

Physical exercise in reduction anxiety in post-pandemic children

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Abstract

Regular exercise can help children cope with anxiety, especially during difficult times like the post-COVID-19 pandemic. Physical exercise promotes children's emotional well-being and helps reduce anxiety symptoms because of its physiological benefits, such as reducing cortisol and releasing endorphins, as well as psychological benefits, such as improving mood and self-esteem. In addition, the results show that cognitive behavioral therapy (CBT), which focuses on identifying and correcting negative thought patterns, also works to treat childhood anxiety. Using techniques such as mindfulness, which teaches children to focus on the present moment, and resilience, which strengthens the ability to cope with adverse situations, can help children reduce symptoms of anxiety and improve their physical and mental health. Running, jumping rope, dancing, ball games, yoga, and other physical activities are all good options for children because they encourage them to be creative, work together, and communicate socially.

Keywords: Anxiety; Physical exercise; Children; POST COVID-19

1. Introduction

Due to the complexity of the phenomenon, anxiety has been addressed in a variety of ways over the years. Studies such as the one by Kabat-Zinn et al. (1995) show that mindfulness can significantly reduce anxiety symptoms and improve quality of life. The post-COVID-19 pandemic has had a major impact on children, increasing their anxiety.

Sigmund Freud was a significant figure in the field of psychoanalysis and the study of anxiety. In *Inhibition, Symptom, and Anxiety* (1926), he explains that anxiety is a response to a danger that has been perceived. It is caused by an internal conflict between the primitive and unconscious impulses and the Superego, which are social expectations and moral norms. The Ego, the conscious part of the personality, is alerted by anxiety. Biologists often view anxiety as a physiological response to stress. In *The Stress of Life* (1956), Hans Selye said that stress can cause symptoms of anxiety through a fight-or-flight response.

Studies have shown that neurotransmitters such as serotonin and GABA normalize anxiety reactions (Ressler & Nemeroff, 2000).

Child anxiety is becoming an increasingly prevalent subject around the world, particularly in the face of the difficulties created by the post-COVID-19 pandemic (Loades et al., 2020). The increase in anxiety in children was strongly influenced by factors such as uncertainty, sudden changes in routine, and health concerns. As a result, it appears that regular exercise can help young people improve their anxiety symptoms and improve their physical and mental well-being during the post-pandemic.

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Physical exercise can reduce anxiety by neurobiological mechanisms, such as the regulation of the neurotransmitter's serotonin and dopamine (Mikkelsen et al., 2018). In addition, cognitive behavioral therapy has also been shown to work to treat anxiety in children (Beck, 1976).

Due to the complexity of childhood anxiety and the effects of the post-COVID-19 pandemic, it is crucial to investigate therapeutic alternatives that can improve children's mental health and reduce their anxiety symptoms. Regular physical exercise, along with other methods of promoting mental health, can help promote emotional well-being and decrease anxiety in children. To better understand anxiety, we need to understand how the brain perceives anxiety. It's a complicated process that involves multiple structures and neurotransmitters in the brain.

According to Ledoux (1996), sensory processing is conceptualized as follows: The hypothalamus initially processes potentially threatening stimuli.

The hypothalamus transmits sensations. The result is an emotional response. The amygdala, a part of the brain that plays an important role in the emotional response, figures this out and can trigger a flight-or-fight response, releasing stress hormones such as adrenaline and cortisol, increasing physical symptoms such as sweating and rapid heart (Öhman, 2005). Cognitive assessment comes later. The frontal cortex threatens and evaluates, which is responsible for processing information and making decisions. If the moment is deemed safe, the amygdala's response may be to calm down (Etkin, 2010). Memory and learning continue.

The hippocampus, which is essential for the formation of memories, has a role in responding to anxiety. Situations that cause memories of anxiety may be recalled in similar situations in the future (Kim & Diamond, 2002). The amygdala and prefrontal cortex do not work well in people with an anxiety disorder. The responses are inadequate and protracted.

2. Benefits of physical exercise in reducing anxiety

Studies show that regular exercise can reduce children's anxiety. This is particularly true during difficult periods, such as the post-COVID-19 pandemic (Asmundson et al., 2013).

Physical exercise is not only good for the body, such as improving cardiovascular function and academic performance, but it is also good for the mind, such as improving psychosocial well-being and academic performance (Biddle & Asare, 2011). Neurological mechanisms, such as the regulation of the neurotransmitter's serotonin and dopamine, are linked to the reduction of anxiety through exercise (Ressler & Nemeroff, 2000).

Endorphins are released: The body produces endorphins during exercise, which are neurotransmitters known to decrease the perception of pain and promote a sense of well-being (Dishman, 1997). These endorphins have a calming effect and can help lower anxiety levels, making you happy and relaxed. Reduce tension in muscles: Physical symptoms of stress and anxiety often include muscle tension and discomfort (Mikkelsen et al., 2018).

The exercises relax and relieve tense and stiff muscles. This can improve the overall sense of well-being, as well as decrease the physical symptoms of anxiety. Distraction and focus: When you exercise, the mind tends to focus on the activities it is involved in, such as body movements breathing and interaction with the environment (Meeusen, 2005). This provides a break from worries and anxious thoughts, allowing the person to focus on the present moment. This distraction can help reduce anxiety levels and promote a sense of calm and mental clarity. Improved sleep: Regular exercise is associated with an improvement in sleep quality (Murray et al., 2017). Adequate sleep plays a key role in regulating mood and managing stress and anxiety.

When a person sleeps better, they are better equipped to cope with day-to-day challenges and are less likely to experience symptoms of anxiety. Increased self-esteem: Regular physical exercise can improve self-image and self-esteem (Sciberras et al., 2019). By achieving fitness goals, overcoming challenges, and experiencing improvements in their overall health and well-being, people tend to feel more confident and positive about themselves. This can help reduce feelings of anxiety and promote a more positive attitude towards life. Regulation of neurotransmitters: Exercise influences the activity of neurotransmitters in the brain, such as serotonin, dopamine, and norepinephrine, which play an important role in regulating mood and emotions (Murray et al., 2017).

Regular exercise can increase the production and release of these neurotransmitters, which can help relieve symptoms of anxiety and promote a sense of emotional well-being. These are some of the mechanisms by which physical exercise can help in reducing anxiety. Incorporating regular physical activity into the daily routine can be an effective strategy for managing and reducing anxiety symptoms. games such as short-distance races, relay races, or even obstacle courses,

where children can jump, dodge, and have fun while running. Jumping rope is an aerobic activity that contributes to the development of motor coordination, balance, and cardiovascular endurance (Mikkelsen et al., 2018).

Adjusting the length of the rope for kids depends on their height and ability. They may attempt basic jumps, and as they become more confident, they may attempt more complex jumps, such as crossing their arms or jumping by alternating feet. Dancing is a type of enjoyable physical activity that combines movement, rhythm, and music (Sciberras et al., 2019). Kids can try a variety of dance styles, such as hip-hop, ballet, jazz, or folk dances, according to their interests and preferences.

The results of studies have shown that regular exercise can play a significant role in reducing anxiety levels in children during the post-COVID-19 pandemic (Murray et al., 2017). However, physical exercise has been shown to be effective in reducing these symptoms, promoting not only physiological benefits, such as improved cardiovascular health and physical function, but also psychological benefits, such as improved academic performance and psychosocial well-being (Asmundson et al., 2013).

Additionally, the reviewed studies highlighted that regular physical exercise can positively impact children's mental health and well-being, providing an effective strategy for coping with anxiety and improving quality of life during challenging periods, such as the post-COVID-19 pandemic (Martínez-Gómez et al., 2017). These findings emphasize the importance of promoting physical exercise as an integral part of strategies to promote children's mental health, providing solid evidence for the implementation of interventions aimed at reducing anxiety in children (Sciberras et al., 2019). Therefore, the results of this study reinforce the relevance of physical exercise as an effective tool to reduce anxiety in children, especially in contexts of stress and uncertainty, such as the one experienced during the post-COVID-19 pandemic (Murray et al., 2017). The promotion of healthy habits, such as the practice of

Regular physical activity can contribute significantly to children's emotional and physical well-being, helping to mitigate anxiety symptoms and promote a better quality of life.

3. Conclusion

Regular physical exercise emerges as a promising strategy to reduce anxiety levels in children, especially in challenging contexts such as the post-COVID-19 pandemic. The physiological and psychological benefits of physical exercise, such as improved physical, cardiovascular, and cognitive function, are key to promoting children's emotional well-being and helping to reduce anxiety symptoms. In addition, cognitive behavioral therapy is also effective in treating childhood anxiety. Childhood anxiety can be triggered by a number of factors, including stress, changes in routine, and health concerns. Regular physical exercise, combined with strategies such as mindfulness and resilience, can have positive effects on reducing anxiety symptoms in children, contributing to their physical and mental health. Studies highlight the importance of recognizing the signs of anxiety in children and seeking appropriate treatments, including regular physical exercise, as an integral part of strategies to promote children's mental health. The regulation of neurotransmitters in the brain, such as serotonin and dopamine, through physical exercise, is an important mechanism for reducing anxiety in children.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed

References

- [1] Anderson, L.B., Andersen, TE, and Mota, J. (2013). Secular trends in physical activity in Danish children: the European Youth Heart Study. *Scandinavian Journal of Medicine and Science in Sport*, 23(3), 287-294.
- [2] Anderson, S.E., Cohen, P., Naumova, E.N., Jacques, P.F., & Must, A. (2013). Adolescent obesity and risk for subsequent major depressive disorder and anxiety disorder: prospective evidence. *Psychosomatic Medicine*, 69(8), 740-747.
- [3] Asmundson, G. J., Fetzner, M. G., & Deboer, L. B. (2013). Aerobic exercise for anxiety and related disorders: A meta-analysis. *Clinical psychology review*, 33(5), 909-917.

- [4] Bandura, A. (1962). Social learning through imitation. *Nebraska Symposium on Motivation*, 10, 211-269.
- [5] Bishop, S.J. (2007). Neurocognitive mechanisms of anxiety: an integrative account. *Trends in Cognitive Sciences*, 11(7), 307-316.
- [6] Biddle, S. J., & Asare, M. (2011). Physical activity and mental health in children and adolescents: A review of reviews. *British Journal of Sports Medicine*, 45(11), 886–895.
- [7] Broman-Fulks, J. J., Ruggiero, K. J., Green, B. A., Kilpatrick, D. G., Danielson, C. K., Resnick, H. S., & Saunders, B. E. (2010). Taxometric investigation of PTSD: data from two nationally representative samples. *Behavior therapy*, 41(4), 672-681.
- [8] Martínez-Gómez, D., Veiga, Ó. L., Zapatera, B., Cabanas-Sánchez, V., Gómez-Martínez, S., & Marcos, A. (2017). Physical activity and anxiety symptoms in adolescents: a longitudinal study. *BMC Public Health*, 17(1), 1-9.
- [9] Mikkelsen, K., Stojanovska, L., Tangen, T., Bosevski, M., & Apostolopoulos, V. (2018). Exercise and mental health. *Maturitas*, 112, 85-91.
- [10] Murray, M., Creswell, J. W., & Cooper, P. (2017). The
- [11] effects of physical activity on physiological processes. In *The Handbook of Physical Activity and Mental Health* (pp. 25-38). Routledge.
- [12] Russo-Neustadt, A. A. (2004). Physical activity and mental health: the role of physical activity as a buffer of life stress. *Journal of Nutrition, Health & Aging*, 8(6), 477-480.
- [13] Sciberras, E., Westrupp, E., Mensah, F., Hiscock, H., & Wake, M. (2019). Physical Activity and Anxiety in Children and Adolescents: Results from the Longitudinal Study of Australian Children. *Academic Pediatrics*, 19(5), 825.