Journal of Physical Education & Health, 2019, vol. 8 (14), 18-24

https://doi.org/10.5281/zenodo.3746133

INTENSIVE BASIC SWIMMING COURSES AND THEIR EFFECT ON CHILDREN´S SWIMMING LITERACY

Natália Kováčová, Monika Czaková, Jaroslav Broďáni

Department of Physical Education and Sport, Faculty of Education, Constantine the Philosopher University in Nitra, Slovak Republic

Abstract

The main aim of the research is to determine the effect of a 5-day-long intensive swimming course on swimming literacy for pupils from elementary school. We used a set of four tests of basic swimming skills for establishing the input and output levels of their swimming skills, which were point-rated and ranked according to their difficulty. Pupils attended the swimming course 5 days in a row, each day for 45 minutes and each hour had its own goals and content. We tested 60 pupils from elementary school with an average age of 9 years. Monitored changes in pupils' swimming literacy according to the evaluation scales are compared statistically by Chi-quadrate. For the evaluation of practical significance we used the effect size Cramer´s φc (10 small effect size, .30 medium effect size, .50 large effect size). By comparison of changes in the input and output results we found that our tested probands achieved in the output testing reveal statistically significant better results in comparison with input testing in each test of basic swimming skills. We consider that the response to a short intensive swimming course, where pupils were in everyday contact with the water and their instructor, is significant according to the results and it can be regarded as a useful tool for the development of children´s basic swimming literacy.

Key words: *swimming, basic swimming skills, basic swimming course*

Introduction

Swimming is a very popular sport activity in Slovakia. It has health and recreational benefits on the body through its conductive effects. Swimming is a universal activity that has a positive impact mainly on the sensorimotor development of children. It also enables them to develop everyday life skills that are very important in dealing with an aquatic environment, and which could save their lives [1].

Many authors [2-5] agree that early school-age is the most appropriate time to begin basic swimming skills training. Nowadays, we encounter the fact that children at primary school do not receive an overview of swimming methods and styles. The fact of the increasingly deteriorating level of swimming skills among young people in primary schools can be supported by statistics of drowned children up to the age of 10, whose numbers are steadily increasing [6]. Children have low swimming literacy and insufficient swimming skills, which are needed in basic swimming and serve as a solid starting line for mastering their swimming skills. These children, who have no contact with an aquatic environment are fearful and cannot estimate their limits when they are in water.

School as an educational institution in Slovakia is in charge of leading swimming lessons for first stage pupils through a range of 20 lessons. There is considerable discrepancy in the Directive between the requirements of the performance standard and the real state of swimming literacy among pupils. The process of teaching swimming and acquiring new swimming skills is thus shifted to extracurricular education.

Nowadays, many swimming schools offer the opportunity to expand children's swimming skills and teach the child to swim.

Many schools make use of these offers and the trend is towards so-called "accelerated" swimming training where lessons are fewer than 20. In our case this is a five-hour intensive swimming training, where the tasks of the basic state of swimming training are unchanged. Children improve and extend their swimming skills, they practice the technique of two swimming methods during the training, especially freestyle and backstroke, and they learn to safely manage to jump into deep water. This swimming training is attended by children from the third year of primary school for 45-minute-long lessons over a period of 5 days.

Aim

The aim of the work is to examine the level of initial swimming literacy and the level of final swimming literacy during a 5-hour accelerated swimming training period using predetermined swimming tests.

Materials and Methods

The research sample consisted of 60 primary school pupils with an average age of 8.63. According to [7] in the research situation, we recorded a selection of probands (V = 60) and observed the states (S) at times t0 and t1. The measurements were performed under strict conditions with an unchanged number of probands. The identified situation helped us to compare the level of swimming literacy between t0 and t1 and to find out what differences occurred during this interval. We used the method of direct observation and subsequent recording of data onto a record sheet for testing swimming literacy.

We used 4 tests of basic swimming skills [2] to determine the level of swimming literacy for input and output testing. The swimming skills tests were arranged according to difficulty from the least demanding to the most demanding task. The duration of the swimming training was 5 days for 45 minutes and each hour had its clearly defined goals and its content (Table 1).

Table 1. Shortened content of the swimming lessons

Lesson	Content
1.	a) safety and hygiene instructions
	b) swimming literacy testing
	c) breathing and floating games
	d) 15 m flutter kick with breathing into water
2.	a) games for orientation in the water
	b) 10 m flutter kick without board
	c) flutter kick with board - breathing into water
	d) backstroke flutter kick - first attempts
	e) jumping into water
3.	a)improving of flutter kick (body position and breathing)
	b)backstroke flutter kick with board (body position)
	c) freestyle strokes - fist attempts in the shallow end with pullboy
	d) backstroke, first attempts
	e) games based on jumping into the water
4.	a) improving flutter kick (backstroke and freestyle)
	b) freestyle, backstroke (technique)
	c) swimming starts - first attempts
5.	a) freestyle, backstroke
	b) catch and dive games
	c) swimming literacy testing

Tests: We rated all tests on a scale of 0 - 2 points where 0 = lowest score, 2 = highest score (Table 2).

Table 2. Evaluation scale of swimming literacy

Test of swimming literacy	0 points	1 point	2 points
Jumping into the water	failed	With instructor assistance	Jumped into the water without help
25 meters flutter kick with kickboard	failed	With breaks or weak technique	Successfully swam 25 meters without break
Dive and catch the puck	failed	With more attempts	Caught on the first attempt
Swimming technique (freestyle or backstroke)	failed	Weak swimming technique, with breaks	Great swimming technique, without breaks

Test no. 1 – Jumping into water: in the first test, we placed the pupils on the edge of the pool and their task was to jump into the water with a depth of 1.5 m. We observed if the pupil could jump into the pool alone or needed the help of an instructor or refused to jump into the water. The highest number of points was awarded to pupils who jumped into the water alone.

Test no. 2 – Flutter kick with kickboard 25 m.: the task of the pupils was to swim across a 25-meter pool with a flutter kick. We observed if the pupil could swim 25 meters with the kickboard and we noticed technical performance during this task. The highest number of points was given for continuous swimming with mastered freestyle technique. Only one point was awarded when a pupil needed to stop and had significant technical errors in their performance.

Test no. 3 – Dive and catch the puck: the test focused on pupils' orientation under the water. The task was to catch an object from a 1-meter deep water. We observed pupils orientation in an aquatic environment and whether or not they could dive deep into the pool and catch an object from its bottom.

Test no. 4 – Swimming technique (freestyle or backstroke): the task of the pupils was to swim 25 meters freestyle or backstroke. This test was used to assess the ability of the pupils to swim separately to the other side. We evaluated the selected swimming method. The highest number was given to pupils who swam the length continuously and without major technical errors. Fewer points were given to pupils who needed a break and had significant performance errors. If the pupils refused to complete the task, they got 0 points.

Data processing

We characterized files numerically (multiplicity) and graphically (by bar graphs). The changes (pretest and posttest) in the swimming literacy rating scales are compared using Chi-square. Material and practical significance is assessed by the Effect size (Cramer φc, .10 small effect, .30 medium effect, .50 large effect). Statistical significance of changes is assessed at $p < 0.01$ ** significance level.

Results and discussion

We found a very low level of pupils´ swimming literacy in the input measurement of pupils swimming. Pupils who have not yet received basic swimming training experience did not achieve a single point on the test scale in some cases. As a result of shortened swimming training, there was a significant change in the swimming literacy of primary school pupils (Table 3).

Table 3. Changes in pupils' swimming literacy before and after the swimming course

Test of swimming literacy		**0 points**	**1 point**	**2 points**	χ^2	**p**	**ES φc**
Jumping into the water	Pretest	4	20	36	39.59	0.000	0.574
	Posttest	2	6	52			
25 meters flutter kick with board	Pretest	21	20	19	199.29	0.000	1.289
	Posttest	2	13	45			

Dive and catch the puck	Pretest	23	21	16	31.38	0.000	0.511
	Posttest	15	9	36			
25 meters swimming	Pretest	46	11	3	62.28	0.000	0.720
	Posttest	18	31	11			

In the first test - the water jump test, we observed the children's response to the aquatic environment on three levels. The results of this test were influenced by most of the previous experiences of children with water. Jumping into water was the least demanding test and therefore we achieved good results in the input measurement where only four pupils refused to jump into the water, but up to 36 of them needed the help of an instructor (Fig. 1). During the swimming program, children started to enjoy jumping and became confident in the aquatic environment, and therefore the changes in the test after the swimming program were statistically significant at $p < 0.01$ **; $\chi^2 = 39.59$. We also verified these changes using Cramer's φc, where the effect size came out with a large effect (ES φc = .574).

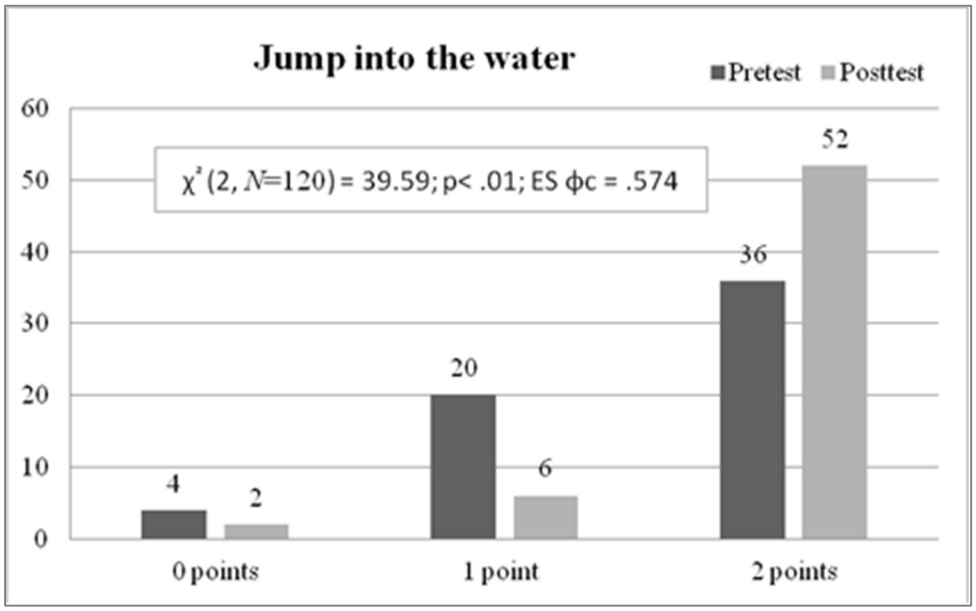

Figure 1. Changes in swimming literacy during test: Jump into the water

We evaluated the second test on three levels of how children can handle 25 meters of flutter kick with the kickboard. In this test up to 21 pupils were unable to cross 25 meters of flutter kick in the input measurement and 20 pupils fulfilled this task with breaks and technical errors. The fact is that the pupils did not have knowledge of the performance technique and thus were not able to properly position the body in the water and perform the flutter kick technically correctly. Among the most common performance errors were weak leg kicking, bent knees, legs kicking far apart and bent arms. During the swimming program, however, the children learned to take the right position and kick with their feet very quickly, so at the end of the swimming program, up to 45 pupils had no problem in swimming the full length without technical mistakes. The effect of the swimming program reached statistically significant values at $p < 0.01$ **; $\chi^2 = 199.29$. We also verified the results using Cramer's φc, where the effect size came out with a large effect (ES φc = 1.289).

In the next test we monitored how a puck was caught in the aquatic environment and if the pupils were able to dive into the water with their entire body without holding their nose. Pretests showed that only 16 pupils (Fig. 3) were able to catch the puck from the bottom of the pool, the depth of which was 1 meter; 21 pupils had difficulty plunging into the water to

catch the puck for the first time and 23 pupils refused to dive. We practiced exercises for breathing in water and orientation in an aquatic environment with our pupils during the swimming lessons. We found it important for pupils to be able to dive into the water without holding their nose or unnecessary fear because it is an important factor for improving swimming. At the end of the swimming program, 36 pupils managed to catch the puck for the first time, 21 pupils were able to do so more times, and only 15 pupils failed to catch the puck. The effect of the swimming program was statistically significant at $p < 0.01$ **; $\chi^2 = 31.38$. The result was also verified using Cramer's φc, where the effect size came out with a large effect (ES φc = .511).

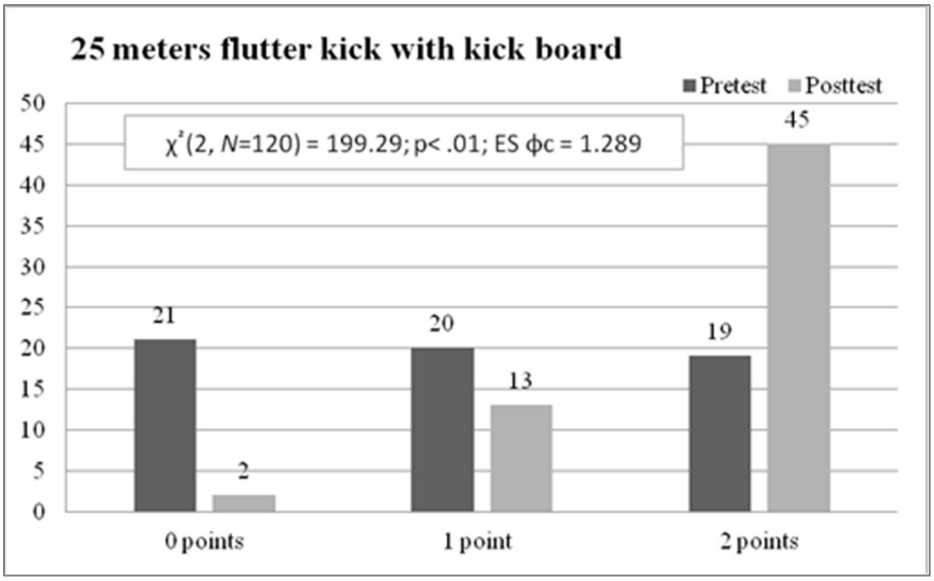

Figure 2. Changes in swimming literacy in the test: 25 meters flutter kick with kick board

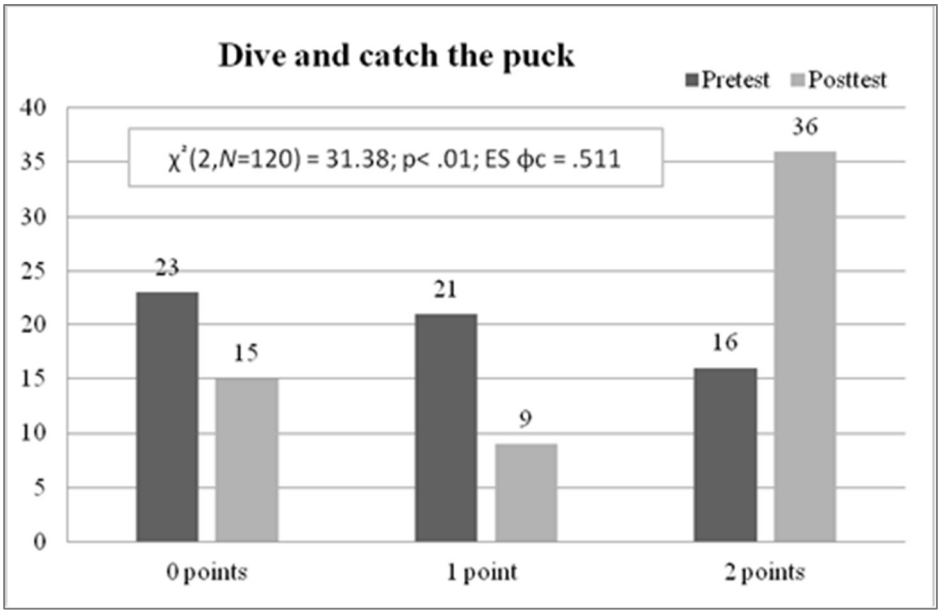

Figure 3. Changes in swimming literacy in the test: Dive and catch the puck

The last test was the most difficult. In pretest measurement, although the children initially believed and claimed they could swim only three pupils were able to swim in the full test, and 11 pupils crossed the 25-meter backstroke or freestyle with technical errors (Fig. 4). Input measurements showed that 46 out of 60 children were not able to swim to the other side with a normal swimming style. This fact shows that most of the pupils had never participated in a swimming course where they could learn how to swim correctly. We offered them a choice between freestyle and backstroke swimming style. Most often the pupils chose a freestyle swimming style. In the technical performance, they did not manage the right breath to the side, had a slight flutter kick and could not carry their arms over the surface. The pupils were also in bad shape because they needed breaks when performing tasks. We noticed the pupils' fear of moving away from the edge of the pool, which was a place of certainty and offered them a feeling of security. During swimming training, we focused on training and improving two swimming styles: freestyle and backstroke. We did exercises to feel comfortable in water, breathe properly, kick legs and work arms. In the final test, 11 pupils passed the 25 meter freestyle or backstroke without problems, 31 pupils needed rest or had technical problems and only 18 pupils failed the test. We consider it a great success that, despite the not entirely correct swimming technique, pupils were able to swim 25 meters, showing that the effect of the swimming program on this test was statistically significant at $p < 0.01$ **; $\chi^2 = 62.28$. The result was also verified using Cramer's φc, where the effect size came out with a large effect (ES φc = .720).

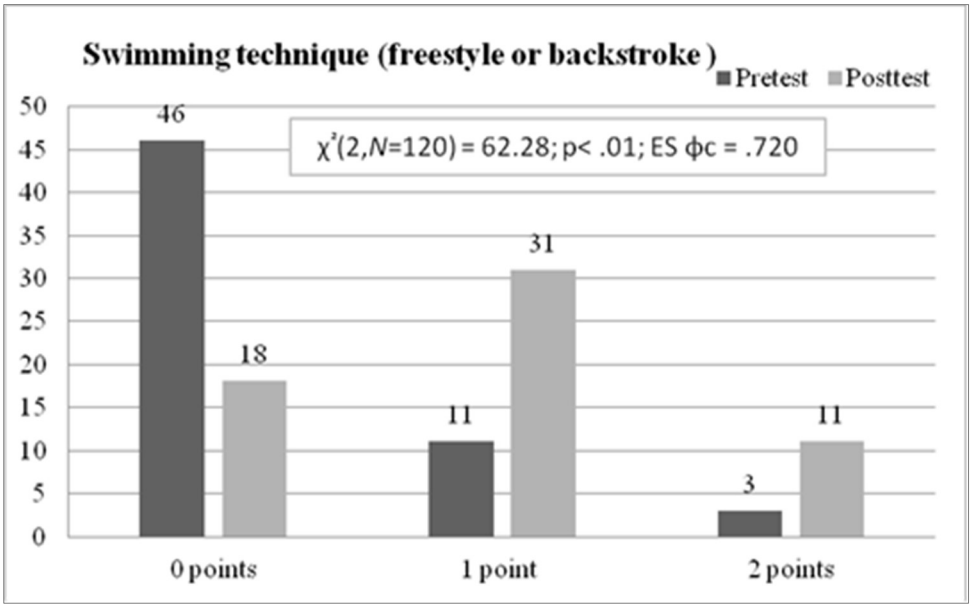

Figure 4. Changes in swimming literacy in test: Swimming technique (freestyle or backstroke)

Conclusion

The aim of the work was to examine the input and output levels of swimming literacy due to 5-hour accelerated swimming training, which students attended 5 days in a row. When evaluating the tests, we found statistically significant values ($p < 0.01$ **) in each swimming skills test. We also verified these statistical values using Cramer's φc, where the effect size came out with a large effect (ES φc ≥.50). Therefore, we can state that the results were not influenced by the possibilities of statistics and are significant both statistically and materially. We conclude that even such shortened swimming training has a positive effect on the level of pupils' swimming literacy and if a

school cannot provide normal swimming training with 20-hours of lessons, this program is a good choice. We consider it positive that children are in contact with the pool every day, which allows them to improve faster and to remember better swimming techniques. During everyday contact with water, they become more confident in movement in an aquatic environment. Similarly, in such conditions, children can establish a better relationship with their swimming instructor, which affects their motivation and self-confidence.

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Received: December 2018
Accepted: January 2020
Published: March 2020

CORRESPONDENCE

Natália Kováčová
Constantine the Philosopher University in Nitra
Slovak Republic
E-mail: natalia.kovacova@ukf.sk