OPTIMIZING PHYSICAL EDUCATION LESSONS IN THE SECOND AND THIRD TRIENNIUM OF ELEMENTARY SCHOOL

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Abstract

Since we are forced, by our lifestyles, to sit down most of the time, it is of extremely important to carry out physical education (PE) at the highest level possible. PE is, to many children, the only organized, professionally guided physical activity they will experience. The purpose of our investigation was to establish the duration of individual elements within PE lessons and to present elements that would, through optimization of their work, help teachers put more attention on physical activities. Observations of 65 physical education lessons were performed and statistical data was processed with SPSS 16.0 for Windows. According to the results, the introductory time of the lessons is usually much shorter than suggested and not enough attention is put to special warm-up. The main part of the lessons is, theoretically, of appropriate length, whereas the last part of the lessons is again too short. Since teachers do not optimize the time spent on unnecessary activities, PE lessons are, as a rule, shorter than 45 minutes. As a consequence of the above factors, students' effective involvement during physical education lessons is lower than expected. The results also show that time usage during physical education lesson could easily be improved, merely by applying some minor modifications to teachers' processes and by raising awareness of the importance of physical education among teaching staff. Sufficient physical activity is crucial for child's healthy development.

Key words*: physical education, PE, lesson optimization, physical education teachers*

Introduction

Physical education (PE) is education for life. Cardiologists emphasize its importance for a healthy lifestyle. There are no other subjects with similar educational goal. Physical activity is also a part of health education, since it educates children to have an active lifestyle. The key mission of PE is, "To educate young individuals to follow a healthy and active lifestyle throughout all periods of their life.'' (Kristan, 2001:164). It is therefore extremely important to carry out physical education at the highest level possible, whereas PE is, to many children, the only organized, professionally guided physical activity they will experience.

An eloquent proof of the importance of PE in child's free time is the fact that children with better end-of-the-year reports, better grades at PE and positive relationship towards the educational process, and are much more active during holidays (Jurak, Kovač, Strel, Majerič, Starc, Filipčič, Štihec, 2003). There are elements of joy, relaxation, playfulness and laughter that help establish genuine relationships between the students and the teacher of PE. Children are physically and mentally relieved by everyday physical activity, which enables them to stay focused and more efficient at other subjects (Klemenčič, 2001). The educational system is responsible to educate children.

As physically healthy and persistent individuals, to enable them to grow fond of sports and recreational activities and to habituate them to regular recreation (Pišot, Sever, 2002). PE teachers are therefore obliged to qualitatively and quantitatively arrange their lessons in order to realize all learning objectives. In Slovenia, 55% of adults are not physically active. There are numerous reasons for this fact, from lack of time and poor organization to lack of knowledge and experience in individual sports. The latter reason is explained by inadequate knowledge among family members and by the educational system not giving them the sufficient foundation for pursuing additional physical activities (Doupona Topič, Cvelbar, Matoh, 2002). As for some researches (Powell, Dsyinger, 1987; Twisk, 2001; Malina 1996), physical activity of adults and children are statistically not directly connected. It is not as a rule that active children become active adults. Yet at the same time, it has been proven that active lifestyle of children and an adolescent is connected with lower body fat and higher stamina of young adults (Telama, Nupponen, Pieron, 2005). Adults have an important role in introducing regular exercise and sport activities to children and in helping them, they develop a positive attitude towards sports. Parents have this role in child's early childhood, later it is augmented by the education system.

The educator who teaches PE must have the knowledge of child development, didactics, lesson planning, leading and evaluation of educational process. He/she must also be able to transfer theoretical knowledge into practice, together with setting a good example. PE teachers are in contact with their children only during their lesson, which is why a proper lesson execution is significant. PE lessons are supposed to be 45 minutes long. Approximately 1/3 of the time should be used for special warm-up, 3/4 of the time for the core lesson, and 3 to 5 minutes for the conclusion (Kovač, Strel: 2004; Pirc, 1991). Teachers should use various teaching methods (Tomić, 2000), since they depend on the level of teaching process, lesson contents, children's skills, time and teacher's personality. Principles of individualization and differentiation should also be taken into consideration when working with children. Since PE teachers have an important role in a child's physical development, PE lessons have to be performed at a maximum quality level, especially considering the optimization of the time available. Therefore we were interested in the average duration of PE lesson, which parts of the lesson are given more attention by the teachers and to what extend the available time is used for physical activities.

Methods and approach

Sample group

The sample group utilized in this study is not classical since it is examines 65 PE lessons of classes from fourth to seventh of nine-year elementary school, and classes from fourth to sixth of eight-year elementary school (23 teachers, children between 9 and 12 years of age). The sample is, due to complexity of measurement, a small one so it can thus be anticipated that it does not fully present the population and that there might be some deviations when generalizing.

Variables

Measurement was carried out using a standard observation scheme with the following elements:
General data (school, class, number of students, date and time, lesson location)
Lesson type according to teaching process level and contents
Duration of individual lesson parts
Duration of teacher's activities
Duration of students' effective involvement

Measurement organization

The research was carried out in November and December of the 2008/2009 school year.. Measuring took a week (Monday to Friday) on individual schools. Research was carried out by 2 observers who completed 5 hours of preliminary training. One researcher was measuring the teacher's activity according to observation scheme; the other researcher was measuring students' effective involvement. Duration was measured in minutes and seconds.

Data processing methods

Duration times were transformed into seconds and processed using SPSS 16.0 for Windows. Statistical parameters were calculated for individual variables (answer frequency, arithmetic mean, minimum and maximum values).

Results

Table 1: Duration of PE lesson and its parts (minutes)

	F	F %	X min	X max	M
Lesson preparation	65	100	35	272	114
Main part	65	100	73	394	252
Conclusion	45	692	0	206	23
Whole lesson	65	100	254	453	3,905

f – number of answers, f% – value percentage, X min – minimum value, X max – maximum value, M – arithmetic mean

The shortest lesson (25.40 minutes) was interrupted prematurely due to serious disciplinary actions. The lessons were in 10 cases shorter than 35 minutes, in 27 cases they lasted between 35 and 40 minutes and in 28 cases they lasted longer than 40 minutes.

Table 2: Duration of individual lesson activities (minutes)

	F	F %	X min	X max	M
Lesson preparation	65	100	13	103	45
General warm-up	60	892	0	134	43
Special warm-up	58	861	0	162	51
Instructions, explanation	64	985	0	9	34
Demonstration	54	831	0	132	1
Training spot preparation	59	902	0	76	24
Clearing up	50	769	0	62	12
Work organization	65	100	3	94	32
Calming down	43	662	0	142	13
Theoretical summary	45	692	0	32	4
Disciplinary actions	45	692	0	173	6
Evaluation and assessment	58	892	0	143	5
Activity supervising	65	100	52	331	193

f – number of answers, f% – value percentage, X min – minimum value, X max – maximum value, M – arithmetic mean

Lesson preparation time was considered the time used to get to the gymnasium after the official lesson beginning. The training spot preparation was the time used for setting up the training spot at the beginning of the lesson and taking it apart at the end.

This preparation was sometimes done by teachers themselves and sometimes in cooperation with students. Work organization presented the time used for organizing students in pairs or groups, handing out record charts, giving directions, assigning tasks, etc. Disciplinary actions were categorized as short interruptions in the SPSS system. They were either shorter (warnings) or longer (solving conflicts, setting additional rules, punishing) and resulted from breaking the agreed rules and safety violations. Observations were made and research data was gathered as teachers' activities, their involvement and control over students' individual work, giving instructions and feedback and their role as a referee were monitored.

Table 3: Duration of students' effective involvement in intervals

Effective time in minutes	F	F %
5 to 10	12	185
11 to 15	20	308
16 to 20	22	338
21 to 25	9	138
above 25	2	31
Number of students	65	100

f – number of answers, f% – value percentage

Discussion and conclusion

Elements included in our inquiry were those, for which we assumed to take more time than required (explanation, training location preparation). Effective lesson length was also monitored. Average lesson duration was 39.05 minutes, which is 86.8% of the 45 minute total time available. Students and teachers needed an average of 4.47 minutes to change clothes and enter the gymnasium. This time period was much longer at schools where the gymnasium is situated outside school facilities. Lesson preparation time could be much shorter if students entered the dressing room during the break and changed before the start of the official lesson (the shortest measured preparation time was less than a minute). Lesson lead in, consisting of general and special warm-up, took 9.34 minutes on average, which is less than suggested in theory. According to the 1/3 share of the whole lesson, this length was, in majority of observed lessons, an appropriate (29.2%). However, we would like to point out that more attention should be placed on warm-up especially due to some more demanding activities in PE classes in the second and third triennium. The quality of this part of the lesson could be discussed if data about the content were available, yet time used for warm-up is an important factor of quality.

What concerned us, were the 7 lessons with no general warm-up and 9 lessons with no special warm-up. The purpose of warm-up is not only to motivate (emotional preparation) but also to prepare our organism for physical activity, to reduce risk of injuries and to intensify the effect of exterior muscular activity (Kristan, 1980; Pistotnik, 1999). Leaving out warm-up is therefore inexcusable and it can lead to serious injuries of students. Lesson conclusion was present only at 66.2% of monitored lessons. It is of great importance to calm students down in order to lower their heart rate. This part usually takes place at the end of a lesson or after more strenuous physical efforts. It is also important to prepare students for the next lesson, since the organism has to get used to lower physical activity. Students, who have not calmed down, encounter difficulties at their next lesson. Calming down and cooling down after a PE lesson is similar to calming down after a sport activity and is unfortunately rarely done by amateur athletes. It is therefore important for a PE lesson to teach this point, and include a 'Cool Down' period no matter the activities performed in the main part. Theoretical parts of PE lessons are meant to educate students about the importance of physical activity in everyday life. Theoretical summary and contents were present at more lessons than lesson conclusion, thus we can come to the conclusion that theoretical contents were also present in the main part of the lessons. Teaching methods of demonstration and explanation were most frequently used. They were usually interrelated, whereas demonstration is supposed to be substantiated by explanation and vice versa (Kovač, Strel, Jurak, Starc, Majerič, 2004). On average 3.42 minutes were used for the explanation, which was present at all but one lessons. An average 1.05 minutes were used for demonstration, which was present at 54 monitored lessons.

The only lesson without explanation was related to dancing (demonstration lasted for 13.22 minutes; student effective involvement time was 17.35 minutes). Demonstration was absent at consolidation lessons, whereas it was present at all other lessons. It is easier to demonstrate than to explain a certain movement that is why more time was used for explanation. Demonstration is also easier to understand and copy whereas explanation can easily be misinterpreted. Preparing and cleaning up the training location are elements present at every PE lesson and their effectiveness influences the students' involvement. Gymnasiums had in many cases been prepared in advance, especially when several lessons with the same content followed one another. Some teachers had prepared the gymnasium by themselves before the arrival of the students.

Students' effective involvement times were much longer at lesson where no special preparation was needed. Training location preparation took an average of 2.32 minutes and cleaning up took 1.18 minutes. If special preparation was required (installing protection) these times were prolonged. Preparation and cleaning up times were on average relatively short yet there is room for improvement. Instead of giving oral instructions, teachers could also make use of organization boards. Duration of students' effective involvement was monitored at every lesson, presenting the time of students' physical activity following the teacher's instructions, not including preparation and cleaning up. Most of the students (33.8%) were physically active between 15 to 20 minutes, 83.1% of the students were effectively involved for no more than 20 minutes.

Duration of average effective involvement was 15.11 minutes, which is 40% of the lesson duration (averaging 39.05 minutes). Lessons with students' effective times lower than 10 minutes involved acrobatics (1 lesson), gymnastics (1 lesson), mini basketball (1 lesson), mini volleyball (5 lessons) and natural forms of movement (3 lessons). The results came as no surprise since team sports (especially if work is improperly organized) do not enable active involvement of all students. At gymnastics and natural forms of movement, much time was consumed by gym preparation. More accurate lesson preparations and organization boards would certainly help reduce preparation and cleaning up times. The goal of our research was to get an insight into time usage of PE lessons led by sports pedagogues. Regardless of some poorly executed lessons we can easily confirm that PE lessons of the second and third triennium of elementary schools are time-wise properly organized.

Unfortunately there is much time lost with lesson and gymnasium preparation, which could easily be saved with more punctuality and better lesson planning. Precious time is lost also when giving instructions, forming groups and standing in queues. Time spent on preparation, cleaning up and demonstration could be saved by using organization and content boards. Teaching form that is still not adequately present in Slovene schools is 'giving additional tasks'. It enables better work individualization and optimizes individuals' time consumption. Relay games and testing grounds also shorten students effective involvement since much time is spent waiting. The above mentioned activities are useful when students work in smaller groups, with tasks of different difficulty. Activities that involve too much waiting or where only a subgroup of students is active should be avoided. More attention should be placed on special warm-up, since it is an important part of a lesson, which reduces risk of injuries. Lesson conclusion and 'Cool Down' must also not be overlooked since it prepares students for the next lesson and helps them relax.

Our intention was to identify elements of PE lessons that can be optimized in order to maximize the duration of children's physical activity. The surveyed results pointed out the problems of time usage during PE lessons. Minor changes in class structure including preparation, special warm up, organization boards, demonstration techniques, and proper cool down would help maximize the effectiveness and long-term educational benefits of PE classes. The results of these improvements would benefit all aspects of the educational experience. Raising the awareness among all teachers and parents of the importance and benefits of physical education (PE) for a child's healthy development and future should be a priority.

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OPTIMIZACIJA NASTAVE TJELESNE I ZDRAVSTVENE KULTURE U DRUGOM I TREĆEM TROGODIŠNJEM RAZDOBLJU OSNOVNE ŠKOLE

Sažetak

Budući smo prisiljeni, načinom života, na sjedenje veći dio vremena, izuzetno je značajno bavljenje tjelesoim i zdravstvenom kulturom (TZK) na najvišoj mogućoj razini. TZK je, za mnogo djece, jedina organizirana, profesionalno vođena tjelesna aktivnost koju će iskusiti. Svrha ovog istraživanja je bila utvrđivanje trajanja pojedinih elemenata unutar TZK nastave i prezentacija elemenata koji mogu, kroz optimizaciju rada, pomoći učitelju da uspostavi više pozornosti tjelesnim aktivnostima. Izvršeno je praćenje 65 nastavnih sati TZK i podaci su obrađeni SPSS 16.0 paketom za Windows. Sukladno rezultatima, uvodno vrijeme nastave je obično znatno kraće od predloženog i ne obraća se dovoljna pozornost "zagrijavanju". Glavni dio sata nastave je, teorijski, odgovarajućeg trajanja, međutim, završni dio sata je također prekratak. Pošto učitelji ne optimiziraju vrijeme korišteno za nepotrebne aktivnosti, nastava TZK je, po pravilu, kraća od 45 minuta. Kao posljedica ovih čimbenika, učeničko efektivno uključivanje za vrijeme nastave TZK je manje od očekivanog. Rezultati također pokazuju da se korisno vrijeme nastave TZK može lako povećati, jednostavno primjenom minornih modifikacija učiteljskih djelovanja i povećanjem svjesnosti o važnosti tjelesnog vježbanja među učiteljima. Dostatna tjelesna aktivnost je krucijalna za dječji zdravi razvitak.

Ključne riječi*: tjelesna i zdravstvena kultura, TZK, optimizacija nastave, učitelji TZK*

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