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## Improving the process of training of qualified swimmers-sprinters on the basis of training programs of power orientation

**Abstract. Purpose:** improvement of process of training of qualified swimmers-sprinters. **Material and Methods:** analysis of scientific-methodic literature, pedagogical observation, questionnaire survey, pedagogical experiment, methods of mathematical statistics. The examined group consisted of sportsmen of high qualification who were members of the national team of Ukraine on the swimming. **Results:** the authors developed a program of training sessions of power orientation at the development of highly skilled swimmers-sprinters (on land and in water), justifies its effectiveness. **Conclusions:** the use of training programs of power orientation in the process of training of qualified swimmers – sprinters promotes the growth of high-speed performance.

**Keywords:** swimmers, sprinters, program, power preparation.

**Introduction.** Physical preparation – is one of the most important components of sports training which is aimed at the development of motive qualities – forces, speeds, endurance, flexibility, dexterity (coordination abilities) [2; 5; 7; 10].

As shows the analysis of literature, a power work borrows for about 60% of time which is allowed for physical preparation in swimming [6].

The achievement of high rates of force and power of movements is the task of power training of swimmers when performing the main physical actions, characteristic for swimming: start, turn, work of a cyclic character [1; 3; 6].

However the level of power qualities in operating time on land provides not always the increase of level of high-speed and power opportunities and endurance when performing high-speed and power work of a special character in water. Therefore the section which is connected with the increase of abilities of swimmers before the realization of the available power potential in the course of swimming, is very important in the structure of power preparation [4; 8; 9].

The analysis of modern scientifically methodical literature allowed to come to a conclusion that a problem of a choice of this or that program of trainings, when training swimmers of different specialization, remains incomplete solved at the moment. Researches in this direction will allow to receive information which can be used for the improvement of the training process as gives the chance correctly to place accents of training actions and, as a result, to achieve good results.

**The objective of the research:** to prove the efficiency of application of training programs of a power orientation in training of highly skilled swimmers-sprinters.

*Research tasks:*

1. To characterize the general bases of creation of the training process of swimmers-sprinters.
2. To develop the program of the training classes which is aimed at the development of power qualities at highly skilled swimmers-sprinters.
3. To prove experimentally the efficiency of application of trainings of a power orientation in training of swimmers-sprinters.

**Material and methods of the research.** For the solution of the put tasks the following methods were used: analysis of scientifically methodical literature, pedagogical supervision, questionnaire, pedagogical experiment, methods of mathematical statistics.

The investigated group consisted of 10 sportsmen who specialized in swimming by free style at distances of 50 and 100 meters, had a rank of MSIC, MS and CMS. All of them were members of a national team of Ukraine on swimming.

**Results of the research and their discussion.** It is well-known that power preparation on land provides the development of different types of power qualities: maximum and explosive force, power endurance.

The ratio of the work aimed at the development of power qualities causes a success at this or that distance.

Swimmers who specialize at short distances (50, 100 m), pay a prime attention of the development of the maximum and explosive force.

High-speed and power qualities develop by a performance of exercises with a high speed, big encumbrances and insignificant number of repetitions. Such work allows to increase an ability before the realization of the power qualities acquired in the course of the general and auxiliary preparation when performing specially-preparatory exercises of high-speed and power character and at high-speed swimming [8].

Performance of exercises on land has to consider a compliance of mechanisms of power supply of a work on land to requirements of competitions, existential and dynamic coordination of the chosen special physical exercises with the structure of movements of a swimmer in water during competitions; overwhelming inclusion in a work of groups of muscles which take part in swimming in the main way.

Programs which are carried out in water, are based on the use of a big circle of the special means and methodical techniques, which are directed on the creation of prerequisites for transformation of a wide range of various power qualities and abilities in specific characteristic for the effective implementation of specially-preparatory and competitive exercises in water. In this plan on a leash swimming is especially effective; with extension of a rubber cord (for sprinters – less elastic – 20–25 kg); swimming in the hydrodynamic pool with a speed which exceeds the most available for 5–15%; with shovels of the different plane; with brake belts in a special swimming suit but others.

As a result of studying of techniques of power training of the strongest swimmers of the world, questionnaire in which

the leading coaches of a national team of Ukraine took part that have a long-term experience of training of highly skilled swimmers, the program of the training classes was developed by us which is aimed at the development of power qualities that includes different sets of exercises on land (tab. 1).

Table 1

**Exercises for the development of power qualities which were used in the course of training of swimmers-sprinters**

Nº	Exercise	Number of repetitions	Time of a performance or number of repetitions in approach	Speed	Pauses between approaches, s	Overwhelming orientation
1.	Imitation of fungal movements by butterfly stroke with the use of the exercise machine "Huttel- Mertens", the size of a resistance is 75% from the maximum	10	60 s	Above an average	30	Power endurance
2.	Imitation of fungal movements by a crawl on a breast with the use of the exercise machine "Biokinetik", a resistance is 75–80% from the maximum	4-8	30 s	High competitive	60	Explosive force
3.	Imitation of fungal movements by turns a crawl on a breast with the use of the exercise machine "Biokinetik", a resistance of 70% from the maximum	4-6	60 s	High	60	Power endurance
4.	Standing, hands are lowered down, bending hands in elbow joints, to lift a bar to the level of a breast, encumbrance, 80–90% from the maximum	6	8 times	Average	60	Maximum force
5.	Sitting to persons to the block device, hands are extended up, lowering to a rod for the head, encumbrance of 80-90% from the maximum	3	6–8 times	Average	60	Maximum force
6.	Pullings up on the cross-piece	3	10 times	High	120	Explosive force
7.	Knee-bend with a bar which contains on shoulders, encumbrance of 85-95% from the maximum	4	6 times	Average	120	Maximum force
8.	Lying on a back on a lava – lowering of a signature stamp of a bar for the head from accusative – hands are extended at the level of a breast, encumbrance of 70-80% from the maximum up	4	8 times	Average	120	Maximum force
9.	Jump up from an emphasis, having sat down	5	10 times	High	60	Explosive force
10.	Jumps through a lava 20-30 sm high,	3	10 times	High	120	Explosive force
11.	Standing facing the block device, imitation of an initial phase of a stroke, encumbrance, 80–90% from the maximum	3–5	8–10 times	Average	60	Maximum force
12.	Lying on a back, hands are bent to a breast – a bar press on outstretched arms, a resistance gradually grows and decreases – 70, 80, 90 – 90, 80, 70% from the maximum	6	Till full implementation of an exercise	Average	120	Maximum force

In water swimming "on a leash" with the use of an elastic cord (in shovels and without them), and also swimming in shovels with a special brake belt were actively applied.

For the purpose of the determination of the efficiency of application of the developed technique the pedagogical experiment was made with the assistance of 10 leading swimmers – members of a national team of Ukraine who had the

level of sports qualification from the candidate for the master of sports to the master of sports of international class.

All participants of the research specialized in swimming by free style, acting at short distances.

Sportsmen were distributed on two groups: experimental and control.

The program of the pedagogical testing consisted of five tests:

- result at a distance of 25 meters from the start;
  - result at a distance of 50 meters from the start;
- result at a distance of 100 meters from the start;
  - the test "2x25 m with an interval of rest of 10 seconds" (the first piece from the start);
- the test "4x25 m from the start with a rest interval 1 minute 30 seconds".

All tests were carried out with a speed, most available to swimmers.

Both groups (experimental and control) trained in identical conditions, but in the program of training of sportsmen of the experimental group was included on more than 5% of exercises aimed at the development of power qualities.

The application of the developed program lasted 4 weeks upon the termination of which the repeated testing was held. Results are given in tab. 2.

Table 2

**The comparative analysis of results of the testing of sportsmen of control and experimental groups during the experiment**

Group	Test, m	Average meaning		Difference, %
		Before the experiment, s	After the experiment, s	
Experimental (n=5)	2x25 (amount)	22,65	22,51	0,62
	4x25 (amount)	44,58	44,19	0,875
	25	10,92	10,62	2,75
	50	24,20	24,04	0,66
	100	52,79	52,48	0,59
Control (n=5)	2x25 (amount)	22,46	22,42	0,18
	4x25 (amount)	43,39	41,56	4,22
	25	10,68	10,62	0,56
	50	23,96	23,82	0,585
	100	51,60	51,45	0,29

Apparently from the received results, the overwhelming improvement took place practically in all test indicators in the experimental group.

Results of the speech of sportsmen at competitions allowed recording also more positive dynamics at swimmers of the experimental group (both rather general time of passing of a distance, and its separate components).

Thus, the application of the developed technique which is aimed at the development of power qualities in training of highly skilled swimmers-sprinters, finished the efficiency.

**Conclusions:**

1. The growth of results in modern sports swimming dictates a need of the search of new ways of optimization of the training process. The emphasis of attention in training of swimmers-sprinters on questions of the improvement of the technique which is aimed at the development of power qualities, can be one of such directions.

2. The program of training of swimmers-sprinters has to include not less than 55–56% to the volume of the work aimed at the development of power qualities.

3. The structure of special physical exercises on land has to be the most approached to the structure of movements of the swimmer in water during competitions.

4. Mechanisms of power supply of a work on land have to meet the requirements of competitions.

**Prospects of the subsequent researches** consist in a consideration of the questions which are connected with the development of training programs of a power orientation for highly skilled swimmers – stayers.

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