

## Business cooperation technology between a swimming coach-instructor and parents of infants

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### Abstract:

*The aim of the study* is to develop and evaluate the effectiveness of an experimental program of business cooperation of a swimming coach-instructor with parents for development of swimming skills in infants. *Material and methods.* In the early swimming center in Kopeisk-city (Russia) 20 parents with children aged 6-7 months from the control and experimental groups (10 pairs in each one) took part in an experimental study. In both groups children with their parents were engaged in recreational swimming in the pool according to the traditional training program. In addition, the online course of theoretical training and keeping an observation diary of children's well-being was offered for parents in the experimental group once a week. Before and after the pedagogical experiment, the level of swimming skills of children of both groups was determined by the method of testing in water, and a mid-term survey of parents was carried out to assess their level of awareness of the importance of recreational swimming for children. *Results of the study.* At the end of the pedagogical experiment, the level of parents' knowledge about recreational swimming and its importance for the child's quality of life, motivation to exercise and the use of the knowledge gained in teaching the child in the control group increased by 9.1%, and in the experimental group it increased 2.3 times. At the end of the study, half of the parents of the control group and 100% of the parents of the experimental group developed a conscious motivation for their child's recreational swimming lessons. At the end of the pedagogical experiment, in both observed groups, a positive effect on the child's body of recreational swimming was established, as evidenced by the results of the analysis of the parents' answers about the subjective indicators of children's well-being (sleep, appetite, general condition). The final test showed a more significant increase in the values of indicators of the level of swimming readiness of children in the experimental group and an improvement in their quality of life, compared with the indicators of children in the control group. *Conclusions.* The experimental program for the development of swimming skills in infants with the help of our proposed online pedagogical technology of cooperation between an instructor and parents to improve their health-improving competencies has shown greater efficiency compared to the traditional program. And it can be recommended for use in health-improving swimming centers for infants and in children's clinics.

**Key Words:** swimming, infants, parents, digital technologies

### Introduction

The standard of human health is the most important social-biological characteristic of the modern society. A significant place in the population health monitoring is given to the issues of preservation and promotion of the health of the child population. This is especially true for infants (WHO Regional Office for Europe, 2018).

Walking and coordination abilities are known to develop intensively at this age. These abilities provide the formation of the vertical position of the body, and the formation of sensory systems of the body of children. The foundations of mental operations are laid, socialization and active physical development of the child take place (Kapotov, 2018). Motor activity plays an important role for the harmonious development of the child (Görner Karol, Reineke Alexa, 2020).

Swimming is one of the highly effective drug-free means of improving the health of young children, their all-round harmonious physical, mental and somatic development (Aparyeva, Krohin, 2015; Karol Görner, 2020). Swimming has a positive effect on the functional systems of the body, it helps to strengthen the musculoskeletal system, cardiovascular and respiratory systems (Yapıcı-Öksüzoğlu 2020). Exercises in water stimulate metabolic processes, strengthen the nervous system, improve sleep, appetite, increase endurance and

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increase the overall tone of the body (Peters et al., 2014). It is believed that learning to swim should be started as early as possible after the birth of a child. Women who actively swam and dived during pregnancy had children who were not afraid of diving under water, they held their breath for a long time, and they had more active movements in the water.

The important role in the development of swimming skills in infants is assigned to coaches-instructors, whose pedagogical activity should represent a developing learning system that is adequate to the age needs of children (Milyakova et al., 2017). One of the priority fields of teaching children involved in recreational swimming is the business cooperation of a coach-instructor with parents. Therefore, the pedagogical support of the learning process should be directed not only to the child, but also to his/her parents. We believe that a coach-instructor is obliged to increase knowledge and form health-improving competencies in parents who are direct participants in the pedagogical learning process. The active involvement of parents in the development of swimming skills in infants necessitates the search for ways to improve the results of the effectiveness of classes and professional activities of a coach, whose work consists of the unity of target, content and technological components (Stefan Meier, 2020; Yevhen Prystupa et al., 2020).

Currently, the search for new multiple, multidisciplinary approaches to solve modern problems of educational activity, which includes various work with parents, remains relevant (Giuseppe Madonna, Patrizia Belfiore, 2020). There are comprehensive curricula, which have a section on collaborative involvement of teachers, coaches and families to increase the physical activity of children. Similar technologies for physical education have already shown a high positive result (Kriemler, 2011). Fields based on the use of digital technologies in physical culture and sports are developing (Ashanin et al., 2018; Philipp Born et al., 2018; Kolokoltsev et al., 2019). Literary sources do not sufficiently reflect the issues of business cooperation between coaches-instructors in recreational swimming and parents of infants. In our opinion, they do not allow us to effectively use the potential of swimming to improve the quality of a child's life and educate his/her life skills. The development and test of modern technologies for business cooperation between parents and swimming coaches and instructors will increase the level of children's mastering of swimming competencies.

**The purpose of the study** is to develop and evaluate the effectiveness of an experimental program of business cooperation of a swimming coach-instructor with parents for development of swimming skills in infants.

#### Material & methods

In an experimental study (September 2018 - June 2019), in the early swimming center in Kopeisk (Russia), 20 parents with children aged 6-7 months from the control and experimental groups (10 pairs in each one) took part in an experimental study. Swimming lessons with mothers were organized 2 times a week. Every lesson lasted 45 minutes. Parental consent for the study was received.

Children in control and experimental groups were engaged in recreational swimming with their mothers according to the traditional training program (Fedulova, 2011). Children went to the next stage if they coped well with the tasks of the previous one. Swinging exercises, various types of throwing action, sliding on the chest and on the back, immersion in water and diving, games on the water were used at all stages of training. To activate the movements of the legs and arms, methodology of supportive exercises and independent swimming were used. All mothers in the experimental group kept a diary of observation of children, in which they noted weekly subjective indicators of children's well-being (sleep, appetite, changes in the child's external behavior, etc.).

Additionally, once a week, an online educational course was given for the mothers in the experimental group, where the coach-instructor carried out systematic theoretical training, and formed health-improving competencies in parents and discussed the results of keeping a diary of observation of children (Table 1).

**Table 1. Program of the online course of theoretical training for parents in the experimental group**

Course content			
1-st week	2-nd week	3-d week	4-th week
September			
Parents' meeting "Swimming lessons for infants in the early swimming center". Questionnaire.	Consultation "The value of recreational swimming lessons for strengthening the health of children".	Consultation "The first difficulties in teaching swimming to infants".	Discussion of the observation diary results.
October			
Consultation "Sanitary and hygienic standards and safety measures for infant swimming".	Consultation "Prevention of water fear in infants".	Consultation "Modern approaches and methods of teaching infant swimming".	Discussion of the observation diary results.
November			
Consultation "Indications and contraindications for infant swimming".	Folder "Swimming games and exercises for infants at home".	Consultation "Development of resistance to the cold of the body with a help of exercises and games on the water".	Discussion of the observation diary results.

December			
Master-class "Playing exercises as a means of adaptation of children to water".	Consultation "How to make non-standard equipment for swimming lessons".	Recommendations to development of resistance to the cold of the body.	Discussion of the observation diary results.
January			
Video review of swimming at home.	Consultation "Influence of infant swimming and diving on the development of the child's body systems".	Consultation "Hydrotherapeutic procedures".	Discussion of the observation diary results.
February			
Case "The technique of swimming on the back and chest. Diving. Swimming aids".	Case "Swimming on the chest. Supports. Methods. Diving. Equipment."	Individual conversations "How to help a child overcome the fear of water"	Discussion of the observation diary results.
March			
Consultation "Planning of infant swimming lessons. Sequence of training. Types and duration of exercises".	Consultation "Gymnastics for children of different periods of life".	Case "Games in the water. Supports. Methods. Equipment at home".	Discussion of the observation diary results.
April			
Consultation "What parents need to know when their child learns to swim".	Discussion of the video recording of the lessons.	Consultation "Water procedures in nature".	Discussion of the observation diary results.
May			
Consultation "Assessment of the results of the health and physical development of children involved in recreational swimming".	Questionnaire "Swimming lessons for infants in the early swimming center".	Preparation for the final entertainment in the swimming pool "Veselye Rybki"	Progress report for the 2018-2019 academic year

According to the results of the questionnaire survey of all parents before and after the pedagogical experiment, the answers about the level of their awareness and satisfaction with the work of the coach-instructor were assessed on a five-point scale. The characteristics of the parents' interest in the swimming lessons and the importance of recreational swimming for children were given.

The level of swimming skills of children in the control and experimental groups was determined before and after the pedagogical experiment by testing and evaluating the results on a four-point scale. Control exercises were used for testing: "Pushing off a baby in a horizontal position from a hard surface", points; "Pushing off the baby in a vertical position from a hard surface (with a little support)", points; "Swimming on the back with a swimming cap "Mermaid", min; "Diving under water", the number of times. The obtained material was subjected to statistical processing with the determination of the average values and their error. The reliability of the difference in values was determined with a help of parametric methods.

### Results

The results of the questionnaire survey of all parents at the beginning and at the end of the experiment made it possible to compare the level of their awareness of recreational swimming and its significance for the child's quality of life, motivation to exercise and the use of the knowledge gained in teaching the child (Fig. 1).

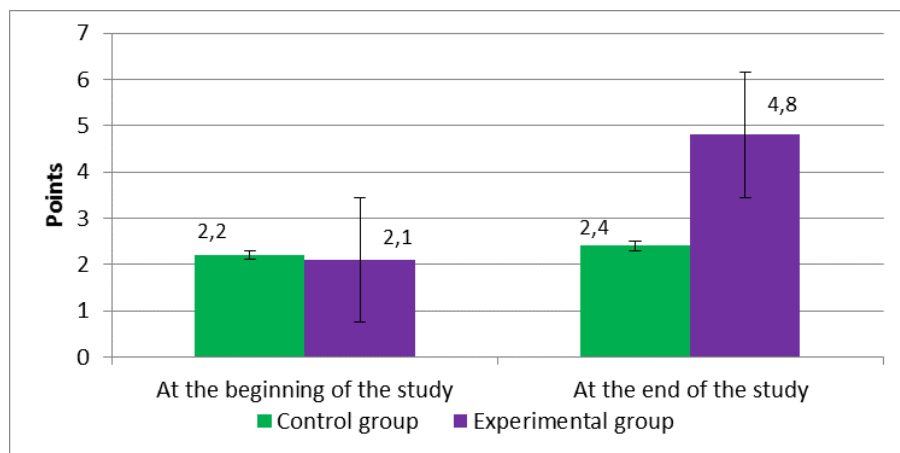


Fig. 1 The milestone level of parents' knowledge of recreational swimming (points)

It was found that at the beginning of the study, the level of parents' knowledge about recreational swimming was low and did not significantly differ between the control and experimental groups ( $2.2 \pm 0.3$  and  $2.1 \pm 0.3$  points, respectively),  $p > 0.05$ .

At the end of the pedagogical experiment, the level of knowledge of mothers in the control group increased by 9.1%, and in the experimental group increased 2.3 times (from  $2.1 \pm 0.3$  to  $4.8 \pm 1.3$  points),  $p < 0.05$ .

All parents in the experimental group noted that additional theoretical training provided by the coach-instructor through online classes increased their motivation to know about the benefits of recreational swimming for infants.

At the beginning of the study, it was found that in both observation groups, the parents were not motivated to develop swimming skills in their children and came to classes in the pool in order "to swim with the child". At the end of the study, half of the parents in the control group and 100% of the parents in the experimental group developed a conscious motivation for child's recreational swimming lessons.

The recreational swimming program provides for midterm testing and determination of the level of swimming skills of children.

At the beginning of the experiment in the control group, 50% of children had low and 50% below average levels of development of swimming skills. In the experimental group 60% of children had low and 40% below average levels of development of swimming skills. In both groups observed there were no children with high and medium levels of development of swimming skills.

At the end of the experiment, in the control group, the number of children with a low level of development of swimming skills decreased from 50% to 30%, and 20% of children had an average level. The number of children with a level below the average has not changed.

In the experimental group 70% of children had an average level of development of swimming skills, 30% of children had the level below average. Children with the low level were not identified.

Table 2 shows the results of testing all children at the beginning of the training program (September 2018).

**Table 2. Values of the swimming skills indicators of children in the control and experimental groups at the beginning of the experiment**

Tests	Control group ( $\bar{x} \pm \sigma$ ) (n=10)	Experimental group ( $\bar{x} \pm \sigma$ ) (n=10)	P
Pushing off in a horizontal position from a hard surface, points	1,5±2,45	1,6±2,67	>0,05
Pushing off in a vertical position from a hard surface (with a little support), points.	1,7±2,16	1,6±2,12	>0,05
Swimming on the back with a swimming cap "Mermaid", min	2,0±2,12	1,9±1,89	>0,05
Diving under water, the number of times	1,6±1,43	1,8±1,95	>0,05

As it can be seen from Table 2, in all tests there are no statistically significant differences between the values of indicators of swimming skills of children in the control and experimental groups,  $p > 0.05$ .

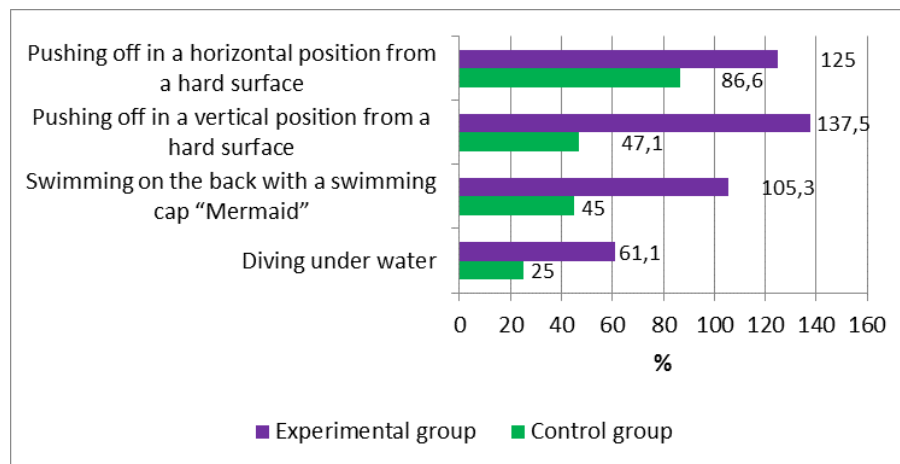
At the end of the pedagogical experiment (June 2019), the final testing of the level of children's swimming skills was carried out (Table 3).

**Table 3. Values of the swimming skills indicators of children in the control and experimental groups at the end of the experiment**

Tests	Control group ( $\bar{x} \pm \sigma$ ) (n=10)	Experimental group ( $\bar{x} \pm \sigma$ ) (n=10)	P
Pushing off in a horizontal position from a hard surface, points	2,8±3,51	3,6±3,71	<0,05
Pushing off in a vertical position from a hard surface (with a little support), points.	2,5±3,24	3,8±3,56	<0,05
Swimming on the back with a swimming cap "Mermaid", min	2,9±2,53	3,9±2,67	<0,05
Diving under water, the number of times	2,0±3,35	2,9±3,52	<0,05

Comparative analysis of the results of control tests showed that in all tests there are statistically significant differences between the values of indicators in children in the control and experimental groups at the end of the experiment,  $p < 0.05$ , (Table 3).

At the end of the experiment, there was an increase in the values of indicators in all tests in order to determine the swimming skills of all children, especially in the experimental group (Fig. 2).



**Fig. 2. Increase in the values of indicators of children's swimming skills at the end of the experiment (%)**

The greatest increase in the test results was found in the children in the experimental group, in the tests "Pushing off in a vertical position from a hard surface" by 137,5% and "Pushing off in a horizontal position from a hard surface" by 125,0%.

### Dicussion

The scientific literature has shown that the level of education of parents and some other social aspects can positively affect the increase in the swimming competence of their children (Karol Görner, 2020) and increase children's interest in sport activities (Burgess et al., 2016; Harwood et al., 2019). Currently, there are insufficiently studied issues related to the study of business cooperation between parents of children involved in recreational swimming and a coach-instructor. Therefore, the subject we have chosen for this study is relevant from the perspective of increasing the effectiveness of recreational swimming in infants.

Children playing sports can influence not only the child himself/herself, but also the psychoemotional state (Prosoli et al., 2021) and the motivation for motor activity of the parents (Zoltán Szaláncz et al., 2020). This is in agreement with the results of our research, and it indicates an increase in motivation and interest in recreational swimming among parents at the end of the study.

According with the information from scientific literature, it is known there is mutual influence and relationship between the indicator of high sensitivity to signals in a child and increased anxiety of the mother (Troitskaya, et al., 2021). We have chosen infants for the study because of the close psychoemotional contact between a mother and a child.

Information and communication technologies are widely used in physical culture and sports (Volodymyr Ashanin et al., 2018; Philipp Born et al., 2018; Kolokoltsev et al., 2019), GPS location (Boulos, Yang, 2013), and it makes it possible to increase the effectiveness of the educational and training process. It has been shown that viewing and evaluating video recordings of the children performing physical exercises in water by parents increased the effectiveness of swimming in school-age children (Tobias Vogt, Ilka Staub 2020).

Digital pedagogical technologies provide for communication of participants in the learning process using Internet tools, and independent study of the theoretical material of the assignment. Currently, this technology is effectively used in teaching various disciplines (Wulfovich, 2017). In our study the use of online technology in the business cooperation of a coach-instructor with parents allowed not only to increase the motivation of parents to engage in children's recreational swimming, but also to significantly increase the swimming skills of children in the experimental group, compared with the control group, where the online theoretical training course for parents was absent in program. In all tests the increase in the values of indicators of swimming skills in children in the experimental group is significantly higher than in the control group.

According to our data, the use of modern pedagogical technologies for business cooperation between the coach-instructor of the recreational swimming center and the parents made it possible to improve the subjective indicators of the health of children in the experimental group. Parents note fast falling asleep and deep sleep, increased appetite and improved overall health of the child.

## Conclusions

The pedagogical experiment has been performed for 10 months to assess the effectiveness of the educational online course. During this experiment the coach-instructor carried out systematic theoretical training and formed health-improving competencies in parents, discussing the results of keeping the observation diary of children who engaged in recreational swimming.

The effectiveness of the proposed innovative educational pedagogical technology in the program of recreational swimming for infants is confirmed by the positive results of our research.

At the end of the pedagogical experiment all parents in the experimental group noted that additional theoretical training provided by the coach-instructor through online classes increased their motivation to know about the benefits of recreational swimming for infants. At the end of the study 100% of mothers in the experimental group developed the conscious motivation for health-improving swimming activities of their child and a desire to improve the physical and somatic health of their children. At the end of the experiment there was an increase in the values of indicators in all tests, which were used to determine the swimming skills of all children, especially in the experimental group.

The use of modern pedagogical technologies for business cooperation between the coach-instructor in the recreational swimming center and the parents made it possible to improve the subjective indicators of the health of children in the experimental group (fast falling asleep and deep sleep, increased appetite and general health of a child). We believe that further study of the effectiveness of use of the online educational course is promising in the system of teaching infants in recreational swimming. This type of the pedagogical technology can be recommended for use in teaching children of different ages.

**Conflicts of interest.** The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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