

## Running Injuries

\*Running continues to be the sport of choice for many because of its convenience, health benefits, and economical nature. The potential for running injuries, however, is something that needs to be taken into serious consideration as reported annual injury rates have soared as high as 65% over the past few years.

5 most common injury Types: Patella-femoral pain syndrome, IT band syndrome, plantar fasciitis, tibial stress syndrome (shin splints), Achilles tendinitis

If you DO acquire a running injury, here are some basic identification points:

Pain/symptoms during or immediately after a run; Pain/symptoms within the approximate time span of beginning a running program; Pain/symptoms severe enough to force you to stop running, alter your running stride, or significantly reduce your mileage

### Injury Reasons

1. Overtraining/Poor Training Techniques; 2. Inadequate recovery mechanisms; 3. Anatomical/Hereditary

You can't change the structure of your feet (flat, high-arched, wide, high instep, etc.), but you can change the shoes you decide to put on them...

3 categories of running shoes for 3 types of runners:

**Motion control shoes** (for the overpronator) – emphasizes medial support by having dual density midsoles, roll bars or foot bridges; **Stability shoes** (for the neutral pronator); **Cushioning shoes** (for the supinator) – emphasizes enhanced shock dispersion in its midsole and/or outsole design. Many shoe companies add materials to the heel and forefoot areas to enhance the cushioning properties of the shoe (e.g. air, gel, etc.) The "Shoe Advisor": <http://www.runnersworld.com/shoe-finder/shoe-advisor>

- The technologies that make a shoe a cushioned, stability or motion control shoe are mainly to be found in the **midsole** unit of the shoe



Does corrective footwear actually make a significant difference in terms of performance and injury prevention? Let's look at the evidence...

Studies have indicated the following:



Motion control shoes – no pronation alteration/reduction, no change in shock dispersion, no change in kinematics of the tibia or calcaneus bones.

Certain shoe types (e.g. Asics Gel-Nimbus & Brooks Glycerin) *do* reduce plantar pressure. But *where* they reduce pressure is highly variable, meaning that pressure reduction varies between forefoot/rearfoot/etc. This led to the conclusion that there should be a shift in prescribing shoes to one based on where plantar pressure is highest for that individual person. This would require improved running shoe (and inserts/orthotic) customization.

Running either barefoot or in Vibram Five Fingers has resulted in reduced impact forces, shorter ground contact and stride length, but increased stride frequency when compared to running with shoes. There has been an associated increase in Achilles Tendon injuries.

\*Across studies, shorter stride length and increased stride frequency seems to be the ideal recipe for improved running economy.

### **B. Orthotics**

Problem area: What about runners who have extremely high-arched feet (pes cavus)? Should it be suggested that orthotics are just as ineffective as supportive footwear? In order to not get hurt, should a runner with pes cavus very gradually build up volume using vibrams/barefoot/etc.? Or should individuals with such anatomy avoid barefoot running at all costs? \*Strong evidence exists for efficacy of orthotics in altering kinematics when compared to prefabricated insoles.

Transitioning to Minimalist/Barefoot Running: <http://www.runnersworld.com/injury-prevention-recovery/how-can-i-train-run-minimalist-shoes>

**Rules of good barefoot running form:** 1. Don't land too hard on your heel, nor too far up on your forefoot. 2. Don't overstride, as to land your foot directly under center of mass. 3. Maintain upright upper body posture – don't lean too much at the hips 4. Maintain a high cadence – 180 steps/min works well for most runners (a slow cadence makes you overstride, AND it's less efficient). To measure it, you can buy a small metronome for about \$20, or download a metronome app for free on your smartphone. 5. Listen to your feet! Not your iPod... Especially when you're training barefoot on a treadmill, listen for how loud the sound is every time you strike your foot. 6. Relax upper body – there are what we call "passive stabilizers," and if you tense and shrug too much, you defeat the purpose of these stabilizers 7. Stretch

### **Other Preventative Measures**

#### **1. Cross Training and Stabilizer Strengthening for Better Neuromuscular Control:**

If you're in legitimate pain (not just muscle soreness) from your running regimen, stop! Your neuro-pathways are signaling that something you're doing isn't right. Cross training (e.g. cycling, elliptical, swimming) may be necessary in the interim.

#### **2. FITT:**

**A. Frequency** – Slow and steady wins the race! Don't jump immediately from running 1 or 2x/week to 5 or 6x/week.

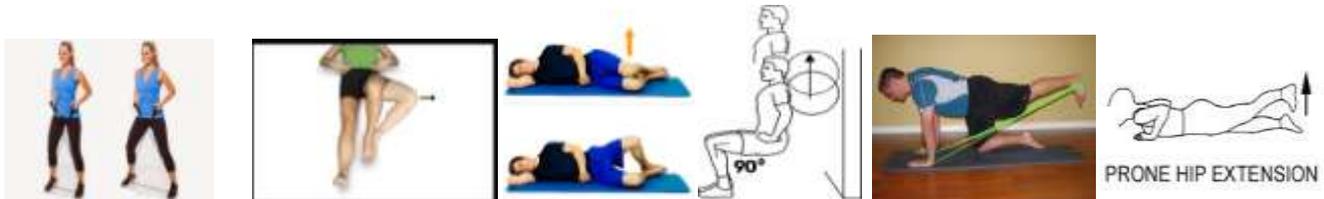
**B. Intensity** – Increase speed gradually... If you normally run a 10-minute mile, don't suddenly start aiming for 7-minute miles.

**C. Time** – If your runs each week are normally 20 to 30-minutes/day and you want to start training for longer races, increase your running time by no more than app. 10 minutes/day each week. Similarly, you should not be upping your mileage any more than 2 additional miles/day over the span of a week.

**D. Type** – If you're accustomed to running on flat surfaces, incorporate hills very gradually. Your hip flexors need time to adjust to the heightened stress that comes with hill workouts.

#### **3. Strength Training**

Core & Hip Girdle Strength – Transverse abdominis and muscles attaching hips to lower extremities



**Drills to Improve Proper Running Form and Technique:** <http://home.trainingpeaks.com/blog/article/drills-for-proper-running-form>

### **Rest Time & Proper Recovery are just as important as your training!**

#### **How to cope with an acute/chronic running injury:**

1. If you cannot take a normal stride (i.e., limping) then do not run – try bike, swim, elliptical, Nordic track

2. RICE – Rest. Ice (3x/day – 20 min. sessions). Compression. Elevation (Elevating the injury site above the heart reduces the flow of blood to the area and reduces the swelling.)

3. Sleep Hygiene – For best results: Go to sleep & wake up at same time every day, no naps, avoid alcohol & limit caffeine (earlier the better), don't use bed for anything other than sleep and sex.