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Injury management for triathlon

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PHASES OF HEALING



INFLAMMATION

- Swelling
- Bruising
- Pain
- Weakness



PROLIFERATION

- 24-48 hours – 3 weeks
- Scar tissue
- Weak & disorganised
- Unable to withstand forces



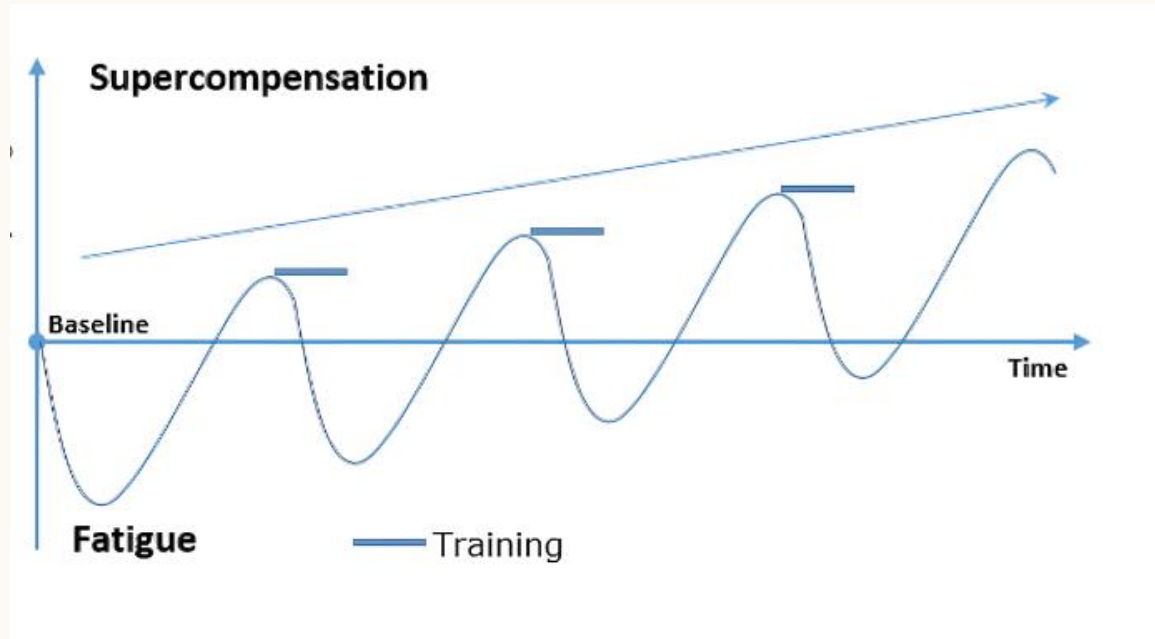
REMODELLING

- Tissue starts to mature
- Process can last months
- Strong linear appearance
- Withstand kinetic movement

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Progression – Fatigue – Injury

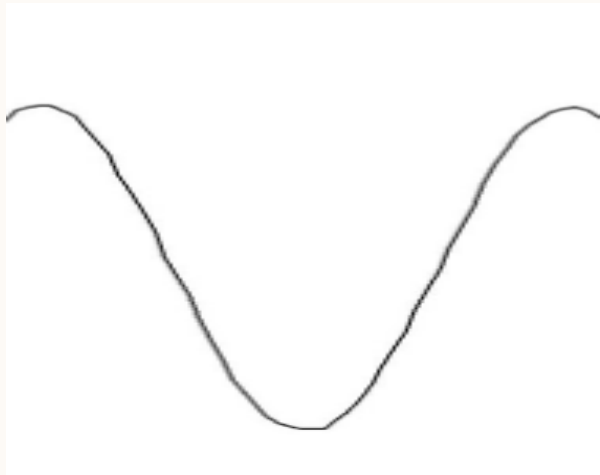


87% of triathletes suffered with an overuse injury within 6 months of training (Kienstra., *et al* 2017).

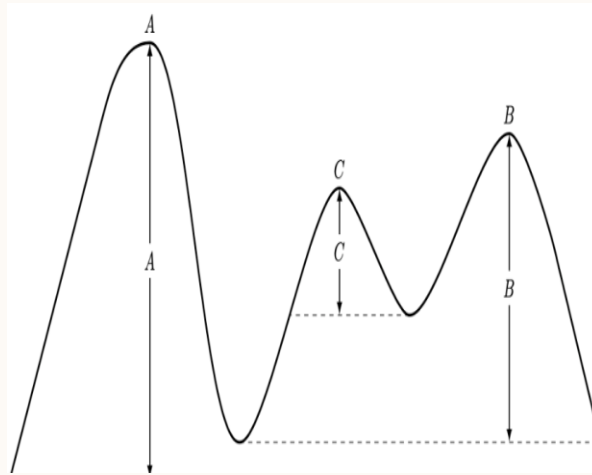
TYPES OF PAIN



INFLAMMATION



MECHANICAL



NEURAL

**ERRATIC
AND
UNPREDICTABLE**

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Muscle healing timeline

Inflammation – Muscle regeneration starts approximately 4-5 days after injury

Proliferation – Peaks at 2 weeks (Pain may stop but you're not ready)

Remodelling – Diminishes approximately 3-4 weeks

Depends on size and severity of injury

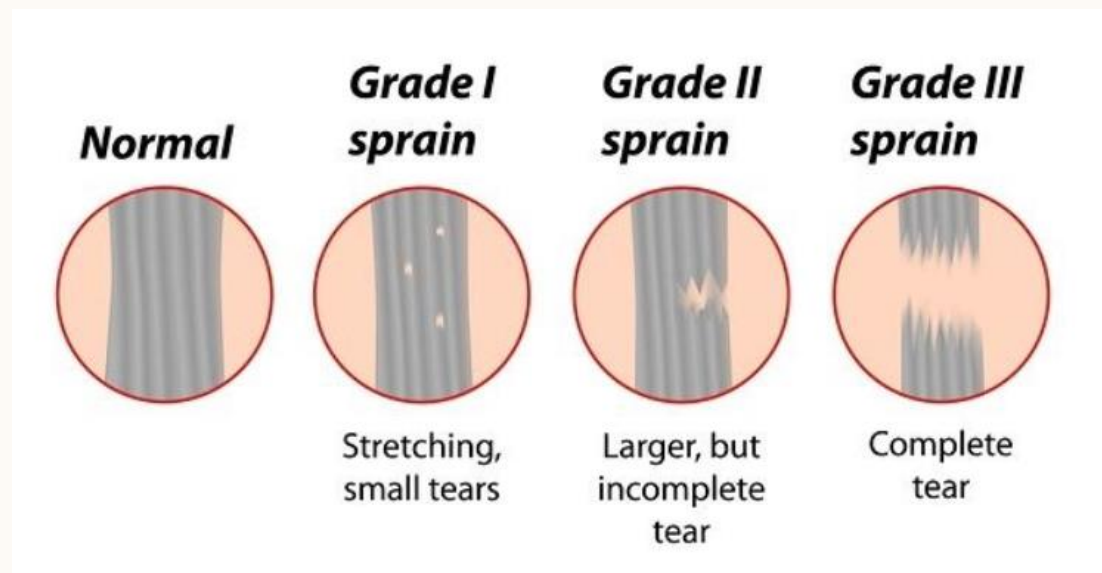
3 grades of muscle injury

Do not stretch! – Early isometric exercises

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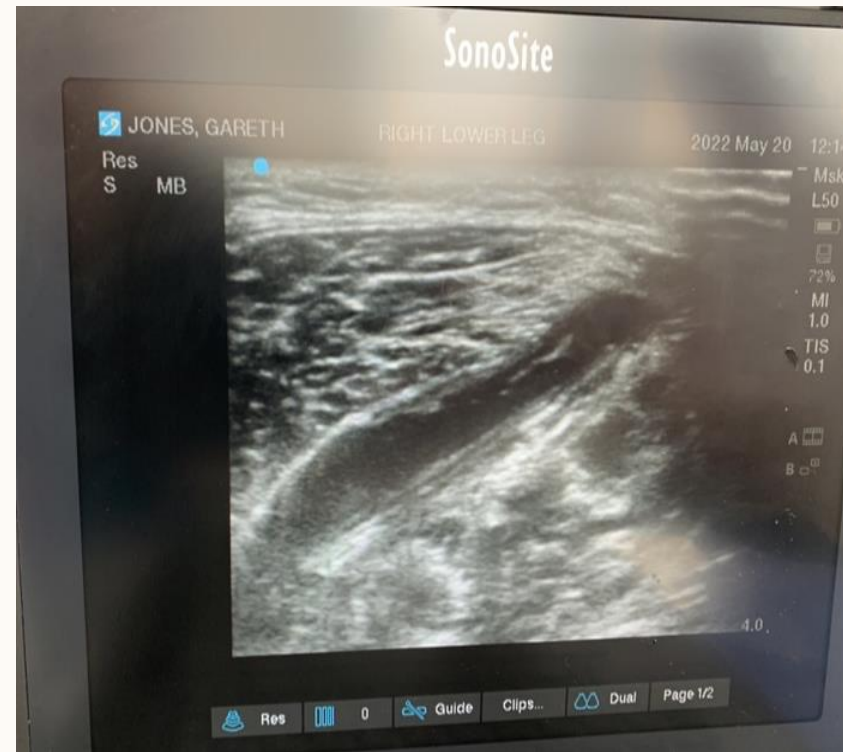
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3 grades of muscle injury



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Tendon healing timeline

Inflammation – 0 -14 days

Proliferation – 2 – 4 weeks (Type 3 collagen)

Remodelling – From 4th to 26 weeks (Type 1 collagen)

De-Load

Strength is key if no loss of flexibility

TENDINOPATHY CONTINUUM



NORMAL

Normal Tendon



REACTIVE

Reactive tendon



DYSREPAIR

Dysrepair stage



DEGENERATIVE

No way back!



MANAGEMENT

Your choice!

Strength

Biomechanics

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Factors that may affect healing time

Age – Metabolism slows which will affect the ability to heal

Previous injury – Previous injury or weakened tissue may affect healing

Metabolic influence – Blood supply (Meniscus)

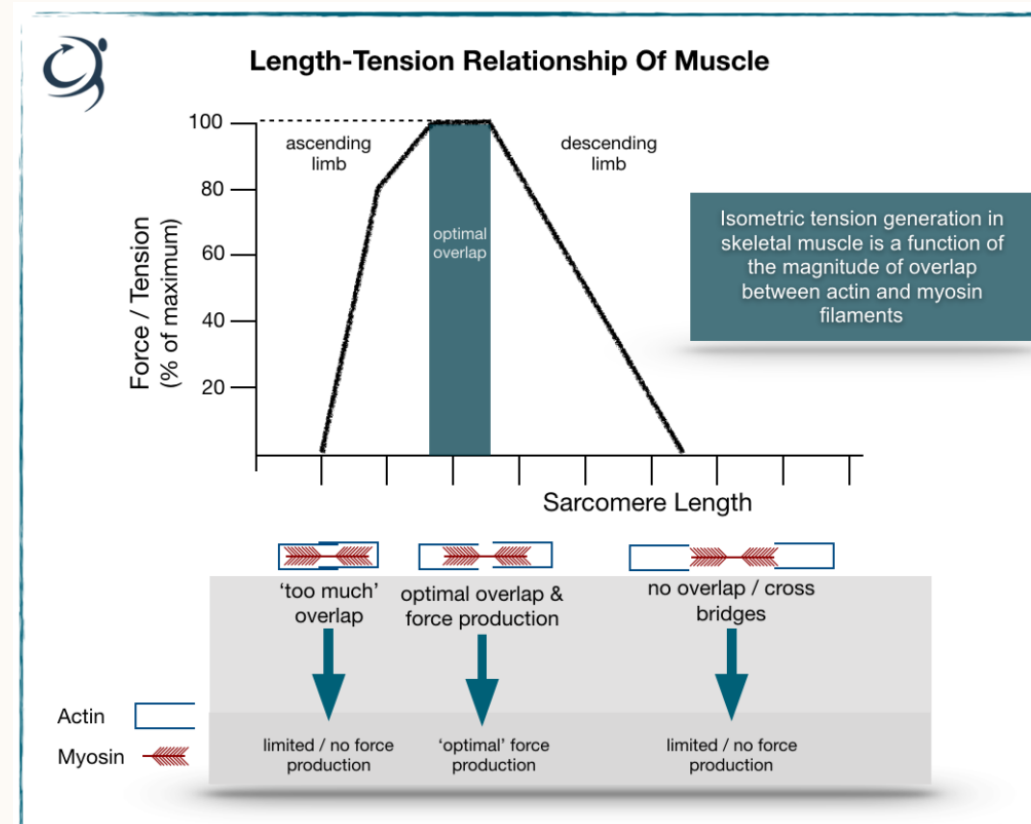
Activity levels – Too much! Too little!

If in doubt hit the pool – Hydrotherapy can encourage load with little stress

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The effects of injury on performance



MOST COMMON TRIATHLON INJURIES



SWIMMING

- Shoulder impingement
- Bursitis
- Biceps tendonitis
- Lower back pain
- Anterior labrum tear
- Hip & knee pain to be covered



CYCLING

- Anterior knee pain –
Quadriceps tendonitis –
Patella tendinopathy –
PFJS.
- Lower back pain
- Neck pain
- Guyon's canal syndrome
- Carpal tunnel syndrome



RUNNING

- Achilles tendinopathy
- Plantar fasciitis
- Shin splints – MTSS
- IT band syndrome
- Patella femoral joint pain
- Sprains and strains
- Nerve related pain

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Swimming injuries



Injury prevention for swimming

Mobility - Shoulder – Scapula humeral rhythm!

Mobility - Cervical and thoracic spine rotation.

Stability/ Movement Control - Core

Strength - Core stability

Strength - Shoulder and Scapula stabilisers and lats/ pecs (Pull)

Strength - Hip and knee flexors and extensors (Kick)

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Shoulder impingement

Biomechanics – Scapula humeral rhythm!

How to self diagnose – Empty can test (Apply downward force and resist)

What to avoid – Movements above the head

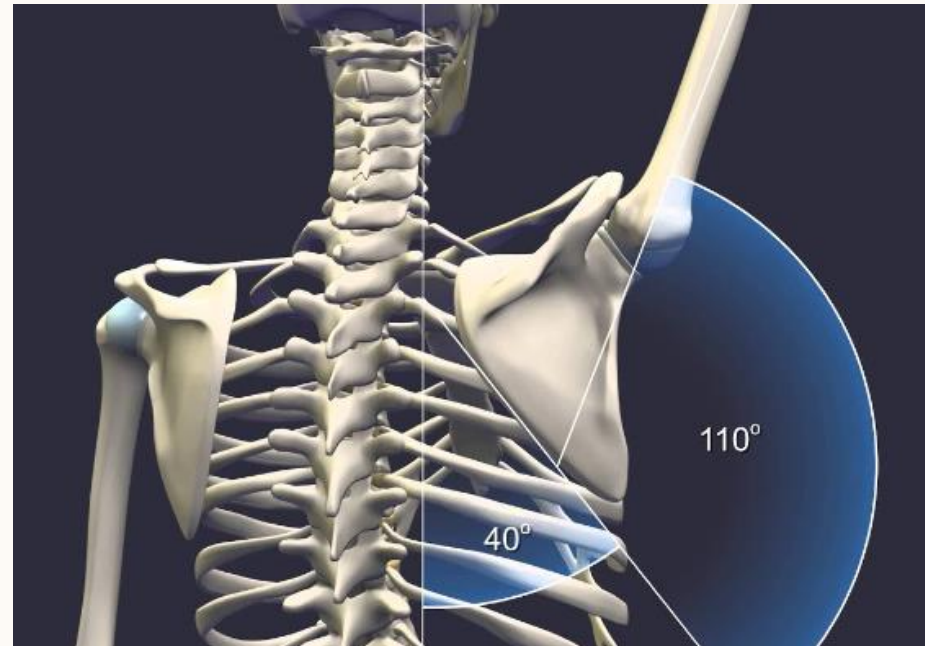
Self treatment – Isometrics and pendulum exercises

When to seek help – Chronic pain (3 weeks plus) May lead to further damage

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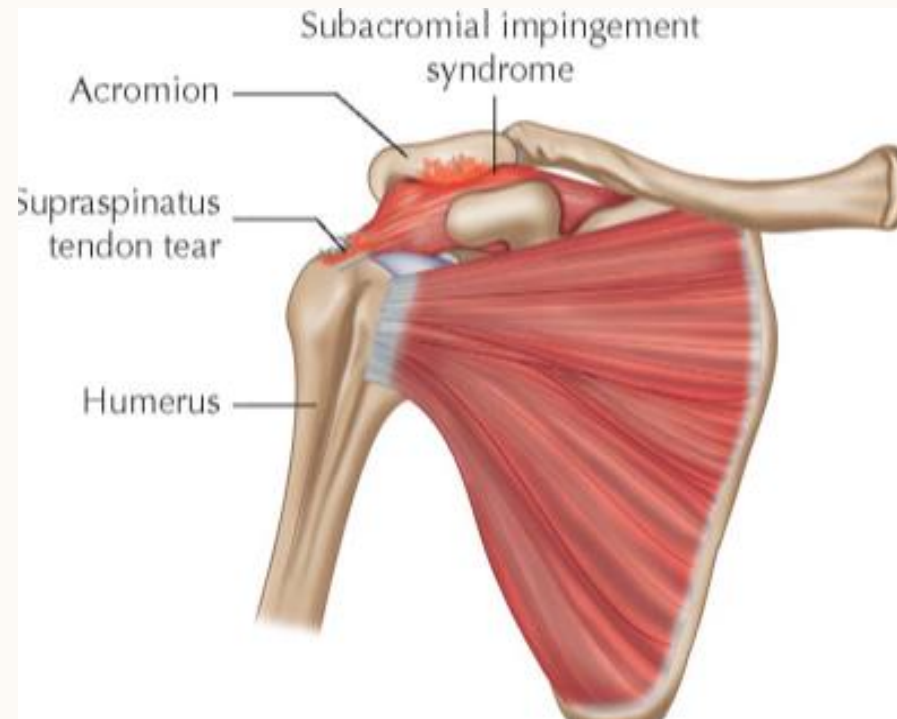
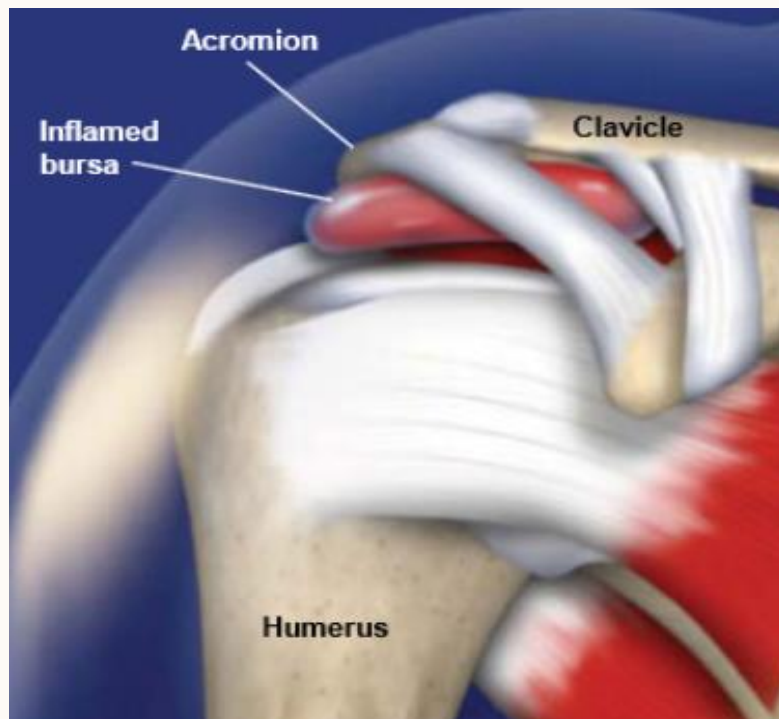
Scapular humeral rhythm



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Two types of impingement



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Biceps tendonitis

Biomechanics – Pulley system!

How to self diagnose – Speeds test and palpation of the bicipital groove

What to avoid – Heavy lifting and rapid arm movement

Self treatment – Ice and isometrics (6 x 10 seconds holds for cortical inhibition)

When to seek help – If the pain gets worse – May lead to labrum tear!

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Biceps tendonitis



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Other injuries to consider

Lower back pain – Hyperextension or excessive hip movement (SIJ!)

Hip pain

Anterior labrum tear (MRI) – Test with hip flexion/ Adduction

Knee pain – Possibly bursitis – Beware of bakers cyst forming over time

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Cycling injuries



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Anterior knee pain

The three main players – Quadricep tendonitis – Patella tendinopathy – PFJS

How to self diagnose – Position of pain will give it away

What to avoid – Heavy power sets

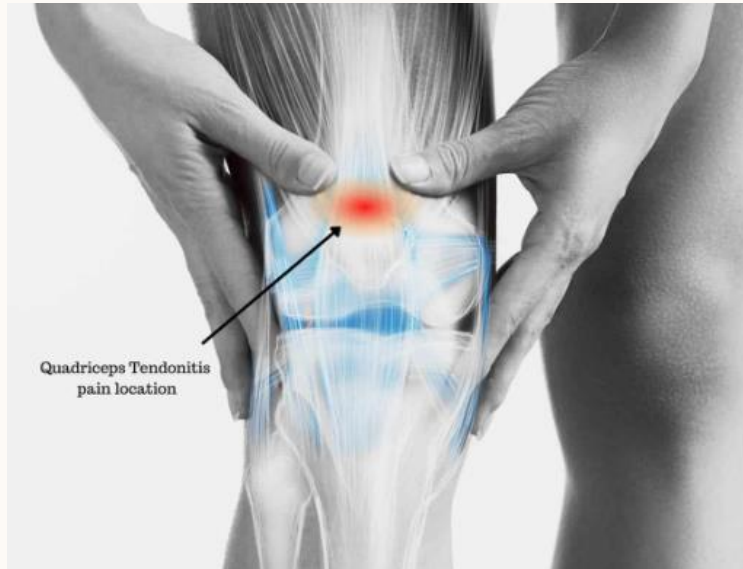
Self treatment – Single leg exercises and ice

When to seek help – Chronic pain (3 weeks plus)

Bike position can play a part in anterior knee pain! Low and forward

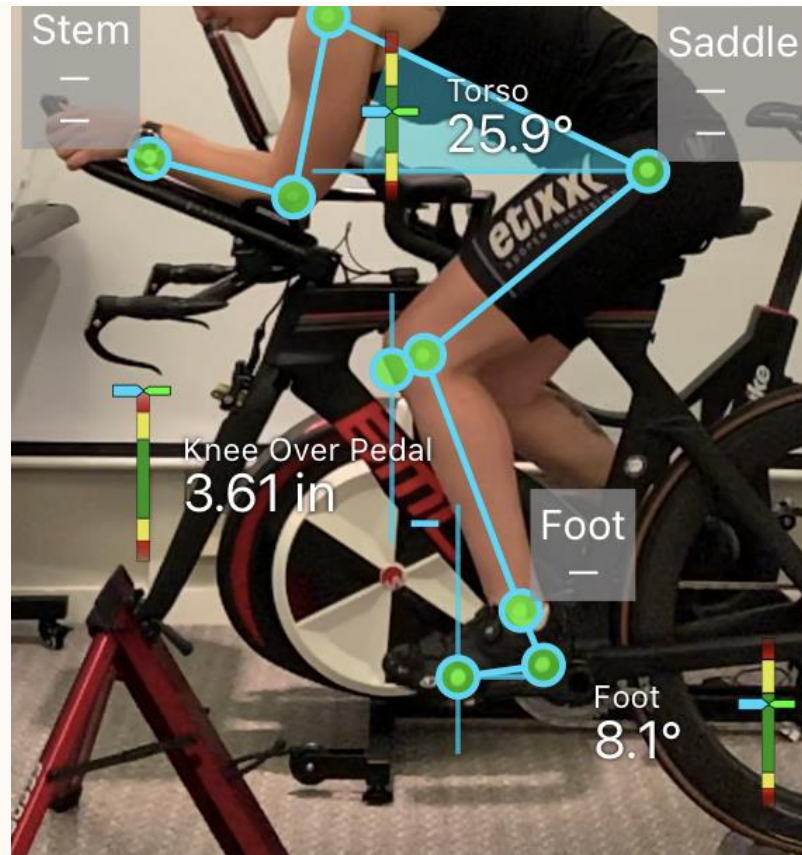
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Guyon's canal syndrome

How to self diagnose – Numbness in certain fingers

What to avoid – Compression

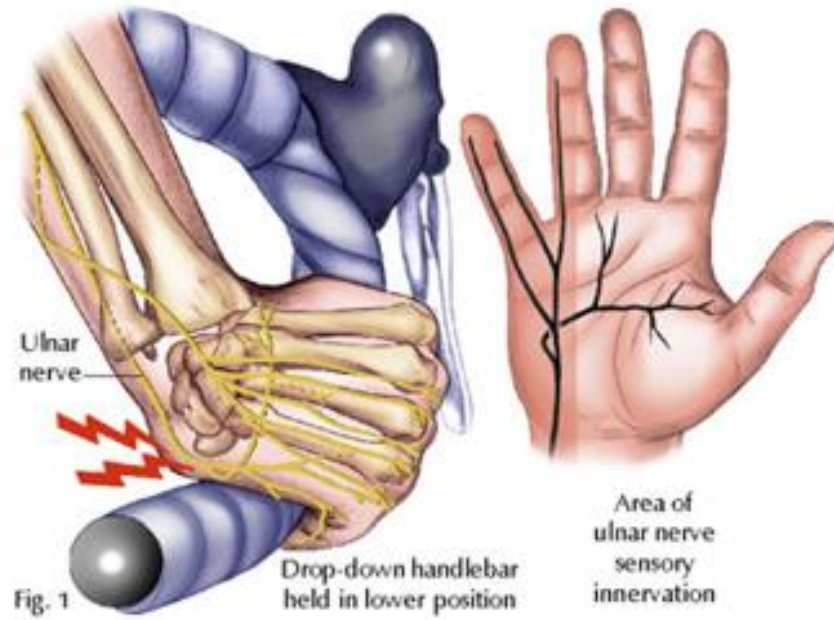
Self treatment – Stretch

When to seek help – Chronic numbness

Bike position – Be aware of ulna/Radial deviation

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Carpal tunnel syndrome

How to self diagnose – Numbness in certain fingers

What to avoid – Compression

Self treatment – Stretch

When to seek help – Chronic numbness

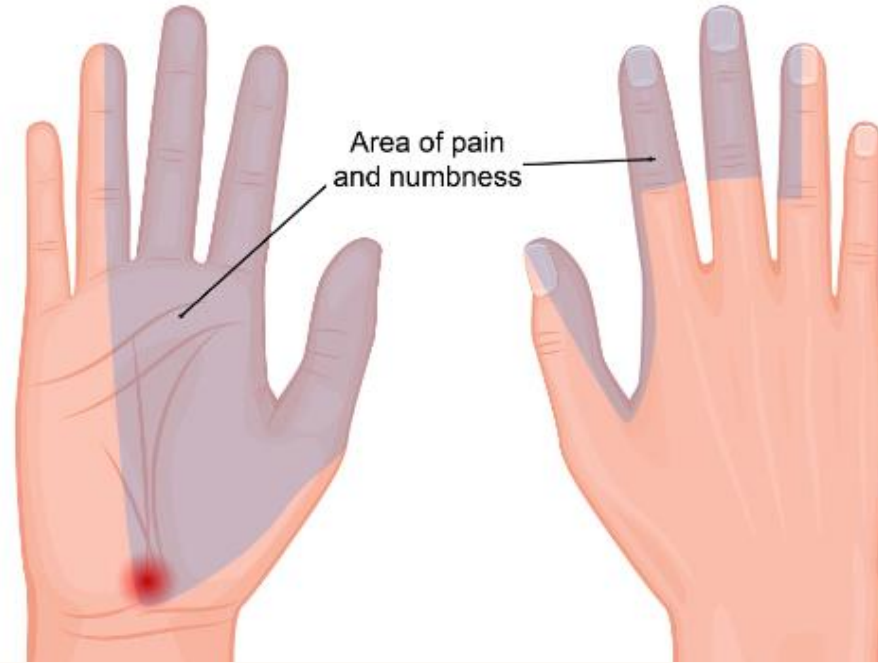
Bike position – Be aware of ulna/Radial deviation

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Palm of Hand

Front of Hand



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Lower back and neck pain

How to self diagnose – What type of pain is it? Mechanical vs Inflammation!

What to avoid – Will depend on the diagnosis

Self treatment – Back stretcher and sleeping position

When to seek help – Always seek help for back and neck

Bike position and sizing!

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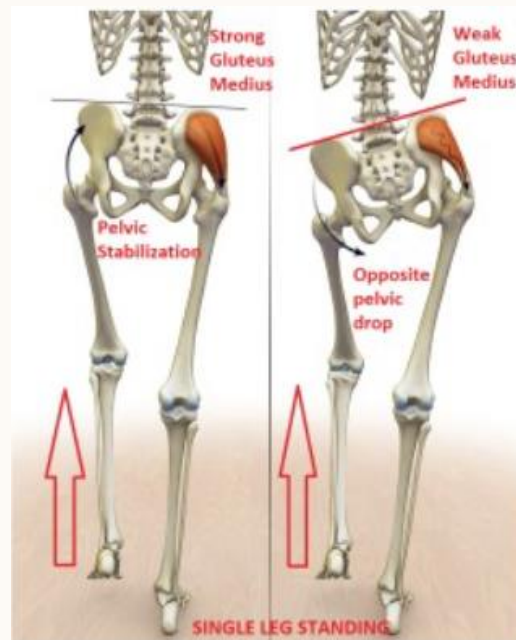
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Running injuries

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Gluteus Medius Dysfunction



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Achilles tendinopathy

Biomechanics – Kinematics – Over-pronation and torsional forces

How to self diagnose – Palpation – Position

What to avoid – Closed kinetic chain – Running – Jumping

Self treatment – Ice and strength (De-Load)

When to seek help – Always – Consider shockwave therapy

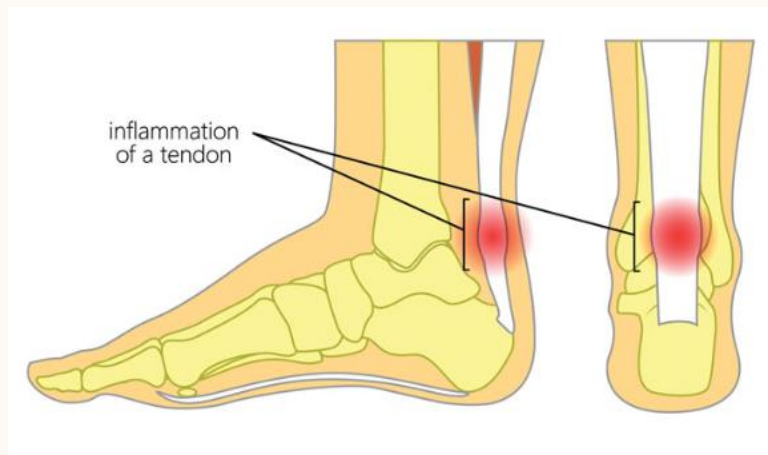
Continuum!

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Achilles tendinopathy

Mid portion



Insertional







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Achilles Rupture



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Plantar Fasciitis

Biomechanics – Windlass mechanism

How to self diagnose – Palpation

What to avoid – Excessive loading

Self treatment – Ice and lacrosse ball

When to seek help – Shockwave 9/10

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Plantar Fasciitis



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Shin splints

Biomechanics – Torsional forces! Check shoes

How to self diagnose – Palpation

What to avoid – Impact

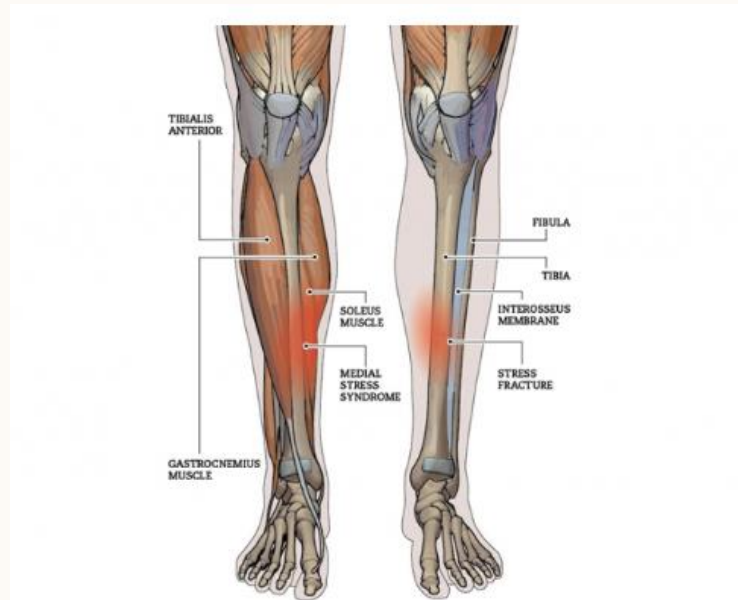
Self treatment – Ice and compression

When to seek help – Chronic pain – May be stress fracture

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Shin splints



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ITB Syndrome

Biomechanics – Internal hip rotation

How to self diagnose – Point of pain

What to avoid – Uneven ground and long runs

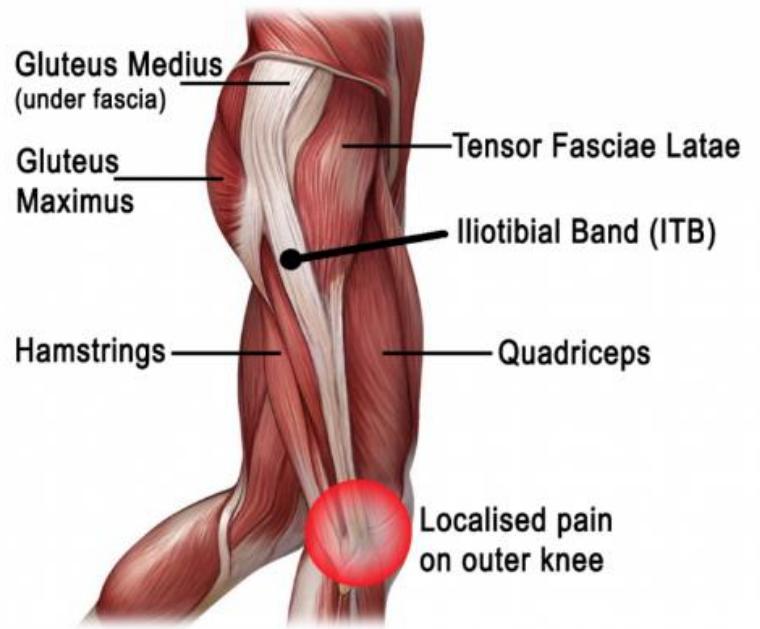
Self treatment – Self massage (TFL)

When to seek help – If it stops you running

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ITB syndrome



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Patella femoral joint pain

Biomechanics – Valgus knee forces (Females at more risk)

How to self diagnose – Patella test

What to avoid – High mileage

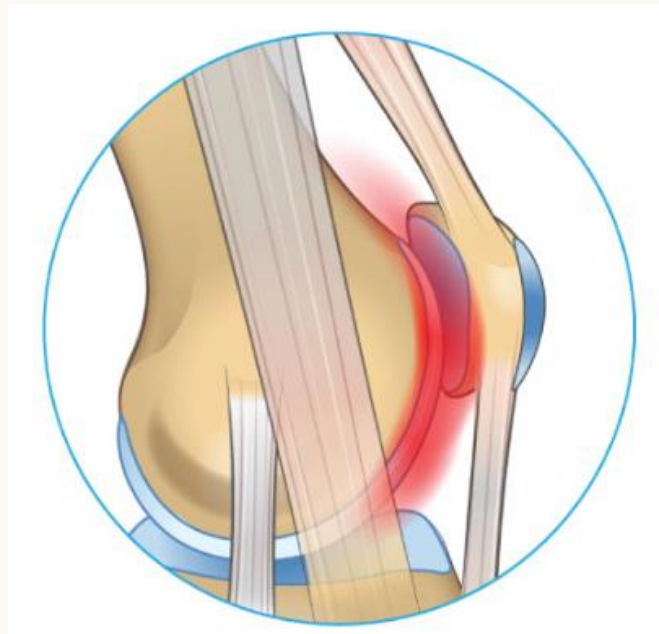
Self treatment – Strengthen VMO (Isometrics)

When to seek help – If pain when running

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Patella femoral joint pain



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Sprains and strains

Biomechanics – Nerve related? Trigger points?

How to self diagnose – Strength may indicate severity

What to avoid – Stretching

Self treatment – Ice and rest (Isometrics)

When to seek help – Bruising or weakness

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Prevention tool box

Scapula mobility drills

Core strength – Plank and rotational plank

Side plank Abduction

Single leg squats

VMO (Single leg)

Bike fit!



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