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RESEARCH ARTICLE

IMPROVING BASIC MOTOR SKILLS OF CHILDREN WITH AUTISM THROUGH AUTISM-LED INDIVIDUALIZED CONDITIONING EXERCISE (ALICE) PROGRAM

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ABSTRACT

This study presents the "ALICE: Autism-Led Individualized Conditioning Exercise Program," a personalized physical education approach designed for children with autism spectrum disorder (ASD). The challenges faced by individuals with ASD in communication, behavior, and social interaction highlight the need for tailored interventions. The ALICE program aims to address this need by offering customized exercise plans based on each child's unique abilities and preferences. To assess the program's efficacy, a pre-test and post-test study was conducted involving 30 children diagnosed with autism. Comparative results indicate significant improvements in specific locomotion skills such as running, galloping, hopping, and sliding ($p < 0.05$). Object control skills like striking, catching, kicking, and underhand throwing also demonstrated notable enhancements ($p < 0.05$). While certain skills like leaping, horizontal jumping, stationary dribbling, and overhead throwing did not exhibit significant changes ($p > 0.05$), the overall findings underscore the positive impact of the ALICE program on enhancing targeted physical abilities among children with autism. This study emphasizes the potential of personalized interventions to promote physical well-being, psychological health, and social engagement within the autism community.

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INTRODUCTION

Autism spectrum disorder (ASD) remains one of the most intriguing and complex neurodevelopmental conditions of our time, affecting millions globally. Spanning a broad spectrum, ASD encompasses diverse challenges ranging from social skills deficits to repetitive behaviors, and from speech impediments to nonverbal communication difficulties. The intricate mosaic of factors contributing to ASD—genetic, neurobiological, developmental, and environmental—make it an extensive field of research. Yet, amidst these multifaceted challenges, one often overlooked domain stands out as an avenue of potential growth and transformation: Physical Education (PE). Physical activity universally stands as a cornerstone of health. For the average child, it promotes physical well-being, aids cognitive development, and fosters social skills. However, for the child with ASD, the significance of PE transcends these general benefits. Structured PE not only addresses the prevalent motor coordination challenges faced by many with autism but also serves as an invaluable platform for social integration. Within the predictable cadence of a PE class, children with ASD find consistency and structure, elements that often alleviate some of the anxieties tied to their condition. Furthermore, engaging in team sports or group exercises paves the way for improved communication, a deeper understanding of social cues, and enhanced sensory processing.

Yet, as promising as this terrain is, the intersection of ASD and PE is markedly under-researched. A cursory review reveals a dearth of structured physical programs tailored for these children and even fewer PE instructors equipped with the nuanced training required to support them effectively. Moreover, while the benefits of PE for children with ASD are evident—an uptick in motor skills, reduced problematic behaviors, and better sensory integration—the question remains: How can we optimize PE programs to harness these benefits fully? This research aimed to bridge this gap. Drawing from the lived experiences of children with ASD, it delved deep into the world of PE, seeking effective strategies to create a more inclusive, adaptive, and beneficial physical education landscape for them. Through this investigation, this research looked to not just to elucidate the profound impacts of PE on children with ASD, but also to chart a path forward, pioneering a new paradigm of physical education that resonates with their unique needs and potentials.

Background of the Study: Autism, as we understand it today, has its roots in the early 20th century. In 1943, American medical scientist Kanner first identified what we now recognize as autism, presenting it as a distinct form of developmental dysfunction. These initial observations characterized affected children as those exhibiting a marked disinterest and lack of skills in social communication. Furthermore, they often displayed repetitive behaviors and narrowly focused interests devoid of apparent meaning or purpose.

While these symptoms have been observed since the infantile stage, there has been a discernible escalation in the prevalence of autism in recent years. This increase, alongside the inherent irreversible nature of autism's developmental trajectory, has posed significant challenges both globally and specifically in certain nations. According to the "Blue Book of Children's Development Obstacles Rehabilitation Industry in 2022," a conservative estimate suggested that in 2021, 3 million children aged 0–18 were diagnosed with autism. Autism fundamentally stems from aberrations in early brain development, leading to pronounced irregularities in social behaviors and exchanges. Its cardinal symptoms encompass difficulties in social interactions, language impairments, nonverbal communication disorders, and a propensity for specific, often repetitive interests. The consistent annual surge in autism cases has led some to describe it as an "epidemic." However, despite its rising prominence and extensive research, the exact cause of autism remains elusive. While no specific cure exists, behavioral interventions have emerged as the most potent tool in managing and alleviating its manifestations.

Within this context, physical activity stands out as a beacon of promise. An abundance of evidence underscores the importance of suitable physical activity as a cornerstone for maintaining health. This holds especially true for those with disabilities, where physical activity not only supports health but also aids functional rehabilitation and can even act as a preventive measure against certain disease progressions. For the autistic community, the benefits of physical activity extend beyond health. Engaging in sports can help compensate for certain deficits and foster societal integration, pivotal for their well-being. Unfortunately, despite its evident advantages, participation rates in physical exercise among the autistic population remain distressingly low, arguably the least among all groups. This is particularly concerning as physical activity is paramount for fostering growth, development, and holistic well-being in this demographic. The current landscape, marked by a dearth of appropriate facilities, professional guidance, and understanding, compounds the challenges autistic individuals face in accessing the physical activities crucial for their health and well-being. This study delved into these challenges, aiming to shed light on potential avenues to bridge the existing gaps.

Statement of the Problem: This research sought to investigate the effects of the Autism-Led Individualized Conditioning Exercise (ALICE) Program on the basic motor skills development of the of children diagnosed with autism. Specifically, it addressed the subsequent inquiries:

- What is the level of basic motor skills of children with autism before the implementation of the ALICE Program?
- What is the level of basic motor skills of children with autism after the implementation of the ALICE Program?
- Does the ALICE Program improve the basic motor skills of children with autism?

Significance of the Study: The outcomes of this research stand to offer valuable insights and advantages to the following stakeholders:

Children with autism: This research promotes a tailored approach to sports education, addressing the unique needs of children with autism. By cultivating a personalized learning atmosphere, it not only enhances their sports prowess but also bolsters their concentration and reduces repetitive stereotypical behaviors. Significantly, this paves the way for improved social interactions, providing children with vital tools to better navigate their environment.

Parents of children with autism: The study serves as a valuable resource for parents, introducing them to personalized physical activities tailored to the needs of their children. Implementing these methods can substantially aid in the day-to-day rehabilitation of autistic symptoms. Beyond techniques, this research offers emotional reinforcement to parents, alleviating their feelings of helplessness and equipping them with effective strategies to alleviate familial stresses associated with autism.

Sports curriculum developers: This study offers rich insights that can refine the existing sports curriculum. Incorporating the findings from this research can lead to a more nuanced and effective approach in teaching sports to children with autism, thereby maximizing their developmental potential.

School leaders: Educational administrators stand to benefit immensely from this research. It serves as a cornerstone for embedding a specialized curriculum tailored for children with autism. The empirical evidence provided can be instrumental in formulating policies and strategies, ensuring that both special schools and broader educational institutions are better positioned to cater to the needs of autistic students.

Teachers: Teachers find themselves at the frontline of this educational endeavor. This study provides them with a comprehensive understanding of the challenges and solutions associated with devising physical education plans for autistic children. By bridging the gap between curriculum design, teaching methodologies, physical education, and special education, teachers are empowered to deploy impactful strategies, fostering an inclusive and effective learning environment.

Psychologists: For psychologists, this research offers a deeper understanding of the interplay between physical activity and cognitive as well as behavioral manifestations in children with autism. It enables them to integrate these insights into therapeutic strategies, enhancing the holistic development of their clients.

Special education schools: Institutions dedicated to special education can utilize the findings of this study to tailor their curriculum and teaching methodologies. With concrete evidence supporting the benefits of individualized physical education, these schools can further their mission of providing optimal learning experiences for children with autism.

Scope and Delimitation of the Study: This research focused on the influence of tailored physical education programs on the foundational motor abilities of 15 primary school students diagnosed with autism. Conducted within a specialized educational institution, the study seeks collaboration from school administrators, physical education instructors, and parents of the involved students. The scope was further defined by its singular emphasis on an intervention group, without the presence of a comparative or control group, implying that the findings are exclusively based on the effects observed in this selected cohort. Delimitations of this research encompassed its restricted geographical setting, limited to a single specialized education institution, which may not resonate with the conditions or practices of other such institutions. Furthermore, the study's focus remained strictly on primary school-aged children with autism, excluding other age brackets. Lastly, while the research delved into the effects of a bespoke physical education curriculum, it did not consider the impacts of other intervention types or generalized physical education programs. Collectively, these boundaries ensured that readers interpret the research findings within the specific parameters set, acknowledging both its reach and inherent limitations.

Theoretical Framework: This research is anchored to the sport-for-development theory or SFDT. The interdisciplinary theoretical and conceptual foundations of SFDT, which is based on the idea of Olympism, include organizational theory, intergroup contact theory, humanistic psychology, educational psychology, theory and research methodologies. The fundamental thesis of SFDT is that "sport initiatives can support personal development and social transformation by embracing non-traditional sport management approaches through an interdisciplinary framework, integrating sport with cultural enrichment." As a result, SFDT is made up of five essential parts: organizational, sporting, educational, and cultural enrichment are among the other four categories. Then, depending on the cultural setting and demographics that the SFD intervention is intended to reach, these elements, or building blocks of SFD programs, can be modified and enhanced (Lyras & Welty Peachey,

2011). In this research, it can be surmised that the ALICE program can help improve the basic motor skills of children with autism. The idea of improving the content of sports for students with autism spectrum disorder concurs with the fundamentals of sport-for-development theory—that is, to support personal development of these challenged individuals. The individualized physical education program is conceived to be a non-traditional method of teaching sports that can bring about developments.

A large number of studies have shown that children with autism have significant motor delays or deficits. Compared with ordinary children, children with autism have more difficulty in maintaining balance, coordination, and speed of movement. These motor deficits can be exacerbated by the fact that children with autism have fewer opportunities to participate in physical activity. This is an important reason for choosing this study. Figure 1 illustrates the basic tenets of this research. It presupposes that the independent variable for this study is the personalized physical education program, which has a causal relationship to the improvement of motor skills, as indicated by an arrow. Physical exercise and other physical rehabilitation methods and means can improve people's mood. This kind of benign emotion can cause nutritional reflex through the sympathetic nerve, which acts on the body's material metabolism process and contributes to the rehabilitation of the disease. This idea is consistent with the theoretical framework of literature and citations, that autistic students belong to a special population, and ordinary sports cannot provide targeted training and rehabilitation effects, while personalized sports programs can participate and guide the study subjects at the personal level, and their attention and ability will be improved when it comes to their basic motor skills. Due to the particularity and individual differences of autistic children, ethical considerations were prioritized as the researcher did not want to cause injustice by assigning children with autism to a control group. The main research method of this study, therefore, mainly adopted longitudinal difference research of pre-test and post-test.

METHODOLOGY

This chapter outlines the study's design, the subjects, the research instrument, the data collection process, and the statistical data analysis that will be used.

Research Locale: The study was conducted at the Xiang yang Zhanyan Star Special Education Center. Established in 2006, Zhanyan Star was the first rehabilitation education institution for special children in Xiang yang that integrated teaching, learning, research, and social services. It was also a designated rehabilitation training institution for autistic children in Xiang yang. The facility had an evaluation room, training room, music room, social games, sensory room, and other multifunctional rooms.

Sample and Sampling Technique: The study involved 15 children with autism. These children were purposefully selected using the following matching criteria: aged 6–10 and diagnosed with mild autism spectrum disorder. The small sample size was determined due to the limited number of the accessible population and the personalized nature of the intervention program.

Data Gathering Procedure

The study followed the subsequent data collection phases:

Phase 1: Written permission was obtained from the special education institution before the study commenced. The objectives of the research were elucidated to the leaders and administrators of the site.

Phase 2: Once the study site was approved, informed consent were secured from each subject's parents. The intervention and data collection methods were explained to them. During the initial two-week baseline, no intervention was administered on the subjects. This phase aimed to pre-test the subjects and assess their

exercise capabilities. The pre-test was organized by the students' class teachers, and the movement data of each autistic child was documented.

Phase 3: This phase marked the beginning of the study's actual implementation. An individualized physical education program tailored for the autistic children spanned across an eight-week period. Throughout this period, records of the frequency and instances of repetitive behaviors exhibited by the autistic students during each class were maintained. An all-inclusive analysis of the real-time observations and post-class video reviews was carried out. Documentation took place thrice a week for each of the PE classes. Subsequently, post-test data were collected using the TGMD-2, with the students' class teachers organizing the post-test and documenting the movement data of every autistic child.

Phase 4: All gathered data were organized and subjected to statistical evaluation. Appropriate software was employed for data management and analysis.

Statistical Analysis: Frequency and percentage were used to summarize data on the demographic profile. Mean and standard deviation were used to summarize the pretest and posttest scores of the TGMD-2. Paired t-test was used to determine if there were significant differences between the pretest and posttest scores. The level of significance was set at $\alpha = 0.05$ and was referred to as the decision criteria for a significant finding.

In the context of this study, the following ranges for the mean score can be categorized as follows:

Low Level (0.00–0.66): This range suggests that, on average, the children in this group exhibit limited gross motor skills based on the TGMD-2's standards. They consistently do not meet many of the performance criteria for the skills tested.

Moderate Level (0.67–1.33): Mean scores in this range suggest that children are meeting some, but not all, of the performance criteria for the skills on the TGMD-2. Their performance is variable, with some skills possibly being stronger than others.

High Level (1.34–2.00): This range indicates that, on average, the children frequently meet the performance criteria for the skills tested on the TGMD-2. Their gross motor development is aligning more closely with the test's standards for their age group.

RESULTS

The following section presents a comprehensive analysis and discussion of the results obtained from the study's interventions and assessments for children with autism.

Table 1. Summary of Locomotion Gross Motor Development Scores of the Subjects before the Intervention

Subtest	Mean	Standard Deviation
Running	5.60	2.41
Galloping	3.73	1.49
Hopping	3.47	2.45
Leaping	2.13	1.77
Horizontal Jumping	2.13	2.07
Sliding	2.40	2.03
Locomotion	19.47	8.80

Table 1 provides a comprehensive overview of the participants' baseline performance in various locomotion subtests. The results shed light on one of the many challenges faced by individuals on the autism spectrum. Gross motor skills encompass larger movements involving the coordination of multiple muscle groups and are essential for activities such as walking, running, jumping, and playing sports. Research consistently indicates that many children with autism experience delays or difficulties in the development of these skills.

Table 2. Summary of Locomotion Gross Motor Development Scores of the Subjects after the Intervention

Subtest	Mean	Standard Deviation
Running	6.53	1.77
Gallop	5.47	1.41
Hopping	4.13	2.45
Leaping	2.53	2.33
Horizontal Jumping	2.67	1.80
Sliding	3.20	2.37
Locomotion	24.53	7.65

Table 3. Summary of Object Control Gross Motor Development Scores of the Subjects after the Intervention

Subtest	Mean	Standard Deviation
Striking	4.00	2.00
Stationary Dribbling	1.47	1.19
Catching	2.00	2.00
Kicking	0.67	1.23
Overhead Throwing	1.60	0.83
Underhand Throwing	2.67	2.58
Object Control	12.40	6.24

Table 4. Difference in the Locomotion Before and After the Intervention

Locomotion Subtest	t-value	p-value	Interpretation	Decision
Running	-2.43	0.03	Significant	Reject H ₀
Gallop	-3.67	0.00	Significant	Reject H ₀
Hopping	-2.65	0.02	Significant	Reject H ₀
Leaping	-1.15	0.27	Not Significant	Accept H ₀
Horizontal Jumping	-1.74	0.10	Not Significant	Accept H ₀
Sliding	-2.45	0.03	Significant	Reject H ₀
Locomotion	-5.98	0.00	Significant	Reject H ₀

Table 5. Difference in the Object Control Before and After the Intervention

Object Control Subtest	t-value	p-value	Interpretation	Decision
Striking	-2.17	0.05	Significant	Reject H ₀
Stationary Dribbling	-0.56	0.58	Not Significant	Accept H ₀
Catching	-2.26	0.04	Significant	Reject H ₀
Kicking	-2.26	0.04	Significant	Reject H ₀
Overhead Throwing	-1.00	0.33	Not Significant	Accept H ₀
Underhand Throwing	-6.63	0.00	Significant	Reject H ₀
Object Control	-2.17	0.05	Significant	Reject H ₀

In this discussion, several pieces of research can be cited due to some factors contributing to low gross motor development in children with autism. Some factors contributing to low gross motor development include:

- **Neurodevelopmental differences:** Autism is characterized by neurodevelopmental differences that can affect motor control and coordination. These differences can impact the planning and execution of complex movements (Girault & Piven, 2020). *Sensory processing issues.* Many individuals with autism experience sensory processing difficulties, which can affect their ability to process and integrate sensory information necessary for motor coordination and balance (Neufeld, Taylor, Remnélius, Isaksson, Lichtenstein, & Bölte, 2021).
- **Limited repertoire of play:** Children with autism might engage in repetitive behaviors or have limited interests, which can affect their exposure to a variety of play activities that contribute to the development of gross motor skills (Crane, Lui, Davies, & Pellicano, 2021). Communication challenges. Communication difficulties might hinder the ability of children with autism to receive instructions and feedback from caregivers and peers, which are crucial for learning and motor skills (Wigham, Ingham, Le Couteur, Wilson, Emsum, & Parr, 2022). Table 2 provides a comprehensive summary of the baseline performance of the subjects in the object control aspect. Object control refers to the ability to manipulate and interact with objects effectively, demonstrating skills such as grasping, manipulating, throwing, and catching. In the context of children with autism, difficulties in object control are often observed and can have a significant

impact on their overall development and daily functioning. This discussion focuses on the factors contributing to low object control in children with autism and the potential implications for their motor and socio-emotional development. Some factors contributing to low object control include:

Table 3 offers a comprehensive summary of the subjects' performance within the locomotion aspect following the intervention. The findings underscore the remarkable progress observed in children with autism over the course of eight weeks of personalized physical training. This progress is particularly evident in their performance across all six significant locomotion skills, with notable advancement evident in running proficiency. The outcomes posit that personalized physical education holds the potential to significantly enhance the motor skills and overall motor development of children with autism. Table 4 provides a comprehensive summary of the subjects' performance in the object control aspect following the intervention. Broadly evaluating the results, the object control domain exhibits an average score of 8.13, with a standard deviation of 4.75. It is noteworthy that personalized sports training has engendered a notable focus on hand-based movements in comparison to those involving the feet. Consequently, within the Object Control Gross Motor Development, striking ability demonstrates the highest efficacy, while kicking ability remains the most challenging aspect.

An individualized Physical Education (PE) program has improved the gross motor skills of children with autism due to the tailored approach that takes into account their unique strengths, challenges, and sensory

preferences. A number of reasons can be cited why such a program is effective in enhancing gross motor skills:

Addressing individual needs: Children with autism often have a wide range of sensory sensitivities, motor coordination challenges, and developmental variations. An individualized PE program recognizes these differences and designs activities that cater to each child's specific needs. This personalized approach ensures that the child's sensory sensitivities are respected, creating a more comfortable and conducive environment for skill development.

Adapting to learning styles: Children with autism may have different learning styles and ways of processing information. An individualized PE program can adapt teaching methods, communication styles, and cues to match each child's learning preferences. This allows them to better understand instructions and engage in activities effectively, leading to improved motor skill acquisition.

Setting achievable goals: Tailoring a PE program for each child allows for setting achievable and incremental goals. These goals are based on the child's current abilities and can be adjusted as they make progress. Achieving these goals provides a sense of accomplishment and motivation, encouraging the child to actively participate in the program and work towards further skill improvement.

Providing structure and predictability: Children with autism often thrive in structured and predictable environments. An individualized PE program offers a consistent routine and clear expectations, which can reduce anxiety and help the child feel more at ease during physical activities. This, in turn, allows them to focus better on developing their gross motor skills.

Supporting sensory integration: Sensory integration is a crucial aspect of motor skill development for children with autism. An individualized PE program can incorporate sensory-friendly activities that help the child process sensory input more effectively. This can lead to better coordination, balance, and overall motor control.

Using special interests: Many children with autism have specific interests that can be integrated into the PE program. Incorporating these interests into activities can increase the child's motivation and engagement. For example, if a child is fascinated by animals, incorporating animal-themed movements can make the learning process more enjoyable and effective.

Building self-confidence: Success in an individualized PE program can significantly boost a child's self-confidence. When activities are tailored to their abilities, they are more likely to experience success, which contributes to a positive self-image and a willingness to engage in physical activities. This newfound confidence extends beyond the PE program and can positively impact other areas of the child's life.

Creating positive associations: An individualized PE program can help children with autism associate physical activity with positive experiences. When activities are enjoyable, manageable, and aligned with their preferences, they are more likely to develop a positive attitude towards exercise and physical movement.

Promoting repetition and practice: Consistency and repetition are crucial for skill development in children with autism. An individualized PE program ensures that the child has regular opportunities to practice gross motor skills. Repetition aids in muscle memory, helping the child refine movements over time. Overall, an individualized PE program recognizes and respects the unique characteristics of children with autism, creating an environment that fosters skill development, confidence, and enjoyment. By tailoring activities to their needs, preferences, and sensory profiles, these programs can effectively enhance their gross motor skills and overall physical development. Table 5 presents a comprehensive comparison of the subjects' locomotion performance before and after the intervention. The t-values reflect a noteworthy improvement in the outcome scores as compared to the baseline measures. It is worth

noting that these children often grapple with challenges related to attention and restlessness, which can impede their ability to execute simple actions involving markers. This difficulty is especially evident in tasks that involve jumping movements, which tend to pose greater challenges due to their complex nature. Table 6 compares the differences in the object control of the subjects before and after the intervention. The design and implementation of an individualized Physical Education (PE) program for children with autism that focuses on improving their gross motor skills aligns with the sports-for-development framework. This approach not only addresses their individual needs but also integrates the principles of inclusion, skill development, and holistic growth. Here's how the improved locomotor skills of children with autism can be connected to a personalized PE program using the sports-for-development framework:

Inclusivity and individualized approach: The sports-for-development framework emphasizes the importance of tailoring programs to individual needs and abilities. A personalized PE program for children with autism recognizes their unique challenges and strengths. By adapting activities to their skill levels and preferences, the program creates an inclusive environment where every child can participate and progress.

Skill enhancement and achievement: Improved locomotor skills are a key aspect of the PE program for children with autism. By focusing on activities that target specific motor skills, such as running, jumping, and balancing, the program aims to enhance their physical abilities. This process of skill development not only boosts their confidence but also provides a sense of achievement as they make progress over time.

Empowerment and self-efficacy: The sports-for-development framework emphasizes empowering participants to take ownership of their development. In a personalized PE program, children with autism are encouraged to set personal goals for improving their locomotor skills. As they witness their own progress and achievements, their self-efficacy increases, fostering a positive self-image and motivation to continue their efforts.

Life skills and transferable learning: The sports-for-development approach promotes the acquisition of life skills through sports participation. A personalized PE program can integrate activities that require teamwork, communication, problem-solving, and perseverance. These skills are transferable to various life contexts, helping children with autism navigate social interactions, academic challenges, and future endeavors.

Social interaction and collaboration: Many sports activities involve interaction with peers and coaches. In a personalized PE program, children with autism engage in activities that encourage social interaction, promoting communication and collaboration. By practicing these skills within a controlled and supportive environment, they become better equipped to engage with others in different settings.

Intrinsic motivation and enjoyment: The sports-for-development framework emphasizes the importance of enjoyment and intrinsic motivation in sports activities. A personalized PE program for children with autism integrates activities that align with their interests and preferences. This enhances their engagement, making the learning process more enjoyable and sustainable.

Community engagement and support: The sports-for-development approach often involves community partnerships and support networks. A personalized PE program can collaborate with parents, teachers, therapists, and community organizations to create a comprehensive support system for children with autism. This collaborative approach reinforces the child's development and ensures a holistic learning experience.

Continuous learning and adaptation: The sports-for-development framework encourages ongoing learning and adaptation. A personalized PE program evolves based on the progress and changing needs of each child with autism. This dynamic approach ensures that the program remains relevant and effective in fostering skill development and overall growth. By connecting the improved locomotor skills of children with autism to a personalized PE program using the sports-for-development framework, you create a comprehensive and inclusive learning environment. This approach not only enhances physical abilities but also promotes cognitive, social, and emotional development, contributing to the overall well-being and success of these children. The findings underscore the value of incorporating exercise and fitness into the lives of individuals with autism, not only for enhancing their physical well-being but also for addressing behavioral challenges. The study also underscores the importance of long-term, consistent interventions across different settings to achieve sustained benefits. By aligning intervention goals within educational, family, and training environments, positive outcomes can be maximized. This research underscores the significance of personalized fitness exercises for individuals with autism, recognizing their unique requirements and fostering improvements in both physical health and behavior management. As we move forward, it is imperative to continue refining these interventions and maintaining a comprehensive approach to supporting the holistic development of children with autism.

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