Objectives

- MDT principles
- Considerations
- Return to sport
Case 1: Treatment of an Olympic Lifter

- Nationally ranked Olympic lifter
- 6 months of R anterior knee pain
- Previous treatments
  - Sports PT
  - Chiropractic
  - Massage
  - Acupuncture
  - Injections
- MRI: unremarkable
### Examination

#### Posture
- Sitting: **Good / Fair / Poor**
- Correction of Posture: **Better / Worse / No Effect / NA**
- Standing: **Good / Fair / Poor**
- Other observations: 

#### Neurological:
- **NA / Motor / Sensory / Reflexes / Dural**  **Nil**

#### Baselines (pain or functional activity):
- **Squat (ERP) Lunge (ERP)**

#### Extremities
- **Hip / Knee / Ankle / Foot**

<table>
<thead>
<tr>
<th>Movement Loss</th>
<th>Maj</th>
<th>Mod</th>
<th>Min</th>
<th>Nil</th>
<th>Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>Extension</td>
<td></td>
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<td>X</td>
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<tbody>
<tr>
<td>Adduction/Inversion</td>
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<tr>
<td>Internal Rotation</td>
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<tr>
<td>External Rotation</td>
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</tr>
</tbody>
</table>

#### Passive Movement (+/- over pressure) (note symptoms and range):
- Flexion: nil loss, painful
- Extension: nil loss, no effect

<table>
<thead>
<tr>
<th>PDM</th>
<th>ERP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

#### Resisted Test Response (pain)
- Resisted extension: painful
- Resisted flexion: no effect

#### Other Tests
- Step down test (+)
## Movement Exam.

<table>
<thead>
<tr>
<th>Repeated Tests</th>
<th>Symptom Response</th>
<th>Mechanical Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active/Passive movement, resisted test, functional test</td>
<td>During – Produce, Abolish, Increase, Decrease, NE</td>
<td>After – Better, Worse, NB, NW, NE</td>
</tr>
<tr>
<td>Rep ext unloaded</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Rep ext loaded</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Rep ext with ER</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Rep flexion unloaded</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Rep flexion loaded</td>
<td>P</td>
<td>NW</td>
</tr>
<tr>
<td>Resist extension</td>
<td>P</td>
<td>NW</td>
</tr>
</tbody>
</table>

### Baseline Symptoms

- Pain with squat

### Images

1. [Image 1](#)
2. [Image 2](#)
3. [Image 3](#)
4. [Image 4](#)
5. [Image 5](#)
6. [Image 6](#)
Remodeling regimen

• Baseline: pain with squat
• Repeated movements: no effect
• Resisted testing: produce, no worse with eccentrics
• Symptoms resolved in six weeks but needed to consider sport specific requirements
Recovery of function: Requisite mobility

• Single joint vs. multi joint
• Specific demands
• Functional movement patterns
Recovery of Function: Load tolerance

• Break testing not sufficient
• Local vs. global
• Specific to sport
• Dysfunction vs. Derangement
Recovery of function: Power output energy requirements

- Movement must mimic specific demands without pain/obstruction
- Fatigue factor
- Adaptation to pain
Recover of function: Return to sport

• Demonstrate requirements in all three aspects of recovery
• Know the sport
  • Energy demands
  • Open vs. Closed
  • Positions, postures, movements
• Load it, load it, load it.
Case 2: The Hockey Hip

By: Nicolas Turcotte, PT, Cert MDT, (CAN)
Clinical presentation

• 17 y/o competitive Hockey Goaler
• 15-20 hours of training a week

1 month ago
No trauma, subsided with 10 days rest

2 days ago
Trauma, much more intense than previous episode
Date: March 5th 2010

Name: ___________________________  Sex: M / F

Address: ____________________________________________________________

Telephone: __________________________________________________________

Date of Birth: ___________  Age: 17

Referral: GP / Orth / Self / Other: Hockey team

Work: Mechanical stresses: Competitive Hockey Goaler

Leisure: Mechanical stresses: ___________________________

Functional disability from present episode: Unable to practice or play

Functional disability score: ___________________________

VAS Score (0-10): _______________________

HISTORY

Present symptoms: Groin Pain

Present since: 2 days  Unchanging

Commenced as a result of: During a game was in butterfly stance was hit by another player

Symptoms at onset: Immediate Groin pain

Spinal history: None

Constant symptoms: None

Intermittent Symptoms: R adductor region
Worse  bending sitting / rising / first few steps standing walking stairs squatting / kneeling am / as the day progresses / pm when still / on the move Sleeping: prone / sup / side R / L
Other  ___________  Goaler Posture, using leg to push

Better  bending sitting standing walking stairs squatting / kneeling am / as the day progresses / pm when still / on the move Sleeping: prone / sup / side R / L
other  ___________  Rest

Continued use makes the pain:  Better  ____  Worse  ____  No Effect  ____  Disturbed night  ____  Yes / No
Pain at rest  Yes / No
Other Questions:  Swelling  Clicking  Locking  Giving Way / Falling

Previous episodes  One month ago symptoms subsided gradually without treatment within a week
Previous treatments  None
General health:  Good / Fair / Poor
Medications:  Nil / NSAIDS / Analg / Steroids / Anticoag / Other  Advil had no effect
Imaging:  Yes / No
Recent or major surgery:  Yes / No
Accidents:  Yes / No
Night pain:  Yes / No
Unexplained weight loss:  Yes / No

Summary  Acute / Sub-acute / Chronic
Trauma  Insidious Onset
Sites for physical examination  Back / Hip / Knee / Ankle / Foot
Other:  ___________
EXAMINATION

POSTURE
Sitting: Good / Fair / Poor  Correction of Posture: Better / Worse / No Effect / NA  Standing: Good / Fair / Poor
Other observations: ____________________________

NEUROLOGICAL:  NA Motor / Sensory / Reflexes / Dural  ____________________________

BASELINES (pain or functional activity): ____________________________

EXTREMITIES  __________Hip________ / Knee / Ankle / Foot

### MOVEMENT LOSS

<table>
<thead>
<tr>
<th></th>
<th>Maj</th>
<th>Mod</th>
<th>Min</th>
<th>Nil</th>
<th>Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension</td>
<td></td>
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<td>Plantar Flexion</td>
<td></td>
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</tr>
</tbody>
</table>

Add and Abd tested in neutral:

- Adduction / Inversion
- Abduction / Eversion
- Internal Rotation
- External Rotation

Passive Movement (+/- over pressure) (note symptoms and range):

Major loss off movement and end range pain in add at 90 degrees flexion

<table>
<thead>
<tr>
<th>PDM</th>
<th>ERP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Resisted Test Response (pain)  ADD 4/5 Pain++  A3LR 4+/5 Pain

Other Tests  Palpation proximal adductors painfull
No visible swelling or discoloration
SPINE
Movement Loss None
Effect of repeated movements No Effect
Effect of static positioning
Spine testing Not relevant / Relevant / Secondary problem

Baseline Symptoms

<table>
<thead>
<tr>
<th>Repeated Tests</th>
<th>During – Produce, Abolish, Increase, Decrease, NE</th>
<th>Symptom Response</th>
<th>After – Better, Worse, NB, NW, NE</th>
<th>Mechanical Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive Fix x 20</td>
<td>Produces NW</td>
<td>NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passive ABD x 20</td>
<td>Produces NW</td>
<td>NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR and ER passive x 20</td>
<td>NE</td>
<td>NE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passive Add at 90 degrees fix X 50</td>
<td>Decrease Better</td>
<td>5/5 Strenth resisted add decrease pain 50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect of static positioning</td>
<td>Increase ROM ++ ADD at 90 Flexion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase ROM ABD, IR ER</td>
<td></td>
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</tr>
</tbody>
</table>

PROVISIONAL CLASSIFICATION

Dysfunction – Articular

Derangement Responds To ADD at 90 degrees Fix

Other

Spine

Contractile

Postural

PRINCIPLE OF MANAGEMENT

Education

Exercise and Doseage Every hour 10 reps passive add at 90 degrees

Equipment Provided

Treatment Goals Return to sports without symptoms

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Looks like tendinopathy
Feels like a tendinopathy
Smells like a tendinopathy!!

Deranged Hockey Hip
Look at Hip ADDn at different angles to find the obstruction and address with repeated movements

That's lava
Hip ADDn
Look at different angles to find the obstruction
Reductive Exercices
Management of the hockey player

• Most will respond to ADDn at 90 FLX
• Why?
• Biomechanics of the skating motion ABD with EXT
Management of the athlete within a team

• Do not pull them out, keep them implicated with the team
• Discussion with coaches and local staff on what can and can’t be done
• Goals of PT:
  – Return to sport as soon as possible
  – Maintain conditioning
  – Maintaining Game Shape with transition exercises
Management and follow up with the athlete in the case study

Progression
Day 1 on ice took shots standing for 15 minutes finished the practice on stationary bike

Day 2 Forward skating with direction changes, increased intensity on bike

Day 3 PT prior to practice had to progress with therapist O/P. Tested him functionally on sliding board. Practiced post to post and butterfly on ice, took shots

Day 4 Full practice without contact

Day 5 PT Cleared him for contact and full return. Had to O/P to regain full ROM in add.
Case 3: The Volleyball Shoulder

By: Mathieu Séguin, PT, Cert MDT, cert Sport PT (CAN)
Clinical presentation

- 23 y/o pro VB player (20-30h/wk)
- Long Hx of recurring of R shldr pain
- Treated as LHB tendinopathy (US, massage, etc)
- Present episode 6 wks
- Treatment was pain mgmt only for him to play
We leave in 10 days!
**THE McKENZIE INSTITUTE**  
**UPPER EXTREMITIES ASSESSMENT**

<table>
<thead>
<tr>
<th>Date</th>
<th>Apr 22nd 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Sex Male</td>
</tr>
<tr>
<td>Address</td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
</tr>
<tr>
<td>Date of Birth</td>
<td>Age</td>
</tr>
<tr>
<td>Referral: GP / Orth / Self / Other</td>
<td></td>
</tr>
<tr>
<td>Work: Mechanical stresses</td>
<td>Pro VB player 12mo/year</td>
</tr>
</tbody>
</table>

**Leisure: Mechanical stresses**  
Cooking, reading, movies

**Functional Disability from present episode**  
Decrease efficacy spiking and serving

**Functional Disability score**

| VAS Score (0-10) | 4-6/10 |

**SYMPTOMS**

**HISTORY**

<table>
<thead>
<tr>
<th>Present Symptoms</th>
<th>R shldr - sharp/catch ant and dull ache posterior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present since</td>
<td>6 wks</td>
</tr>
<tr>
<td>Commenced as a result of</td>
<td>Increase in volume (playoffs)</td>
</tr>
<tr>
<td>Symptoms at onset</td>
<td>sharp and shldr p 8/10</td>
</tr>
<tr>
<td>Spinal history</td>
<td>none</td>
</tr>
<tr>
<td>Constant symptoms:</td>
<td>dull ache (consistent)</td>
</tr>
<tr>
<td>Intermittent Symptoms:</td>
<td>ant shldr</td>
</tr>
</tbody>
</table>

**Handedness:** Right / Left  
Improving / Unchanging / Worsening  
Or No Apparent Reason  
Paraesthesia: Yes / No  
Cough / Sneeze: +ve / -ve
<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Better</th>
<th>Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>b/g/s/t/r</td>
<td>bending / sitting / turning neck / dressing</td>
<td>reaching / gripping</td>
</tr>
<tr>
<td>am/pm</td>
<td>am / as the day progresses / pm when still / on the move</td>
<td>Sleeping: prone / sup / side R / L</td>
</tr>
<tr>
<td>Other activities</td>
<td>Swing, above head activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>massage, AINS, sleeper stretch</td>
<td></td>
</tr>
</tbody>
</table>

Continued use makes the pain:  
- Better  
- Worse  
- No Effect  
- Disturbed night  
- Yes  
- No

Pain at rest:  
- Yes / No

Site:  
- Neck  
- Shoulder  
- Elbow  
- Wrist  
- Hand

Other Questions:  
- Swelling  
- Catching  
- Clicking  
- Locking  
- Subluxing

Previous episodes:  
- Suprascapular neuropathy, biceps tendinitis

Previous treatments:  
- Physio, massage, US, IFC, K-tape, acupuncture, SWT

General health:  
- Good  
- Fair  
- Poor

Medications:  
- Nil  
- NSAIDS  
- Analg  
- Corticosteroids  
- Anticoag / Other

Imaging:  
- Yes / No  
- X-ray N, MRI fatty deposits in Infra-spin, min swelling in LHB

Recent or major surgery:  
- Yes  
- No

Night pain:  
- Yes  
- No

Accidents:  
- Yes  
- No

Unexplained weight loss:  
- Yes / No

Summary:  
- Acute / Sub-acute / Chronic

Trauma:  
- Insidious Onset

Sites for physical examination:  
- Neck / Shoulder  
- Elbow / Wrist / Hand  
- Other
**Posture**

- Sitting: Poor
- Correction of Posture: Better
- Standing: Good

Other observations: Complete atrophy of R intra-spin, R wing scap, hypertonus R Trap

**Neurological:**

- NA / Motor / Sensory / Reflexes / Dural: Normal

**Baselines (pain or functional activity):**

- Full forward flexio and reach (spike)

**Extremities**

- Shoulder

<table>
<thead>
<tr>
<th>Extremity</th>
<th>Movement Loss</th>
<th>Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>Maj X Mod Min Nil Pain</td>
<td></td>
</tr>
<tr>
<td>Extension</td>
<td>X</td>
<td></td>
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<tr>
<td>Supination</td>
<td></td>
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<tr>
<td>Pronation</td>
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**Passive Movement (+/- over pressure) (note symptoms and range):**

- Adduction/ Ulnar Deviation: X ANT
- Abduction/ Radial Deviation: X PDM
- Internal Rotation: X 9 cm HBB
- External Rotation: X

**Resisted Test Response (pain):**

- ER 2/5, ABD + FLX 4/5 pain

**Other Tests:**

- Hawkins +, Speed +, Scarf -, lift off difficult, empty can mild pain
**SPINE**

Movement Loss  Min R rotation  
Effect of repeated movements  NE  
Effect of static positioning  NE  
Spine testing  **Not relevant**  Relevant / Secondary problem  

**Baseline Symptoms**  HBB 8 cm, Res Abd and Flex P, Hawkins  

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<td>After – Better, Worse, NB, NW, NE</td>
</tr>
<tr>
<td>Rep RI @ 90 ABD</td>
<td>P (general shldr)</td>
<td>NW</td>
</tr>
<tr>
<td>Rep RI @ 90 Flex</td>
<td>P post shoulder</td>
<td>NW</td>
</tr>
<tr>
<td>Rep HBB + Add</td>
<td>P ant shldr (stretch)</td>
<td>B</td>
</tr>
</tbody>
</table>

**PROVISIONAL CLASSIFICATION**  
Extremities  
Spine  

**PRINCIPLE OF MANAGEMENT**  
Education  Condition  Equipment Provided  
Exercise and Dosage  Rep HBB + Add 10 reps every other hour  
Treatment Goals  Decrease pain, increase strength, return to full function  

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Technique
Neuropathy involvement

- Supraspinatus muscle wasting
- Infraspinatus muscle wasting
ROF vs Recurrence prevention

Take into consideration

Sport demands (non adjustable)

• High volume of same movement
• Loss of part of the shoulder stabilizers
• Important times
ROF vs Recurrence prevention

• Homeostasis
• Stability program vs prevention program
  – Scapular control
  – Compensation mechanisms
  – Healthy cervical spine

• Weight training modification
ROF vs recurrence prevention

• To know the sport and its biomechanical stresses facilitates treatment as patterns are seen within the same population

• Understand biomechanics
  – Assess (video/dartfish)
  – Coaches feedback
  – In this case spike vs serve
  – Other demands (periodization, weights, etc...)
References

THANK YOU!