Influence of the speed abilities of swimmers-diverers on sports results

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Abstract

Objective of the study was to determine the influence of the speed abilities of swimmers-diverers on sports results.

Methods and structure of the study. Swimmers-diverers aged 13-15 years old (10 girls, 10 boys) took part in the scientific work. All athletes are engaged in the sports school of the Olympic reserve "Sputnik" (Krasnoyarsk) and have a sports category not lower than the third adult. The study was conducted at the sports base of the Avangard sports club, from September 2021 to December 2022. The speed abilities of athletes were assessed based on the results of passing control standards on land and on water.

Results and conclusions. As the obtained data showed, athletes who are able to accelerate themselves from a standstill to maximum speed in the shortest time show the best sports result at a distance of 50 m. Swimmers who are able to maintain maximum speed for as long as possible throughout the serial operation of sprint simulators show the best sports result distance of 100 m. It was revealed that among girls and boys a strong degree of dependence on the sports result has a serial work four times 15 m to the finish line (maximum). Using data on the dependence of sports results on the level of development of the speed abilities of divers, the coach can correctly build the training process, both on land and on water, which will further lead to an increase in sports results.

Keywords: *speed, underwater sports, distance, competitions, diver, sports equipment.*

Introduction. The speed abilities of a submariner are characterized by his ability to overcome short distances at a high pace and are inextricably linked with the technical skills of the athlete. Without good swimming technique, competent execution of starts and turns, there are no high speeds. The perfection of swimming technique in the main way, the ability to perform movements with maximum mobilization, while maintaining accuracy, coordination and optimal amplitude, is the most important prerequisite for achieving a high level of speed abilities of a diver-submersible.

In underwater sports, the athlete's speed abilities are manifested when swimming distances of 50 and 100 m - such distances are considered to be sprint distances. It is at sprint distances that athletes fully demonstrate their level of development of speed abilities.

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Results of the study and their discussion. The results of passing intermediate standards, speed series and sprint simulators among girls and boys are presented in Table 1, 2.

As the obtained data showed, athletes who are able to accelerate themselves from a standstill to maximum

Table 1. *Results of passing intermediate standards, speed series and sprint simulators among girls (13-15 years old)*

Distances	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10
Standard: shuttle run 3x10 m, s	8,8	9,0	8,4	8,1	9,2	8,4	9,5	9,9	9,3	9,4
Standard: 60 m run, s	10,0	9,8	9,6	9,7	9,3	10,1	10,2	9,8	10,3	10,4
Standard: glide from the start 5 m	1,5	1,6	1,6	1,4	1,5	1,6	1,9	1,8	1,7	1,9
Standard: glide after turning 5 m	2,3	2,8	2,2	2,3	2,6	2,4	2,6	2,5	2,7	2,6
Standard: start reaction, s	70	65	69	72	73	69	68	71	75	72
Series: 4 times 25 m (maximum), average speed	13	12	11	13	12	12,5	11,6	10,9	11	12,2
Simulator: 50 m from the start + 50 m from the water (10 s rest between segments)	23/ 24,5	24/ 26,10	22,5/ 24,0	23/ 24,3	21,5/ 23,0	22,5/ 24,0	23/ 24,2	22,6/ 24,0	24/ 25,1	24,2/ 25,6
Series: 15 m from the start + 25 m from the start + 35 m from the start + 50 m from the start (1 min mode)	5 13 19 22,9	6 12,5 18,4 23,7	5 12 18 22,4	5,5 11 19 23,0	5 12 18,5 21,3	5 11 17,5 22,2	6 12 19 22,9	5 11 18 22,7	6,5 13 19 23,7	7 13 18 24,1
Series: 4 x 15m to finish (maximum)	6	5	4,8	6	5	5,5	5,4	6	6,4	6,6
Results at city competitions (place) 50 m / 100 m	2/1	3/4	1/3	4/6	1/1	2/3	3/2	3/2	5/7	3/6

Table 2. *Results of passing intermediate standards, speed series and sprint simulators among boys (13-15 years old)*

Distances	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10
Standard: shuttle run 3x10 m, s	8,1	9,0	8,5	8,3	7,0	7,4	7,8	9,0	9,3	8,4
Standard: 60 m run, s	8,2	8,4	9,2	8,7	9,1	8,6	9,0	9,5	8,6	8,9
Standard: glide from the start 5 m	2,0	1,5	1,8	2,1	2,3	1,3	1,6	2,3	1,8	1,9
Standard: glide after turning 5 m	2,0	2,5	2,1	1,9	1,7	1,9	2,2	2,5	2,4	2,7
Standard: start reaction, s	65	63	67	70	71	65	65	70	73	72
Series: 4 times 25 m (maximum), average speed	12	10	11	10,5	11,1	10,7	11	10,1	10	11,3
Simulator: 50 m from the start + 50 m from the water (10 s rest between segments)	22/ 23,2	23/ 23,8	22,3/ 24,0	21/ 22,6	21,5/ 23,0	22,5/ 23,4	22/ 23,2	22/ 22,9	23/ 24	23,1/ 24,3
Series: 15 m from the start + 25 m from the start + 35 m from the start + 50 m from the start (1 min mode)	5 10 16 21,5	5 11 17 23,1	4,5 10 17 22,1	5,4 10 16 21,0	5 11 17 21,1	5 10 17,5 22,0	6 11 17 22,3	5 10 11 21,7	6 11 18 22,8	6 11 18 23,3
Series: 4 x 15m to finish (maximum)	5,5	5	4,5	4,9	5	5,2	5,1	5,7	5,2	5,7
Results at city competitions (place) 50 m / 100 m	4/5	5/6	5/3	2/1	1/2	3/4	5/7	6/8	7/5	8/9

speed in the shortest time show the best sports result at a distance of 50 m. Swimmers who are able to maintain maximum speed for as long as possible throughout the serial operation of sprint simulators show the best sports result distance 100 m.

Analyzing the results of a correlation analysis to establish the dependence of a sports result on the level of development of the speed abilities of athletes (Table 3), it was found that among girls and boys a strong degree of dependence on the sports result has a serial work four times 15 m to the finish line (maximum) (r= 0.82 and r=0.84). A good degree of dependence is observed with serial work: 15 m from the start + 25 m from the start + 35 m from the start + 50 m from the start (1 min mode) (r=0.75 and r=0.79), four times 25 m (maximum) (r=0.76, r=0.80), with a simulator 50 m from the start + 50 m from the water (rest between segments 10 s) (r=0.75, r=0.78), with running for a segment of 60 m (r=0.73, r=0.75). The average correlation relationship with the standards: sliding from the start of 5 meters (r=0.51, r=0.63), start reaction (r=0.54, r=0.51). Low degree with standards: shuttle run (r=0.32, r=0.34), sliding after turning 5 meters (r=0.32, r=0.31).

Table 3. *Comparative analysis of the relationship between sports results and the development of speed abilities of sportsmen - divers*

Control standards on land / water	Correlation coefficient girls	Correlation coefficient boys
Standard: shuttle run 3x10 m, s	0,32	0,43
Standard: 60 m run, s	0,73	0,75
Standard: glide from the start 5 m	0,51	0,63
Standard: glide after turning 5 m	0,32	0,31
Standard: start reaction, s	0,54	0,51
Control series/simulators on the water		
Series: 4 times 25 m (maximum) average speed	0,76	0,80
Series: 50 m from the start + 50 m from the water (rest between segments 10 s)	0,75	0,78
Series: 15m from the start + 25m from the start + 35m from the start + 50m from the start (1 min mode)	0,75	0,79
Series: 4 x 15m to finish (max)	0,82	0,84

Note: (r < 0.30) - low relationship; (r from 0.31 to 0.50) - weak relationship; (r from 0.51 to 0.70) - average relationship; (r from 0.71 to 0.80) - good relationship; (r from 0.81 to 0.90 and above) - a strong relationship.

Conclusion. The growth of achievements in underwater sports is largely determined by the constant improvement of the methods of training athletes.

Using data on the dependence of sports results on the level of development of the speed abilities of divers, the coach can correctly build the training process, both on land and on water, which will further lead to an increase in sports results.

When training speed abilities at the age of 13-15 years, a distinctive feature is the use of speed-oriented exercises with a period of rest until full recovery. Also in this age period, the foundations are laid for a high level of not only speed at a distance, but also the starting reaction, as well as turning and repulsion.

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