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POSSIBILITIES OF MONITORING THE FORMATION OF SWIMMING SKILLS IN PRIZE-WINNING SWIMMERS OF DIFFERENT AGES AND GENDERS AT THE XXXVII EUROPEAN AQUATICS CHAMPIONSHIPS IN BELGRADE-2024, SERBIA

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INTRODUCTION

In practice, when evaluating the results of such prestigious competitions as the European Aquatics Championships, which have been regularly held since 1926 by the European Swimming League (LEN), qualitative indicators are used to form the rating, indicating that the performers have received prize awards, first of all, gold, then silver and then bronze medals. However, general quantitative indicators (number of different medals, FINA points table) are practically not taken into account[1, 2 ,3, 4]. This makes their level important for an objective analysis of a certain success of the participants, that is, the rating of the strongest swimming teams for a qualitative and quantitative analysis of the development of European swimming in each country of the continent[5,6].

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So, according to our research the criterion of difference (in points) for the quality of receiving a medal in swimming at the European Championship at the I stage from 1926–1950, is among men: 418, 380, 395 points respectively, which is determined on average 398 points. Among women, these parameters were respectively at the level of: 410, 394 and 376 points, the average range is – 394 points. In general, the differences between the average value of achievements of men and women have a similar level – 398 and 394 points[7].

Also in our research, the criterion of distinction (in points) for the quality of medals received at the II stage from 1954-1991 for men is: 754, 739, 726 points. This indicates, respectively, an average level of achievement of 745 points. For women, these parameters were, respectively: 775 and 727 and 749 points, and the average value =750 points. The generalized differences between the average value of achievements of men and women have a similar level: 745 and 750 points[8].

In addition, as our information, in O. Ganchar, showed the criterion of distinction (in points) for the quality of medals received at the III stage from 1993-2014 for men: are respectively 890, 870, 857 points 3. Represent an average of 868 points. In women, these parameters were, respectively: 888, 866, 851 points, and the average were exactly 870 points. The differences from the average achievement of men and women are summarized, as our previous studies have proven, at a similar level: 868 and 870 points.

These facts can serve as an informative criterion for the level of achievements of the country (the price of a medal in points). Therefore, the main criterion is the number of medals, and their quality will be the main criterion when the equality of certain awards is fixed.

We note that the availability of information on the dynamics of gender differences in sports swimming among youth and adults in existing publications on the theory and methodology of physical education and sports is disclosed almost fragmentarily and episodically. This concern the calculation of the ranking of the participating teams, primarily by the number of gold medals won, then silver and bronze medals. At the same

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time, the greatest interest for specialists and swimming fans is the level of differences in the results of women's and men's achievements at distances in various ways in prestigious competitions, such as the final starts of the European Aquatics Championships [9],[10],[11],[12].

Therefore, the results obtained can complement the results of well-known domestic scientists: M. Dutchak, on the study of the theory and practice of sports for all in Ukraine, and also clarify the fundamental research on the ways of achieving success by athletes in sports swimming, which has been implemented for a long time by his research V.M. Platonov.

It also details the work of foreign scientists and specialists on improving sports swimming: application of modern indicators of sports swimming technique, E. Bartkowiak[13]; studying the state of development of swimming in the 21st century, M. Colwin Cecil[14]; for information materials of the handbook of sports medicine and sports swimming, D. Z. Costill, E. W. Maglischo, A. B. Richardson[15];

involving recommendations of the new science of swimming, J.E. Counsilman, B.E. Counsilman[16]; compliance with the requirements of technically rational swimming, J. Giehrl[17]; use of materials of coaching manuals for swimming,

Hannula Dick, Thornton North[18]; use of recommended indicators for speed swimming, W. Ernest Maglischo[19]. It should be noted that this sport, of which sports swimming is an integral part, includes open water marathon swimming competitions. They have been held since 1991, since individual

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[16] Counsilman J.E., Counsilman B.E. The New Science of Swimming. Prentice Hall, 1994. 420 p.

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swimmers combine starts in both sports and marathon swimming (wikipedia.org, sports-reference.com, swimrankings.net, len.eu)[20,21,22,23.]

Taking into account the existing useful materials of information experience that already exist in the theory and practice of sports and marathon swimming, the involvement of professional reports on the status of the completion of the starts of the European Championship-2024 in Belgrade will be timely, relevant and regulated for the appropriate preparation of performers for the next XXXVIII European Aquatics Championships in Paris-2026.

Formulation of the research goal. Based on the development of the proposed topical problem, we chose the appropriate object of research: the dynamics of readiness for swimming of young people and adults at the stages of long-term training and improvement of sports swimming skills. Subject of research: features of the manifestation of similarities and differences in the levels of formation of sports and marathon swimming skills among the achievements of representatives of different ages and genders at the XXXVII European Aquatics Championships on June 12–15 and 17–23 in Belgrade–2024, Serbia.

Purpose of the research: to determine the level and degree of formation of motor skills of sports and marathon swimming among prize-winning swimmers based on the results of monitoring the final swims at the XXXVII European Aquatics Championships in Belgrade–2024, June 12–15 and 17–23, Serbia. The objectives of the study were: a) to identify the dominant differences and similarities in the dynamics of the achievements of prize-winning swimmers at the XXXVII European Aquatics Championships in Belgrade–2024, Serbia

b) to implement the most significant research results into the theory and practice of physical education and sports to support swimming in different age groups.

The main research methods were: theoretical analysis of literary sources, generalization of documentary materials, ascertaining and comparative experiment, mathematical statistics.

1. Ranking of European countries at the Belgrade 2024 championship among prize-winning swimmers

Research results. At the final starts of the XXXVII European Aquatics Championships in Belgrade-2024, Serbia, which took place on June 12–15 and 17–23, prize medals were received by representatives of 26 countries of

[20] http://www wikipedia.org
[21] http://www.sports-reference.com
[22] http://www.swimrankings.net
[23] http://www.len.eu

the continent (out of 46 participating countries), who competed at distances in 23 types of sports and 7 types of marathon swimming in open water, where medals of various quality were received by prize-winning swimmers: 120 men and 120 women (Table 1).

Table 1

Ranking of teams of participating countries of the XXXVII European Aquatics Championships in Belgrade–2024, Serbia, including sports and marathon swimming in open water (by the facts of receiving gold, silver and bronze medals)

Teams ranking	Medals of participating countries	Golden		Silver		Bronze		Total		Together
		men	women	men	women	men	women	men	women	men/ women
1.	Hungary	5+	5 c	4	5	4+	4+	13++c	14+	27+++c
2.	Greece	5		5	3	3	1	13	4	17
3.	Poland		3	6		4	2	10	5	15
4.	Germany	1	++	2	1+	2	1	5	2+++	7+++
5.	Italy	++	+	+	++c	+	+	++++	++++c	++++++ ++c
6.	Israel	1	3	1	1	1		3	4	7
7.	Czech Republic		3		2	1	1	1	6	7
8.	Turkey	2		1		1	2	4	2	6
9.	Ukraine	2		1		2		5		5
10.	Sweden	1	1				3	1	4	5
11.	Denmark		1		2		2		5	5
12.	Switzerland				1	3	1	3	2	5
13.	France			++		+	c	+++	c	+++c
14.	Austria	2		1				3		3
15.	Lithuania	1		1		1		3		3
16.	Belgium		1		1		1		3	3
17.	Romania	2						2		2
18.	Ireland		1		1				2	2
19.	Serbia	1				1		2		2
20.	Portugal		1				1		2	2
21.	United Kingdom				1		1		2	2
22.	Bulgaria	1		-				1		1
23.	Estonia		1						1	1
24.	Finland				1				1	1
25.	Bosnia and Herzegovina				1				1	1
26.	Spain						+		+	+
Sport swimming+mixed men/women		24	20	22	20	23	20	69	60	129
Marathon +c – mixed		+3	+3c	+3	+3c	+3	+3c	+9	+9ccc	21
Total medals received		27	24	25	24	26	24	78	72	150

The most successful (top ten) was the performance of the athletes: Hungary in swimming-23+4 in the marathon, Greece-17+1, Poland-15, Germany -7+3, Italy+9 marathon, Israel-7, Czech Republic-7, Turkey-6, Ukraine-5, Sweden-5 medals. The second ten of the team ranking by the number and quality of medals includes the following countries: Denmark-5, Switzerland-5, Lithuania-3, Austria-3, France-1+3, Belgium-3, Portugal-2, Serbia-2, Romania-2, Ireland-2 medals, Spain-2+1. The third ten were joined by: Great Britain-2 medals, Bulgaria-1, Finland-1, Estonia-1, Bosnia and Herzegovina-1, Spain+1 medal in marathon swimming.

Among men swimmers, the more successful were: Greece-13+1, Hungary-9+2, Poland-8, Ukraine-5, Italy-+4 marathons, Turkey-4 medals. Among women swimmers, the best were the following athletes: Hungary-14+1, Czech Republic-6, Italy-1+4, Poland-5, Denmark-5, Germany-2+3, Sweden-4, Greece-4 medals.

2. Average swimming speed indicators at distances among prize-winning swimmers

When considering the results of the winners of the final swims, data were obtained that are more characteristic of the winners and prize-winners of the final swims in different swimming methods, both among men and among women, taking into account their age characteristics. This allows us to study in detail the state of swimmers' swimming readiness, as well as to identify the features of the dynamics of their performance results, both among men and women of different age groups, which contributes to an objective assessment of their gender differences in the formation of sports and applied swimming skills among elite swimmers (Table 2).

The greatest excess (up to 1-5 years) of age of men over women was noted at 16 competition distances: 100–200–400–800–1500 m freestyle, 100–200 m backstroke, 100–200 m breaststroke, 100 butterfly, 4×100 m freestyle relay, 4×200 m freestyle, 4×100 m medley relay, 4×100 m and 4×200 m freestyle mixed relay, 25,000 m marathon swimming. Meanwhile, the age advantage of women over men in the range of 1–4 years was recorded at 8 distances of the competition: 50 m freestyle, 50 backstrokes, 50 m and 200 m butterfly, 400 m individual medley, 4×100 m mixed medley relay, 10,000 m marathon swimming and 4×1,250 m mixed marathon swimming relay. The absence of changes in age indicators was recorded at 3 distances of these prestigious competitions: 50 m breaststroke, 200 m individual medley, 5000 m marathon swimming. Thus, the total age difference of the prize-winning swimmers is, with almost similar parameters, 24 years: men, $x \pm m = 23.84 \pm 1.92$; women, $x \pm m = 23.80 \pm 2.05$; $t = 0.93$, $p > 0.05$ (table 2).

Table 2

Observation of the formation of swimming skills of the prize-winners of the XXXVII European Aquatics Championships in Belgrade–2024, Serbia, taking into account their different ages and genders

Swimmer results			Distance, swimming style	Age of swimmers		
men	women	difference		men =120	women. =120	± diffe-rence
21,76	24,64	2,88	50 m freestyle	28	29	-1+
47,34	53,96	6,62	100 m freestyle	24	22	+2-
1.45,03	1.56,65	11,62	200 m freestyle	24	22	+2-
3.46,10	4.08,07	21,97	400 m freestyle	24	23	+1-
7.48,02	8.32,60	44,58	800 m freestyle	24	21	+3-
15.01,10	16.13.29	1.12,19	1500 m freestyle	22	20	+2-
24,58	27,86	3,28	50 m backstroke	24	26	-2+
52,87	60,18	7,31	100 m backstroke	24	22	+2-
1.55,52	2.09,06	13,55	200 m backstroke	21	20	+1-
26,95	30,70	3,75	50 m breaststroke	25	25	0
59,11	1.07,09	7,98	100 m breaststroke	26	21	+5-
2.09,70	2.24,96	15,26	200 m breaststroke	26	25	+1-
23,20	25,98	2,78	50 m butterfly	22	24	-2+
50,92	57,75	6,83	100 m butterfly	23	21	+2-
1.54,90	2.08,08	13,18	200 m butterfly	22	26	-4+
1.57,73	2.10,80	13,07	200 m individual medley	22	22	0
4.11,34	4.38,41	27,07	400 m individual medley	23	24	-1+
3.13,29	3.38,75	25,46	4×100 m freestyle relay	25	22	+3-
7.09,12	7.55,44	46,32	4×200 m freestyle relay	23	21	+2-
3.33,45	4.00,74	27,29	4×100 m medley relay	23	22	+1-
2men+2-women. = 3.26,41		-	4×100 m freestyle mixed	21,5		-
1.37,48	1.48,93	11,45	4×100 m freestyle mixed	22	21	+1-
2 men+2 women. =7.33,58		-	4×200 m freestyle mixed	22		-
3.36,52	3.57,06	20,54	4×200 m freestyle mixed	23	21	+2-
2 men+2women =3.47,55		-	4×100 medley relay mixed	23,5		-
1.49,25	1.48,30	2,00	4×100 medley relay mixed	23	24	-1+
53.28,6	58.26,5	4.97,9	5000 m marathon	25	25	0
1:49.33,3	2:00.56, 06	11.22,4	10000 m marathon	26	29	-3+
308.68,7	327,63,5	18.94,8	25000 m marathon	31	28	+3-
2 men + 2 women. = 1:06.28,7		-	4 × 1250 m marathon relay mixed	24	25	-1+
Age difference between prize-winning swimmers: men, x±m=23,84±1,92; women, x±m=23,80±2,05; t= 0,93, p>0,05						

As shown in Table 2, the absolute values of the difference in the results of female and male swimmers in terms of average speed parameters increase synchronously with increasing distance covered, as well as different swimming methods. Their detailed knowledge can determine the advantages of using teachers, coaches, specialists, organizers and the performers themselves, that is, swimmers, the main priorities in the appropriate effective provision of the training process and better selection of swimming teams before important sports competitions.

3. Difference in achievements of men and women prize-winning swimmers in swimming techniques

Table 3 shows the generalized results of the difference in average swimming speed in different ways among men and women winners and prize-winners at distances of sports and marathon swimming, according to the program of these prestigious competitions. This ascertaining information should be used in the practice of sports and marathon swimming to improve the possibilities of forming motor skills of swimming in the training process. They will be useful for use by trainers and teachers both at the initial stages of initial training, optimal application of the relevant stages of formation of the basic components of the educational and training process, and further improvement of sports and marathon swimming skills to increase the physical readiness of participants in competitions in order to optimally realize their potential.

Table 3

Dynamics of the formation of skills by swimming methods of people of different ages and genders according to the results of male and female prize-winning swimmers of the XXXV11 European Aquatics Championships in Belgrade–2024, Serbia, and June 10–23

Distance, m, swimming style	Average speed, distance : time = m/s, men/women	Difference in average swimming speed, men/women	Rank of distinction distances and swimming style m/s, men/women	Difference in results, m/s, men/women
50 m freestyle	50:21,76-50:24,64	2,29-2,02=0,27	0,72:3=0,24	1.67:9= 0,18 м/с; t= 5,28; p<0,05
100 m freestyle	100:47,34-100:53,96	2,11-1,85=0,26		
200 m freestyle	200:1.45,03-200:1.56,65	1,90-1,71=0,19		
400 m freestyle	400:3.46,10-400:4.08,07	1,77-1,61=0,16	0,43:3=0,14	
800 m freestyle	800:7.48,02-800:8.32,60	1,71-1,56=0,15		
1500 m freestyle	1500:15.01,10-1500:16.13,29	1,66-1,54=0,12		
50 m backstroke	50:24,58-50:27,86	2,03-1,79=0,24	0.63:3=0,21	
100 m backstroke	100:52,87-100:1.00,18	1,89-1,66=0,23		

Table 3 (continuance)

200 m backstroke	200:1,55,51-200:2.09,06	1,73-1,55=0,16		
50 m breaststroke	50:26,95-50:30,70	1,85-1,62=0,23	0.60:3=0,20	
100 m breaststroke	100:59,11-100:1.07,09	1,69-1,49=0,20		
200 m breaststroke	200:2.09,07-200:2.24,96	1,55-1,38=0,17		
50 m butterfly	50:23,20-50:25,98	2,15-1,92=0,23	0.64:3=0,21	
100 m butterfly	100:50,92-100:57,75	1,96-1,73=0,23		
200 m butterfly	200:1.54,90-200:2.08,08	1,74-1,56=0,18		
200 m individual medley	200:1.57,73-200:2.10,80	1,70-1,53=0,17	0.33:2=0,17	
400 m individual medley	400:4.11,34-400:4.38,41	1,59-1,43=0,16		
4×100 m freestyle reley	400:3.13,29-400:3.38,75	2,07-1,82=0,25	0.64:3=0,21	
4×200 m freestyle reley	800:7.09,12-800:7.55,44	1,86-1,68=0,18		
4×100 m medley reley	400:3.33,45-400:4.00,74	1,87-1,66=0,21		
4×100 m freestyle mixed	3.26,41 (2 men+2 women)	1,94	0,52:3=0,17	
4×100 m freestyle mixed	200:97,48-200:108,93	2,05-1.83=0,22		
4×200 m freestyle mixed	7.33,58 (2 men+2 women)	1,76		
4×200 m freestyle mixed	400:3.36,52-400:3.57,06	1,85-1.69=0,16		
4×100 m medley mixed	3.47,55 (2 men+2 women)	1.76		
4×100 medley mixed	200:1.49,25-200:1.52,67	1.83-1.69=0,14		
5000 m marathon	5 km:53.28,6-5 km:58.26,5	1.55-1.42=0,13	0,35:3=0,12	
10000 m marathon	10km:1:49.33,3-10 km:2:00.56,1	1,52-1,38=0,14		
25000 m marathon	25km:5:08.68,7-25km:5:27.63,5	1.35-1.27=0.08		
4×1250 m marathon mixed men/women	5km:1:06.28,7=1.25 m/s	1.25 team result		
Difference in average swimming speed: men, x±m=1,81±0,17; women, x±m=1,63±0,14; t=5,28; p<0,05				

The greatest difference in the average swimming speed of men from women was found in freestyle swimming at sprint distances of 50-100-200 m: over 0.24 m/s, then in relay swimming – 0.21, in butterfly swimming – 0.21 m/s and in backstroke swimming – 0.21 m/s. A similar difference in the results of the average speed of overcoming distances is manifested in women from men, which is recorded in breaststroke

swimming: at 50-100-200 m also at the level of – 0.20 m/s and in medley swimming at 200-400 m – 0.17 m/s. In the mixed relays of 4×100 m freestyle, 4×200 m, as well as in the combined relay of 4×100 m, the difference in the average speed of overcoming distances in women from men was recorded at the level of – 0.17 m/s. In the stayer swimming at 400-800-1500 m, these indicators are smaller – 0.14 m/s, and in marathon swimming the lowest difference was noted at distances of 5000-10000-25000 m, where the difference in the level of average speed in women from men was only – 0.12 m/s.

Thus, the total difference in average swimming speed, which characterizes the existing methods of swimming in these competitions and which in modern conditions is at a certain level, is more than – 0.18 m/s: men, $x \pm m = 1.81 \pm 0.17$; women, $x \pm m = 1.63 \pm 0.14$; $t = 5.28$; $p < 0.05$.

4. Difference in achievements of men and women prize-winning swimmers at swimming distances

Comparative analysis of the difference in the results of the average swimming speed of the winners-prize winners in men and women, which accompanies the proper overcoming of the swimming distance, showed that the largest parameters are observed in the 50 m sprint swimming in various ways – 0.242 m/s. (Table 4).

Next in the degree of decrease in this indicator is swimming at distances of 100 m: the total indicator for this distance is more than – 0.23 m/s. At 400 m distances of sports swimming, a higher indicator of the difference in average swimming speed was obtained – 0.195 m/s.

At distances of 200 m of sports swimming, the difference in average swimming speed was smaller, almost – 0.174 m/s. At the distance of 800-1500 m and the relay of 4×200 m freestyle, this indicator is more than – 0.15 m/s. In mixed relays, this indicator is more than – 0.17 m/s, and the smallest difference was recorded at distances of marathon swimming – 0.12 m/s.

Therefore, the total difference in average swimming speed at all distances is more than 0.18 m/s: men, $x \pm m = 1.81 \pm 0.17$; women, $x \pm m = 1.63 \pm 0.14$; $t = 5.28$; $p < 0.05$. The parameters recorded by us for the difference in average swimming speed in different ways at the distances of sports and marathon swimming specified in the competition program allow physical education and sports specialists to observe and evaluate in detail the dynamics of all the results of prize-winning swimmers at the most prestigious European competitions.

Table 4

Dynamics of the formation of swimming skills of people of different ages and genders according to the results of male and female swimmers-prize winners of the XXXVII European Aquatics Championships in Belgrade–2024, Serbia, June 17–23 (swimming) and June 12–15 (marathon)

Distance, m, swimming style	Average speed, distance : time = m/s, men/women	Difference in average swimming speed, men/women	Rank of distances and swimming style, m/s, men/women	Difference in results, m/s, men/women
50 m freestyle	50 m:21,76-50 m:24,64	2,29-2,02=0,27	0,97:4=0,242	0,18 m/s; t= 5,28; p<0,05
50 m backstroke	50 m:24,58-50 m:27,86	2,03-1,79=0,24		
50 m breaststroke	50 m:26,95-50 m:30,70	1,85-1,62=0,23		
50 m butterfly	50 m:23,20-50 m:25,98	2,15-1,92=0,23		
100 m freestyle	100 m:47,34-100 m:53,96	2,11-1,85=0,26	0,92:4=0,23	
100 m backstroke	100 m:52,87-100 m:1.00,18	1,89-1,66=0,23		
100 m breaststroke	100 m:59,11-100 m:1.07,09	1,69-1,49=0,20		
100 m butterfly	100 m:50,92-100 m:57,75	1,96-1,73=0,23		
200 m freestyle	200 m:1.45,03-200 m:1.56,65	1,90-1,71=0,19	0,87:5=0,174	
200 m backstroke	200 m:1,55,51-200 m:2.09,06	1,73-1,55=0,16		
200 m breaststroke	200 m:2.09,07-200 m:2.24,96	1,55-1,38=0,17		
200 m butterfly	200 m:1.54,90-200 m:2.08,08	1,74-1,56=0,18		
200 m individual medley	200 m:1.57,73-200 m:2.10,80	1,70-1,53=0,17		
400 m freestyle	400 m:3.46,10-400 m:4.08,07	1,77-1,61=0,16	0,78:4=0,195	
400 m individual medley	400 m:4.11,34-400 m:4.38,41	1,59-1,43=0,16		
4×100 m freestyle relay	400 m:3.13,29-400 m:3.38,75	2,07-1,82=0,25		
4×100 m medley relay	400 m:3.33,45-400:4.00,74	1,87-1,66=0,21		
4×200 m freestyle relay	800 m:7.09,12-800 m:7.55,44	1,86-1,68=0,18	0,45:3=0,15	
800 m freestyle	800 m:7.48,02-800 m:8.32,60	1,71-1,56=0,15		
1500 m freestyle	1500 m:15.01,10-1500 m:16.13,29	1,66-1,54=0,12		
4×100 m freestyle mixed	3.26,41 (2 men.+2 women)	1,94	0,52:3=0,17	
4×100 m freestyle mixed	200 m:97,48-200:108,93	2,05-1.83=0,22		
4×200 m freestyle mixed	7.33,58 (2 men.+2 women)	1,76		

Table 4 (continuance)

4×200 m freestyle mixed	400 m:3.36,52-400:3.57,06	1,85-1.69=0,16		
4×100 m medley mixed	3.47,55 (2. men +2 women)	1.76		
4×100 m mixed relay	200 m:1.49,25-200 m:1.52,67	1.83-1.69=0,14		
5000 m marathon	5 km:53.28,6-5 km:58.26,5	1.55-1.42=0,13	0,35:3=0,12	
10000 m marathon	10 km:1:49.33,3-10 km:2:00.56,1	1,52-1,38=0,14		
25000 m marathon	25 km:5:08.68,7-25 km:5:27.63,5	1.35-1.27=0.08		
4×1250 m marathon mixed men/women	5 km:1:06.28,7=1.25 m/s	1.25 team result		
Difference in average swimming speed, m/s: men., x±m=1,81±0,17; women., x±m=1,63±0,14; t=5,28; p<0,05				

Discussion

It should be noted that any information materials related to the study of the results of the review of past European Aquatics Championships for a long time from 1926-2024 among men and women are reflected in the theory and practice of physical education and sports quite generally for teams, and episodically by estimates: first gold medals are counted, then silver and then bronze. Therefore, the information detailing of the achievements of European swimming makes them more significant for the theory and practice in the modern time of competitions on the European continent.

As for the absolute achievements of swimmers of different ages and genders, the results of the winning swimmers should be taken into account in the ratio of average swimming speed at different distances, as well as in one or another swimming method. This can objectively characterize the achieved level of a more reliable state of formation of motor skills of swimming in young people of different ages and genders at such prestigious competitions as the current XXXVII European Aquatics Championships, held in Belgrade-2024, Serbia.

Thus, the Italian team, participating in marathon swimming, received 9 medals of various quality and ranks 5th in the rating (table 1), where swimmers previously combined sports and marathon starts. This has also become typical for swimmers from France with 4 medals and the Spanish team with 1 medal. If we follow the generally existing assessment, which is reflected in practical activities, then the achievements of these teams should be taken into account only in marathon swimming. Although at the starts of distances of 800-1500 m freestyle, athletes who previously combined their performances with overcoming marathon distances are met (Romanchuk – Ukraine, Paltrinieri – Italy, Sharon van Roowendal – Netherlands).

Table 2 details the dynamics of the average swimming speed of prize-winning athletes of different ages and genders, which allows detailed information on the state of achievements at all 46+7 distances of sports and marathon swimming. The greatest excess (up to 1-5 years) of age of men over women was noted at 16 distances of the competition: 100-200-400-800-1500 m freestyle, 100-200 m backstroke, 100-200 m breaststroke, 100 butterfly, 4×100 m freestyle relay, 4×200 m freestyle, combined relay 4×100 m, mixed relay 4×100 m and 4×200 m freestyle, 25,000 m marathon swimming. Meanwhile, the age advantage of women over men in the range of 1-4 years was recorded at 8 distances of the competition: 50 m freestyle, 50 backstrokes, 50 m and 200 m butterfly, 400 m individual medley, 4×100 m mixed medley relay, 10,000 m marathon swimming and 4×1,250 m mixed marathon swimming relay. The absence of changes in age indicators was recorded at 3 distances of these prestigious competitions: 50 m breaststroke, 200 m individual medley, 5000 m marathon swimming.

Thus, the total age difference of the prize-winning swimmers is, with almost similar parameters, 24 years: men, $x \pm m = 23.84 \pm 1.92$; women, $x \pm m = 23.80 \pm 2.05$; $t = 0.93$, $p > 0.05$. This provides additional information to swimming coaches and performers about the existing trends in overcoming distances by different swimming methods and the state of achievements among men and women, taking into account their age indicators at all distances.

A detailed review of the final starts allows us to learn and compare the state of the level of development of swimming skills in the strongest swimmers who took prizes at different distances, as well as to determine differences in the dynamics of results in men and women of almost similar age. In addition, it is necessary to confidently and reliably identify significant differences in the average speed of overcoming distances by different swimming methods among men and women (table 3), as well as at different distances, from 50 m to marathon distances (table 4), which indicates the importance of indicators during observations of these prestigious competitions, which thoroughly show the level of development of swimming skills.

The indicators of the monitoring analysis of the actual material obtained according to the available information sources among the prize-winning swimmers present the generalized results of the difference in indicators among men and women at a reliable level, which is almost – 0.18 m/s (men, $x \pm m = 1.81 \pm 0.17$; women, $x \pm m = 1.63 \pm 0.14$; $t = 5.28$, $p < 0.05$), which is characteristic of the stage of their long-term observation, which has a detailed modern scientific novelty, as well as theoretical and practical significance in the dynamics of the gradual growth of European achievements of swimmers of almost similar age and different sex at some of the most prestigious competitions in modern Europe.

CONCLUSIONS

1. At the final starts of the XXXVII European Aquatics Championships in Belgrade-2024, Serbia, which took place on June 12-15 and 17-23, prize medals were awarded to representatives of 26 countries of the continent, who competed in 27 types of sports and 7 types of marathon swimming in open water: prize medals were awarded to 120 men and 120 women. The most successful (top ten) was the performance of athletes from the continent: Hungary in swimming-27+4 in the marathon, Greece-17, Poland-15, Germany -7+3, Italy+9 marathon, Israel-7, Czech Republic-7, Turkey-6, Ukraine-5, Sweden-5 medals. The second ten teams ranked by the number and quality of medals include the following countries: Denmark-5, Switzerland-5, France-+4, Austria-3, Lithuania-3, Belgium-3, Romania-2, Ireland-2, Serbia-2, Portugal-2 medals. The third ten included: Great Britain-2, Bulgaria-1, Estonia-1, Finland-1, Bosnia and Herzegovina-1, Spain+1 medal in marathon swimming.

Among male swimmers, the more successful were : Hungary-13+3, Greece-13, Poland-10, Germany-5, Ukraine-5, Italy-+4 marathons, Turkey-4 medals. Among female swimmers, the best performers in the sports and marathon swimming distances were: Hungary-14+1, Czech Republic-6, Italy-+5, Poland-5, Denmark-5, Germany-2+3, Sweden-4, Greece-4 medals. The above indicators combine the achievements of the prize-winning swimmers at all sports and marathon swimming distances, which provide opportunities for an objective rating of the state of development of swimming skills among the countries of the European continent at the time of these prestigious competitions.

2. The greatest age advantage of men over women (up to 1-5 years) was noted at 16 competition distances: 100-200-400-800-1500 m freestyle, 100-200 m backstroke, 100-200 m breaststroke, 100 butterflies, 4×100 m freestyle relay, 4×200 m freestyle, 4×100 m medley relay, 4×100 m mixed freestyle relay. Meanwhile, the age advantage of women over men (up to 1-4 years) was recorded at 8 competition distances: 50 m freestyle, 50 backstroke, 50 m and 200 m butterfly, 400 m individual medley, 4×100 m mixed medley relay, 10000 m marathon swimming and mixed marathon swimming relay 4×1250 m.

The absence of age differences between men and women was recorded at 3 distances of these competitions: 50 m breaststroke, 200 m individual medley swimming, 5000 m marathon swimming. Therefore, the total difference in the age of prize-winning swimmers is similar to the parameters of 24 years: men, $x \pm m = 23.84 \pm 1.92$; women, $x \pm m = 23.80 \pm 2.05$; $t = 0.93$, $p > 0.05$, which is provided by the indicators in Table 2. The information provided allows coaches to rationally recruit performers to participate in

competitions, taking into account their age and gender and the priorities of the existing characteristic trend at the distances of future starts.

3. The greatest difference in the average swimming speed of men from women was found in freestyle swimming at sprint distances of 50-100-200 m: over – 0.24 m/s and relay swimming – 0.21, then in butterfly swimming – 0.21 m/s, and in backstroke swimming – 0.21 m/s, and is also recorded in breaststroke swimming: at 50-100-200 m – 0.20 m/s. In the mixed relays of 4×100 m freestyle, 4×200 m, as well as in the combined relay of 4×100 m, the difference in the average speed of overcoming distances in women from men was recorded at the level of – 0.17 m/s. in the 200-400 m individual medley – 0.17 m/s, in the 400-800-1500 m freestyle – 0.14 m/s. In marathon swimming, the lowest difference in average swimming speed between men and women was noted at distances of 5000-10000-25000 m, only – 0.12 m/s.

So, the generalized difference in average swimming speed between men and women at these most prestigious European competitions is at a significant level, almost over – 0.18 m/s: men, $x \pm m = 1.81 \pm 0.17$; women, $x \pm m = 1.63 \pm 0.14$; $t = 5.28$; $p < 0.05$. This indicator details the existing trends in the differences in the average speed indicators of male and female prize-winning swimmers depending on different swimming methods, which can be usefully used by specialists and performers for more reliable support of future competitions.

4. The generalized difference in the results of the formation of motor skills of swimming in different ways in men and women according to the average speed indicators at distances is largely determined by the distances covered. First of all, this applies to swimming distances of 50 m in different ways at the level of – 0.242 m/s. Similar differences in the average swimming speed of women from men are also observed in swimming distances of 100 m, over – 0.23 m/s. A smaller difference in the average swimming speed of women than men is observed in overcoming distances of 400 m, almost – 0.195 m/s, although further at distances of 200 m, about – 0.174 m/s, as well as in mixed combined relays – 0.17 m/s, then at stayer distances of 800-1500 m, over – 0.15 m/s, and the smallest difference is observed in marathon swimming of 5000-10000-25000 m – 0.12 m/s.

The generalized difference in the average swimming speed of men from women at all distances of sports and marathon swimming, according to the adopted program of European competitions, is also reliably, over – 0.18 m/s: men, $x \pm m = 1.81 \pm 0.17$; women, $x \pm m = 1.63 \pm 0.14$; $t = 5.28$; $p < 0.05$. This indicator details the existing trends in the possibilities of overcoming by prize-winning swimmers, especially the 200 m distance, where the indicators in various ways reflect the existing clearly smaller difference in these

competitions than in 400 m, which should be taken into account by specialist coaches when recruiting teams.

5. Prospects for further research. Further research into the problem of modern age and gender differences in the results of the formation of swimming motor skills in men and women, which should be carried out using the example of the participation of swimmers-winners and prize-winners in many other prestigious competitions of our time, including real facts of the extraordinary holding of the championships of Ukraine, the World Universidad, the World Championships and the Olympic Games, which is accompanied by examples of negative challenges from the influence of extreme environmental factors, various viral infections and possible quarantine conditions of their modern holding on different continents of the world.

SUMMARY

The purpose of the study: to determine the level and degree of development of motor skills in sports and marathon swimming among prize-winning swimmers based on the results of monitoring the final swims at the XXXVII European Aquatics Championships in Belgrade-2024, June 12-15 and 17-23, Serbia. Material. Indicators of the average swimming speed of prize-winning swimmers at 46 sports distances and 7 marathon distances among 120 men and 120 women of different ages and genders.

Results. The overall result of the rating was the quantitative and qualitative indicators of the awards received among prize-winning swimmers from 26 countries. The most successful (top ten of the rating) was the performance of athletes from the following European countries: Hungary in sports swimming – 23 + 3 medals in the marathon, Greece – 17, Poland – 15, Germany – 7 + 3, Italy – 9, Israel – 7, Czech Republic – 7, Turkey – 6, Ukraine – 5, Sweden – 5 medals. The second ten of the team rating includes the following countries: Denmark – 5, Switzerland – 5, Lithuania – 3, Austria – 3, France – 1 + 3, Belgium – 3, Portugal – 2, Serbia – 2, Romania – 2, Ireland – 2 medals. The third ten included: Great Britain – 2 medals, Bulgaria – 1, Finland – 1, Estonia – 1, Bosnia and Herzegovina – 1, Spain + 1 medal in marathon swimming.

Among men swimmers, the most successful were: Greece-13, Hungary-9+2, Poland-8, Ukraine-5, Italy+4 marathons, Turkey-4 medals. Among women swimmers, the best were: Hungary-14+1, Czech Republic-6, Italy-1+4, Poland-5, Denmark-5, Germany-2+3, Sweden-4, Greece-4 medals. The greatest age difference of men (up to 1-5 years) over women was noted at 16 distances. The age advantage of women over men in the range of 1-4 years was recorded at 8 distances. Similarity of age indicators was recorded at 3 distances. Therefore, the total age difference of prize-winning

swimmers is similar, almost 24 years: men, x±m=23.84±1.92; women, x±m=23.80±2.05; t=0.93, p>0.05.

The difference in the results of men and women in terms of average swimming speed is determined by the distances covered by different means: first of all, this applies to sprint freestyle swimming – 0.24 m/s, freestyle and combined relays – 0.21 m/s, backstroke, butterfly – 0.21 m/s. A further advantage in the average swimming speed of men compared to women is observed in breaststroke – 0.20 m/s, mixed relays – 0.19 m/s, complex swimming – 0.17 m/s, in stayer swimming – 0.14 m/s, marathon swimming – 0.12 m/s. Therefore, the total difference in the average swimming speed is – 0.18 m/s: men, x±m=1.81±0.17; women, x±m=1.63±0.14; t=5.28; p<0.05.

The generalized difference in the results of the formation of swimming motor skills in men and women in terms of average speed at distances is determined by the distances covered: 50 m distance – 0.24 m/s, 100 m distance – 0.23 m/s, 400 m distance – 0.195 m/s, 200 m distance – 0.174 m/s, stayer distances 800-1500 m – 0.16 m/s, in mixed combined relays – 0.13 m/s, in marathon swimming 5000-10000 m – 0.12 m/s. The generalized difference in the average swimming speed of men from women is, over – 0.18 m/s: men, x±m=1.81±0.17; women, x±m=1.63±0.14; t=5.28; p<0.05. This provides specialists with real control opportunities to assess the level of development of swimming skills in young people of different ages and genders at prestigious competitions.

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