

Creating Degrees of Freedom



Presenter | Sara-Lynn Bernard | St. Petersburg College, FL

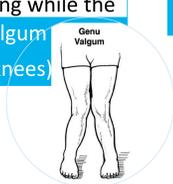
Abstract

The purpose of this research proposal is to create degrees of freedom for those displaying developmental orthopedic conditions with non-invasive medical procedures. The objective of the research is to test early intervention with Kinesio tape and physical therapy to result in avoidance of surgical intervention for genu varum (bow-leggedness) and genu valgum (knocked-kneed) children. By utilizing Kinesio Tape to drive neurogenesis, myogenesis, and osteogenesis resulting in the corrective development of these tissues layers and eliminate improper movement patterns.

What is Genu Varum and Genu Valgum

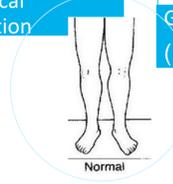
• This is a condition. The lower extremities turn inward, causing the appearance of the knees to be touching while the

Genu Valgum (knock-knees)



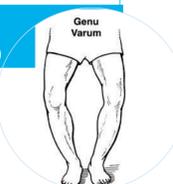
• This is where the hips, knees and ankle stay in the same alignment

Normal Anatomical Leg position



• This is a condition may present from infancy to adulthood. The lower extremities turn outward, causing the appearance of bowing while the ankles remain together.

Genu varum (bow-legged)



Current Research

Current research supports the use of Kinesio Tape it has been implemented to improve muscle function in hemiplegic patients and resulted in increased proprioceptive feedback. Thus neurogenesis can be impacted by the use of KT tape and physical therapy.

What is proprioceptive feedback and Why is it important?

Proprioceptive feedback is the bodies way of understanding its position in regards to the space around it. This is important in regards to balance, movement execution, and generation of motor command and control. Kinesio tape can assist in the development of improving proprioception when the patient is outside the care of the doctor as it can be gentle remind of corrective movement patterns without conscious repetition.

Surgical Options



Kinesio Tape Method



Implementation

When Kinesio tape is applied, it can stay in place (2-3days) during all daily actives including sweating and bathing. It can be put in place at the being of a therapy session and help to reinforce the corrective movement patterns during the therapy session. After leaving the session, it allows the child to continue with their regular activates but with the added effect of therapeutic guidance (reinforced by proprioceptive feedback) to help keep them in their corrective movement patterns.

Rationale for this study

- The profusion of grow potential decreases with age and the permanence of maturation across the body systems is effected in turn. As the body ages the process of ossification become more permanent and the pull of muscle on bone is a major factor in how ossification sets in.
- The rationale for this study is to take these factors into account early on to adjust the trajectory of bone growth. By adapting the proprioception feedback and its effect on the muscle development resulting in a lasting impact on developmental ossification.

Benefits of Kinesio

- The current approach to genu varum (bow-leggedness) and genu valgum (knock-knee) is to depend primarily on natural correction with body development. It is assumed that most cases will correct with the age of a child. Additionally, those who outgrown these conditions may still have after effects that go on diagnosed until later in life. That could be avoided if dealt with in a preventive manner. The children who do not outgrow these conditions are left with few options for corrective surgery or restricted movement.

Conclusion

- It is far more sustainable to address these conditions head-on with Kinesio Tape techniques and physical therapy. The Kinesio Tape adds the advantage of stimulation of the proprioceptive feedback. This is advantageous because of the lasting effect that it has on the natural growth trajectory in the body. It does not require additional artificial stimulation when a child is given proper nutrition.
- The cost of surgery, complications, recovery, and failure of surgical process is far more significant than that of the prospect of Kinesio taping and physical therapy. The well-known traumatic nature of surgery has far-reaching impacts on the patient's body and their family. Furthermore, operational correction failure occurs in nearly 57.9% of cases according to Funk et al. study conducted in 2016. If it is possible to create a less invasive preventative measure to correct the condition of genu varum and genu valgum patients, it is the charge of the Allied Health field to attempt to find a better process.

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