

**IMPROVING PHYSICAL EDUCATION LESSONS IN GENERAL SECONDARY
SCHOOLS THROUGH THE USE OF INTERACTIVE TRAINING EQUIPMENT**

Uraimov Sanjar Ruzimatovich

Doctor of Pedagogical Sciences (DSc), Professor

Fergana State University

Orcid ID: 0000-0001-5890-4457

Abdubannobov Mukhammadyusuf Sherali ugli

Teacher of Physical Education and Sports,

International Institute of Food Technology and Engineering;

PhD Candidate, Namangan State University, Uzbekistan

Orcid ID: 0009-0001-6039-4414

Abstract: This article explores the improvement of physical education lessons in general secondary schools through the use of interactive training equipment. The main emphasis is placed on supporting students' healthy physical development and proper posture formation, and achieving these goals more efficiently through interactive simulators. Another important objective is to enhance student engagement in physical education lessons and foster a competitive and health-oriented environment. Modern interactive simulators allow multiple students to exercise simultaneously, significantly increasing lesson density.

Keywords: interactive simulators, physical education, general secondary education, digital technologies, virtual sports training, sensor systems, student activity, pedagogical innovations, fitness technologies, individualized approach, gamified training, teacher–technology cooperation, healthy lifestyle, training effectiveness, motivation in education.

INTRODUCTION

In recent years, reforms aimed at developing physical education in general secondary schools have emphasized establishing a healthy and active lifestyle among students. The integration of digital technologies into the educational process has brought physical training to a new stage of development. In particular, interactive simulators are recognized as effective tools for improving students' motor skills, monitoring exercises, and enabling detailed analysis of physical performance.

The growing experience of using interactive simulators in many schools demonstrates that physical education is increasingly being organized using modern approaches. As a result, examining the impact of such devices on students' physical development, simplifying teachers' methodological work, and improving lesson effectiveness is of great scientific and practical importance. Additionally, the use of simulators can prevent various disorders in students with minor health issues, such as spinal or muscular condition

This article analyzes the pedagogical, methodological, and innovative opportunities of using interactive simulators in general education schools and evaluates their role in improving physical training effectiveness.

Aim of research: Increasing lesson density and enhance a competitive healthy environment in general secondary schools through modern training equipment.

- Tasks of research:**
1. Studying various types of interactive training devices and their didactic potential; to identify functional features of contemporary equipment applied in physical education lessons.
 2. Analyzing the influence of interactive equipment on students' physical preparedness, movement coordination, correct execution of exercises, and health-enhancing outcomes.
 3. Developing a methodology for organizing physical education lessons using interactive devices and provide methodological recommendations for effective use.
 4. Establishing criteria for assessing lesson effectiveness, including digital monitoring of training results and measurement of students' physical development indicators.
 5. Identifying advantages and challenges associated with implementing interactive training systems, including technical, methodological, and organizational issues.
 6. To determine the skills and competencies teachers need for effective integration of interactive equipment and develop recommendations for professional development.
 7. To formulate conclusions for improving physical education lessons through interactive systems.
 8. To propose a practical implementation model for school environments.

A simulator - is a training device used to learn and improve the technical skills required for operating machines or mechanisms. Simulators are employed to provide profession-specific training for various specialists, including the preparation of pilots and astronauts, as well as in the military for enhancing the combat readiness of personnel. Simulators exist in both simple and complex forms.

The primary function of sports simulators is to help students eliminate excess body weight, promote the healthy development of muscle tissue, reduce fat mass, improve muscular aesthetics, and strengthen the cardiovascular system. Simulators are generally divided into two major categories: cardio and strength-training equipment. Home-based cardio simulators provide aerobic load and help burn extra calories, whereas strength-training simulators target specific muscle groups and contribute to the formation of an athletic physique. Of course, achieving visible results requires using both types in combination.

Below are the simulators that I recommend, as they have a direct positive impact on the physical development of young people.

These include:

1. For fat loss and cardiovascular training:

Treadmill – An excellent tool for rapidly burning calories and strengthening the cardiovascular system.

Elliptical trainer – Places less stress on the joints compared to running, yet provides highly effective cardio training.

Exercise bike – Beneficial for strengthening the leg muscles and improving heart rate regulation.

2. For muscle growth and strength development:

Dumbbells and barbells – Universal equipment suitable for various exercises and considered the primary choice for bodybuilding and strength training.

Multistation (gym station) – Allows targeted training of multiple muscle groups.

Smith simulator – A safe and convenient option for shoulder, chest, and leg exercises.

3. For abdominal muscle training:

Slant board for abdominal exercises – One of the most effective tools for targeted abdominal training.

Ab roller (wheel) – Helps strengthen core muscles and improve balance.

Plank platform – A convenient tool for strengthening stabilizer muscles.

4. For home-based training:

Jumping rope – A simple yet effective tool for fat loss and leg muscle development.

Bodyweight-based trainers (TRX, resistance bands) – Suitable for exercising comfortably even in small spaces.

Rowing simulator – A good option for improving cardio performance and increasing muscular strength.

Below, I outline the positive changes that occur in every student as a result of exercising on training equipment:

1. Reduces the risk of injuries.

Exercises performed on simulators are carried out under greater control, which prevents excessive strain on the joints and significantly reduces the likelihood of incorrect movements.

2. Enhances student motivation.

Interactive simulators make the training process more engaging; they stimulate competition, interest, and encouragement, and allow students to see their results immediately.

3. Creates an individualized approach.

Exercises can be selected according to each student's health condition, level of preparedness, and physical abilities. This, in turn, increases the overall effectiveness of the lesson.

4. Develops physical qualities comprehensively.

Simulators help cultivate strength, speed, agility, balance, coordination, and reaction ability in a well-rounded and balanced manner.

5. Saves time and improves safety.

Simulators enable students to perform exercises according to precise parameters—such as time, distance, and number of repetitions—while allowing the teacher to control safety with greater ease.

6. Provides psychological benefits.

Exercise reduces stress, elevates mood, strengthens self-confidence, and increases interest in physical education.

Training equipment allows a significant portion of lesson time to be devoted to students' direct physical activity. In traditional lessons, passive processes such as waiting in line, standing idle, or simply listening to the teacher's instructions often occupy much of the class. Simulators, however, employ a station-based approach that engages the entire class in active movement simultaneously. As a result, lesson density increases from an average of 30–40% to as high as 70–80%. Higher density is a key factor in the effective development of physical qualities.

Secondly, simulators make it possible to manage training loads on an individual basis. Since each student differs in physical preparedness, health condition, and physical capability, simulators allow loads to be set with far greater precision compared to traditional methods. This minimizes excessive strain and the risk of injuries, while ensuring that every student participates actively according to their abilities.

Thirdly, the introduction of interactive and digital simulators not only makes the lesson more engaging, but also enhances the objectivity of monitoring. Modern simulators record heart rate, exercise duration, number of repetitions, energy expenditure, and other indicators in real time. When both the student and the teacher observe these metrics, it strengthens competition, responsibility, self-improvement, and overall engagement. Consequently, the lesson becomes more meaningful and productive.

Fourthly, simulators help improve the structure of the lesson itself. Warm-up, main exercises, and the concluding phase can be organized systematically, with rapid transitions and efficient time planning that broaden the teacher's methodological capabilities. Dividing exercises into stations, grouping students, and applying rotation techniques ensures that each student remains actively involved. Simulators also make it easier to perform movements safely, correctly, and under full supervision.

Fifthly, simulators have a positive impact on students' psychological well-being. The engaging nature of the lesson, the presence of game-like and competitive elements, and the ability to see results immediately all enhance motivation. Students perceive simulator-based lessons as modern, convenient, and beneficial. This significantly increases their interest in physical education and their level of participation.

According to the results obtained, lessons conducted with simulators noticeably improve students' physical qualities—strength, endurance, speed, agility, and coordination. Furthermore, simulators play an invaluable role in cultivating healthy lifestyle habits and fostering a genuine interest in sports. Most importantly, such lessons ease the teacher's workload, increase overall lesson effectiveness, and enrich the educational process through innovative approaches.

PRACTICAL RECOMMENDATIONS:

1. Establish training zones in schools.

Each school should create a small sports area equipped with at least 5–7 types of simulators designed to develop strength, endurance, and speed. Interactive simulators—such as cycle simulators, treadmills, and sensor-based jump platforms—should be introduced gradually.

2. Organize lessons using the station method.

Divide the class into 4–6 groups and assign each group to a separate simulator station. By applying a 2–3 minute rotation system, all students can remain physically active simultaneously throughout the lesson.

3. Adjust training loads individually.

The teacher should gradually increase the exercise intensity on simulators according to each student's health status and level of physical preparedness. Simplified modes should be provided for weaker students, while more advanced options should be offered for well-prepared learners.

4. Implement an interactive monitoring system.

Based on simulator indicators, maintain a small electronic log recording students' performance during each session. Analyze the results collectively with the class and provide appropriate encouragement.

5. Introduce specialized professional development courses for teachers.

Organize training seminars for physical education teachers on the methodology of using simulators. Conduct practical sessions covering safety rules, load standards, and monitoring technologies.

6. Strengthen safety measures during training sessions.

Simulators should undergo regular technical inspection. Students must be provided with brief, clear instructions on the proper and safe use of each device.

7. Enrich training sessions with game-based, competitive, and test activities.

Introduce interactive running competitions, jump tests, and cycling simulator rating systems. Organize motivational activities that promote higher levels of physical activity among students.

Conclusion

Research and practical observations demonstrate that lessons organized with the use of simulators not only increase lesson density but also help cultivate qualities such as independence, self-control, discipline, and responsibility among students. These tools create the conditions for lessons to proceed steadily, rhythmically, and efficiently. Moreover, interactive simulators strengthen the spirit of competition and make physical exercises more engaging. As a result, students' motivation toward the subject increases, and their commitment to a healthy lifestyle becomes more firmly established.

In particular, when exercises are organized using the station method, every student remains in constant motion. This allows 70–80 percent of lesson time to be devoted to active physical work. Compared with traditional lessons, classes that incorporate simulators stand out due to saved time, more balanced distribution of workload, and safer, more accurate execution of movements. Therefore, the widespread integration of simulators into the educational process represents one of the most promising directions for improving the quality of physical education.

According to the outcomes obtained, simulator-based lessons significantly enhance students' physical qualities — strength, endurance, speed, agility, and coordination. In addition, simulators play an invaluable role in fostering healthy lifestyle habits and increasing students' interest in sports. Most importantly, such lessons reduce the teacher's workload, increase overall effectiveness, and enrich the educational process through innovative approaches.

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