Psychomotor Stimulation of Students in Physical Education Using Audiovisual Media

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Abstract

The paper presents a method for increasing the students’ capacity of reception and acquiring information using audiovisual media in gymnasium. The opportunity of this new approach has been proved using a questionnaire which has revealed the fact that more than 50% of the interviewees agree the idea of using audiovisual media in physical education lesson. The average score for the experimental group assessed by experts to athletics testing has increased by 226%, while the gym test has proved a rise of the average score by 208%. Results of equal importance and significant have been achieved also at handball test.

Keywords: Audiovisual media, physical education, testing;

1. Introduction

Nowadays it is very important that the information passed to students is properly perceived and it rendering process to be as accurate. The paper presents a method for increasing the students’ capacity of reception and acquiring information using audiovisual media in secondary physical education lesson.

Training students and maintaining interest towards physical exercise are the main tasks of physical education teacher. To perform, the teacher must act in full agreement with the desire and physical training of children and students, as a result of their physiological development (C. Ciorba, 2001, Wilcox, D. L. - Nolte, L. W. 2001).

In order to achieve these objectives it is important to permanently correlate the tasks of educational process (Ciorba, 2001, P. Sava, 1998).

It is necessary that the educational process is optimized using audiovisual media during physical education classes. (V. Gutu, V. Pisiaru, 1999).

One of the major objectives of the educational process is stimulating and guiding the formative process of secondary school pupils' interest to use audiovisual media (C. Ciorba, 1991, V. Bunescu, 1992, V. Gutu, V. Pisiaru, 1996, T. Badiu, 1997, G. Carstea, 2000, P. Sava, 1998, C. Ciorba, 2001). In order to achieve these goals, new methods should be chosen, modern ones, which combined with suitable traditional approaches, will allow upgrading and improving the educational process.

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2. Scope

The aim of this study is to present the opportunity of using unconventional tools in physical education classes, as audiovisual media and to prove its efficiency.

Some particular features, like students’ motor skills, their motivation, school facilities must be taken into account when the implementation of audiovisual media during physical education at secondary school is considered. The aim of physical education class is to achieve a superior level of psycho-motor skills.

Simply adding new data to physical education classes is not enough to ensure the modernization of physical education teaching process. By restructuring its entire content, by redefining traditional concepts and by applying new methods appropriate to science paradigm regarded as its dual aspect: integration and differentiation, fundamental and applied, we were able to develop this new approach of teaching process in physical education class.

The teaching process, in general and the knowledge transmission during physical education class, in particular, are strongly influenced by audio-visual information that plays an important role. Naturally, some of the audio-visual information that will be discussed below can be folded on other disciplines, but they find their true value in physical education teaching process, where the stimulus-response relationship acquires new meanings (A. M. Seward Barry, 1997, T. Armstrong, 2000, R. Dave, 1991).

3. The effectiveness of audiovisula media in physical education classes

3.1. Visual information

Pattern recognition is designed for identifying an object in order to extract fine indication of the shape, texture and form. It occurs in hairline distinction so, as the processed information is more accurate, the athlete has to clarify it much more, for example, identifying the plane of a stroke in tennis or identifying the sense of rotation of a ball in team sports.

Detection and analysis of motion in sports involves mainly the retinoic-colicular anatomical complex, which allows the apprehensibility of two important facts:

a) Scrolling the visual scene on the retina will lead to changes in the balance of the body that have to be compensated by the athlete. This information will allow analyzing the relative movements of the body with respect to the environment, when this is actively transported (e.g. running, acrobatic jump) or passively transported (e.g. by car, in cycling, in skiing).

b) Scrolling the moving objects (balls, animated equipment/tools) will stimulate the motion detectors in the peripheral retina, allowing the analysis of their kinetic features, especially the direction and the velocity.

Thus, we are able to explain the fact that athletes with visual acuity deficit yet fail great performance.

3.2. Audio information

During physical education classes, audio media can play an important role as long as they meet some basic rules that will optimize the teaching process and hence the effectiveness of physical education lesson (T. Armstrong, 2000, A. M. Seward Barry, 1997). Music should be used with caution at the right time and place, having regard to rules that do not transform the lessons into concerts, restrain teacher–student communication, to avoid attention loosening, not to create tense situations and loss of discipline and work ability.

We can conclude that for the teaching process in general, and for transmission of knowledge in physical education lesson, in particular, audio-visual information plays an important role (L. Jinga, 1999; D. Pop, 1999, C. Stroe, 2006).

3.3. Methods

For this study we have used the questionnaire approach (for the opportunity of using audiovisual media), the pedagogical experiment approach (for highlighting differences between a control group and an experimental one), the experts approach (for assessing student’s performance in both groups) and statistical methods for interpreting the
outcomes and conclusions. All the participants volunteered to participate in the study and gave their consent. The Ethics Committee has agreed to the procedures.

For the opportunity of using audiovisual media during physical education classes we have used the questionnaire method. The questionnaires provide subjective opinions on issues defined by very well-formulated questions. The interpretation may lead to generalization and extension of findings. The development of the questionnaire was performed according to the methodology proposed by M. Epuran, 1995 JR Thomas, JK Nelson, 1996 and G. Bontila, 1996.

The pedagogical experiment has aimed to highlighting differences between a control group and an experimental one, by introducing a change in the way of conducting a physical educational lesson, in order to verify the hypothesis. The pedagogical experiment has implied 61 students enrolled in two groups: a control group where the curriculum was covered without any special intervention, using standard methods and procedures to cover the content and an experimental group, where besides classical methods, the teacher has applied also audiovisual media. In all the moments of the lesson content, the presence of audiovisual merely complement classical methods of teaching and thus facilitate the teacher's efforts in achieving the objectives of physical education lesson. The application of audio-visual becomes part of the didactical approach, with clear influences on the way the students act during the lesson and on enriching their knowledge base. Thus, one can distinguish two categories of students, depending on how audiovisual media have been part of training: students with low audiovisual practice and students having high level of practice.

For assessing student’s performance in both control and experimental groups we have used the experts’ approach, in order to verify the efficiency of audiovisual media, providing algorithms and grades at the beginning and at the end of applying algorithms for: athletics - long jump with 1 and half step, gymnastics - jumping off classical support, handball - throwing the ball with added steps.

All these technical elements were fragmented in five phases. Each sequence is scored by 0-2 points.

4. Results and interpretation

The opportunity of this new approach has been proved using a questionnaire. Questioning was conducted on a sample composed of 91 physical education teachers, from different counties: A (34%), B (31%), C (15%) and D (22%). The respondents’ structure was the following: teachers with less than 10 years professional experience (21%), between 10-20 years (22%), between 20-30 years (47%) and over 30 years (10%).

The first group of questions of the questionnaire has been designed to test subjects’ opinions on the level of physical education in Romanian schools, about the importance of physical education classes, about the time spent on their education planning and the desirability of methodological changes. Regarding the new approach in terms of methodological physical education classes, according to respondents was unanimous (100%), all being of the opinion that it is necessary to reconsider this lesson of physical education on new modern principles.

The following set of questions of the questionnaire has been designed to highlight the methodological guidelines, to establish the schools facilities and degree of their implementation in education cycle. Questioned on methodological guidelines with greater efficiency, subjects were issued as follows: 34.07% of respondents considered that intuitive methodological guidelines are effective, 12.09% believe that traditional methods are effective, while 53.85% considers that the most effective are audiovisual media. 67% of the latter considered that the audiovisual media must be completed with the intuitive ones and 33% considered that they might be very well completed with other categories of methodological guidelines. According to 54.95% of the subjects interviewed, the use of audio-visual is more effective during physical education lesson, 38.46% believe that the efficiency is better in primary schools, 5.49% in high school and 0% in primary school.

The next set of questions of the questionnaire has pursued at how the audiovisual media might be used in physical education lesson, the moments of lesson they would be appropriate, the frequency of using audio-visual media, types of frequently used audio and video for achieving short time objectives. The replies of specialists have revealed the fact that 86.22% of the respondents agree the idea of using audio, while 72.53% of them like the idea of using visual aids in physical education lesson. According to subjects, the most used audiovisual media is music (86.12%) and combined video tools (72.53%) (fig.1) which should be used in all types of lessons (67%).
During the pedagogical experiment 61 students have been enrolled in two groups: a control group where the curriculum has been covered without any special intervention, using standard methods and procedures, and an experimental group, where besides classical methods the teacher has used audiovisual media.

![Figure 1. Highly effective audiovisual media](image-url)

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![Figure 2. The experts’ average marks](image-url)

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In order to outline the effectiveness of the new proposed approach, we have used the experts’ method, to evaluate the students’ skills and abilities. The experts have granted marks at the beginning and at the end of the lesson, for both groups. For better appreciation, the physical exercises have been divided into five phases and for each one a mark from 0 to 2 was granted. Each phase has been appreciated with points: "0" - unfulfillment; "1" - partial fulfillment; "2" - correct execution. The maximum grade for each exercise is 10.

Highly experienced teachers have been selected to be the experts in this study. Table 1 presents the results of the control group and the experimental group for the initial and final test.

<table>
<thead>
<tr>
<th>Test</th>
<th>Control group</th>
<th>Experimental group</th>
<th>Student’s test p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athletics</td>
<td>Initial test</td>
<td>2.413±0.184</td>
<td>2.62±0.161</td>
</tr>
<tr>
<td></td>
<td>Final test</td>
<td>7.587±0.233</td>
<td>8.56±0.146</td>
</tr>
<tr>
<td>Gymnastics</td>
<td>Initial test</td>
<td>2.465±0.184</td>
<td>2.647±0.151</td>
</tr>
<tr>
<td></td>
<td>Final test</td>
<td>7.387±0.178</td>
<td>8.25±0.166</td>
</tr>
<tr>
<td>Handball</td>
<td>Initial test</td>
<td>2.968±0.186</td>
<td>2.79±0.138</td>
</tr>
<tr>
<td></td>
<td>Final test</td>
<td>7.568±0.146</td>
<td>8.233±0.138</td>
</tr>
</tbody>
</table>

Statistical processing the data from the pedagogical experiment, we have noticed that the averages for gymnastics test have been very small at initial test for both groups (2.467 for experimental group and 2.465 for control group), while the final test has revealed averages of 8.25, and 7.387 respectively. The standard error (0.151-0.184) much smaller than the mean, certifies the accuracy of the marks that the experts have provided. For the athletics, we have noticed that the mean ranges between 2.62 and 8.56 for the experimental group, while for the control group the mean ranges between 2.413 and 7.587. For the handball test the progress for the experimental group was 5.433, from an average of 2.79 to 8.233, while for the control group, the progress was smaller, 4.69 (fig.2).

The correlation coefficient ranges between 0.745 and 0.998, proving the experts’ objectivity and professionalism. They have properly assessed the improvement of students’ techniques.

The Student test has revealed significant differences (p < 0.001) at the final test between the experimental and control group for all three types of lessons. It means that the use of audio-visual means has led to improvement of the techniques, i.e. a significant increase in the quality level of performances.

5. Conclusions

This study has proven that using audiovisual media in physical education class was able to improve Neuro-motor and sensory-perceptual skills, thus ensuring the development of abilities and motor skills.

The average score for the experimental group assessed by experts to athletics testing has increased from 2.62±0.161 to 8.56±0.146 (p<0.001), proving a significant progress. The gym test has proved also an improvement of the results, the average score rising from 2.67±0.15 to 8.25±0.16 (p<0.001). Results of equal importance and significant have been achieved at handball test. The average score for the experimental group assessed by experts has increased from 2.79±0.13 to 8.23±0.13 (p<0.001), proving also a significant progress.

The study has revealed the increase of students’ motor skills from both experimental and control groups. They have started from the same level of physical preparation, but better outcomes have been recorded by the experimental group, proving that applying audiovisual media during physical education classes is the significant factor influencing the performance enhancing.

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References

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