

# The effects of intensive learning the basic elements of swimming within the frame of ex-curriculum activities upon the elementary school children

Key words: training of non-swimmers, swimming, extra-curriculum activities  
Ključne riječi: obuka neplivača, plivanje, vannastavne aktivnosti

*Preliminary communication*

## Abstract

The research had been conducted on the sample consisting of 88 girls and boys attending the 3rd grade of Elementary School. The aim of the research was to establish the effects of training of the basic elements of swimming created under the impact of programmed work within the frame of extra-curriculum activities. For the purpose of analysing the differences between initial and final testing, was used T-test for dependent samples as well as percentage analyses. On the basis of final parameters, statistically significant positive changes had been noticed with the all variables as a result of applied training programme. By correct pedagogical approach, the majority of children have shown positive changes in regard of learning of the basic elements needed for the movement in the water. From the theoretical and practical point of view it could be stated as this programme is highly useful and applicable as a form of extra-curriculum activity.

## Introduction

From the point of view of intensifying of school process, it means that the students are to be offered many attractive contents, adjust them to their age, the level of their characteristics and skills, the level of their motoric skills and achievements, or simply, to provide every student teaching process to be carried out in accordance with their actual anthropological status (Beiner, 2002). Research had shown that children who are in free time engaged with some sport, faster and more effective acquire the basic elements of swimming (Torlaković, 2009). Every additional form of physical activity, beside the regular classes of Physical education, is of great use and importance for the young student, especially taking into consideration swimming that is the motoric skill of high utility. Thus, it's needed to employ all disposable resources in order to raise the swimming literacy on a higher level. When a child acquires the skills of swimming, diving, jumping, the other skills are also developed such as: fighting spirit, systematic quality and discipline in carrying out of the tasks and healthy attitude towards the group (Findak, 2003). No any other physical activity can have such an impact on the person such as swimming does. In some sense, our existence is related with the moving in water (Dahl, 2009). Swimming and water activities have very soothing effect on all body parts, organs and physiological functions (Findak, 1995). Specific feature of swimming is seen in a fact of a need for changing the body position (a transition from vertical to horizontal position), different way of breathing, fictitious weight

*Olympic Swimming Pool Center Sarajevo, Bosnia and Herzegovina*

## Sažetak

Istraživanje je provedeno na uzorku od 88 djevojčica i dječak trećih razreda osnovne škole. Cilj istraživanja bio je da se utvrde efekti obuke osnovnih elemenata plivanja nastalih pod uticajem programiranog rada u okviru vannastavnih aktivnosti. Za analizu razlika između inicijalnog i finalnog testiranja primijenjen je T-test za zavisne uzorke i procentualna analiza. Na osnovu dobijenih parametara utvrđene su statistički značajne pozitivne promjene kod svih varijabli kao rezultat primijenjenog programa obuke. Pravilnim pedagoškim pristupom kod većine djece je pokazala pozitivne promjene u učenju osnovnih elemenata potrebnih za kretanje u vodi. Gledano iz ugla teorije i prakse može se konstatovati da je program vrlo koristan i upotrebljiv kao jedan od oblika vannastavnih aktivnosti.

loss that demand not only adjustment but also learning of moving in water as a new environment (Radjo, 1997). Swimming is not mere sport, but necessary skill needed for knowing how to move through water. The research results of non-swimmers' training showed that the process of adaptation is needed for all candidates starting with the training (Atha, 1982). On the other hand, the main aim of sport swimming is rationalism which is manifested in economical, uniform straightforward to score of some section using a specific technique (Volčanšek, 2002). The assessment of swimming knowledge or swimming speed only can save the time, but it is of the same value the assessment in regard of knowledge and swimming skills due to high utility of swimming (Leko, Grčić-Zubčević, 1999). The aim of the research is to establish the effects of intensive programme of learning the basic elements of swimming through extra-curriculum activities lasting up to 12 hours upon the elementary school children.

## Methods

### Sample of the examinees

The research has been conducted on the sample comprising of 88 elementary school pupils of 3rd grade at two Elementary Schools from Municipality of Ilijaš (Sarajevo Canton, Bosnia and Herzegovina). The examinees were of 9.3 age  $\pm$  7 months, of both sexes. There were 55 girls (62.5%), height 136.2  $\pm$  7.1 cm, weight 32.3  $\pm$  7.0 kg and 33 boys (37.5%), height 135.8  $\pm$  7.8 cm, weight 34.1  $\pm$  7.9 kg.

### Sample of variables

Every examinee was separately tested, and the result of testing have been included into charts. The estimation was done according to the following criteria:

The basic elements of adaptation for the prolonged stay in water:  
Head dive (HD) – is able / is not able to dive the head under the water with deep breath

Diving of an object (DO) - is able/ is not able to dive and pick up light object from the depth of 140 cm

Feet jump into shallow water (FJS) - dare to jump /not dare to jump on feet into shallow water of 120 cm

Feet jump into deep water (FJD) - dare/ not dare to jump into 200 cm deep water

Floating on belly (FB) - can/can not float for > 5 seconds

Back floating (BF) - can / can not float for > 5 seconds

As criteria variables within the estimation of both initial and final condition of knowledge about swimming, candidates were evaluated numerically from 1 to 5. These criteria are modified ones, from the seminar held in Lipik in 1983 (Kazazović, 2007).

Swimmer – (5) jumps on feet into deep water on his own, swims minimum of 40 m – two styles and comes out from the pool on his own

Swimmer a beginner – (4) jumps on feet into deep water on his own, swims using free technique for 25 m and comes out of the water on his own

Semi-swimmer – (3) jumps on feet on his own, swims for 10 -15 m using free technique, comes out from the pool on his own or with help of an instructor.

Floater – (2) is able for a short period of time to maintain floating on chests and to swim using free technique for 10 m and comes out from the pool on his own or with help of an instructor.

Non-swimmer- (1) does not have any knowledge on swimming

### Swim section:

Initial condition of swam out meters by free style – 1 hour

Transitional condition of swam out meters by free style - 6 hour

Final result of swam out meters by free style -12 hour

### Program of training

The programme comprising 12 hours of acquiring the basic elements of swimming was carried out within the complex of Olympic pool in Sarajevo, during work days, one hour per day in the morning hours (table 1). The training had been carried out by the professors of Physical education and sport. All examinees were subjected to the same both programme and testing under equal conditions. During the research, initial, transitive and final testing were conducted. During the first hour, they were examined in order to establish the level of their knowledge of moving in the water, so after the initial testing, they have been divided into homogenous groups. Each group consisted of 6 to 7 pupils. As a model of assessment of initial and final condition, the following facts were taken into consideration: swam out length in meters and the impression of an instructor that was the basis for selecting them into different groups: non-swimmer, floater, semi-swimmer, swimmer beginner and swimmer.

### Data processing methods

For the purpose of knowing the knowledge of the basic activities needed for being in the water, the results are presented in frequencies and percentage values. The difference between initial, transitive and final testing on meters as well as the assessment of swimming knowledge had been checked out by T-test for dependent samples.

Table 1. Schematic survey of the training programme –12 hours' programme

Programme 12 hours	1	2	3	4	5	6	7	8	9	10	11	12
Initial testing of the candidates	*											
Simple exercises of adjustment and moving in the water:												
1. Exercises of adjustment to water	*	*										
2. Breathing exercises – watching in the water	*	*	*	*	*	*	*	*				
3. Exercises of maintaining the horizontal posit.			*	*	*	*	*	*	*	*	*	
4. Exercises of sliding on the water			*	*	*	*	*	*	*	*	*	
Exercises for acquiring the swimming techniques												
5. Set of style exercises (on the floor)	*	*	*	*	*	*	*	*	*	*	*	
6. Exercises in the basic swimming movements (on the floor)	*	*	*	*	*	*	*	*	*	*	*	
7. Exercises for feet movement (in the water)				*	*	*	*	*	*	*	*	
8. Exercises for hands movement (in the water)					*	*	*	*	*	*	*	
9. Exercises for improvement of coordination and jumps (in the water)							*	*	*	*	*	
10. Exercises for synchronization of feet and hands movement – crawl								*	*	*	*	
11. Exercises for synchronization of feet and hands movement – back side								*	*	*	*	
Final testing of the candidates												*

## Results and Discussion

During the initial testing it was noticed that majority of examinees have been with modest swimming knowledge. The values of initial parameters of all variables show that the group was heterogeneous. Even 76.1 % of examinees were absolute non-swimmers (figure 3). The programme of training had caused the process of homogenization of all functions that are important for moving in water (table 2). It is especially visible with the adaptation elements being a basic phase in training of non-swimmers. Discrimination of the results of knowing the basic elements of adaptation of children for staying in water with both initial and final testing show that absolute improvements occurred (figure 1). All candidates showed as they are freed from fear, that was necessary for further activities.

On the basis of arithmetic mean of the results at the beginning and in the end of the programme, as well as on the basis of the importance of changes being tested by T-test for dependent

samples, it is obvious that the programme has produced positive effects ( $p=0,00$ ). Analyzing the assessment of swimming knowledge, it could be stated that significant statistical changes occurred between the initial and final check up with these variables (table 3).

At the beginning of training, the average score was 1.5. In final check up there were significant improvements and it is noticeable in average score 3.4 (figure 2).

At final testing 28,4 % of examinees showed the knowledge of moving in water that put them into a category of swimmers. The same percentage of examinees was noticed within the category of semi-swimmers. Very good index is significant increasing number of swimmers beginners that was 13.6 %. Although during the final check up, there was 2.3 % of non-swimmers, it is important to point out as they also succeeded to acquire the basic elements of adaptation, to swim short section less than 10 meters by which they did not fulfilled the condition the lower limit needed for getting into the category of floaters (table 4).

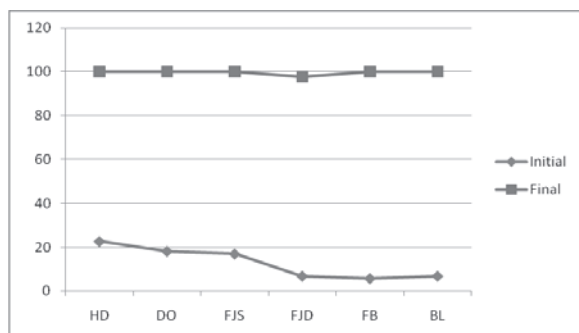
**Table 2.** Results of initial and final testing of the basic elements of adaptation for staying in water

	Head dive	Diving of an object	Feet jump into shallow water	Feet jump into deep water	Floating on belly	Back floating
<b>Initial</b>	20 22,7 %	16 18,2 %	15 17 %	6 6,8 %	5 5,7 %	6 6,8 %
<b>Final</b>	88 100 %	88 100 %	88 100 %	86 97,7 %	88 100 %	88 100 %

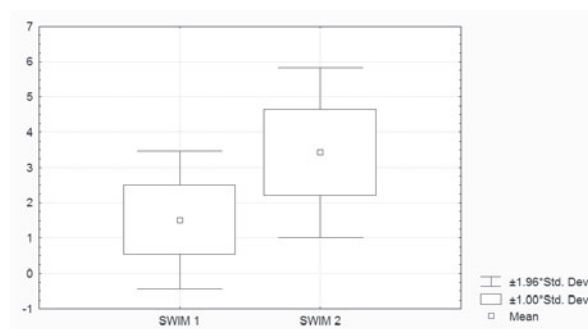
**Table 3.** Results of T-test for dependent samples for swimming knowledge assessment.

	Mean	Std.Dv.	N	Diff.	Std.Dv. Diff.	t	df	p
<b>SWIM 1</b>	1,511364	,994171						
<b>SWIM 2</b>	3,420455	1,229163	88	-1,90909	,990023	-18,0893	87	0,00

**Figure 1.** Results of assessment of the basic elements of adaptation for staying in water.



**Figure 2.** The results of differences in arithmetic mean with initial and final assessment of swimming knowledge

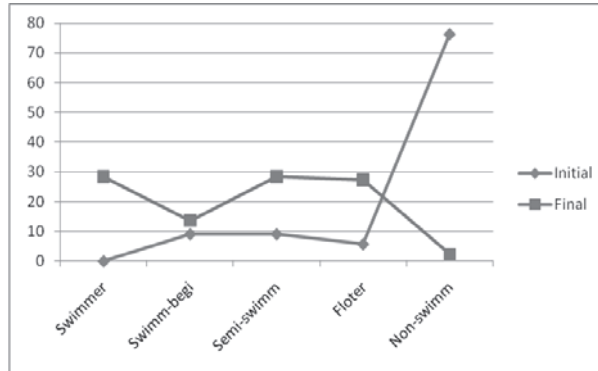


**Table 4.** Percentage results of initial and final testing of swimming knowledge assessment.

	Swimmer	Swimmer a beginner	Semi-swimmer	Floater	Non-swimmer	TOTAL
<b>Initial</b>	0 0%	8 9,1%	8 9,1%	5 5,7%	67 76,1%	88 100%
<b>Final</b>	25 28,4%	12 13,6%	25 28,4%	24 27,3%	2 2,3%	88 100%

This shows that systematic and intensive repeating of good contents of learning the basic elements of swimming leads to significant improvement within relatively short period of time (figure 3).

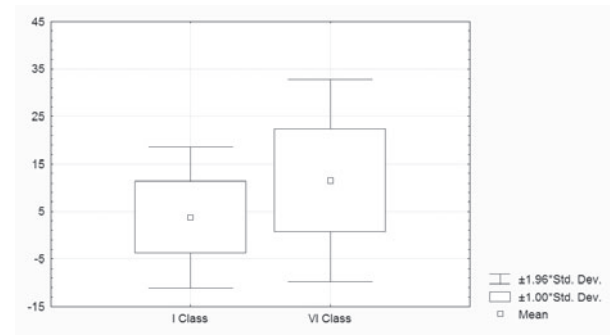
**Figure 3.** Percentage survey of the results selected according to the swimming knowledge assessment.



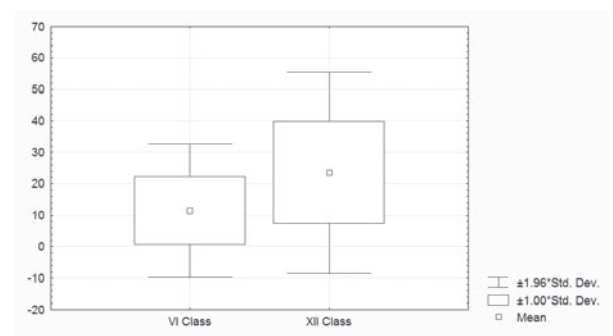
On the basis of result analyses of arithmetic mean of T-test for dependent samples, it is noticed that there are statistically significant changes in variables in regard of swam out meters for each sequence. Analyzing the initial and transitive testing ( $p=0.00$ ), transitive and final ( $p=0.00$ ) and initial and final ( $p=0.00$ ), it could be stated the continuous growth of the results (table 5). Acquiring the motoric skills in water and swimming out the sections had progressive dynamic. During the transitive testing on 6th hour of training, the average group result was 7.7 m. Comparing of these parameters give noticeable improvements as a result of good preparation caused by adequate adaptation programme in the first part of training (figure 4). In the second part of the programme there was a progression in regard of meters being swam out that, on average, was 12 meters (figure 5). The acquired skills of moving in water were additional motivation for further work and success. By the end of the programme, significantly better results are visible related to initial testing (figure 6).

These results show good effects of intensive non-swimmers training. In final testing a significantly higher homogeneousness of examinees is stated. It clearly shows that such form of extra-curriculum activities within the population of young school children is very necessary and useful.

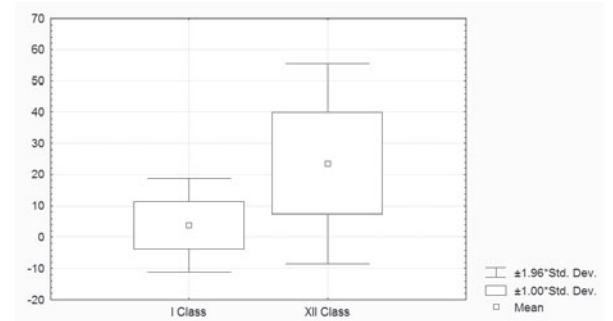
**Figure 4.** Result of differences of arithmetic mean in regard to dynamic of swam out meters from the first till the sixth hour.



**Figure 5.** Results of differences of arithmetic mean in regard to dynamic of swam out meters from the sixth till the twelfth hour



**Figure 6.** Results of differences of arithmetic mean of swam out meters at initial and final testing



**Table 5.** The results of T-test of dependent samples for swam out meters in sequences at initial, transitive and final result.

	Mean	Std.Dv.	N	Diff.	Std.Dv. Diff.	t	df	p
I Class	3,76136	7,60519						
VI Class	11,48864	10,87758	88	-7,72727	5,118655	-14,1616	87	,000000
I Class	3,76136	7,60519						
XII Class	23,54545	16,36362	88	-19,7841	12,06539	-15,3821	87	,000000
VI Class	11,48864	10,87758						
XII Class	23,54545	16,36362	88	-12,0568	9,932367	-11,3873	87	,000000

In some previous researches, it was concluded that the achievements of non-swimmers for the period of 12 hours are pretty modest ones, but experienced teachers acquire much better result than inexperienced ones (Atha, J., A.D. Kinnear, and J.S. Sawbridge 1982). During learning, when children experience success in different tasks, this produces intrinsic pleasure, which encourages them to want to persist and improve their competence (Shapiro, Yun, & Ulrich, 2002).

## Conclusion

The results of this research show that the examinees have significantly improved their skills in regard to acquire the basic elements of adaptation in water that is very necessary for them to proceed with further activities. It could also be concluded that during the non-swimmers' training of young school children, a psychological adaptation is of great importance and which is carried out through various water activities. These activities are needed to be performed during the first phase, and periodically repeated throughout the entire training. As it was expected, the dynamic of swimming out per sequences was accompanied by the growth of results. In the second half of training, the examinees had shown better progress in regards of swam out meters. These conclusions had been stated by other authors who treated the same subject. Methodology of intensive training of non-swimmers within the frame of extra-curriculum activities that has been applied in this research showed as very efficient one, and the main reason for that is the application of adequate methodical principles of systematicness and graduality that is of crucial importance working with the children of this age. We have to be fully aware of the fact that being familiar with the basic swimming skills can save life. Drowning is the very top cause of death among youngsters up to 16 years old. The aim of this work is not to consider and describe the details that are generally known, but the basic purpose is to analyze the effects of realised intensive programme lasting 12 hours. From the scientific point of view, non-swimmers' training represents paedagogical process of conveying the skills from the instructor to non-swimmers aiming to prepare them for the independent and safe staying in water. Unfortunately, the majority of children in Bosnia and Herzegovina finish their schooling without systematic learning of the basic swimming elements. Exercises and water games have very strong educational role. Programme itself can be very useful and absolutely there is no any obstacle it to be applied within the frame of Physical education with the young school children. The use of this programme could have long lasting positive effects not only because of acquiring the basic elements of swimming but also for the socialization of children through pleasant being together. This could be the way to create a good basis children gradually, through play, get to know the elements and to develop into independent and safe swimmers. The final aim of this training within the frame of extra-curriculum activity of elementary school children, should be the creation of correct motoric stereotype in the field of swimming and moving in the water till the end of elementary school education. Also, it can be concluded that the programme is applicable in all environments where there are basic conditions for swimming activities. The results of research could be good basis for further research projects directed to improve the curriculum of Physical education of young elementary school children through the segment of swimming.

## References

- Atha, J., A. D. Kinnear, and J. S. Sawbridge (1982). Some concomitants affecting the skill adaptation of non-swimmers during a twelve-session training programme. Society of Sports Services Conference; Br J Sports Med. Department of Human Sciences University of Loughborough, 16(2): 110.
- Beiner, F. (2002). Individualisation of the learning process. ŠŽur individualisierung des Lernprozess. Verlag Schwann, Dusseldorf.
- Dahl, D (2009). Zen and the art of swimming – Impulses for teaching and training. Norwegian University of Sport and Physical Education. 14th Annual European Congress of Sport Science. Oslo, Norway, 232.
- Findak, V. (1995). Equipment for education of the non-swimmers. Bulletin of the Croatian Association of recreation sports: 7. Croatian advice on training non-swimmers. Split, 4 - 7.
- Findak, V. (2003). Methodology of Physical Education. School book. Zagreb.
- Kazazović, B., D. Đedović, A. Popo, M. Mekić (2007). Effects of transformation process in teaching (training) swimming for the junior school age. II International Symposium New Technologies in Sports, Sarajevo 2007, 2: 324 - 328.
- Leko, G., N. Grčić-Zubčević (2005). Selecting children for swimming school. The case of Croatia. Kinesiology, 36(2), 192-205.
- Radó, I (1997). Transformacioni procesi motoričkih i funkcionalnih sposobnosti i različitih aspekata u plivanju. (Transformation process of motor and functional ability and various aspects of swimming). Doctoral thesis, Faculty of Physical Education University in Sarajevo.
- Shapiro, D.R., Yun, J., & Ulrich, D.A. (2002). Measuring perceived gross motor skill competence in children. International Journal of Sport Psychology, 33, 391–409.
- Torlaković, A (2009). Analysis of dynamics of studying basic swimming elements. 11th International Conference of Sport Kinetics (IASK), Chalkidiki, Greece, 83-84.
- Volčanšek, B. (2002). Bit plivanja. (Purpose of swimming). Zagreb: Faculty of Kinesiology.

Submitted: October 30, 2009.

Accepted: December 02, 2009.

Correspondence to:

Aldvin Torlaković, MSc

Olympic Swimming Pool Center Sarajevo, Bosnia and Herzegovina

71 000 Sarajevo, Bosnia and Herzegovina

Phone: +387 61 159 200

E-mail: aldvinc@yahoo.com