

AL EXERCISE AND ACTIVE TIME IN A PHYSICAL EDUCATION CLASS

(Preliminary communication)

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Abstract

The goal of this research was to define the effects of implementing additional exercise to active exercise time of students in physical education classes of gymnastics. This research was experimental, and it involved four 2nd year high school classes. The method of chronometric measurement of engagement of the students during the class was applied within this experimental treatment. The students of the experimental classes displayed much better active exercise time on classes, which proves the positive effect of introduction of supplemental exercises in physical education classes.

Keywords: *pedagogical experiment, experimental group, control group, method of measurement, second class schools, motor skills, sport and technical skills, gymnastics.*

INTRODUCTION

Various factors influence the physical education class efficiency, such as: educational programmes, instructors' competency and motivation, material and technical conditions of corresponding school facilities, students' motivation. All of the above reflect on the level of students' engagement on PE classes, which directly influences the realization of numerous educational tasks – development of motor capabilities, acquisition of skills and sport-technical capabilities, formation of positive attitude and assurance about the values of physical education and exercise itself. One of the teacher's key tasks in the realization of PE classes is to rationalize his planning with the goal of better utilization of the available class time; and the best indicator of this is the active exercise time.

Many experts have been contemplating this problem for quite some time. Based on the results of the researches conducted over the previous several decades, one can note the alarmingly low level of students' engagement on the PE classes. The statistics show that students averagely spent 9 minutes exercising within various types of activities, which makes 20% of total class duration (Ivanić, 1969); somewhat better result with 15,39 minutes or 34,77% (Miskovic, 1978); while the lowest recorded average result is 8,49 minutes (Krsmanovic, 1992). Particularly significant data that needs to be highlighted is the fact that students have proved much less active in gymnastics classes than in classes dealing with sports games (Arunović, Novaković, & Tomić, 1979; Petrović, 2010). Amongst the biggest problems

that are quoted with regard to the realization of gymnastics classes that include programs of both apparatus and floor exercises, are usually: weak material base for realization of the program – lack of apparatus, often even lack of indoor facilities; insufficient engagement of teachers which is directly connected with the problems of low or non-existent link between the realization of PE programs with the realization of PE programs in lower grades of elementary school (Šekeljić, 2010; Vukašinić, Radojević, Dabović, & Grbović, 2010). If, on the hand, insufficient school fittings may be admitted as a factor on which a PE teacher, objectively, can not influence, on the other hand one can certainly obtain facilities for realization of apparatus and floor exercises by applying adequate organizational-methodical work methods in PE classes. Although the positive effects of supplemental exercise method have been already pointed out in researches of some authors before (Stanojević, 1965, Stepanović, 1980), the practice has proved that this method has not truly yet been adopted.

Supplemental exercise may serve in the course of training process, where it is, in terms of coordination, similar or identical to primary exercise, or is given with the goal of compensatory treatment, to influence on the muscle groups that were less engaged in performance of primary exercises. The advantages of this methodical-organizational work form reflect primary on diminished students' passive time, much better educational performance, adaptability at all students' ages, possibility of individual dosage (Matić, 1978; Višnjić, Jovanović & Miletić, 2004).

This research was carried out with the purpose to achieve higher level of engagement of high school students in the realization of gymnastics program on PE classes by implementing convenient additional exercises.

METHODS

This research was carried out in March 2009/2010 school year in the „Radoje Ljubičić“ Technical High School in Užice. Pedagogical experiment with parallel groups was applied, with two experimental groups and two control groups. During the experimental program, a chronometric method of measuring students' engagement in the activities has been applied.

The experimental program focused on performing supplemental exercises during the main class phase. The class work was organized in such way that students, previously divided into three groups, performed exercises in three separate locations, where they had been offered three supplemental exercises aside from performing the ahead planned program of floor and apparatus exercises. The students performed the supplemental exercises in accordance with their corresponding capabilities – number of repetition, speed, exercise order, all in accordance with available time between two consecutive performances of primary exercises, with available apparatus, self-estimation of fatigue level in order not to disrupt the realization of primary class content. Activities in the control groups did not differ from those in the experi-

mental one in terms of applied programs, timetable and dynamics, material-technical conditions; the only difference was in applying organizational-methodical work forms in the primary class phase.

The PE professors themselves did the measuring of active exercise time. In five consecutive classes, both in experimental and control groups, two students were randomly selected and monitored, active time of their physical activity was measured with a stopwatch, in particular class phases as well as during the whole class. The monitored students were not aware that they were subjects in an experiment.

RESULTS

Ten students from both experimental and control group had their active exercise time on PE classes of gymnastics measured. Statistical analysis displayed basic statistic results: arithmetic mean, standard deviation, coefficient of variation, standard error in the mean; the obtained results were expressed in percents.

Table 1 shows a display of active exercise time of students from the experimental group.

With the experimental group students, the average activity time was 21 minutes and 43 seconds, or 47,52% of total class duration, where variation ranged from 18 min. 25 sec. (40,93%) up to 23 minutes 30 seconds (52,22%). Table 2 shows central tendency and dispersion of experimental group students' active exercise time.

Table 1. Active exercise time of the experimental group students

Student	Phase 1	Phase 2	Phase 3	Phase 4	Total	%
1.	3:21	4:56	10:54	1:02	19:33	43.44
2.	3:16	4:51	10:01	0:57	18:25	40.93
3.	3:59	5:13	11:26	1:25	21:23	47.52
4.	3:52	5:00	11:56	1:33	21:41	48.19
5.	4:10	4:54	13:16	1:50	23:30	52.22
6.	3:57	4:49	12:36	1:50	22:32	50.07
7.	3:57	4:26	13:02	1:03	22:28	49.93
8.	3:50	4:24	12:14	1:00	21:28	47.70
9.	4:18	5:25	11:24	0:47	21:14	47.19
10.	4:12	5:31	11:43	0:50	21:36	48.00
M	3:53	4:58	11:51	1:14	21:43	47.52

Table 2. Central tendency and dispersion parameters of experimental group students' active exercise time

	1.	Class phase		4.	Total
		2.	3.		
M	3:53	4:58	11:51	1:14	21:43
SD	0:19	0:21	0:56	0:23	1:39
KV	0,08	0,07	0,08	0,31	0,08
SE _M	0,02	0,02	0,06	0,02	0,10

Table 3. Active exercise time of the control group students

Student	Phase 1	Phase 2	Phase 3	Phase 4	Total	%
1.	2:57	4:13	5:43	0:37	12:50	28.52
2.	2:54	4:02	4:35	0:30	11:21	25.22
3.	3:23	4:54	5:53	1:23	14:53	33.09
4.	3:19	4:59	5:05	1:11	14:34	32.37
5.	4:01	5:13	7:10	0:51	17:15	38.33
6.	3:59	5:38	6:48	0:43	16:28	36.59
7.	2:56	4:26	7:55	0:44	15:21	34.11
8.	3:11	4:19	7:41	0:40	15:11	33.74
9.	3:42	5:06	8:50	1:55	18:53	41.95
10.	3:40	4:35	8:32	1:50	17:57	39.89
M	3:24	4:45	6:49	1:02	15:28	34.38

Table 4: Central tendency and dispersion parameters of control group students' active exercise time

	Class phase				Total
	1.	2.	3.	4.	
M	3:24	4:45	6:49	1:02	15:28
SD	0:24	0:29	1:23	0:29	2:10
KV	0,12	0,1	0,2	0,47	0,14
SE _M	0,02	0,03	0,08	0,03	0,13

Considering that the dispersion of results displays normal layout, and the coefficient of variation is low (0.08), it can be concluded that the subjects from the experimental group proved high level of homogeneity in the level of engagement in classes dealing with program of floor and apparatus exercises.

The control group resulted with the average activity volume of 15 minutes 28 seconds, or 34,38% of the total class duration. Variation ranged from 11 minutes 21 seconds up to 18 minutes 53 seconds, variation interval was 7 minutes 32 seconds.

Table 4 displays central tendency and dispersion parameters of control group students' active exercise time.

Comparing the outcomes of experimental and control groups, one can perceive that the experimental group resulted better, by 6 minutes 15 seconds in average. Also, It can be noted that the experimental group displayed higher homogeneity in their results. If we only take the primary class phase (with the experimental factor) into consideration, we find that the active exercise time of experimental group was 11 minutes 51 seconds, which is much better result than the subjects from the control group had – 6 minutes 49 seconds. This difference shows that the students from the experimental group during the monitored sequence of classes dealing with gymnastics programs were more physically engaged than students from the control group, practically for the duration of entire school class.

CONCLUSION

Based on obtained results and differences, we can conclude that application of supplemental exercises in PE classes positively influences students' active exercise time. This is mostly implied by differences in students' engagement in the primary class phase, where the supplemental exercises were implemented. Having in mind the specificity of gymnastics programs in high schools that mostly reflects in different levels of motor capabilities of students, and the level of the acquisition of motor skills, it is clear that one has to pay more attention to the work organization in the class. Students with weaker motor capabilities have difficulties in mastering the planned programs which influences their motivation, and thus often results in their very low engagement in classes. Aside from the adjustment of programs and the realization of gymnastics exercise contents, another significant possibility for improving students' activity in classes can be provided by applying supplemental exercises, which are, among other things, adjusted to individual capabilities of students, thus positively reflecting onto their motivation.

REFERENCES

- Arunović, D., Novaković, M., & Tomić, Ž. (1979). Opterećenost i angažovanost učenika na časovima fizičkog vaspitanja [Exertion and engagement of students in Physical Education classes. In Serbian]. *Fizička kultura*, (5), 372-379.
- Ivanić, S. (1969). Aktivnost učenika na časovima fizičkog

- vežbanja kroz prizmu naših istraživanja [Activity of students in physical exercise classes through the prism of our expectations. In Serbian], *Fizička kultura*, (1-2), 11-14.
- Krsmanović, B. (1992). Aktivnost i angažovanost učenika na času fizičkog vaspitanja [Activity and engagement of students in Physical Education classes]. *Zbornik radova nastavnika i saradnika*, (6), 34-39. Novi Sad: Fakultet fizičke kulture.
- Matić, M. (1978). *Čas telesnog vežbanja*, [Physical exercise class], Beograd: NIP Partizan.
- Mišković, Lj. (1978). Trajanje fizičke aktivnosti učenika na časovima fizičkog vaspitanja, [Duration of students' physical activity in Physical Education classes. In Serbian]. *Fizička kultura*, (3), 217-219.
- Pajaziti, Dž. (1982). *Prilog proučavanja opterećenosti i angažovanosti učenika na časovima fizičkog vaspitanja sa predlogom mera*, [Contribution to studies of exertion and engagement of students in Physical Education classes] (Unpublished master's thesis, University of Belgrade). Beograd: Fakultet fizičkog vaspitanja.
- Petrović, A. (2010). *Uticao posebno organizovanog programa fizičkog vaspitanja na neke morfološke, motoričke i psihološke karakteristike učenika*, [Effects of specially organized Physical Education program on certain morphologic, motoric and psychological characteristics of students] (Unpublished master's theses, University of Belgrade). Beograd: Fakultet sporta i fizičkog vaspitanja.
- Stanojević, I. (1965). Mogućnost za poboljšanje kvaliteta i intenziteta nastavnog rada – putevi savremenog fizičkog vaspitanja [Possibility for improvement of quality and intensity of teaching – contemporary ways of physical education. In Serbian]. *U Zborniku, Stručni materijal sa savetovanja nastavnika fizičke kulture* (str. 33). Beograd: Partizan.
- Stepanović, M. (1980). *Efekte povećane aktivnosti na času fizičkog vaspitanja organizovanog „metodom“ dopunskih vežbi na motoričke sposobnosti učenika* [Effects of increased activity in a Physical Education class organized using a „method“ of supplemental exercises on motoric capabilities of students] (Unpublished master's thesis, University of Belgrade). Beograd: Fakultet fizičkog vaspitanja.
- Šekeljčić, G., Stamatović, M., & Marković, Ž. (2009). Od evropskih gimnastičkih sistema ka humanističkoj paradigmi individualno orijentisanog fizičkog vaspitanja [From European gymnastics systems towards humanistic paradigm of individually-oriented physical education. In Serbian] *U Zborniku radova „Obrazovanje i usavršavanje nastavnika“* (str. 507–522). Užice: Učiteljski fakultet.
- Šekeljčić, G. (2010). *Efekte nastavnih sadržaja sa elementima košarke na motorički prostor učenika mlađeg školskog uzrasta*, [Effects of teaching programs with basketball elements on motor area of younger students], Užice: Učiteljski fakultet.
- Višnjić, D., Jovanović, A., i Miletić, K. (2004). *Teorija i metodika fizičkog vaspitanja*, [Theory and methods of physical education]. Beograd: Fakultet sporta i fizičkog vaspitanja.
- Vukašinović, V., Radojević, J., Dabović, M., i Grbović, M. (2010). Problemi u realizovanju programa vežbi na spravama i tlu u školama Srbije [Problems in realization of programs of apparatus and floor exercises in schools in Serbia] *U Zborniku radova „Peti Evropski kongres FIEP-a i Drugi srpski kongres pedagoga fizičke kulture“* (str. 235-244). Niš: Društvo pedagoga fizičke kulture i Fakultet sporta i fizičkog vaspitanja.

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