Fenton Physical Therapy

Long May You Run

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Michael S. O'Hara, P.T., OCS, CSCS

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400 Rounds Drive
Fenton, MI 48430
810-750-1996
www.fentonphysicaltherapy.com

Visit our blog at:
www.mikeoharapt.com

Fenton Fitness & Athletic Center

404 Rounds Drive
Fenton, MI 48430
810-750-0351
www.fentonfitness.com

Video demonstration of the exercises found in this book can be viewed on our youtube channel at:

http://youtu.be/PMoxxC7QizM

LONG MAY YOU RUN

It has been 46 years since Dr. Kenneth Cooper published the book Aerobics and launched the fitness running boom. Despite all of the advances of modern medicine and exercise science, the injury rates among runners remain extremely high. A runnersworld.com poll conducted in 2009 revealed that 66% of respondents reported a running related injury that year. The statistics are solid that a third of the participants at your local 10k fun run will *require medical attention* for a running related injury over the next year. In marathons, the fastest growing demographic are runners in the 60 year and up age bracket. Unfortunately, the older you are the more likely you are to suffer an injury. Is their anything we can do to reduce running related injuries?

What the Running Experts Suggest

- Don't do too much, too soon, too fast.
- Listen to your body and do not run through pain.
- RICE: Rest, Ice, Compression, and Elevation to the sore joint.
- Shorten your stride.
- Include some other form of endurance activity in an effort to crosstrain.
- Get some new shoes.

While most of these are good suggestions, I have found few runners willing to heed these warnings. Most runners ramp up their weekly mileage far too quickly, regularly run through pain, and only use the "I" in the RICE equation. I doubt most runners are able to alter their stride without some long term and complicated training. Crosstraining is probably a good idea before an injury occurs, but once the pain begins, biking, swimming, and using the elliptical often make the injury worse. Running shoe hype is at epidemic levels. Use the shoes that feel good on your feet—not the shoes the salesman says you need.

What We See In the Clinic

Most of the runners that are referred for physical therapy have glaring mobility restrictions, muscle weakness, and limited movement patterns. The repetitive nature of distance running—same plane of motion for thousands of cycles—allows any strength or mobility deficit the chance to create the soft tissue overload that produces pain symptoms. The more miles you travel and the faster you run, the more likely a limitation in stability or mobility will produce a sore hip, painful foot, or aching knee. The deficits we find in runners are remarkably similar from patient to patient. The best injury prevention is a training program that proactively prevents or abolishes the common physical restrictions that produce injuries in runners.

Runner Injury Prevention Training

Distance running is a single leg activity with the foot repeatedly interacting with the ground at fast speeds. High levels of force must be transferred from leg to leg through a stable pelvis. Proper injury prevention training for runners happens in a standing position with a single leg bias and a strong core stabilization demand. All injury prevention exercises should focus on improving neurological coordination, running biomechanics, and efficient deceleration of forces. Sitting on the leg press and leg curl machine will make your muscles stronger, but it is far from optimal for injury prevention.

Listed below are my top six runner injury prevention activities. I chose these drills based on my experience with runners as both fitness clients and patients. Many other exercises would also be appropriate. The exercises selected create a great deal of benefit for the time invested in training and generally can be mastered in just a few sessions.

1. ANTERIOR STEP UPS
2. MINI BAND LATERAL MONSTER WALKS
3. POSTERIOR SLIDES
4. HALF KNEELING LIFTS
5. PHYSIOBALL MOUNTAIN CLIMBERS
6. SLED PUSH

Fitness Precaution

Distance running is an extremely demanding activity that requires good mobility, superior strength levels, and an appropriate body mass. If you are sedentary, maybe a little heavier, and have difficulty performing simple squat and lunge patterns, you should begin your quest for fitness with an activity other than running. Many other exercise modalities can move you toward your fitness goals with a much lower chance of injury. The best place to start is with a proper Functional Movement Screen evaluation provided by a qualified trainer. Get stronger, improve your mobility, lose the excess bodyfat, and only then consider a gradual introduction into distance running. See one of the trainers at Fenton Fitness for further information.

How Much, How Many

Perform this program at least two times a week on non-consecutive days. Start with the first two exercises and then add the next exercise on the list every other training session. You will be gradually increasing the workload by adding exercise three on the second session, exercise four on the fourth session and exercise five on the sixth session. Spend more time on the drills that you find to be the most difficult. If one side of your body can perform an exercise more readily than the other, you must work hard at improving performance on the more limited side.

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Anterior Step Ups

Most of the lower extremity training in the gym occurs with both legs working at the same time. Leg press, leg extensions, squats, and deadlifts all train both lower extremities simultaneously. Running requires balance, proprioception, core stability, and strength while on one leg. One of the best single leg exercises for preventing injuries in runners is step ups.

When you stand on one leg, the team of muscles that keep you upright and tall are collectively called the lateral subsystem. They consist of the groin muscles (muscle on the inside of the thigh), the gluteus medius (outside of the hip), and quadratus lumborum (side of the spine). These muscles must work in a coordinated fashion to keep you upright and stable. The step up exercise places a strong demand on the lateral subsytem.

If you perform this at home, make sure you use a stable step up box. A mirror can be very useful in monitoring your performance. Most people can start with an eight inch household step.

Stand facing the box with one foot completely on the box from heel to toes. When you perform a step up, use your gluteals and hamstrings to push through the foot and drive up into single leg stance. Do not jump up on to the step by leaning over and "popping up" with the rear leg. Bring the rear leg up to 90 degrees hip flexion and hold a single leg stance for two counts. Try to abolish any wobble in your single leg stance position. Lower back down using the stance leg to control the descent. Perform all of the repetitions on one leg and then repeat on the other leg. If you find one leg is significantly weaker, then start with that limb first. Perform two or three sets of eight to ten repetitions.

Master your bodyweight on the eight inch step first, and only then move to a higher box. A good goal is to move up a box height that places the top of the thigh just below parallel when the leg is placed on the box.

You can load the anterior step up many ways. I like using a medicine ball held at chest level as the first progression of loading and then progress to using an Iron Grip plate. Stronger runners can progress to holding a pair of dumbbells.

Mini Band Lateral Monster Walks

Running and most of the exercises performed in the gym emphasize the sagittal (front / back) plane of motion. Squat, lunge, elliptical, and treadmill are all sagittal plane activities. In athletics and life, we must be able to move efficiently in all planes of motion. Our gluteal muscles are the primary producers of lateral (side to side) and rotational movement in the lower extremities. Strong and responsive gluteals keep your knees and lower back safe from injury when you run. A simple exercise to improve gluteal function and move better in the often-neglected frontal plane is a *mini band lateral monster walk*.

You will need a mini resistance band or a lateral resistor—you can order them from performbetter.com. Place a mini band loop around your ankles. Assume an athletic stance with the feet straight ahead, knees bent, and hips flexed. The band should be held taught and you should try to keep the hips and shoulders level throughout the exercise. Your torso and pelvis should not wobble side to side. Move the right foot 12 to 18 inches to the right, and after planting the right foot, follow with the left. Remember to keep some tension on the band. When you have completed the prescribed number of repetitions, rest and then lateral step back to the left.

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Posterior Slides

When you run, everything is related to single leg balance, strength, and power production. Research has found that an asymmetry in lower extremity function (a strong well functioning leg connected to a weak poorly functioning leg) is a strong predictor of future injury. *Posterior slides* are a simple single leg biased exercise that will help identify and train away any performance asymmetry.

Stand with a large size furniture slider under the left foot. You can purchase a pack of four sliders at Bed, Bath and Beyond for $15.00. You may initially need an upper extremity support for assist if your balance is limited. Use a chair, broomstick, or pvc pipe on the left side. Place 90% of your weight over right foot and 10% on the left. Slide the left leg back into a genuflexion position. Push back up with the right leg, keeping the right heel firmly on the ground. The body moves backward with the left leg and the right leg controls the decent. Keep the torso tall and push back up with glutealls and hamstrings of the right leg. Perform five to ten repetitions and switch to the left leg. It is not uncommon to have one side more proficient than the other. Work on training away that asymmetry by performing an extra set of this drill on your weaker side. As your performance improves, drop the balance assist and work on adding resistance in the form of dumbbells, a medicine ball, or kettlebell.

Half Kneeling Diagonal Lifts

Pelvic girdle stability is often limited when athletes must adapt the reciprocal hip position involved in running. When one hip is flexed and the other extended, the core muscles must be able to keep the pelvis free of any excess motion as force is transferred from one limb to the other. The half kneeling diagonal lift will improve pelvic girdle stability.

You will need an Airex pad or an exercise mat under the knee, and some resistance tubing or a cable column for this exercise. Set up in a genuflexion position with the right knee resting on an Airex pad and the left foot in line with the left hip. Align the body so the resistance tubing or a cable column with a rope attachment is set up on the lower right side and slightly behind the body. Stay tall through the torso and pull the tubing or cable upward to chest level and then up and over to the left. Keep the abdominal and gluteal muscles braced so the pelvis does not move. Hold for two counts and then lower with control to the starting position. Perform ten repetitions on each side.

Physioball Mountain Climber

Running involves holding your pelvis, spine, and shoulder girdle in a stable position while moving your hips. You need to develop the isometric strength necessary to stabilize all of these areas for the duration of the running session. The physioball mountain climber is a challenging exercise that will address all of these areas.

You will need a physioball and a mirror is helpful as it permits self monitoring of your position during this exercise. Assume a push up position with the hands on the physioball and the body held in straight line. The feet are placed shoulder width apart and the physioball is positioned directly under the head. Brace the torso and keep the shoulder blades tightly pulled down the back. The neck should be long and eyes focused on the floor—no neck extension. Squeeze the ball with the hands. In a slow and deliberate fashion bend one hip up into flexion. Do not allow the spine to move and try to keep the ball still. Lower the leg back down and then repeat with the other leg. That is one repetition. Perform two sets of ten repetitions.

Sled Push

Running requires efficient “triple extension” of the ankle, knee, and hip while maintaining a stable pelvic girdle and spine. Leg position is asymmetrical and ground reaction forces are transferred from one leg to the other through the pelvis and spine. Sled pushing closely emulates these demands. Sled pushing is all concentric (muscles shortening), and no eccentric (muscles lengthening) so the recovery time after a sled training session is short. You can push the sled and not be so depleted that you are unable to run.

You need a sled and about twenty yards of open ground to push the sled. To perform the sled push, lean well forward and grasp the sled support posts. Push off the ball of the foot and reach the hip into full extension before planting and pushing with the other leg. Keep the abdominal muscles braced and the shoulder blades down the back. Use a load on the sled that you can move at a steady pace. The load is too great if you are moving like a plow horse and too light if you can sprint with the sled. Perform two or three twenty yard pushes.