**Functional Taping for Musculoskeletal Injuries (FTMI)**

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**Wide Variety of Taping Techniques**
- **Kinesiology Taping**
  - Kinesio Taping
  - Kenso Kase
  - SpiderTech Pre-Cuts/NeuroStructural Taping
  - Kevin Jardine
  - Rock Tape (Movement Taping)
  - Greg van den Dries, Steve Capobianco
- **Strapping Methods**
  - McConnell
  - Mulligan
  - Specific Proprioceptive Response Taping (SPRT)
  - Tim Brown
  - Functional Movement Taping
  - Cook

**Different Applications of Taping**

Kevin Jardine

- **Neurosensory**
  - Goals: to improve afferent efferent communication to normalize tone of tissue, assist in restoring motor pathways and disrupt pain
- **Structural**
  - Goal: Block injurious ROM, improve adaptive postural behaviors, assist mechanical advantage of a joint, assist in stabilizing laxity/instability
- **Microcirculatory**
  - Goal: Promote movement of stagnant superficial fluid, edema, bruising, assist in removal of chemical irritants, improve oxygenation to injured tissue

**What taping techniques can be used for each application?**

- **Neurosensory**
  - Variety of different kinesiology tapings techniques
  - SPRT
  - To an extent all tapings have a neurosensory aspect due to application on the skin
- **Structural**
  - SPRT
  - McConnell
  - Mulligan
  - Kinesiology Taping with significant stretch
  - Functional Movement Taping (Cook)
  - Standard athletic taping/Strapping (coban, elastikon)
- **Microcirculatory**
  - Kinesiology taping only

**Functional Taping for MSK Injuries (FTMI)**

- **System of evaluation and application of a number of different taping techniques**
  - Utilizes specific pre-testing to determine if the taping may be effective for the patient’s injury
  - Through pre-testing assists in determining which taping technique will be most effective

**Concept of evaluation to determine what type of taping technique to use**

- **Concept of pretesting to ensure the taping will have a significant change in patient’s symptoms**

- **Utilizes all existing taping theory and techniques with emphasis on kinesiology taping, SPRT and strapping techniques**
Functional Taping for MSK Injuries (FTMI)

- Squat testing for knee
  - Tibial Torsion
- Lateral Patella tracking
- Inferior patella tendinopathy
- Patella Femoral Arthritis
- General Patella unloading

What is Kinesio Taping?

- Kinesio Taping involves taping over and around muscles in order to either:
  - assist and give muscle support
  - prevent over contraction of the muscles.

What can this voodoo tape be used for? Virtually everything

Kinesio® Taping Technique

- works with the body allowing full ROM
- No latex in the product making it skin sensitive and safe to use from pediatric to geriatric populations
- allowing comfortable wear over a 3–5 day period
- Water resistant fabric that wicks away the moisture as well as giving the patient the ability to bathe as normal
History of Kinesio Taping

• Kenzo Kase, D.C. invented this taping method in 1973.
• Dr. Kase wanted his patients to utilize a “prescription” that they could take home and use between visits.
• Began experimenting with already existing tapes.

Skin Function

› Sensory stimuli to mechanical receptors
› Decrease inflammation and pressure on chemical receptors
› Possibly activates spinal inhibitory system – through stimulation of the touch receptors
› Gate Control Theory

Muscle Function

› Improves muscle contraction of a weakened muscle???? (decreased nociception)
› Reduces muscle fatigue
› Reduces over-extension and over-contraction
› Increases Range of Motion
› Relieves pain

Joint Function

› Adjusts misalignment caused by spasms and shortened muscle
› Normalizes muscle tone and abnormality of fascia involved
› Improves range of motion
› Relieves pain

Lymphatic Function

› Lifts the skin, causing convolutions which provide space and decrease pressure
› With lifting of the skin, filaments which attach skin to endothelial cells are opened allowing for lymph obligatory load to fill in lymphatic capillaries
› Creates areas of decreased pressure, under the Kinesio tape, which allows areas of higher pressure to migrate to areas of lower pressure
› Decreases pain as a result of decreased stimuli on pressure receptors and gate control theory.
Example of Relaxation Technique:

- Insertion to Origin
- Approximately 5–10% stretch
- Tissue placed in a stretch position

Facilitation Technique

- Origin to Insertion
- Tape stretched 15–25%
- Tissue placed in stretch position or done in active motion
Joint Correction:
- Joint placed in its mechanically correct position when possible
- Tape is stretched 50–100%

Edema Reduction:
- Place in lymphatic drainage direction
- Tape stretched minimally
- Placed over bruising or swelling

Kinesio Taping after 12 Hours

What is SpiderTech™
The PRE-CUT Advantage

- Standardized
- Reproducible
- Simple
- Saves Time
- Applications Stay on Longer
  - Able to apply outside of clinical setting

WRIST SPIDER™ basic application

Helps with the following conditions:
- Sprained Wrist
- Wrist Instability
- Carpal Tunnel Syndrome
- Hypermobility
- Tendinopathies of fingers

ELBOW SPIDER™ basic application

Helps with the following conditions:
- Tennis Elbow (Lateral Epicondylar Pain)
- Golfer's Elbow (Medial Epicondylar Pain)
- Improved Athletic Performance
- Muscle Strain
- Postoperative Rehabilitation

POSTURE SPIDER™ basic application

Helps with the following conditions:
- Shoulder injuries
- Mid back pain
- Poor posture
- Rounder shoulders
- Neck pain
- Improved athletic performance
- Postoperative rehabilitation
- Muscle imbalances

SHOULDER SPIDER™ basic application

Helps with the following conditions:
- Arthritis
- Joint Strain (Impingement Syndrome)
- Improved Athletic Performance
- Rotator Cuff Strains
- Muscle imbalance
- Postoperative Rehabilitation
- Muscle Spasms

LOWER BACK SPIDER™ basic application

Helps with the following conditions:
- Arthritis
- Joint Strain
- Improved athletic performance
- Disc injuries
- Muscle Strains and Spasms
- Postoperative Rehabilitation
**GROIN SPIDER™**
**basic application**

Helps with the following conditions:
- Groin Pulls
- Weak Adductors
- Torn Adductors
- Improved Athletic Performance
- Muscle Imbalance

**HAMSTRING SPIDER™**
**basic application**

Helps with the following conditions:
- Strained Hamstring
- Weak Hamstrings
- Traction Enthesopathies
- Muscle Strain
- Muscle Imbalance
- Improved Athletic Performance
- Postoperative Rehabilitation

**UPPER KNEE SPIDER™**
**basic application**

Helps with the following conditions:
- Arthritis
- Patellar Tendinopathies
- Improved Athletic Performance
- Patello-femoral joint instability
- Ligament Strains
- Postoperative Rehabilitation
- Meniscal Degeneration

**FULL KNEE SPIDER™**
**basic application**

Helps with the following conditions:
- Used when more sensory input is required
- Arthritis – Especially progressed conditions
- Patellar Tendinopathies
- Improved Athletic Performance
- Patello-femoral Joint Instability
- Ligament Strains
- Postoperative Rehabilitation
- Meniscal Degeneration

**HIP SPIDER™**
**basic application**

Helps with the following conditions:
- Iliotibial Band Syndrome
- Strained gluteal muscles
- Hip bursitis
- Muscle imbalance
- Improved athletic performance
- Postoperative rehabilitation

**ANKLE SPIDER™**
**basic application**

Helps with the following conditions:
- Shin Splints
- Ankle Sprains
- Ankle Instability
- Improved Athletic Performance
- Postoperative Rehabilitation
- Arthritis
- Plantar Fasciitis
**Calf & Arch Spider™ basic application**

Helps with the following conditions:
- Calf strain
- Fallen arches
- Plantar fasciitis
- Muscle cramps
- Posterior shin splints
- Ligament damage in the ankle
- Improved athletic performance
- Postoperative rehabilitation

**Wrist Spider™ basic application**

Helps with the following conditions:
- Sprained Wrist
- Wrist Instability
- Carpal Tunnel Syndrome
- Hypermobility
- Tendinopathies of fingers

**Elbow Spider™ basic application**

Helps with the following conditions:
- Tennis Elbow (Lateral Epicondylar Pain)
- Golfer’s Elbow (Medial Epicondylar Pain)
- Improved Athletic Performance
- Muscle Strain
- Postoperative Rehabilitation

**Posture Spider™ basic application**

Helps with the following conditions:
- Shoulder injuries
- Mid back pain
- Poor posture
- Rounder shoulders
- Neck pain
- Improved athletic performance
- Postoperative rehabilitation
- Muscle imbalances

**Shoulder Spider™ basic application**

Helps with the following conditions:
- Arthritis
- Joint Strain (Impingement Syndrome)
- Improved Athletic Performance
- Rotator Cuff Strains
- Muscle Imbalance
- Postoperative Rehabilitation
- Muscle Spasms

**Lymphatic Spider™ basic application**

Medium Lymphatic Spider

Helps with the following conditions:
- Muscle Strains
- Acute Injuries
- Chronic Joint Swelling
- Oedema
- Lymphatic Congestion
- Bruising
- Postoperative Recovery
Currently the SpiderTech™ line has 16 applications

16 different static designs....

...over 40 different ways to apply

Therefore NOT a cookie cutter approach

The tape on the skin leads to the formation of areas of low pressure to areas of high pressure leading to a change in the flow of fluid

Neurosensorial Effects

Mechanoreceptors

Microcirculatory Applications

Technique #1

“Stretch the tape AND the muscle™”

- Use the Lymphatic Spider™
- Improve superficial fluid dynamics
- Improve lymphatic drainage
- Treats Swelling, Bruising, Oedema and/or Ecchymosis

Example:

- Microcirculatory Applications:
  - Theory
    - Creates convolutions on the skin (Accordion Effect)
    - These convolutions create alternating areas of low and high pressure
    - Through the properties of diffusion, these alternating pressure systems effectively create "rivers" assisting in the reduction of fluid stasis
    - Removes chemical irritants assisting in blocking the inflammatory cycle preventing unwanted fibrosis and accelerates the healing of tissue
Kinesiology Taping

- Application
  - Tissue and the tape are stretched
  - Should be left on for a minimum of 12 hours
  - Reduces bruising under the tape
  - Improves superficial fluid movement
  - Make sure the patient is able to accept the increase of fluid back into the lymph system (lymph edema)

Structural Applications Technique #2

“Stretch the tape NOT the muscle™”

- Prevent harmful ranges of motion without a hard end feel
- Dynamically supports better postural positions
- Enhance biomechanical postures during sports
- Reduce strain on affected muscles
- Dynamically treat hyper-mobility

Kinesiology Taping

- Structural Applications
  - Theory
    - Continuous biofeedback associated with potentially injurious ROM without hard end feel
    - Allows for improved postural positions without limiting full ROM (shoulder)
    - Assists in protection of healing tissues (helps prevent repetitive strain)
    - Assists in structural adaptation blocking cycles of poor posture

Kinesiology Taping

- Application
  - Tissue is not stretched but placed into biomechanical correct posture
  - Tape is stretched to the amount necessary to assist in preventing motion into potentially injurious motions
    - More stretch = Less motion
    - Less stretch = More motion
  - DO NOT OVERSTRETCH TAPE AS THIS WILL CREATE IRRITATION
Neurosensory Applications
Technique #3
“Stretch the muscle NOT the tape™”

• Used for 90% of all Applications
• Enhanced sensory stimulation leading to a decrease in the neural perception of pain
• Activates sensory gating mechanisms for therapeutic effect
• Restoration of normal muscle activation and function

Kinesiology Taping

› Neurosensory Applications
  • Theory
    • Stimulate sensory receptors (Merkel Cell)
    • Stimulation of the Merkel Cell (A-Beta Fiber) disrupts the stimulus from A-delta and C-Fibers (pain fibers)
    • Assists in restoring proper afferent/efferent communication

Application
• Tape should be applied to stretched tissue with paper off tension (tape is applied to the backing at 10% stretch)
• Tape should only be stretched more if you cannot stretch the tissue (frozen shoulder)

Neurosensory Effects
Mechanoreceptors

Classification of Nerve Fibres

<table>
<thead>
<tr>
<th>Sensory Function</th>
<th>Receptor Type</th>
<th>Afferent Axon Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprioception</td>
<td>Muscle Spindle</td>
<td>A-Alpha (Ia II)</td>
</tr>
<tr>
<td>Touch</td>
<td>Merkel, Meissner, Pacinian, Ruffini</td>
<td>A-Beta</td>
</tr>
<tr>
<td>Pain, Temperature, itch</td>
<td>Free nerve endings</td>
<td>A-Delta</td>
</tr>
<tr>
<td>Pain, Temperature, itch</td>
<td>Free nerve endings</td>
<td>C</td>
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</tbody>
</table>
Why is the AC tab important?

- Helps determine the direction necessary for proper approximation and/or compression of the injured tissue.
- Provides a vector of pull in relief of symptoms
- Gives greater relief from the injury in movement patterns
- Due to the types of tape used, very supportive of injured areas

SPRT

- Neurosensory Applications
  - Through use of the AC tabs, it is possible to create vector pulls on the superficial fascia.
  - Through facial pulls can assist in finding a vector that will relieve pain
  - With use of strapping tapes it is important not to over pull and only create tension on the fascia directly at the AC tab
  - Should not limit ROM!

SPRT

- Structural Applications
  - Used to Block possible injurious motions
    - Determine the point at which injury/pain will occur
    - Bring the patient just out of painful range
    - Apply tape at this position
      - Example: Disc herniation:
        - Pain with radiation at 35 degrees of standing
        - Bring patient to 30 degrees of flexion and apply tape
  - Used to enhance posture
    - Assists in retraining proper posture
    - Hard end feel so used in more severe cases

Rock Tape
Postural Control Taping (PCT)

**Goal:** To assist in establishing a targeted posture to facilitate normal movement patterns:

1. Place the body into the position opposite to the unwanted posture.
2. Apply the stabilization tape along the fascial line to facilitate the intended posture (via cutaneous stimulation).
3. Apply the tape with little to no stretch.

Power Taping Method™ (PTM)

**Movement Correction/Performance Enhancement Technique**

**Goal:** To utilize known bio effects of kinesiology taping for performance enhancement

**PowerTaping™ Concepts**

1. **Taping Movement, not Muscles**
2. **Longitudinal/Integrated Anatomy Concept**
3. **Sensorimotor Stimulation**
Fascial Taping Concept

1. Brain coordinates movement not muscles

2. Taping movement patterns helps to prime the sensorimotor system via cutaneous afferent stimulation

3. Improve performance via improved fascial continuity

Associated Conditions:
- LBP
- C/T Pain
- Costal Pain
- Shoulder Pain
- Headaches

Clinical Application of Tape

Kinesiology tape and Strapping Tapes

Kinesiology Tape Cutting Techniques

X-Cut       "I" Cut       "Y" Cut       "Fan" Cut

Joint is moved through a full range of motion prior to completing tape application
- Neurosensory
- Microcirculatory Applications

X, Y, I & Fan tape cuts are used
- "Y" & "I" cut being the most common
- Other creative cuts depending on injury
  - Basket weave/lantern, diamond holes, bottle shape

1", 1 ½", 2", 3", 4" tapes are available
- 1 ½": Strapping tapes, athletic tapes, kinesiology tapes
- 2": Kinesiology, Coverall
- 4": Coverall, Rock Tape

Application of Kinesio Taping

Kinesiology Tape is applied to stretched tissue, minimal stretch is added to the tape for.

Kinesiology Tape is slightly stretched if applied to non-stretched skin (frozen shoulder).

Kinesiology Tape is applied with moderate stretch only when used as a Structural technique.
Application of Tape

- Skin should be free of oils and dry
- After application, rub the tape to activate the heat sensitive adhesive
- Tape application in moist areas, may want to use water resistant tape
- Tape both the pain, and cause of the pain

Limitations of Taping

- Body hair may need to be clipped or shaved
- Apply approx. 45 minutes before activity
- Application during activity, may require the use of a tape adherent
- Patient understanding & willingness to wear tape for multiple days, or in public
  - TMJ
  - SCM

Initial Difficulties in Application

- Training for use of athletic tapes teach the need to “pull tape” for support
- Need to treat both the pain and the cause of pain, providing for correction of symptoms
- Proper muscle/injury evaluation critical in obtaining positive results
- Knowledge of the Lymphatic system helpful
- Unlearning what “tape” can be used for

Functional Taping for MSK Injuries

- LS Disc SPRT
  - Increased pain on flexion, sitting driving at a specific range
  - Symptoms decrease as soon as you raise slightly out of the posture

LS Disc Herniation SPRT

Tape used: Coverall, Leukotape
Patient in flexed position just above pain
- Apply Coverall from mid-lower sacral region to T/L region along paraspinals region
- Apply A/C tapes to level of involvement

With leukotape, grab the tab and apply tension in the direction of decreased symptoms
LS Disc Herniation SPRT

- Used for disc herniation and postural correction

Functional Taping for MSK Injuries

- Rotation in the SI Joint
  - Supine to Sit Test
  - Active SLR Test
  - Supine Force Closures
  - Standing Manual Force Closures
  - SPRT Neurosensory Taping Application
    - PI/AS ilium

SI Evaluation

AS–PI Correction SPRT

- Tape used: Coverall/KT, leukotape
- Patient standing
  - PI side: apply Coverall from sacrum across PSIS running anteriorly and superiorly along iliac crest to ilium
  - Apply leukotape A/C tab lateral to PSIS

AS–PI Correction SPRT

- AS side: Apply Coverall/KT from ASIS posteriorly along iliac crest to Sacrum
  - Apply leukotape tab lateral & anterior PSIS
AS–PI Correction SPRT

- PI side: catch the tab with leukotape starting at sacrum and pulling tab anteriorly toward abdomen
- AS side: catch the tab starting at Lateral LS and pulling tab posteriorly to Sacrum

Use a piece of coverall across the sacrum to anchor tape
- On pregnant patients be careful moving too far anteriorly as the abdomen skin is highly sensitive

AS–PI Correction SPRT

- Used for rotational corrections of the SI joint
- Must be aware of irritation with this tape job at abdomen or with obese patients

Functional Taping for MSK Injuries

- Scapular Retraction
  - Hard End feel for more aggressive cases
  - Greater control over winging at specific sites
- CS Disc
  - Flexed posture increases CS pain or radiation
  - Coming out of posture decreases symptoms immediately

Scapular Retractors SPRT

Tape used: Coverall, leukotape
- Patient Position: exaggerated neutral posture
- Structural Technique
  - Apply Coverall across the scapulas at spine of scapula and inferior angle
  - Apply tabs to the lateral aspect of the medial border of scapula
Scapular Retractors SPRT

- From both the right and left side, grab the tabs and pull towards the spine
- Do the same at the inferior angle

Strong scapular retraction for weak scapular stabilizers

Tape used: Coverall, leukotape
Patient Position: CS in position of best centralization
Structural Technique
- Apply Coverall from top of CS inferiorly to the scapula
- Apply leukotape tabs over level of involvement

CS Disc Herniation SPRT

- Catch tabs with 2nd strip of leukotape
Postural Correction

- Poor Posture with rounded shoulders
- CS Disc with or without radiation
- Progressive layers depending on needs
  - Start with Kinesiology tape only
  - Multiple levels of stretch
  - Progress to addition of leukotape for more serious conditions

Tape used: KT, Leukotape Coverall

Patient Position: Slightly exaggerated correct posture

Structural Technique

- Apply Coverall in crisscross pattern from front of shoulders to the opposite inferior scapula

- Can be used for CS disc herniations as well
Postural Correction
Cross Your Heart

Functional Taping for MSK Injuries

- Use of Mulligan mobilization with movement
  - Painful or restricted movement on ABD

- Using mobilization belt or hands apply corrective force to the anterior GH joint improves symptoms

- Positive Relocation Test

- Significant Anterior and/or superior translation on PROM for IR

- Positive Apprehension test

Superior Translation KT

Tape used: KT, “Y” strip
Patient position: seated
Structural Technique

- Affix base at posterior shoulder
- Bring the patients arm into anatomically correct position

Prevents superior translation in Abduction and ER positions
Used in conjunction with anterior translation
Anterior Laxity KT

- Tape used: KT, “I” strip
- Patient position: seated
- Structural Technique
  - Affix base along the anterior GH joint
  - Bring the patient’s arm into anatomically correct position

- Apply the tape posteriorly at about a 50–100% tension
- I do not apply 100%. Find it to be irritating and tends to roll with patient activities above 90 degrees
- Joint Correction

Anterior/Superior Translations with Eval

- Tape used: Leukotape, coverall
- Patient Position: Neutral position
- Neurosensory Technique
  - Apply coverall perpendicular to the common Flexor tendon
  - Place AC tab to inside tendon

- Epicondylopathy
  - MMT produces pain
  - Fascial pulls in one or several directions relieves pain

- Cubital Tunnel Syndrome
  - HX of repetitive or traumatic stress to elbow with tingling along ulnar nerve distribution
  - Positive Ulnar Nerve Tension Test
  - Reduction of Ulnar Nerve Symptoms with Fascial Pulls

Med Epicondylopathy SPRT

- Tape used: Leukotape, coverall
- Patient Position: Neutral position
- Neurosensory Technique
  - Starting on the inside aspect of the elbow pull the tab across the flexor tendons ¾ of the way around
  - Cho pat without vascular compression

Functional Taping for MSK Injuries

- Epicondylopathy
  - MMT produces pain
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  - Reduction of Ulnar Nerve Symptoms with Fascial Pulls
Epicondylopathy SPRT

Squat Test Eval

Squat Test Eval for Fibular Head

Tibial/Femoral Torsion Strapping/Proprioceptive

Tape Used: KT, Leukotape
Patient Position: Knee bent

- Apply KT along the anterior tibia from medial to lateral in a superior angle
- Apply 2nd KT along anterior thigh from lateral to medial

- Apply 1st tab along medial tibial tuberosity
- Apply 2nd tab at lateral thigh

- Catch tab with 2nd strip of leukotape and pull laterally to reduce IR of the tibia
Tibial/Femoral Torsion Strapping/Proprioceptive

- Catch the 2nd tape with leukotape and pull medially

- Finish off all strips along the KT
- Used for tibial torsion correction
- Also excellent for meniscus correction

Inversion Ankle Sprain

- Hx of Inversion Sprain
- Palpatory Tenderness of Ligaments
- Swelling, edema, bruising
- Positive Ligament Stress Tests

General Ankle Stabilization

- Hx of Eversion Sprain
- Ankle Mortice Joint Injury
- Decreased pain on Dorsiflexion with posterior Talus mobilization

Inversion Sprains Taping

- Tape Used: coverall, leukotape
- Patient position: Dorsiflexed and everted
- Structural Technique
  - Apply coverall from dorsum of the foot along the ATFL
  - Apply Leukotape tab just before ATFL

- Catch tab with 2nd leukotape strip and pull towards the lateral malleolus
Inversion Sprains Taping

- Toughest application
- Apply coverall in a diagonal along the anterior compartment and lateral malleolus and wrapping under the foot

Inversion Sprains Taping

- Pull foot into dorsiflexion and eversion from under the foot along the lateral malleolus ending at the medial anterior compartment

Inversion Sprains Taping

- Apply coverall from under the heel medial and laterally along the leg

Inversion Sprains Taping

- Apply tab inferior to the CFL
- With 2nd strip of Leukotape, begin medially and follow under the heel to the lateral surface

Inversion Sprains Taping

- Catch tab with leukotape and pull into everted position ending laterally

Inversion Sprains Taping

- With 3" coverall apply under the heel
Pull tight medially across the front of the ankle
Pull tight laterally across the front of the ankle

Strips 1 and 3 have tabs Strip 2 does not

Side Line Ankle Eval