

THE ROLE OF A MODERN SIMULATOR IN INCREASING PHYSICAL TRAINING OF RESCUE SERVICES

¹Djumaev S.K., ²Islamov S.I.

¹Head of “Emergency Prevention “Department, The Ministry of Emergency Situations of the Republic of Uzbekistan, Doctor of Philosophy of Technical Sciences, Associate Professor

²Ministry of Emergency Situations of the Republic of Uzbekistan, Independent researcher, Deputy head of the department for organizing service and combat training of rescue forces

<https://doi.org/10.5281/zenodo.12110395>

Abstract. *Emergency responders, including firefighters, paramedics, and search and rescue teams, are expected to operate efficiently and effectively in a wide array of challenging and often life-threatening situations. To meet these demands, physical training is a critical component of their preparation, ensuring that these professionals possess the strength, endurance, and agility necessary to perform their duties.*

Keywords: *emergency responders, including firefighters, paramedics, and search and rescue teams, decision-making, situational awareness, and stress management.*

Traditional training methods, while invaluable, have limitations in replicating the complex and dynamic environments that rescuers face in the field. This is where modern simulators come into play. By leveraging cutting-edge technology, simulators offer a realistic, immersive, and safe training environment that can closely mimic real-life scenarios. These advanced systems enable rescue personnel to practice and hone their skills in a controlled setting, allowing for repetitive practice and immediate feedback, which are crucial for effective learning and skill retention.

Modern simulators are equipped with features such as virtual reality (VR), augmented reality (AR), and sophisticated simulation software that create highly detailed and customizable training scenarios. These tools not only enhance the physical training of rescue services by improving muscle memory and physical conditioning but also contribute to better decision-making, situational awareness, and stress management under pressure. As a result, simulators play a vital role in preparing rescue teams to respond with precision and confidence, ultimately leading to more successful outcomes in real-world emergencies.

In this context, the role of modern simulators extends beyond mere physical training; they are integral to a comprehensive training strategy that encompasses both the physical and cognitive aspects of emergency response. This introduction explores the significance of these advanced training tools in elevating the preparedness and performance of rescue services, ensuring they are ready to meet the challenges of their critical and often heroic work.

It is not a secret to anyone that in emergency situations, the emergence of various unexpected risk factors creates difficult situations for rescuers. One of these factors is traveling in full gear when performing tasks involving overcoming obstacles in destroyed buildings, working in smoky areas with limited visibility, special stairs and heights, and rescuing people and property in such situations. [1]

All this requires the rescuer to develop important professional qualities, such as agility, strength, endurance, coordination of movements, and speed of reaction. To develop these qualities, firefighters require a high level of physical fitness.

First of all, the content and essence of classes based on modeling extreme conditions for performing professional and practical tasks are related to its certain structure. [2]

Therefore, the scientific substantiation of teaching methods within the framework of vocational and physical education, based on modeling complex conditions of professional activity, is one of the pressing issues today. To this end, the authors proposed new methods of teaching and training rescuers in emergency situations and organized work to develop methods for their application.

Firstly, the use of modern simulators in the preparation and training of rescuers in emergency situations;

Secondly, to develop optimal options for increasing the psychological preparedness of rescuers in emergency situations.

The goal of developing the first modern simulator is to train the special physical qualities of future professional rescuers by simulating their actions in difficult conditions using various tools.

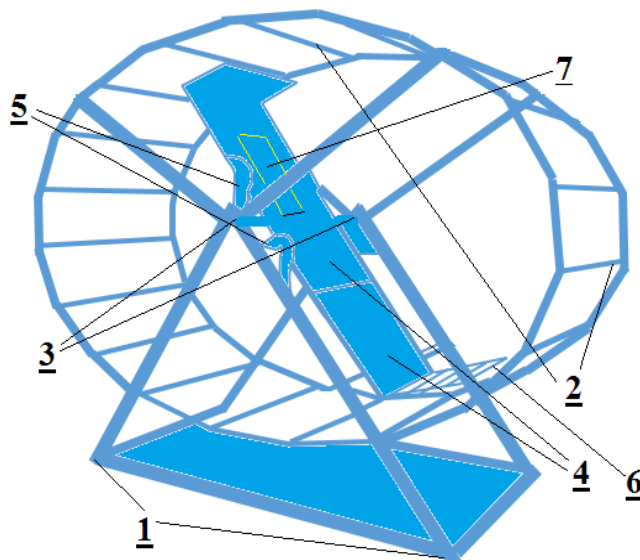
The novelty of the scientific idea lies in the development of methods for psychological and physical training of rescuers in emergency situations, the preparation of a modern training device (Fig. 1) and the modeling of situations close to real ones using special sets of exercises. in the simulator. [3]

The simulator consists of the following parts:

A ring-shaped closed ladder (2), mounted on four solid supports (1), and a rotating shaft (3) are installed in their center, and a seat (4) is symmetrically placed on the rotating shaft inside the ring-shaped closed ladder. . Special straps (5) for fixing the rescuer on the seat, an adjustable base to suit the height of the rescuer.

(6) and a special place (7) is prepared for personal respiratory protection equipment.

Figure 1. Design of a modern simulator



The followings can be done with the help of the simulator:

1. The rescuer is attached to the seat with special belts and turns the seat back and forth three times without the help of arms and legs. This exercise helps control, strengthen and develop the rescuer's vestibular apparatus, as well as move the body without arms and legs.

2. Besides that, the rescuer can move up and down in the simulator using only his hands, and move forward at speed (acceleration takes into account time). These exercises help develop hand coordination, as well as dexterity, endurance and strength.

3. The cadet moves forward and backward with full hand-foot coordination along the endless staircase. This exercise is designed to develop speed endurance, agility and the ability to climb tall buildings.

4. Play sports with a mask and dark glasses. In this exercise, the ability to see is temporarily limited and a test exercise is performed with sounds that affect the mental state of the rescuer. The exercise can be performed in a smoky room or in the absence of natural artificial light.

By summarising it can be suggested that the developed technical device of the simulator provides a simultaneous solution to the problems of mental, technical and physical training. The use of special exercises in difficult conditions by gradually increasing loads during training sessions contributes to the development of not only physical qualities, but also professional skills and abilities.

REFERENCES

1. Sharabanova I.Yu., Shipilov R.M., Kharlamov A.V. Application of new methods of training and education of rescuers working in emergency situations // Modern problems of science and education. – 2014. – N. 4.
2. Psychological selection of candidates for service in LLC "GPS of Russia". – M.: VNIPO, 2003. – 148 p.
3. Shlenkov A.V. Psychological support for professional training of employees of the State Fire Service of the Ministry of Emergency Situations of Russia: Dis. Doctor Psych. Sciences / A.V. Shlenkov. – St. Petersburg, 2009. – 282 p.