



## PHYSICAL DIMENSIONS

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# Top Running Injuries and Prevention Strategies

## 1. Plantar Fasciitis

- a. Primary risk factors:
  - 1) Rapid increase in intensity or uphill running followed by sleeping on your stomach or tightly tucked sheets. This causes nocturnal contracture (shortening) of the plantar fascia.
- b. Preventions:
  - 1) Build volume before intensity.
  - 2) Sleep with your ankles in a neutral non-toe pointing position.
  - 3) Obtain a tibial night splint from a sports medicine professional.
- c. Secondary risk factors:
  - 1) Hyper flexible running shoes (racing flats) or work shoes.
  - 2) Excessive mileage on your shoes.
  - 3) Overpronation (flattened arches).
- d. Preventions:
  - 1) Train at moderate distances in a moderate weight shoe, and race in a flexible, fast racing shoe.
  - 2) Obtain an orthotics consultation from a professional sensitive to the needs of a runner. (A 4oz orthotic in a 10oz shoe adds up.)
  - 3) Wear quality rigid supportive shoes like Danskos to work on concrete floor.
- e. Tertiary risk factors:
  - 1) Weak intrinsic muscles of the feet com.
- f. Preventions:
  - 1) Perform toe gripping and toe walking activities to bring these muscles endurance up to speed with the rest of your program.

## 2. Patellar Tendonitis

- a. Primary risk factors:
  - 1) Rapid increase in intensity.
  - 2) Downhill running, or pseudo-downhill running (over striding).
- b. Preventions:
  - 1) Build volume before intensity before initiating downhill running.
  - 2) Lean forward on the flats and downhill running.
  - 3) Land with your foot level with the ground rather than leaning backwards with toes up trying to decelerate one self.
  - 4) Oscillate side to side on steep downhill running to disperse deceleration forces into your IT bands rather than patellar tendons.
  - 5) When looking down at your patella (kneecap) as you run, your sternum should be on top of your kneecaps and your kneecaps on top of your second toe. Poor



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alignment from either flat feet causing toe out or weak groin adductors or hip abductors cause excessive side to side tension on patellar tendon.

- 6) Increase back swing of upper extremity opposite of the symptomatic lower extremity to aid in forward propulsion and decrease deceleration forces.
- c. Secondary risk factors:
  - 1) Inflammation exceeds healing rate causing patella to become distended with fluid.
- d. Preventions:
  - 1) Ice daily with non-moist ice bag directly on patella with compression.

### 3. Iliotibial Band Syndrome

- a. Primary risk factors:
  - 1) Same as patellar tendonitis risk factors.
  - 2) Over supination or high arches, or excessive outward bowing on knees are inherent to ITB.
- b. Preventions:
  - 1) Same treatment approaches as patellar tendonitis except add hip abductor endurance activities on symptomatic side to minimize inherent Trendelenberg gait (hip drop) on side opposite symptoms at heel strike.
  - 2) Running on loose sand and dirt surfaces also surprisingly increase incidence of ITB due to the natural behavior of pausing during heel strike to establish firm surface to push off.

### 4. Hamstring Strains

- a. Primary risk factors:
  - 1) Over striding (not leaning forward at heel strike).
  - 2) Performing speed work on hamstrings that are already suffering from delayed-onset muscle soreness/hypertonic
  - 3) Weak adductor and gluteus maximus causing hamstring overemphasis.
- b. Preventions:
  - 1) Fix or identify over striding.
  - 2) Never do speed work on hypertonic hamstrings.
  - 3) Limit hamstring weight training the day before a track workout.
  - 4) Ice hamstrings after every workout to decrease natural hamstring tone.
  - 5) Perform adductor/gluteus maximus facilitation activities as demonstrated by a sports medicine professional.

### 5. Trochanteric Bursitis/Gluteus Medius Tendonitis

- a. Primary risk factors:
  - 1) Rapid increase in intensity and steep climbing in preseason before tendon thickness is adequate.



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- 2) Over striding.
- 3) Excessive hip drop opposite symptomatic hip at heel strike.
- 4) Poor hip abductor group endurance.

b. **Preventions:**

- 1) Volume before intensity i.e. Stairmaster walking before skyrocketing up Green Mountain, carrying 20lb child in backpack on level surfaces before attempting straight up a mountain.
- 2) Shorten stride and lean forward.
- 3) Increase opposite arm back swing to increase forward propulsion without overloading same side abductors.
- 4) Hip abductor/side-kicking endurance program.
- 5) Ice hips daily before they become symptomatic.

### 6. Shin Splints

a. **Primary risk factors:**

- 1) Intensity before volume.
- 2) Over striding/not leaning forward/landing with a level foot at heel strike.
- 3) Poor endurance of anterior tibialis muscles.
- 4) Overly rigid or flexible shoes
- 5) Running in the same direction every day around a track.
- 6) Running downhill with unusual weight on your back.

b. **Preventions:**

- 1) Perform volume before intensity.
- 2) Obtain a video gait analysis (VGA) to identify/correct over striding.
- 3) Perform anterior tibialis endurance exercises.
- 4) Obtain a shoe prescription and switch shoes every 300 miles.
- 5) Alternate directions around a track.
- 6) Ice daily with compression to decrease compartmental pressure at the shins.

### 7. Stress Fractures in the Feet

a. **Primary risk factors:**

- 1) Relative excess volume combined with premature intensity.
- 2) Hyper flexible training shoes.
- 3) Toe running/landing on mid to forefoot during heel strike.
- 4) Rapid increase in downhill running.
- 5) Rapid transition from trail running to pavement running.

b. **Preventions:**

- 1) Build volume before intensity and listen to your body.
- 2) Know weekly mileage threshold at which you experience stress phenomena.
- 3) Train in a moderate weight training shoe and race with a flexible flat if needed.



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- 4) If you come from a booted sport background like hockey and are new to distance running, take a year to build up to the marathon distance as you likely don't have the bone density yet necessary to train marathon distance on hard pavement.