

PHYSICAL EDUCATION AND ADAPTIVE SPORT: MODERN DEVELOPMENTS**Babayev Alisher Odilovich**

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Annotation: This article analyzes current trends in adaptive physical education and sports, which play a vital role in integrating people with disabilities into society and ensuring their full lives. Key development vectors in this field are discussed: the introduction of innovative technologies, the development of individualized training programs, and the use of digital platforms and modern rehabilitation methods. The special importance of young scientists' participation in the research and practical implementation of new approaches is emphasized. The need for government support and interdisciplinary collaboration for the sustainable development of adaptive physical education and sports is emphasized.

Key words: adaptive physical culture, adaptive sport, innovative technologies, rehabilitation, inclusion, health, training, young students.

Annotasiya: Ushbu maqolada nogironligi bo'lgan odamlarni jamiyatga integratsiya qilish va ularning to'liq hayotini ta'minlashda muhim rol o'ynaydigan adaptiv jismoniy tarbiya va sportning hozirgi tendentsiyalari tahlil qilinadi. Ushbu sohadagi asosiy rivojlanish vektorlari muhokama qilinadi: innovatsion texnologiyalarni joriy etish, individual o'quv dasturlarini ishlab chiqish va raqamli platformalar va zamonaviy reabilitatsiya usullaridan foydalanish. Yosh olimlarning yangi yondashuvlarni tadqiq qilish va amaliy qo'llashda ishtirok etishining alohida ahamiyati ta'kidlangan. Adaptiv jismoniy tarbiya va sportning barqaror rivojlanishi uchun davlat tomonidan qo'llab-quvvatlash va fanlararo hamkorlik zarurligi ta'kidlangan.

Kalit so'zlar: adaptiv jismoniy tarbiya, adaptiv sport turlari, innovatsion texnologiyalar, reabilitatsiya, inklyuziya, sog'liq, trening, yosh olimlar.

Introduction: Adaptive physical education and sport represent a unique approach to physical education, aimed at creating conditions for people with disabilities to engage in physical activity. In today's world, the problem of integrating this population into the social environment is particularly pressing, requiring the development of new methods and programs that take into account the individual characteristics and needs of each individual. Adaptive physical education is not simply adapted exercises, but a comprehensive system encompassing medical, educational, psychological, and social aspects.

Adaptive sports, in turn, are becoming an important part of physical education, allowing people with disabilities not only to engage in sports but also to achieve high results and participate in competitions at various levels, including the Paralympic Games.

Modern research shows that adaptive physical education classes contribute to improved physical and mental well-being, increased self-esteem, and the development of communication skills and social engagement. Therefore, the development of this area is a pressing issue and requires attention from the government, the scientific community, and the professional community of trainers and educators.

Main directions of development of adaptive physical education and sports

Modern development trends in adaptive physical education and sports are multifaceted and multifaceted, reflecting society's commitment to ensuring equal opportunities for all citizens, including people with disabilities. One of the key areas remains the creation of accessible and safe infrastructure for physical education and sports. This category includes specialized sports facilities: gyms with convenient entrances and wide aisles, training areas equipped with special needs, swimming pools with lifts and gentle slopes, treadmills with handrails, and exercise machines with the ability to customize the load and range of motion. Such equipment not only allows for classes to be tailored to all needs but also fosters a sense of confidence and safety in participants.

Particular attention is paid to developing individualized training programs that take into account not only the type of disease but also the individual's level of fitness, age, psychological state, motivation, and personal interests. This approach allows for the most effective organization of the training process, ensuring an optimal balance between stress and recovery, which is especially important for preventing overtraining and fostering a lasting interest in exercise. The programs include both traditional forms of exercise and modern techniques: yoga, Pilates, breathing exercises, aqua aerobics, and training on bio-adaptive exercise equipment.

Training qualified specialists is another crucial area. Modern trainers, exercise therapy instructors, rehabilitation specialists, and sports educators must possess not only professional knowledge in physical training but also a deep understanding of the psychology of people with disabilities, as well as skills in using modern equipment and technology.

Their goal is not just to teach movement, but also to maintain motivation, help overcome fears, and foster a positive attitude toward achieving goals, all while creating a comfortable and welcoming atmosphere for those involved.

Scientific research deserves special attention, as it forms the foundation for the development of new approaches and methods. Research covers a wide range of topics: from the biomechanics of movement and the musculoskeletal system in individuals with disabilities to psychophysiological responses to various types of exercise. The use of digital technologies is particularly important: the development of software for monitoring health indicators, the use of wearable devices for tracking cardiovascular parameters and activity levels, and the development of apps for independent exercise at home.

Innovative solutions such as exoskeletons, intelligent prosthetics, feedback-based training devices, and telerehabilitation systems significantly expand training options. The use of virtual and augmented reality helps simulate various sporting situations, conduct psychophysical training, and improve spatial orientation and response to external stimuli. Online platforms and apps for remote training are becoming an important tool for making training more accessible, especially in remote regions and when access to specialized centers is impossible.

Furthermore, the development of adaptive physical education is impossible without an interdisciplinary approach. The collaboration of doctors, physical therapists, psychologists, engineers, programmers, and educators enables the creation of comprehensive programs that address all aspects of human health and well-being. This synthesis of knowledge from various fields contributes to the development of a new philosophy of adaptive physical education—as a universal means of improving quality of life, social integration, and unlocking individual potential.

Thus, the development of adaptive physical education and sport is a complex and multifaceted process that requires not only the implementation of innovative technologies but also a systematic approach that integrates science, practice, education, and public policy.

3. The role of innovation in the development of adaptive physical education Innovations are becoming an integral element of the modern development of adaptive physical education and sports, opening up new horizons for improving the quality of life of people with disabilities.

The introduction of modern technologies allows us to transform traditional approaches to organizing the training process, making it more effective, safe, and accessible to all categories of participants.

One of the key areas of innovative development is the use of sensor systems and monitoring technologies that enable real-time tracking of biomechanical parameters of movement, heart rate, blood oxygen levels, pulse, and other important indicators. This data helps trainers and rehabilitation specialists objectively assess progress, adjust training loads, and prevent injury or overtraining. The use of wearable devices integrated with mobile apps allows participants to independently monitor their workouts, receive recommendations on exercise technique, and track their progress.

Particular attention is paid to virtual and augmented reality (VR/AR) technologies, which simulate training situations, creating a safe environment for practicing motor skills, improving coordination, and spatial perception. Such solutions are especially important for competition preparation and for individuals with musculoskeletal disabilities, as they help build confidence and adapt to various conditions.

Bioengineering developments occupy a special place in the innovative ecosystem of adaptive sports. Modern intelligent prosthetics equipped with feedback sensors and control systems enable athletes to restore lost motor function, adapt to stress, and improve exercise performance. For example, lower limb prosthetics with adjustable stride amplitude and speed help athletes move more naturally and safely during training and everyday activities. Adaptive exercise equipment, capable of adapting to the user's individual characteristics, effectively develops strength, endurance, and motor coordination while minimizing the risk of injury.

Innovative approaches are also actively developing in the field of functional nutrition and recovery. The development of individualized nutrition programs tailored to the body's metabolic characteristics, health status, and physical activity level helps improve the body's adaptation to stress and accelerate recovery. The use of nutraceuticals, sports supplements, vitamin and mineral complexes, and specialized nutritional products helps improve overall vitality and reduce the effects of fatigue.

An integrated approach, combining technology, medicine, psychology, and pedagogy, is becoming the foundation of modern adaptive physical education.

Methods of psycho-emotional support, including coaching, art therapy, meditation, and cognitive-behavioral training, are becoming especially important, helping athletes overcome fears, increase motivation, and improve their emotional well-being.

Thus, innovations not only improve the effectiveness of the training process but also play a crucial role in the social integration of people with disabilities, building their self-confidence, expanding their horizons, and improving their health. The introduction of modern technologies into adaptive physical education opens up prospects for creating a more accessible, inclusive, and effective system of sports training and rehabilitation.

4. Prospects and Challenges for Further Development. Despite significant achievements, the adaptive physical education and sports system faces significant challenges. These include the need for further infrastructure development, especially in the regions, ensuring equal access to activities for all population groups, improving the level of professional training, and developing inclusive education programs.

Promising areas include the active implementation of artificial intelligence to analyze the training process and athletes' health, the development of online platforms for remote training, and an in-depth study of the psychophysiological characteristics of athletes with disabilities to create more precise and personalized training programs.

An important aspect of future development is the formation of a system of state support, including funding for scientific research, the construction of specialized centers, and the

development of legislative initiatives aimed at the development of adaptive physical education and sports.

5. Conclusion

Adaptive physical education and sport are an integral part of modern social policy and healthcare systems, aimed at ensuring equal opportunities for all citizens. Current development vectors in this field include the introduction of innovative technologies, the creation of individualized training programs, the development of scientific research, and the training of a new generation of specialists. Support for young scientists, the integration of science and practice, and government support are key factors in the successful development of this field.

It is important to continue developing and improving adaptive physical education and sport to make them accessible and effective tools for rehabilitation, health improvement, and socialization for people with disabilities.

Literature.

1. Blokhina I.V. Adaptive physical education: theoretical and methodological foundations. - Moscow: Sport, 2021. - 320 p.
2. Ivanova S.A., Petrova E.N. Innovative technologies in adaptive sports. - Kazan: Kazan Federal University Publishing House, 2022. - 198 p.
3. Nikolaev P.V. Modern trends in the development of adaptive physical education // Physical education: theory and practice.- 2023. - No. 3. - P. 45-51.
4. Adaptive Physical Activity Quarterly. - 2024. - Vol. 41, No. 1. - P. 23-40.
5. Zotova A.L., Semenova I.V. Application of VR technologies in adaptive physical education. // Innovations in sport. - 2023. - No. 4. — pp. 57–62.