Intelligent Training

Injury & Robustness

Emma Deakin

Performance Assessment Weekend 2018
Introduction to Physiotherapy - Screening

What it does:

• Initial introduction to physiotherapy
  • History of illness and injury
• Physical capacities (Muscle)
• Range of Movement
• Quality of Movement

What it doesn’t!

• Predict injury
# Introduction to Physiotherapy

- **Screening**

<table>
<thead>
<tr>
<th>Pre Season Profiling</th>
<th>British Triathlon</th>
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<tbody>
<tr>
<td><strong>Athlete</strong></td>
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</tr>
<tr>
<td><strong>Date</strong></td>
<td>13/11/2015</td>
</tr>
<tr>
<td><strong>Attempt</strong></td>
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<table>
<thead>
<tr>
<th>ROM</th>
<th>Joint</th>
<th>Test</th>
<th>Units</th>
<th>Target</th>
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<th>R</th>
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<tbody>
<tr>
<td>Shoulder</td>
<td>Internal Rotn</td>
<td>Degrees°</td>
<td>245-60°</td>
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<tr>
<td></td>
<td>External Rotn</td>
<td>Degrees°</td>
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<td>90</td>
<td>90</td>
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<td>CET</td>
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<td>-10</td>
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<td>TxSp</td>
<td>Thoaric Rotn</td>
<td>Degrees°</td>
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<td>50</td>
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<tr>
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<td>Hip Extension</td>
<td>Degrees°</td>
<td>120-30°</td>
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<td>Ankle</td>
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<td>Cm</td>
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<td>13</td>
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<table>
<thead>
<tr>
<th>CAPACITY</th>
<th>Muscle</th>
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<tbody>
<tr>
<td>Hamstring</td>
<td>90/90 Bridge</td>
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<tr>
<td>Adductor L</td>
<td>Adductor L Bridge Hold</td>
</tr>
<tr>
<td>Adductor M</td>
<td>Adductor M Bridge</td>
</tr>
<tr>
<td>Gastroc</td>
<td>Straight leg calf raise</td>
</tr>
<tr>
<td>Soleus</td>
<td>Bent leg calf raise</td>
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<table>
<thead>
<tr>
<th>FUNCTIONAL</th>
<th>Test</th>
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<tbody>
<tr>
<td>QASLS</td>
<td>Single Leg Squat</td>
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<tr>
<td>My Jump App</td>
<td>DL hop</td>
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<td>Y-Balance</td>
<td>3-point reach test</td>
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<tr>
<td>OptoJump</td>
<td>Contact time av</td>
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<tr>
<td></td>
<td>Flight time av</td>
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<tr>
<td></td>
<td>Stride length av</td>
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Injury and Illness Audit at BTF

**What is measured and Why?**

**What?**
- All illness and injury burden; recorded in number of days lost or adapted.
- Effect of individual disciplines of swim, bike and run.
- Effect on racing/performance

**Why?**
Reduce injury and illness risk to maximise performance, through:
- Maximising Availability/freedom to train
- Optimising Effort/reduce modification
- Ensuring Recovery
Results of Audit

- Filter through the programme.
- Patterns and Trends
  - Injury Type
  - Female v’s Male
  - Times of season
  - Risk periods in athlete development
What we know...

Risk Periods
Development – Junior to U23
- Race distance
- Volume, intensity of training
- Move to centre/university

Gender
- Types of injuries

Seasonal
- Winter v’s Summer
Common Triathlon Injuries

- Overuse (Training Volume V’s Physical capacity/Robustness)
- Lower Limb
- Run Specific

1. Tendinopathies
2. Bone Stress
3. Shin Splints
Bone Stress: Signs and Symptoms

- Common sites – Shin, Foot, Hip, Lumbar spine

S&S:
- Localised bone pain (normally on running/impact)
  - Comes on earlier in session
  - Felt on lower impact activities, walking, stairs, out of saddle
- Ache post activity/night pain

Why:
- Previous Hx of bone stress
- Increase in training volume
- Change of surface
- Random presentation
- Girls – gaps in menstrual cycle

Diagnosis: CT Scan V’s X Ray
Female Athletes and Bone Stress

- Increase risk in females: train >5 hours a day
- Dietary deficiencies, negative energy balance
- Menstrual irregularities
  - Alteration in oestrogen / effect on bone
- Lower bone mineral density

*Late starting / irregular menstruation
Contact GP for Review
Tendinopathies – inability to tolerate load

- Common sites – Achilles, Hamstring, Peroneal

S&S:
- Pain on loading
- Am stiffness
- Unpredictable response to load

Why:
- Spikes in loading history, * training after a break, after offload
  - Volume, speeds, biomechanics, footwear
- Previous tendinopathy
- Poor muscle capacity/strength
Tendinopathies - Prevention

• Load monitoring – graded increase in training loads
• Graded return to running post breaks
• Avoiding fatigued running

• S&C
  • The muscle/tendon units ability to accept load
  • Increase specific muscle capacity
    • Calf (Gastroc and Soleus)
    • Hamstring
Robustness – the basics

S&C: the 4th discipline of Triathlon

• Stretching
• Foam roller
• Core Control
• Lower Limb Capacity
• Drills
  • Plyometric loading
  • Landing mechanics
  • Multi directional
Essential Stretches
Essential Foam Roller
Core Control for Triathletes

• Streamline in the swim
• Stability on the bike
• Efficiency on the run

Dynamic Core Control!
Effective Core Control for Triathletes

1. Glutes: Clams

2. Dead Bugs / Supermans

3. Functional Exercise e.g. Deadlifts / Overhead Squats
4 Strength exercises not to miss!

Posterior Chain Strength:
R v’s L, Capacity (pre/post injury)

Calf = Straight Leg Heel Raises
Calf = Bent Leg Heel Raises
Hamstring Bridges
Glute = Clams
Injury Prevention: Key Components

Intrinsic

• S&C
  • Range of Movement
  • Strength
  • Capacity
• Drills
  • Technique based
• Rest and Recovery
  • Nutrition
    • Fuelling = what, how and when

Extrinsic

• Training
  • Loading, build up
  • Terrain
  • Make up// Fresh & recovered for key sessions
• Equipment
  • Bike set up
  • Footwear
Questions