



TRUNK KINESIO TAPING IN CHILDREN WITH CEREBRAL PALSY: INSIGHTS FROM A NARRATIVE REVIEW

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Abstract: Cerebral palsy (CP) is a common cause of motor and postural disorders in children. Kinesio taping (KT) has emerged as a relatively new therapeutic technique used in the rehabilitation of children with CP, often as an adjunct to other therapies. This narrative review explores the evidence regarding the effectiveness of trunk KT application in improving various aspects in children with CP, such as sitting posture, trunk control, balance, and functional mobility, based on available research. Evidence from randomized controlled trials and pilot studies suggests that trunk KT may offer benefits in certain areas, particularly sitting posture and dynamic balance, when integrated into rehabilitation programmes.

Index Terms - Cerebral palsy, Kinesio taping, Pediatric rehabilitation, Physiotherapy, Trunk control.

I. INTRODUCTION

Cerebral palsy (CP) encompasses a group of non-progressive motor disorders resulting from brain damage during fetal development or early infancy. Children with CP often experience motor impairments, including abnormal muscle tone, muscle weakness, and increased reflexes, leading to difficulties with postural control, balance, and coordination, which subsequently affect their self-care, mobility, and participation in daily activities. Physiotherapy plays a crucial role in managing these challenges, aiming to improve posture, movement, and functional independence.

Kinesio taping (KT) is a therapeutic technique involving the application of elastic tape to the skin. It is hypothesized that KT can enhance muscle and myofascial function by providing continuous afferent stimulation to cutaneous mechanoreceptors, potentially improving voluntary control and coordination. While KT has been used in sports and orthopedics for some time, its application in pediatric neurorehabilitation, particularly for children with CP, has gained increasing attention. This narrative review aims to synthesize the current evidence on the effects of trunk KT application as an adjunct to physiotherapy in children with CP.

2. THERAPEUTIC RELEVANCE AND CLINICAL APPLICATIONS OF TRUNK KINESIO TAPING IN CHILDREN WITH CEREBRAL PALSY

2.1 SITTING POSTURE AND TRUNK CONTROL

Several studies have investigated the impact of trunk KT on sitting posture and trunk control in children with CP. Simsek et al. found that KT application longitudinally along the paraspinal muscles between C7 and S1 for 12 weeks had a positive effect on sitting posture (head, neck, foot position, and arm, hand function) in children with CP, although no direct effects on gross motor function and functional independence were observed.¹ Similarly, Badawy et al. reported a significant improvement in sitting posture and trunk control in young children with spastic diplegic CP when KT was applied over the paraspinal region as an adjunct to a therapeutic exercise program.² Ibrahim also found that KT significantly improved sitting control and postural parameters in children with spastic diplegia.³ Karabay et al. demonstrated that KT application in addition to neurodevelopmental therapy (NDT) for four weeks was effective in improving sitting as measured by the Gross Motor Function Measure (GMFM) sitting subset.⁴

In contrast, Footer stated that 12 weeks of paraspinal taping did not seem to affect gross motor function and independence in activities of daily living.⁵ However, a systematic review by Unger et al. concluded that there is moderate evidence to support the truncal application of KT as an effective adjunct to physiotherapy to improve GMF in sitting.⁶

2.2 BALANCE AND FUNCTIONAL MOBILITY

The effect of trunk KT on balance and functional mobility has also been explored. Partoazar et al. found that Kinesio taping of the trunk improved dynamic balance and functional mobility in children with spastic CP.⁷ This is consistent with the findings of Da Costa et al., who observed improvements in dynamic activities following KT application.⁸ Ibrahim in 2015 reported significant improvements in standing control and balance with trunk KT.⁹

However, the systematic review by Unger et al. noted contradictory findings regarding standing posture and function, with one study showing improvement and another reporting no significant improvement as determined by the GMFM. They suggested that the method of taping application might contribute to these differences, with paraspinal taping extending further down the spine potentially being more effective than 'T' taping for scapular stabilization and postural control.⁶

2.3 INTEGRATION WITH OTHER THERAPIES

Several studies highlight the potential benefits of combining trunk KT with other therapeutic interventions. Elbasan and Uzun Akkaya found that a combination of neurodevelopmental treatment (NDT), KT, and neuromuscular electrical stimulation (NMES) was more effective in improving trunk control and posture, functional reach, and activities of daily living in children with CP.¹⁰ Karabay et al. also compared KT and NMES as adjuncts to NDT, finding that both improved kyphosis and sitting, with NMES showing greater improvement.¹¹ Nugroho et al. found significant improvements in static sitting balance in children with spastic and quadriplegic diplegia CP who received KT in the paraspinal region combined with NDT.¹²

CLINICAL IMPLICATION

Trunk Kinesio taping (KT) can be a useful adjunct to physiotherapy in children with cerebral palsy, helping to improve sitting posture, trunk control, and dynamic balance. The technique is non-invasive, adaptable, and complements other therapies. It is most effective when combined with other therapies like neurodevelopmental treatment (NDT) and neuromuscular electrical stimulation (NMES). Correct taping technique, especially along the paraspinal muscles, is crucial for optimal results. While KT alone may not significantly enhance gross motor function or independence, it supports overall rehabilitation goals. Therapists should tailor taping approaches individually and monitor for skin issues during prolonged use.

CONCLUSION

Evidence suggests that trunk kinesio taping, when used as an adjunct to physiotherapy, can be a beneficial intervention for children with cerebral palsy, particularly for improving sitting postural control, dynamic balance, and functional mobility. Children with spastic diplegia and those functioning at higher GMFCS levels may experience greater benefits. The combination of KT with other rehabilitation techniques like NDT and NMES may further enhance outcomes. However, the evidence base is still developing, and further well-designed studies with larger sample sizes, clear descriptions of taping methods, and investigations into short- and long-term effects are warranted to optimise the clinical application of trunk KT in children with CP. Therapists should consider KT as a complementary tool within a comprehensive rehabilitation program tailored to the individual needs of the child.

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