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**THE ESTIMATION OF AUTHOR PROGRAM'S EFFICIENCY OF PREPARATION UKRAINIAN ROWING WOMEN TEAM TO THE OLYMPIC GAMES – 2012**

**Abstract. Purpose:** *to give the estimation of efficiency of the use of the authorial training program in setup time for the women's Ukraine rowing team representatives in the process of preparation to Olympic Games in London. Materials and Methods:* *10 sportswomen of higher qualification, that are included to Ukraine rowing team, are participated in research. For the estimation of general and special physical preparedness the standard test and rowing ergometre Concept-2 are used. Results:* *the end of the preparatory period was observed significant improvement significant general and special physical fitness athletes surveyed, and their deviation from the model performance dropped to 5–7%. Conclusions:* *the high efficiency of the author training program for sportswomen of Ukrainian rowing team are testified and they became the Olympic champions in London.*

**Keywords:** *general and special physical preparedness, rowing, women Ukrainian team, author training program, Olympic Games.*

**Introduction.** It is conventional that training of sportsmen for the most important competitions provides the achievement of the highest level of their general, special, functional, technical and tactical and psychological preparedness, in particular to the Olympic Games [6; 7; 9; 11; 14].

The main attention has to be paid to their general and special preparation according to a number of experts, along with undoubted importance of all specified components of the general preparedness of sportsmen [3; 4; 5; 12].

At the same time the prompt growth of sports results among sportsmen of various countries specializing, in particular, in rowing provides a serious improvement of training programs taking into account the last achievements of sports science.

In this regard the development and the practical introduction in training process of sportsmen of the top skills of new programs of training classes at various stages of a year cycle of preparation, especially during the preparation for the most responsible competitions, is undoubtedly an actual problem which has a great practical value and is directed on the achievement of the maximum results by sportsmen [1; 2; 8; 13].

**Communication of the research with scientific programs, plans, subjects.** The work is a part of scientific programs of the faculty of physical training and the chair of the Olympic and professional sport and is executed within the subject

"Studying of adaptive opportunities of an organism of sportsmen at different stages of the educational and training process" (the number of the state registration is 0106U000583) the Consolidating plan of RW of the Ministry of Education and Science of Ukraine for 2010–2014.

**The objective of the research:** to give an assessment to the efficiency of the use of the experimental program of training classes in the preparatory period for representatives of the women's national team of Ukraine on rowing in the course of preparation for the Olympic Games in London.

**Material and methods of the research.** We held the test of the general and special physical fitness of 10 sportswomen of the highest qualification, having training for the Olympic Games – 2012 in London in a line-up of the women's national team of Ukraine on rowing for the practical realization of the research objective. The testing of sportswomen was held at the beginning (October, 2011) and at the end (June, 2012) of the research, i.e. just before the Olympic starts.

During the whole preparatory period of the sportswoman of the national team of Ukraine were engaged according to the author's program of planning of training classes. The intensification of power-high-speed and power training of sportswomen and the stabilization of a rate of rowing at the level of model characteristics (42 strokes per minute) became the main accent of this program. The complete description of this program is presented by us in the methodical development for rowing coaches [10].

The level of the general physical fitness of sportswomen at all stages of the experiment was estimated on indicators of their general endurance (run on 3000 m, s), power endurance (number of times of raising of a bar, lying on a board, in 7 minutes) and maximum force by results of draft of a bar, lying on a board – the coefficient of the maximum force of  $K_{max}$ , conventional units, c.u. was calculated).

A special rowing ergometer Concept-2 was used for an assessment of the level of the special physical fitness of sportswomen: loading power (N, W), heart rate (HR,  $bpm^{-1}$ ) and lactate level in blood (L,  $mmol \cdot l^{-1}$ ) were determined when passing distances of 125 m, 250 m, 500 m, 2000 m and 6000 m on an ergometer.

The model indicators of the general and special physical fitness of sportswomen of the highest qualification were used which are presented by us in the previous works for the purpose of the objective interpretation of data of the experiment in the research.

All received results during the research were processed on the personal computer with the use of a package of the program Statistika 6.0.

**Results of the research and their discussion.** The preliminary testing of the sportswomen of the national team of Ukraine was held at the beginning of the Olympic year, allowed to note that the examined sportswomen authentically conceded to model values of these parameters on indicators of the general and special physical fitness (tab. 1).

So, the sportswomen of the national team of Ukraine had authentically the worst, in comparison with model values, indicators of the general endurance (for  $9,82 \pm 1,27\%$ ), power endurance (for  $9,23 \pm 2,84\%$ ), maximum force (for  $9,11 \pm 2,43\%$ ) at the beginning of the period of preparation.

Results of the preliminary testing of sportswomen on the ergometer Concept-2 showed that the deviation from the model characteristics at a distance of 125 m on the

capacity of the performed work, HR at loading and to a lactate in blood made respectively  $16,08 \pm 1,47\%$ ;  $9,36 \pm 4,39\%$  and  $9,54 \pm 9,05\%$ ; at a distance of 250 m – respectively  $10,06 \pm 1,68\%$ ;  $5,11 \pm 1,83\%$  and  $12,08 \pm 9,98\%$ ; at a distance of 500 m –  $10,03 \pm 1,48\%$ ;  $5,01 \pm 1,10\%$ ;  $6,74 \pm 1,35\%$ ; at a distance of 2000 m – respectively  $9,79 \pm 1,65\%$ ;  $6,91 \pm 1,55\%$  and  $14,18 \pm 5,06\%$  and for distances of 6000 m – respectively  $9,46 \pm 1,86\%$ ;  $6,30 \pm 3,79\%$  and  $30,36 \pm 7,27\%$ .

Table 1

**Indicators of the general and special physical fitness the sportswomen of a national team of Ukraine on rowing at the beginning of the forming experiment,  $X \pm S$**

Indicators	National team of Ukraine (n=10)	Model characteristics (n=10)	% of deviations from model characteristics
Run on 3000 m, s	818,3±1,25	745,13±1,58***	9,82±1,27
Power endurance, q-ty of times	188,08±1,14	207,2±0,43***	-9,23±2,84
Kmax, s. u.	1,04±0,01	1,14±0,001***	-9,11±2,43
N-125, W	664,2±16,5	791,44±15,27***	-16,08±1,47
HR-125, bpm <sup>-1</sup>	189,2±1,1	173±0,26***	9,36±4,39
Lactate-125, mmol·l <sup>-1</sup>	7,68±0,07	8,49±0,01***	-9,54±9,05
N-250, W	582,2±19	647,29±14,02**	-10,06±1,68
HR –250, bpm <sup>-1</sup>	199,7±0,91	190±0,59***	5,11±1,83
Lactate –250, mmol·l <sup>-1</sup>	10,91±0,13	12,41±0,01***	-12,08±9,98
N-500, W	474±7,14	526,82±6,53***	-10,03±1,48
HR –500, bpm <sup>-1</sup>	201,2±1	191,6±2,21***	5,01±1,10
Lactate –500, mmol·l <sup>-1</sup>	14,73±0,08	13,8±0,09***	6,74±1,35
N-2000, W	328,9±6,85	364,58±5,21***	-9,79±1,65
HR 2000, bpm <sup>-1</sup>	194,3±0,67	181,73±0,56***	6,91±1,55
Lactate –2000, mmol·l <sup>-1</sup>	16±0,25	14,01±0,05***	14,18±5,06
N-6000, W	259,3±6,55	286,4±4,18***	-9,46±1,86
HR –6000, bpm <sup>-1</sup>	186,1±1,04	175,07±0,28***	6,30±3,79
Lactate –6000, mmol·l <sup>-1</sup>	10,49±0,43	8,05±0,06**	30,36±7,27

**Note.** \*\* –  $p < 0,01$ ; \*\*\* –  $p < 0,001$  in comparison with indicators of the women's national team of Ukraine on rowing.

In general the sizes of deviations of indicators of the general and physical fitness of the sportswomen of the national team of Ukraine from model characteristics fluctuated in the range from 5% to 16% at the beginning of the period of preparation for the Olympic Games that, according to experts, is admissible for this stage of a year cycle of preparation. Rather high sizes of deviations in values of a lactate after passing by sportswomen of distances of 2000 m and 6000 m on a rowing ergometer which were significantly higher than the model characteristics (respectively  $30,36 \pm 7,27\%$  and  $14,18 \pm 5,06\%$ ) guarded a little. In this regard the special attention was paid to the increase of the general endurance of the sportswomen of the national team of Ukraine and to the increase in aerobic capacity of their organism as the distance of 2000 m is a "working" competitive distance.

We carried out the corresponding correction of the comprehensive program of preparation of the women's national team of Ukraine for the Olympic Games in

London taking into account the results of the examination of sportswomen in the Pre-Olympic year (2011), and also the presented data of the preliminary testing in the Olympic year (2012). The assessment of the efficiency of this program and the degree of preparedness of sportswomen of the national team of Ukraine to the Olympic Games-2012 in London was carried out by us on the basis of the results of their final testing in June, 2012.

The reliable improvement of the majority of the indicators of the general and special physical fitness used in the research was characteristic apparently from the results presented in tab. 2 to the end of the preparatory period for sportswomen of the national team of Ukraine.

So, the run time on 300 m decreased till  $757,75 \pm 1,15$  s or on  $-7,40 \pm 1,36\%$ , indicators in tests on power endurance and maximum force improved on  $8,70 \pm 1,48\%$  (till  $204,44 \pm 1,24$  times) and on  $8,18\%$  (till  $1,12 \pm 0,03\%$ ).

Undoubtedly, the changes of the indicators were positive which are registered in the tests with the use of the rowing exercise machine. It should be noted that, irrespectively from a distance (from 125 m to 6000 m), the orientation of these changes was almost identical: the decrease in heart rate (on 4–7%), the lactate in blood (on 9–22%) and, on the contrary, the increase in power of the performed work (on 9–17%).

The special attention was paid by us on the results of the ergometric testing of sportswomen of the national team of Ukraine at a distance of 2000 m. It is established that undoubtedly positive changes were characteristic to end of the preparatory period for them, in comparison with the beginning of the period of preparation which were expressed in the reliable decrease in HR to  $185,10 \pm 0,78$   $\text{bpm}^{-1}$  or on  $4,73 \pm 1,54\%$ , lactate level in blood to  $14,10 \pm 0,22$   $\text{mmol} \cdot \text{l}^{-1}$  or on  $11,88 \pm 1,34\%$  and the increase of power of work to  $361,4 \pm 7,92$  W or on  $9,88 \pm 1,53\%$ .

*Table 2*

**Indicators of the general and special physical fitness of sportswomen of a national team of Ukraine (n=10) at the beginning of research and at the end of the research,  $\bar{X} \pm S$**

Indicators	The beginning of the research	The end of the research	% of changes
Run on 3000 m, s	$818,3 \pm 1,25$	$757,75 \pm 1,15^{***}$	$-7,40 \pm 1,36$
Power endurance, q-ty of times	$188,08 \pm 1,14$	$204,44 \pm 1,24^{***}$	$8,70 \pm 1,48$
Kmax, s. u.	$1,04 \pm 0,01$	$1,12 \pm 0,03^*$	$8,18 \pm 4,26$
N-125, W	$664,2 \pm 16,5$	$778,9 \pm 15,8^{***}$	$17,27 \pm 1,38$
HR –125, $\text{bpm}^{-1}$	$189,2 \pm 1,1$	$176,9 \pm 1,04^{***}$	$-6,50 \pm 1,37$
Lactate –125, $\text{mmol} \cdot \text{l}^{-1}$	$7,68 \pm 0,07$	$8,38 \pm 0,16^{***}$	$9,11 \pm 2,64$
N-250, W	$582,2 \pm 19$	$638,4 \pm 19,23$	$9,65 \pm 1,42$
HR –250, $\text{bpm}^{-1}$	$199,7 \pm 0,91$	$192,5 \pm 0,83^{***}$	$-3,61 \pm 1,36$
Lactate –250, $\text{mmol} \cdot \text{l}^{-1}$	$10,91 \pm 0,13$	$12,19 \pm 0,14^{***}$	$11,73 \pm 1,44$
N-500, W	$474 \pm 7,14$	$515,11 \pm 7,38^{***}$	$8,67 \pm 1,44$
HR –500, $\text{bpm}^{-1}$	$201,2 \pm 1$	$194,5 \pm 1^{***}$	$-3,33 \pm 1,42$
Lactate –500, $\text{mmol} \cdot \text{l}^{-1}$	$14,73 \pm 0,08$	$14,01 \pm 0,12^{***}$	$-4,89 \pm 1,76$
N-2000, W	$328,9 \pm 6,85$	$361,4 \pm 7,92^{**}$	$9,88 \pm 1,53$
HR –2000, $\text{bpm}^{-1}$	$194,3 \pm 0,67$	$185,1 \pm 0,78^{***}$	$-4,73 \pm 1,54$

Lactate –2000, mmol·l <sup>-1</sup>	16±0,25	14,1±0,22***	-11,88±1,34
N-6000, W	259,3±6,55	285,5±7,71**	10,1±1,54
HR –6000, bpm <sup>-1</sup>	186,1±1,04	177,7±0,79***	-4,51±1,26
Lactate –6000, mmol·l <sup>-1</sup>	10,49±0,43	8,17±0,25***	-22,12±1,16

**Note.** \* –  $p < 0,05$ ; \*\* –  $p < 0,01$ ; \*\*\* –  $p < 0,001$  in comparison with indicators at the beginning of the research.

The positive dynamics of indicators of the general and special physical fitness of sportswomen of the national team of Ukraine and results of the comparative analysis with model values of these indicators were confirmed (tab. 3).

It was succeeded to establish that sportswomen of the national team of Ukraine on rowing practically "came nearer" to the model characteristics to the end of the period of preparation for the Olympic Games – 2012 in London.

Table 3

**Indicators of the general and special physical fitness of sportswomen of a national team of Ukraine on rowing at the end of the research, X±S**

Indicators	National team of Ukraine (n=10)	Model characteristics (n=10)	% of deviations from model characteristics
Run on 3000 m, s	757,75±1,15	745,13±1,58***	1,69±1,36
Power endurance, q-ty of times	204,44±1,24	207,2±0,43*	-1,33±1,48
Kmax, s. u.	1,12±0,03	1,14±0,02	-1,68±4,26
N-125, W	778,9±15,8	791,44±15,27	-1,58±1,38
HR-125, bpm <sup>-1</sup>	176,9±1,04	173±0,26**	2,25±1,37
Lactate-125, mmol·l <sup>-1</sup>	8,38±0,16	8,49±0,01	-1,3±2,64
N-250, W	638,4±19,23	647,29±14,02	-1,37±1,42
HR-250, bpm <sup>-1</sup>	192,5±0,83	190±0,59*	1,32±1,36
Lactate-250, mmol·l <sup>-1</sup>	12,19±0,14	12,41±0,01	-1,77±1,44
N-500, W	515,11±7,38	526,82±6,53	-2,22±1,44
HR-500, bpm <sup>-1</sup>	194,5±1	191,6±2,21	1,51±1,42
Lactate-500, mmol·l <sup>-1</sup>	14,01±0,12	13,8±0,09	1,52±1,76
N-2000, W	361,4±7,92	364,58±5,21	-0,87±1,53
HR2000, bpm <sup>-1</sup>	185,1±0,78	181,73±0,56**	1,85±1,54
Lactate-2000, mmol·l <sup>-1</sup>	14,1±0,22	14,01±0,05	0,62±1,34
N-6000, W	285,5±7,71	286,4±4,18	-0,32±1,54
HR-6000, bpm <sup>-1</sup>	177,7±0,79	175,07±0,28*	1,50±1,26
Lactate-6000, mmol·l <sup>-1</sup>	8,17±0,25	8,05±0,06	1,53±1,16

**Note.** \* –  $p < 0,05$ ; \*\* –  $p < 0,01$ ; \*\*\* –  $p < 0,001$  in comparison with indicators of the women's national team of Ukraine on rowing.

Distinctions were reliable only on the level of the general and power endurance and sizes of HR when passing all distances (from 125 m to 6000 m) on a rowing ergometer. However these differences were extremely insignificant and fluctuated in the range of 1,32–2,25%.

Moreover, on all other indicators of the general and special physical fitness of a sportswoman of the national team of Ukraine authentically didn't differ from the model characteristics.

The obtained data testified not only to a high efficiency of the author's program of preparation of the women's national team on rowing for the Olympic Games, but also to a high degree of their preparedness to these main international competitions.

The results of sportswomen of the national team of Ukraine on control starts (the 3rd stage of the World Cup in Munich, 15.06.12–17.06.12) where our sportswomen won a convincing victory with results 6.19.40 in the preliminary race and 6.33.10 in the final became the convincing confirmation to it.

### **Conclusions:**

1. The results of the made experiment testified to the high efficiency of the author's program of training of the representatives of the national team of Ukraine on rowing for the Olympic Games – 2012, the general and special preparedness of sportswomen which provided the achievement of the high level before the main competitions of a four-year cycle of preparation.

2. In our opinion, the high level of the general preparedness of sportswomen of the national team of Ukraine was reached at the expense of the increase in volume of training classes at their high-speed- power and power preparation, and also due to the achievement and the maintenance by sportswomen, during passing of a distance, optimum rate of rowing (42 strokes per minute).

Their gold medals at the Olympic Games – 2012 in London with result 6.34.01 in the final race became the confirmation of the high efficiency of preparation sportswomen of the national team of Ukraine by the program offered by us.

**Prospects of further researches in this direction.** Studying of the efficiency of the use of the author's program of planning of training classes for sportswomen of the highest qualification in the increase of the level of their functional preparedness is planned further.

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Received: 10.01.2015.

Published: 28.02.2015.

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