

USE OF KINESIO TAPING® AS AN ADJUNCT TO POSITIONING

Introduction

For patients with complex neuromuscular conditions, providing stability has been the hallmark for seating and positioning. Dynamic positioning components offer many benefits including increased comfort and tolerance to seating, improved sensory processing and attention, and increased opportunity to engage in task specific learning¹. Kinesio Taping® is a method of functional taping that has long been used in the orthopedic and athletic training fields². It may also be used for the complex neurologic patient to promote desired alignment for 24-hour positioning, inhibit destructive postures, and incorporate the benefits of dynamic supports into seating and positioning.

What is Kinesio Taping®?

Kinesio Taping® is a method of functional taping that has a wide variety of applications, including those designed to assist the body to hold a joint or position, increase proprioception and body awareness, and/or position a part of the body in better alignment. Kinesio® Tape is an elastic tape which has a similar thickness and weight to skin. Figure 1 demonstrates the flexibility of Kinesio® Tape as it is applied to a

client's abdomen. It is designed to be breathable and waterproof, and can be worn for at least three to five days per application. The elasticity of the tape and ability to allow normal range of motion is a significant contrast to other widely known taping methods, and can greatly impact a patient's tolerance for wear.

The properties of Kinesio® Tape have effects on five major physiological systems including skin, fascia, circulatory/lymphatic systems, muscles and joints.

Once applied, the tape lifts the top layer of the skin, taking pressure off of deeper layers and structures. This, in turn, can lead to increased blood flow, increased lymphatic drainage, decreased edema and pain, and increased kinesthetic awareness². It has been proposed that the cutaneous stimulation of taping may increase motor unit firing^{7,11} and the improved circulation is thought to lead to improved muscle performance².

Patient Populations

Kinesio Taping® has long been used in the orthopedic and athletic training fields to augment traditional treatment but can be used with a myriad of diagnoses. The technique has seen a recent jump in popularity, particularly among professional athletes. It is designed for use by professionals in advanced medical settings, such as physical therapists, occupational therapists, athletic trainers and nurses. It is often used in combination with traditional therapeutic interventions and a wide variety of techniques and applications can be learned through professional course work. Techniques can be used to address muscle imbalance/postural insufficiency, circulatory and lymphatic conditions, ligament/tendon/joint injuries, fascial adhesions and scars^{4,5}.

Current literature on Kinesio Taping® outcomes is limited. Outcomes cannot be fully supported by evidence and the information that is provided is often inconsistent. Proposed benefits include increased muscle activation, but results have been inconclusive in healthy adults^{6,7}. Research has shown an improvement in range of motion in healthy adults and those with pain, but further studies are needed⁸. Pilot studies in children with cerebral palsy have shown initial promise in dynamic activities and postural control⁹, as well as improved sitting posture when taping was combined with physical therapy intervention¹⁰. The changes in postural control noted in these pilot studies are consistent with our experience when using

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this intervention with children and adults with cerebral palsy or other neuromuscular diagnoses.

The Need for Dynamic Movement

Adaptive equipment that offers a stable base is critical for complex patients with neuromuscular conditions to actively participate in daily tasks. Currently, static supports are often used and needed to provide trunk stability, but this can negatively impact movement and active participation. Decreased opportunities for movement often inhibit skills such as weight shifting and reaching, which are crucial for development of postural control. Dynamic positioning components provide many benefits including increased comfort and tolerance to seating, increased chance for movement, improved sensory processing and attention, and increased opportunity to engage in task specific learning. This presents options for repeated practice of a task with controlled movement, thus gaining experience with active control of movement within the task. When this is incorporated into adaptive seating, the use of head or chest supports or more restrictive positioning components may decrease.¹

As an example, meet our friend “A,” shown in picture 2. He is a 6-year-old boy with cerebral palsy and complicating diagnoses of continuous athetoid movement, dystonia, hearing loss, epilepsy, and cortical visual impairment. He was presented to our clinic in need of a new standing device. He was previously using a supine standing frame, but this was not well-tolerated due to issues with the static head support. The head support on his stander caused his cochlear implant to fall off and limited his

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PICTURE 1



PICTURE 2



PICTURE 3



PICTURE 4



PICTURE 5

PICTURE 1. Note the longitudinal stretch of Kinesio® Tape as it is applied to this child.

PICTURE 2. Kinesio Taping® to facilitate muscular contraction of the rhomboids and paraspinals to assist with head and trunk control in a prone stander.

PICTURE 3. 2-year-old child with spinal muscular atrophy during assessment for Kinesio® Taping.

PICTURE 4. Kinesio Taping® to facilitate muscular contraction of the paraspinals to assist with spinal alignment in sitting.

PICTURE 5. Kinesio Taping® applications provided the trunk stability necessary for this child to reach and access all joystick controls.

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ability to develop head control and visual skills. Kinesio Taping® was trialed to assist with head and trunk control while using a prone stander and was found to be a successful intervention for this patient. With a home program for taping in place, his family chose to pursue a prone stander to increase strength and functional vision during standing.

Indications for Use as a Positioning Support

While typically considered a therapeutic intervention, examples such as the above have pushed us to think of Kinesio Taping® as a part of the positioning system. The unique properties of Kinesio® Tape, including its elasticity, long wear time, and breathability, make it particularly effective when used as a dynamic support. In our experience, it has proven very useful as a dynamic support to gain functional skills for a new system. It is also ideal during periods of growth or changes in functional status when existing equipment is no longer adequately supporting the patient. In these instances, Kinesio Taping® can be an effective strategy to improve function and positioning or increase comfort within a positioning system.

Assessment as a Dynamic Positioning Component

Evaluation for Kinesio Taping® should be performed by a medical professional trained in its applications, indications and contra-indications. Kinesio Taping® should not be performed on clients with allergies to adhesive or tape, compromised skin integrity, active infection or a history of blood clots. A thorough mat assessment should be completed, including examination of muscle tone, range of motion, strength and postural control. It is essential to have a strong grasp on the client's primary impairments and resulting functional limitations to determine the most appropriate taping applications. During the assessment, pay close attention to the level of support the patient requires to maintain the desired alignment and stability. This will guide the clinician to impairments to target and to determine if a corrective or facilitation technique is more appropriate.

Other factors to consider include amount of body hair, patient/family compliance and tolerance to taping due to wear time and sensory thresholds. Patients with impaired sensory processing may have difficulty tolerating taping for extended periods. As Kinesio® Tape is designed to be worn for days at a time, it may need to be removed and reapplied by the patient or family, particularly when used with positioning equipment. Compliance with wear times and applications are crucial if Kinesio Taping® is to be a safe and effective support. While there is not a specific prescribed dosage for Kinesio® Taping as a postural support, we have noted that wear time of approximately three to five days with consistent reapplications as indicated can help promote or maintain desired postures. Applications may need to be repeated or modified over time as clinical presentations change.

To illustrate this process, we will discuss "B," a 2 year old with spinal muscular atrophy type II. She was participating in trials for power mobility and struggling with stability during reaching. Lateral supports and a chest harness had been trialed, but were found to be too limiting for reaching all joystick controls. Picture 3 shows her presenting posture: forward head, trunk rounded and leaning to the left, propping on bilateral forearms. During the mat assessment, she was noted to have decreased balance reactions due to poor activation of her trunk musculature. "B" was able to achieve midline posture with light manual cueing, so applications to target muscle facilitation of the paraspinals and abdominals were chosen (see pictures 4 and 5). Picture 5 shows her posture after both Kinesio Taping® applications. With taping in place, she was able to participate in power mobility trials

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and independently access all controls. “B” did so well with Kinesio Taping® that she used this as a support in her manual wheelchair to improve propulsion until funding was available to pursue a power wheelchair.

Summary

Kinesio Taping® techniques can be applied for a wide variety of patients and many therapeutic purposes. Clinicians must rely on all available resources for positioning equipment and supports, especially with the constraints of funding. Kinesio Taping® may be an effective strategy to have in your clinical tool box to assist with positioning, particularly in times when dynamic supports are indicated. It may be a useful strategy during periods of growth, following a change in physical status, or during the lengthy process of evaluation and funding of new equipment. It can also be particularly helpful to increase comfort within a system, and when addressing a dynamic, functional skill within the positioning system. Kinesio Taping® is likely not a long-term solution for positioning needs but can be effective short term, for intensive intervals to decrease destructive postures, or during trial periods to allow the clinician time to fully assess postural supports.

For more information or to pursue certification in Kinesio Taping®, please contact the Kinesio Taping® International Association.

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