

# All Slides For

1. Shoulder
2. Knee/ACL
3. Hip
4. Neck
5. Low Back
6. Heel
7. Ankle
8. Achilles

# Shoulder Pain: Adhesive Capsulitis

Dani Goettl, Mikaila Foster, Caroline  
Kreuz, Chandler McCrury, Katie  
Mullen, Tina Stough

# Summary of CPG: Shoulder Pain and Mobility Deficits: Adhesive Capsulitis

## Risk Factors

- Diabete mellitus
- Thyroid disease
- Most prevalent in individuals...
  - 40 to 60 of age
  - Female
  - Have had previous episode of A.C.

## Differential Diagnosis

- Sprain & strain of joint/dislocation
- Rotator cuff syndrome
  - Tendinopathy
- And others

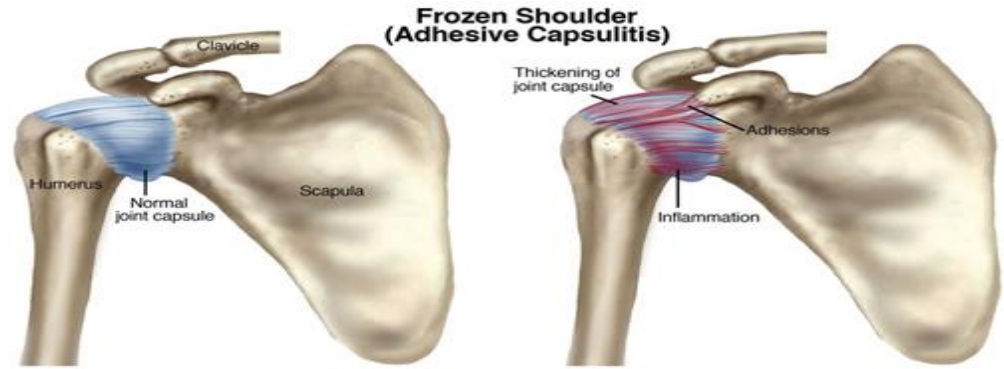
## Clinical Course

- Occurs as a continuum with stages of progression of pain and mobility
  - At 12 to 18 months. Mild to moderate mobility deficits and pain may persist, without disability

## Diagnosis

- 3 components
  - Medical screening
  - Differential evaluation
  - Tissue irritability & ability to handle stress

# CPG Continued



## Intervention Recommendations

Intra-articular corticosteroid injections + **shoulder mobility and stretching**

### Patient Education

- Describe natural course of disease

- Promote activity modifications for painless and functional ROM

- Match stretch intensity to patient's level of irritability

### Joint Mobilizations

- Differ depending on irritability level; refer to CPG

## Outcome Measures: Before & After treatment

DASH, SPADI, ASES

# Other Articles

- 1) Bang, M. D., & Deyle, G. D. (2000). **Comparison of supervised exercise with and without manual physical therapy for patients with shoulder impingement syndrome.** *Journal of Orthopaedic & Sports Physical Therapy*, 30(3), 126-137.
- 2) Diercks, R. L., & Stevens, M. (2004). **Gentle thawing of the frozen shoulder: a prospective study of supervised neglect versus intensive physical therapy in seventy-seven patients with frozen shoulder syndrome followed up for two years.** *Journal of Shoulder and Elbow Surgery*, 13(5), 499-502.
- 3) Donatelli, R., Ruivo, R. M., Thurner, M., & Ibrahim, M. I. (2014). **New concepts in restoring shoulder elevation in a stiff and painful shoulder patient.** *Physical Therapy in Sport*, 15(1), 3-14.
- 4) Kuijpers, T., van der Windt, D. A., Boeke, A. J. P., Twisk, J. W., Vergouwe, Y., Bouter, L. M., & van der Heijden, G. J. (2006). **Clinical prediction rules for the prognosis of shoulder pain in general practice.** *Pain*, 120(3), 276-285.

*Score chart for prediction of persistent shoulder symptoms at 6 months*

<b>Duration of complaints</b>			
<6 weeks	0	...	
6-12 weeks	9	...	
>3 months	17	...	
Gradual onset	10	...	
Concomitant low back pain	13	...	
Shoulder pain (0-10)	score x2	...	
Shoulder pain score at physical examination (0-18)	score	...	+
<b>Total score</b>			...

Total score	Risk
≤1	10% - 20%
2 - 16	20% - 30%
17 - 28	30% - 40%
29 - 39	40% - 50%
40 - 49	50% - 60%
50 - 61	60% - 70%
≥62	70% - 100%

- 5) Thelen, M. D., Dauber, J. A., & Stoneman, P. D. (2008). **The clinical efficacy of kinesio tape for shoulder pain: a randomized, double-blinded, clinical trial.** *Journal of orthopaedic & sports physical therapy*, 38(7), 389-395.

# Luke Van Every

The Shoulder Guy



“The Shoulder Guy”

Practice

<http://www.shoulderguyphysiotherapy.com.au/>

Blog

<http://www.theshoulderguy.com/>

Podcast

“The Shoulder Guy | Simple, Practical, No B.S. Shoulder Physiotherapy Advice, Training and Community”

Follow @TheShoulderGuy 

**“You need evidence based advice-Not opinions”**

@SPTSShoulderSIG





**Katie Mullen** @ptKtMullen · Jun 10

@TheShoulderGuy SPT presenting on frozen shoulder what's most important thing my classmates should know about it?



**Luke Van Every** @TheShoulderGuy · 10h

@ptKtMullen Always X-ray to clear sinister DDx, so much we still don't know, maybe active stiff component, reassure, educate++ & reload++IMO



**Katie Mullen** @ptKtMullen · 10h

@TheShoulderGuy Thank you so much!



**Luke Van Every** @TheShoulderGuy · 10h

@ptKtMullen no worries. Still much uncertainty about the shoulder...



**Katie Mullen**

@ptKtMullen



Following

@TheShoulderGuy We definitely will emphasize your recommendations to our class!

7:01 AM - 12 Jun 2016



# Take Home Messages

1. Frozen Shoulder: an idiopathic condition where the shoulder joint capsule thickens and tightens causing pain and restriction of motion.
2. Since this is an idiopathic condition, it is important to explain to the patient what exactly is going on with their shoulder, as well as the 4 stages of the condition they will experience .
3. Most important things we can do as a PT:
  - a. Patient education
  - b. ROM/stretching techniques
  - c. Ultrasound to aid in pain management



# Knee Pain and Mobility Impairments: Meniscal and Articular Cartilage Lesions

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Meniscal injuries are the second most common  
injury to the knee

Incidence of **12-14%**

Accounts for **10-20%** of all orthopedic surgeries

# Risk Factors

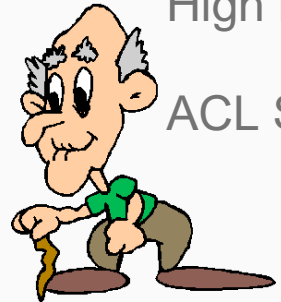
## Meniscus

Age

Time from initial injury

High intensity athlete

ACL Surgery → Knee Laxity



## Articular Cartilage

- Age
- Presence of meniscal tear
- Time from initial injury (ACL)



# Clinical Presentation

Knee pain

Mobility impairments

Effusion (6-24 hrs post injury)

Differential diagnosis

Mechanism/Classification:

Twisting injury, tearing sensation

History of “catching” or “locking”

Pain with forced hyperextension and maximum flexion

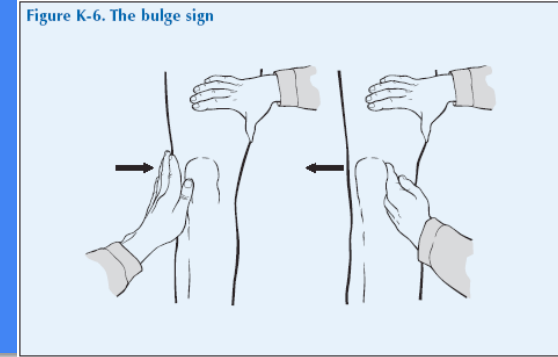
Pain or audible click with McMurray’s maneuver

Joint line tenderness

Discomfort during the Thessaly Test



# Outcome Measures



## The Knee Injury and Osteoarthritis Outcome Score (KOOS) I

Self reported assessment for sports injuries in adolescents

## The Knee Outcome Survey ADL Scale (KOS-ADLS) I

Self reported measure of functional limitations and impairments during ADL's

## Ottawa Knee Rule

Used for determining if imaging is necessary

## Tests and Measures:

Thessaly

McMurray's

Bulge Sign

Knee Joint Line Tenderness

Knee AROM/PROM

Meniscal Pathology Composite Score



# Interventions

## Neuromuscular Electrical Stimulation (NMES)

Moderate evidence supports w/ACL injury leading to meniscal/chondral lesions: safely load muscles for strength adaptation w/minimal stress damage to tissues

Limited research for quad strengthening post-isolated meniscal/chondral lesions

## Therapeutic Exercises

Strength training/Functional exercise

Quad/Hamstring strength

Quads endurance

Functional performance

Progressive resistive exercises = safe loading w/minimal stress damage to tissues

Multimodal Functional Exercise Program

Isokinetic muscle strengthening

# Take Home Points

1. Diagnosing severity of injury based on risk factors and clinical presentation is important for deciding course of action during clinical care.
2. Outcome measures and tests (KOOS, Thessaly, Bulge Sign, Etc) should be appropriately used in order to measure improvement and quantify progress.
3. Several different interventions show potential for therapeutic value, but the evidence supports therapeutic exercise and neuromuscular electrical stimulation as the strongest interventions for rehabilitation.

# WITH MUCH LOVE!

DION

JENNA

KATE

KEVIN

LAUREN

NICK

sending virtual hug



loading...



chibird

# Hip Pain and Mobility Deficits- Hip Osteoarthritis

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By Hannah, Danielle, Esther, Kelcii, Jordon, Alaitia



# NonArthritic Hip Joint Pain: A CPG

- Diagnosis/Classification: Weak Evidence
  - Clinical Findings: anterolateral hip pain or generalized hip pain that is reproduced with FADIR or FABER test that is consistent with imaging findings
- Differential Diagnosis: Expert Opinion
- Interventions: Expert Opinion
  - Patient education and counseling
  - Manual therapy
  - Therapeutic exercises and activities
  - Neuromuscular Re-education



*JOSPT*, Enseki K, Harris-Hayes M, White DM, et al.

# Diagnosing Osteoarthritis of the Hip

- ❑ JOSPT CPR (2008)

Sutlive T, Lopez H, Schnitker D, et al

- ❑ 5 predictor variables with 4 out of 5 being highest likelihood of having OA
- ❑ Compared predictor variables to Gold Standard: Radiographs

- ❑ JOSPT CPG (2009)

Cibulka MT, White DM, Woehrle J, et al

- ❑ CPR Level II evidence

- ❑ Grade A high predictors of presence of hip OA
  - ❑ Moderate anteriolateral hip pain during wt. bearing
  - ❑ Over 50
  - ❑ Morning stiffness less than an hour
  - ❑ Limited IR and flexion by more than 15 degrees

# Outcome Measures

## Patient Questionnaires

- WOMAC
- LEFS
- Harris Hip Score

# Activity Limitation and Participation Restriction Measures

6 min walk test

Self-paced walk test

Stair measure

TUG

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# Outcomes- Physical Impairment Measures

- Passive Hip IR & ER & Hip Flexion-mobility
- Hip Abductor Muscles Strength Test- strength
- The FABER (Patrick's Test)-irritability
- The Scour Test -irritability



# Interventions

## 1. Patient Education

- Activity modification
- Exercise
- Weight Reduction
- Unloading Joints

## 2. Functional Gait & Balance Training

- AD use
- Improve function w/ WBing activities (OA)

## 3. Manual Therapy

- Short-term pain relief
- Hip mobility (OA)
- Hip function (OA)



## 4. Exercise Therapy

- **ROM/Flexibility**

- Low intensity, controlled movements
- Emphasis on iliopsoas, rectus femoris, hip adductors
- Heat then stretch for 15-30 sec (5-10x/day at least 3x/week)

- **Muscle Strengthening**

- Progressive resistive exercises
- Frequency, intensity, duration, exercise type specific to individual

- **Aerobic Conditioning/Endurance**

- Walking, Aquatic exercise
- Workload at 60-80% max capacity & sustained duration of at least 20 minutes



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# Neck Pain

Chris Campbell, Bethany Hightower, Lexi  
Okurily, Sara Patterson, Eddie Smith

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# Aims . . .

1. Correct classification and diagnosis of mechanical neck pain
2. Appropriate interventions for patients based on classification
3. Influential People
  - a. John Childs, PT, PhD
  - b. Joshua A. Cleland, PT, PhD, OCS, FAAOMPT
  - c. Jan L. Hoving, PT, PhD





# Summary of Recommendations

Pathoanatomical Features

Risk Factors

Age > 40

Coexisting LBP

Hx of neck pain

Classification/Diagnosis

Examination

Outcome Measures

Neck Disability Index

Patient-Specific Functional Scale

Interventions

Manipulation

Education

Exercise

## CLINICAL GUIDELINES

JOHN D. CHILDS, PT, PhD • JOSHUA A. CLELAND, PT, PhD • JAMES M. ELLIOTT, PT, PhD • DEYDRE S. TEYHEN, PT, PhD  
ROBERT S. WAINNER, PT, PhD • JULIE M. WHITMAN, PT, DSc • BERNARD J. SOPKY, MD  
JOSEPH J. GODGES, DPT • TIMOTHY W. FLYNN, PT, PhD

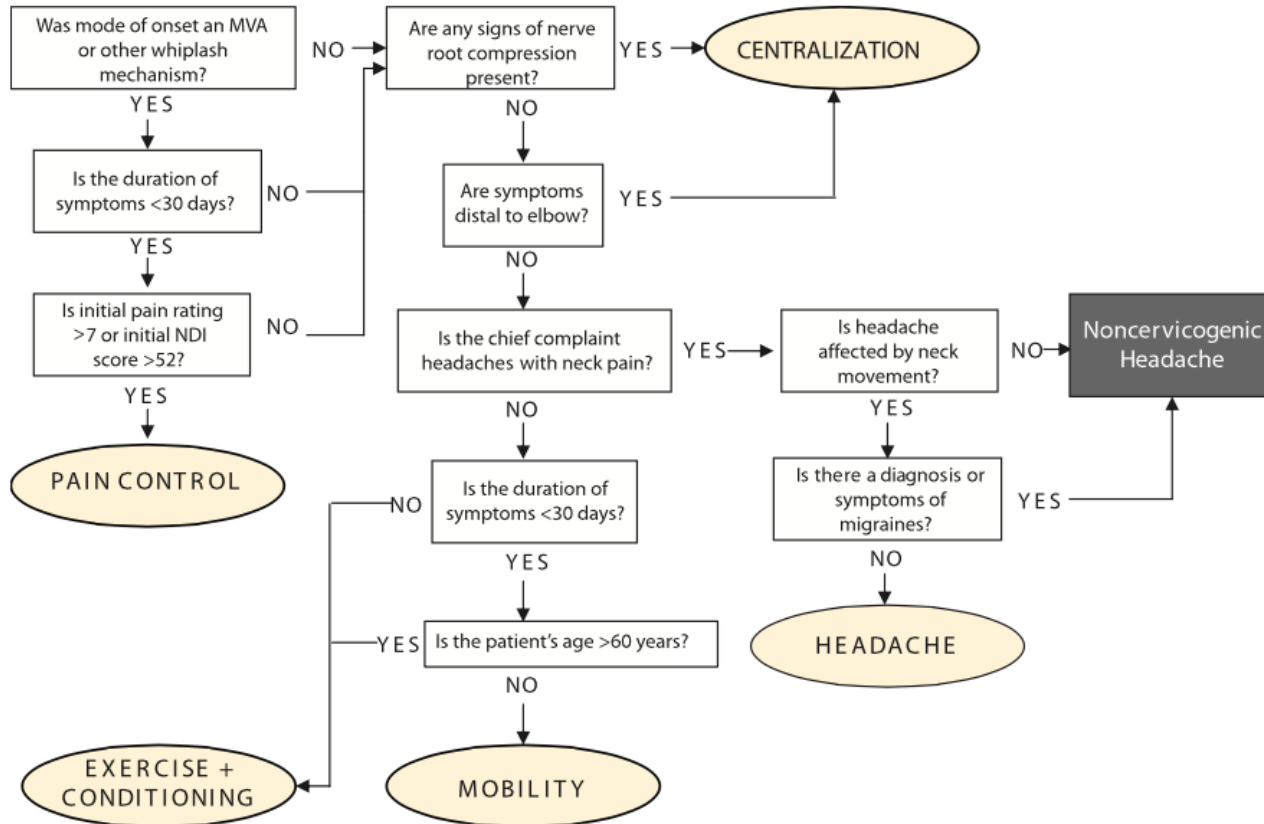
### Neck Pain:

*Clinical Practice Guidelines Linked to  
the International Classification of  
Functioning, Disability, and Health From  
the Orthopaedic Section of the American  
Physical Therapy Association*

J Orthop Sports Phys Ther 2008;38(9):A1-A34. doi:10.2519/jospt.2008.0303

# CPG Classification

## Treatment-Based Classification System for Patients With Neck Pain



# CPG Interventions

- **Patient Education and Counseling**

- Whiplash patients

## **Stretching Exercises**

## **Cervical Manipulation and Exercises**

Reduce neck pain and headaches

## **Reduces pain and disability in pts with neck and arm pain**

Upper Quarter and Nerve Mobilization Procedures

Traction

Thoracic Mobilization/Manipulation

# Clinical Prediction Rules

## Treating Mechanical Neck Pain with Thoracic Spine Thrust Manipulation

### 6 Variables

Symptoms < 30 days (Strongest Predictor)

No symptoms distal to shoulder

Looking up doesn't aggravate symptoms

FABQPA score <12

Diminished Upper Thoracic Spine Kyphosis

Cervical Extension ROM < 30 degrees

Grade C (Cerv. Manip - Grade A)

No. of Predictor Variables Present	Successful Outcome Group	Nonsuccessful Outcome Group
6	2	0
5	3	0
4	9	1
3	18	4
2	7	11
1	3	14
0	0	6

<sup>a</sup> FABQPA= Fear-Avoidance Beliefs Questionnaire physical activity subscale, ROM=range of motion.

Cleland, Joshua A. et al.

*JAPTA*, 2007

# CPG Overview

## Neck pain with...

Mobility deficit

Headache

Movement

Radiating pain

## ➤ Best Treatments:

- Exercise
- Spinal Manipulation
- Patient Education

TABLE 4		NECK PAIN IMPAIRMENT/FUNCTION-BASED DIAGNOSIS, EXAMINATION AND INTERVENTION RECOMMENDED CLASSIFICATION CRITERIA*	
Impairment-Based Category (With ICD-10 Associations)	Symptoms	Impairments of Body Function	Interventions
Neck pain with mobility deficit <ul style="list-style-type: none"> <li>• Cervicalgia</li> <li>• Pain in thoracic spine</li> </ul>	<ul style="list-style-type: none"> <li>• Unilateral neck pain</li> <li>• Neck motion limitations</li> <li>• Onset of symptoms is often linked to a recent unguarded / awkward movement or position</li> <li>• Associated (referred) upper extremity pain may be present</li> </ul>	<ul style="list-style-type: none"> <li>• Limited cervical range of motion</li> <li>• Neck pain reproduced at end ranges of active and passive motions</li> <li>• Restricted cervical and thoracic segmental mobility</li> <li>• Neck and neck-related upper extremity pain reproduced with provocation of the involved cervical or upper thoracic segments</li> </ul>	<ul style="list-style-type: none"> <li>• Cervical mobilization / manipulation</li> <li>• Thoracic mobilization / manipulation</li> <li>• Stretching exercises</li> <li>• Coordination, strengthening, and endurance exercises</li> </ul>
Neck Pain with Headache <ul style="list-style-type: none"> <li>• Headache</li> <li>• Cervicocranial syndrome</li> </ul>	<ul style="list-style-type: none"> <li>• Noncontinuous, unilateral neck pain and associated (referred) headache</li> <li>• Headache is precipitated or aggravated by neck movements or sustained positions</li> </ul>	<ul style="list-style-type: none"> <li>• Headache reproduced with provocation of the involved upper cervical segments</li> <li>• Limited cervical range of motion</li> <li>• Restricted upper cervical segmental mobility</li> <li>• Strength and endurance deficits of the deep neck flexor muscles</li> </ul>	<ul style="list-style-type: none"> <li>• Cervical mobilization / manipulation</li> <li>• Stretching exercises</li> <li>• Coordination, strengthening, and endurance exercises</li> </ul>
Neck Pain with Movement Coordination Impairments <ul style="list-style-type: none"> <li>• Sprain and strain of cervical spine</li> </ul>	<ul style="list-style-type: none"> <li>• Neck pain and associated (referred) upper extremity pain</li> <li>• Symptoms are often linked to a precipitating trauma/whiplash and may be present for an extended period of time</li> </ul>	<ul style="list-style-type: none"> <li>• Strength, endurance, and coordination deficits of the deep neck flexor muscles</li> <li>• Neck pain with mid-range motion that worsens with end-range movements or positions</li> <li>• Neck and neck-related upper extremity pain reproduced with provocation of the involved cervical segment(s)</li> <li>• Cervical instability may be present (note that muscle spasm adjacent to the involved cervical segment(s) may prohibit accurate testing)</li> </ul>	<ul style="list-style-type: none"> <li>• Coordination, strengthening, and endurance exercises</li> <li>• Patient education and counseling</li> <li>• Stretching exercises</li> </ul>
Neck Pain with Radiating Pain <ul style="list-style-type: none"> <li>• Spondylosis with radiculopathy</li> <li>• Cervical disc disorder with radiculopathy</li> </ul>	<ul style="list-style-type: none"> <li>• Neck pain with associated radiating (narrow band of lancinating) pain in the involved upper extremity</li> <li>• Upper extremity paresthesias, numbness, and weakness may be present</li> </ul>	<ul style="list-style-type: none"> <li>• Neck and neck-related radiating pain reproduced with:               <ol style="list-style-type: none"> <li>1. Cervical extension, sidebending, and rotation toward the involved side (Spurling's test)</li> <li>2. Upper limb tension testing</li> </ol> </li> <li>• Neck and neck-related radiating pain relieved with cervical distraction</li> <li>• May have upper extremity sensory, strength, or reflex deficits associated with the involved nerve(s)</li> </ul>	<ul style="list-style-type: none"> <li>• Upper quarter and nerve mobilization procedures</li> <li>• Traction</li> <li>• Thoracic mobilization / manipulation</li> </ul>

\* Recommendation based on expert opinion.

# Clinical Practice Guideline: Low Back Pain Edition

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Treatment Guidelines for Patients with Low Back Pain

# Why and How?: 3 things to remember

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- ❧ Goal: Prevent Recurrences and the transition to Chronic LBP.
- ❧ Rule out other Dx, figure out pt. limitations, classify LBP.
- ❧ Treat the patient with the recommended method based on classification/pt. limitations.

# Classifying LBP

- ❧ Best evidence deemphasize the importance of IDing specific anatomical lesions.
- ❧ Interventions based on sub-group classification work best.
- ❧ How to Classify?
  - ❧ Use history, outcome tools, location, response to pain, description of pain (in other words everything we did in diff diagnosis).
    - ❧ Acute, Sub-Acute, Chronic
    - ❧ Mobility of joints
    - ❧ Movement coordination impairments
    - ❧ Referred or Radicular
    - ❧ Cognitive or Affective Components
    - ❧ Generalized Pain or Localized Pain






# Interventions

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- ❧ **Trunk Coordination, Strengthening, and Endurance Exercises:** sub-acute and chronic low back pain with movement coordination impairments and in patients post lumbar microdiscectomy (SE).
- ❧ **Thrust manipulative procedures:** mobility deficits and acute low back and back-related buttock or thigh pain (SE)
- ❧ **Repeated movements, exercises, or procedures to promote centralization:** acute LBP w/ referred pain into LE (SE)

# Interventions

- 
- 
- ❧ **Traction:** nerve root compression along with peripheralization of symptoms or a positive crossed straight leg raise (Preliminary Evidence).
  - ❧ **Lower Quarter Nerve Mobilization:** subacute and chronic low back pain and radiating pain (WE).
  - ❧ **Flexion Exercise:** older pt. w/ chronic LBP w/ radiating pain. combined w/ other Tx (WE).
  - ❧ **Patient Education and Counseling:** Focus on positives not the negatives (ME).

# Interventions

## ∞ Progressive Endurance Exercise and Fitness Activities:

Chronic LPB w/o generalized pain – moderate to high intensity exercise

Chronic LPB Generalized Pain – progressive low intensity sub-max fitness and endurance activities (SE)



# Reference

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- ∞ Delitto A, George S, Van Dillan L, et al. Low Back Pain. J Orthop Sports Phys Ther Journal of Orthopaedic & Sports Physical Therapy. 2012;42(4):381-381. doi:10.2519/jospt.2012.0503.

Gonorrheal Heel

Jogger's Heel

Policeman's Heel

Tennis Heel

NORTHERN  
ARIZONA  
UNIVERSITY



*Physical Therapy*

# PLANTAR FASCIITIS

## #1 CAUSE OF HEEL PAIN



### WHAT IS IT?

An inflammation of a thick band of tissue that connects the heel bone to the toes.

**PREVALENCE**

200 Mill. Americans



# RISK FACTORS<sup>1</sup> (in order of evidence)

## MOST EVIDENCE:



Limited  
Dorsiflexion



BMI



Time  
Weightbearing



Runner

## SOME EVIDENCE:



## LIMITED EVIDENCE:

Heel Spur



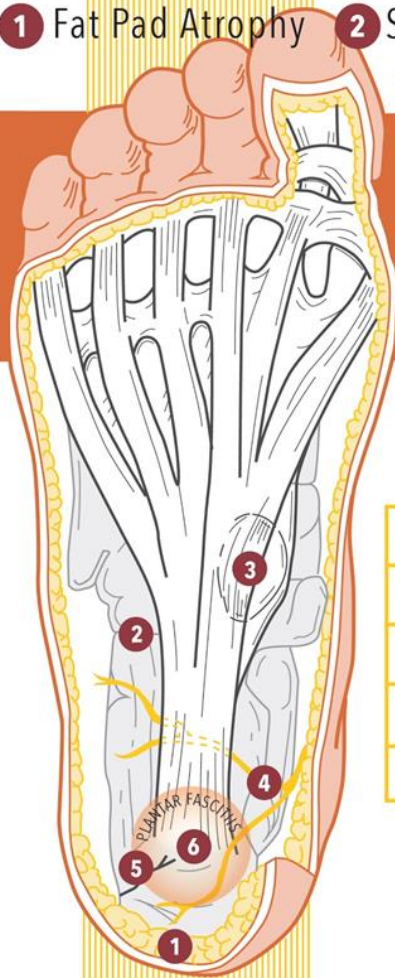
Improper Footwear



Limited First  
Metatarsal  
Extension



- 1 Fat Pad Atrophy
- 2 Spondyloarthritis
- 3 Fibroma
- 4 Nerve Entrapment
- 5 Calcaneal Fx
- 6 Heel Spur



# DIFFERENTIAL & DX

## LESS COMMON DIFF DX:

- Psoriatic arthritis
- Reiter's disease
- Rheumatoid Arthritis
- Fibromyalgia
- Gout
- Idiopathic skeletal hyperostosis  
(bony hardening calcification)

## HOW TO DIAGNOSE:

Presence of risk factors plus..



Heel Pain esp.  
w/ 1st steps



Painful  
palpation



+ Windlass  
Test



- Tarsal  
Tunnel Test



↑ Foot Posture  
Index Score



Imaging  
limited role

# TREATMENT RECOMMENDED

TREATMENT

**A**

LEVEL EVIDENCE



Soft Tissue  
Mobilization



Stretching



Taping



Orthoses



Night Splint

TREATMENT

**C**

LEVEL EVIDENCE

Low Level Laser  
Phonophoresis  
Ultrasound  
Specialized Footwear

TREATMENT

**D**

LEVEL EVIDENCE

Electrotherapy



TREATMENT

**E**

LEVEL EVIDENCE

Education (weight)



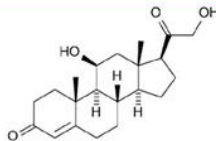
TREATMENT

**F**

LEVEL EVIDENCE

Therapeutic Exercise  
Neuromuscular Re-ed  
Dry Needling

Then: Corticosteroids, Immobilization



Last Resort: Fasciotomy





# WHO ARE THE EXPERTS?



Michael  
Rathleff



Mark  
Cornwall

# IF YOU TAKE ANYTHING...



**1** If a patient comes in with heel pain, it most likely is Plantar Fasciitis

**2** **Prevention:** Stretch (especially your plantarflexors), decrease weight, increase running mileage slowly, wear proper footwear w/ support

**3** PTs provide skilled care w/ soft tissue mobilization, taping and custom orthoses

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# Ankle Instability

Brett, Lauren, Cara, Casey,  
Kelsey, Marissa

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# CPG outline

## Risk Factors- Acute Lateral Ankle Sprain

History of previous ankle sprain

Do not properly warm up with static stretching/dynamic movement before activity

Abnormal DF ROM

No use of external support

No participation in balance/proprioceptive prevention programs with history of previous injury

## Risk Factors- Ankle Instability

No use of external support

Increased talar curvature

No participation in balance/proprioceptive prevention programs with history of previous injury

## Diagnosis

Cumberland Ankle Instability Tool (CAIT)

## Ankle Sprain Grades

Graded I-III

Martin RL, Davenport TE, Paulseth S, Wukich DK, Godges JJ. Ankle Stability and Movement Coordination Impairments: Ankle Ligament Sprains. *J Orthop Sports Phys Ther Journal of Orthopaedic & Sports Physical Therapy*. 2013;43(9). doi:10.2519/jospt.2013.0305.



# CPG outline cont'd

## Two Stages of Intervention

### TherEx

- Single limb balance activities using unstable surfaces

### Manual Therapy

- Graded joint mobilizations (with or without movement)

- Graded joint manipulations

### Activity Training

- Weight-bearing functional exercises

- Sport-specific activity

### Modalities

- Cryotherapy, Diathermy, Electrotherapy, Laser Therapy

## Outcome Measures

- LEFS, Foot and Ankle Ability Measure



Martin RL, Davenport TE, Paulseth S, Wukich DK, Godges JJ. Ankle Stability and Movement Coordination Impairments: Ankle Ligament Sprains. *J Orthop Sports Phys Ther Journal of Orthopaedic & Sports Physical Therapy*. 2013;43(9). doi:10.2519/jospt.2013.0305.

# Relevant Articles

## Take home points:

1. Exercise therapy is effective in the prevention of recurrent ankle sprains. Manual mobilization has an initial effect on dorsiflexion ROM. (Van der Wees, 2006)
2. Postural control and functional limitations exist in people with chronic ankle instability. Comprehensive rehabilitation (including ROM, strength training, neuromuscular control, and functional tasks) appears to improve these functional limitations. (Hale, 2007)
3. Deficits in passive movement sense and anatomic stability are greater concerns than strength deficits when managing the ankle with functional instability. (Lentell, 1995)

# Relevant articles cont'd

## Take home points:

4. Training on a wobble board early after a primary grade 2 ankle sprain is effective in reducing residual symptoms from the sprain. (Wester, 1996)
5. Based on the results of this study, mechanical instability of the talocrural joint is frequently absent in people with functional ankle instability. UBE (uni-axial balance evaluator) testing is consistent with the theory that proprioceptive deficits cause functional instability. (Ryan, 1994)

# Influential persons

Jay Hertel PhD, ATC

University of Virginia, Charlottesville

Associate professor of Kinesiology

Co-director of the Exercise and Sports Injury  
Laboratory

273 publications; 6,829 citations

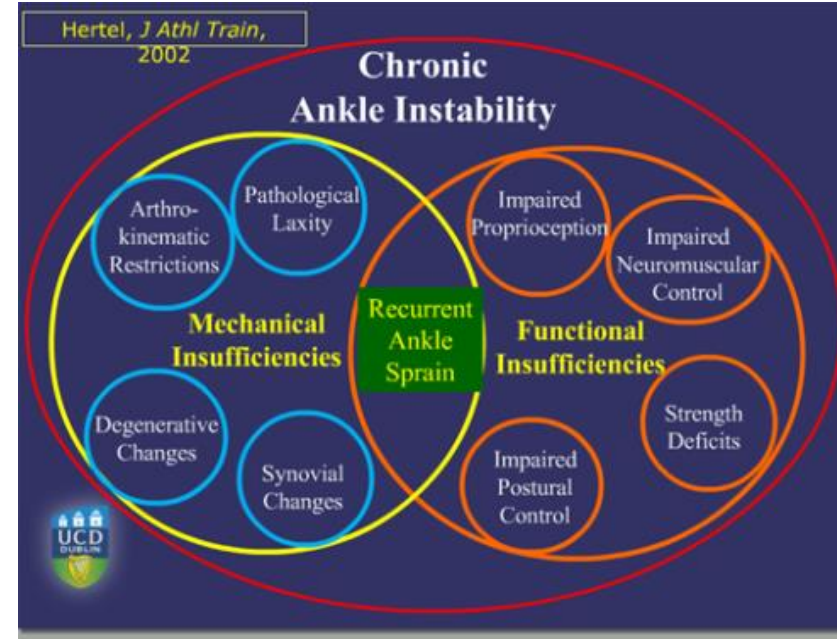
Eamonn Delahunt PhD, BsC

University College, Dublin

95 publications; 1,402 citations

Co-Authored in British Journal of Sports  
Medicine

2016 consensus statement of the International Ankle  
Consortium: prevalence, impact and long-term  
consequences of lateral ankle sprains





# What to Remember

## 1. Diagnosis

Cumberland Ankle Instability Tool

## 2. Examination

Assessment of impairment of body function including:

Measures of ankle swelling

Ankle ROM

Talar translation and inversion

Single-leg balance

## 3. Intervention- Two Stages

Immobilization → AD → weight-bearing

Active/passive STM

Graded joint mobilizations/manipulations with movement

Activity specific training



© Healthwise, Incorporated

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# Achilles Tendinopathy

— Allie, Matt, Mitchell, Kameron, —  
Stephanie, Steven

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# Background, Prevalence, and Population

- Overuse Injury of the Achilles Tendon
  - More often doesn't involve inflammatory cells so shouldn't be termed "tendinosis" or "tendinitis"
  - Ranked among the most reported overuse injuries in literature
  - Mid-portion
- Annual Incidence- 7-9% in runners
- Mean age 30-50 yrs old
- Males>Females
- Majority of those affected are those engaged in activity at recreational or competitive level
  - Occurs most often during training rather than during competitive events
  - Runners are most often reported but have occurred in wide array of sports

## 1. Who has it?

# Intrinsic and Extrinsic Risk Factors (Level B)

- Increased/decreased dorsiflexion ROM (I)
- Increased/decreased subtalar ROM (II)
- Decreased plantar flexion strength (II)
- Increased pronation/calcaneal inversion/forefoot varus (II)
- Abnormal tendon structure - found by ultrasound (II)
- Comorbidities: obesity, HBP, high cholesterol, diabetes (III)
- Training errors, environmental factors, faulty equipment (II)

# Diagnosis, Classification, and Prognosis (Level C)

No formally accepted classification system has been accepted

What then is used in diagnosis?

Positive achilles tendon palpation test (tenderness 2-6 cm proximal to insertion) **(II)**

Decreased plantar flexor strength/endurance **(II)**

Positive arc sign **(II)**

Positive Royal London Hospital Test **(II)**

Stiffness during WBing and after sleep **(V)**

Intermittent pain during activity/exercise **(V)**

Pain stiffness starting exercise **(V)**

## Favorable prognosis w/ nonoperative treatment

71% - 100% return to prior level of physical activity

Conservative and operative prognosis worse in non athletic population

## 2. What do we measure?

# Outcome Measures

### **The Victorian Institute of Sport Assessment (VISA-A) (Level I)**

Developed specifically to assess severity of achilles tendinopathy

Not designed to be diagnostic tool

Consists of 8 items: assesses stiffness, pain, and function

$r=0.90$  for both intra- and inter-rater reliability (test-retest  $r=0.8$ )

### **The Foot and Ankle Ability Measure (FAAM) (Level I)**

Region specific and assesses activity and participation limitations for general

MSK foot and ankle disorders

Consists of 21-item ADL subscale and separately scored 8-item Sports subscale

$r=0.89$ ,  $r=0.87$  test-retest ADL and sports subscale respectively

### 3. How do we treat?

# Interventions- Eccentric Loading (Level A)

Eccentric loading program shown to decrease pain and improve function in pts with midportion achilles tendinopathy

3 studies with level I evidence and 11 studies with level II evidence

Alfredson et al. protocol:

Unilateral eccentric heel raises w/ no concentric component (unaffected LE returns affected side back to starting position)

Slow and controlled movements with moderate but not disabling pain

3 sets of 15, both knee extended and flexed, 2x daily for 12 weeks

External weight added with backpack if needed



# Interventions - Low Level Laser Therapy (LLLT) and Iontophoresis

**(Level B)** LLLT utilizes a machine that uses low power lasers to stimulate tissue and encourage function of the cells

Experimental group (n=20) treated w/ LLLT and control group (n=20) treated w/ placebo 12x over 8 weeks

Both followed same eccentric loading protocol following treatment

Intervention group perceived less pain at 4,8,12 weeks and improved

in secondary measures (palpation tenderness, stiffness, dorsiflexion AROM, crepitation)

## Iontophoresis on achilles tendinopathy

Experiment group (n=14) w/ dexamethasone and control (n=11) w/ saline for 4x over 2 weeks.

Afterwards, both received same 10 week rehab protocol (protocol not mentioned)

Experimental group had less pain with walking, post-activity, and walking up/down stairs

