Common Running Injuries
Rehal Abbas Bhojani, MD CAQSM
Memorial Hermann Medical Group
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Objectives
- Review Epidemiology & Risk Factors for Running Injuries
- Key points in Evaluating Running Injuries
- Updates on Various Running Injuries

Epidemiology
- >40M Americans run regularly
  - >50M run more than 100 days a year
- Up to ½ runners reported an injury, mostly due to overuse trauma
  - Incidence 19.4 - 79.3%
- Knee > Hip
- Marathon Runners
  - Men - hamstring/calf
  - Women - hip
- Retrospective Study (2006)
  - 2886 runners
  - Injury rate 46%
  - Calf, Achilles Tendon, Hamstring
  - Risk factors
    - Male
    - >6 days/week running
    - >30 miles a week

Intrinsic Risk Factors
- Anatomy
  - T Increased Q angle for PFPS
  - Cavus Foot for MTSS, PFPS, Achilles, Plantar Fasciitis
- Gender/Age
  - T Age proportional to injury rate
  - Higher BMI (males only)
  - Girls > Boys
  - MTSS - females with athletic triad

Extrinsic Risk Factors
- Training Variables
  - >40 miles/week increases risk of injury
  - Regular Interval Training protective to knee injury
  - "10% rule" showed NO difference in decreasing injury
- Stretching & Warm-Ups
  - Stretching does not reduce injury rate, but does reduce pain
  - Warm-Ups - insufficient evidence
  - (Still advocate regardless)

Miscellaneous
- Shoes/Orthotics
  - Conflicting studies as to matching shoe type with injury
  - Shock absorption shoes wear out 250-500 miles
  - Orthotics? Benefit
  - Barefoot/Minimalist Shoes - anecdotal evidence
    - May increase MTSS
  - Biomechanics
    - Overpronation: increased knee/foot injuries
    - Increases in step rate decreases knee/hip pain
- Nutrition
  - Need adequate calories, carbs:fat:proteins
  - Hydration (>2% weight change leads to decreased performance)
Nutrient Supplementation

- **Pre-Exercise**: snack with high carb, mod protein, low fat/fiber
- **Post-Exercise**: 1.0-1.5 g/kg carb + protein replacement within first 30-90 minutes
- **Iron Levels**
  - Lost in sweat, GI tract, Menstruation
  - Check ferritin, iron levels (not just CBC)

Evaluating Injured Runner

- **History, History, History!**
- **Check entire “kinetic chain”**
- **Posture/alignment and core strength exam important**
- **Common Findings**
  - Weakness in hip abduction/rotation/flexion
  - Increased lumbar lordosis → weak anterior core
  - Loss of lumbar lordosis → tight hamstrings

Specific Injuries

- **Gluteus Medius Tendinopathy & Piriformis Syndrome**
  - Gluteus Medius - hip abductor/rotator
  - Pain with movement when muscle stretched
  - Tenderness at insertion (medial/superior to greater trochanter)
  - Positive Trendelenburg sign
  - Piriformis - hip external rotator
  - Sciatic nerve passes through, controversial diagnosis
  - Risk factors - overpronation, gluteal weakness, tight adductors
  - **Treatment**
    - PT, correct biomechanics, medications
    - Consider injections (anesthetic, steroids, Botox)

Hip Labral Tear

- **Provide stability and decrease hip joint stress**
- Female > Male
- Anterior hip pain with mechanical symptoms
- **Treatment**
  - PT has mixed results
  - +/- Injection for diagnostic/therapeutic measures
  - Surgical intervention helps, recovery longer

Knee Injuries

- **Patellofemoral Pain Syndrome**
  - Ovause and malalignment
  - Females > Males
  - Decreased strength in hip abduction/extension
  - **Treatment**
    - PT with focus on VMO and hip strength
    - Bracing
    - Arthroscopic surgery
- **IT Band Syndrome**
  - Lateral Femoral Condyle
  - Pain persists after training esp. after repetitive flexion/extension
  - **Treatment**
    - PT with hamstring, core focus
    - Modalities
Stress Fractures

- **Risk Factors**
  - Running patterns
  - Changes in training
  - Shoe/orthotic wear
  - Biomechanics
  - Prior injury
  - Nutrition/Menses

- High risk for nonunion (femoral neck, navicular) more common
  - Femoral Neck - females with athletic triad
  - Navicular - male in track/field events

- “Shin Splints” vs. Tibial Stress Fracture

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Chronic Exertional Compartment Syndrome (CECS)

- Younger runner with time/distance-based pain
- Difficult to diagnose with Stryker compartment testing
- Adjusting mechanics and training usually not helping
- Definitive management - fasciotomy

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Plantar Fasciitis

- **Risk Factors**
  - Training Errors
  - Biomechanics - decreased dorsiflexion of foot/toes
  - Excessive pronation/supination
  - Age and weight

- **Treatment**
  - Eccentric stretching program
  - Splinting
  - Injections / Pain Control
  - Surgery for refractory conditions

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Tendinopathies

- **Achilles** - risks include increased lifetime running, poor flexibility, overpronation, valgus/varus deformity, shoewear
- **Peroneal**
  - Traumatic (lateral ankle sprain)
  - Overuse (excessive foot pronation, weak foot plantarflexors)
  - Consider tendon sheath injection
- **Posterior Tibial** (“Peroneal’s medial sister”)
  - Usually needs shoe wear and prolonged PT
- **Tibialis Anterior** - usually due to change in training (hills)

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Hallux Rigidus (“Turf toe”)

- Due to hyperextension injury or repetitive microtrauma
- Can present as vague lateral forefoot pain due to shifting body weight

- **Treatment**
  - Shoewear - wide toe box, stiff soles, rocker bottoms, low heels
  - Orthotics/insoles
  - NSAIDs/APAP and ice
  - Injections/Surgery

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Sesamoiditis

- Sprinters > marathon runners
- Localized pain/tenderness worsened with great toe dorsiflexion
- NEED imaging to r/o stress fracture

- **Treatment**
  - Short term immobilization, prolonged rest from running
  - Cross-training
  - Orthotics/soft pads
  - Injections
  - Avoid high heels, stiff soles
Morton’s Neuroma

- Swelling/scar tissue in interdigital nerves (3rd > 2nd/4th space)
- Numbness in toe with Mulders sign (clicking sensation when squeezing metatarsal joints)
- Risks: overpronation, tight shoes
- >5mm lesion on U/S = MRI considered significant

Treatment
- Metatarsal pad/bars/orthotics to reduce pressure
- Strengthening intrinsic foot muscles
- Broad-toed shoe with fitting
- Steroid vs. anesthetic injection
- Surgery

Training Tips

- Beginners - 20min/day, every other day, increase by 5min/week
- Limit 40 miles/week (unless elite), >13 mile runs should be every 2 weeks min, run 4-5 days a week with 1-2 cross-training
- Speed work - Fartlek training before interval training, keep to 3 mile sessions, avoid downhill runs
- Select comfortable shoes; barefoot running best for sound biomechanics

Thank You!

Rehal Bhojani, MD CAQSM
Memorial Hermann Medical Group
17510 W. Grand Parkway, Suite 310
Sugar Land, TX 77479
(281) 725-5835

Medical Director, MHSL Sports Medicine Outreach
Medical Director, Sugar Land Skeeters
Medical Director, University of Houston Men’s in Athletic Training Program
Team Physician, Fort Bend Christian Academy & Logos Preparatory Academy

References