



The Importance of Exercise-Based Physical Activity for Individuals Diagnosed with Autism Spectrum Disorder

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Abstract

The purpose of this study is to examine the importance of exercise-based physical activity for individuals diagnosed with autism spectrum disorder in the context of the relevant literature. To this end, the relevant literature was reviewed, and the importance of exercise-based physical activity for individuals with autism spectrum disorder was examined in depth, with the article including the subheadings: Introduction, Exercise, Physical Activity, Exercise-Based Physical Activity, Autism Spectrum Disorder, the Importance of Exercise-Based Physical Activity for Individuals Diagnosed with Autism Spectrum Disorder, and Conclusion. The relevant literature indicates that exercise-based physical activity is important for individuals with ASD, contributing to all areas of development in these children. Consequently, it has been demonstrated that exercise-based physical activity is an important supportive therapeutic approach for individuals with ASD and has the potential to improve their overall health and well-being. These findings highlight that exercise can play a significant role in the management of ASD for health professionals, educators, and families.

Keywords: Autism Spectrum Disorder, Exercise, Exercise-Based Physical Activity, Physical Activity.

Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by significant challenges in social interaction, communication, and repetitive behaviors (APA, 2013). Various treatment and support methods are utilized to improve the quality of life and promote social integration for individuals diagnosed with ASD. In this context, the positive effects of exercise-based physical activity on individuals with ASD are increasingly researched and emphasized. Low levels of physical activity and increased sedentary behavior contribute to adverse health outcomes such as weight gain leading to obesity, metabolic and cardiovascular disorders, impaired psychosocial well-being, and cognitive functions (Doherty et al., 2018). ASD has been observed to have significant impacts on daily activities, physical activity levels, and motor skills (Bertelli et al., 2022). Among motor difficulties observed are delayed acquisition of gross and fine motor skills, impaired bilateral coordination, weak postural control and balance skills, altered walking patterns, deficiencies in motor planning, and poor imitation and interpersonal synchronization skills (Zampella et al., 2021). Individuals with ASD often experience delays in

developmental milestones such as crawling and walking since childhood, which manifest in deficits in motor control, delayed learning abilities, and inefficient and uncoordinated performance in later years (Anshu et al., 2022). Analysis of a large dataset comprising over 13,800 children with ASD from their families has suggested that the relative risk for motor impairments in autism increases along with the severity of social communication deficits, functional and cognitive impairments, and the intensity of repetitive behaviors (Bhat, 2021). Motor development holds a significant place among all developmental domains in individuals with ASD. Facilitating motor development will contribute to many other areas of development. This article will explore the importance of exercise-based physical activity for individuals diagnosed with ASD and examine how it can benefit them physically, psychologically, and socially.

Exercise

Exercise is defined as "structured, repetitive, and purposeful physical activity performed with the intent of improving or maintaining one or more components of physical fitness" (HHS, 2008, p. 7). It involves the conscious execution of

planned and structured physical activities, often performed regularly to support specific health goals or purposes. Exercise is characterized by activities performed within a specific plan and structure, and it can be categorized into various types such as aerobic (cardiovascular), resistance (strength), or flexibility exercises, each targeting different functions and systems of the body (American College of Sports Medicine, 2014).

Regular exercise enhances muscle strength, cardiovascular endurance, flexibility, and overall physical fitness. Aerobic exercises (walking, running, swimming) and anaerobic exercises (weightlifting, sprinting) support health from different perspectives and provide similar benefits for individuals diagnosed with Autism Spectrum Disorder (ASD). In individuals with ASD, exercise supports the development of motor skills and contributes to reducing behavioral issues. The importance of exercise stems from its positive effects on health. Regular exercise preserves heart and vascular health, strengthens the musculoskeletal system, improves body composition, and enhances metabolism to aid in weight management (Warburton et al., 2006).

Exercise also has numerous positive effects on psychological health. It can reduce stress, improve mood, boost self-confidence, and contribute to an overall sense of well-being (Craft & Perna, 2004; Rebar et al., 2015). Tailored exercise programs adapted to different age groups and health conditions can help individuals achieve their health goals and enhance their quality of life. For example, regular exercise for older adults helps maintain balance and muscle strength, while play and movement activities for children support their physical development (Biddle & Asare, 2011; Janssen & LeBlanc, 2010). In conclusion, exercise is a crucial component of a healthy lifestyle and an activity that individuals should engage in regularly to maintain and improve their physical and mental health.

Physical Activity

Physical activity encompasses any bodily movement that involves muscle and joint exertion, including daily life activities, sports, exercise, and games. Regular physical activity assists in the prevention of chronic diseases such as cardiovascular diseases, diabetes, obesity, and certain types of cancer. Additionally, it improves mental health and enhances overall quality of life. Nevertheless, a significant portion of the population continues to remain physically inactive (Chen, Ding, Xu, & Li, 2021).

Children are recommended to engage in 60 minutes or more of moderate to vigorous intensity physical activity daily (Piercy et al., 2018). Lack of physical exercise adversely affects the physical and mental health of children and adolescents (Sallis, Prochaska, & Taylor, 2000; Biddle, 2011). Participating in physical activity during adolescence has numerous benefits for physical and mental health (García-Hermoso et al., 2021). The persistence of low activity levels following sharp declines in physical activity during

adolescence poses a significant public health issue, as it is likely to continue into adulthood (Reiner et al., 2013). Engaging in physical activity during adolescence increases the likelihood of experiencing a healthy adulthood (Reiner et al., 2013).

The importance of physical activity for human health is substantial. Many studies demonstrate the harmful effects of physical inactivity and sedentary lifestyles on health (Li, Lear, Rangarajan et al., 2022). Regular physical activity supports musculoskeletal health, preserves cardiovascular health, aids in weight management, and enhances overall quality of life (Warburton et al., 2006). Physical activity also has positive effects on psychological health by reducing stress, improving mood, boosting self-confidence, and promoting overall happiness (Craft & Perna, 2004; Rebar et al., 2015). These positive effects of physical activity on health can vary depending on age, gender, physical condition, and type of activity. For instance, aerobic activities have a more pronounced impact on cardiovascular health, while resistance exercises focus on muscle strength and endurance (Garber et al., 2011).

Regular physical activity is crucial for individuals diagnosed with Autism Spectrum Disorder (ASD), both for maintaining their physical health and enhancing social interactions. Core impairments experienced by individuals with autism may affect their ability to engage in physical activity (Shields & Synnot, 2016). In conclusion, physical activity is an integral part of a healthy lifestyle and has numerous positive effects on overall health. Engaging in regular physical activity is essential for individuals to maintain and improve their health.

Exercise-Based Physical Activity

Physical activity refers to any bodily movement that results in energy expenditure and is generated by skeletal muscles, while exercise is a subset of physical activity that is planned, structured, and repetitive. Exercise-based physical activity involves regularly performed and consciously planned specific physical activities or exercise programs aimed at achieving health and fitness goals. These activities include exercise routines or sports activities that individuals actively engage in their daily lives.

Exercise-based physical activities typically encompass exercise programs recommended by health professionals to enhance an individual's physical capacity and overall health. These programs are personalized, regularly monitored, and evaluated based on the individual's needs and goals. For individuals diagnosed with Autism Spectrum Disorder (ASD), such programs can be effective in enhancing motor skills development, social interaction, and overall quality of life.

The importance of exercise-based physical activity stems from its positive effects on health. Regular exercises improve cardiovascular health, increase muscle strength, regulate body composition, and support overall health (Garber et al., 2011). Regular aerobic exercises enhance heart health and can reduce

the risk of cardiovascular diseases (Thompson et al., 2003). Moreover, they have positive effects on psychological health by reducing stress, improving mood, and enhancing overall quality of life (Craft & Perna, 2004; Schuch et al., 2016). Exercise-based physical activity also plays a crucial role in preventing and managing chronic diseases such as obesity and diabetes (Colberg et al., 2010). It helps maintain physical functions and independence during the aging process (Nelson, 2007). Resistance exercises increase muscle mass, preserve bone health, and can prevent age-related strength loss (Westcott, 2012). Therefore, engaging regularly in exercise-based physical activity is a significant step toward improving individuals' health and well-being. Tailored exercise programs based on each individual's physical activity level and health condition are vital to enhancing their quality of life and ensuring healthy aging.

It is known that the tendency for physical inactivity increases with age (Ratcliff et al., 2018). Exercise programs tailored to different age groups and health conditions can help individuals achieve their health goals. For instance, flexibility and balance exercises for older adults can reduce the risk of falls, while performance-enhancing exercises for young adults can improve athletes' performance (Behm & Chaouachi, 2011; Gillespie et al., 2012). Research in the ASD population has also focused on the neurobiological effects of physical exercise on cognitive functions. For example, Moradi and colleagues (2018) demonstrated an increase in nerve growth factor concentration in children with ASD after perceptual-motor exercise intervention (Moradi et al., 2018). In conclusion, when exercise-based physical activity is performed regularly, it helps individuals maintain and improve their health. Tailored exercises based on each individual's lifestyle and health condition play a critical role in supporting both physical and mental health.

Autism Spectrum Disorder (ASD)

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by difficulties in social interaction, repetitive behaviors, and restricted interests (APA, 2013). ASD is a lifelong condition that significantly impacts individuals' daily life activities and social interactions. The symptoms and severity of ASD vary from person to person, thus requiring individually tailored supports and interventions.

ASD typically begins in childhood and persists throughout life, marked by significant challenges in social interaction and communication skills. Individuals with ASD are recognized for having repetitive behaviors and restricted interests. The symptoms can vary widely across a spectrum, with different levels of severity observed in different individuals. The signs of ASD may vary depending on the individual's age and developmental level. In early childhood, difficulties in social interaction and communication, along with repetitive behaviors and restricted interests, are prominent. Some children may exhibit significant delays in language development or unusual aspects of language use (American Psychiatric Association, 2013).

The exact cause of ASD is not fully understood, but a combination of genetic and environmental factors plays a significant role. Specific changes during brain development may contribute to the onset of ASD (Geschwind, 2008). Early diagnosis and intervention can enhance the quality of life for individuals with ASD and support their social integration (Dawson et al., 2012). In conclusion, Autism Spectrum Disorder is a neurodevelopmental disorder characterized by complex and diverse symptoms. Due to the variability in symptoms and individual needs, a personalized approach and early intervention are crucial.

The Importance of Exercise-Based Physical Activity for Individuals with Autism Spectrum Disorder (ASD)

Exercise-based physical activities play a critical role in enhancing the quality of life for individuals diagnosed with ASD. These activities not only help maintain their physical health but also enhance social interactions, boost self-confidence, and aid in stress management. Additionally, they support the development of motor skills, promoting independence in daily life activities.

Individuals with ASD often do not fully benefit from physical activity and exercise opportunities. However, recent research indicates that regular physical activity has several positive effects for individuals with ASD. For instance, regular exercise supports the development of motor skills and provides health benefits such as improved physical fitness and prevention of obesity (Tiner, Cunningham & Pittman, 2021). Moreover, consistent participation in physical activities can increase daily life engagement and contribute to the development of social skills (Sefen et al., 2020).

From a physical health perspective, exercise enhances overall physical health by increasing muscle strength and flexibility. Individuals diagnosed with ASD can protect themselves from chronic illnesses such as obesity, cardiovascular diseases, and diabetes through regular exercise. Psychologically, exercise boosts endorphin release, reduces stress and anxiety, alleviates symptoms of depression, enhances self-esteem, and improves overall mood. Exercise can effectively reduce mental health issues like anxiety and depression in individuals with ASD.

Socially, group exercise activities contribute to the development of social skills and societal integration for individuals with ASD. Exercise programs provide opportunities for expanding social circles and forming new friendships. Increased social interactions can help individuals with ASD improve their social skills and communication abilities.

Motor difficulties are significantly associated with the severity of core symptoms in ASD and affect an individual's ability to successfully perform daily life activities (Licari et al., 2020). Exercise programs can aid in improving motor

skills and increasing independence in daily life activities. These programs allow individuals diagnosed with ASD to enhance balance, coordination, and motor control. Moreover, exercises increase participation in physical activities, thereby enhancing quality of life.

The positive effects of exercise-based physical activity on individuals with ASD significantly enhance their quality of life. For example, regular exercise among children with ASD may reduce stress and improve sleep patterns (Ferreira et al., 2019). Additionally, the positive effects of physical activity on emotional regulation can strengthen individuals' abilities to cope with daily life challenges (Sorensen & Zarrett, 2014). In conclusion, exercise-based physical activity serves as a crucial supportive therapeutic approach for individuals with ASD, effectively enhancing their overall health and well-being. Therefore, increasing exercise opportunities is crucial to improving the quality of life and supporting the overall health of individuals diagnosed with ASD.

Conclusion

Exercise-based physical activity encompasses consciously planned physical movements performed regularly to improve or maintain health. These activities typically include muscle-strengthening, cardiovascular endurance-building, and overall physical fitness-enhancing exercises within a specific program or exercise routine (American College of Sports Medicine, 2014). Exercise-based physical activity serves as a crucial tool to enhance the quality of life and maintain the health of individuals diagnosed with ASD.

A recent study has shown that young adults (aged 18-27) with Autism Spectrum Disorder (ASD) typically engage in lower levels of physical activity compared to their typically developing peers (Hillier et al., 2020). This underscores the necessity to develop tailored exercise programs specifically suitable for individuals with ASD. These programs can help strengthen their physical, psychological, and social health, promoting a healthier lifestyle. The effects of exercise-based physical activity on individuals with ASD extend beyond physical health, providing significant benefits for emotional and mental well-being as well. For instance, regular exercise is known to reduce stress levels and improve emotional regulation (Tse et al., 2024), thereby enhancing individuals' abilities to cope with daily life challenges.

However, further research is needed to better understand the specific effects of exercise on individuals with ASD. Particularly, detailed examinations of different types and durations of exercise and their impacts on individuals are crucial. Such research efforts can contribute to optimizing exercise-based interventions and developing more effective strategies to enhance the quality of life for individuals with ASD. In conclusion, exercise-based physical activity serves as an important supportive therapeutic approach for individuals with ASD, holding potential to improve their overall health and well-being. These findings underscore the significant role

that exercise may play in the management of ASD for health professionals, educators, and families alike.

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