Common Lower Extremity Running Injuries

Causes, Symptoms, Risk Factors, and Treatment

Jessica Riggs PT/s Matthew Gallagher PT/s, Tracie Yeaman PT/s, Laura Nye PT/s CSCS

Advisor: Douglas J. Mattson PT EdD SCS

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Prevalence of Injuries

• In a given year anywhere between 27 and 70% of competitive and recreational runners suffer an injury\(^1\)

• Most running injuries (~60%) can be attributed to overtraining, comprised of overuse and training errors

• Runners injured in the previous year had approximately a 50% higher risk for a new injury during follow-up\(^2\)
Prevalence of Injuries

- As runners age they are at a greater risk of injury as tissue healing time is lengthened and there is a loss of shock-absorbing capacity

- Increased radiographic evidence of OA in endurance sport athletes, but no related increase in symptoms reported\(^3\)

- Many researchers believe that running injuries result from a combination of extrinsic and intrinsic factors
Prevalence of Injuries

Training variables associated with overuse injuries:

1) Frequency
2) Speed
3) Duration
4) Distance
Keys to Injury Rehabilitation

• Early recognition of overuse symptoms

• Appropriate activity modification

• Proper and complete rehabilitation before returning to normal running routine
Common Running Injuries

- Iliotibial Band Friction Syndrome (ITBS)
- Patellofemoral Pain (PFPS) “Runner’s Knee”
- Achilles Tendonitis (AT)
- Plantar Fasciitis (PF)

Taunton et al.
Injury Prevention and Treatment

The following interventions are all meant as a means to treat low-level, manageable symptoms. If symptoms are severe, or worsen it is important to seek medical advice and treatment from your doctor or a physical therapist.
Iliotibial Band Syndrome

Symptoms

- Sharp pain just above or below the outside of the knee
- Noticeable swelling
- Tightness
- Discomfort during activities that involve bending the knee, such as ascending/descending stairs
- Pain may occur during activity and persist after
Iliotibial Band Syndrome

Causes

• Repetitive friction of the iliotibial band over the lateral femoral condyle
• In part due to weak hip abductors and/or tight band
Iliotibial Band Syndrome

Risk Factors

- Excessive running in the same direction
- Downhill running
- Running long distances
- Leg-length discrepancy
- Greater than normal weekly mileage (10% rule)
- Weak hip abductor strength (gluteus medius)
Iliotibial Band Syndrome

Treatment

• Acute: activity modification to prevent aggravation, ice, anti-inflammatories (while anti-inflammatories is a common treatment, individuals should talk to their doctor about risks/benefits before taking)

• Subacute: stretching, release myofascial restrictions (foam roll), cross-train

• Recovery: continue stretching, strengthen hip abductors, cross-train

• Return to running: easy strides, no hills, start back by running at most every other day for 1st week
ITB Stretch
Strengthening for ITBS

Sidelying Hip Abduction

• Injured leg is up, bottom leg bent for balance
• Keep upper leg straight
• Brace abdominals
• Bring leg up 30°, hold 1 second, down slowly
• Should feel outside of gluts working
Patellofemoral Pain Syndrome
“Runners Knee”

**Symptoms**

- Pain/swelling below or medial to the kneecap
- Pain/stiffness after sitting for a long time
- Crepitations with activity
- Pain running downhill, walking down stairs, kneeling, prolonged sitting, rising from seated activity and any squatting activities
Patellofemoral Pain Syndrome

“Runners Knee”

Causes

• Multifactorial causes including malalignment of the leg
• Altered muscle pull/imbalance
• Often due to tightness causing the patella to glide abnormally in the trochlear groove of the femur during knee flexion and extension
Patellofemoral Pain Syndrome
“Runners Knee”

Risk Factors

• Tight quadriiceps muscles
• Tight posterior muscles (calves, hamstrings)
• Excessive foot pronation during running
• Abnormal tibia and femur rotations during running
Patellofemoral Pain Syndrome
“Runners Knee”

Treatment

• Ice to decrease inflammation
• Initially avoid exercises with knee bent
• Gently stretch all LE muscles
• Assess footwear for increased wear, pattern
• Strengthen the quads with non-weight-bearing and weight-bearing exercises
Quadricep Stretch
Quadricep Strengthening

Wall Squats

- Stand with feet shoulder width apart and toes facing forward
- Do a slight squat keeping your knees in line with your toes, not letting the knee go more forward than the toes
- Progress to single leg squat standing against wall
- Sidelying hip abduction also good
Posterior Leg Anatomy Review

- Gastrocnemius - two heads of the muscle originate from the distal end of the femur and attached to the heel via the Achilles tendon.
- Soleus - originates on the upper fibula and inserts with the gastroc to the heel
Achilles Tendonitis

Symptoms

• Painful sensation with foot push off
• Redness/inflammation at point of injury
• Often worst in the morning
Achilles Tendonitis

Causes

• Overuse leading to inflammation
• Tight calf muscles
• Running through the original less intense pain
• Poor eccentric control of the gastrocsoleus complex
Achilles Tendonitis

Risk Factors

• Lack of ankle flexibility
• Tight calf muscles
• Hill training
• Increasing mileage dramatically
• Track running
Achilles Tendonitis

Treatment

• Acute:
  1) Cut back on running
  2) Ice massage

• Subacute:
  1) Stretching (avoid overstretching)
  2) Soft tissue massage
Achilles Tendonitis Stretch

Gastroc Stretch

Soleus Stretch
Strengthening for Achilles Tendonitis

• Important to do for prevention and in the sub-acute stage during recovery

• Eccentric control of the gastrocsoleus needs to be emphasized:
  • Standing heel raises with controlled lowering
  • Progress to one leg lowering or through a greater range (off a stair)
Plantar Fascia Anatomy Review

- Strong thick fascia that runs from the heel and attaches to the toes by 5 bands.
Plantar Fasciitis

Symptoms

• Pain on the underside of the heel while weight-bearing
• Usually most intense during first steps in morning
Plantar Fasciitis

Causes

- Specific etiology unknown
- Overuse plays a role
- Excessive foot pronation
Plantar Fasciitis

Risk Factors

• Increased risk as ankle dorsiflexion decreases
• No evidence that arch height is a contributing factor (Wearing)
• Increased BMI
• On feet majority of work day
• Recreational jogger
## BMI Chart

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Plantar Fasciitis

Treatment

• Acute:
  1) Relative rest
  2) Anti-inflammatories (while anti-inflammatories is a common treatment, individuals should talk to their doctor about risks/benefits before taking)
  3) Ice massage
  4) Non-weight bearing stretching

• Subacute:
  1) Non-weight bearing stretching
  2) Roll a ball or bunch up a towel to strengthen foot intrinsics
  3) Arch supports (Dyck)
Plantar Fasciitis Stretch
Strengthening for Plantar Fasciitis

- Engage the small intrinsic muscles of the foot:
  - Towel scrunching
  - Picking up marbles or other small objects
Questions?
References


