

Efficiency of Aqua Fitness in Physical Education of Junior Schoolchildren

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Introduction. Searching and developing new effective methods and techniques to improve health, working efficiency, physical fitness and preventative health care of the younger generation is in the highlight at the present time.

In connection with the search for new ways to improve the efficiency of health and fitness exercises, the specialists cannot help choosing such unique ambience as water, which makes specific impact on the bodies of those who perform exercises, and creates optimal conditions to improve health, increase the level of physical and swimming efficiency, preventative health care while doing exercises with different population [2, 3, 5, 6].

Aqua fitness is the kind of physical exercises in water, which can be performed by people of all ages, beginning with the pre-school one; but these are the children of junior and secondary school age who learn the exercises faster, that is connected with high speed of growth of all physical qualities in this period, high motor activity, better capacity for new movements, interest in performing physical exercises [5, 9].

For the last decade a lot of investigations connected with «aqua fitness» have been conducted [1, 4, 7, 8]. But the most of them deal with the adult population. Methodological recommendations about involving the innovation means of aqua fitness in work with junior schoolchildren, existing nowadays, do not take into consideration the level of their physical health [7–9]; this determines the timeliness of our research.

The aim of the investigation: to determine the efficiency of using the means of aqua fitness in process of physical education of junior schoolchildren.

Research techniques: theoretical analysis and integration of data from scientific-methodological literature, anthropometric and physiological research techniques, pedagogical methods (pedagogical observation, tests, experiments), method of rapid assessment of the level of physical health of children and adolescents, methods of mathematical statistics.

The results of the research and their discussion. On the basis of the analysis of scientific literature, integration of practical experience of the leading experts, we developed the programs of aqua fitness classes using aerobic and strength exercises for children with different levels of physical health. To determine the efficiency of the developed aqua fitness program we formed the control group (n = 38) and the basic group (n = 40) where the 45-minute classes were held 3 times a week for 6 month in off-lesson time. The control group had classes according to the traditional program for teaching to swim (the health-improving classes in water using the exercises from distance swimming were conducted). The basic group had classes according to the developed author's program of aqua fitness trainings.

As a result of the investigation we selected the exercises aimed to develop and strengthen the main ground of muscles and improve morphofunctional indexes. The exercises are performed in the upright position, in crouch position, lying next to movable and not movable support, in unsupported position; with objects and without them.

Physical load was increasing from class to class. At each one the peak of the activity fell to the second third of the main part and it was followed by its gradual decrease. The load was dosed because of the change in movement amplitude, speed, rhythm, coordination complexity, amount of repetition.

However the programs were different in intensity, volume, conditions of performing, preparatory position, coordination complexity, usage of equipment (table 1).

Table 1

Preferential use of the exercises of different types during aqua fitness classes for junior schoolchildren with different level of physical health

Aqua fitness means	Health levels	
	low, below average	average, above average
For accustoming with water environment	Exercises in supported position: walking, running, jumping, exercises from basic swimmers training, synchronous swimming, playing, etc.	

Getting and developing swimming skills	<ul style="list-style-type: none"> – Preferential performance of the exercises in the shallow part of the swimming pool; – Preferential use of supporting equipment (belts, noodles, board, fins) 	<ul style="list-style-type: none"> – preferential performance of the exercises in the deep part of the swimming pool (water is shoulder deep and unsupported position); – no use of facilitating equipment
Games that stimulate getting and developing swimming skills	«Fountain», «Mill», «Roll», «Steamer», «Hold the board», «Caterpillar», etc.	«Boat race», «Motor», «The longest one», «Fight for ball», «Mill», «Hold the board», «Roll», etc.
Games that develop physical qualities	«Fishing net», «Porgies and carps», «Third weird», «Who pulls over?», «Jumping out of water», «Long rod», «Caterpillar», etc.	«Water race», «Ball to the Captain», «Horsemen fight», «Pulling in own waters», «Water basketball», «Pike and porgies», etc.
Use of basic aqua fitness exercises to develop physical qualities	<ul style="list-style-type: none"> – moving on the bottom of the swimming pool; – kinds of running in a low and moderate speed in the shallow part of the swimming pool; – swimming exercises using boards, noodles, fins, elements of water polo in the shallow part of the swimming pool; – flexibility exercises: stretching the muscles of arms, legs, back and front of the thigh at the swimming pool nosing 	<ul style="list-style-type: none"> – moving on the bottom of the swimming pool; – kinds of running in a moderate speed in supporting belts, in unsupported position, in the deep part of the swimming pool; – kinds of jumping (jumps with switching to horizontal position, forward, backward, to the right, to the left, moving ahead and back); – swimming exercises with and without facilitating equipment, elements of water polo in the deep part of the swimming pool; – flexibility exercises: stretching the muscles of arms, legs, back and front of the thigh in pairs and at the swimming pool nosing

As a result of the investigation with the usage of the author's program of aqua fitness classes, we proved that it supported the growth of the physical health level of junior schoolchildren, who used to have low or below average health level. Under the influence of the classes 55 % of the children from the basic group switched to higher health level which is 12,9 % higher than in the control group (42,1 %).

After the analysis, the higher indexes of the level of physical health both among boys and girls of the basic group in comparison with the indexes of the control group were reached due to the statistically lower Rouffio indexes and Robinson indexes ($p < 0,05$). Among the boys of the basic group Rouffio index amounted to 9,77 st. units ($S = 1,68$), among the girls – 10,04 st. units ($S = 1,35$). The weight of Robinson index among the boys of the basic group amounted to 79,75 st. units ($S = 7,46$), among the girls 80,62 st units. ($S = 6,16$). Significant difference in the children's life and power indexes, body weight-height ratio was not discovered.

It was proved that the author's program made a great influence on the increase of the level of physical fitness. For example, in the basic group the results of the tests had statistically significant difference ($p < 0,05$) in comparison with the results in the control group. The biggest difference was observed in such indexes as strength (push-ups), among the boys 21,04 times ($S = 5,60$) and among the girls 11,42 times ($S = 3,96$), speed-strength qualities (standing long-jump) among the boys 168,42 sm ($S = 9,05$) and among the girls 150,10 sm ($S = 11,34$). Among the girls a positive dynamics in flexibility development was established (bending with knees straight) and it amounted to 16,68 sm ($S = 3,85$).

Conclusions. On the basis of the results obtained, we can make a following conclusion. The results of the implementation of the author's aqua fitness program showed significant improvement of physical health level among the children of the basic group in comparison with the control group because of statistically low rates of Rouffio index and Robinson index ($p < 0,05$). After the investigation was conducted, the level of physical fitness both in basic and control groups increased under the influence of classes. However, in the basic group the results considerably differ from the indexes in the control group.

The significant difference between the control and basic groups both among girls and boys is observed in such indexes as agility $p < 0,05$ (shuttle run 4×9 m), strength – $p < 0,05$ (push-ups) and speed-strength qualities – $p < 0,05$ (standing long-jump) and among the girls flexibility – $p < 0,05$ (bending with knees straight).

Consequently, the results of the experiment proves the efficiency of the developed program of aqua fitness, which is worked out with consideration of the level of physical health of junior schoolchildren, that offers the possibility to increase the level of schoolchildren's physical health.

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Annotations

In the article there is studied the up-to-date system of development of programs of aqua-classes at primary schoolchildren; offered some sets of aqua fitness exercises, analyzed specificity of healthy impact of aqua exercises of different intensity onto the organism of primary schoolchildren. The aim of the investigation: to determine the efficiency of using the means of aqua fitness in process of physical education of junior schoolchildren. Research techniques: theoretical analysis and integration of data from scientific-methodological literature, anthropometric and physiological research techniques, pedagogical methods (pedagogical observation, tests, experiments), method of rapid assessment of the level of physical health of children and adolescents, methods of mathematical statistics. During the research there has been substantiated a program of classes involving the innovative aqua fitness techniques for primary schoolchildren of physical health low level. In the result of executed researches there has been revealed the more positive impact of the developed program to the level of physical preparation, morph functional status, the state of schoolchildren health in comparison with generally accepted methodology.

Key words: primary schoolchildren, aqua fitness, level of physical health, programming, recreational effectiveness.

Ганна Жук, Тамара Хабінець. Ефективність застосування аквафітнесу в процесі фізичного виховання молодших школярів. У статті висвітлено питання, які стосуються сучасної системи побудови програм занять у воді з молодшими школярами, вивчено специфіку оздоровчого впливу вправ у воді різної переважальної спрямованості на організм дітей молодшого шкільного віку. Мета дослідження – визначити ефективність застосування засобів аквафітнесу в процесі фізичного виховання молодших школярів. Методи дослідження: теоретичний аналіз й узагальнення даних науково-методичної літератури, антропометричні, фізіологічні, педагогічні (педагогічне спостереження, тестування, експеримент), методика експрес-оцінки рівня фізичного здоров'я дітей і підлітків, методи математичної статистики. У процесі дослідження обґрунтовано програму занять із застосуванням інноваційних технологій аквафітнесу для дітей молодшого шкільного віку з різним рівнем фізичного здоров'я. Результати проведених досліджень показали більш відчутний позитивний вплив розробленої програми на рівень фізичної підготовленості, морфофункціональний статус, стан здоров'я школярів, порівняно із загальноприйнятою методикою.

Ключові слова: діти молодшого шкільного віку, аквафітнес, рівень фізичного здоров'я, програмування, оздоровча ефективність.

Анна Жук, Тамара Хабінець. Эффективность использования аквафитнеса в процессе физического воспитания младших школьников. В статье изложены вопросы, которые касаются современной системы построения программ занятий в воде с младшими школьниками, изучена динамика оздоровительного влияния упражнений в воде разной преимущественной направленности на организм детей младшего школьного возраста. Цель исследования – определить эффективность использования средств аквафитнеса в процессе физического воспитания младших школьников. Методы исследования: теоретический анализ и обобщение данных научно-методической литературы, антропометрические, физиологические, педагогические (педагогическое наблюдение, тестирование, эксперимент), методика экспрес-оценки уровня физического здоровья детей и подростков, методы математической статистики. В ходе исследования обоснована программа заня-

тий с использованием инновационных технологий аквафитнеса для детей младшего школьного возраста с разным уровнем физического здоровья. Результаты проведенных исследований показали более положительное влияние разработанной программы на уровень физической подготовленности, морфофункциональный статус, состояние здоровья школьников по сравнению с общепринятой методикой.

Ключевые слова: *дети младшего школьного возраста, аквафитнес, уровень физического здоровья, программирование, оздоровительная эффективность.*