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a core concepts musculoskeletal group newsletter



Taping Techniques in Management of Musculoskeletal Problems

Taping or strapping is commonly used in the sporting community and its effects and role are widely understood and accepted. In the early years, taping helped prevent recurring injuries by stabilizing and restricting the range of motion of a joint. This is done using rigid and non-elastic tape and is known as restrictive taping. Over the years, taping has evolved beyond simply restricting joint range of motion. There are now other techniques whose purpose is not to restrict but to allow full range of motion. Others techniques aim to help reduce pain through unloading of the fascia, assist swelling reduction, and facilitate muscle activation and movement. We will explore three taping techniques currently used Restrictive taping, Functional Fascial Taping and Kinesio Taping.

Common to all three taping techniques is its ability to enhance the proprioception or kinesthetic feedback. This feedback enables the muscles to activate more appropriately. This was found in studies which showed earlier activation of the Vastus Medialis Oblique (VMO) muscle when a laterally tracked patella was taped into a more neutral position in clients with patello-femoral joint pain.

Improved feedback also enhances the awareness of the joint position. Thus promoting a feed-forward action a muscle contraction, prior to a re-injury. An example would be placing a single strip of rigid tape on the outer side of

an ankle while balancing on a wobble board. This strip of tape signals brain when an inversion is occurring, which in turn activates the peroneal muscles to prevent this movement thereby averting a re-injury.

Restrictive taping

Restrictive taping as the name suggests, restricts the range of motion of a particular joint. Depending on the direction and degree of instability, taping can be used to restrict one direction or multi-directions. Restrictive taping is used to protect unstable or lax joints, where repeated or severe ligament damage has resulted in the instability of the joint. In such cases, elastic braces do not provide enough support as it "gives" and does not limit the joint from moving into the unstable range. Research shows that ankle strapping restricts inward displacement of the hind foot, reducing subtalar motion. This limits strain on the anterior talofibular ligament associated with subtalar inversion. (see Fig 1)

An example of where restrictive taping



Fig 1: Restrictive Ankle Taping

can be used is for an overhead thrower (e.g. water polo player, cricket bowler, badminton player) whose shoulder is hypermobile and is prone to subluxation in that position (abduction and external rotation of the shoulder). Taping is done using a rigid tape to limit the excessive external rotation range to just functional range. The client can still perform the movement without the risk of subluxation.

Another example of the use of restrictive taping is in patello-femoral joint pain (PFJP), also known as anterior knee



Fig 2: McConnell Taping

pain or chondromalacia patella. In clients with PFJP, there is often cartilage loss at the under surface of the patella. One theory suggests this is due to the mal-position of the patella on the femoral trochlea caused by amongst other factors, a delay in the onset of activation between the Vastus Medialis Oblique (VMO) and Vastus Lateralis (VL). This leads to the lateral tracking of the patella. Taping corrects the abnormal position of the patella in relation to the femur. Taping relieves pain and allows earlier activation of the VMO versus VL, but the mechanism of the pain relief is still being investigated. This particular technique is named McConnell taping

after Prof. Jenny McConnell, a physiotherapist who first developed the technique through trial and error and who further led research in this area. Depending on the position of the patella, the patella is taped to reduce lateral tracking, lateral rotation or lateral tilt (see Fig 2).

Functional Fascial Taping (FFT)

Functional Fascial Taping was developed by Ron Alexander, an Australian remedial massage therapist, who worked with the Australian ballet. Whilst he found the restrictive taping useful in preventing the recurrence in injury, it was not functional for his clients as they required a full range of movement of their injured joints/muscles to perform. Hence, FFT was born.

The treatment philosophy is simple and the aim of the technique is purely analgesic. As the tape does not restrict movement, it allows for continuation of functional range and activity, thereby maintaining higher levels of training and performance. Most musculoskeletal conditions are multi-factorial in nature, and pain can be a hurdle in a successful rehabilitation. FFT provides physiotherapists with another tool to manage their clients' pain and increase compliance.

Essentially, FFT affects the connective tissues. When tape is applied, it provides a sustained load onto the fascia in a direction that allows the muscles under the fascia to glide better. This has been observed on ultrasound imaging. The direction of tape applied

is guided by the direction of load that reduces the pain. Anecdotally, it is also found that if the tape is applied appropriately, pain disappears and the range of motion increases with the functional activity. The latter is likely due to the increase muscle gliding with FFT. As with many techniques, the physiological reasons for their effects are still largely unknown although research is still being done. FFT can be applied on any area of the body and does not need to be on a joint.

Kinesio Taping

The Kinesio taping method was developed by Dr Kenzo Kase over 25 years ago in Japan. The method of taping uses a uniquely designed and patented tape for the treatment of muscular disorders and lymphedema reduction. The first technique involves taping over and around muscles in order to give support to prevent over-contraction of the muscle. As the tape is elastic, and the direction of tape applied is from the origin to the insertion of the muscle, this technique gives support to the muscle while allowing full range of motion. It is suggested that the support for the contraction of the muscle is through stimulating the skin and pulling the muscle back towards the point of origin. The aim of kinesio taping is to enable the client to participate in his or her normal physical activities with functional assistance.

The second technique helps provide facilitation of lymph flow is most commonly used in the acute stage of the rehabilitation. Prior to the application of the tape, the skin of the affected area is stretch. After the application, the tape will form convolutions when the skin and muscles contract back to their normal position. It is theorised that when the skin is lifted by this technique, subcutaneous

flow of blood and lymphatic fluid is increased. Although there are not much literature on the effectiveness and physiological effects of kinesio taping, the makers postulate that the alleviation of pain and facilitation of lymphatic drainage occurs through the microscopic lifting of the skin, thus increasing interstitial space. The result is that pressure and irritation are taken off the neural and sensory receptors, thus alleviating pain. Pressure is also gradually taken off the lymphatic system, allowing it to channel more freely.

Although not much research has been done to support or refute the above claims, kinesio taping is widely used in the sporting arena as an adjunct to their rehabilitation process, with the recently completed Olympics being a testimonial to the use of this taping technique.

A final point to note is that taping is an adjunct to the management of musculoskeletal problems, to provide support, pain relief, improve proprioception and muscle activation as the injury heals. Taping should be used in conjunction with a proper rehabilitation programme that include, strengthening, stretching, mobility, proprioceptive exercises and functional retraining.

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- Fascia Research Congress accepted abstracts:
 1. Functional Fascial Taping real time ultrasound investigation
 2. Functional Fascial Taping for lower back pain: a case report
 3. Efficacy of Functional Fascial Taping for the treatment of non-specific low back pain

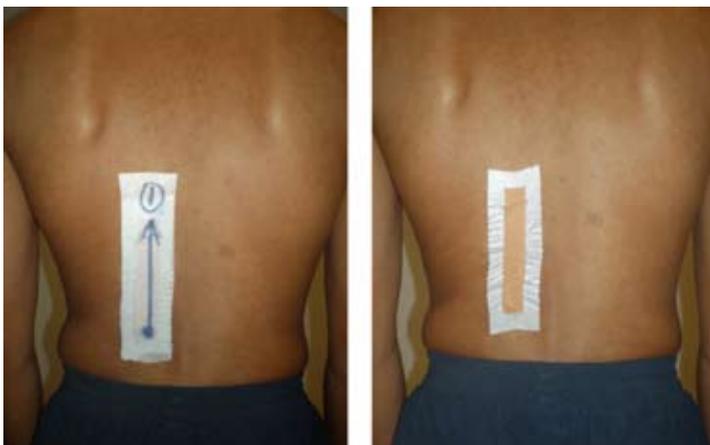


Fig 2: Functional Fascial Taping