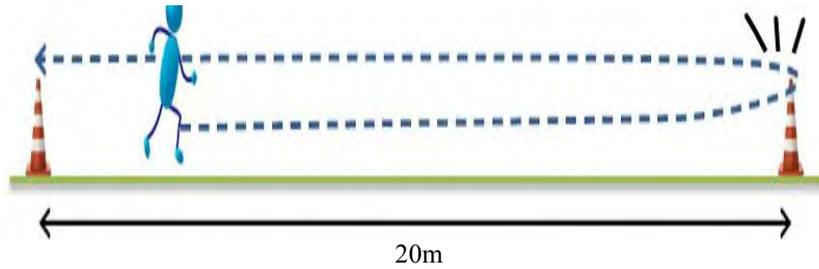


Fig.6. Schema of “Beep test” fulfillment

Test finishes when handball player can not sustain following increase of temp of run or can not run to control line two times turn by turn (see fig.7).

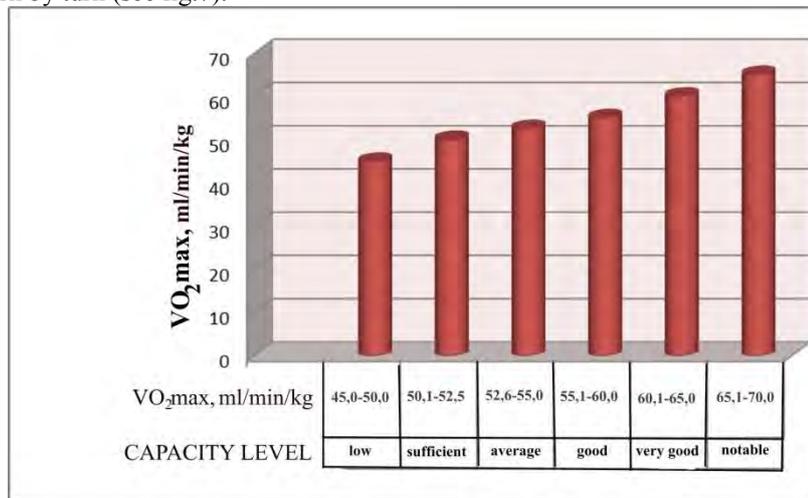


Fig.7. Workability levels of qualified handball players in “Beep test”

Discussion

The data, received in our research, agree with results of other authors. Leger and Lambert offered multi stage “Beep test” for measuring of aerobic endurance [20]. Later, it was changed a little [21] and proved [22]. Our researches proved informative potential of this test for qualified handball players. We assessed workability by calculated VO_2max , which is equivalent to overcoming of distance.

Besides we supplemented the data, determining correlations between dexterity of movements and physical fitness of junior handball players: explosive power of lower limbs, speed power, high jumps, sprint abilities with the help of T-test [19]. Movements’ dexterity is correlated with most of special qualities, which determine competition functioning. It can be used as assessment of specific potential of sportsman’s physical potentials.

Offered by Buchheit M. et al. intermittent fitness test for players of team kinds of sports is an alternate classic continuous testing of speed endurance. It is an exact assessment of VO_2max , but it causes parasympathetic innervations [17]. The testing, conducted by us, proved these data and permitted to determine functional potentials and assess current condition of qualified handball players.

Effectiveness of training process of elite handball teams is based on application of models of physical and special fitness. It is known that successful realization is possible only under objectification of qualitative and quantitative information about peculiarities of sportsmen’s motor functioning. It permits to plan control of their qualitative sides, ensure and base its rationality. Thus, assessment of control over elite handball players’ training functioning shall be regarded as purpose of complex control. Analysis of accumulated material permitted to work out model characteristics of control over qualified handball players’ training functioning (see table 1).

Table 1

Model characteristics of indicators of control over qualified handball players' training functioning

INDICATORS	LEVELS		
	MIDDLE	GOOD	EXCELLENT
Distance, cm	TEST 1		
	50-55	55-60	> 60
Time, min.	TEST 2		
	> 3	1.31 – 2.14	< 1.30
Time, sec.	TEST 3		
	15 m	2.6	2.4
15+5 m	3.7	3.5	< 3.5
Time, min.	TEST 4		
	2.10-2.25	2.00-2.10	< 2.00
Time, sec.	TEST 5		
	56-58	53-55	< 53
Quantity, times	TEST 6		
	29-31	32-34	>34

Conclusions

Testing of special workability of qualified handball players permitted to assess current condition of sportsmen, their functional potentials, determine symptoms of de-adaptation and differentiate correction of training programs.

The conducted researches do not cover all sides of analyzed problem. It proves demand in great attention to further theoretical-methodic studies and in perfection of implementation of innovative system of control in training of elite handball teams. The main purpose of further usage of this information is to determine its potentials and correspondence to requirements and correction of training process.

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