




The Physical Therapist's Guide to Healthy Running

Move Forward.[™]

Physical Therapy Brings Motion to Life

www.moveforwardpt.com



©2011 by the American Physical Therapy Association. All rights reserved. For more information about this and other APTA publications, contact the American Physical Therapy Association, 1111 North Fairfax Street, Alexandria, VA 22314-1488, 800/999-2782, www.apta.org.

Life on the Run

Why do you run? For some, it's about setting goals or staying fit. Others love being part of the running community and the freedom running can provide. No matter the reason, the rewards are undeniable.

Developing muscle strength and aerobic capacity have benefits in the long term. Most runners live longer than non-runners.¹ According to a 21-year study, runners have longer lifespans and are less likely to develop a disability. What's more, the downsides aren't as bad as previously thought. Many runners think they'll pay for abusing their knees, but studies show runners are no more likely to develop osteoarthritis of the knee than non-runners.² If you understand and maintain proper form, your risk diminishes even further.

Physical therapists are experts in restoring and improving motion in people's lives and can help runners improve performance, prevent injury, and get back to running. And, if an injury does occur then a physical therapist can treat it. Many physical therapists are runners themselves and subscribe to a runner's philosophy: It's about hard work and constant improvement. Just because you have an injury does not mean your running days are over.

The Starting Line

Whether you're returning to running or just beginning, it's important to ease into a routine to allow your body to adapt. Gradually increase distance to establish a base of fitness. After you have developed a base of fitness you can gradually increase your speed and pace over time. Don't set out to win your age group in your first race. This approach will likely lead you to an injury.

As you prepare for a race, listen to your body. Because your muscles are adjusting to the stresses of running, you may need to take a day or two off. It's important to try to hit training program targets, but don't stick so firmly to a program that you ignore warning signs and injure yourself. Increasing your weekly running distance by more than 10 percent from week to week can be unsafe.

Runners in their mid-30s and older should take age into consideration when returning to running or starting a regimen for the first time. Their bodies have changed and they must make adjustments to their training routines to accommodate these changes. Take time to adjust, and build your base mileage before training for a race. Ambitious goals can sometimes make you ignore pain, which can lead to injury.

Special Considerations for New Mothers.

There are also special considerations for new mothers. Women experience physical and hormonal changes during pregnancy, which can make returning to running a challenge. For instance, 25 percent of women experience pelvic pain after childbirth.³ Joint instability, weakened abdominal muscles, or an anterior pelvis tilt can also result in poor form. Physical therapists can help women restore their bodies after giving birth and guide them safely to a return to running.

1. Chakravarty E, Hubert H, Lingala V, Fries J. Reduced disability and mortality among aging runners. *Arch Intern Med.* 2008;168(15):1638-1646.
2. Chakravarty E, Hubert H, Lingala V, Zatarain E, Fries J. Long-distance running and knee osteoarthritis. *Am J Prev Med.* 2008;35(2):133-138.
3. Wu WH, Meijer OG, Uegaki K, Mens JM, van Dieën JH, Wuisman PI, Ostgaard HC. Pregnancy-related pelvic girdle pain (PPP), I: terminology, clinical presentation and prevalence. *Eur Spine J.* 2004;13(7):575-589.

Proper Training and Common Mistakes

Train well, race well. Physical therapist Robert Gillanders, PT, DPT, OCS, subscribes to this philosophy for himself and for the runners he trains. Making purpose and intensity part of training requires knowledge of proper training and form. Consider the following training myths:

Myth 1: Recovery is a break from training.

Recovery time isn't a break from training, it is part of it. Runners, particularly those at the Master's (40+) level, can consider taking recovery time every third week instead of every fourth week during a marathon training program.

Consider using cross training, such as the elliptical or bike, to substitute for recovery runs to give your legs a break. This allows you to rest your legs while remaining on track for a successful race.

Myth 2: Push through the pain.

Runners know how to handle pain. But how do you determine what pain is normal and what is cause for alarm? Muscle soreness that eases as you run can be normal. However, pain you should be concerned about may have one or more of the following characteristics:

- ◆ Pain that does not subside within several hours after running.
- ◆ On a pain scale of 1-10 (10 being worse pain), pain that exceeds 3 while running.
- ◆ The onset of sharp pain.
- ◆ Pain that wakes you up at night.
- ◆ Persistent pain that worsens when you run.
- ◆ Pain that persists in the same area, every time you run.

A physical therapist can help determine the cause of the problem and recommend effective cross training exercises, identify when poor form may be contributing to your pain, and prescribe necessary changes in training to allow the body to repair itself. Read more about dealing with an injury on [page 7](#).

Myth 3: You can zone out on a run.

Running can clear your mind and provide stress relief. However, thinking about your form while running can help you make subtle improvements.

"Listen to how you run," Gillanders advises. "Notice how you strike the ground. Does it sound the same on both sides, or is one foot strike louder? Notice where your foot lands relative to your body. Is it in front of you, or relatively underneath you, which is often less stressful? Recognize that as you fatigue, your form is more likely to be compromised." Usually when a runner's form is compromised mechanical stress increases and injury can soon follow.

Race Day

Race day is exciting, and sometimes nervousness and even nausea can set in. It's not just 3.1 or 13.1 or 26.2 miles ahead of you: It's a new course with unfamiliar curves and a pack of competing runners. Here are some tips for the week of the race that can help you do your best:

Leading Up to the Race

- ◆ Wear your race-day shoes 1 to 2 weeks ahead of time to break them in and avoid blistering. Many runners successfully switch to lighter shoes on race day, but a shoe that changes your running style too much can result in unexpected pain.
- ◆ If you can, survey the course a day or so before the race. Identify turns and hills ahead of time. This will enable you to visualize your effort on race day, and know how to pace yourself based on the terrain.
- ◆ Dodging people and avoiding the ones who are cutting in the first mile of the race can be frustrating and a waste of energy. Be sure you're in the proper timing gate.
- ◆ Even though you're tapering off your training 2 to 3 weeks before the race, it's fine to go for a 30- to 45-minute run to keep your body loose.

Race Day

- ◆ Races are energizing, so many runners get out of the gate too quickly. Watch your splits to make sure your planned 7:30 pace isn't a 6.
- ◆ Be conscious of how you are running. Hills can be especially taxing.
- ◆ Remember that protecting your body is more important than one race. Pay attention to warning signs, such as sharp or unusual pain, and signal for help if you need it. Trying to run "through" pain often leads to compensations that can strain other parts of the body. No limping allowed! Remember that if the pain is too great, it is probably better not to push it. Focus on getting better and picking another target race.

Good luck out there!

Your Body on a Running Regimen

A running regimen often reveals the body's inefficiencies or misalignment. For example, improper foot alignment can cause hip pain, or improper hip alignment can cause knee pain. Physical therapists help runners adjust their running technique, thereby reducing risk of injury and improving race performance. Here are some common injuries, pain points, and form issues runners may experience:



- 1 Female runners are more likely to experience hip pain and should speak with their physical therapist about proper running technique, which may improve hip alignment and control. Imbalances at the hip can cause iliotibial band syndrome, which appears as pain on the outside of the knee.
- 2 Knees are the number one site of injury for runners. In fact, anterior knee injuries make up 20 percent of all runner injuries.⁴
- 3 Patellafemoral syndrome, or runner's knee, is often a result of overstriding. When over striding, the foot lands too far from the body causing the leg to take on unnecessary stress that can injure the knee. Shortening the stride can reduce sharp heel strikes to lessen stress.
- 4 The most common sites of injury are different for runners over age 40. The Achilles tendon and calf are more vulnerable, and runners may experience an increase in soft tissue injuries.
- 5 Feet are complex. Achilles tendinitis, plantar fasciitis and overpronation are all sources of discomfort for many runners. The correct footwear can help in many situations, but this isn't a cure-all. Exercise has been shown to have a beneficial effect on common running injuries, even for the foot.
- 6 Stress fractures are common in runners under age 30. They are often the cause of pain in the second metatarsal, the longest bone in the foot that stems out to the second toe. A University of Delaware study⁵ conducted by physical therapist Irene Davis, PT, PhD, found that runners who were cued to "run softly" reduced force to their legs by 30 to 50 percent, greatly reducing the likelihood of a stress fracture.

Does any of this sound familiar? Consider seeing a physical therapist to evaluate your functional mobility and movement patterns before you experience an injury. A physical therapist can help you recover from most running injuries, and learn how to continue to safely train. A physical therapist can help you become a stronger and smarter runner, which in the long term can help you prevent injury.

4. Taunton JE, Ryan MB, Clement DB, McKenzie DC, Lloyd-Smith DR, Zumbo BD. A prospective study of running injuries: the Vancouver Sun Run 'In Training' clinics. *Br J Sports Med.* 2003;37:239-44.

5. Crowell HP, Milner CE, Hamill J, Davis, I. Reducing impact loading during running with the use of real-time visual feedback. *J Orthop Sports Phys Ther.* 2010;40(4):206-213, Epub 12 March 2010.

Strategies for Preventing Injury

Proper form can prevent injury and improve your performance. According to physical therapist Bryan Heiderscheit, PT, PhD, increasing your body's strength may improve your form and control, which can improve your movement patterns and keep you running without injury. Every runner, beginner or advanced, should take these injury-prevention strategies into account:

Start Right

A report from the Centers for Disease Control and Prevention indicates stretching before exercise does not reduce the risk of injury.⁶ Instead, try warming up with a brisk walk or running drills, and then begin the more rigorous parts of your workout as your muscles begin to feel activated.

If you're just starting a running regimen, your routine should include stretching after running. If you've already been stretching before running, however, don't choose race day to switch. Stick with your old routine for the race and gradually shift over between races.

Identify Weakness

"All runners have inefficiencies in their form," said Heiderscheit. "They may be subtle, but finding them uncovers opportunities to make the body stronger and more tolerant of rigorous training."

Physical therapists identify these weak points through a gait analysis. By filming you running on a treadmill and examining your alignment with advanced software, they can see where you need to strengthen muscles, adjust form, improve your shoe wear, or reduce impact in order to become a more efficient runner. When runners can see a knee drift inward, they can visualize the correction and activate muscles to offset poor form.

There are a few areas any non-injured runner can target to run more efficiently. Endurance runners may have underdeveloped hamstrings, so targeting the hamstrings with strengthening exercises may help. In addition, a single-leg balance or single-leg squat exercise is a low impact exercise that pushes the body to build strength, balance, and coordination in the muscle groups most used while running.

Beginner Strategies

Starting a new running regimen? Go for it! But be careful because novice runners will have to adjust to the impact on the joints. A beginner shouldn't start with 5 to 7 runs each week. Instead, replace several of these runs with biking, swimming, or time on the elliptical. Each of these activities builds cardiovascular endurance and strength without stressing the joints too much too soon.

Big-Picture Training

Running shouldn't be the end of your exercise regimen. Strength training can improve overall strength and ultimately improve your running. Strength in your core and hips, flexibility, and coordination all factor into your performance, so make improving these areas part of training, too.

Whether you devote hours each week to running, or run occasionally to maintain a basic level of fitness, a physical therapist can make sure you do so safely.

6. Thacker SB, Gilchrist J, Stroup DF, Kimsey D. The impact of stretching on sports injury risk: a systematic review of the literature. *Med Sci Sports Exerc.* 2004;36(3):371-8.

The Sole Purpose

Runners know their feet and their shoes.

When choosing a pair of shoes, there are a few things to know, like whether you pronate excessively. Runners should understand that some pronation, which is when the heel angles inward, is perfectly normal. The foot should assume a flexible posture when it hits the ground—but when the foot stays in this pronated or flat position too long it can lead to pain or injury.

Some runners need more support, but others seek lighter, minimalist shoes. How does your form change with lighter shoes and barefoot running? You will likely decrease your stride length, increase your cadence and hit the ground more softly. These effects can also be achieved with a traditional running shoe, if the runner is deliberate and focused on proper technique. If you choose a minimalist shoe, transition gradually. An abrupt change can overwhelm the foot, leading to pain and injury.

Be conscious of the onset of new pain in the foot, even when you aren't switching shoes. Stress to the foot accumulates in training, causing stress fractures and pain. Stretching the toes and soft tissue massage may provide some relief for plantar fasciitis and Achilles tendinitis. Taping techniques can also shield sensitive tissue and ease stress. A physical therapist can advise you on these strategies to protect your feet and also prescribe exercise to help you heal.



What to Do If You've Been Injured

For many injuries runners experience, a relative break from running can heal the tissue. During this time, inflammation within the tissue will be reduced, which is necessary for the tissue to repair itself. As the tissue repairs, the injury will feel better, but it's important to recognize that until full strength is returned, a runner will be vulnerable to reinjury. Running as soon as pain subsides can result in aggravating the injury or causing a new one.

Exercises help restore the body when it is injured. Every injury is unique so avoid using generic routines available on the Web to address your problems. Instead, consider being evaluated by a physical therapist who can tailor a routine to your specific needs. Think of it as a roadmap to return to your healthy running form. A physical therapist may recommend cross-training to help you maintain your level of fitness. Studies from the University of Toledo indicate that runners training in the pool for 4 weeks experience only minimal fitness loss as compared with their land-running counterparts.⁷ Be open-minded about new ways to exercise.



7. Bushman BA, Flynn MG, Andres FF, Lambert CP, Taylor MS, Braun WA. Effect of 4 weeks of deep water run training on running performance. *Med Sci Sports Exerc.* 1997; 29(5):694-9.

Making the Most of Your Race Day Experience

By Chris Farley, Owner of *Pacers Running Stores*

Whether you're running in your first race or are an experienced runner, planning for race day can be as important to your success as the miles you have invested during training. Too many times I've seen runners put in the hours and miles only to be derailed by race-day logistics, anxiety, or simply not having a race-day strategy. There are several basic steps all runners should take to ensure a successful race.

At least 1 week before your event, practice your race-day routine. Set your alarm to wake up for breakfast as you would the day of your event. Finalize what fuel you will take during the race and at what intervals, and wear your race day clothes and shoes. Shoes should have less than 100 miles on them but shouldn't be fresh from the box either.

Also, do the small but important things to prepare your body for the race. For some, the days leading up to your race will be full of anxiety and excitement, and you'll be particularly wired the night before the race. The week of the race, stay hydrated and bank at least 8 hours of sleep each night. Try to attend the race's expo 2 days before the race to avoid a long day on your feet.

If you're participating in a race in a new city, send your friends and family off to sightsee while you visualize your success. This is a great opportunity to relax and review race-morning logistics. Your nutritional intake the day before the race will impact your performance, so consider protein-rich foods and carbohydrates, and have a banana for dessert.

These steps will help you prepare for race day and enjoy yourself once the gun goes off. Running a distance race has the potential for being a life-changing experience. If well prepared, you'll remember and cherish every moment.

Chris Farley is the owner of Pacers Running Stores, running specialty stores in the Greater Washington DC Metro area. Farley has completed over a dozen marathons and set a personal record of 2 hours 31 minutes.



Receive **\$10** off your purchase of **\$50**
or more at Pacers Running Stores

www.runpacers.com

Valid through November 5, 2011.

Not valid on sale items, online items, race entries, Garmin, or BOB Strollers. Cannot be combined with other discounts or coupons.



Visit www.moveforwardpt.com to learn more about the many ways in which a physical therapist can help you to:

- Significantly improve mobility to perform daily activities
- Provide an alternative to painful and expensive surgery, in many cases
- Manage or eliminate pain without medication and its side effects, in many cases



*Move Forward.*TM

Physical Therapy Brings Motion to Life

www.moveforwardpt.com