



# Therapeutic Taping for the Lower Quarter

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## *Dyanna Haley-Rezac*

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- Credentials
  - FAAOMPT – Fellow American Academy of Orthopedic Therapists, Regis University FMT
  - OCS - Orthopedic Certified Specialist (APTA)
  - DPT - Slippery Rock University
  - BS - Exercise Physiology WVU
  - CSCS - Certified Strength and Conditioning Specialist (NSCA)
  - CKTP - Certified Kinesio Taping Practitioner (KTA)
  - CGFI-MP2 – Certified Golf Fit Instructor Level 2 – Medical Professional (TPI)
  - APTA Certified Clinical Instructor (CI)
- Professional Associations
  - APTA, AAOMPT, NSCA
- Physical Therapist Roles
  - Co-Owner Rezac & Associates Physical Therapy, Colorado Springs, CO
  - Affiliate Faculty, Regis University, Denver, CO
  - CO Professional Development Co-Chair
  - APTA CO SE District Secretary
- Taping – studying, learning and practicing since 1987
  - Athletic Training / Cramer
  - McConnell, Mulligan
  - Elastic taping – Kinesio, Power Taping, KT, Dynamic

## Scott Rezac

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### ➤ Credentials

- FAAOMPT – Fellow American Academy of Orthopedic Physical Therapists, Regis University FMT
- OCS - Orthopedic Certified Specialist (APTA)
- DPT – University of Southern California
- BS – Kinesiology, California State University Fullerton
- CSCS - Certified Strength and Conditioning Specialist (NSCA)
- CKTP - Certified Kinesio Taping Practitioner (KTA)
- CGFI-MP2 – Certified Golf Fit Instructor Level 2 – Medical Professional (TPI)
- CEAS – Certified Ergonomics Assessment Specialist
- APTA Certified Clinical Instructor (CI)
- CCCE – Center Coordinator of Clinical Education

### ➤ Professional Associations

- APTA, AAOMPT, NSCA

### ➤ Physical Therapist Roles

- Co-Owner Rezac & Associates Physical Therapy, Colorado Springs, CO
- APTA CO SE District President
- APTA CO SE District Chief Delegate
- Colorado Physical Therapy Network (CPTN) Treasurer

### ➤ Taping – studying, learning and practicing

- McConnell, Mulligan
- Elastic taping – Kinesio, Power Taping, KT, Dynamic

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## Course Objectives

- Identify appropriate patients for taping interventions relative to indications and contraindications.
- Identify appropriate taping techniques based on patient presentation and functional limitations.
- Identify efficacy of taping application objectively.
- Identify current evidence with regard to utilizing taping techniques.
- Identify appropriate billing and reimbursement standards.

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# Types of Taping

## 1) Rigid

- Athletic Training Techniques
- Cramer, Mueller, J&J, PowerTape
- Immobilization, Joint Protection / Support, Control Movement , Re-injury Prevention
- Invented in 1920s by J&J, but hit height of popularity in 80s



## 2) Semi-Rigid

- McConnell / Mulligan Techniques
- Leukotape, EnduraTape, DonJoy Tape
- Neuro Re-ed (facilitation, inhibition, joint position sense), muscle torque, improved joint loading tolerance, unloading painful tissues, mobilization with movement
- Introduced by Jenny McConnell in 1986 and Brian Mulligan in 1989, most popular in the 90s

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# Types of Taping

## 3) Elastic Proprioceptive Taping

- Kinesio Tex/ Balance Tex / Sports Tex Kinesiology/ Spider, Dynamic, KT Tape
- Neuro Re-ed (muscle facilitation inhibition), Lymphatic Drainage, Unloading, Proprioceptive Input, Joint Support
- Invented in the 70s by Dr. Kenso Kase, DC not popular in US until 2000s
- Kinesio® Taping Theories
  - **Muscle Function** -facilitate muscle contraction via muscle spindles, inhibit muscles via GTOs to decrease pain and improve ROM, activation of weak muscles for AROM, Proprioceptive feedback / re-ed, Reduce over-extension or over-contraction of muscle
  - **Skin Function** - Stimulation of nociceptors, mechanoreceptors and thermoreceptors
  - **Pain Function** - Gate Control Theory – increased mechanoreceptor stimulation, Inflammation Reduction – decreased nociceptor stimulation, Unloading painful structures



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# Taping Basics

- Precautions:
  - Use caution with frail skin (elderly, pediatrics)
  - Do not tape over wounds or incisions that are not closed
  - Ask about tape allergies
- Guidelines:
  - Shave or clip excessive hair, free of oils and lotions
  - Round ends of tape, don't stretch last 2" of either end
  - Heat activated – will set with rubbing down and after 20' wear
  - Usually always tape with tissue in most lengthened position
  - Unload – 75-100% stretch – cut ½ total length you will need
  - Facilitation – 50-75% stretch – cut ½ to 2/3 total length needed
  - Inhibition – 10-25% stretch – cut exact length
  - Edema – no stretch – cut exact length
  - Space correction – max stretch in middle, none on ends

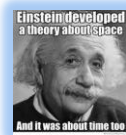
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# Evidence Based Practice



- Why these are **THEORIES** no research to support:
  - Joint realignment via radiography or MRI
  - EMG activation/de-activation of muscle fibers (muscle spindles, GTOs)
  - Effect on nociceptors, mechanoreceptors or thermoreceptors
  - Reproduction of Joint Position Sense (RJPS) / Proprioception
- What the **RESEARCH** does support:
  - Decrease in pain rating scales
  - Improvement in disability scores
  - Improvement in functional tasks
  - Decreased incidence of re-injury
  - Decreased inflammation / edema
  - Psychological Benefit



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## Evidence Based Practice



- Identify your comparable or asterisk (\*) sign – the motion reproduces their specific pain
- Generally want to tape for function first, then pain (pain follows function)
- Test before taping, re-test after for efficacy
  - Range of Motion – active, passive, pain, quality
  - Strength – functional strength or manual muscle testing
  - Activity Tolerance – lifting, carrying, reaching, computer
  - Neuromuscular recruitment – capital flexion test, GHS kinesia
  - Proprioception – C/S Proprioception with laser and target
  - Outcome Measures – NDI, DASH, HDI, SPADI, PSFS
  - Pain / Headaches – frequency, intensity, duration
  - Posture – improved tolerance, duration
  - Special Tests – RTC, impingement, TOS, nerve tension
- Tape should NEVER make them worse!

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## Kinesio® Taping

### PFPS Improved Function with Both Tapes

Jancaitis G et al 2006 Short Term Effects of Kinesio® Taping on Symptoms of PFPS

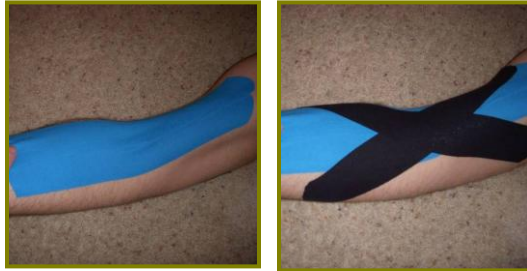
- University of Virginia study submitting for Platform Presentation with NATA and publication
- Randomized controlled trial
- 14 subjects between 18-50 years old with + hx of PFS
- Baseline measurements, taped with Kinesio Tape or sham tape (cross strip above & below patella) and measured on initial taping and 2 days later
- LE Functional & Visual Analogue Scale, 1 & 10 step down
- Reduction in pain in 10 step down test for both groups

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## Knee Hyper-extension Block Athletic Tape Technique

- Same as for elbow
- Two strips maximal stretch from mid-thigh to mid-calf
- Two single strips across joint



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## Patellar Fat Pad Unload

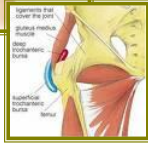
- Adapted from McConnell Technique
- Split strip attached to tibial tubercle with maximal, but equal pull medial and lateral
- Use step up/down, squat tests to validate



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## IT Band / Hip Bursa Unload



- IT Band

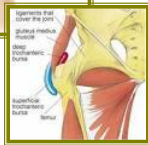
- Modified Kinesio® Taping Technique
- Maximal stretch 1-2 strips along IT Band
- Can also help facilitate lateral hip control
- Test pain with ambulation, Trendelenburg



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## IT Band / Hip Bursa Unload



- Trochanteric Bursa

- Used by Athletic, McConnell, Mulligan & Kinesio® Taping
- Space Correction 3-4 squares x 2-4 strips in multiple directions over bursa
- Test with \* Sign



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## Hamstring Facilitation

- 1-2 strips with moderate stretch over hamstring
- Can direct laterally s/p ACL medial hamstring graft



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## Contusion / Edema

- Kinesio® Taping Technique
- Multiple splits strips
- 4-8 strips (with 2")
- No stretch
- Great for TKA's



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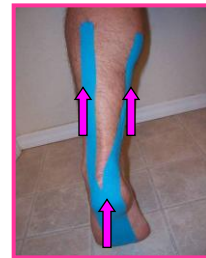
## Plantar Fascia Unload

Gastroc/Soleus/Achilles Complex Unload  
Athletic Training & Modified Kinesio® Technique  
(also achilles tendonosis, gastroc strain)



**Step 1:** With foot in dorsiflexion, begin tape at transverse arch on plantar aspect of foot. Apply maximal stretch to calcaneus. Can also fan and/or direct to 1<sup>st</sup> ray for improved 1<sup>st</sup> distribution.

**Step 2:** Split tape and apply to medial and lateral aspects of the gastroc/soleus complex with moderate stretch.  
**Very effective when combined with navicular lift**



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## Low Dye Tape on Medial Longitudinal Arch Controls Pronation During Stance, Running, Walking

- Vicenzino B et al. Initial effects of anti-pronation tape on the medial longitudinal arch during walking and running. *British Journal of Sports Med.* 2005 Dec;39(12):939-43
- 17 subjects who were asymptomatic and exhibited a navicular drop greater than 10 mm.
- The augmented Low Dye tape was effective in controlling pronation during both static and dynamic activity. Tape induced changes in static foot posture paralleled those during walking and jogging.

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## Calcaneal tape vs sham, stretching, and no treatment on Plantar Fascia Pain Calcaneal Tape More Effective

- Hyland MR; Webber-Gaffney A; Cohen L; Lichtman PT *J Orthop Sports Phys Ther* 2006 Jun; Vol. 36 (6), pp. 364-71.
- Randomized controlled trial of 41 subjects with plantar heel pain 1)calcaneal taping , 2)sham taping, 3) plantar fascia stretching and 4) control for the short-term management of plantar heel pain.
- Calcaneal taping was shown to be a more effective tool for the relief of plantar heel pain than stretching, sham taping, or no treatment but no change on PSFS.



## Navicular Lift McConnell Technique

- Stability and deceleration of pronation moment during stance
- Similar to a “chopat” for the foot

**Step 1:** No stretch from lateral dorsum to navicular tubercle

**Step 2:** Maximal stretch from tubercle to anteriolateral tibia



# Distal Fibular Glide

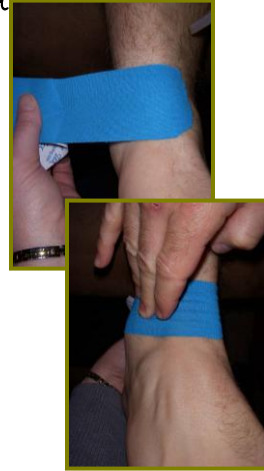
## Mulligan Technique

- Improve DF
- Tension ATFL to prevent lateral ankle sprain

**Step 1:** Tape from slightly anterior and distal to distal fibula

**Step 2:** maximal stretch in a posterior and proximal direction around the posterior calf while applying a posterosuperior glide

Same technique can be used for superior tib-fib



## Mulligan Fibular Glide Taping Decreased Ankle Injury

- Moiler K, Hall T, Robinson K. The role of fibular tape in the prevention of ankle injury in basketball: A pilot study. J Orthop Sports Phys Ther. 2006 Sep;36(9):661-8.
- 443 measured basketball exposures resulted in 11 ankle injuries. All injuries occurred in subjects with a history of previous ankle sprain. Significantly less ankle injuries were sustained by members of the FRT condition
- This study provides preliminary data regarding the prophylactic effects of FRT on ankle injury in male basketball players.



## Achilles Space Correction

### Kinesio® Tape utilizing McConnell/Mulligan Concepts



**Step 1:** Cut a 3-square piece of tape and remove backing from middle 1/3 of tape.

**Step 2:** With foot in DF, stretch maximally horizontally across the Achilles tendon.

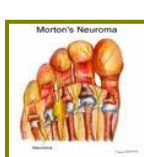
**Step 3:** Lie down two ends without stretch.



**Very effective when combined with gastroc/soleus/plantar fascia unload.**

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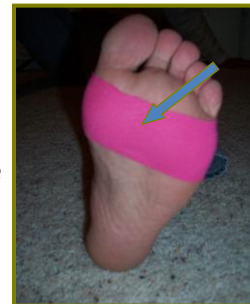


## Morton's Neuroma

- Space correction to relieve pain from Morton's neuroma / Metatarsalgia

**Step 1:** Place with maximal stretch across site of most pain (usually between 2<sup>nd</sup> & 3<sup>rd</sup> or 3<sup>rd</sup> & 4<sup>th</sup> MTP on plantar surface, but can be used on dorsal surface if neuroma is on the superior aspect)

**Step 2:** Lie down ends without stretch



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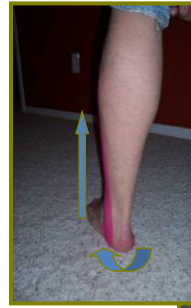
## Eversion Stirrup Biomechanical Correction

### Athletic Taping Technique

- Lateral ankle sprain
- Can be used with peroneal facilitation and/or navicular lift

**Step 1:** begin at the medial calcaneus and lie tape down on plantar aspect of the calcaneus

**Step 2:** stretch maximally up the lateral aspect of the calf to apply an EV force to the ankle.



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## Posterior Tibialis

### Kinesio® Technique

- Medial ankle sprain
- Tarsal Tunnel Syndrome
- Tape with moderate stretch (facilitation) or minimal stretch (inhibition) in EV and DF
- Can add a space correction for Tarsal Tunnel



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## Tibialis Anterior Kinesio® Technique

- Facilitate DF
- Inhibit with space correction for shin splints
- With foot in EV and PF, mod to max for facilitation and minimal to no stretch for inhibition

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## Hallux Valgus Correction

- Can be augmented with navicular lift
- Valgus or Varus can be used on any toe.

**Step 1:** Begin medial on the 1<sup>st</sup> ray, stretch moderately to maximally along medial foot to calcaneus (avoid positioning 1<sup>st</sup> MTP at end-range of available motion).

**Step 2:** Continue around posterior calcaneus laterally and back to medial foot on the dorsum ending at the medial 1<sup>st</sup> ray (starting point).

**Step 3:** A small strip can be used around the toe to secure ends without any stretch.

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## Clinical Evidence-Based

- Objective Assessments
  - Gait
    - Gait mechanics (at IC, MS, TS, etc)
      - Trendelenberg
      - LE IR, Q angle
      - Genu Valgum
      - Knee hyperextension
      - Calcaneal, midfoot, forefoot position
    - Stride Length
    - Stance Time
    - Distance
    - Speed
    - Assistive Device



## Clinical Evidence-Based

- Objective Assessment (cont).
  - Pain
    - at rest
    - with AROM
    - previously aggravating positions / activities
    - VAS (Visual Analog Scale)
  - Outcome Measures
    - LEFS (Lower Extremity Functional Scale)
  - AROM
  - MMT



## Clinical Evidence-Based

- Objective Assessment (cont).
- Functional Tests (Asterisk Signs)
  - Step up, step down, squat, SLS, jumping
    - Less pain, more reps, improved range / height?
  - Cutting, cross-overs, uneven surface
  - ADLs
    - Sit <> stand, stair negotiation, kneeling



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## Questions, Comments, Discussion

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