Scientific analysis and practical significance of experimental research results aimed at improving defensive techniques of para-taekwondo athletes

Tulkinova Shokhistakhon Kahramon kizi[1]

[1]Research institute of physical education and sports, Tashkent, Uzbekistan

Abstract

In this study, the number of para-taekwondo athletes is significantly lower compared to able-bodied taekwondo athletes. Additionally, there may be considerable differences in their physical capabilities, technical preparedness, and reaction speed. Therefore, selecting athletes who are compatible in terms of age, gender, sports qualifications, and functional abilities presents particular challenges.

Research objective: To enhance the scientific analysis and practical significance of experimental research results aimed at improving defensive techniques of para-taekwondo athletes.

Research tasks: This selection system was developed based on scientific criteria for forming experimental and control groups, serving to compare the effectiveness of teaching defensive and counter-attacking techniques in para-taekwondo.

Keywords: para-taekwondo, physical capabilities, technical-tactical skills, specialized training, competition, selected athletes, athletes, objective assessment.

Introduction

Attention to the field of physical education and sports in our country is growing year by year. In particular, the opportunities created for people with disabilities, their integration into society through sports, and the manifestation of their talents are defined as one of the priorities of state policy. In this regard, the development of para-sports, specifically para-taekwondo, and increasing the technical and tactical potential of athletes remain crucial scientific and practical issues.

Para-taekwondo is distinguished by its complexity, requiring an approach tailored to the individual physical capabilities of each athlete. In-depth study of the specific technical aspects of defensive movements in this sport, their improvement, and assessment of their effectiveness on an experimental basis is an important factor in enhancing the athletes' success in competitions.

To date, while a number of scientific studies on para-taekwondo are being conducted, the technical analysis of defensive actions and experimental research aimed at their improvement have not been sufficiently explored. This necessitates the development of new scientific approaches in this field and their practical application.

This article aims to study the defensive techniques of para taekwondo athletes on an experimental basis, develop recommendations for their improvement, and thereby achieve better results for the athletes.

To ensure the effectiveness of scientific research aimed at studying the level of special training of para taekwondo athletes, it is important to carefully organize the selection process. The fact that the athletes involved in the study have the same or similar initial conditions in terms of age, gender, sports experience, health status, and technical and tactical training allows for an objective analysis of the results.

Results and discussion

In this table, we present the results obtained before the start of a set of special exercises before (the stage obtained at the beginning of the experiment) aimed at developing the compensatory capabilities of the healthy arm of para taekwondo athletes. When comparing the indicators of the control group (CG) and the experimental group (EG):

1. Static standing against the wall (sec.), -CG - 24.6±3.8 sec., EG - 25.0±3.7 sec., difference 0.4 sec., the difference is minimal and statistically insignificant ($P > 0.05$), **r**ubber band front and back pull (repetitions), -CG - 14.2±2.3 repetitions, EG - 14.4±2.2 repetitions, difference 0.2 repetitions, the groups are at almost equal levels.

2. Maximum wall-supported stretch (sec.), CG - 21.5±3.1 sec., EG - 21.8±3.0 sec., difference 0.3 sec., which is also not significant, lifting a dumbbell behind and in front of the shoulder with the healthy arm (repetitions), CG - 12.8±1.9 repetitions, EG - 13.0±1.8 repetitions, difference 0.2 repetitions, **r**apid alternating movements with the healthy arm

(repetitions), CG - 15.7±2.5 repetitions, EG - 15.9±2.4 repetitions, difference 0.2 repetitions.

3. Rapid reaction exercise with colored lights (sec.), CG - 1.42±0.20 sec., EG - 1.41±0.21 sec., difference 0.01 sec., overall analysis: in all exercises, the difference between the control group and experimental group indicators is very small and statistically insignificant (P > 0.05). These results confirm that the physical capabilities of the groups at the beginning of the study were nearly equal. Since equality is ensured, it becomes possible to objectively assess the effectiveness of the methodology in subsequent stages.

This table shows the level of improvement in physical capabilities of para taekwondo athletes at the end of the study. In the table, when comparing the final indicators of the control group and the experimental group, we presented the superiority of the experimental group in percentage terms.

1. Static stance against the wall, CG - 27.1±3.6 sec., EG - 33.4±3.1 sec., EG superiority +6.3 sec or +23.2%, which indicates a significant increase in the static strength and stability of the healthy arm.

2. Pull back and forth with a rubber band, control group (CG) 15.3±2.2 repetitions, experimental group (EG) 18.9±2.0 repetitions, experimental group (EG) superiority +3.6 repetitions or +23.5%, this exercise was effective in increasing arm strength, muscle elasticity, and resistance to fatigue.

3. Maximum wall stretching, CG - 24.0±3.0 sec., EG - 29.2±2.7 sec., EG superiority +5.2 sec. or +21.6%, which indicates an increase in muscle flexibility and range of motion.

4. Lifting a dumbbell with the healthy hand over the back and front shoulders, CG - 13.6±1.8 repetitions, EG - 16.5±1.6 repetitions, EG superiority +2.9 repetitions or +21.3%, This indicates the development of muscle strength and coordination.

5. Quick alternating movements with the healthy hand, CG - 16.9±2.3 repetitions, EG - 20.7±2.0 repetitions, EG superiority +3.8 repetitions or +22.5%, indicating an improvement in rapid movement ability and coordination skills.

Table 1. Pre-study indicators of a special exercise complex aimed at developing compensatory capabilities of the healthy arm in para-taekwondo athletes

No	Exercise name	Control group (at the beginning of the experiment) X±σ	Experimental group (at the beginning of the experiment) X±σ	Difference (sec.) t	P
1	Static wall stand (sec.)	24.6±3.8	25.0±3.7	0.4	>0.05
2	Front and back pull with elastic band (repetitions)	14.2±2.3	14.4±2.2	0.2	>0.05
3	Maximum wall-supported stretch (sec.)	21.5±3.1	21.8±3.0	0.3	>0.05
4	Lifting dumbbell behind and in front of shoulder with healthy arm (repetitions)	12.8±1.9	13.0±1.8	0.2	>0.05
5	Rapid alternating movements with healthy arm (repetitions)	15.7±2.5	15.9±2.4	0.2	>0.05
6	Quick reaction exercise with colored lights (sec.)	1.42±0.20	1.41±0.21	0.01	>0.05

6. Quick reaction exercise with colored lights: Control Group (CG) - 1.35±0.18 sec., Test Group (TG) - 1.11±0.15 sec. TG reaction was 0.24 sec. faster, which equals an improvement of +17.8%, indicating an increase in the speed of visual signal processing and response time.

As a result, the test group outperformed the control group in all exercises by 17.8%-23.5%. The greatest improvement was observed in exercises requiring strength and endurance. The significant advantage of the test group in the quick reaction exercise also indicates the development of their visual and motor coordination.

Before the study, the difference between the control and experimental groups was insignificant (P>0.05), while after the experiment, a significant difference (P<0.05) was observed for all techniques and models. This confirms

Table 2. Set of special exercises aimed at developing compensatory capabilities of the healthy arm in para-taekwondo athletes, post-study indicators

No	Exercise names	Control group (at the end of the experiment) X±σ	Test group (at the end of the experiment) X±σ	Difference (control and test)	Test group advantage (%)
1	Static wall stand (sec.)	27.1±3.6	33.4±3.1	+6.3	+23.2%
2	Front and back pull with rubber band (repetitions)	15.3±2.2	18.9±2.0	+3.6	+23.5%
3	Maximum stretch against the wall (sec.)	24.0±3.0	29.2±2.7	+5.2	+21.6%
4	Lifting dumbbell over back and front shoulder with healthy arm (repetitions)	13.6±1.8	16.5±1.6	+2.9	+21.3%
5	Quick alternating movements with healthy arm (repetitions)	16.9±2.3	20.7±2.0	+3.8	+22.5%
6	Quick reaction exercise with colored lights (sec.)	1.35±0.18	1.11±0.15	-0.24	+17.8% (time reduction)

that the applied training system significantly increased not only the defensive and step movements of the athletes but also the speed of counterattacks.

Conclusion

The conducted scientific research has shown that in the process of improving the defensive-attacking technique of para-taekwondo athletes, a static-elastic defense system and an approach to gradually mastering step movements adapted to it yields high effectiveness. The main essence of this system is that the athlete, without leaving the positional center, has the opportunity to execute defense and immediately transition to a counterattack. The step-by-step training model (developing sensory-motor reactions, automating isolated technical elements, forming spatial positional advantage, practicing counter-strike transition positions, applying reflex-chain combinations) developed during the research directly had a positive impact on improving the athletes' technique.

References

Sobirova, L.B. (year not indicated). Means of developing sports activities for persons with disabilities. - Tashkent: Ilm ziyo, 24 p.

Urinboyev, E.A. (year not specified). Methods of physical development for students with musculoskeletal disorders. - Tashkent: Scientific Center of Physical Culture and Sports, pp. 89-99.

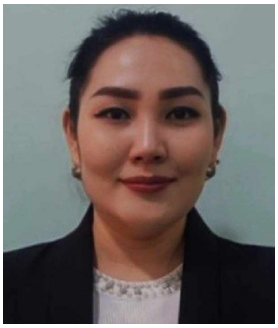
Mirjamolov, M. System of socio-psychological support for athletes with disabilities. - Tashkent: Ilm ziyo, 180 p.

Salomov, R.S. **(2014).** Fundamentals of developing special physical training for para-athletes. - Tashkent: National Paralympic Committee of Uzbekistan, pp. 67-70.

Yevseev S.P., Orlov V**. (2018).** Improving psychomotor reaction speed in adaptive sports methodology. - Moscow: Sport.

Matveev, L.P. (2010). Theory and Methodology of Physical Culture. - Moscow: Physical Culture and Sports, p.544

AUTHOR BIOGRAPHY:



Shokhistakhon Kahramon kizi TULKINOVA

Employment
Researcher at Research institute of physical education and sports

Degree
MD

Research interests
Sports activities for persons with disabilitiesTheory of physical education, Analyzing of sport competitions