

By Ron Alexander, soft tissue therapist

TRADITIONAL USE OF TAPE IN INJURY MANAGEMENT

Acute injury

Conventionally taping is used for a number of reasons during the rehabilitation process. In the acute stage the overarching goal is to provide support and protection through the reduction of swelling, limitation of unwanted range of movement and the reduction of pain. Further injury can be prevented while the appropriate rehabilitation process can be facilitated to allow optimal return to function (1).

Chronic injury

Taping is also widely used in the management of more chronic injuries such as patellofemoral pain syndrome although its proposed and actual mode of action remains questionable (2). What has been consistently demonstrated is the ability of taping to alter the pain response in presenting patients. This change in pain allows immediate functional gains in a previously painful movement. This can both encourage the patient to exercise and, possibly more importantly, allow these movements to be performed in a pain free environment. This difference in the use of tape in a more 'chronic' problem, with the added advantage that the patient can reapply the tape themselves as needed, is a powerful rehabilitation tool.

Neuromuscular application

The next development has been for tape to be used to increase or reduce muscle activity, to 'excite' or 'inhibit'. Commonly, the former taping is used around the shoulder to 'facilitate' the action and activity of the lower fibres of trapezius. This theory of action has been based on clinical observation and anecdotal evidence. Despite recent evidence questioning its mode of action, it is still commonly used and extremely useful even though it isn't yet understood how this is achieved (3).

FUNCTIONAL FASCIAL TAPING

The subtle alteration in the use of taping to off-load has also proved extremely useful. During my 8 years as the principal soft tissue therapist at the Australian Royal Ballet, I was under the common sports medicine practitioner's pressure to get my athletes back to fitness as quickly as possible. Recent studies have demon-

FUNCTIONAL FASCIAL TAPING

This article reviews the topic of functional fascial taping. While there is little research evidence to support its effectiveness, anecdotal findings continue to impress. If you want to learn more, sign up for one of the workshops listed at the end of the article.



strated the high incidence of musculoskeletal injuries in this population, with over 75% of dancers reporting an injury during the 19 week trial period, with the majority of these confined to the foot or ankle (4). Through clinical experimentation in my chosen patient population group, I developed a highly effective way of using tape in acute, and especially, sub acute chronic injuries.

In conjunction with the normal assessment and treatment process, it was observed that direction-specific digital pressure applied over a painful area could alter the pain response. This alteration facilitated increases in pain free range and improved muscle function. These, often notable gains could be maintained by the application of tape using a specific gathering technique allowing the patient to rehabilitate appropriately and return to function earlier. With time it became apparent that this had application in virtually any musculoskeletal condition and has now been used in most sports internationally.

So how does it work?

The idea of off loading is not new. The difference lies in the specificity of tape

application in terms of technique, direction, the amount and the width of tape used. The underpinning factor in its application being the sound clinical reasoning premise of test, apply tape and retest.

The theory underlying the action of tape has been questioned within the professional literature (2). Whilst not supported by research evidence it is the belief of the author that local fascia provides the clue. The ultimate connectivity of the fascial system throughout the body has been repeatedly demonstrated, in conjunction with anecdotal evidence of the influence of local structures on the function of distant areas (5).

Fascia has three relevant characteristics:

- 1) it is a connective tissue
- 2) it is responsive to load
- 3) it contains an abundance of mechanoreceptors and neural tissue.

In response to injury, the body lays down Type III collagen to return structural integrity to the area. With time this is converted to Type I collagen, however the structural alignment of the repaired tissue is altered from that of the original. Whilst locally applied soft tissue mobilisations

BOX 1: TAPING CONTRAINDICATIONS

- Allergic reactions to tape/sensitive skin - red hair, fair skin people are susceptible
- Soft skin
- Damaged or broken skin
- Thin skin (elastic tape)
- Sunburn
- Undiagnosed pathologies
- Conditions getting worse or not improving.



(6) prove an extremely useful treatment modality, they are temporary, with the unloaded state being the normal state of the tissue a majority of the time.

It is theorised that by applying tape using the FFT® method, a longer maintained stretch can influence both structure and function of the local fascial tissue. Whilst the method is currently undergoing a randomised controlled trial in Australia, previous real time ultrasound data demonstrates an alteration in the direction of movement of superficial AND deep fascial layers with FFT®. This alteration, in conjunction with the directional specificity, may provide an alteration in the afferent nociceptive activity of mechanoreceptors and would explain the frequent notable reductions in pain and increases in range observed.

How is it applied?

Non stretch tape is normally applied in a functional position with minimal to moderate tension with a common aim of restricting a range of movement. FFT® is specifically applied following a local examination to elicit the most relieving digital pressure which allows the patient to gain further pain free range at the chosen area. This latter point is important, the reduction in pain is a primary aim of the technique and a degree of searching is necessary although common patterns seem to exist. Once this has been found, the tape is applied in a gathering technique reproducing the pain relieving direction of load. Movement is reassessed throughout and the techniques adjusted. Further applications of tape in different directions may be needed to gain maximum effect, each direction of load is marked to allow easy reapplication of tape and the patient or a guardian is taught how to do this, along with appropriate warnings. Other aspects of the treatment for example manual therapy, can be applied before or after taping and rehabilitative exercises can also be taught.

Tape can be tightened daily and it is then removed after a few days and reapplied to prevent skin irritation. The usual safety screening procedures common to all traditional taping are equally applicable with FFT (see Box 1). If irritation is elicited the tape is removed until this has subsided and an appropriate hypoallergenic protective film eg. Comfeel/Coloplast, is used.



Figure 1: Fascial taping for low back pain

At reassessment the movement is checked and the best direction of taping elicited through functional testing, tape is then applied using the gathering technique.

In about 10% of patients an ache is reported or symptoms distal or proximal to the original may become apparent. These frequently settle within 24 hours. If not the patient is advised to loosen the tape until these symptoms settle and then to reply.

As symptoms improve the need for taping reduces with patients commonly needing taping for up to 3 weeks before discontinuing the tape. However this may need to be longer and the key factor here is, if the area is accessible patients can self tape or a partner can be taught.

What does it work on?

FFT® proves most effective with sub-acute to chronic injuries. Once the healing process has restored as much mechanical integrity to the area it is thought FFT® influences the local fascia to create its effect.

It has been used highly successfully in the management of plantar fasciitis, anterior impingement of the ankle, Morton's neuromas (7), osteoarthritis of the knee, any muscle sprain, groin pain, low back pain (Figure 1), shoulder impingement, headaches, tennis elbow and carpal tunnel syndrome (Figure 2). The tape in conjunction with rehabilitative exercises have shortened return to function times significantly and have frequently prevented the need for surgery.

SUMMARY

Like many therapeutic interventions FFT® has been developed through clinical observation and experimentation. It has a wealth of anecdotal evidence to support its wide spread use and is currently subject to a randomised controlled trial in



Figure 2: Fascial taping for carpal tunnel

low back pain patients. It provides an easily applied medium in musculoskeletal injuries by which pain free range can be gained quickly allowing appropriate and effective rehabilitation to be conducted.

THE AUTHOR

Ron Alexander founded the FFT® method in 1994 during his eight years as the principal soft tissue therapist for the Australian Ballet. The high performance levels and the flexibility required by the dancers provided the impetus for Ron to experiment with taping techniques. This led to the discovery and development of a more functional way of applying tape to modify pain and increase range of movement allowing for rehabilitation. The Australian Ballet awarded Ron the 'Lady Southey Scholarship for Excellence' and since this time he has gone on to expand the FFT® method.

References

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Ron Alexander is visiting the UK later this year to run a series of FFT courses. Please see the end of the case study for dates.

CASE STUDY: FFT APPLIED TO

PRESENTATION

History of present complaint

A 40 year old female patient sustained an inversion injury to her right foot four months previously, while jogging in the park. She felt immediate pain and an inability to weight bear. She attended her local accident and emergency department where an X ray did not reveal a fracture. She was diagnosed with a local sprain, issued with a compressive support and advised to use rest, ice, compression, elevation and appropriate analgesics to relieve the pain.

She then gradually improved such that after six weeks she felt well enough to return to exercise. This was limited by a return pain and subsequent stiffness in her ankle both during and after exercise. At this point she visited her

GP and was referred to physiotherapy.

Initial presentation (Day 1)

On initial presentation the patient described her ankle as 'non functional'. She was experiencing pain anterior and lateral ankle pain during walking (especially up a gradient), descending stairs, squatting and walking on uneven surfaces. In addition, her ankle felt stiff in the morning which resolved as the day went by. She reported no neurological symptoms.

Previous activity

The patient was normally quite active and had performed two 30-minute runs and attended two fitness classes that week.

General health

Her general health was good and she did not report any history of previous injuries.

PHYSICAL EXAMINATION

Range of movement

In non-weight bearing dorsiflexion on the right was full but accompanied by a tightness in the Achilles posteriorly. Plantar-flexion was limited by 5 degrees with anterior ankle pain. In standing dorsiflexion was limited in the 'knee to wall' test with the right ankle reduced to half (unable to touch her knee to the wall) compared with the left ankle (1st toe three finger breathes from the wall with no pain) and pain reported to be 8 out of 10 on a visual analogue scale (VAS).

Knee to wall test

This is a quick test for weight bearing dorsiflexion. The patient stands with their toes touching the wall and the foot straight with the normal medial arch maintained. The patient then takes

TREATMENT 1

Initially traditional treatment in the form of soft tissue mobilisations and ultrasound were applied, the knee to wall test was then repeated. Movement had increased so she could touch her knee to the wall but after five repetitions pain increased and range returned to the previous level. It was then decided to apply FFT®. Digital distraction in a medial to lateral direction anteriorly gave most pain relief during the test. The skin was prepared and three layers of rigid tape were applied over a hypoallergenic adhesive underwrap. The first layer was applied with the ankle in neutral, the second tape was applied with minimal tension with the patient in the test position, the third tape was applied at end of range with moderate tension. On reassessment her knee touched the wall with a 1 out of 10 pain and Achilles tightness, further

range reproduced her initial pain but only 3 out of 10 (see Figure 1). This was consistent on repetition. A layer of hypoallergenic tape was placed over the taping to prevent lift. Further advice was given (see below) but no exercises were given.

ADVICE GIVEN

- Any burning sensations or feelings indicative of skin irritation (eg. redness, itching) - remove tape
- If the condition becomes worse - remove tape
- If ankle feels achey - loosen tension for 30-90 minutes or remove completely



Figure 1: Fascial taping a sprained ankle

- You may develop new symptoms in short duration within the first 24 hours – leave tape on if manageable
- You may shower with the tape on

TREATMENT 2 (DAY 3)

The patient reported she had felt other aches and a feeling of instability but these had subsided within two hours. Knee to wall had deteriorated slightly but the patient was very positive with the improvement. Removal of the tape resulted in no change in range but an increase in pain from 1 to 4 on a VAS. Plantarflexion in supine was full.

Local soft tissue treatment and electrotherapy were applied as before but with no improvement in range. FFT® was reapplied as day 1, however as the patient had also reported a sensation above the lateral malleolus a second area of taping

A CHRONIC RIGHT SPRAINED ANKLE

their knee to the wall. Frequently this will touch the wall. The patient then moves their foot away until the point when they are unable to move their foot any further without lifting their heel. All the time they are maintaining their knee against the wall. When they reach this point, they are at the end of their dorsiflexion in standing. Watch for compensatory pronation. The measure of performance is how far the end of the 1st toe is from the wall. Compare sides.

Palpation

Tenderness was noted over the right anterior talofibular ligament and calcaneofibular ligament.

Other testing

All isometric resisted muscle tests were equal and pain free, straight leg raise with

sensitising manoeuvres was pain-free. No joint instability was detected in the ankle or inferior tibiofibular joint complex. Her gait pattern demonstrated a short stance phase with early toe-off. She also demonstrated full pain-free range of her lumbar spine, hip and knee with over pressure.

Diagnosis

It was felt that symptoms were related to impingement of the anterior talofibular ligament, calcaneofibular ligament and anterior capsule of the ankle during dorsiflexion.

SUMMARY

This case demonstrates the use of FFT® in the management of a sprained right ankle 6 weeks post injury.

Soft tissue treatment and electrotherapy

did not result in maintained improvements in range. FFT® applied over the area of symptoms resulted in sustained improvements in range. This was progressed over the next 11 days and the patient was taught to tape herself. FFT® was a useful adjunct to manual treatment that allowed an earlier return to function and empowered the patient in her own management. Home exercises were integrated to allow a full return to function.

FFT® has a wide application which produces quick and sometimes dramatic improvements in range and reduction in pain.

Further research studies will help clarify its method of action and enhance even further the clinical benefits it offers.

was introduced.

'Knee to wall' was repeated and the patient could touch the wall with her right knee with ease with no anterior ankle pain. She was given this movement to perform as a stretch, holding for 2 mins and repeating 3 times, twice daily.

TREATMENT 3 (DAY 5)

The patient reported a noticeable reduction in stiffness in the morning and that pain had moved to the medial aspect of the leg during dorsiflexion. Range had not increased. The medial pain was cleared with tape applied medially and knee to wall increased to one finger breadth from the wall. The patient was taught to self apply the tape. No further exercises were added.

TREATMENT 4 (DAY 11)

The patient reported she had experienced

no pain, descending stairs was normal and pain free, minimal morning stiffness, normal gait pattern and knee to wall test was 2 fingers from the wall with tightness limiting.

Tape was reapplied and, in liaison with her personal trainer, she returned to the gym and commenced wobble board training and her fitness classes with tape applied throughout.

FURTHER TREATMENT

The patient received three other physiotherapy sessions one week apart to progress her exercises programme, introduce jogging and wean her off the tape. At last review six weeks after the initial consultation the patient had returned to her normal activities with no pain and limitation in function.

FURTHER DETAILS

- To read more about Ron Alexander and the Functional Fascial Taping technique visit www.fft.net.au
- For more details about PhysioUK's courses and dates visit www.physiouk.co.uk

Ron is visiting the UK to run a number of courses on FFT®. If you are interested in attending one of these courses, please contact Physio UK on 020 8394 0400, visit www.physiouk.co.uk.

FUNCTIONAL FASCIAL TAPING COURSE DATES

June 2007

- * 3rd London (1 day)
- * 5-6th Milton Keynes (2 days)
- * 8-9th Manchester (2 days)
- * 12-13th Wigan (2 days)
- * 15-16th Bath (2 days)