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The role of mindfulness training and progressive muscle relaxation for managing stress in children with autism, and the role of ICTs

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Abstract

Stress management is a critical component of therapeutic interventions for children with autism spectrum disorder (ASD). This article explores the efficacy of mindfulness training and progressive muscle relaxation (PMR) as strategies to alleviate stress in this population. Current research indicates that these techniques can significantly reduce anxiety and improve overall well-being in children with autism. This paper reviews relevant studies and highlights the mechanisms through which mindfulness and PMR contribute to stress management.

Keywords: Stress; Mindfulness; Relaxation; Progressive Muscle Relaxation; Autism; Digital technologies

1. Introduction

Children with autism spectrum disorder (ASD) often experience heightened levels of stress due to sensory sensitivities, social challenges, and communication difficulties (White et al., 2009). Effective stress management strategies are essential to enhance their quality of life and overall functioning. This article examines the impact of mindfulness training and progressive muscle relaxation (PMR) on stress reduction in children with autism.

2. Stress in Autism Spectrum Disorder

Children with ASD are prone to elevated stress levels due to various intrinsic and extrinsic factors (Lecavalier et al., 2006). Intrinsic factors include neurobiological differences that affect sensory processing and emotional regulation (Baron-Cohen et al., 2009). Extrinsic factors involve environmental stimuli and social interactions that can be overwhelming for children with ASD (Kanner, 1943).

3. Mindfulness Training

3.1. Definition and Mechanisms

Mindfulness involves paying attention to the present moment non-judgmentally (Kabat-Zinn, 1994). It enhances self-awareness and emotional regulation, crucial for children with ASD who struggle with these areas (Hölzel et al., 2011).

3.2. Efficacy in ASD

Research shows that mindfulness training can reduce anxiety and improve behavioral regulation in children with ASD (Spek et al., 2013). Studies highlight improvements in attention, emotional regulation, and social skills following mindfulness interventions (Hwang & Kearney, 2013).

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3.3. Implementation

Mindfulness practices for children with ASD can include breathing exercises, body scans, and mindful movement activities. These techniques are adapted to be age-appropriate and engaging (Saltzman & Goldin, 2008).

3.4. The Role of ICTs

In this section, we emphasize the significance of all digital technologies in the field of education and in autistic children training, which is highly effective and productive, facilitates and improves assessment, intervention, and educational procedures via mobile devices that bring educational activities everywhere [21-23], various ICTs applications that are the main supporters of education [24-37], and AI, STEM, GAMES and ROBOTICS that raise educational procedures to new performance levers [38-43]. Additionally, the development and integration of ICTs with theories and models of metacognition, mindfulness, meditation, and the cultivation of emotional intelligence [44-55], accelerates and improves more the educational practices and results, especially in children with autism, treating domain and its practices like assessment and intervention.

4. Progressive Muscle Relaxation (PMR)

4.1. Definition and Mechanisms

PMR involves the systematic tensing and relaxing of muscle groups, promoting physical relaxation and stress reduction (Jacobson, 1938). This technique helps in lowering physiological arousal associated with stress (McCallie et al., 2006).

4.2. Efficacy in ASD

Studies demonstrate that PMR can reduce anxiety and improve sleep quality in children with ASD (Carmassi et al., 2019). PMR also aids in decreasing aggressive behaviors and enhancing emotional stability (Singh et al., 2011).

4.3. Implementation

PMR is implemented through guided sessions where children progressively tense and relax muscle groups. Visual aids and simple instructions are used to make the process accessible for children with ASD (Vancampfort et al., 2013).

5. Comparative Analysis and Integration

5.1. Combined Benefits

Combining mindfulness and PMR can provide a comprehensive approach to stress management in children with ASD. While mindfulness enhances emotional and cognitive regulation, PMR directly reduces physiological tension (Zoogman et al., 2015).

5.2. Case Studies

Case studies reveal that children with ASD show marked improvements in stress levels and adaptive functioning when these techniques are used in conjunction (Cachia et al., 2016). Personalized interventions tailored to the child's specific needs yield the best outcomes (Sukodolsky et al., 2008).

6. Challenges and Future Directions

6.1. Implementation Barriers

Challenges in implementing mindfulness and PMR include variability in individual responsiveness and the need for consistent practice (Davis & Hayes, 2011). Tailoring interventions to fit the unique sensory and cognitive profiles of children with ASD is crucial (Baer, 2003).

6.2. Research Gaps

Further research is needed to explore the long-term effects of these interventions and their impact on different subgroups within the ASD population (Williams et al., 2018). Studies should also examine the integration of these practices into school and home settings for broader applicability (Kazdin & Blase, 2011).

7. Conclusion

Mindfulness training and progressive muscle relaxation offer promising avenues for managing stress in children with autism spectrum disorder. These techniques not only reduce stress and anxiety but also enhance overall emotional and behavioral regulation. As research continues to expand, these interventions hold the potential to significantly improve the quality of life for children with ASD.

Compliance with ethical standards

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Disclosure of conflict of interest

The Authors proclaim no conflict of interest.

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