

## Implementation of Novel Interventions in an OMT Curriculum: Example: Taping with Elastic Tape

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### Introduction

As a result of research or, more often, empirically, new ideas, techniques, exercises, or other interventions make their way into clinical practice.

Ultrasound, EMG, Heart Rate Variability (HRV) measurement tools are being used by physios for myo/bio-feedback, electrotherapy seems to be rediscovered, and colourful taping is .... everywhere.

Functional taping with elastic tape as introduced in the 2009 IMTA newsletter is such a novel intervention that curriculum developers might like to include.

### Background of Taping

Taping is not new. Taping with adhesive non-elastic bandages has been introduced in western medicine in 1892 by Gibney in the USA and later in German sports medicine (Montag & Lohfink 1964).

Jenny McConnell may have been the first manipulative physiotherapist to incorporate rigid taping in an overall management plan (mid-eighties). She expanded the classical indication (protection, immobilisation, deloading, supporting) with further aims such as correction and improving proprioception.



The disadvantages of rigid taping are evident: it is not applicable in swelling, it limits circulation, lymphatics, metabolism and furthermore it needs skin protection.



McConnell uses Endura Fix under Endura Sports-Tape for skin protection.



Meanwhile, rigid taping is a well-known and acknowledged intervention in OMT, it is integrated in overall patient management, and there is (some, conflicting) evidence (Ref. Taping Techniques, Ed. by R. Macdonald 2004, Elsevier)

Japanese Chiropractor and Kinesiologist Kenzo Kase developed elastic tape material and a method of application in the 80s & 90s, which now is well-known under the fantasy name Kinesio Taping.

The natural cotton with synthetic elastic fibers (3 or 4%) eliminates disadvantages for the skin and, moreover, it is making use of characteristics of the skin to support healing mechanisms (to decrease pain, to gain full range of motion).



It has become very popular in sports, however there is a growing interest in taping in normal orthopaedic, neurological, paediatric practice as well.

Sometimes it even gives the impression that sports on TV is incomplete without visible colourful bandages. It is a real hype and the marketing is simply clever.



Presently the weather turns cloudy. Patients as well as course participants become more and more disappointed and the topic is increasingly critically appraised.

The difficulties that Kinesio Taping meet are evident:

local symptomatic applications only may not be appropriate in managing neuro-musculoskeletal dysfunctions,

Furthermore, the typical nomenclature of the many applications (Muscle, Ligament, Correcting application) is challenging. Taped is the skin and it seems more appropriate to describe the aim of the application.

Applied Kinesiology as a basis for application, e.g. for the choice of colours, finds low acceptance in the academic world, and the quality of publications and research certainly is to be improved.

Moreover .... just look at the Kase picture... what would you change in a teaching situation for the shown local symptomatic M. triceps surae application?

Conclusion: Stop. Dead End Street. Return to Zero.



Kinesio Tape example for a sprained medial collateral ligament

## Re-Start: Taping in an OMT scope

The original considerations of Kase sound valid and can be supported.

Elastic permeable material has clear advantages for the skin, remarkable immediate effects can be observed (and measured) in everyday practice and there is a much larger variety of indications compared with non-elastic tape.

So, how could elastic taping be an additional, acceptable, integrative therapy option, within the scope of all current paradigms?

ICF, bio-psychosocial, pain physiology and behaviour, comprehensive neuro-musculo-skeletal assessment, reassessment principle, dysfunction specific applications (impairment and or disability), integrated in overall management, clear indications, supporting the main interventions (passive techniques and active training), with logical rationales and precise guidelines for application, as well as evidence supported.

Taping „as functional as it gets“ may have various aims:

1. pain relief
  2. reduce swelling (e.g. in post-traumatic soft-tissue injuries, hydrops, secondary lymphatic edema)
  3. improve, enhance treatment effect (of passive techniques and or active training)
  4. enable more specific / progressive training
- and
5. support awareness / compliance of the patient

In addition it serves as a means to support personal professional development of the therapist as well as the student (knowledge, reasoning, skills)

A principle with “5T’s” shows a routine procedure.

The 5T’s in Patient Management in OMT are:

1. Think .... first: clinical reasoning
2. Test comprehensive assessment with appropriate tests
3. Treat with tailored, specific techniques and exercises
4. Tape if necessary: an application in analogy to treatment (at Rx1?, or at Rx2,3)
5. Train any application aims to enhance the positive treatment effect and or to facilitate, specific, progressive Training

All applications should be understandable, with logical rationales, biomechanical and or neurophysiological explanations with the aim to facilitate muscle function, to positively alter arthrokinematics, to improve neurodynamic tests etc., with clear application guidelines

The guidelines for functional taping are in agreement with the OMT management principles for articular, myogenic and neurogenic dysfunctions:

the Shape(s) of the tape(s), the Starting Position, the Basis (Beginning), the Course, the Ending, the percentage of applied Stretch, as well as

the Aim(s), specific details (Remarks, Clinical Tips) and Reference(s) (evidence) should all be described accurately.

Examples of Starting Positions (SP):

- Articular in an end-range problem: post-R1, pre-P1  
in a pain / range of motion pain problem: between Neutral and P1
- Myogenic facilitation: in inner range at the beginning of insufficiency or in a functional exercise position (to facilitate local stabilising muscles)  
lengthening: at R1 (not possible in all hyperactive muscles)
- Neurogenic to support “slider” exercises with 2 Bases and 2 Starting Positions at R1
- Other (Lymphatics, Visceral, Cranium): commonly in Neutral

For example the amount of stretch (S) (between 0 and 100%):

Application	%	Description
Lymphatic	0-10%	Apply without stretch (the tape has been manufactured with 10% pre-stretch on the foi)
Sensitive soft tissue	10-25%	Light to moderate stretch. Tape pulls back to the basis
Firmer soft tissue, articular/osseous structures	25-50%	Stronger to strong stretch. Tape still pulls back to the basis
Non-elastic application for osseous/articular structures	100%	Maximum stretch. The tape now pulls away from the basis

Such functional applications may be best applied when it becomes clear what the weakest part in a chain of dysfunction is. What dysfunction needs most therapeutic attention?, and may profit from tape to improve, enhance treatment effect, e.g. bridging the in-between session time. However there certainly are applications to be considered at the initial treatment.

Apart from taping in acute sports injuries, management of SIJ, 1. Rib, Tossy lesions, to name a few, may profit from immediate taping at Rx1 significantly.

Example of a Tape in case of a medial collateral ligament strain

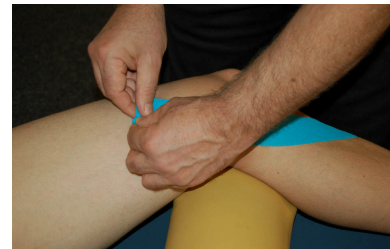
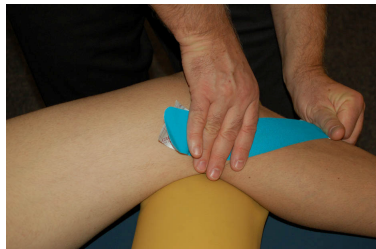
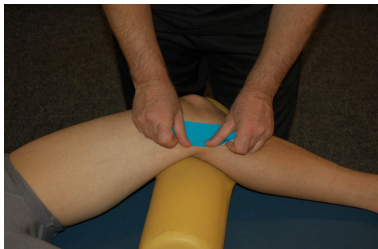
Material: 2 I-shaped tapes

Starting Position: Knee in 30° Flexion, Femur in ER, Tibia in IR (maximum relaxation of the ligament)

Tape 1:

Basis at the medial joint line,

Course – Ending: distally to posterior border of the Fibula with >25% stretch, proximally to the border of M. sartorius and M. quadriceps with <25% stretch

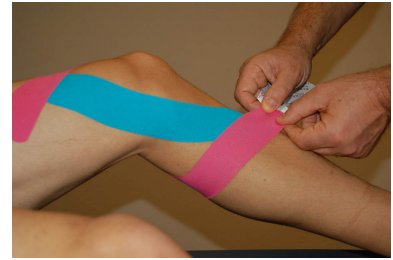
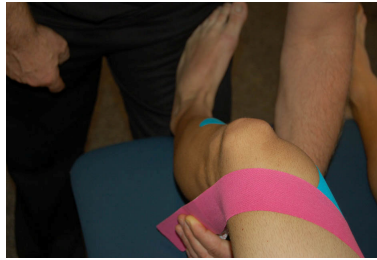
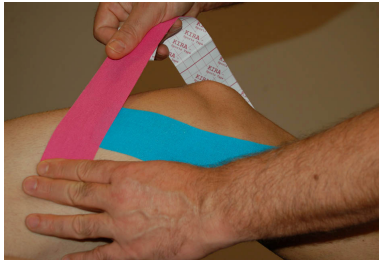




Tape 2:

Basis: oblique at the back of the knee,

Course – Ending: distally to Pes anserinus superficialis, further to posterior border of the Fibula with >25% stretch, half-overlapping with tape 1, proximally oblique medio-cranially to the proximal ending of tape 1 with <25% stretch



Khosro Heydari, Iran, in training (tape in any colour),  
in competition (preferably or mandatory in skin colour)

Compare this application with the original Kase application.

## Implementation in an IFOMPT compatible Curriculum

The new IFOMPT Standards Document (SD) describes the desired outcome of an educational program with competencies in 10 dimensions. Teaching and learning aim to reach an advanced level of knowledge, skills, and attributes.

Most of the teaching and learning is expected to be at Level 7 (Masters Level) with the following aspects: Critical evaluation, Synthesis, Justification, Reflection, Innovation, Complex, Analytical, Theorise, Hypothesise.

(Ref: A Taxonomy for Learning, Teaching, and Assessing: A revision of Bloom's Taxonomy of Educational Objectives. Anderson, Krathwohl et al. 2001, Designing a new taxonomy of educational objectives, RJ Marzano 2001)

Interventions to be included in an OMT curriculum can be classified as

1. passive techniques
2. active training
3. other additional, supporting interventions such as
  - applications (cryo-, thermo, electrotherapy, ultrasound, dry needling, bio/myo-feedback, taping, ....)
  - aids (pillows, collars, splints, ...)
  - as well as explaining, advising, teaching, counseling ....

The program and the teachers (mentors / external assessors) recognize that learning is a step-wise process and that the curriculum should show a constructive alignment of the contents (See Biggs 2003, Biggs & Tang 2007)

The Contents, Number of Hours, Learning Aims, Methods, Analysis of References etc. of a taping module may best be split up in various parts and integrated in other (main) modules throughout the OMT education, which consists of >200 hrs theory, >150 hrs practical and >150 hrs mentored clinical practice.

### Knowledge

Theory, principles and guidelines of elastic taping, and initial skills training in the first stage of the education, and may include preparation / self-directed learning (8 teaching hours incl. approx. 10 applications)

### Skills Training

#### Dysfunction specific practice

in the middle part of the education, integrated in modules on syndrome / clinical pattern management (6 to 8 hours, 12-16 applications), as well as in a formative and or summative assessment

### Mentored Clinical Practice

Application (clinical reasoning driven with / without evidence support) in patient management sessions in the second half of >150 hrs MCP

Students may like to choose the taping topic for a written assignment (critical analysis of the literature) and or to plan and to perform a clinical study to provide evidence for short-term efficacy of elastic taping, e.g. embedded in a Masters thesis.

A design proposal could be in summary:

Prospectively select 30 people (colleagues, university personnel, ...) who cannot touch the floor on forward bending, who all provide written consent for participation (inclusion criteria), however are neither having complaints, nor having physiotherapeutic or medical treatment (exclusion criteria).

A standardised finger-to-floor measurement is taken twice to determine a baseline, e.g. on two subsequent Mondays on the same time of day.

In addition the Femur-Trochanter major-SIAS angle and Schober Sign (10 cm to S1) are measured in standardised Neutral as well as at Limit of forward bending in a standardised and valid way. A standardised SLR could be measured in addition.

The 10 subjects with the least change in Femur-SIAS angle will then be taped paravertebrally from S3 to L1 where as the 10 subjects with the least change in Schober will be taped from the Tuber over the M biceps femoris and Caput fibulae to the anterior side of the proximal Tibia ("wrong tapes").



Hypotheses:

Left: dorsal thigh tapes improve finger-floor distance work, lumbar tapes not



Right: lumbar tapes improve finger to floor distance, dorsal thigh tapes not

After having measured the differences compared to baseline immediately after taping and twice after 24 hrs later: before and after removal of the tapes. Subsequently the taping will be performed reversed ("right tapes").

The hypothesis is that the 10 subjects with much pelvic tilt but little change in Schober Sign will show an immediate significant improvement of the finger-to-floor test and Schober Sign from the paravertebral tapes, where as the 10 subjects with little pelvic tilt but larger lumbar spine movement in Flexion will significantly profit more (finger-to-floor and SLR) from the dorsal thigh tape.

## Conclusion

The Kinesio Taping hype will settle. There are many reasons why the original Kase method is unlikely to be accepted on higher levels of practice and education. Rigid taping as advocated by McConnell did make its way into OMT. There is an increasing academic acceptance as well as increasing evidence in favour of non-elastic taping in the last 20 years.

As the advantages of elastic tape material cannot be denied, the use, role and acceptance of applying elastic tape in OMT will grow.

Clinical rationales and guidelines as well as scientific underpinning are likely to lead to a distinct and definite position within the scope of OMT practice and education.

It can be expected that clinicians, educators and researchers will gradually discover the benefits and options of elastic taping in OMT and will further promote its use.



Muchos Gracias Maria !

John Langendoen, Zaragoza, 25.11.2010