

AN ACTIVE WORKOUT TIME OF STUDENTS DURING PHYSICAL EDUCATION CLASSES APPLYING DIFFERENT ORGANIZATIONAL-METHODICAL FORMS OF WORK

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Abstract

Physical education teaching is recognized as one of the key factors in promoting and increasing the physical activity of children and youth. However, the analysis of studies dealing with the students physical activity in physical education classes in primary school, showed that the share of time that students spend in physical activity in classes does not meet half of the total time duration of the class. Therefore, an active workout time of students during physical education classes was chosen to be the subject of this research. The goal of this research was to establish an active workout time of students in relation to different organizational-methodical forms of work in the main phase of the physical education class. Also, the goal of this research was to assess the activity of a physical education teacher in the physical and health education class, in relation to the applied organizational-methodical form of work. The research was conducted on a sample of 22 fifth grade elementary school students, where three classes of sports gymnastics were held. For providing information about students' physical activity and teacher's didactic-methodical activity, validated instrument SOFIT was used. All data were analyzed using descriptive statistics. It is determined that an active workout time of students in each class was over 50% of the total time duration of the class. The students' most active workout time was during a parallel-class form of exercises – 24.17 min, or 65.32%, in comparasion with the total time of the class. During additional exercises, activity was 57.21%, while the shortest active time was during stops method (56.62%). The teacher spent most of the time giving instructions to the students, where, while applying a parallel-class form of exercises this task was using 49.55% of the total time of class, stops method 44.66% and additional exercises 36.04%. The rest of the time, the teacher was using "promotion of fitness" (encouraging students) and exercise assistance.

Key words: PHYSICAL EDUCATION / METHODICAL FORMS OF WORK / SOFIT /

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INTRODUCTION

One of the main problems we face today is hypokinesia. Due to insufficient physical activity, which plays a key role, not only for physical but also for social and mental development, the population suffers from a wide range of different diseases. In the world of modern technology and modern life, especially affected groups are children and youth. According to the recommendation of the World Health Organisation (WHO, 2014), children and adolescents aged 5 to 17 should reach 60 minutes of moderate to vigorous physical activity each day. In addition to sports and recreational organizations engaged in organized physical exercise, the crucial and indispensable role in contributing to the overall physical activity of children and youth is played by the physical education teaching. Only 20% of adolescents worldwide meet the WHO recommendation (Hallal, Andersen, Bull, Guthold, Haskell, Ekelund & Lancet Physical Activity Series Working Group, 2012).

The results of research published between 2005 and 2014, which goal was to examine the level of moderate to vigorous physical activity of primary school students in physical education classes, showed that the share of time that students spend in physical activity in classes does not meet this recommendation (Hollis, Williams, Sutherland, Campbell, Nathan, Wolfenden, Morgan, Lubans & Wiggers, 2016). Centers for Disease Control and Prevention, as well as U.S. Association for Physical Education have recommended that students aged between 5 and 17 should spend 50% of the full time of physical education class in moderate to vigorous physical activity (CDC, 2011; Association for Physical Education, 2015). In Serbia, research that have dealt with students activity in physical education classes dates back to the middle of the last century (Ivanić, 1969, Stevanović, 1973, Lučić, 1975, Mišković, 1978, Stepanović, 1982). Great significance that using up the physical education class's time, which in Serbia lasts 45 minutes, has on the satisfaction of the need for movement can be observed from two standpoints: the first one is class duration or "absolute class time", and the second one is "active workout time". Under class duration we consider the time between the students' arrival to the physical exercise area and the students' departure to their next class (Višnjić, Miletić and Jovanović, 2004). An active workout time is the amount of time of the full time class that students have spent in activities of higher intensity than activities such as natural walking. In research conducted to examine an active workout time of students, the authors came to relatively similar results, where it was found that the active workout time of students was between 20% and 50% of the full time of the class (Ivanić, 1969, Stevanović, 1973, Lučić, 1975, Mišković, 1978, Stepanović, 1982). Ivanić (1969) came to data of 23.29%, while Stevanović (1973) and Lučić (1975) came to value of 24.2% and 27.24%. Slightly better results were obtained by Mišković (1978) and Stepanović (1982) with 41.00% and 45.39% utilization of classes for students activity.

In recent times, there has not been much research that has examined an active workout time of students in physical and health education classes in Serbia. In the research of Božović (2011), an active workout time of high school students was 47.52 %. In classes with contents of sports gymnastics it was 51.92%, with contents of volleyball 40.86% and with contents of athletics 52.14% (Božović, 2011). In the research of Marković, Bokan, Rakić and Tanović (2012), 52.32% of class utilization was recorded, which averaged 19.18 minutes.

When it comes to the active workout time in the classes of sports gymnastics, many authors got relatively poor results in terms of this criterion. The results are commonly between 7% and 18% of the full time of the class. Ljubišić (1995) came up with a result of 7.47% of the time that has been used for physical practice, while Petrović (1960), Matković et al. (1963) and Arunović et al. (1979) came up with a score of 14.2%, 16.6% and 18.1% of the active workout time. The best results from older research were recorded by Mišković (1978), when the active workout time was 28.22% of the full time of the class,

while Božović (2011), as already mentioned, when applying sports gymnastics, has recorded best results, 51.92% of the full time of the class.

In addition to the content that is processed or perfected in physical and health education, the engagement of students in classes depends on other factors, such as: level of students motor skills, gender, number of students in class, type of class, available conditions, expertise and engagement of a teacher, etc. Also, it was conducted that most of an active workout time is lost during the main phase of the class, mainly due to poor organization of the class and the usage of inappropriate organizational-methodical form of work (Višnjić et al., 2004). Organizational-methodical forms of work represent the way of organizing the main phase, and it includes the distribution of students and teaching equipment in exercise space. The methodical part of the name refers to the methodical procedure that is applied depending on the way in which the students are organized and the content that needs to be realized in the main phase of the class. There are a large number of organizational-methodical forms of work that are used in the physical and health education teaching, but some of the most commonly used are: begin (a row), stops method, circuit training, a parallel-class form of exercises, additional exercises, polygon training, etc. It is very important that the teacher of physical and health education knows how to choose the most adequate organizational-methodical form of work in relation to the goal, type and contents of the classes.

Having in mind the results of previous research in the world which indicate that students do not reach half of the full time of physical education classes in moderate to vigorous activity (Hollis et al., 2016), as well as the role and importance of physical and health education in the overall physical activity of children and young people, the problem of this paper refers to which of the organizational-methodical forms of work can most contribute to increasing the students active time. Also, it refers to what is the didactic-methodical activity of teacher in class in relation to the form of work that has been used. The subject of the paper is the active workout time of students in the physical and health education class.

The goal of research was to establish an active workout time of students during physical education classes applying different organizational-methodical forms of work in the main phase, where the contents of the classes were the same, and the type of classes was perfecting. Also, the goal was to establish the activity of the physical education teacher in relation to applied organizational-methodical form of work.

METHODS

Non-experimental observation was conducted in the elementary school „Lazar Savatić“ in Belgrade, where three classes with content of area in physical education called Sports gymnastics were held. The sample consisted of 22 students (13 boys and 9 girls) of the fifth grade. At all three classes, the basic elements of ground floor exercises were perfecting, with the emphasis on the following exercises: handstand, forward roll, backward roll, bridge, and candlestick.

The same beginning and the end phase were applied in all three classes, while in the main phase different organizational-methodical forms were used for perfecting chosen exercises.

In the introductory phase, a form named “Running column – fartlek applied in physical education classes” was used, while in the preparation phase, the basic exercises complex was used. One of the students was demonstrating exercises with the help of the teacher. The complex of exercises contained 12 different exercises with the emphasis on the shoulders musculature.

In the main phase, different organizational-methodical forms were used in each class. The following organizational-methodical forms were used: additional exercises, stops method, and parallel-class form of exercises.

For the purposes of this research, the SOFIT (The System for Observing Fitness Instruction Time) instrument was used to assess and collect data on students' physical activity in physical education classes (McKenzie, Sallis, & Nader, 1991). This instrument has been used for more than two decades in research on physical education, as well as on other conditions in which children and youth are physically active, such as various training and competitive activities in sport and other (McKenzie & van der Mars, 2015). The validity of the instrument has been confirmed by a number of studies (Rowe, Schuldheisz, & van der Mars, 1997; Faison-Hodge & Porreta, 2001; Pope, Coleman, Gonzalez, Barron & Heath, 2000). The system for observing an active workout time is an instrument that collects data for assessing the student activity levels, lesson context, and teacher behavior during class time. Data are collected through direct observation of classes by trained observers and have been used to assess the quality of physical education classes (McKenzie et al, 1991).

For the purpose of this research, the SOFIT instrument was modified so that elements related to students' activity and teacher's behavior were used, but not elements related to class content. Four trained observers monitored student activity in the class. They had a form with basic data on the observer and the student being observed, a space intended for entering the time when the observation began and ended, observation sequences, and part intended for entering the data obtained by observation. The observers randomly selected 5 students, taking into account equitable distribution of female and male students. Four students were observed during the whole class, and the fifth was a replacement in case one of the observed students had to permanently leave the practice area for some reason. There was a special form for each student on which the data were recorded. The task was to observe one student for 4 minutes (12 sequences) and then move to the next, and so on until the end of the class. When selecting the students who will be observed, the observers also determined the order in which they will be monitored throughout the class (which student is observed first, which one second and so on). It is planned to observe the student and the teacher for 10 seconds, and then in the next 10 seconds to record the observed data at the intended place on the form. Each of the observers had headphones connected to a mobile device on which there is a sound that signals every 10 seconds.

Student activity is codified from 1 to 5, with the codes from 1 to 4 signifying that the student is passive and code 5 signifying that the student is active. Code 1 signified that the student is lying, code 2 that the student is sitting, code 3 that the student is standing, and code 4 that the student is walking. Code 5 signified that the student is active which means that the student is expending more energy than he/she would during ordinary walking.

Teacher activity is codified with the help of six codes. Code "P", "promotes fitness", is codified when the physical education teacher cheers the students on and supports them during students' exercise performance, code "D", "demonstrates fitness", is codified when the teacher demonstrates a particular exercise to students and, also, gives students exercise assistance. Code "M", "management", is codified when the teacher performs role-call, divides the students into groups, sets the equipment for performing certain exercises, talks about the tasks that are going to be performed in that class. Code "I", "instructs generally", is codified when the teacher gives instructions and feedback to students, but without physical engagement. Code "O", "observes", is codified when the teacher observes an individual, a group or the whole class throughout the whole interval of 10 seconds, while code "T", "other tasks", is codified when the teacher deals with tasks that are not directly related to class or students.

All data were analyzed using descriptive statistics.

RESULTS

Table 1 shows the active workout time of students at the level of the entire class, depending on the applied organizational-methodical form of work, and in relation to the full time and real-time of the class. The students' most active workout time was during a parallel-class form of exercises that has been applied in the main phase of the class. The students were active 24.17 minutes, which is 65.32% of the real-time of the class. By applying additional exercises in the main phase of the class, the activity was 57.21% of the real-time of the class, which is taken as the main norm for calculating the active workout time of students, while the least active time was using stops method with activity of 56.62% of the real-time of the class.

able 1. An active workout time of the students at the level of the full time of the class depending on the applied organizational-methodical form of work

	Average full time class	Average real time class	An active time (mins)
Additional exercises	52.92%	57.21%	21.17
Stops method	55.21%	56.62%	22.08
Parallel-class form of exercises	60.42%	65.32%	24.17

In the main phase of the class, when additional exercise was applied as an organizational-methodical form of work, students were active 14.58 minutes or 54.10% of the time, and of the remaining, inactive, 45.99%, 0.50 minutes (1.85%) were spent lying down, 0.08 minutes (0.31%) sitting, 8 minutes (29.63%) in a standing position and 3.83 minutes or 14.20%, walking.

When stops method was applied, students were active 14.83 minutes (52.35%) of the main phase, and inactivity of 47.65% was distributed as follows: 0.08 minutes (0.29%) students spent in a supine position, 1.33 minutes (4.72%) sitting, 6.33 minutes (22.35%) standing and 5.75 minutes or 20.29% , walking.

When a parallel-class form of exercises was applied, students were active 14.17 minutes (56.86%), and inactivity was 43.14% of which students spent 2.25 minutes (9.03%) lying down, 1.25 minutes (5.02%) sitting, 5.17 minutes (20.74%) standing and the remaining 2.08 minutes (8.35%) walking. These results are shown in Table 2.

Table 2. Students activities in the main phase of the class depending on the applied organizational-methodical form of work

	Lying down	Sitting	Standing	Walking	Very active
Additional exercises	0.50 min 1.85%	0.08 min 0.31%	8 min 29.63%	3.83 min 14.20%	14.58 min 54.01%
Stops method	0.08 min 0.29%	1.33 min 4.72%	6.33 min 22.35%	5.75 min 20.29%	14.83 min 52.35%
Parallel-class form of exercises	2.25 min 9.03%	1.25 min 5.02%	5.17 min 20.74%	2.08 min 8.35%	14.17 min 56.86%

When it comes to the activity of the teacher, Table 3 shows the results, in relation to the organizational-methodical forms of work, which relate to the specific tasks that he fulfilled during whole class. In all three classes, the teacher spent most of the time of the class giving instructions to the students on the proper performance of exercises. When the parallel-class form of exercises was applied, this task the teacher realized 49.55% of the full time of the class, when stops method was applied that activity lasted 44.66%, and when additional exercise was applied 36.04% of the main phase of the class. Other most common activities of the teacher were “promoting fitness”, which included encouraging students, as well as assisting students while practicing.

Table 3. Teacher’s activity at the level of the full time of the class depending on the applied organizational-methodical form of work

	Promotes fitness	Exercise assists	Instructs	Manages	Observes	Other tasks
Additional exercises	11.94%	35.59%	36.04%	3.60%	12.84%	0.00%
Stops method	25.64%	20.09%	44.66%	3.85%	5.77%	0.00%
Parallel-class form of exercises	15.09%	23.42%	49.55%	0.00%	11.94%	0.00%

When additional exercise as an organizational-methodical form of work was applied in the main phase of the class, the teacher arranged his activities as follows: the most of the time he was assisting to students (48.77% of the full time of the main phase of the class), then giving instructions to the students (33.95%), observing how well and in what way students were practicing (10.49%), and promoting fitness and cheering students (6.48%). He spent only 0.31% of the time setting up the equipment, while the “other tasks” were not applied. When the stops method was applied, the teacher spent most of the time giving instructions related to practice (40.59%), then encouraging students (28.24%). The time he devoted to assisting students was 27.64% of the full time of the main phase of the class, while he applied pure observation in 3.53% of the time. Setting up the equipment and the “other tasks” were not applied. In the class where the parallel-class form of exercises was used, the teacher used the time of the main phase of the class as follows: he was giving instructions 48.16% of the time, 24.41% of the duration of the main phase was invested in assisting students, 17.73% on cheering students. On observing the students, the teacher spent 9.70% of the time, while setting up equipment and the “other tasks” were not applied in the main phase of the class. These results are shown in Table 4.

Table 4. Teacher’s activity in the main phase of the class depending on the applied organizational-methodical form of work

	Promotes fitness	Exercise assists	Instructs	Manages	Observes	Other tasks
Additional exercises	6.48%	48.77%	33.95%	0.31%	10.49%	0.00%
Stops method	28.24%	27.64%	40.59%	0.00%	3.53%	0.00%
Parallel-class form of exercises	17.73%	24.41%	48.16%	0.00%	9.70%	0.00%

DISCUSSION

In each of the observed and analyzed classes, it was determined that the students activity while perfecting five elements of ground floor exercises, in relation to the total time duration of the class, was over 50% (applying the parallel-class form of exercises even over 65%). The obtained results fulfill the recommendation according to which students should spend half of the total time duration of the class in moderate to vigorous physical activity in the physical education class (CDC, 2011; Association for Physical Education, 2015), which is a very good result and shows that with good organization and appropriate usage of organizational-methodical forms of work in class, this recommendation can be fulfilled.

In relation to some previous research of students' active workout time in Serbia, in which activity of students in physical education classes was between 20% and 50% of total time duration of the class, it can generally be concluded that the data obtained on students activity in this research are higher. However, due to the different methods of observation and recording of observation factors used to collect data on student activity, classes' types (training and perfecting), as well as the content applied in those classes, it is not possible to accurately compare the obtained results.

A large number of organizational-methodical forms of work that are used in the physical and health education teaching, primarily serve to increase an active workout time of students in the class. The application of forms of work also depends on the conditions available to the teacher, both spatial and those related to the number of students per class, (non) existence of equipment or teaching aids. In this research, the influences of organizational-methodical forms of work were monitored in accordance with the optimal conditions that most primary schools in Serbia can meet, spatially and in terms of teaching aids (in this case, specifically used equipment for the realization of classes) and the number of students per class. They were based on enough number of places for practice, when it comes to the stops method and parallel-class form of exercises, and thus inactivity of students while waiting their turn to complete the task. When the additional exercise was applied, it was rationally distributed and with enough number of repetitions so that during the rotation of students, also, no crowds were created, which increased the active workout time of the students. These three organizational-methodical forms of work enable increase in the active workout time of students during the realization of the content of sports gymnastics, which shows the results that refer not only to the class as a whole but also to the main phase of the class, where these forms are applied. In the class where the parallel-class form of exercises was applied, the best results of active workout time were obtained (65.32% or 24.17 minutes) due to the fact that students did not change the place of realization of tasks, and thus no time wasted on that activity. On the other hand, the contents that were realized required as much space as was available to the students, so that a large number of students could realize the tasks at the same time, so there was not too much waiting in the line to practice. The results of the main phase of the class also prove that activity of students is high and the active workout time is over 50% of the total duration of the main phase (additional exercise – 54.01%; stops method – 52.35%; the parallel-class form of exercises – 56.86%). As it was the case in the whole class, in the main phase of the class parallel-class form of exercises gave the best active workout time (14.17 minutes), for the reasons already stated. This organizational-methodical form of exercises has not been examined enough in previous research, especially not in terms of the active workout time of students. Taking into account the data obtained in this research, it can be concluded that the parallel-class form of exercises in practice is unjustifiably neglected, given that it is possible to achieve a higher level of students engagement when applying ground floor exercises as a part of sports gymnastics.

Previous research has mainly dealt with the ways of organizing classes, as well as the contents, in order to determine the active workout time of students' activity, however, the activity of a teacher was not included, except in the case of Marković et al. (2012). This research paid special attention to the activities carried out by the teacher, both at the level of the whole class and depending on each of its phases. To the certain rate, the expected results were obtained. In the classes where the contents from the field of exercising on gymnastics equipment and the elements of ground floor exercises are realized, the teacher is expected to spend most time giving certain instructions to the students, which refer to the way in which a certain exercise is performed correctly, protection measures and similar instructions. Also, it is expected, and depending on the specific exercise, guard and assist to students. When the obtained results are compared to those obtained by Marković et al. (2012), certain differences can be noticed in terms of teacher activity. . In the mentioned research, the teacher spent most time observing the students (14.97 minutes) and giving instructions to the students (11.87 minutes), while demonstration and assistance are only the fourth most common activity with a value of 1.89 minutes. These differences in the obtained results can be explained by the different contents that were applied in the classes in these two research. Teacher's activity related to promoting fitness and encouraging students is indispensable, especially in the classes of ground floor exercises. The contents of this thematic area are, in most cases, far more demanding for students than the contents of sports games or athletics. The reasons for that are various, but the fact that a small number of students had the opportunity to encounter activities of that type beforehand, especially if they do exercises on gymnastics equipment. For all the above reasons, it is clear that the role of a teacher in such situations is the most important, and amongst them, above all, encouraging and motivating students to be able to realize all the exercises that are assigned to them.

CONCLUSION

The goal of this research was to establish an active workout time of students in physical and health education class in relation to different organizational-methodical forms of work in the main phase, where the same contents were applied and the type of classes was perfecting. Also, the goal was to establish the activity of the physical education teacher in the same classes.

For the purpose of this research, the validated SOFIT instrument was modified, in the way that only elements that measured the activity of students and teacher were used, but not the content of the class. It is determined that the active workout time of students in each class was over 50% of the total time duration of the class. Based on the obtained results, it can be concluded that students met the recommendation where they should spend 50% of the total time duration of the physical education class on moderate to vigorous physical activity.

The students' most active workout time was during the parallel-class form of exercises (65.32%, that is 24.17 minutes). In the main phase of the class, also, the best results in terms of students' activity were given by the parallel-class form of exercises (56.86% of the time of the main phase, the students were active).

The teacher spent most of the time in class giving instructions to the students on the proper performance of the exercise, ways to protect and help and improve the realization of the exercise (49.55% of the full time class). In the main phase of the class the teacher, also, spent most of the time giving instructions to the students on the proper performance of exercise (48.16% of the time of the main phase where the parallel-class form of exercise was applied).

Based on the obtained results, it can be concluded that with the appropriate usage of organizational-methodical forms of work in the main phase of the class, but also appropriate teacher's activity, different

goals can be achieved, both physical and health education and those related to recommendations for physical activity of children and youth, which directly affects proper growth and development, and above all the health of students.

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