When working with patients who have suffered multiple traumas, brain injury and/or spinal cord injury, it is important to use the “tools in our toolbox” that will give us the ability to produce excellent clinical outcomes. Kinesio Taping® or therapeutic taping is one of those tools.

More than 30 years ago, a Japanese practitioner, Dr. Kenzo Kase, developed a tape that had the texture and elasticity very similar to skin. This idea originated when he was working with more rigid forms of tape and was not seeing results with his sports-related patients. He wanted to have something that was similar to our body and our fascia tissue that could treat many different types of injuries. Kinesio Tape® was the result of his work.

Uses of Kinesio Tape

Kinesio Taping is a clinical intervention that can be used during any phase of recovery. It can affect six body systems:

- skin
- fascia
- circulatory
- lymphatic
- muscle
- joints

Taping techniques applied to these systems can result in:

- Reduced pain
- Muscle facilitation
- Muscle relaxation
- Reduced inflammation
- Support to weakened ligaments and joints

How does it work?

Our skin consists of many different sensory receptors which perform functions such as vasoconstriction and tactile stimulation. There are also free nerve endings that regulate pain, pressure, temperature and touch.

By targeting different receptors within the entire sensory system, therapeutic taping alleviates pain and facilitates lymphatic drainage by microscopically lifting the skin. This lifting affect forms convolutions or ripples in the skin thus increasing space in the fluid filled areas that surround cells and allows for a decrease in inflammation of the affected areas.

Based on the desired outcome and the affected body system, the tape can be applied in a specific way to take advantage of its versatility.

The tape stretches along the length only, and its thickness and weight is similar to skin. There is no latex or medicine in the tape. It is constructed of 100% cotton and elastic fibers.

Practitioners will apply different tensions to the tape—ranging from 10-100%—depending on the desired outcome. When the tape is applied to the tissue, no tension is applied to the ends of the tape. The appropriate tension is only applied to the target tissue or the target zone.

Prior to applying any of the above corrections or muscle application techniques, it is important to do a clinical assessment of the person to determine the cause of their difficulty. The skin is then prepped before tape is applied. Skin should be clean and body hair may need to be removed so that the tape can adhere to the skin surface and impact the sensory receptors.

The individual should be reassessed after the tape is applied. Most people will feel some type of effect within the first hour. The tape can be worn for three to five days without removing for bathing or other activities.

Efficacy of therapeutic taping

Therapeutic taping is very versatile and can be used to treat many different types of conditions. Athletes are learning of the benefits of taping and use it during sporting events. They use it to treat pain, ligament injuries, inflammation, bruising, and muscle imbalances (trigger points, over-use). The use of this technique has also expanded into treating neurological conditions, abnormal movement patterns, and poor posture.

Case studies: Proven results
Kinesiology Taping continued

After a neurological insult, such as a traumatic brain injury (TBI), there can be many challenges that limit the person’s ability to regain independence. Some of these can include abnormal muscle tone and autonomic nervous system dysfunctions.

**Gaining independence**

A case study review that was presented at the Kinesio Taping Symposium by Amy Stahl (1999), MS, PT, CKTI, included a young woman who was very active prior to surgery. She had a neuroma removed with resultant Reflex Sympathetic Dystrophy. This can cause severe burning pain, pathological changes to bone and skin, and extreme sensitivity to touch.

The young woman had pain and hypersensitivity that was so debilitating she could not resume any of her previous physical activities which included ice skating, running, rock climbing, and even simply walking barefoot on a beach. Kinesio Tape was applied to her foot and ankle and she reported that within 24 hours she was pain free and the hypersensitivity of her foot was significantly reduced.

**Shoulder rehabilitation after stroke**

In an article written by Ewa Jaraczewska, PT, CKTI and Carol Long (2006), OTR/L, CKTP, *Kinesio Taping in Stroke: Improving Functional Use of the Upper Extremity in Hemiplegia*, the authors identified factors that contribute to a loss of function in the involved upper extremity. They reviewed several different taping techniques that corresponded to the type of shoulder disuse the person was experiencing.

Core stability in the trunk of our patients is important. When there is muscle imbalance in the trunk, whether due to abnormal tone or muscle weakness, it is imperative for the trunk to provide the support for functional movement of the extremities.

The authors also evaluated taping techniques applied to the trunk extensors for mechanical correction, inhibition of the upper trapezius to reduce the abnormal tone, facilitation of the middle and lower trapezius for improved scapular alignment, relaxation of scapula muscle, and support of the deltoid.

These taping techniques provided not only muscle facilitation and inhibition but gave the patient increased proprioception, an awareness of where their arm was in space. The article concluded that shoulder rehabilitation after stroke can be enhanced with Kinesio Taping through proper postural alignment, facilitation and inhibition of muscles, and reduction in pain.

**Facilitation of muscle groups**

A study performed at the University of Medicine and Dentistry of New Jersey (Cepeda et al., 2008) studied the effects of Kinesio Tape applied to abdominal muscles of children with hypotonia, or low muscle tone. They studied supine to sit transitional movement to determine if the tape had any positive effect.

In this study there were five subjects that had hypotonia in their trunk. Recording of transitioning from supine to sit was completed pre- and post-tape application to evaluate the number of compensatory movements the children used. The therapeutic tape was applied to their abdominal muscles for facilitation. The results showed decreased compensatory movements, increased focus and attention, as well as a less protruding abdomen in all five children.

In another case study (Martin, T. & Yasukawa, A., 2003) the orbicularis oris, (the muscle surrounding the mouth), was taped for a young boy who had cerebral palsy and a significant problem with drooling. The study demonstrated that the drooling reduced from wiping his mouth 12 times in an hour-long session to only one time during the same time period. This study review was completed by Trish Martin, PT, CKTI. Many times, individuals with TBI have problems with oral motor control, facial weakness, and drooling problems. This demonstrates that Kinesio Taping can have a significant impact for both the patient and the caregiver.
Facilitating Muscle Contraction

A story on ESPN (E:60 Ryan’s Hope) in March 2010 highlighted Ryan Westmoreland, a young Boston Red Sox player who underwent brain surgery and had a lower motor neuron palsy that affected the left side of his face. He had motor impairments that would not allow him to smile, whistle, close his eye, or control other facial movements. Therapeutic taping was used to facilitate muscle contraction and improve the symmetry of his face. Immediately after the tape was applied, the 19 year old was able to blink and close his eye.

Contraindications

There are some conditions in which the tape is not recommended. Tape should not be applied over active malignancy area, open wounds, over potential blood clots, cellulitis or skin infections. There are other conditions in which its use is cautioned. These include diabetes, kidney disease, congestive heart failure, carotid artery disease, very frail skin or pregnancy as it could stimulate labor.

Use of Kinesio Tape at Rainbow

Many times after experiencing a traumatic brain injury, the person will have other orthopedic injuries, too. Rainbow Rehabilitation Centers has adopted the use of Kinesio Taping techniques on individuals with both neurological and orthopedic injuries and reports positive results. At Rainbow, it has been used for facilitation of muscles for hand, wrist, and ankle dorsiflexion. It is also used for pain relief, to relax tight muscles and has been discovered to work well with a hemiplegic shoulder.

It is important to note that the taping is a supplement to other clinical rehabilitation to get the best clinical outcomes. For example, when taping a muscle for facilitation, it is important that strengthening exercises and functional movements are still performed. The tape is not the end-all, be-all, but rather, it is something that can enhance skilled therapy.

Conclusion

The skin is the largest organ of the body and is filled with many different receptors that feed information to our brain. As we have discovered, it is through sensory receptors that we are able to take information from our environments, process it and have smooth coordinated movements.

There are several clinical interventions that can be used to stimulate our sensory system, and we’ve found that Kinesio Taping is one of these.

In the time that Rainbow has been using these therapeutic taping techniques, clients have realized excellent results. Whether it is a simple orthopedic injury or a significant brain injury with resultant neurological damage, Kinesio Taping can be an effective clinical intervention that will produce positive clinical outcomes.

References


Bibliography