

## The Role of Technique in Improving the Performance of Junior Swimmers

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### Abstract

**Aim.** Establishing a model of training as well as the judicious use of the most effective methods and means specific to and non-specific to swimming should lead to: - appropriate appropriation from the technical point of view of the 4 swimming procedures; - increasing the minimum driving qualities; - demonstrate the validity and applicability of methods used to follow the development of qualitative motor skills; **Methods.** In the general tendency to objectively human actions, there is also the need to rationalize the exercises used in training, hence the name „rationalization of effort on areas of intensity”. With these tests we tracked and scored with grades from 1 to 10 of the crawl technique and recorded the performance of athletes in the 50m free sample. The repetitions were performed on distances of 12.5m, 25m in a maximum of 8 repetitions. The usual statistical indicators were used: arithmetic average, amplitude, standard deviation and coefficient of variability. **Results.** Performance dynamics for 50m - arithmetic average, global, analyzing the entire period of research, reveals that the greatest leap in the results is between the second and the third tests (Init.T.= 40,47±4,38 sec and at the Fin. T. = 37,82±2,38 sec with a Dif. = 2,65 sec). **Conclusions.** Evaluation of technical performance. In addition to physical training under the training plan, special emphasis has been put on technical training, which at this age has a primordial role, knowing that incorrectly acquired skills, hardly or not at all, can be corrected later. The results obtained in the tests carried out have improved continuously, and finally the progress is obvious.

**Keywords:** research, evaluation, methods, technique, speed.

## **Introduction**

Sport training at swimming is the main form of organizing and systematic development of the current training, conceived as a system of norms, requirements, pedagogico-instructive principles of applying the methods and means of optimal and efficient exercising of psycho-motomical, temperamental, by effort according to the degree of physical-functional development, of the conduct, of the reasons for adherence to the objectives established according to the technical-material conditions and the existing organizational framework (Maglischo, Ernest, 2003).

The purpose of this research is to investigate the theoretical and experimental research on the important role of the technical component in junior children (14-15 years old).

The research hypothesis - increasing the training efficiency of the educational instructive process requires establishing precise objectives, a well-targeted and optimized drive system as well as the choice of the most efficient methods and means of action.

## **Methods**

The improvement of the training methods requires the observation of two major milestones: the time spent and the recovery pause, whereby the duration of the return of the cardiac frequency can be adjusted and, implicitly, the payment of the 0xygen debt (diminution of fatigue), (Cirla, Luciela, 1999).

The learning of sporting techniques, as any motric learning process, does not take place linearly, ascendant, but after a discontinuous curve, characterized by ascending portions and plateaus (Bompa, T., 2003).

The development / education of motor skills is based on the mobilization of the energetic resources of the organism, therefore through systematic effort, not only of the nervous type (attention, memory, abstraction and generalization etc.), but also muscular (Cârstea, G., 2000).

In order to carry out the experiment the chosen athletes were selected children born in 2004-2005, members of the performance group within the Arad Municipal Sports Club.

Establishing a training model as well as the judicious use of the most effective methods and means specific and non-specific to swimming should lead to:

- appropriate appropriation from the technical point of view of the 4 swimming procedures;
- increasing the minimum of motor skills;
- demonstration of the validity of the methods used and the applicability of tests to follow the qualitative development of motor skills.

In the process of psychomotor education, actions are directed towards the accumulation of conducts, which gradually build up the basic components, which will contribute to forming a more accurate representation of the movements of the body and its segments (Grosu, Emilia, Florina 2009).

### **Experimental design**

The experiment on verifying the efficiency of the means used in swim training was carried out during the period from June 2018 to March 2019.

In the general tendency to objectively human actions, there is also the need to rationalize the exercises used in training, hence the name „rationalization of effort on areas of intensity” (Bitang, Viorel, 2009).

For the good conduct of the experiment we applied three tests:

- Initial testing - 12 - June 13, 2018, Arad
- Interim Testing - 11 - 12.12.2018, Arad
- Final Testing - 25 - 26.03.2019, Arad

With these tests we tracked and scored with grades from 1 to 10 of the crawl technique and recorded the performance of athletes in the 50m free sample.

Between June and November 2018, emphasis was placed on technical exercises. Between November 15 and November 28, 2018, according to the period of increase in the volume of training, emphasis was placed on increasing the training volume, which was 3600 - 3800 m / training. Techniques were also used three times a week.

Between 29 November and 4 December 2019 corresponding to the narrowing period, according to the training plan, technical training continued. The repetitions were performed on distances of 12.5m, 25m in a maximum of 8 repetitions.

Between 13 and 20 December 2018, the transition period, 5 training sessions per week were given, focusing on swimming techniques, especially on arm movements and foot movements.

Between December 21st 2018 - January 2, 2019 - holiday. Between 3 January and 16 February 2019, emphasis was placed on technical exercises.

Between February 18 and March 10, 2019, the workload period followed by decreasing the intensity of the effort and the number of exercises with a focus on technique (3 / week).

Between 11 and 22 March 2019 corresponding to the narrowing period, workload decreased and increased intensity, repetitions of 12.5m and 25m were performed.

### **Statistical analysis**

The usual statistical indicators were used: > arithmetic average, > amplitude, > standard deviation, > coefficient of variability

The experiment was performed on a single group that was considered a control sample at the initial testing, and the final one was considered an experimental sample (Dragnea, Adrian, 1992).

### **Results**

The evolution of the sports results obtained by the subjects included in the study are those in Table 1.

**Table no. 1.** Evolution of the sports results obtained by the subjects included in the study - 50m distance.

Subj.	Year of birth	Initial testing (sec)	Intermediate testing (sec)	Final testing (sec)
1.	2004	36,95	36,36	33,77
2.	2004	37,64	38,95	37,44
3.	2004	38,71	37,39	39,85
4.	2004	38,88	39,51	36,98
5.	2004	40,81	40,70	37,90
6.	2004	43,32	42,86	39,01
7.	2004	52,20	46,56	40,63
8.	2004	33,30	33,29	34,34
9.	2004	36,05	36,11	34,19
10.	2005	36,48	37,32	35,26
11.	2005	36,52	36,98	35,55
12.	2005	38,80	38,73	37,60
13.	2005	40,67	39,05	38,40
14.	2005	41,09	40,73	40,01
15.	2004	45,76	45,51	41,25
16.	2004	35,98	36,29	36,21
17.	2004	43,86	43,01	40,80
18.	2004	44,26	43,97	39,70
19.	2004	45,87	44,01	41,95
20.	2004	42,32	41,87	38,70

**Table no. 2 -** Dynamics of experimental performance

Statistical parameters	Initial testing (sec)	Intermediate testing (sec)	Final testing (sec)	Diference Init.T. – Fin.T.
<b>X</b>	40,47	39,96	37,82	2,65
<b>W</b>	18,90	13,27	8,18	10,27
<b>Am</b>	3,54	2,93	2,00	1,54
<b>S</b>	4,38	3,48	2,38	2,00
<b>Cv</b>	10,82	8,70	6,29	4,53

## **Discussion**

Global, analyzing the entire period of research, reveals that the greatest leap in the results is between the second and the third tests.

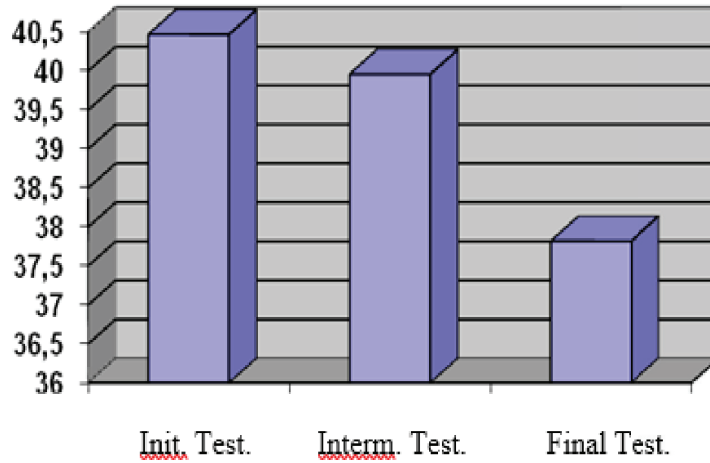


Chart no. 1. Performance dynamics - 50m - arithmetic average

The results show that the difference in the number of subjects fades, which is normal for a well-trained workout.

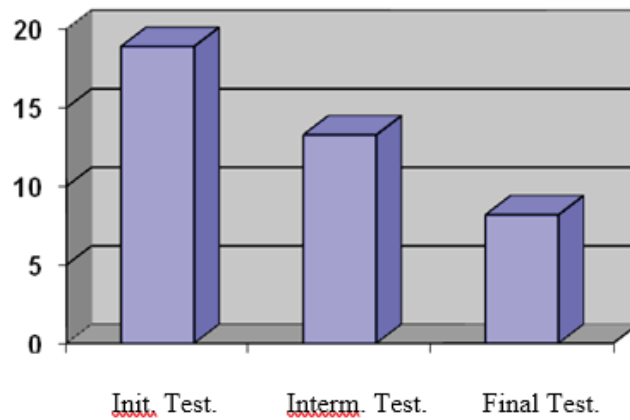


Chart no. 2. Evolution of amplitude during the experiment

We observe the same homogenization of the results in the investigated sample, as in the case of amplitude. At the final measurement, this statistical indicator changes by more than 1.5 seconds.

It is also observed in this case the tendency to homogenize the value of the subjects in terms of registered performances. Thus, although the statistic states that between 0 and 10%, the sample is very homogeneous, with the exception of the first test, the results obtained fall within these limits

Table no. 3 - Status of notes during the experiment

Parametri statistici	Testarea inițiala	Testarea intermediara	Testarea finala	Diferența T.inițial -T.final
X	5,7	6,6	7,6	1,9
W	1,6	1,6	1,8	0,2
Am	0,27	0,22	0,20	0,07
S	0,40	0,34	0,37	0,03
Cv	7,01	5,15	4,86	2,15

Evaluation of technical performance. In addition to physical training under the training plan, special emphasis has been put on technical training, which at this age has a primordial role, knowing that incorrectly acquired skills, hardly or not at all, can be corrected later.

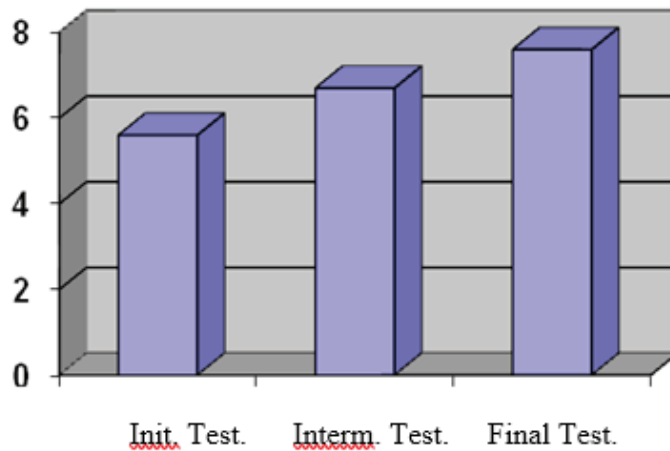
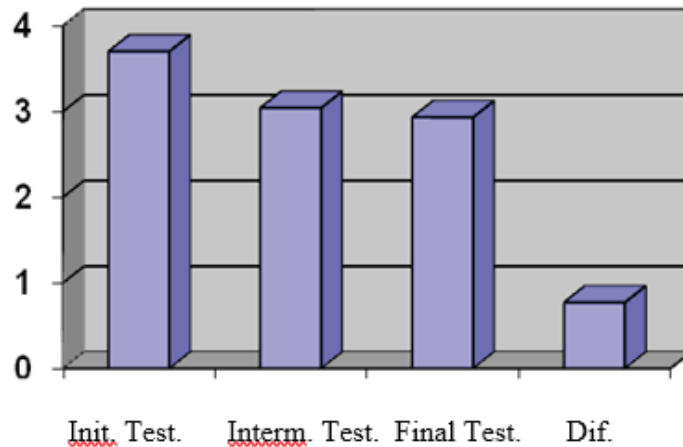


Chart no. 3. Evolution of the average score.

Throughout the research period, the progression is about 2 notes, indicating that the means used for technical training were judiciously chosen and used, the dynamic stereotype of swimming improving qualitatively.



**Chart no. 4.** Dynamics of the variability coefficient

The analysis of the distribution indicators shows the homogenization of the experimental sample in terms of the quality of the swimming act. The evolution of the coefficient of variation shows a homogeneity of the subjects included in the experiment since the first test, but this in conjunction with the improvement of the arithmetic mean indicates that the hypothesis was confirmed

Finally, we can assert, as a result of the analysis of the data collected, that the research hypothesis is confirmed, the differences between the control sample (considered in the initial testing) and the experimental (considered as final testing) are significant.

### Summary and Perspectives

- the results obtained in the tests carried out have improved continuously, and finally the progress is obvious. The other



statistical indicators considered had specific values for well-established and trained collectives.

- the appreciation of the technique, although more difficult to achieve, but in our case based on a rigorous algorithm, has shown an improvement of the technical skills, which can be put on the judicious choice of the independent variables.
- the obtained results, both on the motor and on the technical accuracy, confirm the statistical experimental hypothesis.

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