

Effects On Performance By Electronic Training Equipment For Young Karatists

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ABSTRACT

The use of modern computer technologies makes it possible to increase the effectiveness of the training process, the efficiency and accuracy of the procedure for controlling the special physical fitness of karatekas. This research is devoted to the issues of studying the possibilities of using the electronic sparring system "Zemita" for use in the training process and control of the special physical readiness of young karatekas. The broad possibilities of using the studied equipment for the improvement and assessment of the special physical fitness of these athletes, for holding competitions and recreational activity have been established. The levels of special endurance of 7-8 years old young karatekas have been determined.

KEYWORDS: karate, electronic sparring system, control, special physical fitness, levels.

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Introduction

It is known that today information technologies and electronic devices have already begun to be intensively introduced into the field of sports. We can see how they successfully penetrate all areas of training athletes from beginners to highly qualified athletes. In single combats, the development and implementation of new elements of the electronic training environment are one of the main trends in the scientific support of sports training. They are actively implemented to objectify refereeing, mastering and improving technique and tactics, improving the safety of the competition and increasing their entertainment and objectivity. An important direction in the research and development activities of specialists in single combats is the creation of new simulators that provides quick feedback during training, supplying the coach and the athlete with the necessary information about the level of fitness of athletes.

The methods of using training devices and computer programs in the educational and training process of karate players are being improved by modeling tactical situations with different techniques of attacking actions under the conditions of the knock factor with using computer programs which allowing to determine the basic biomechanical parameters and analyze the technique of attacking actions.

For the process of sports training, electronic devices are actively developed and patented, which allow practicing blows with hands and feet, measuring the speed and force of blows by limbs, which is of fundamental importance for control of fitness in single

combats. New types of simulators for single combats (karate, boxing, taekwondo) with built-in impact force recorders are being developed, in which accelerometric sensors and angular velocity sensors are used to measure the movements of a dynamometric bulb, which makes it possible to create a device with a longer measuring surface (up to 1.8 m) than previously used strain gauge instruments. Such devices can effectively and accurately measure the force of impacts both with the upper and lower limbs.

Equally relevant are the issues of the development of special physical qualities of karatekas, criterion justifications for their improvement and evaluation, where there is ample scope for the use of electronic training systems and devices. The release of a new electronic system for training and evaluation of special abilities in martial arts by the South Korean firm "Zemita". This device was used in the research of A.V.Mutyev and N.P.Mishin which was conducted in taekwondo athletes.

The technique included a theoretical analysis of the possibilities of using the electronic sparring system "Zemita" in the training process of young karate athletes (according to the instructions on the use of the system), practical testing and development of levels of assessment of special endurance of young karate athletes in the conditions of special physical training competitions. In addition, research in this area, including A.V.Mutyeva and N.P. Mishin.

Testing of the level of special endurance was conducted in a sparring method. It consisted of the maximum number of punches within 30 with electronic

registration devices of the electronic sparring system "zemita" leading the countaccurate strikes of sufficient force. These athletes have been statistically processed, after that, for young karate athletes 7-8 years were developed levels of special endurance, which were calculated by the method of signal deviations.

Using a Bluetooth transmitter through special transmitters, the system sends data to a mobile device with software that allows you to perform various measurements and set the parameters of training tasks. Applications allow you to evaluate and provide operational information to the coach about such important parameters of special physical fitness of athletes as:

- latent response time when striking a sound or light stimulus;
- time spent on a given number of strikes and their average speed to evaluate special speed abilities;
- the maximum number of strokes and their average speed for a certain (given) time to evaluate special endurance;
- determination of the maximum impact force;
- the ability to register blows of a given force with a maximum speed to assess the special speed and strength abilities of athletes.

The electronic sparring system "zemita" includes equipment used in the usual training process in karate: protective vests, racket paws, pillows for strikes and others, equipped with sensors that register the force of strikes (figure).

At the same time, the capabilities of the applications allow the trainer to independently simulate the testing parameters by setting the types and number of impacts to register, the testing time, the threshold force of the strike registration.

Such capabilities allow active use of the electronic sparring system not only when assessing the level of special physical fitness, but also in the training process, allowing to set a variety of modes of training tasks and immediately receive operational information about the results of their performance.

The research results showed significant interest of participants, as well as a high emotional background of the audience during such sparring competitions.

Mathematical processing of test results data showed that the number of strikes in 30 seconds was in the range of 60-83 strokes, the average was 71.5 ± 3.41 strokes. On average, young athletes hit 2.2 to 0.05 strokes per second.



Fig. Electronic sparring -

Levels of special endurance of young karate players 7-8 years

Test	Levels				
	High	Above the average	Average	Below the average	Low
Number of strikes per 30 s (times)	80 and above	75-79	70-74	63-69	55 and below

The study group revealed 26.84% of young athletes with low level of special endurance were identified: 12.70% - with a level below average; 49.00% had an average level; 7.38% - above average and 4.08% - high level.

Based on the results, we can draw the following conclusions: the use of the electronic sparring system "Zemita" in the training process will allow the coach and the athlete quickly receive information about the manifestation of special physical qualities when performing blows(strikes); the use of such electronic devices gives opportunity, much reduce training cycles; similarities of devices allow athletes to raise self-esteem.

In conclusion, we would like to stay on another important factor in martial arts. There are problems of refereeing in martial arts, which is much deeper than it might seem at first glance. Most of the existing

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refereeing systems used in martial arts in general are highly archaic and untenable in relation to the modern requirements for Olympic sports.

Simply hoisting flags, fixing the events of the fight by the judges with the help of notes or mechanical counters, and at best wired joysticks in the style of a game console.

There are simple programs that separately count and separately record. The most advanced systems with varying degrees of success integrate the local impact-fixing sensors. For example, such solutions are used in taekwondo WTF. However, these technologies are extremely expensive, and in the local integration of sensors the sport is not modified for the better, which is the general opinion of professionals. We suggest using the VAR (Video Assistant Referee) system used in football.