

Injury Prevention in Runners

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“Care at its Best”

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What is injury prevention?



- **Injury prevention** is an effort to prevent or reduce the severity of body injuries caused by external mechanisms, such as trauma or overuse, before they occur.



Running Injuries



66% of runners suffer an injury each year



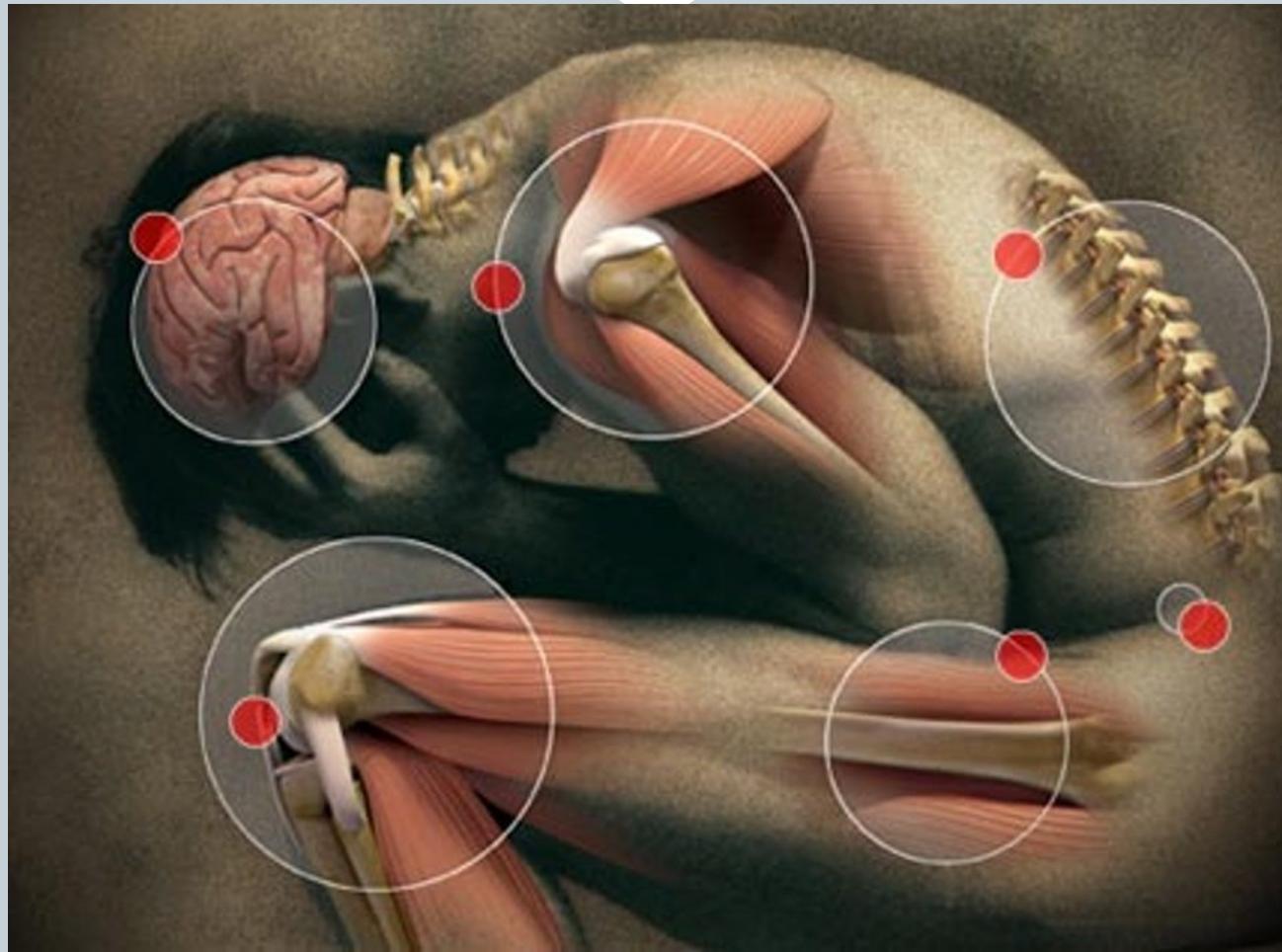
Running Injuries



- Patella Femoral Pain Syndrome (PFPS) 40%
- Anterior Tibialis Tendinitis (Shin Spints) 12%
- Iliotibial Band Syndrome (ITBS) 12%
- Achilles Tendinitis 11%
- Plantar Fasciitis 10%
- Hamstring Strain 7%
- Stress Fracture 6%

*survey completed by runnersworld.com

What do you do to prevent injuries?



Research has given us the answers!

- 
- Being female
 - Being male
 - Being overweight
 - Being underweight
 - Not stretching enough
 - Stretching too much
 - Overpronating
 - Underpronating
 - Drink to little water
 - Drinking too much water
 - Too much training
 - Too little training
 - Being a heel striker
 - Being a toe runner
 - Too much shoe cushioning
 - Too little shoe cushioning
 - Being too old
 - Being too young
 - Running on a treadmill
 - Running on the road

What do we actually know?



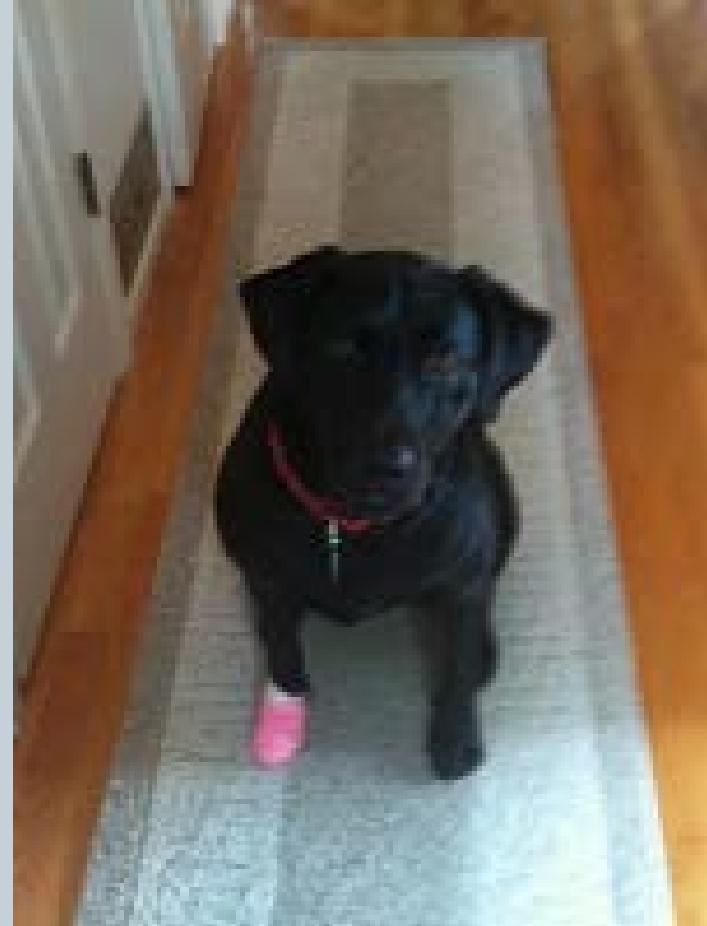
- **Too much too soon**
 - Increasing your distance and effort before the body has had adequate tissue adaptation.
 - Believed to be the cause of 80% of running injuries.
 - Cardio adapts much faster than tissue.



What do we actually know?



- Failure to recognize the warning signs
 - Understand the difference between discomfort and pain.
 - Understand muscle soreness vs. injury signs
 - Understand the importance of rest



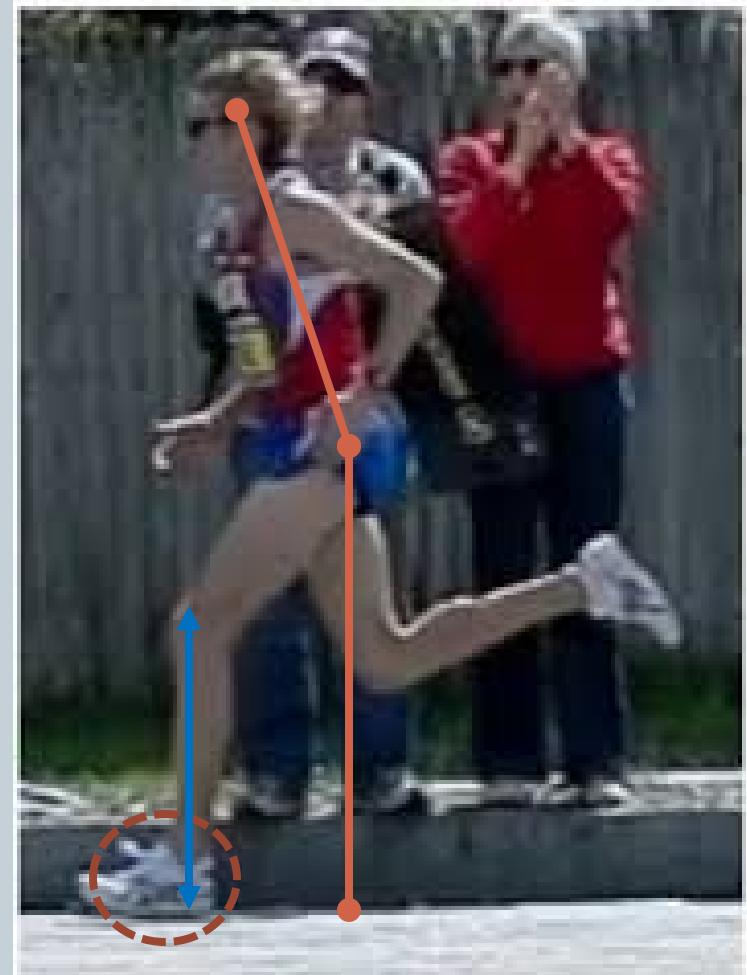
When is pain ok?



- **Type I:** After activity: stretch affected area well, long, slow, gentle stretch, then ice for 10 minutes. Continue to progress program if discomfort appears to be muscle soreness. If joint pain and/or swelling develops, increase rest between exercise sessions and decrease activity level to previous level.
- **Type II:** During activity, at begin then dissipates: maintain same activity level and low intensity until symptoms dissipate.
- **Type III:** During activity, gradually develops and intensifies with activity: decrease intensity of activity, stop and stretch to relief symptoms, stop activity if those do not relief symptoms. Maintain same activity level; if symptoms continue, decrease activity to previous level.
- **Type IV:** At night, keeps you up or wakes you up: Bad, doing too much; total rest until symptom free, decrease activity to previous level and keep intensity low.

Does form matter?

- 8° forward lean.
- Mid-forefoot strike
- Cadence of >180 foot strikes per minute
- Lower leg perpendicular to the ground at foot strike.
- Minimal trunk rotation



Running Analysis



Stability and Mobility



- How do we define “enough”?
- How can we determine if we have “enough”?
- How can we tell if what we are doing is working?



Test 1: Ankle Dorsiflexion Mobility



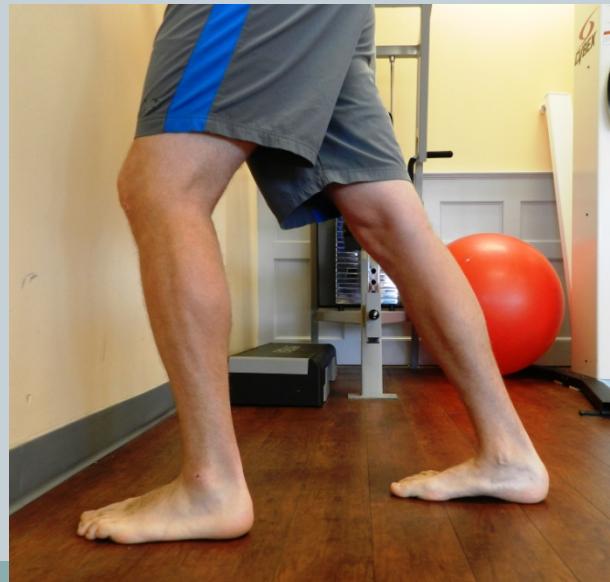
- Sit in a chair with knee and ankle bent at 90 degrees
- Slide your hips forward so that your knee passes over your toes without your heel lifting off the ground.



Test #1: Ankle Dorsiflexion Mobility



Ankle Dorsiflexion	Pass	Fail	Correction
		Pain/tightness in front of ankle	Contact PT
		Pull in back of leg	Calf str. and soft tissue massage



Test #2: Big Toe Extension



- From the same position as test #1 reach down and lift your big toe.
- The toe should be at least 30 degrees from the floor or about $\frac{3}{4}$ inches from the floor to the bottom of your toe.



Test #2: Big Toe Extension



Big Toe Extension	Pass	Fail	Correction
		Pain on top of toe joint	Contact PT
		Lack of motion/mobility	Stretch and soft tissue massage to plantar fascia



Test #3 Hip Extension

- Inside a door jam kneel on one knee. The leg you are kneeling on should be directly in line with your torso and the shin bone of the other leg is vertical with the floor.
- Flatten your back against the door jam. You should not feel any stretching or pulling in your hip.



Test #3 Hip Extension



Hip Extension	Pass	Fail	Correction
		Can not get back flat without feeling a stretch in the front of the hip	Kneeling hip flexor stretch and foam roller for hip mobilization



Test #4: Hamstring

- Lie on your back with one leg on the floor.
- Bend your hip so that you can interlock your fingers behind the other leg.
- Then straighten your leg. Your hip should be at about 70 degrees.

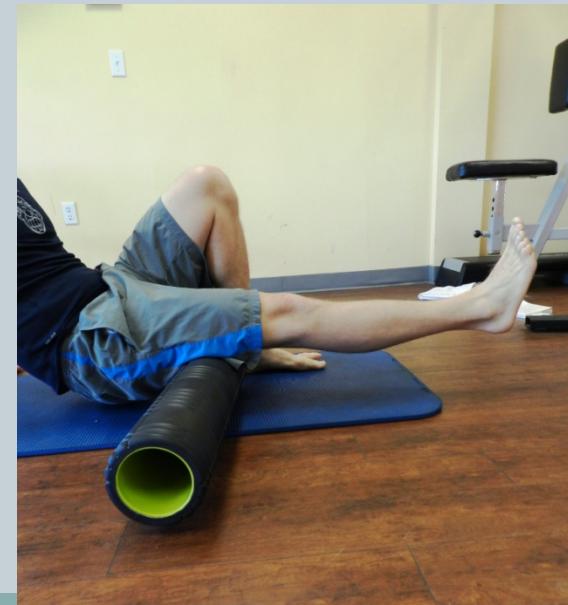


Test #4 Hamstring



Hamstring

	Pass	Fail	Correction
		Pain in leg/foot	Contact PT
		Unable to reach 70 degrees at the hip	Hamstring stretching, soft tissue massage with foam roller



Test #5: Vertical Compression Postural Test

- Stand with your feet at a comfortable width.
- Notice where your weight is focused (heel, balls of feet, midfoot).
- Your weight should feel equally distributed through the forefoot and rearfoot.
- If you have a partner have them press downward on your shoulders.
- Notice does the pressure force you to bend forward, backwards or remain steady.



Test #5: Vertical Compression Postural Test



Vertical Compression Postural Test	Pass	Fail	Correction	Progression
		Increase in low back curve with downward pressure.	Posture correction; Standing on one leg	Standing on 1 leg with eyes closed. Planks, side planks



Test #6: Bilateral Squat

- Have a partner observe or film yourself from the side.
- Place your hands on your hip and squat down.
- Your thighs should be parallel to the floor like you are sitting in a chair. Your lower leg should remain vertical to the floor.



Test #6: Bilateral Squat



Bilateral Squat	Pass	Fail	Correction	Progression
		Knee moves forward of toes when moving into a squat position	Squat re-training/re-education	Squats on unstable surface.



Test #7: Bridge

- Lie on your back with your feet flat on the floor.
- Lift the hips off the ground and hold for 30 seconds.
- Lift one leg off the floor, then return.
- Repeat on the other leg.
- Your pelvis should not shift or drop.



Test #7: Bridge



Bridge	Pass	Fail	Correction	Progression
Bridge		Feel low back pain	Contact PT	
		Low back tightness	Glut strengthening (Donkey kick, bridge with knee to chest)	Single leg dead lift
		Hip drop/rotation	Clamshell, hip hike	Rotational lunge, side planks



Test # 7: Bridge



Test #8: Big Toe Isolation



- Standing press the big toe into the ground while lifting the other toes.
- Inability to isolate the big toe or rolling ankle in and out.



Test #8: Big Toe Isolation



Big Toe Isolation	Pass	Fail	Correction	Progression
		Inability to press big toe down.	Big toe isolation Toe yoga	Single leg toe tap with eyes closed



Test #9: Single Leg Squat

- In a mirror perform a squat on one leg.
- Trunk should remain still and hips level.
- Knee passes inside ankle, does the hip drop or rotate.



Test #9: Single Leg Squat



Single Leg Squat	Pass	Fail	Correction	Progression
		Lose forefoot contact	Balance exercises, toe yoga	Single leg deadlift.
		Trunk Shift	Hip Strengthening (bridging, lunges, donkey kicks)	Single leg deadlift, one leg bridging
		Knee moves inside second toe	Clamshells, hip hike	Single leg deadlift, side-lying hip abduction
		Pelvic drop	Clamshells, hip hike	Side lying hip abduction, rotational lunge

What to do when you have an injury?



Thank you!



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