Therapeutic Taping for the Lower Quarter

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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
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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

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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.
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

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, mechoreceptors and thermoreceptors
     • **Pain Function** - Gate Control Theory – increased mechanoreceptor stimulation, Inflammation Reduction – decreased nociceptor stimulation, Unloading painful structures
**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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Scott & Dyanna Rezac - Lower Quarter Taping 2014
Evidence Based Practice

- Identify your comparable or asterisk (*) sign – the motion that 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!

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
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

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
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

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
Hamstring Facilitation

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

Contusion / Edema

- Kinesio® Taping Technique
- Multiple splits strips
- 4-8 strips (with 2”)
- No stretch
- Great for TKA’s
**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 1st ray for improved 1st 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

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

- 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 anterolateral 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

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**Mulligan Fibular Glide Taping**

**Decreased Ankle Injury**

- 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.

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 2nd & 3rd or 3rd & 4th 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
**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
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

Hallux Valgus Correction

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

**Step 1:** Begin medial on the 1st ray, stretch moderately to maximally along medial foot to calcaneus (avoid positioning 1st 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 1st ray (starting point).

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

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

Questions, Comments, Discussion

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