Improving the effectiveness of physical education lessons for hearing-impaired students using “Motion control XR” equipment

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Abstract

Purpose: increasing the effectiveness of physical education classes for students with hearing problems using the ”Motion control XR” device.

Methods: The study uses methods of analysis of scientific and methodological literature, questionnaires; pedagogi cal observations; biomedical methods, control tests char acterizing special preparedness, pedagogical experiment, mathematical and statistical data processing.

Results: The “Motion Control XR” equipment was explained to the students selected for the sports club of hearing-impaired students. For 1 month, they were taught the terms of the vibration codes available in this equipment and used them in practice for 6 months. “Motion Control XR equipment mainly includes 12 terms. These terms are the most frequently used words in the lesson process. In addition, the selected terms are words related to the reaction speed and attention of students.

Conlcusion: After 6 months of mastering the equipment, the results improved significantly. Of course, the fact that the lessons being studied consist of elements of two different sports also affects the percentage of total and motor intensity of the lesson. But the time to line up or similar teams is significantly reduced when the focus is on the table during the experiment. After the experiment, the results showed that the total lesson density was 80%. And the motor activity density was 55.5%. This is a much better result.

Keywords: hearing impaired students, lesson process, general intensity, motor activity intensity, timing, equipment, physical education, efficiency.

Introduction

Decree of the President of the Republic of Uzbekistan, dated 13.10.2020, № PD-4860 “On measures to further improve the education system and upbringing of children with special educational needs”, Decree of the President of the Republic of Uzbekistan, dated 05.11.2021, № PD-5280 “On the Program for the development of sports and educational institutions until 2025", Resolution of the President of the Republic of Uzbekistan, dated 29.04.2019, № PR-5712 “On approval of the Concept for the development of the public education system of the Republic of Uzbekistan until 2030", Decree of the President of the Republic of Uzbekistan, dated 24.01.2020. № PD-5924 “On measures to further improve and popularize physical culture and sports in the Republic of Uzbekistan”, Resolution of the Cabinet of Ministers of the Republic of Uzbekistan, dated 13.02.2019 № 118 “On Approval of the Concept of Development of Physical Culture and Mass Sports in the Republic of Uzbekistan for the period 2019-2023” the above-mentioned resolutions, decrees and other regulatory legal acts, play a certain role in achieving the goals and objectives of the study.

Before we move on to timing, let's define it. In physical education classes, timing is used to determine the overall and motor activity intensity of the lesson. From a pedagogical point of view, the total lesson density is determined by the proportion of time used correctly throughout the lesson. The motor activity intensity of the lesson is determined by the student's immediate motor activity and the time spent on the exercise.

The information obtained as a result of timing to a certain extent deepens the pedagogical analysis of the lesson, since it allows rational use of the time allocated to various types of activities.

The examiner of the lesson should analyze the following timing documents:

- timing report;
- total and motor density;
- text analysis of lesson density.

Before starting the lesson, the examiner must indicate in the protocol the timing of the lesson tasks, as well as the time allocated to various sections or parts of the lesson. To do this, the examiner must get familiarized with the student’s notes.

The next part of the protocol is filled out exactly during the lesson in the following form, filling in only two columns - “Content of student activity-2” and “end time of activity-3".

During the observation, the lesson is conducted on one student and it is recommended that his last name be recorded in the protocol.

Table 1. Programme-1

Parts of the lesson	Content of student work	End of activity time	Listening and observing the teacher	Doing exercises	Preparation of the training venue	Waiting in line	Time spent through the teacher's fault	Notion
1	2	3	4	5	6	7	8	9
Preparation time	*Lining up*	1^m	10^s	40^s			10^s	
	Greeting	$1^m 37^s$	10^s	5^s			22^s	
	Duty report	$1^m 48^s$	3^s	8^s				
	Announcement of the lesson topic	$2^m 06^s$	18^s					
	Walking exercises	$4^m 24^s$	22^s	$1^m 56^s$				
	Running exercises	$7^m 02^s$	42^s	$1^m 56^s$				
	Regrouping for general development exercises	$9^m 07^s$	28^s	12^s	22^s	$1^m 08^s$	15^s	
	1-GDE	$9^m 37s$	10^s	20^s				
	2- GDE	$10^m 09^s$	12^s	20^s				
	3- GDE	$10^m 39^s$	11^s	19^s				
	4- GDE	$11^m 12^s$	12^s	21^s				
	5- GDE	$11^m 42^s$	10^s	20^s				
	6- GDE	$12^m 16^s$	13^s	21^s				
	7- GDE	$12^m 51^s$	14^s	21^s				
	8- GDE	$13^m 38^s$	10^s	19^s				
	9- GDE	$14^m 04^s$	8^s	18^s				
	10- GDE	$14^m 31^s$	10^s	17^s				
Main part	*1) Training in the technique of back and forth somersaults in wrestling.*	$21^m 50^s$	$3^m 11^s$			$1^m 05^s$	$3^m 03^s$	
	2) Performing the forward somersaults	$28^m 13^s$	56^s	$3^m 05^s$		$2^m 02^s$		
	3) Performing the backward somersaults	$37^m 18^s$	$2^m 12^s$	$2^m 36^s$		$3^m 10^s$	$2^m 07^s$	
Final part	*1) Lining up*	$39^m 10^s$	50^s	$1^m 02^s$				
	2) Performing breathing and exhaling exercises while walking	$43^m 50^s$	40^s	$3^m 20^s$				
	3) Rating and encouragement.	$44^m 25^s$	35^s					
	4) Giving homeworks	$44^m 45^s$	15^s					
	5) Farewell	45^m	5^s					

The second column clearly outlines the content of the teacher's activities and the sequence of classes. For example: Lining up. Report. The teacher's explanation of the lesson objectives. Walking. Explanation of the exercises.

$$\frac{31*100}{45} = 68{,}8\%$$

General development exercises should be written in simple or short phrases — bends, jumps, etc.

The third column records the time of each action performed using a stopwatch. For example, if it takes a student 2 minutes and 10 seconds to line up and give a report, the time spent on this activity is written in the column. The time spent by the teacher explaining and demonstrating the exercises, preparing visual aids, preparing the learning space, and performing the exercises by the student is accurately recorded and recorded in the appropriate column.

$$\frac{18*100}{45} = 40\ \%$$

After the lesson ends, teachers should develop time data. To find out the exact time spent on each lesson, subtracting the next stopwatch reading from the previous one is needed.

Fig 2. Programme-2

Parts of the lesson	Content of student work	End of activity time	Listening and obsereving the teacher	Doing exercises	Preparation of the training venue	Waiting in line	Time spent through the teacher's fault	Notion
1	2	3	4	5	6	7	8	9
Preparation time	Lining up	50^{s}	10^{s}	40^{s}				
	Greeting	1^{d}	5^{s}	5^{s}				
	Duty report	1^{d} 18^{s}	3^{s}	2^{s}		13^{s}		
	Announcement of the lesson topic	1^{d} 48^{s}	30^{s}					
	Walking exercises	3^{d} 36 ^{s}	10^{s}	2^{d} 14^{s}				
	Running exercises	6^{d} 10^{s}	15^{s}	2^{d} 19^{s}				
	Regrouping for general development exercises	6^{d} 25^{s}		15^{s}				
	1-GDE	6^{d} 53s	10^{s}	18^{s}				
	2- GDE	7^{d} 23s	10^{s}	20^{s}				
	3- GDE	7^{d} 49^{s}	8^{s}	18^{s}				
	4- GDE	8^{d} 19^{s}	10^{s}	20^{s}				
	5- GDE	8^{d} 43^{s}	8^{s}	16^{s}				
	6- GDE	9^{d} 13^{s}	10^{s}	20^{s}				
	7- GDE	9^{d} 43^{s}	10^{s}	20^{s}				
	8- GDE	10^{d} 13^{s}	10^{s}	20^{s}				
	9- GDE	10^{d} 39^{s}	8^{s}	18^{s}				
	10- GDE	11^{d} 09^{s}	10^{s}	16^{s}				
Main part	1) Learning the technique of receiving the ball from above and below in volleyball	18^{d} 35^{s}	6^{d} 05^{s}		1^{d}21^{s}			
	2) Learning the technique of receiving the ball from above in volleyball	29^{d} 05^{s}	30^{s}	6^{d} 40^{s}		2^{d} 20^{s}		
	3) Learning the technique of receiving the ball from below in volleyball	41^{d} 10^{s}	20^{s}	7^{d} 30^{s}		3^{d}15^{s}		
Final part	1) Lining up	41^{d}25^{s}		15^{s}				
	2) Performing breathing and exhaling exercises while walking	43^{d} 50^{s}	15^{s}	2^{d} 15^{s}				
	3) Rating and encouragement.	44^{d} 35^{s}	40^{s}					
	4) Giving homeworks	44^{d} 55^{s}	20^{s}					
	5) Farewell	45^{d}	5^{s}					

The next part of the protocol is filled out during the lesson in the following form, filling in only two columns – "content of the student's work-2" and "time of work-3".

Results and discussion

During the observation, the lesson is conducted on one student. That's why we chose Yasmina Yusopova. The second column clearly outlines the content of the teacher's work and the sequence of training. General development exercises are written in a simple abbreviated form, that is, in capital letters.

The third column records the time of each action using a stopwatch. The time spent by the teacher explaining and demonstrating the exercises, preparing visual aids, preparing the learning space, and performing the exercises by the

student was carefully recorded and entered in the appropriate column.

After the lesson ends, you need to develop time data. To find out the exact time spent on each lesson, you need to subtract the next stopwatch reading from the previous one.

Time spent on organization, that is, activities not related to solving educational tasks or violating discipline, early termination of the lesson, breaks during the lesson as a result of a student leaving the lesson without a valid reason — all this is included in the unjustified time

$$\frac{36*100}{45} = 80\%$$

of the lesson process. When calculating the total intensity of the lesson, the 45 minutes allotted for the lesson were taken as 100%. 31 minutes of pedagogically justified time were spent, the calculation is as follows:

The total lesson density was 68.8%. Motor intensity is a special indicator in physical

$$\frac{25*100}{45} = 55{,}5\ \%$$

training.

It took 18 minutes to complete the actions, the calculation is as follows:

The motor intensity of the lesson was 40%. Having determined the general and motor intensity of the lesson, it should be analyzed. The highest level of overall intensity is the correct and accurate use of all 45 minutes. The optimal level of motor intensity, whether high or low, depends on several factors, including the task of the lesson and the material provided for the exercise.

After using this equipment, a timing survey of 6th grade students was conducted. The main reason for choosing this class was that it was attended by children who were selected specifically for the experiment and studied at our sports club.

Yasmina Yusupova is observed during timing. 36 minutes of pedagogically justified time was spent, the calculation is as follows:

The overall lesson intensity was 80%. It took 25 minutes to complete the actions, the calculation is as follows:

The motor activity of the lesson was 55.5%.

Conclusion

The timing method in physical education lessons is the most convenient and optimal way to determine the overall and motor intensity of a lesson. We chose one of the physical education lessons conducted by 6th grade students, and when calculating the total lesson intensity, it was 68.8%. The motor activity density, on the other hand, was 40%. Of course, this is a good result. But in the course of observations, it was found that most of the time is spent on commands (terms) used during the lesson. We have developed MOTION Control XR equipment and put it into practice to improve this process.

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