

REVIEW ARTICLE

Autistic Solutions: Exercises Being Crucial

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ABSTRACT

ASD or Autism Spectrum Disorder is characterised by issues with social interplay, the prevalence of particular inquisitiveness, and monotonous behaviours. There are now two major categories of ASD interventions: focused intervention practises that solely address specific behavioural symptoms and diversified treatment models, which are organized programmes. Additionally, studies have shown that ASD frequently co-occurs with motor skill impairments and disruptions. Given this data, exercise treatment would seem to be a suitable therapeutic approach to enhance ASD patients' quality of life. Exercise mimics the effects of antidepressants by releasing endorphins and monoamine neurotransmitters in the brain, making physical activity an effective alternative to medication therapy. Numerous trials investigating the use of physical activity in ASD have supported the application of physical activity in the management of autism. The effect of exercise on pathophysiological systems, namely in raising their endogenous melatonin levels, may operate as a mediator for the beneficial effects of exercise on sleep duration and quality. The favourable impact of exercise on social relationships may positively influence behaviours associated with eating disorders, which is expected to help improve the cholesterol profile of kids and teenagers with ASD. Exercise regimens that are highly planned and tailored to each individual should be an effective supplemental therapy to reduce symptomatology in kids and teens with ASD. Additionally, research has demonstrated that exercise has a direct favourable impact on children's cognitive and adaptive skills as well as self-determination and strength. Exercises are therefore important for many parts of autistic solutions and can have a good effect on an autistic person's life.

Keywords: ASD, Physical Activity, Management, Stereotypical behaviour, Eating disorders.

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BACKGROUND

ASD or Autism Spectrum Disorder is characterised by issues with social interplay, the prevalence of particular inquisitiveness, and monotonous behaviours [1].

There is presently no proven therapeutic treatment for ASD, and interventional methods are often implemented as structured programmes that combine behavioural and educational components. There are now two major categories of ASD interventions: focused intervention practises that solely address specific behavioural symptoms and diversified treatment models, which are organized programmes [2].

EXERCISES AS A THERAPEUTIC APPROACH FOR AUTISTIC SOLUTIONS

Exercise therapy is regarded as an evidence-based practise since it uses physical effort to reduce problem behaviours or increase acceptable behaviours. Additionally, studies have shown that ASD frequently co-occurs with motor skill impairments and disruptions. Given this data, exercise treatment would seem to be a suitable therapeutic approach to enhance ASD patients' quality of life [2].

In order to preserve overall population health, physical activity is crucial. It lowers blood pressure, enhances sleep quality, and increases insulin sensitivity, all of which minimise the chance of developing certain chronic diseases. Exercise mimics the effects of antidepressants by releasing endorphins and monoamine neurotransmitters in the brain, making physical activity an effective alternative to medication therapy [2]. It has been demonstrated that physical activity benefits pre-schooler's motor abilities and cognition, particularly in the domains of attentiveness, retention, behaviour, and academic achievement.

Children with ASD can benefit from physical activity in terms of their general health. However, compared to children who are normally developing (TD), children with ASD have lower levels of physical activity. Poor balance and motor coordination, which are frequently linked to ASD, may be to blame for this. Participating in team activities is difficult when one lacks the necessary sensory, behavioural, and communication skills. Numerous trials investigating the use of physical activity in ASD have supported the application of physical activity in the management of autism.² De Jesus et al.'s (2020) systematic review came to the conclusion that dancing had a beneficial impact on ASD-related symptoms. Improved social participation, behaviour, communication competence, physical realization, and cognitive health were among them. A meta-analysis of 29 research evaluating the influence of physical activity therapies on young ASD people discovered a generally somewhat good effect [1]. However, movement-related outcomes (manipulative and locomotor ability, muscular strength, and endurance) showed modest to considerable positive effects. Additionally, significant gains in a social function were seen. This is a significant weakness in ASD. A systematic evaluation of 18 studies on physical activity in adults and children found benefits in behaviour, academic achievement, or physical health in every single one of them [2].

Physical activity may be especially advantageous for individuals with autism because they are at higher risk for illnesses like depression, anxiety, sleep difficulties, obesity, hypertension, stroke, and diabetes. Autistic people frequently struggle with motor coordination. Exercise helps people's motor skills, with only one session having a "priming" influence on learning new motor skills. Improved motor coordination can lessen injuries, such as those caused by falls, suggesting once more that physical activity may assist improve the health of autistic persons [3].

Physical activity is good for autistic persons' health, according to studies. People with autism have the chance to interact with others through structured physical activities. One of the main characteristics of autistic people is stereotyped conduct, which consists of a pattern of monotonous, pointless, and meaningless actions. Because the stimulation gained through physical activity for autistic individuals has an underlying mechanism of action with the stimulation created by stereotypical behaviour, the effect of physical activity on the drop in stereotypical conduct in autistic people may be explained. In order to reach the ideal amount of excitation through sensory stimulation and adjustment, this can offer autistic people with comfortable sensory stimulation [4].

About 50 to 80 percent of children and adolescents with ASD show signs of sleep problems. The effect of exercise on pathophysiological systems, namely in raising their endogenous melatonin levels, may operate as a mediator for the beneficial effects of exercise on sleep duration and quality [5].

About 45 to 95 percent of children and adolescents with ASD exhibit eating issues. Therefore, the favourable impact of exercise on social relationships may positively influence behaviours associated with eating disorders, which is expected to help improve the cholesterol profile of kids and teenagers with ASD. Exercise regimens that are highly planned and tailored to each individual should be an effective supplemental therapy to reduce symptomatology in kids and teens with ASD [5].

Treatment for ASD often aims to inhibit or eradicate maladaptive behavioural tendencies including stiffness and stereotyped movements while promoting the development of cognition, language, and social skills. Secondary symptoms like hyperactivity, hostility, "fits of rage," and abrupt mood swings are frequently also addressed during treatment. According to research, each of the three main problem areas can be addressed rather well with the usual ASD treatment, and occasionally even improvements outside of these main symptom clusters are noted. Children with ASD have demonstrated to have higher IQs after receiving early group therapy [6].

The advantages of physical activities for kids with ASD have been investigated. Physical activity is a significant contributor to health in populations with developmental disorders. Physical activity has been demonstrated to aid with a variety of the deficiencies and difficulties that kids with ASD face. According to the study, engaging in physical activity enables kids with ASD to have fun with their classmates and improve important interpersonal skills. Several advantages of physical activity have been linked to mental and psychosocial wellness, according to several researches. For instance, physical activity may enhance psychological wellbeing in children with ASD, resulting in improved self-esteem, conduct, and happiness. Additionally, research has demonstrated that exercise has a direct favourable impact on children's cognitive and adaptive skills as well as self-determination and strength [7].

Numerous studies have found positive therapeutic outcomes when physical activity is used to treat kids with ASD. Tse permitted ASD kids to cycle, and he discovered that it significantly enhanced their executive function. When it comes to the visual attention of kids with ASD, Richard demonstrated that it is slower than that of kids with usual development. According to research, children with ASD have better visual attention when they are physically active [8].

Children with autism who exercise regularly report less repetitive behaviours and better cognitive performance overall. Exergaming links with physical activity movements to video game control, combining physical and mental exercise at the same time and possibly improving adherence to exercise [9].

Autism spectrum disease is a neurological condition that affects youngsters frequently and is characterised by constrictive, repetitive behavioural patterns that make daily tasks more difficult. In children with ASD, aerobic exercise has the potential to lessen stereotypical tendencies. Low- to moderate-intensity exercise significantly reduces stereotypical behaviours in children with ASD, however it appears that high-intensity aerobic exercise may increase these behaviours. This offers a simple, affordable method to have a positive impact on these people [10].

According to the research, a physical activity-based strategy is easy to implement and helpful in lowering a number of inappropriate behaviours linked to autism. To successfully engage a person with autism in any new activity, especially exercise, involves persistence, creativity, and the use of research-based teaching methods. For those with autism, visual aids like photographs, visual schedules, video models, social narratives, and modelling are a helpful teaching technique. Many autistic children need structure, routine, and order in their everyday activities, and visual supports provide these things. When used properly, visual supports give autistic kids the flexibility to participate in life, despite their disability. Visual supports and many other research-proven strategies (including reward and peer-mediated learning) are successfully used in special education [11].

Physical tasks requiring one or more motions done with a high level of accuracy and precision are referred to as motor skills. In general, the motor skills involved in physical exercise can be divided into open and closed skills depending on how individuals react to their environment. Open motor skills are performed in environments that are unpredictable or in motion, requiring performers to adjust their movements in response to the dynamic properties of the environment, as opposed to closed motor skills, which are performed in extremely predictable, stationary, and self-paced environments (like swimming or track and field). Due to the specialisation of different motor skill types, physical activity may benefit numerous brain functions. Additionally, depending on a person's stage of development, physical activity may have different effects on them, and it may be predominantly beneficial for ADHD symptoms in the initial stages of evolution [12].

A growing body of research demonstrates that moderate physical activity can strengthen neurotransmitter systems, upregulate brain-derived neurotrophic factor (BDNF), and enhance neurogenesis to improve psychological wellness. Physical activity has the potential to be a compliance ADHD remedy because it increases dopamine and norepinephrine neurotransmitters, which has a physiological effect similar to that of stimulant drugs in reducing ADHD symptoms. Additionally, 5-hydroxytryptamine (5-HT) and endogenous opioids are related with increased levels of physical activity, which may further improve mood and concentration [12].

Physical activity interventions for ADHD patients' inattentive symptoms still have unknown exact mechanisms at work. The primary biological explanation for ADHD at the moment is that catecholamines (CAs, such as norepinephrine, epinephrine, or dopamine) are dysfunctional. One of the pathophysiological causes of ADHD has been hypothesised to be abnormality in dopamine regulation in the brain's dopamine reward system, which causes distractive manifestations in patients with ADHD but not hyperactive features. Amphetamine and methylphenidate are two CA agonists that are effective in treating the symptoms of ADHD because they reduce the attenuation of the CA response to environmental stimuli. Studies suggest that exercise may increase the amount of dopamine and other CA produced and released in the prefrontal cortex, nucleus accumbens, caudate nucleus, and basal ganglia. Based on the aforementioned findings, an increase in levels of dopamine in the brain may be the major cause of how physical activity interventions improve symptoms of inattentiveness [12].

Children with ASD may have clumsy movements and motor skills. Many of these coordination issues can result in more complicated learning challenges in later development, including as difficulties with playground and athletic skills, when merged with communication, social abilities, and behavioural issues.¹³ According to research, engaging in intense physical activity can be a very productive autism treatment. One such investigation, which appeared in the 1982 issue of the journal "Journal of Autism and Developmental Disorders," discovered that jogging sessions increased appropriate play and academic response while reducing self-stimulatory behaviour. Running and swimming are repetitive activities that share similarities with repetitive actions linked to autism, according to one theory explaining why exercise reduces this type of behaviour. Exercise regimens that are planned are beneficial replacement behaviours [13].

It is believed that motor skills are the building blocks of sport-specific skills since they predict engagement in physical activity and have been connected to cognitive results.¹⁴ Childhood obesity, which is linked to both short- and long-term negative health effects, has also been linked to poor motor abilities [15].

Additionally, a lack of motor abilities may be a sign of a medical or developmental issue requiring specialised treatment [16].

Since children with ASD do poorly in the motor domain, it is advised that initial intervention programmes emphasise motor development. To help the kid make up for any deficiencies in their motor skills, physiotherapists can encourage the development of functional motor skills [17].

Physical activity, such as karate, swimming, or basketball, has been shown in prior studies on autistic children and teenagers to improve social interaction, communication skills, stereotyped behaviour, sports skills, motor coordination, cardiovascular fitness, and overall quality of life. Pool activities have been shown to be a successful method for helping children with ASD improve their psychomotor abilities, their capacity for adaptive behaviour, and their chances for social interaction. In fact, earlier studies have demonstrated how structured aquatic activities, like technical modality (TAT) or game-based (GAT), can support the emotional and social development of autistic children while also enhancing their physical fitness and water sensitivity. Additionally, buoyancy and hydrostatic pressure characteristics can be used to illustrate the advantages of the aquatic environment. These characteristics allow autistic children to develop their motor abilities as well as their sensory and social habits (such as paying attentiveness and keeping eye contact) [18]. Exercises are therefore important for many parts of autistic solutions and can have a good effect on an autistic person's life.

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