

POSSIBLE CAUSE OF PERFORMING THE STANDARD ACTIONS INCORRECTLY IN GAME SPORTS AND HYPOTHESIS OF INCREASING PERFORMANCE

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ABSTRACT

The article studied one of the reasons for inaccurate performance of actions, in games executed from the standard positions, acute hypoxia, which occurs during the game strains. It has been suggested that hypoxic training can lead to an increase body's resistance to O₂ deficiency, a moderate increase in heart rate and respiratory rate, consequently, creates conditions for the "faultless" performance of standard techniques.

Keywords: game standard actions, strains, accuracy, heart rate, respiratory rate, hypoxic training, breathing exercises.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

In team sports competitions, there are often cases where players make a "miss" when performing game actions from the standard position, where no one bothers them to apply obtained techniques. For instance, 11-meter free kick in football, free throws in basketball, serve in volleyball, etc. The reason for such "misses" explained with various factors. In volleyball, for example, "misses" are associated with non-systematic practicing of the ball while intensive strains, lack of psycho-tactical readiness to perform serves, lack of control over the point of hitting the ball, the phenomenon of motion sickness and loss of balance during games, etc. [A.V. Belyaev, 2008; F. Blen, 2008; A.A. Pulatov, 2017]. It is assumed among these factors, leading to the "miss" of the performed standard actions, there is also such as an increase in the cardiac and respiratory rhythms that occur under the influence of high-speed strains that lead to an increased frequency of body oscillations, discoordination of movements and a decrease in accuracy. The validity of this assumption was studied by putting forward the following objectives:

- to study the level of the aiming accuracy while the performance of the standard gaming techniques in the "state of rest" (without strains) and with subsequent impact of moderate high-speed strains for the players;
- to determine the role of the hypoxic resistance when players perform standard game actions.

The following methods were used in the studies: pulsometry, measurement of respiration frequency, determine the serves accuracy of volleyball players' into the target 1.5x1.5 m², which was drawn on the further part of the 6th zone until the front line; for football players, the accuracy of 11-meter free kicks to the goal of 1x1 m²; for basketball players free throw accuracy. Standard actions were performed 6 times by all players. Before each standard action, players performed the training test called "fir-tree" (92 meters shuttle run) at maximum speed and immediately after the test the heart rate (HR) and respiration rate (RR) were measured, after which the players proceeded to perform standard actions. The objects of the research were student volleyball players (12 people), football players (11 people), basketball players (10 people) of the highest class categories.

The results of the study and discussion.

The results of the study allowed us to reveal the explicit variability of the accuracy in the performance of standard actions made from the standard positions, depending on the functioning mode of the cardiorespiratory system of the body in specific conditions of motor activity. In the state of rest, the rate of accuracy in performing such kind of game actions turned out to be relatively higher, and in the conditions of aftereffect of high-speed strains it usually decreases. So, for example, among volleyball players the accuracy of serving at the state of rest was on average 4.5 ± 0.24 times out of 6 attempts. The heart rate before the beginning of the test was 67.4 ± 2.14 beats / min., and the respiration rate was 13.2 ± 0.7 times / min. (Table 1).

Table 1: Indicators of the accuracy of game actions performed from the standard position at the state of rest and after the high-speed test strain “fir-tree” for students of highest class categories ($X \pm \sigma$)

No	Tests to evaluate the accuracy of standard actions	Standard actions in the “state of rest” (without strains)	Heart rate before (numerator) and after (denominator) test performance (beats / min)	Respiratory Rate before (numerator) and after (denominator) test performance (times / min)	Standard action after tests (quantity)
1	Serves for accuracy into a target from 6 attempts (quantity)	$4,5 \pm 0,24$	$67,4 \pm 2,14$ $138,6 \pm 5,17$	$13,2 \pm 0,79$ $39,5 \pm 3,12$	$1,7 \pm 0,08$
2	11-meter free kicks into the goal of 6 attempts (quantity)	$4,2 \pm 0,11$	$68,7 \pm 2,33$ $141,3 \pm 5,29$	$13,4 \pm 0,82$ $40,4 \pm 3,15$	$1,4 \pm 0,05$
3	Free throws of 6 attempts (quantity)	$4,7 \pm 0,19$	$65,3 \pm 2,09$ $139,2 \pm 5,21$	$12,7 \pm 0,68$ $38,9 \pm 3,09$	$1,5 \pm 0,05$

After performing the “fir-tree” training test (92 meters shuttle run) at the maximum speed, the heart rate reached up to 138.6 ± 5.17 beats / min., and the respiratory rate increased to 39.5 ± 3.12 times / min, which led to a decrease in the accuracy of ball serves to 1.7 ± 0.08 times.

The accuracy of the 11-meter free kick at the players from 6 attempts averaged 4.2 ± 0.11 times. Heart rate alone before performing the test was 68.7 ± 2.33 beats / min., and the respiratory rate (RR) 13.4 ± 0.82 times / min. After performing the “fir-tree” speed test, the heart rate increased to 141.3 ± 5.29 beats / min. and respiratory rate increased to 40.4 ± 3.15 times / min., which led to a decrease in the accuracy of the free kick to 1.4 ± 0.05 times.

The degree of accuracy of a free-throw performance among basketball players from 6 attempts corresponded on average 4.7 ± 0.19 times. After the “fir-tree” test, the heart rate reached 139.2 ± 5.21 beats/minute, and the respiratory rate rose to 38.9 ± 3.09 times / min. Prior to the beginning of the test load, the heart rate was 65.3 ± 2.09 beats/min., and respiratory rate respiration was 12.7 ± 0.68 times / min. Under the influence of the “fir-tree” speed test, the accuracy of the free throw of the ball decreased to 1.5 ± 0.05 times. From the above data it can be seen that the noticeable increase in heart rate and respiratory rate occurred from high-speed strains, actually led to a decrease by more than two times in the accuracy of game actions. These consequences suggest that one of the reasons for the decrease in the accuracy of the

game actions, performed from the standard position, is a noticeable increase in heart rate and respiratory rate caused by the previous speed strains, which, in our opinion, occurs due to insufficient development of the body's hypoxic resistance to O₂ deficiency.

Based on the above, we have developed a program for the improvement of hypoxic resistance of the body, which included the below exercises:

1. Breath holding on inhalation "to failure" in the following body positions: lying on the back; lying on the stomach; lying on the right side; lying on the left side; while sitting; while sitting with the torso and head to the knees; while standing;
2. Breath holding on exhalation "to failure" in the same body positions as in the first exercise;
3. Performance of the shuttle run "fir-tree" and at the finish line will be performance of 7-8 times deep breathing with fast inhalation and exhalation "to failure", then the breath holding during inhalation "to failure", both repeated 3 times;
4. The same exercise 3 as above, but at the end the breath holding performed as you exhale;
5. Moderate 1,000 meter run with the act of taking a deep breath and exhaling, daily in the morning after awakening and after an evening workouts;
6. Exercises 1 and 2 are performed daily in the morning before and after the 1,000 meter moderate run.

The total effectiveness of this complex of exercises was determined on the basis of a 6-month experiment conducted in the period of January – June in 2018. The results of the experiment showed that among volleyball players the standard action accuracy in the "state of rest" out of 6 attempts was 3.9 ± 0.24 times (Table 2). Heart rate after the test strains increased to 138.6 ± 5.17 beats / min., respiratory rate increased to 39.5 ± 3.12 times / min. Such a reaction of the cardiac and respiratory systems, led to almost two times decrease in volleyball players' ball serves, which was 1.7 ± 0.08 times. After the completion of the 6-month experiment, during which the volleyball players systematically performed exercises to increase the body's hypoxic stability, the accuracy of the ball serves before performing the "fir-tree" test increased 0.8 times and averaged 4.7 ± 0.21 times in 6 attempts.

Table 2: Indicators of the accuracy of game actions performed from the standard position, before (numerator) and after a 6-month hypoxic training (denominator) for students of highest class categories ($X \pm \sigma$)

Tests to evaluate the accuracy of standard actions	Standard actions in the "state of rest" (without strains)	Heart rate after the test " fir-tree" (beats./min)	Respiratory rate after the test "fir-tree" (time / min)	Standard action after tests (quantity)
1 Test	$3,9 \pm 0,24$	$138,6 \pm 5,17$	$39,5 \pm 3,12$	$1,7 \pm 0,08$
	$4,7 \pm 0,21$	$129,3 \pm 4,08$	$30,4 \pm 2,17$	$3,9 \pm 0,11$
2 Test	$32, \pm 0,11$	$141,3 \pm 5,29$	$40,4 \pm 3,15$	$1,9 \pm 0,07$
	$4,5 \pm 0,25$	$127,6 \pm 3,47$	$33,2 \pm 2,74$	$4,1 \pm 0,22$
3 Test	$3,7 \pm 0,19$	$139,2 \pm 5,21$	$38,9 \pm 3,09$	$1,5 \pm 0,05$
	$5,2 \pm 0,29$	$131,4 \pm 3,67$	$31,7 \pm 2,13$	$4,3 \pm 0,21$

At the end of the experiment with the test strains was not accompanied by a sharp increase in heart rate, as it was before the beginning of the experiment (138.6 ± 5.17 beats / min), it was

129.3 ± 4.08 beats / min. Respiratory rate after the test load decreased to 30.4 ± 2.17 times / min. Such moderate response of the cardiac and respiratory systems to the test strains, have led to a noticeable increase in the number of accurate ball serves among volleyball players 3.9 ± 0.11, which is two times better than the accuracy rate of the serves prior to the start of the experiment. It can be assumed that such progressive shifts, that occurred after the experiment in the areas of motility, cardiac and respiratory systems of volleyball players, are the results of the systematic implementation of the developed breathing exercises which were focused on hypoxic training. It should be emphasized that by the end of the experiment such progressive dynamics of the studied parameters were also noted within groups of football players and basketball players.

CONCLUSION

The results of this study are not sufficient for a reliable justification of the assumptions put forward in the article and therefore, they only emphasize on the need for further exploratory research in this direction.

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