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Original Article

Analysis of the indicators of athletes at leading sports schools in swimming

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Abstract
The purpose of the research – to evaluate the level of theoretical knowledge and practical skills of young athletes of Zaporizhzhiaand Kherson sport schools in swimming. *Material and Methods.*The study involved beginner athletes, students of the Zaporizhzhia swimming School (ZapSwS) (59 people) and Kherson swimming school (KherSwS) (55 people), the total number – 114 persons, 25 honored trainers of Ukraine.The following research methods were used to solve the tasks in the work:analysis and synthesis of literature of the research topic; pedagogical observations; questionnaire of the sportsmen of Zaporizhzhia and Kherson swimming schools; analysis of the swimming curriculum; expert evaluation of coaches to determine the level of theoretical knowledge of sportsmen of the Zaporizhzhia and Kherson swimming schools; testing the level of theoretical knowledge of swimmers on the basis of questioning; standard methods of mathematical statistics.
The object of study is the indicators of the theoretical knowledge and practical skills of young athletesZaporizhzhiaand Kherson sport schools in swimming. *Results.*The expert evaluation of the trainers shows a rather low level of theoretical knowledge among the students of the Zaporizhzhia schools of swimming "ZapSwS" and "KherSwS" on the following issues: selection of exercises to improve the movements of the legs and body in butterfly, methodology of training athletes in training backstroke. The average grade of theoretical knowledge did not exceed 4.6 points.The conducted pedagogical researches make it possible to state the fact that the existing number of training hours, which are allocated for the acquisition of knowledge and skills in swimming, does not allow almost 90% of athletes to learn even the main sports ways of swimming.
Conclusions. The level of theoretical knowledge and practical skills of swimmers are satisfactory.
Key words:young swimmers, leading sports schools, theoretical andpractical skills, expert evaluation

Introduction

In order to summarize the best practices in organization of training from the perspective of management requirements, it is advisable to analyze the vast positive experience of organizing children and youth sport. The purpose is obvious, since the knowledge which has been discovered can be used in the development of a methodology for managing the long-term training process from the point of view of theoretical and specific requirements for certain kinds of sport (Gardasevic, Bjelica, &Corlukaet al, 2018; Lisenchuk, Zhigadlo et al, 2019). It is well known that there are relatively separate and, at the same time, closely interrelated sides of the process of training athletes: psychological, physical, moral-willed, technical, tactical, theoretical and integral (Valeria & Olexander, 2015; Evhen & Valeria, 2017; Tyshchenkoet al, 2018; Batistaet al, 2019). In view of this, the evolution of sports indicates that the modern athlete ceases to be a simple performer of the tasks which are entrusted to him by the coach. He must provide his actions with a theoretical basis, be able to analyze creatively and summarize information, taking into account their individual characteristics (Kozinaetal, 2018; Lisenchuk,

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Tyshchenkoetal, 2019). A sufficient level of theoretical knowledge is the basis for a better, meaningful development of the content of the training process and competitive activity at all stages of long-term preparation (Pavlova&Reutskaya, 2017). According to the regularities of the preparation process, there is a strict systematic system, in which knowledge is formed firstly and subsequently, on their foundation, skills are formed. Determination of the place of theoretical training in different kinds of sport is based on the need to create an effective basis for the process of improving sportsmanship at different stages of long-term training, in particular at the stage of initial training (Yuriy et al, 2016; Tishchenko, 2016). And as a consequence, promoting the harmonious development of the athlete's personality in the future career. Thus, theoretical training is the foundation on which the sportsmanship is formed, which is characterized by specific features of competitive activity in the sport, the basic provisions of the theory and practice of sports training in the chosen sport (Pitynet al, 2017).

As confirmed by scientists, theoretical training is necessary for the athletes to equip themselves with knowledge of the theory and methods of sports training, content and patterns of sports training, the evolution of sports, etc. (Korobeynikov et al, 2019; Malikov et al, 2019). It is noted that theoretical training in the training process is the most important part in the practical implementation of the principle of consciousness. The well-known scientists consider that the theoretical training of athletes is a pedagogical process of improving the theoretical education of the athlete, equipping him with certain knowledge and on their basis – skills which used in training and competitive activities (Zadorozhna et al, 2018).

Summarizing numerous scientific studies, it can be stated that in the practice of the training process physical fitness, motor skills are evaluated mainly, and very rarely – theoretical knowledge (Kozina, Cretuetal, 2018;Greco etal, 2019;Tyshchenkoetal, 2020). The practical significance of this problem has become a prerequisite for conducting this research.

Materials &methods

Participants

The study involved beginner athletes, students of the Zaporizhzhia swimming school (ZapSwS) (59 people) and Khersonswimming school (KherSwS) (55 people), the total number – 114 persons, honored trainers of Ukraine.All athletes volunteered to participate in the research. Prior to the testing, the procedures were explained to all of them, including possible risks involvement, and after the explanation, an informed consent form was signed. The experiment has been done after every participant was tested. The athletes were free from any injuries or neuromuscular disorder. The study has been approved by the Institutional Ethics Committee, complied with all the relevant national regulations and institutional policies, followed the tenets of the declaration of Helsinki, and it has been approved by the authors' institutional review committee.

Purpose, Methods and Procedures

The purpose of the study is to evaluate the level of theoretical knowledge and practical skills of young athletes of Zaporizhzhiaand Khersonsport schools in swimming.

For the purpose of the study, the *following tasks* were assigned to the work:

1. To evaluate the level of theoretical knowledge of beginner athletes on the basis of expert evaluation of coaches.
2. To carry out a comparative analysis of the obtained data of athletes of leading sports schools in swimming in Zaporizhzhiaand Kherson.

The following research methods were used to solve the tasks in the work:

1. Analysis and synthesis of literature of the research topic.
2. Pedagogical observations.
3. Questionnaire of the sportsmen of Zaporizhzhiaand Khersonswimming schools.
4. Analysis of the swimming curriculum.
5. Expert evaluation of coaches to determine the level of theoretical knowledge of sportsmen of the Zaporizhzhiaand Khersonswimming schools.
6. Testing the level of theoretical knowledge of swimmers on the basis of questioning.
7. Standard methods of mathematical statistics.

In the course of the research, young athletes were questioned, regarding the level of their theoretical knowledge in swimming on a 10-point rating scale based on the developed questionnaire. A comparative analysis of the level of theoretical training of the athletes of different swimming schools in Zaporizhzhiaand Khersonis made.

All data obtained during the study were processed using standard methods of mathematical statistics, analyzed and listed in the table.

Statistical Analysis

The methodology of the study included the execution of a series of sequential operations, the essence of which was to provide a logical justification for a set of the most important technical and tactical actions of sportsmen of the Zaporizhzhiaand Khersonswimming schools that directly affect the success of the game.

Results

As a result of the study based on a survey of young swimmers and coaches, we have confirmed our assumptions about the quality of learning swimming material. In the course of the sportsmen's poll, it was found that on a 10-point scale, they rated their theoretical knowledge from 2.9 ± 0.4 points (knowledge of exercises to improve the movements of the legs and body when swimming butterfly) to the highest 9.5 ± 0,8 points (knowledge of the organization and conduct of swimming refereeing) (Table 1).

The lowest score (from 3 to 5 points) the athletes evaluated their theoretical knowledge on the following issues: training session of a crawl swimmer, backstroke swimmer; a training session for a breaststroke swimmer, a butterfly swimmer; training methods for athletes who specialize in butterfly, crawl, backstroke; training methods for athletes specializing in breaststroke; selection of exercises for studying the movements of the legs in sidestroke swimming, to improve the movements of the legs and body butterfly swimming. Thus, in general, the average score of theoretical knowledge of the athletes of both clubs was 5.6 points.

Table1 – Results of the Zaporizhzhiaand Khersonswimming schools'swimmers regarding the evaluation of the skills in swimming on the scale of 1 to 10 (points, X±m)

Type of knowledge	Level of knowledge, according to the received answers	
	ZapSwS	KherSwS
History of the development of swimming	7,4±0,4	6,9±0,5
Technique of starts and turnings	6,3±0,3	6,1±0,1
Thetechniqueofinitialswimmingtraining	6,0±0,3	6,2±0,4
Swimming as a vital, lifesaving-applied and Olympic sport	7,1±1,4	7,0±0,3
Techniqueofbreaststroke	6,9±0,2	7,5±0,6
Technique of crawl	8,0±0,5	8,9±0,4
Technique of backstroke	5,9±0,1	6,5±0,8
Trainingsessionofacrawlswimmer	4,5±0,3	4,4±0,3
Training sessions of backstroke swimmers	4,1±0,6	4,3±0,6
Training session of breaststroke swimmer	3,5±0,4	4,3±0,3
A training session of a butterfly swimmer	3,1±0,6	3,6±0,7
Athlete's daily regime. Requirements for clothing and equipment in swimming	4,1±0,1	4,6±0,5
Factors that determine the technique of swimming	3,2±0,3	4,0±0,3
Proficiency in applied swimming as a condition of safety on water	3,8±0,6	3,5±0,9
Rules of crawl swimming. Coordination of legs and hands movements with breathing	3,1±0,4	3,2±0,4
Exercises for learning the movements of the legs in sidestroke swimming	3,0±0,5	3,6±0,4
Exercises for studying the movements of the hands in sidestroke swimming	3,2±0,8	3,5±0,4
Exercises to improve the movements of the legs and body in butterfly swimming	2,9±0,4	2,0±0,3
Ways to get rid of a drowning man locks and transportation methods	7,9±0,2	8,3±0,4
Exercises for the study of diving techniques	8,9±0,1	9,1±0,6
Organization of safety in the places of swimming training	9,4±0,9	9,7±0,4
First aid to drowning	8,3±0,6	8,4±0,5
Organization and conducting of refereeing	9,5±0,8	9,7±0,3
Selection of major mistakes in swimming technique and how to remove them:		
- crawl	8,7±0,6	7,8±0,9
- backstroke	6,7±0,4	6,9±0,8
- breaststroke	6,9±0,2	5,6±0,4
- butterfly	3,0±0,7	3,9±0,5

According to Figure 1, the results of athletes' responses regarding the assessment of their swimming skills are as follows. The athletes of both clubs evaluated their ability to swim butterfly in full coordination with the lowest score (1.1±0.1 points). The athletes rated their highest ability to swim crawl in full coordination (8,20,3 points – "ZapSwS" and 8,9±0,5 points – "KherSwS"), to judge swimming competitions (8,6±0,5 points "ZapSwS" and 8.5±0.1 points "KherSwS"), diving 10 m (8.0±0.3 points "ZapSwS" and 8.8±0.4 points "KherSwS"), transportation of the drowning person (8,7±0,5 points "KherSwS").

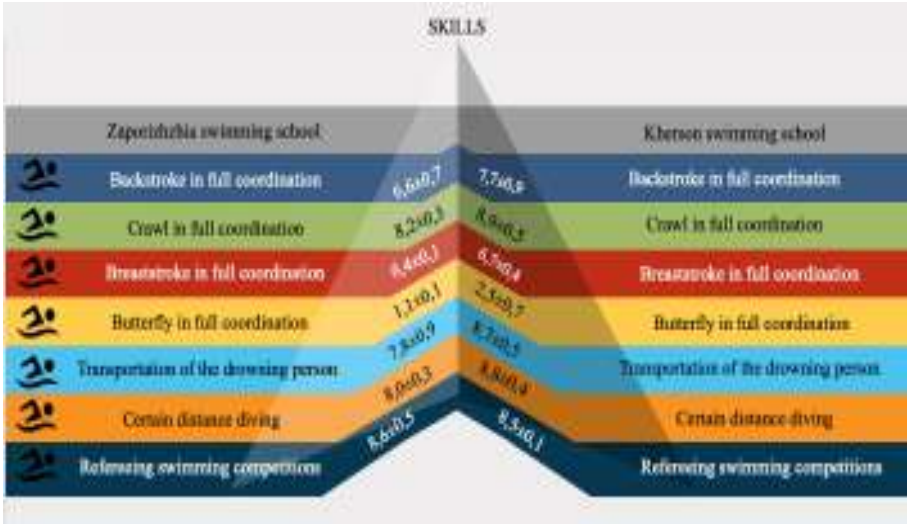

Figure 1. Results of theanswers of young athletes regarding skill level assessment of swimming on a 10-point scale (points, X±m)

Considering the expert assessment results of the trainers, we note the following. Thus, in their opinion, the athletes of both clubs have a rather low level of theoretical knowledge on the following issues: selection of exercises to improve the movements of the legs and body when swimming butterfly (2.3±0.8 points – "ZapSwS" and 2.0±0.8 points – "KherSwS"), training methods for athletes specializing in backstroke (2.3±0.2 points – "ZapSwS" and 2.6±0.3 points –KherSwS). Therefore, according to the trainers, the average mark of theoretical knowledge of swimmers did not exceed 4.6 points. The trainers evaluated the technique of butterfly with a low score, as well as the ability to conduct training sessions with highly skilled athletes and young athletes (Table 2). The highest score the trainers evaluated the ability of athletes in crawl and breaststroke in full coordination, diving, refereeing swimming competitions, transportation of a drowning person.

Table 2 –The study of the formation of theoretical knowledge and practical skills in swimming (expert assessment of the 10-point system, X±m)

Practical knowledge and skills	ZapSwS	KherSwS
History of the development of swimming	4,4±0,3	4,3±0,7
Technique of starts and turnings	3,6±0,9	3,6±0,4
Thetechniqueofinitialswimmingtraining	5,2±0,4	5,2±0,8
Techniqueofbreaststroke	5,8±0,2	6,5±0,3
Technique of crawl	6,2±0,7	6,9±0,9
Technique of backstroke	5,0±0,4	5,5±0,3
Trainingsessionofacrawlswimmer	4,1±0,9	4,1±0,9
Training sessions of backstroke swimmers	4,0±0,5	4,1±0,4
Training session of breaststroke swimmer	2,9±0,7	2,8±0,8
Training session of a butterfly swimmer	2,9±0,8	2,9±0,5
Methods of training athletes who specialize in butterfly	4,0±0,7	4,1±0,9
Methods of training athletes specializing in crawl	3,0±0,9	3,0±0,2
Methods of training athletes who specialize in backstroke	2,3±0,2	2,6±0,3
Methods of training athletes specializing in breaststroke	2,6±0,7	2,5±0,9
Exercises for studying the movements of the hands in sidestroke swimming	3,2±0,4	3,4±0,8
Exercises for learning the movements of the legs in sidestroke swimming	3,5±0,7	3,4±0,9
Exercises to improve the movements of the legs and body in butterfly swimming	2,3±0,8	2,0±0,8
Ways to get rid of a drowning man locks and transportation methods	6,1±0,9	6,3±0,2
Exercises for the study of diving techniques	7,0±0,7	6,8±0,9
Organization of safety in the places of swimming training	8,3±0,3	9,7±0,4
First aid to drowning	6,3±0,6	6,5±0,5
Organization and conducting of refereeing	5,2±0,8	5,4±0,1
Selection of major mistakes in swimming technique and how to remove them:		
- crawl	6,5±0,3	6,7±0,6
- backstroke	6,1±0,2	6,2±0,5
- breaststroke	6,0±0,5	5,3±0,5
- butterfly	2,9±0,3	2,8±0,3

During testing of theoretical knowledge of athletes of both clubs using the tests, the following results were obtained.13% (8 athletes) of "ZapSwS" and 20% (5 athletes) of "KherSwS" got "excellent". The highest number of "ZapSwS" athletes got "satisfactory" – 45% (27 athletes) and –"good" – 33% (18 athletes), "unsatisfactory" got the lowest number of athletes – 9% (6 athletes).

Discussion

The theoretical training in swimming is based on a document concerning the system of long-term improvement of athletes – a training program for children's and youth sports schools, specialized children's and youth sports schools of the Olympic reserve and schools of higher sportsmanship. But this document dates back to 1995. On the whole, there is a sufficiently diverse range of issues under consideration. However, there is a lack of control systems to determine the level of theoretical readiness of swimmers, which indicates the relevance of our study. However, it should be emphasized that when preparing athletes at the initial training stage, reserves for theoretical training are dominant taking into consideration the need for balanced training and to avoid enhancing training.

During the study of professional literature on the theoretical and methodological aspects of training athletes, this area was considered partially in the preparation of handball players (Tyshchenko et al, 2019), table tennis players (Elena, 2018), skilled female volleyball players (Raiola, 2014). Studies have shown the feasibility of organizing theoretical training for young gymnasts and judoka during the summer camp. Multiple daily trainings allow you to allocate the required amount of time to theoretical classes. In addition, the alternation of such exercises with physical activity allows to conduct in balance training work, which is especially important for young athletes (Karpenko, 2007; Shakhov et al, 2012).

The expert evaluation of the trainers shows a rather low level of theoretical knowledge among the students of the Zaporizhzhiaand Khersonswimming schools on the following issues: selection of exercises to improve the movements of the legs and body in butterfly, methodology of training athletes in training backstroke. The average grade of theoretical knowledge did not exceed 4.6 points.

Conclusions

The conducted pedagogical researches make it possible to state the fact that the existing number of training hours, which are allocated for the acquisition of knowledge and skills in swimming, does not allow almost 90% of athletes to learn even the main sports ways of swimming. Can be stated that the level of theoretical knowledge and practical skills of swimmers are satisfactory.

Training in motor skills in the water environment is associated with significant difficulties in the perception of their own movements and their management. This is due to several factors: the horizontal position of the body, the lack of solid support (suspended state of the body in water), an altered rhythm of breathing, etc. Correct orientation in water and the performance of movements in the water environment requires a fundamental restructuring of the mechanisms for controlling movements that have developed under ordinary conditions. The success of mastering motor actions in many respects depends on the athlete's ability to perceive correctly and evaluate his own movements, to develop the correct visual and muscular representations and to combine them into an integral image of movements, which is precisely given by theoretical. One of the way to speed up the process of learning to swim can be increased by the variety of motor tasks in the water, which expand the range of coordination abilities and the arsenal of swimming activities. In addition, the effect of the positive transfer of the basic physical qualities and basic skills to special swimming readiness contributes to the effective formation of the structure of swimming techniques.

Conflicts of interest The authors declared no potential conflicts of interest with respect to the research, authorship and publication of thisarticle.

The prospects for further research are aimed at introducing into the training process of swimmers the means and methods of theoretical training, taking into consideration the need for balanced training and avoiding forcing.

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