

SMX2008

Hard Surfaces Contributing Variables Preventative Taping Techniques

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Seminar Outline

- Sporting Surfaces
 - Different variables causing injuries
- Common Injuries we are encountering
- Preventative Techniques
- Advanced Taping techniques



Sporting Surfaces

- Open Fields
 - Grass is OZ
- Closed Stadiums
 - Grass
 - Astroturf
- Variable tennis surfaces
- Basketball Courts
 - Wooden vs Artificial Surface
- Hockey Fields
 - Water based
 - Sand Based
- Gymnastics floor



What variables may lead to injuries in sport

1. Ground hardness
2. Grass type
3. Time of the year
4. Shoe-surface traction
 1. Boot selection
5. Training loads
6. Preventative taping
7. Shoe selection

What the research tells us

- Early season bias for ACL injuries in AFL/NRL (*Orchard*)
- Astroturf and ACL in cooler climates
- Northern State Bias
- Less risk of ACL on perennial rye grass vs couch
 - Reduced shoe-surface traction (less traction between grass and shoe/boot cleats/stops)
- Harder ground conditions and less rainfall associated with > match injuries in NRL (*Gabbet 07*)
- Artificial playing surface has increases the injury risk vs wooden floors in pivoting indoor sports: Finnish female floorball (*Pasenan et al 07*)
- Minimal correlation between hardness – penetrometer
- Greater risk of ankle sprains in air-cell shoes on basketball courts

State of current grounds

- Different in different councils
- Bias away from perennials and move towards couch (drought resistant)
- Councils using sand to attempt growth of new grass
 - Variable conditions on the one ground.
 - Players rather perform than slip – screw ins
- Some councils paying for water



What we are seeing in sports medicine centres

- Stress Fractures
- Medial tibial stress syndrome
- ACL ruptures
- Growth plate injuries in children
- Plantar fasciitis



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Personal anecdote

1. Ground hardness and grass type contribute to increase stress on body
2. Body very adaptive to different conditions – will absorb different ground force reactions in different ways (*Derrick 04*)
3. Structure / biomechanics put some individuals at greater risk
4. Individual screening with specific loads
5. Point where stress becomes too much
 1. Training load
 2. Surface conditions

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Taping the lower limb

ROLE

- Prevent injury
- Assist recovery
- Prevent recurrence
- Pain modification



MECHANISM

- Pain modification – Fascial Tension
- Biomechanical Correction
- Unloading Soft Tissue stress

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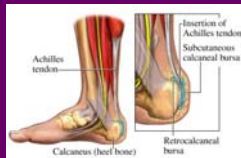
Who is at Risk

1. High arches – pes cavus
2. Flat foot
 1. Rear foot
 2. Forefoot
3. Knock Knees
 1. Genu Valgum



Injuries

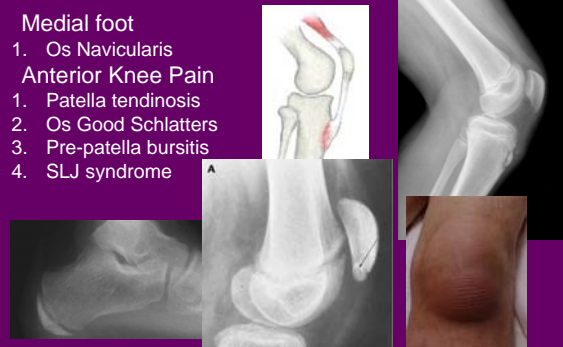
1. Medial Foot Pain
 1. Plantar Fasciitis
2. Achilles injuries
 1. Tendinosis
 2. Retrocalc bursitis
 3. Severs Disease - adolescents



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Injuries

1. Medial foot
 1. Os Navicularis
2. Anterior Knee Pain
 1. Patella tendinosis
 2. Os Good Schlaters
 3. Pre-patella bursitis
 4. SLJ syndrome



Low dye taping

- Low dye taping technique
 - Used commonly for
 1. Plantar Fasciitis
 2. Os Navicularis (kids)
 3. Tibialis Post tendinosis
 - Aim of unloading the plantar fascia during weightbearing
 - Clinically shown to reduce PF pain in short term (*Landorf 05*)
 - Corrects biomech (*Whitaker 03*)
 - Reduced calcaneal eversion (rearfoot)
 - > height of medial arch
 - Better ROM of 1st MTP (*Whitaker et al 03*)



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Augmented Low Dye Taping

- Used in management of
 - Medial tibial stress syndrome (MTSS)
 - Compartment Syndrome
 - PF, tib post tendinopathy, os navic
 - Anterior knee pain
 - Severs



Figure 1. Augmented low-Dye technique in its entirety (A), which consists of the LowDye (B), three reverse-foe (C), 2 calcaneal slings (D).

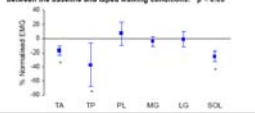
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Augmented Low Dye Taping

- Shows mechanical improvement
 - *Vincenzo 07, Smith 04*
- Reduced muscle activity in leg
 - *Vincenzo 07, Smith 04*
 - **MTSS**
 - **EICS**
 - **Tendinopathies**
 - **PF**
 - **Severs**
 - **Achilles**



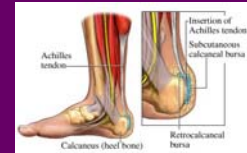
Figure 4. Group mean difference and 95% CI for peak muscle activity between the baseline and taped walking conditions. *p < 0.05



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Modified Achilles Taping

- Assists the following
 - **Acute Achilles tear**
 - **Achilles tendinopathy**
 - **Retrocalc bursitis**
 - **Calf strain**
 - **Plantaris strain/rupture**
 - **Severs Disease**
 - **Anterior Ankle impingement**
- Mechanism
 - **Mechanical**



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Anterior Knee Taping

Assists the following

- Osgood Schlatters
- Sindig Larsenn Johansen Syndrome
- Patella Tendinopathy/Tendinosis
- Fat Pad Impingement
- Infrapatella Bursitis

Mechanism

- Most likely fascial tension
- Pain modulation

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QUESTIONS



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