

Marathon Injuries: The end of- season battle PART 1: Below the knee

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End of Season Injuries

- Part 1:
 - Plantar Fasciitis
 - Heel Pain
 - Achilles irritation
 - Calf strains
 - Shin Pain/Splints/Fractures/Compartment
 - Quick touch on: Neuroma, Hallux Limitus/Rigidus
- Part 2 (follow up presentation)
 - Hamstring pain
 - Quad strain
 - ITB issues
 - Outer Hip pain
 - Piriformis issues
 - Sciatic Nerve pain
 - Hip flexor and groin strains

Why they happen...

- End of season vs beginning:
 - More miles, so less time focusing on other things, such as Pilates, Yoga, Flexibility, cool down, etc.
 - Fix: If you have 2 hours you do not run for 2 hours, you run for 80-90% and spend the rest taking care of yourself
 - If you have 10 hours a week, you run for 8 of them and help your body with 2
 - Physically just not recovering as well, muscles, tendons, ligaments, joints, lactic acid, etc.

Common Misconceptions

- Running more will be better
 - Truth: Running more distance will help you to run more distance. Not to be healthier in the miles you do run. Not to prevent injury, not to run faster, and not to be more efficient.
- Stretching is for off season
 - Truth: need to do it all the time to apologize to muscles
 - As we increase mileage and intensity, we need to recover even *more* from tighter muscles that are demanded to do more for us

Cont.

- Strengthening is for pre-season, I do not need to do that once I am running
 - Truth: You need to strengthen to:
 - Balance muscle groups
 - Keep muscles strong that you need, ancillary, but do not use in full every day (core, spine, outer hips)
 - The stronger you are, the more efficient you are of a runner

Injury 1: Plantar Fasciitis

- Symptoms:
 - Pain in the AM
 - Pain with barefoot walking
 - Pain in the arch of the foot
 - May have more pain with orthotic or high arch shoe due to pressure
 - May get better after 2-3 miles, due to being stretched out

Pic: Plantar Fasciitis



- Irritation can be from the heel to the toes and the arch between
- Can be constant or intermittent
- Can feel ropery and gristle-like
- Can get better after warm up

Plantar Pain: How to treat

- Traditional methods of rolling foot on ice does not work
 - Ice only takes swelling away while ice is on!
- Ultrasound- works in combination, but not as only treatment
- OTC orthotics- sometimes are not the best fit
- New:
 - Graston technique- pull way scar tissue, bring blood to area
 - ART- release scar tissue and tissue tension
 - ART- for the calf, esp posterior tib, which is always an issue
 - TP Products- rolling to decrease overall calf tone
 - Topical anti-inflammatory
 - Voltaren prescip, Arnica OTC
 - Iontophoresis: PT office only, topical patch, leave on
- In general: Gait evaluation, orthotics, shoe fit analysis

Injury 2: Heel pain

- What it could be:
 - Start of achilles pain
 - Because of where it inserts
 - Fat pad irritation
 - Bottom of the foot, worn away or irritated
 - Calcaneal (heel bone) stress fracture
 - Prelim dx with tuning fork/ultrasound in PT office
 - Bone spur
 - -xray dx
 - Tight dorsi flexors (calf complex)
 - Measure range of motion (ROM)

Pics of heel pain



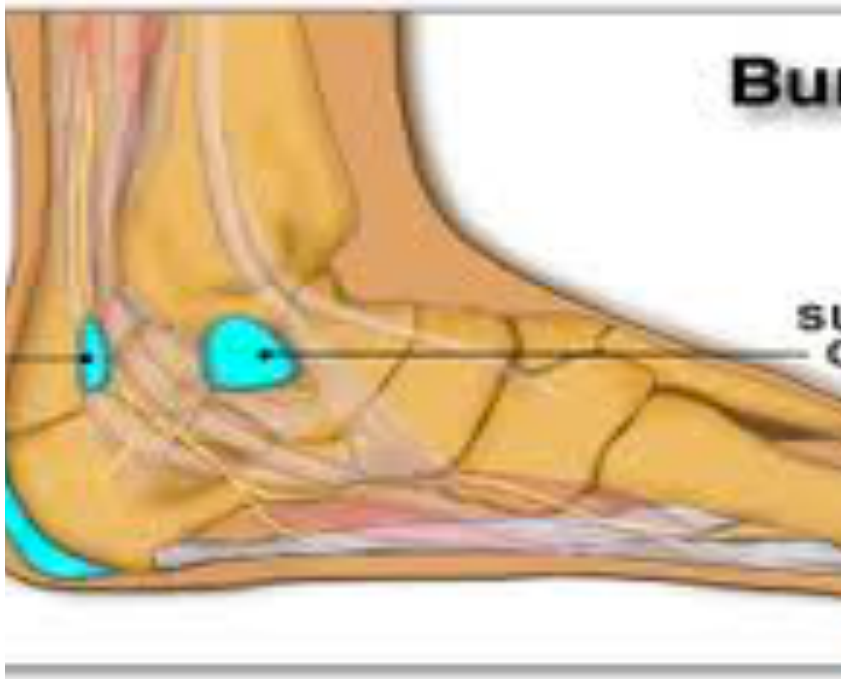
Injury 3: Achilles Irritation

- What it could be:
 - Achilles tendinitis
 - Irritation of the bursa sac
 - A little higher than the distal insertion
 - Technically Dx with MR/CT not xray
 - Achilles tendinosis
 - Thickening, already irritated, pushed through, body layed down scar tissue, thickened to protect, and cycle continues
 - Need to restart the injury process
- Small tear
 - Rest is only option, or may tear further

Anatomy Pics of Calf



Bursal irritation



- Bursal irritation will not go away unless pressure is taken off of the achilles, meaning, rest from all dorsiflexion (walking, running, jumping)

Achilles: How to treat it

- TP roller- decrease tone
- Stretching- NOT always the best option.
You will pull either
 - Away from the bone, the achilles
 - Pull inter-muscular fibers, and make it worse!
- Soft tissue work- PT- specifically ART
- Graston- increase blood flow, decrease haphazard tissue in gastroc, soleus, etc
- If at tendon- topical
 - Prescript: Voltaren
 - OTC- Arnica

Injury 4: Calf Pain

- What it could be:
 - Behind the knee
 - Baker's cyst
 - Popliteus or plantaris strain
 - Calf strain
 - Hamstring strain
 - Nerve entrapment (CP behind Fib Head)
 - Mid Calf
 - Small Tear
 - Strain
 - Scar tissue
 - Nerve stuck

Calf: How to treat

- Initially- rest, decrease mileage
- Decrease speed work
 - Uses calf to push off more
- Decrease hill work
 - The angle of impact increases stress to plantar flexors (achilles tendon, essentially gastroc, soleus, post tib)
- TP roller- calf
- Gluteal strength to take pressure of calf

Injury 5: Shin Pain

- What it could be:
 - Stress Fracture
 - Bone scan, MR, sometimes –ve on xray
 - Stress Reaction
 - Sometimes will not show on any film, Dx by process of ruling out
 - Compartment syndrome
 - Symptomatically diagnosed, then Dx by machine testing pressure of fascia/skin as well as exertion level
 - Posterior Tib tendinitis
 - Pain behind the shin bone, approached either from front or back



- Commonly forgotten about muscle
- Majority of MD, podiatrists, etc think that shin pain automatically is bone related
- Muscle is so longitudinally close to bone, one of the only in the body

Illustration of shin splints



Compartment Syndrome



How to Fix/Prevent Shin issues

- Wear shoes that support the arch
 - Navicular should not excessively drop
 - There should be motion between the forefoot and rearfoot, biomechanically
 - Make sure heel is on good posting position
- Wear cushioned shoes for longer runs
- Run on softer surfaces (gravel, not road)
- Replace runs with water work if necessary
- Avoid back to back pounding days if poss.

Treatment

- No ultrasound... traditional PT, but not up to date. Vibrates, and that hurts injured bone (duh!)
- IFC will do nothing either
- Need ART and Graston combination, as well as joint mobs for the ankle and foot, as well as knee (fob head)
- Roll with TP Products to release compartments as well as P Tib muscle
- Stretch after run
- Strengthen Glutes to help with absorption of body weight with stance phase of run

Injury 6: Pain between my toes

- What it could be:
 - Neuroma
 - Morton's most common, between 3rd and 4th toe
 - Thickening of nerve tissue
 - Intertarsal neuroma, more on the ball of the foot
 - Get it because of compression or repetitive irritation of nerve
 - Shoes too small
 - Tie shoes too tight
 - Wear high heels
 - Too much pounding
 - Weight may be an issue for activity level
 - Stress Fracture
 - Metatarsal bone itself
 - Diagnosed via xray, MR, or sometimes bone scan

Neuroma, Morton's



- Neuroma pic, inflamed, not any more room between toes, so constantly compressed while irritated
- Endless cycle

Injury 7: Pain on the bottom of my big toe!

- What it could be:
 - Sesmoid irritation
 - Two small bones on bottom of foot
 - Flexor Hallicus tendon irritation
 - Bone that bends the big toe into flexion
 - Part of plantar fasciitis
 - May be the end of where plantar tissues insert

Pics of Sesmoid Anatomy



Irritation...

- How to avoid:
 - Wear newer shoes, well cushioned shoes
 - Rotate shoes, 2, 3, 4 pairs
 - Label all mileage
 - Add insert into shoe
 - If Diagnosed, then orthotic with cutout
 - Avoid high heel shoes, places too much stress on ball of foot/big toe

- How to treat:
 - Injury screen
 - Xray to check bone health
 - Ice and topical anti-inflammatory
 - OTC- Arnica
 - Prescrip: Voltaren
 - Once irritation is done, important to re-educate gait pattern, stretch plantar fascia and achilles
 - Assume that the patient was in a boot or surgical shoe, and not allowed to have full motion of the big toe passively extending or the ankle going through normal range of motion either

Author Bio:

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- Active Release Techniques Certified, Full body, Biomechanics, Nerve, and Instructor
- Performance Care Provider for ART at Ironman North American Events and World Championships
- Graston Technique Provider
- Gait evaluation and biomechanics specialist
- Age group competitor- multiple marathons and Ironman, including World Championships in Kona, HI
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