Assessment of the functional preparedness of the women's national team of Russia in Thai boxing

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Abstract

Objective of the study was to assess the functional readiness of the Russian women's national team in Thai boxing.

Methods and structure of the study. The experiment took place from 03/12/2022 to 03/26/2022 at the Federal Sports Center "Yug Sport" in Kislovodsk. The 1st and 2nd numbers of the women's national team of Russia in the amount of 21 people took part in the training event. Correlation analysis of the means used: in the form of test training, current examination, no-load testing, was compared with an expert assessment of the leading specialists of the Russian national team.

Results and conclusions. A strong association with expert opinion was found with anaerobic hand performance recorded on the Monark Ergomedic 894E bicycle ergometer. Medium Connectivity is an exercise with BlazePod sensors in focus mode. Low connection in exercises: barbell, pull-ups on the horizontal bar, % fat, % muscle and the sum of the rating points. The rest of the tests were unreliable. The training process, with the inclusion of test tasks, motivate athletes to perform the load with dedication, and the proposed control over preparedness in the form of a set of rating points allows you to visually assess the profile of an athlete's preparedness, identifying his strengths and weaknesses. However, the selection of informative exercises for the preparation of highly qualified Thai boxers requires additional research.

Keywords: *functional state, heart rate variability, Polar-Team software, HYKSO trackers, BlazePod sensor, fitness profile, step load, body composition.*

Introduction. Preparation is a derivative of the preparedness of an athlete. The quality of preparedness directly depends on preparation. Control over the quality of preparedness will depend on the selected tests evaluating it [1, 2, 3, 4, 7].

The selection of the most informative tests related to the preparedness of highly qualified Thai boxers is still on the way. In this article, we discuss the legitimacy of using certain exercises in the preparation of the women's team in Thai boxing [5, 6, 7].

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Methods and structure of the study. The training camp was held from 03/12/2022 to 03/26/2022 at the Federal Sports Center "Yug Sport", Kislovodsk. The 1st and 2nd numbers of the Russian women's national team in the amount of 21 people took part in the training event. This event was planned as a preparation for the World Championship, but due to sanctions against the Russian Federation, the pre-competition training camp was used in a test mode, where athletes could show their qualities without looking back at the upcoming start.

Before the start of the training camp, a group of experts (head coach of the Russian national team V.Yu. Ilyin, head coach of the women's team V.Ya. Manchur and assistant to the head coach of the women's team Yu.V. Dyurd) conducted an expert survey to identify the most promising athletes of the national team Russian

team participating in this event. Consistency of experts' opinions with a concordance coefficient of 0.71 indicates a high consistency of experts. The composition of the women's national team of Russia was represented by women aged 23 ± 5 years, from 15 cities of Russia, among them Honored Master of Sports - 1, Master of Sports of Russia of international class - 4, Master of Sports - 14 MS, Candidate Master of Sports - 2.

To assess functional fitness, daily unloaded testing of heart rate variability (HRV) was carried out, tests on General physical fitness and Special physical training took place as part of the training process, as well as laboratory testing at the Innovation Center of the Russian Olympic Committee. All the data received were summarized in one general table, taking into account the rating. Based on this rating, an individual profile of the athlete was built.

No-load testing was performed every morning before exercise using the diagnostic equipment of NPO «Dynamics» and the Omega-C program using the heart rate variability (HRV) method. To assess the functional state, indicators were used: IN (index of tension of regulatory systems of the body), IARS (indicator of activity of regulatory systems), TP (power of the wave spectrum). The range of heart rate variability during the training session was as follows: IARS (20.8-166.7), IN (25.1-287), TP (398-9036).

At the beginning and end of the training camp, Thai-boxers underwent a body composition examination by the bioimpedance method using the InBody 720 body composition analyzer. The first place in the rating was occupied by an athlete with a large % of muscle mass (37.2-48.2), a lower % of fat (13.4-37.2), and received the largest increase in these indicators at the end of the collection. At the end of the training camp, an increase in muscle mass was recorded in 9 athletes of the women's team, 1 athlete remained with the same indicators, and 11 Thai boxers had a decrease in muscle mass. The percentage of fat was reduced in 10 athletes, and 11 women received an increase in this indicator. In our opinion, this was due to the lack of competition at the end of the training event.

4 exercises were used to assess special physical training. Coordination properties and decision speed were evaluated using BlazePod sensors in two modes of operation. In the first mode (30 s) "focus", it was necessary to touch only the red sensor from 6 simultaneously lit up different colors, evenly fixed on the box-

Readiness rating of the Russian women's national Thai boxing team

place	Full Name	Hykso	BlazePod 1	neck 20 kg	barbell 50% weight	pull-up	press	diving under water	swimming 40 min	fat %	muscle %	static dynamics	TP	expert review	coordination	BlazePod 2	rowing simulator	MAP legs	MAP hands	jumping	aerobic fitness	Sum
1	B Va	13	8	15	18	17	19	1	12	16	15	10	12	14	15	11	18	21	17	18	18	288
2	M Vya	21	1	3	12	14	18	1	1	21	21	13	21	16	12	4	15	20	15	17	16	262
3	Da S	18	11	9	17	13	10	6	16	19	18	21	8	7	1	13	14	14	13	14	13	255
5	T An	16	20	16	15	16	4	1	8	9	11	15	4	9	18	1	20	15	16	21	19	254
4	Vi D	17	3	2	11	11	14	5	11	11	10	19	11	18	13	8	17	19	21	20	11	252
6	B Ma	19	6	14	13	15	12	3	10	17	19	8	18	12	6	1	13	13	14	13	14	240
7	Pe T	11	18	1	1	8	20	11	18	12	12	16	13	8	14	1	12	12	12	11	12	223
8	B Ec	7	7	18	14	12	9	1	9	4	4	17	16	20	16	2	11	11	9	12	21	220
9	Du B	20	4	12	5	1	11	2	5	10	7	4	17	15	17	3	16	17	19	16	17	218
10	P Po	1	13	1	1	7	8	9	15	8	8	18	2	17	2	1	21	18	18	19	15	202
11	L Ve	5	12	10	6	1	7	12	3	13	13	5	1	19	4	1	19	16	20	15	20	202
12	P Da	15	5	6	10	10	21	7	13	15	16	12	6	11	3	1	10	7	8	10	8	194
13	K Vi	2	15	13	16	18	17	1	1	7	5	9	19	13	7	9	7	8	11	9	10	197
14	Is S	10	16	17	7	5	6	13	19	6	9	14	20	5	5	1	6	9	7	7	9	191
15	Gd D	12	9	8	9	6	15	8	14	14	14	7	15	4	8	1	3	6	10	6	6	175
16	Al V	8	10	5	4	2	13	10	17	2	2	11	7	3	19	10	4	10	5	8	5	155
17	Kl M	3	2	7	3	9	3	4	7	18	17	3	3	21	21	7	2	5	6	5	7	153
18	K El	4	17	4	8	3	2	1	6	5	6	20	9	6	9	1	9	4	4	3	4	125
19	K An	1	14	1	1	1	1	1	4	20	20	1	14	10	10	1	8	1	3	4	3	119
20	K Ek	6	19	1	1	4	5	1	2	3	3	6	10	2	11	6	6	2	1	3	2	94
21	El A	9	21	11	2	1	1	1	1	1	1	1	2	5	1	20	1	1	3	2	1	86

ing bag. The decision-making speed was recorded in milliseconds (386-680).

The second mode (30 s) "fight in the ring" included a simultaneous confrontation of 3 athletes in the ring. Each corner of the ring, equipped with a BlazePod sensor, lit up in 3 different colors (blue, red, green). The task of each boxer is to extinguish his color by touch (pre-negotiated), the boxer who covers the most sensors wins. The fight in the ring took place simultaneously in three rings of 3 circles, which made it possible to involve 9 athletes. The winners of each ring received 1 point and moved to ring No. 1, the second places received 2 points and met in ring No. 2, and, accordingly, the losers sorted things out in ring No. 3, having 3 points in their arsenal. The athlete with the lowest number of points rose in the ranking and went to the next round of the competition until the winner was revealed.

In the third exercise, HYKSO trackers were used to assess the number of hits (tapping test) in a boxing pillow for 30 s, their range was (182-280).

The fourth exercise in the form of an interval-test training 12 ITT (2-4, 3-4, 2-5) consisted of working on a boxing bag and included 12 intervals in different pulse zones, which were held under the control of Polar H-10 heart monitors with Polar Team software. The rating was determined by the time to complete the specified intervals in minutes 12 ITT3-4 (6:15-8:20), 12 ITT2-4 (8:28-18:15), 12 ITT2-5 (13:09-22: 40) [8].

Results of the study and their discussion. The indicators of general physical fitness had the following boundaries: pull-ups on the bar (1-14), bringing the legs to the bar "press" (1-28), throwing the bar 20 kg from the chest in 1 min (13-61), lifting the barbell to the chest 50 % of own weight (1-37), swimming 40 minutes (m) (500-1250), swimming "dive" under water (m) (6-33.5), an exercise consisting of static-dynamic push-ups alternating every 30 seconds in lying and squats to failure in minutes (16:25-62:00) (see table). Based on the results shown in the proposed exercises, the athletes were assigned an individual rating, where the best result was 21 points.

The current survey was conducted at the Innovation Center of the Russian Olympic Committee in Kislovodsk. The body composition analysis was carried out on 05/16/2022 and 05/24/2022, the rest of the tests were carried out as part of the training process on 05/20/2022.

To determine the level of aerobic fitness, a step test on a treadmill was used, the final rating was de-

termined by the sum of the rating for the following indicators: MOC, HR ANOT, time on the course, % HR ANOT from HR max. The strength index rating was determined using carpal dynamometry. The height of the jump from a place, the elasticity index and the consistency index were determined using optical sensors Microgate OptoGait system, rating points were awarded based on the sum of jumps from three initial positions. The anaerobic performance of the arms and legs was determined on a Monark Ergomedic 894E bicycle ergometer, they are reflected in the table as "MAP arms" "MAP legs", the rating score was composed of 4 indicators: peak, relative power (W and W/kg), time to reach peak power (ms) and speed at peak power (rpm). In the maximum step test on the rowing machine, time and power to failure were evaluated, without taking into account the weight of the athlete. The quality of the balance function is calculated by the StatMed 2.0 program using the analysis of the center of pressure displacement vectors relative to the coordinate axes, three indicators were taken to calculate the rating: balance with open eyes, eyes closed and the M test (ability to assemble in an extreme situation). In the table and figure, it is designated as coordination.
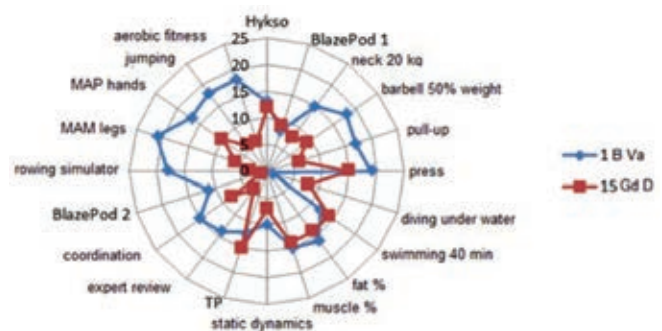
Individual fitness profile of two members of the Russian women's national Thai boxing team

Throughout the training event, the rating of athletes was determined based on the results of each test. At the end of the training camp, an overall rating was summed up based on the sum of the places taken. Based on the places taken in the battery of tests, an individual fitness profile was compiled for each athlete (see figure).

An individual profile built on ranking values allows you to visually see the strengths and weaknesses of the preparedness of athletes. However, after conducting a correlation analysis between the expert assessment and the proposed exercises, only one strong

relationship was found 0.71 with the anaerobic performance of the hands recorded on the Monark Ergomedic 894E bicycle ergometer. This circumstance prompts us to look for new forms of informative exercises that are as close as possible to competitive activity, which requires additional research to assess the quality of preparedness in Thai boxing.

Conclusions. The training process, with the inclusion of test tasks, additionally motivates athletes to perform the load with dedication, and the proposed control over preparedness in the form of a set of rating points allows you to visually assess the athlete's preparedness profile, identifying his strengths and weaknesses from the sample of the Russian national team.

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