

Study on the Exercise Intervention of Stereotypical Behavior in Children With Autism

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Abstract: By using the method of literature, we first defined the core concepts of autism spectrum disorder and stereotypical behavior, then analyzed the types of stereotypical behavior of autistic children, and finally summarized the effect of exercise intervention on autistic children, so as to provide reference for the follow-up exercise intervention of stereotypical behavior of autistic children.

1. Introduction

Stereotypical behavior is one of the core defects of autism spectrum disorders, which refers to a series of behaviors with high frequency, no obvious purpose and significance displayed by children with autism spectrum disorders, including narrow interest, difficult to accept the change of things, etc. As the most difficult defect to overcome in autism spectrum disorder, repetitive stereotyped behavior seriously affects the social integration and social skills acquisition of children with autism spectrum disorder, affects the development of children's functional behavior, and brings severe challenges to children and their families. At present, there are few researches on repetitive stereotyped behavior in the domestic academic field, and most of them focus on behavioral intervention; exercise intervention belongs to behavioral intervention, and the existing researches show that exercise intervention can have a moderate to significant maximum impact on children with autism spectrum disorder, which is conducive to their sports ability development and physical and mental health, and reduce stereotyped repetition and self harm behavior. Therefore, the research on exercise intervention for autistic children has certain theoretical basis and practical significance.

2. Definition of Core Concepts

2.1 autism spectrum disorders autism

Autism spectrum disorders autism (ASD) also known as autism, is a kind of neurodevelopmental disorders with the core symptoms of social interaction disorders and repetitive stereotyped behaviors. It starts in infancy, and most of them are male. The concept of autism was first put forward by American child doctor kainer in 1943 and introduced into China in 1980s. With the introduction of diagnostic and Statistical Manual of mental disorders (5th Edition, DSM-V) in 2013, the term "autism" has been gradually replaced by "autism spectrum disorder". It defines autism spectrum disorder as a single category, which belongs to neurodevelopmental disorder, and clearly indicates that autism is a spectrum Obstruction.

2.2 stereotyped behavior

In the early definition of stereotyped behavior, is often described as a high-frequency behavior that repeats in a constant way and has no obvious adaptive function. However, more and more recent studies support the view that stereotyped behavior is an operational behavior, which is maintained by its subsequent results (such as automatic reinforcement). Stereotypes can have serious negative effects on individuals and their families. Ann Hylton summarizes these effects It is manifested in the following aspects: interfering with the acquisition of individual skills, such as

hindering the individual's observation and learning, playing and mastering specific academic skills; preventing the individual from carrying out stereotyped behavior may cause individual's resistance; the individual with stereotyped behavior is vulnerable to social discrimination, which is unfavorable for social interaction; some stereotyped behavior may develop into self-injuring behavior, such as repeatedly slapping the body A part may cause self-injury. These negative effects will bring some challenges to families and related personnel. Therefore, it is necessary to explore effective intervention methods, which is of great significance to improve the quality of life of autistic children and their families.

3. ASD Stereotyped Behavior Types

According to Turner (1996), repetitive behavior can be divided into two categories: low level repetitive behavior and high level repetitive behavior. Low level repetitive behaviors include stereotyped actions, repetitive objects and repetitive self-injuring behaviors, while high level repetitive behaviors are stereotyped adherence to some rules or mental stereotypes, such as attachment to objects, adherence to maintaining identity, repetition of language, limited interest, etc. Bodish et al. (1999) classified repetitive stereotype into the following six categories: stereotype, compulsive behavior, self-injurious behavior, ritualistic behavior, sameness behavior and restricted interests. In addition, some researchers have classified stereotyped behaviors according to the degree of harm caused by stereotyped behaviors. According to the degree of injury to the body, stereotypical behaviors are usually manifested as self-stimulating behaviors (such as screaming, running, squinting, etc.) and self-injuring behaviors (such as grasping, poking, pinching, or pulling different parts of the body, etc.). Due to the individual differences of autistic children, the stereotyped behaviors of each child are complex and uncertain.

4. The Intervention Effect of Stereotypical Behavior in Children with Autism

At present, researchers measure stereotyped behavior mainly based on observation. As early as 1980, waters found that when ASD individuals engaged in some physical activities (such as gymnastics, extracurricular activities), their stereotyped behavior would be reduced correspondingly. After that, Kern et al. (1982) also found that jogging for only 20 minutes can reduce the stereotyped behavior of ASD children, and this effect has cross situational consistency. Based on these findings, researchers began to focus on the relationship between exercise intensity and ASD children's stereotyped behavior. Kern et al. (1984) took three ASD children aged 7-11 as subjects, and asked them to do 15 minutes of vigorous exercise (jogging) and moderate intensity exercise (in the distance of 2-3m, adults and ASD children throw the ball back and forth 11-12 times / min). The study found that compared with moderate intensity exercise, ASD children's stereotype behavior after vigorous exercise was significantly reduced. In the above study, Kern et al. (1984) defined throwing as moderate intensity sport, which was questioned by some researchers, who believed that such operation was not accurate. Later, Levinson et al. (1993) took three ASD children as subjects and asked them to walk for 15 minutes and jog for 15 minutes respectively. The results also showed that only after jogging, the stereotyped behavior of ASD children was temporarily improved, which was 17.5% lower than that before intervention.

In recent years, researchers began to use more rigorous experimental design to test the effect of sports intervention on the stereotyped behavior of ASD individuals. Bahrami et al. (2012) randomly divided 30 ASD children into the experimental group and the control group, 15 in each group. The experimental group received 14 one-on-one karate training, 4 times a week (30 minutes in the first 7 weeks, 90 minutes in the eighth weeks), a total of 56 times. The control group did not receive training. The study found that after the intervention, the experimental group had a significant improvement in the stereotype behavior, compared with before the intervention, the experimental group's stereotype behavior decreased by 42.54%, and the effect can last at least one month. Mays (2013) took two ASD children as subjects, and performed jogging intervention before class (4 times a week, 10 minutes each time, 30 times in total, with the intensity of 60% - 80% of the maximum

heart rate (HRmax). The results showed that immediately after jogging intervention, the level of stereotyped behavior of subject 1 decreased by 12%, and that of subject 2 decreased by 10.7%. Liu et al. (2016) took 23 ASD children as subjects, and asked them to have 15 minutes of medium and high intensity exercise (MVPA). The whole exercise process was monitored by HR. In the exercise process, each ASD child had a staff to assist, including trampoline, bicycle, dance, etc. The results showed that the stereotyped behavior decreased significantly after exercise intervention, and the effect lasted at least 2 hours.

5. Conclusion

In summary, although the research on exercise intervention of ASD individual stereotyped behavior started earlier, compared with other diagnostic characteristics of autism spectrum disorders, the number of literature on repetitive behavior is very limited. From the existing literature, the main intervention contents are jogging, karate, fitness games and so on. And the study found that both short-term exercise intervention and long-term exercise intervention can improve the stereotypical behavior of ASD individuals. It is worth noting that the effect of high-intensity exercise seems to be better than that of low-intensity exercise.

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