## Letter to Editor

# Child-centered Corrective Exercises: A Multidisciplinary Approach to Posture Improvement in Children

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### Dear Editor

Body posture in children has been a focus of research for decades. Posture refers to the way the human body is positioned against the force of gravity. When musculoskeletal structures are still developing during childhood, establishing good postural habits is crucial for long-term health [1]. Studies have shown that good posture is associated with appropriate physical performance in children. For example, research indicates a correlation between good posture and improved athletic performance.

Furthermore, good posture can enhance balance and coordination, reducing the risk of falls and injuries. Moreover, recent evidence suggests a potential link between posture and mental health in children. Some studies indicate that good posture may increase confidence and self-esteem. Conversely, poor posture may be linked to feelings of fatigue and even depression [2].

Several methods have been proposed to improve body posture in children, the most important of which is participation in therapeutic and corrective exercises. Exercise and physical activity play a fundamental role in establishing good posture in children. Exercise can help children develop and maintain healthy postural habits by strengthening core muscles, enhancing flexibility, increasing body awareness, improving neuromuscular coordination, enhancing muscle strength, and reinforcing balance and postural control [3].

The existing evidence shows that corrective exercises can be designed to address various postural issues in children. For instance, resistance exercises for the upper back muscles can help improve rounded shoulders, forward head posture, or thoracic kyphosis. Similarly, corrective exercises can improve knee alignment in children with dynamic knee valgus. However, most studies indicate that while different corrective exercises can improve children's posture, there is little significant difference in the effectiveness of various exercise methods [4]. Thus, to enhance the effectiveness of therapeutic exercise interventions for children's postural alignment, it is essential to consider aspects of posture that have received less attention.

Multiple factors influence children's posture. While the biomechanical aspects of posture have been well-studied, the role of psychological and cognitive factors remains unclear. It should be kept in mind that the human body and brain have a complex relationship. Emotions, thoughts, and self-awareness can manifest physi-

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cally and affect posture. For example, research shows a connection between positive emotions, such as confidence, and forward head and rounded shoulder posture [5], whereas negative emotions, like depression or anxiety, can be associated with thoracic kyphosis and forward head posture [6].

Studies have shown that various psychological factors can influence children's posture. For instance, children experiencing positive emotions like happiness and excitement tend to stand more upright, while negative emotions like fear or sadness can lead to slouching and reduced muscle activity. Additionally, children with high self-esteem tend to exhibit proper and upright posture [6, 7].

In addition, past studies have shown that children's posture depends on the ergonomic condition of the school furniture and their bag weight and height [8]. Also, the role of social factors should be addressed when designing corrective exercise programs for children. However, it has also been observed that the possible role of parents and teachers has not been considered in designing corrective exercises for children. Therefore, conducting a more comprehensive approach to design more effective corrective exercises in children seems necessary.

## Child-centered approach to therapeutic exercises and posture in children

Traditional exercise programs often lack appeal, resulting in low adherence rates and reduced effectiveness [9]. However, addressing postural issues in children poses a unique challenge. Traditional exercise therapy programs are often structured and repetitive, which can be boring for young individuals, leading to decreased compliance (acceptance of treatment) and limited results [10]. This editorial advocates for a shift in approach, supporting a child-centered model for therapeutic exercises that leverages the power of play to enhance engagement and maximize effectiveness.

## Why a child-centered model? Challenges with traditional approaches

Traditional exercise programs for children often encounter several issues:

**Lack of exercise adherence:** Repetitive exercises with minimal variety can be monotonous and discouraging for children. This lack of adherence reduces participation, ultimately hindering exercise progress and outcomes.

**Focus on correction:** Traditional approaches often concentrate on correcting postural deviations, neglecting the importance of developing foundational skills and new competencies and the essential role of movement in improving children's developmental and learning contexts.

**Limited child autonomy:** Children may feel powerless and isolated when the therapist solely dictates exercise decisions.

Neglect of psychological aspects of posture: Limited studies have shown that children's posture is related to psychological dimensions.

**Lack of ergonomic consideration:** Many schools in Iran have non-standard desks and benches that are unsuitable for children's height and physical conditions. In addition, improper school backpacks can have detrimental effects on children's posture. Therefore, addressing this aspect in designing a comprehensive model seems crucial.

**Lack of parental or teacher involvement in posture correction:** Most studies have focused on the impact of exercise on children's posture. However, given that children may continue engaging in risky postural behaviors despite corrective recommendations or may lack awareness or understanding of the importance of posture, it is necessary to design more effective programs that involve parents, teachers, and instructors in the process of correcting children's posture and provide necessary education on the subject.

## Fundamental principles of the child-centered approach

**Play-based programs:** This approach designs and prescribes corrective exercises as playful activities to enhance participation and effectiveness.

**Attention to individual differences:** A child-centered movement therapy program is tailored to individual characteristics such as age, weight, developmental level, interests, and postural needs.

**Fun and diverse activities:** In the child-centered approach, exercises are transformed into fun and engaging games using age-appropriate equipment, supportive tools, and storytelling.

**Encouraging the child:** This approach emphasizes praising effort, progress, and participation, fostering a positive association with exercise.

**Active participation:** Considering the child's ideas when selecting activities fosters a sense of ownership.

**Attention to psychological dimensions:** This approach considers the child's psychological characteristics and, if necessary, involves psychologists to improve outcomes.

**Ergonomic considerations:** The exercise therapist needs to evaluate and, if needed, provide ergonomic interventions to enhance the effectiveness of corrective exercises.

Involving families and teachers in corrective programs: The exercise therapist needs to engage families and teachers in the corrective program by educating them about optimal posture and encouraging children to maintain good posture in their daily lives.

## Conclusion

Postural changes in children are a multifaceted phenomenon encompassing various psychological, physical, and social dimensions. Accordingly, more attention should be paid to these aspects to improve the effectiveness of corrective exercises for children.

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