

female students. The study suggested females had a lower level of aerobic fitness as compared with male students [6].

Conclusion. This study also concluded that significant difference was found between male and female students on Physical parameters and VO₂max. This study also concluded that body height, body weight and BMI of the male is significantly higher value than female and percentage of body fat significantly greater value in female than male. The male students' shows a significantly higher value of VO₂ max than female.

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INNOVATIVE APPROACH TO THE PHYSICAL EDUCATION OF STUDENTS USING AN INTERACTIVE CLIMBING WALL

Keywords: *interactive climbing wall, motor movement, professional training, improving the quality of education*

The active introduction of innovative products and technologies into the socio-economic system has become a key factor in economic development and improving the quality of life of the population in modern conditions. Advanced achievements of science and technology make it possible to widely introduce innovative technologies in education and sport.

It is innovative technologies that can become a positive factor that will improve the training of athletes, will contribute to the spread of the ideology of a healthy lifestyle and meaningful leisure activities.

In modern science, there are many studies on the issues of innovation in sports activities [1-2]. The last decades in the world and Ukraine there has been an active development of rock climbing. 95 % of climbing sections in Ukraine are sections in universities.

Climbing walls attracted the attention of students because with their help you can not only improve your figure and tighten all muscle groups, but also get a dose of adrenaline and great pleasure.

Research by scientists has shown that activities done during artificial wall climbing have been causing positive development in problem solving skills and perception levels of university students.

The creation of an interactive climbing wall has become an innovation in education, which combines innovative technologies, educational tasks and physical activity.

For the first time, a climbing wall with an interactive surface was created by computer scientists from Finland. Created in Finland, the system is designed to help beginners learn to climb walls, and qualified athletes to successfully complete climbing distances.

An interactive climbing wall is a climbing wall complete with hardware and software. The original concept combines body-tracking technology with engineered graphics to turn any climbing wall into a huge interactive surface – meaning computer games and sport climbing are actually enriched with new features, offering a variety of familiar activities (from fun to fun), difficult training tests and competitions) [3].

In order to climb the smart wall, you do not need to put on any sensors. The rope-free setup works with a ceiling-mounted projector and a camera system that fully tracks the climber's movements. On the wall for bouldering (a type of free climbing without insurance to a small height) – graphics are designed. With the help of images, climbers get clues on which ledges of the wall are best to grab onto. Climbers can choose games with different levels of difficulty. You can complete the task both individually and in pairs, complicating the tasks and accelerating the speed of the exercises.

This idea has become quite popular in the world and specialists from many countries began to develop interactive climbing walls [4].

In 2018, Ukraine developed its own universal product. This is a compact, universal OneTwoClimb climbing wall with a universal climbing application in which you can find any climbing wall (or offer to add your own), it is possible to keep statistics of your successes, conduct competitions (challenges) through the application, share the routes created in the application among friends, see the rating participants and more.

The 12Climb app for climbers has the following features:

1. View all climbing walls in Ukraine with addresses;
2. Tracking your own achievements, marking the routes you have traveled, calculating your rating and calories burned;
3. Convenient weekly achievement statistics;
4. Holding competitions and festivals;
5. Creating your own routes in the application on climbing walls (takes less than 1 minute);
6. Working with the 12Climb board simulator (creating your own tracks, tracking the passage of already created tracks);
7. Using QR codes to quickly mark passages.

For each goal, a different climbing training program can be built and one or another skill will be developed.

In total, several directions can be distinguished:

Strength – a combination of maximum strength and speed – the ability to make heavy movements quickly and powerfully (long intercepts, jumps, etc.); the ability to perform high-intensity work.

Stamina – the ability to do low-intensity work for a long time. Endurance depends on how long you can stay on the wall.

Strength endurance – the body's ability to resist fatigue during prolonged strength work; for a climber – the ability to make many heavy intercepts in a row (without rest between intercepts).

Technique – precise work of arms and legs, smooth movements, precise body positions, a certain rhythm of movements.

Work on the project – work on a difficult route for a long time: the ability to read the route, find the optimal alignment, perform movements after many attempts and errors; morale on difficult routes.

Climbing «on the capacity» – means to climb a lot for a certain (not very large) period of time; useful for developing strength, endurance, the ability to «read» the route.

For each direction, you need to choose the right «conditions» of training, in particular for climbers – these are the appropriate routes or holds for vises, etc. In the 12Climb application, you can specify the characteristics of the route and then any climber will be guided that he wants to climb to improve his chosen skill (strength, technique, training, dynamics, etc.).

Today, developers have offered a working basic functionality on the Play market, and you can also install the application on Android and iOS.

In general, more than 40 climbing walls worked in Ukraine, mainly in the Kiev and Sumy regions. This development has been introduced into some educational institutions in Poland.

Recently, the National Climbing School was built in South Korea, a specialized educational institution that provides educational services in mountaineering and mountain-forest trekking.

The National School of Climbing offers safe outdoor climbing training programs that are suitable for families, teens and children alike. They also present courses of varying difficulty up to a course for professionals.

The climbing wall includes external walls of varying difficulty, high-speed walls, an artificial sheer rock, and an interactive 12Climb bouldering climbing wall with LED lighting.

Literary analysis and personal experience have shown that the introduction of climbing walls in secondary schools, educational institutions of vocational and higher education allows you to conduct classes both in physical education classes and outside of school hours. This allows you to maintain: a healthy interest of young people in sports, support general physical development, popularize active recreation, and also increase the chances of showing talented and capable young people for their further professional or sports career [5-7].

Let's summarize the advantages of using an interactive climbing wall:

- the possibility of its use in preschool educational institutions, schools, child development centers, private sports centers for children and youth;
- activities done during artificial wall climbing have been causing positive development in problem solving skills & perception levels of university students.
- promotes simultaneous mental and physical development;
- contributes to the development of speed, coordination abilities, endurance and strengthens all muscle groups, which contributes to increasing human performance and reducing fatigue;
- in children of preschool and junior school age, interactive sports games develop logic, attention, help children consolidate knowledge about colors, shapes and learn to count;
- taking into account individual characteristics of the child (physical development, speed of reaction) and individual characteristics of the athlete (level of technical and physical preparation, morphological and functional characteristics, mental state);
- the possibility of using it in classes with children who have limited health opportunities (delayed psychomotor development);
- selection of tasks based on the level of game complexity (individual approach);
- a selection of different options (thousands) of rocks and routes that can be displayed on one wall using a remote control;
- accessibility for the busy population of different age categories.

Thus, the use of interactive climbing walls is widespread in Ukraine and the world, which contributes to the popularization of rock climbing (as a sport) and activates the physical activity of students.

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STUDENTS' EXPERIENCE OF USING ERGOMETER «CONCEPT-2» DURING INDEPENDENT PHYSICAL EDUCATION IN THE PROCESS OF EDUCATION IN UNIVERSITY

Keywords: *ergometer «Concept-2», independent work, training program, level of physical fitness*

Today it is impossible to imagine the life of an active person without the use of rowing machines. The simulator is used in gyms and fitness clubs, hospital rehabilitation departments and the NASA astronaut-training center, army and police gyms, on oilrigs in the North Sea and in thousands of homes and apartments.

Today there are 35 «dry rowing» Europe Championships and more than 120 in the world. Active users are people of different age categories, and especially students.

Ukrainian students became active participants in rowing competitions on «Concept-2». After all, the use of rowing machine is effective both in training athletes and for recreational purposes, regardless of the time of year. «Concept-2» has become an integral means of special and general physical training [1-3].

If walk into any Cross Fit box or weightlifting gym, and you'll find the rowing machine is virtually always occupied. That's because smart trainees know just how amazing it is as a «clean-up» workout after an intense weight training session. Using a «Concept-2» is also great because it is low impact, meaning it is great for people with injuries and bad knees.