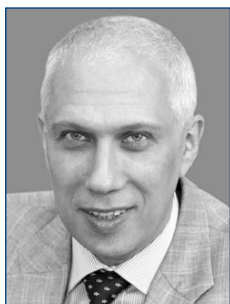




Model of implementation of the program of universal swimming teaching, according to indicators of swimming pools provision and the number of children of primary school age in the Russian Federation

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Abstract

Objective of the study was to develop a model for the implementation of a program for universal swimming education, taking into account the indicators of the availability of swimming pools and the number of children of primary school age in the Russian Federation.

Methods and structure of the study. To achieve the goal of this study, a modeling method was used to calculate the number of participants in the interdepartmental program for teaching swimming in the framework of the lessons "Physical Education" with children of primary school age.

Results and conclusions. Approbation of the model for the implementation of the program of universal swimming training was carried out on the example of the Ivanovo region. It has been established that the maximum number of participants in the interdepartmental program in this region is 63% of the average number of children of primary school age. The results of the study allow scaling this model to the entire territory of the Russian Federation in order to effectively manage and monitor the interdepartmental program of universal swimming education.

Keywords: *universal swimming education, swimming for all, children of primary school age, number of participants, provision of sports swimming pools.*

Introduction. In accordance with the List of Orders of the President of the Russian Federation Pr-1919 dated October 07, 2021, paragraph 5, the Government of the Russian Federation was instructed to develop and approve an interdepartmental program aimed at universal teaching children to swim as a basic life-supporting skill. [2]. In turn, Decree of the Government of the Russian Federation No. 3894-r dated December 28, 2021 "On Approval of the Concept for the Development of Children and Youth Sports in the Russian Federation until 2030" sets a target number of 500 thousand children (from among children who cannot swim) in all subjects of the Russian Federation, which should annually become participants in the interdepartmental swimming training program [4]. How-

ever, the implementation of this solution is difficult to implement without calculating the number of participants in the interdepartmental program in accordance with the availability of swimming pools in the constituent entities of the Russian Federation, taking into account their walking and transport accessibility, as well as the requirements for the parameters of the pools for mastering the program for teaching swimming to children of primary school age.

Objective of the study was to develop a model for the implementation of a program for universal swimming education, taking into account the indicators of the availability of swimming pools and the number of children of primary school age in the Russian Federation.



Implementation of this model will make it possible to comply with the principle of “equalization of opportunities” when making decisions on financing program participants representing various constituent entities of the Russian Federation in accordance with their different levels of availability of swimming pools and other socio-economic indicators, as well as to develop proposals for the construction and reconstruction of swimming pools.

Methods and structure of the study. To achieve the goal of this program, a modeling method was used to determine the relationship of the cognizing subject and the cognized object by reproducing a certain fragment of reality.

At the same time, the number of participants in the interdepartmental program for teaching swimming within the framework of the lessons “Physical Education” with children of primary school age in the i -th subject of the Russian Federation is determined by the formula:

$$Q_i = \sum_{k=1}^{sh_i} p_k + \sum_{j=1}^{S_i} (\sum_{l=1}^5 h_{lj} \times q_j), \quad (1)$$

where: sh_i is the number of educational institutions/schools equipped with a swimming pool in the i -th subject of the Russian Federation (if $sh_i=0$, then the first term of formula (1) is equal to zero);

p_k is the number of primary school students studying in the k -th school and not able to swim;

S_i is the number of swimming pools in the i -th subject of the Russian Federation, the parameters of which allow the implementation of an interdepartmental program for teaching swimming;

h_{lj} is the number of hours provided by the j -th pool during the daytime (training) time on l -th is day of the week for teaching schoolchildren to swim;

q_j is the number of students per hour in j -th pool who do not know how to swim (in one hour, one class can learn to swim as part of the subject “physical education”).

The number of swimming pools in which it is possible to implement an interdepartmental program is presented on the site <https://swimstandart.ru> for the i -subject of the Russian Federation, thus the values of sh_i, S_i of formula (1) will become known; the value q_j can be taken equal to the average class occupancy rate in the i -th subject of the Russian Federation (d_i); it is also possible to take the average number of hours provided by swimming pools during school hours per day (h_j), in this case the value $p_k = 5 \times h_i \times d_i$. Transforming formula (1), we obtain the maximum number of participants in the interdepartmental program for teaching swimming in the framework of the lesson “Physical Education” by

children of primary school age in the i -th subject of the Russian Federation:

$$Q_{i,max} = 5 \times (sh_i + S_i) \times h_i \times d_i \quad (2)$$

Accordingly, the annual (maximum) number of participants in the interdepartmental program for teaching swimming as part of the “physical education” lesson by children of primary school age in the Russian Federation is determined as the sum of the number of participants in the interdepartmental program of all subjects of the Russian Federation:

$$Q = \sum_{i=1}^{85} Q_i \quad (Q_{max} = \sum_{i=1}^{85} Q_{i,max}). \quad (3)$$

Results of the study and their discussion. As a basic work program for teaching swimming to primary school students, the “Exemplary work program of the subject “physical culture” (“swimming” module) for educational organizations implementing educational programs of primary general and basic general education, including a 36-hour program learning to swim [3]. The organization of swimming training within the framework of the physical education subject, based on the duration of the academic year of 34 academic weeks for schoolchildren of grades 2-4, is possible in the form of lessons one, two or three times a week, lasting one academic hour. Thus, for one academic hour in one swimming pool during one academic year, one, two or three training classes, respectively, can be taught.

Taking into account the regional features of the development of physical culture and sports [1], in order to apply the model for implementing a swimming training program on the example of one of the constituent entities of the Russian Federation, in particular the Ivanovo region, we will use the following data. The average number of children of primary school age (born in 2011–2014) in the Ivanovo region, according to Rosstat, is 11,117 people [5]; there are no educational institutions equipped with a swimming pool (sh_{37}); 14 swimming pools (S_{37}), the parameters of which allow the implementation of an interdepartmental swimming training program, including six pools with private ownership (it is assumed that all swimming pools, regardless of the form of ownership, participate in the program); the average class occupancy rate (d_{37}) is 25 people. Since swimming pools are mostly busy during the daytime and evening hours, it is possible to conduct classes in the morning hours as part of an interdepartmental program - four hours a day (h_{37}), five days a week. Thus, the maximum number of participants in the interdepartmental program for children of primary school age in the Ivanovo region is:



$$Q_{37_max} = 5 \times (sh_{37} + s_{37}) \times h_{37} \times d_{37} = 5 * 14 * 4 * 25 = 7000,$$

which is 63% of the average number of children of primary school age.

Of course, it is worth considering the walking and transport accessibility for teaching swimming to students of educational institutions separately in each city and district municipality of the Ivanovo region. In this case, we will be able to calculate more accurately the number of children of primary school age that can be attracted to participate in an interagency program aimed at teaching children to swim as a basic life-supporting skill for everyone, and identify municipalities in which it is not possible to organize swimming lessons as part of an educational subject "physical culture", respectively, to calculate the number of children of primary school age who will not be able to take part in the interdepartmental program due to the lack of swimming pools within walking distance and transport accessibility.

Having calculated the number of children of primary school age in urban districts and municipal districts of the Ivanovo region without swimming pools, that is, those who do not have access to swimming pools on foot or transport, and, accordingly, without the possibility of organizing swimming lessons as part of the physical education subject, we get 3507 children, which is 32% of the average number of children of primary school age.

Conclusions. The calculation of the number of children of primary school age in the Ivanovo region, taking into account the indicators of the availability of swimming pools within the framework of the developed model, allows scaling its results to the entire territory of the Russian Federation in order to effectively manage and monitor the interdepartmental program of universal swimming education.

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