

Monitoring the assessment of the swimming skills formation among swimmers-prize-winners at stages I-II-III of the Olympic Games (1896-2021)

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Abstract

Purpose: to assess the level and degree of formation of swimming skills among swimmers-prize-winners in the distances of sports and marathon swimming at the Olympic Games at the I-III stages of their holding from 1896 to 2021. **Subject of research:** monitoring of the dynamics of the results of the formation of swimming skills by the level of achievements of swimmers-medalists at all Olympic Games at distances of sports swimming at the I-III stages of their holding. **Material:** the official protocols of competitions at all past Olympic Games at I-III stages of holding, respectively: 1896-1948, 1952-1992, 1996-2021 (among 193+420+387=1000 men and 75+388+387=850 women). **Results.** At the first stage of the Olympic Games from 1896-1948, the age of swimmers-medalists (men and women: 22-19 years) was determined. The overall difference in the average speed of swimming at all distances in different ways was 0.17 m/s (1.35-1.18). At the second stage of the Olympic Games from 1952-1992, the age of the swimmers-medalists was revealed: the difference between men and women was 1-4 years (21-19 years). The overall difference in the average speed of swimming at all distances in different ways was 0,17 m/s (1,70-1,53). At the third stage of the Olympic Games from 1996-2021, the difference of age of the swimmers-medalists was 1-3 years (24-23 years). The overall difference in the average swimming speed was 0.16 m/s (1,82-1,66). The smallest difference of speed in marathon swimming at 10000 m – 0,11 m/s, in stayer freestyle swimming – 400-800-1500 m at the level – 0,12 m/s, in complex swimming 200-400 m – 0,15 m/s, in relay swimming – 0,15 m/s, breaststroke at 100-200 m to – 0,17 m/s, in backstroke swimming up to – 0,18 m/s at 100-200 m, as well as in swimming 100-200 m butterfly – 0,19 m/s. The largest speed difference in swimming at 50-100-200 m freestyle was noted – 0,21 m/s. The overall difference of speed in all the results of swimmers-prize-winners in the formation of swimming skills in competitions from 1996-2021 was revealed at the level – 0,16 m/s (men – 1,82; women – 1,66; p<0,05).

Keywords: prestigious competitions, male swimmers, female swimmers, swimming distances, state of achievements, average speed, difference in indicators, assessment of achievements, stages, Olympic Games.

Introduction.

Competitive swimming was already presented at the I Olympic Games, starting since 1896, and women's swimming was included only since 1912, although by now XXXI have been already held. Since 2008 swimming at the Olympic Games includes competitions, both in the pool and in open water (Firsov, 1976; Platonov, 2004; www.wikipedia.org, www.swimrankings.net, www.omegatiming.com, www.swimnews.com). Thus, it is advisable to distinguish the initial origin, progressive development and formation of the swimming program in providing a long period of the Olympic Games from 1896 to 1948: Stage I (4-11 types of program); from 1952 to 1992: Stage II (11-16 types of program), and also from 1996 to 2021 the present Stage III, representing the program expansion from 32 to 34 types, including open water swimming marathon and new countries participation (Ganchar, 2007; Ganchar, 2013; Dutchak, 2009; Kuramshin, 2002).

At the moment, there are no theoretical studies related to the analysis of the dynamics of results according to the swimming achievements of the winners-prize-winners (men and women) of the Olympic Games at the I-III stages of their holding from 1896 to 2021, depending on the methods of swimming.

The teaching aids on teaching swimming for children (Strauss, 2019), and for students of sports universities (Platonov, 2000) are the main specialized educational scientific literature nowadays. Existing scientific articles related to world-class swimming competitions are analyzed the performance of finalist swimming athletes in Olympic games:

reaction time, partial time, speed, and final time of freestyle swimmers at the Beijing 2008, London 2012, and Rio 2016 Olympics (Da Silva, 2020); assessment of the levels of swimming skills development of the strongest swimmer teams at the I-XXXIV watersports' championships from 1926-2018 (Ganchar, 2021).

Difference researches are being carried out on the use of various teaching methods: computerized video method in teaching and improving the kinematic and dynamic characteristics of sports skills, key elements and improvement of sports technique of movement in the aquatic environment in the selected swimming styles (Sima, 2018); using coaching methods during swimming training for more effective assimilation of theoretical material (Balan, 2018); structural construction of the training process, providing for "elaboration of coherent overview over the whole traineeship and establish of functional correlations between goals – methods – means – assessment forms" (Ezechil, 2013) Using swimming as a tool: to improve the quality of life of young people with special educational needs (Chera-Ferrario, 2019); physical development of university students (Nosko, 2019), (Leuciuc, 2019). There are also some biographical publications about outstanding athletes (Kalyani, 2008).

The aim of this study is to evaluate the level and degree of the swimming skills formation among prize-winners according to the distances of sports and marathon swimming at the Olympic Games at the I-III stages of their staging from 1896 to 2021. **Object of the study:** to monitor the elite swimmer's performance at the Olympic Games at the sports and marathon swimming. **Subject of research:** to investigate the dynamic results of the swimming skills formation among the strongest swimmers at the Olympic Games in sports and marathon swimming at stages I-III.

Material and methods

Research methods: theoretical analysis of the literature on the studied problem about the levels objective assessment of the swimming skills formation among men and women at prestigious competitions; the documentary materials generalization (official protocols of competitions at all past Olympic Games at stages I-II-III are generalized, according, 1896-1948, 1952-1992 and 1996-2021, both among men (211+402+387=1000) and women (90+373+387=850), which is available for information and posted on the websites – www.swimrankings.net; www.wikipedia.org; www.omegatiming.com; www.swimnews.com; stating and comparative experiment (with its help, data were obtained that made it possible to find out and compare the generalized average indicators in achievements among men and women at all sports and marathon swimming distances referring to the program of Olympic Games competitions); mathematical statistics (usage has become necessary and unconditional to determine the average performance in the achievements of swimmers among men and women at different distances to define the reliability of the swimming skills indicators formation at a significance level: $p < 0.05$).

Results

Analyzing in detail the facts of holding all the past Olympic Games from 1896 to 2021, based on the results of obtaining gold, silver and bronze medals by swimmers-prize-winners, generalized data were obtained that characterize the historically formed stages of the progressive development of Olympic swimming: at the first stage (1896-1948) among 211 men and 90 women; phase II (1952-1992) out of 402 men and 373 women; at the III stage (1996-2021) among 387 men and 387 women (Table 1). Monitoring the results of the most successful swimming teams at the I-XXXII Olympic Games on the facts of obtaining gold, silver and bronze medals at the I-II-III stages of their holding from 1896-1948, 1952-1992, 1996-2021, determined a generalized rating of their achievements among 54 participating countries, which concerns 54 leaders of swimming competitions.

Table 1. Monitoring of the results of swimming teams at the I-XXXII Olympic Games on the facts of receiving gold, silver and bronze medals at the I-II-III stages of their holding from 1896-1948, 1952-1992, 1996-2021

Rank No	Participating countries	Gold		Silvers		Bronze		Together		Just
		men	women	men	women	men	women	men	women	
1.	USA	152	106	103	80	74	71	329	257	586
2.	Australia	34	35	36	31	42	31	112	97	209
3.	Germany (FRN)	13	5	16	13	23	28	52	46	98
4.	GDR	6	32	7	25	5	17	18	74	92
5.	Japan	17	7	23	4	21	11	61	22	83
6.	United Kingdom	13	7	18	13	15	16	46	36	82
7.	Hungary	15	14	20	7	14	6	49	27	76
8.	Netherlands	5	17	4	17	4	15	13	49	62
9.	USSR	9	3	14	7	18	8	41	18	59
10.	Canada	6	3	8	10	12	16	26	29	55
11.	China	4	12	4	17	2	10	10	39	49
12.	France	6	2	11	5	14	6	31	13	44
13.	Sweden	8	1	10	6	10	4	28	11	39
14.	Italy	4	1	3	4	13	4	20	9	29
15.	Russia	6	1	7	4	9	1	22	6	28

16.	RSA	3	4	6	1	1	5	10	10	20
17.	Brazil	1	1	4	-	10	1	15	2	17
18.	Denmark	-	3	2	3	1	6	3	12	15
19.	Austria	1	-	6	-	3	2	10	2	12
20.	CIS	5	1	3	-	-	1	8	2	10
21.	Ukraine	-	4	2	1	2	-	4	5	9
22.	Romania	-	3	-	2	1	3	1	8	9
23.	Australasia *	1	1	2	1	3	-	6	2	8
24.	Spain	1	1	-	2	2	2	3	5	8
25.	Zimbabwe	-	2	-	4	-	1	-	7	7
26.	Greece	1	-	4	-	2	-	7	-	7
27.	New Zealand	2	-	1	-	2	1	5	1	6
28.	Poland		1	1	2	1	1	2	4	6
29.	Belgium	1	-	1	1	1	1	3	2	5
30.	Finland	-	-	1	-	4	-	5	-	5
31.	Tunisia	3	-	-	-	1	-	4	-	4
32.	Ireland	-	3	-	-	-	1	-	4	4
33.	Half. Korea	1	-	3	-	-	-	4	-	4
34.	Costa Rica	-	1	-	1	-	2	-	4	4
35.	Argentina	1	-	-	1	-	1	1	2	3
36.	Bulgaria	-	1	-	1	-	1	-	3	3
37.	Belarus	-	-	-	2	-	1	-	3	3
38.	Switzerland	-	-	-	-	3	-	3	-	3
39.	Yugoslavia	-	1	-	1	-	-	-	2	2
40.	Suriname	1	-	-	-	1	-	2	-	2
41.	Mexico	1	-	-	-	-	1	1	1	2
42.	Cuba	-	-	1	-	1	-	2	-	2
43.	Norway	-	-	1	-	-	1	1	1	2
44.	Hong Kong	-	-	-	2	-	-	-	2	2
45.	Slovakia	-	-	-	2	-	-	-	2	2
46.	Philippines	-	-	-	-	2	-	2	-	2
47.	Kazakhstan	1	-	-	-	-	-	1	-	1
48.	Singapore	1	-	-	-	-	-	1	-	1
49.	Lithuania	-	1	-	-	-	-	-	1	1
50.	Venezuela	-	-	-	-	1	-	1	-	1
51.	Serbia	-	-	1	-	-	-	1	-	1
52.	Croatia	-	-	1	-	-	-	1	-	1
53.	Slovenia	-	-	-	1	-	-	-	1	1
54.	Trinidad-Tobago	-	-	-	-	1	-	1	-	1
Total medals		323	274	324	271	319	276	966	821	1787
Notes: Australasia - N. Zealand performed together with team Australia in London 1908 and Stockholm-2012										

The top ten most successful participating countries included the following teams of swimmers in terms of the degree of achievement and the number of medals received: USA-586, Australia-209, Germany-98, GDR-92, Japan-83, Great Britain-82, Hungary-76, Netherlands-62, USSR-59, Canada-55 medals. The second ten includes the following countries: China-49, France-44, Sweden-39, Italy-29, Russia-28, South Africa-20, Brazil-17, Denmark-15, Austria-12, CIS-10 medals.

The third ten included the following countries: Ukraine-9 medals, Romania-9, Australasia-8, Spain-8, Zimbabwe-7, Greece-7, New Zealand-6, Poland-6, Belgium-5, Finland-5 medals. In the fourth ten Tunisia-4, Ireland-4, South Korea-4, Costa Rica-4, Argentina-3, Bulgaria-3, Belarus-3, Switzerland-3, Yugoslavia-2, Suriname-2 medals. The fifth ten included the following countries: Mexico-2, Cuba-2, Norway-2, Hong Kong-2, Slovakia-2, Philippines-2, Kazakhstan-1, Singapore-1, Lithuania-1, Venezuela-1 medals. The rating of the teams participating in the Olympic swimming is completed: Serbia-1 medal, Croatia-1, Slovenia-1, and Trinidad and Tobago-1 medals.

The study of the final starts allows you to objectively investigate the state of formation of swimming skills in the strongest swimmers-prize-winners at different distances, as well as to determine the features of trends in the dynamics of results among men and women in different age groups at the 1st stage of the Olympic Games from 1896-1948 (among some differences in the age of swimmers-prize-winners: men, 22,40±0,88; women, 19,20±0,32; t=0,002; p>0,05 (Table 2).

Table 2. Average indicators of the results of the formation of swimming skills according to the achievements of swimmers-prize-winners at the first stage of the Olympic Games from 1896-1948

Results of swimmers			Distance, methods of swimming	Age of swimmers		
men	women	difference in average speed, m/s		men	women	± difference
28,30	-	1,62 m/c	50 yards-45.72 m freestyle	22	-	-
1.00,96	1.12,37	11,41 c	100 m freestyle	23	20	+3
2.20,40	-	0,71 m/c	100 m freestyle clothing	20	-	-
1.02,8	-	1,45 m/c	100 yards-91.44 m freestyle	22	-	-
2.29,53	-	1,33 m/c	200 m freestyle	19	-	-
2.41,9	-	1,24 m/c	200 m freestyle with obstacle	21	-	-
2.48,73	-	1,19 m/c	220 yards-201.16 m freestyle	22	-	-
-	4.42,93	1,06 m/c	300 m freestyle	21	-	-
5.08,31	5.40,02	31,71 c	400 m freestyle	22	19	+3
6.25,73	-	1,04 m/c	440 yards-402,34 freestyle	23	-	-
9.05,60	-	0,91 m/c	500 m freestyle	25	-	-
14.36,3	-	1,14 m/c	1000 m freestyle	23	-	-
19.07,8	-	1,05 m/c	1200 m freestyle	22	-	-
20.56,4	-	1,19 m/c	1500 m freestyle	21	-	-
13.17,4	-	1.00,9 m/c	880 yards-804.66 freestyle	22	-	-
28.00,1	-	0,96 m/c	1 mile-1609,34m freestyle	22	-	-
1.06.62,3	-	1,11 m/c	4000 m freestyle	24	-	-
1.14,33	1.20,92	6,59 c	100 m backstroke	22	19	+3
1.18,13	-	1,17 m/c	100 yard-91,44 m backstroke	31	-	-
2.54,00	-	1.15 m/c	200 m backstroke	20	-	-
2.55,90	3.11,89	15,99 c	200 m breaststroke	24	19	+5
6.37.93	-	1.00 m/c	400 m breaststroke	23	-	-
7.28,30	-	0,89 m/c	440 yards-402,34 m breaststroke	21	-	-
-	5.05,84	1,30 m/c	4×100 m freestyle	-	19	-
9.49.27	-	1.36 m/c	4×200 m freestyle	22	-	-
2.04.06	-	1.47 m/c	4×50 yards(4×45,72 m) freestyle	22	-	-
17,98 yard	1 ярд=0,91м	16,36 м	sliding from the start	26	-	-
48 Points	-	-	5×40 m freestyle	20	-	-
173 Points	-	-	60 m underwater swimming	18	-	-

Difference in the age of swimmers-prize-winners: men., $x \pm m = 22,40 \pm 0,88$; women, $x \pm m = 19,20 \pm 0,32$; $t = 0,002$, $p > 0,05$

Table 2 shows the average results of the difference in the average speed of overcoming distances by different methods of swimming among men and women in swimmers-prize-winners at the final starts only in 4 cases at the first stage of their inception and subsequent periodic conduct from 1896-1948. This provision is due to the fact that the women's swimming program was included in the regulations of the Olympic Games only since 1912. Some difference in the average swimming speed is about $-0,17$ m/s: men, $1,35 \pm 0,14$; women, $1,18 \pm 0,10$; $t = 0,033$; $p > 0,05$ (Table 3).

Table 3. Average indicators of the results of the formation of swimming skills among swimmers-prize-winners at the first stage of the Olympic Games for the period 1896-1948

Distance, m	Average swimming speed, distance: m./s, men/women	Difference in average swimming speed men/women, m/s	Difference in swimming strokes, men/women, m/s	Difference between men/women swimmers, m/s
50 yards in/style	45,72:28,30	1,62	0,26	0,17±0,12; t= 0,033, p>0,05
100 m in/style	100:1.00,96-100:1.12,37	1,64-1,38=0,26		
100 m in clothes	100:2.20,40	0,71		
100 yards freestyle	91.44:1.02,8	1,45	0,19	
200 m freestyle	200:2.29,53	1,33		
200 m with obstacle	200:2.41,9	1,24		
220 yards	201.16:2.48,73	1,19	0,12	
300 m freestyle	300:4.42,93	1,06		
400 m freestyle	400:5.08,31-400:5.40,02	1,30-1,18=0,12		
440 yards freestyle	402.34:6.25,73	1,04	0,12	
500 m freestyle	500:9.05,6	0,92		
880 yards freestyle	804.66:13.17,4	1.00,9		
1000 m	1000:14.36,3	1,14	lack of results among	

freestyle			women	
1200 m freestyle	1200:19.07,8	1,05		
1500 m freestyle	1500:20.56.4	1,19		
1 mile freestyle	1609.34 :28.00,1	0,96		
4000 m freestyle	4000:1.06.62,3	1,11		
100 m backstroke	100:1.14,33-100:1.20,92	1,34-1,24=0,10		
100 yards freestyle	91.44:1.18,13	1,17	0,10	
200 m backstroke	200:2.54,00	1,15		
200 m breaststroke	200:2.55,90-200:3.11,89	1,14-1,04=0,10		
400 m breaststroke	400:6.37,93	1,00	0,10	
440 yard breaststroke	402.34:7.28,30	0,89		
4×100 m freestyle	400:5.05,84	1,30		
4×200 m freestyle	800:9.49,27	1,36	0,17	
4×50 yards freestyle	4×45,72	1,47		
sliding from the start	17,98 yards	-		
5×40 freestyle	200 M	48 points	nonparametric criteria	
60 m long dive	60 M	173 points		
Difference in average swimming speed, m/s: men, $x \pm m = 1,35 \pm 0,14$; women, $x \pm m = 1,18 \pm 0,10$; $t = 0,033$; $p > 0,05$				

A detailed examination of the results at the second stage of the final competitions of the Olympic Games from 1952-1992 showed some features of the swimmers-prize-winners, which is characteristic of the majority of participants in these world prestigious competitions among men and women, taking into account their age.

The largest difference in the age of male and female participants was recorded in all 14 cases in the range from 2-4 years (difference in the age of swimmers-prize-winners: men, $21,18 \pm 0,75$; women, $18,60 \pm 0,69$; $t = 1,51$; $p > 0,05$). The absence of the advantage of the age of women over men in 14 cases is represented in all cases by observations at these competitions at the early stage of the development of Olympic swimming (Table 4).

Table 4. Average indicators of the results of the formation of swimming skills among swimmers-prize-winners at the II stage of the Olympic Games for the period 1952-1992

Results of swimmers			Distance, ways of swimming	Age of swimmers		
men	women	difference		men	women	±difference
22,25	25,44	3,07	50 m freestyle	24	21	+3
52,43	59,05	6,05	100 m freestyle	21	19	+2
1.50,64	2.01,71	10,91	200 m freestyle	21	18	+3
4.05,49	4.30,68	27,12	400 m freestyle	20	18	+2
-	8.42,77	-	800 m freestyle	-	17	-
16.18,52	-	-	1500 m freestyle	20	-	-
58,79	1.06,29	5,60	100 m backstroke	20	18	+2
2.03,54	2.15,44	13,00	200 m backstroke	21	18	+3
1.03,77	1.11,59	7,31	100 m breaststroke	21	19	+2
2.24,07	2.40,58	14,88	200 m breaststroke	22	19	+3
54,43	1.03,80	6,77	100 m butterfly	22	19	+3
2.04,86	2.13,31	13,00	200 m butterfly	21	19	+2
2.05,20	2.18,50	13,38	200 m medley	21	19	+2
4.28,62	4.54,58	25,99	400 m medley	20	18	+2
3.25,93	3.59,24	25,53	4×100 m freestyle	22	19	+3
7.46,92	-	-	4×200 m freestyle	21	-	-
3.49,97	4.20,41	27,72	4×100 m medley	22	18	+4
Difference in the age of swimmers-prize-winners: men, $x \pm m = 21,18 \pm 0,75$; women, $x \pm m = 18,60 \pm 0,69$; $t = 1,51$, $p > 0,05$						

Meanwhile, the observed difference in the parameters of the average swimming speed in men and women at different distances, which are overcome by various regulatory methods, is to a certain extent characterized by the degree of formation of swimming skills of performers over a long period of their observation (Table 5).

Table 5. Average indicators of the results of the formation of swimming skills among swimmers-prize-winners at the II stage of the Olympic Games for the period 1952-1992

Distance, m	Average swimming speed, distance: m/s, men /women	Difference in average swimming speed, men /women, m/s	Difference in swimming distance, men /women, m/s	Difference between swimmers, men/women m/s
50 m freestyle	50:22,25-50:25,44	2,25-1,96=0,29	0,23	0,17±0,14; t=3,41; p<0,05
100 m freestyle	100:52,43-100:59,05	1,91-1,69=0,22		
200 m freestyle	200:1.50,64-200:2.01,71	1,81-1,64=0,17		
400 m freestyle	400:4.05,49-400:4.30,68	1,63-1,48=0,15	0,15	
800 m freestyle	800:8.42,77	1,53		
1500 m freestyle	1500:16.18,52	1,53		
100 m backstroke	100:58,79-100:1.06,29	1,70-1,51=0,19	0,17	
200 m backstroke	200:2.03,54-200:2.15,44	1,62-1,48=0,14	0,16	
100 m breaststroke	100:1.03,77-100:1.11,59	1,57-1,40=0,17		
200 m breaststroke	200:2.24,07-200:2.40,58	1,39-1,24=0,15		
100 m butterfly	100:54,43-100:1.03,80	1,84-1,57=0,27	0,18	
200 m butterfly	200:2.04,86-200:2.13,31	1,60-1,50=0,10	0,15	
200 m medley	200:2.05,20-200:2.18,50	1,60-1,44=0,16		
400 m medley	400:4.28,62-400:4.54,58	1,49-1,36=0,13		
4×100 m freestyle	400:3.25,93-400:3.59,24	1,94-1,67=0,27	0,24	
4×200 m freestyle	800:7.46,92	1,71		
4×100 m medley	400:3.49,97-400:4.20,41	1,74-1,54=0,20		
Difference in average swimming speed, m/s: men, $x \pm m = 1,70 \pm 0,15$; women, $x \pm m = 1,53 \pm 0,11$; $t = 1,768$; $p < 0,05$				

The smallest difference in average speed indicators among men and women is characteristically represented in stayer freestyle swimming – 400-800-1500 m at a level of – 0,15 m/s and in a complex swimming of 200-400 m – 0,15 m/s. Further difference gradually increases to – 0,16 m/s in swimming breaststroke 100-200 m, then in backstroke swimming to – 0,17 m/s at distances of 100-200 m, as well as in swimming 100-200 m butterfly – 0,18 m/s, in swimming at short distances 50-100-200 m freestyle – 0,23 m/s. Meanwhile, the biggest difference was recorded in relay swimming – 0,24 m/s (difference in the average swimming speed, m/s: men, $1,70 \pm 0,15$; women, $1,53 \pm 0,11$; $t = 1,768$; $p < 0,05$).

Such a review of the results at the III stage of the final competitions of the Olympic Games from 1996-2021 showed the modern features of the swimmers-prize-winners, which is characteristic of the majority of participants in these world prestigious competitions among men and women, taking into account their age and physical preparedness (Table 6).

Table 6. Summary table of differences between the average results of the winners and prize-winners of the final swims and the age of the participants of the Olympic Games in swimming in the III stage, held in 1996-2021

Results of swimmers			Distance, swimming strokes	Age of swimmers, years		
men	women	difference		men	women	± difference
21,57	24,23	2,66	50 m freestyle	27	26	+1-
47,64	52,99	5,35	100 m freestyle	24	25,5	-1,5+
1.44,90	1.55,32	10,42	200 m freestyle	22,5	22,5	0
3.43,70	4.01,36	17,66	400 m freestyle	22	21,5	+0,5-
7.42,10	8.18,01	35,91	800 m freestyle	25	22	+3-
14.43,14	15.40,55	57,41	1500 m freestyle	23,5	25	-1,5+
52,78	58,80	6,02	100 m backstroke	24	21,5	+2,5-
1.54,92	2.06,74	11,82	200 m backstroke	24	22	+2-
58,82	1.05,97	7,15	100 m breaststroke	24,5	21,5	+3-
2.08,35	2.21,50	13,15	200 m breaststroke	23,5	23,5	0
50,74	56,52	5,78	100 m butterfly	23	24,5	-1,5+
1.53,79	2.05,58	11,79	200 m butterfly	23	23	0
1.56,52	2.09,52	13,00	200 m medley	25	22,5	+2,5-
4.10,11	4.31,09	20,98	400 m medley	24	23	+1-
3.11,18	3.33,87	22,69	4×100 m freestyle	24,5	23,5	+1-
7.04,05	7.46,31	42,26	4×200 m freestyle	23	23	0
3.30,20	3.54,97	24,77	4×100 m combined	24	22,5	+1,5-
2 men	2 women	3.38,46	4×100 m medley mixed	25	23	+2-
1.48,83	1.49,63	0,80	4×100 m medley mixed	25	23	+2-
1:49.98,1	1:58.50,4	8.52,3	10000 m marathon	26	26	0
Age difference: men, $x \pm m = 24,26 \pm 1,22$; women, $x \pm m = 23,57 \pm 1,66$; $t = 0,203$; $p > 0,05$						

The difference in the age of men from women is characteristically represented in 12 cases at the level of 1-3 years is observed in swimming: 50 m, 400 m, 800 m freestyle, 100-200 m backstroke, 100 m breaststroke, complex swimming 200-400 m, 4×100 m freestyle relay, mixed and combined relay 4×100 m (age difference: men, $24,26 \pm 1,22$; women, $23,57 \pm 1,66$; $t = 0,203$; $p > 0,05$). Along with the noted phenomena, it should be emphasized

about the more significant and significant differences in the indicators of the average speed of overcoming different distances by swimmers, as evidenced by the data among men and women, which is shown in Table 7.

Table 7. Average indicators of the results of the formation of swimming skills among swimmers-prize-winners at the III stage of the Olympic Games for the period 1996-2021

Distance, m	Average swimming speed, distance: m./s, men/women.	Difference in average swimming speed men/women, m/s	Difference in swimming distance, men/women, m/s	Difference between men/women swimmers, m/s
50 m freestyle	50:21,57-50:24,23	2,31-2,06=0,25	0,21	0,16±0,14; t=6,70; p<0,05
100 m freestyle	100:47,64-100:52,99	2,10-1,89=0,21		
200 m freestyle	200:1.44,90-200:1.55,32	1,91-1,73=0,18	0,12	
400 m freestyle	400:3.43,70-400:4.01,36	1,79-1,66=0,13		
800 m freestyle	800:7.42,10-800:8.18,01	1,73-1,61=0,12	0,18	
1500 m freestyle	1500:14.43,14-1500:15.40,55	1,70-1,59=0,11		
100 m backstroke	100:52,78-100:58,80	1,89-1,70=0,19	0,17	
200 m backstroke	200:1.54,92-200:2.06,74	1,74-1,58=0,16		
100 m breaststroke	100:58,82-100:1.05,97	1,70-1,52=0,18	0,19	
200 m breaststroke	200:2.08,35-200:2.21,50	1,56-1,41=0,15		
100 m butterfly	100:50,74-100:56,52	1,97-1,77=0,20	0,15	
200 m butterfly	200:1.53,79-200:2.05,58	1,76-1,59=0,17		
200 m medley	200:1.56,52-200:2.09,52	1,72-1,54=0,18	0,15	
400 m medley	400:4.10,11-400:4.31,09	1,60-1,48=0,12		
4×100 m freestyle	400:3.11,18-400:3.33,87	2,09-1,87=0,22	0,15	
4×200 m freestyle	800:7.04,05-800:7.46,31	1,89-1,72=0,17		
4×100 m medley	400:3.30,20-400:3.54,97	1,90-1,70=0,20		
4×100 m medley mixed	200:1.48,83-200:1.49,63	1,84-1,82=0,02	0,11	
10 km marathon	10km:1:49,98,1-10km:1:58,50,4	1,51-1,40=0,11		
Difference in average swimming speed, m/s: men, $x \pm m = 1,82 \pm 0,15$; women, $x \pm m = 1,66 \pm 0,13$; $t = 6,70$; $p < 0,05$				

The smallest difference is characteristically presented in marathon swimming at 10000 m – 0,11 m/s, as well as in stayer freestyle swimming – 400-800-1500 m at the level – 0,12 m/s, in complex swimming 200-400 m – 0,15 m/s, then in relay swimming 4×100 m, 4×200 m freestyle, 4×100 m combined relay and mixed – 0,15 m/s. Further difference in the methods of overcoming distances gradually increases in breaststroke swimming by 100-200 m to – 0,17 m/s, then in backstroke swimming up to – 0,18 m / s at 100-200 m, as well as in swimming at 100-200 m butterfly – 0,19 m/s. Meanwhile, the biggest difference was recorded in the swimming of short distances at 50-100-200 m freestyle at a level of – 0,21 m/s. The overall average difference between all the studied results of swimmers-prize-winners in the formation of swimming skills at these prestigious competitions from 1996-2021 is at the level of – 0,16 m/s (the general difference in the average swimming speed: men, $1,82 \pm 0,15$; women, $x \pm m = 1,66 \pm 0,13$; $t = 6,70$, $p < 0,05$).

Discussion

First of all, it should be noted that any information materials related to the study of the results of the review of all past Olympic Games for a long time of their holding from 1996-2021 among men and women are reflected in the theory and practice of physical education and sports quite episodically, which makes them more significant and modern.

At the same time, at the final starts at the Olympic Games, which took place from 1996 to 2021, average results were obtained among the swimmers-prize-winners at different distances, which were characteristic and reliable for the majority of participants in these world prestigious competitions among men and women, taking into account their age. In addition, it is necessary to confidently and reliably identify significant differences in the average speed of overcoming distances among men and women, which indicates the importance of the indicators obtained during the observations of these prestigious competitions. Indicators of monitoring analysis of factual material obtained in accordance with available information data among prospective swimmers present generalized results of the difference in the results of men from women at the level of – 0,16 m/s (men, $x \pm m = 1,82 \pm 0,15$; women, $x \pm m = 1,66 \pm 0,13$; $t = 6,70$; $p < 0,05$) which is characteristic of the III stage of their long-term observation for 1996-2021, have modern scientific novelty, as well as theoretical and practical significance.

Conclusions

1. The top ten most successful participating countries included the following teams of swimmers in terms of the degree of achievements and the number of received medals: USA-586, Australia-209, Germany-98, GDR-92, Japan-83, Great Britain-82, Hungary-76, and Netherlands-62, USSR-59, and Canada-55 medal. The second ten includes the following countries: China-49, France-44, Sweden-39, Italy-29, Russia-28, South Africa-20, Brazil-17, and Denmark-15, Austria-12, and CIS-10 medal. The third ten included the following countries: Ukraine-9, Romania-9, Australasia-8, Spain-8, Zimbabwe-7, Greece-7, New Zealand-6, and Poland-6, Belgium-5, and Finland-5 medal. In the fourth ten Tunisia-4, Ireland-4, South Korea-4, Costa Rica-4, Argentina-3, Bulgaria-3, Belarus-3, Switzerland-3, Yugoslavia-2, Suriname-2 medal. The fifth ten included the following countries: Mexico-2, Cuba-2, Norway-2, Hong Kong-2, Slovakia-2, Philippines-2, Kazakhstan-1, and Singapore-1, Lithuania-1, and

Venezuela-1 medal. The rating of the teams participating in the Olympic swimming is completed: Serbia-1 medal, Croatia-1, Slovenia-1, and Trinidad and Tobago-1 medal.

2. At stage I (1896-1948), a greater age difference between men and women prize-winners was observed in the range from 3 to 5 years at distances: 100 m freestyle, 400 m freestyle, 100 m backstroke, 200 m breaststroke (difference in the age of swimmers-prize-winners: men, $22,40 \pm 0,88$; women, $19,20 \pm 0,32$; $t=0,002$, $p>0,05$).

The general state of difference in the average speed of swimming at distances among men and women shows that men have a higher level of results than women, primarily: 100 m freestyle, 400 m freestyle, 100 m backstroke, 200 m breaststroke. Some difference in the average swimming speed is about $-0,17$ m/s: men, $1,35 \pm 0,14$; women, $1,18 \pm 0,10$; $t=0,033$, $p>0,05$.

3. A detailed examination of the results at the II stage of the Olympic Games from 1952-1992 showed *some* the largest difference in the age of male and female participants was recorded in all 14 cases in the range from 2-4 years (difference in the age of swimmers-prize-winners: men, $21,18 \pm 0,75$; women, $18,60 \pm 0,69$; $t=1,51$; $p>0,05$). The absence of any advantage of the age of women over men is represented in all cases of observation at these prestigious competitions of our recent past.

The smallest difference in stage II (1952-1992) of the average speed indicators among men and women is characteristically represented in stayer freestyle swimming – 400-800-1500 m at a level of $-0,15$ m/s and in complex swimming of 200-400 m – $0,15$ m/s. Further difference gradually increases to $-0,16$ m/s in swimming breaststroke 100-200 m, then in backstroke swimming to $-0,17$ m/s at distances of 100-200 m, as well as in swimming 100-200 m butterfly – $0,18$ m/s, in swimming at short distances 50-100-200 m freestyle – $0,23$ m/s. The largest difference in the average speed was noted in relay swimming – $0,24$ m/s (the general difference in the average speed of swimming – $0,17$ m/s (men, $1,70 \pm 0,15$; women, $1,53 \pm 0,11$; $t=1,768$; $p<0,05$).

4. At stage III (1996-2021), the absence of age-related changes in data among men from women was recorded in 5 cases during the specified observation period. This is revealed in the 200 m freestyle, 200 m breaststroke, 200 m butterfly, 4×200 m freestyle relay, marathon swimming 10000 m. There is a predominance of age indicators of women over men only in 3 cases: 100 m freestyle, 1500 m freestyle and 100 m butterfly. At the same time, the difference in the age of men from women is in 12 cases at the level of 1-3 years. This is observed in swimming: 50 m, 400 m, 800 m freestyle, 100-200 m backstroke, 100 m breaststroke, complex swimming 200-400 m, 4×100 m freestyle relay, mixed and combined relay 4×100 m (age difference: men, $24,26 \pm 1,22$; women, $23,57 \pm 1,66$; $t=0,203$; $p>0,05$).

The smallest difference in the average speed of swimming is characteristically noted in marathon swimming at 10,000 m – $0,11$ m/s, as well as in stayer freestyle swimming – 400-800-1500 m at a level of $-0,12$ m/s, in relay swimming – $0,15$ m/s, complex swimming 200-400 m – $0,15$ m/s. Further difference up to $0,17$ m/s is observed in swimming breaststroke 100-200 m, then in backstroke swimming up to $0,18$ m/s at 100-200 m, as well as in swimming 100-200 m of butterfly – $0,19$ m/s. Meanwhile, the biggest difference was recorded in swimming at short distances of 50-100-200 m freestyle – $0,21$ m/s. The overall average difference between all the studied results of swimmers-prize-winners in the formation of swimming skills at these prestigious competitions from 1996-2021 is at the level of $-0,16$ m/s (difference in average swimming speed, m/s: men, $x \pm m = 1,84 \pm 0,15$; women, $x \pm m = 1,66 \pm 0,13$; $t=6,70$; $p<0,05$).

5. The information materials received are of professional interest to coaches-teachers, athletes-dischargers, amateurs and veterans of swimming. The novelty of the results of the study will also be necessary for the theory and practice of training specialists in physical education and sports undergoing professional training in the field of swimming at many faculties of pedagogical institutes, academies and universities of Ukraine, CIS countries and swimmers from different continents to realize their sports interests and opportunities at the most prestigious competitions of our time.

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