

Treadmill Running Rehab

Rehabilitation of an injury can be a lengthy and frustrating process. The treadmill is a useful tool for injured runners to minimize down time and prepare for return to full activity. When utilizing the treadmill properly, the body adjusts to stresses in an appropriate manner facilitating return to optimal functioning.

One of the key elements for preparing the body to return to running is specificity of training. All activities including those for developing strength, flexibility, proprioception and endurance for running, should be specific to the movements and forces produced while running. For example a rowing machine or bike offers much less specificity than a treadmill while treadmill running allows for a smooth transition to outdoor running by being highly specific, yet with less impact forces.

Treadmill Running

When you are ready to re-introduce running to your fitness regime, you should think about using the treadmill as a first step. Treadmills with suspended decks decrease impact forces of running. Treadmills also decrease stress or effort on the lower body through a moving running surface (belt). Many runners who are injured are able to run on a treadmill without symptoms when outdoor running is symptomatic. Another benefit that occurs is running specific muscles will be conditioned preparing the body for eventual return to running.

Running should first be introduced as a means to apply running-specific forces to the body and injured area, rather than for aerobic endurance. Even 5-10 minutes can be beneficial if done appropriately with a warm up. This small amount of running should be accomplished without pain and symptoms. The warm up should consist of 5-10 minutes at a pace that feels very, very easy (level one on a scale of one to ten). During the warm-up, the blood flows to the muscles, improving their flexibility and stability.

Stride Rate & Stride Length

The treadmill allows runners to maintain a specific stride rate and length. Stride rate and length are key factors in running injuries and their prevention. Many running injuries are caused or aggravated by repetitive eccentric action. An eccentric contraction of a muscle involves lengthening of the muscle while it's under tension. Over striding (taking too long of a stride), downhill and faster running, such as speed work or tempo running intensifies eccentric contractions and thus the risk of injury.

To avoid over striding, the stride rate (number of strides per minute) should reach 85-90 strides/minute regardless of the treadmill speed. This may require shorter, faster steps than a runner is accustomed to. A high stride rate encourages a "spinning" motion that is smooth and efficient, which minimizes excessive forces on the injured body. Try to visualize "spinning the legs". Maintaining the legs directly under your torso and pelvis will aid the "spinning" motion. While the high stride rate will benefit the rehab of an injury, it will also develop efficiency in your running.

Depending on the type of injury, many injuries respond positively to inclined treadmill running because it keeps the speed down, lessens the impact forces and builds strength. The amount of incline will vary with the type of injury and individual running biomechanics. Typically, 3-8% is the recommended range. This should NOT be a hill workout! The stride rate should be kept at 85-90 strides/minute. Avoid bending at the waist and instead, lean into the incline with the entire body, and visualize a straight line drawn from foot to head.

Another advantage of the treadmill for running rehabilitation is the ability to precisely control speed. When first returning to running, your speed should be significantly decreased with an emphasis on maintaining a high stride rate. Once you are pain-free at slower speeds, gradually incorporate short intervals of increasing speed as tolerated. Since increasing speed introduces risk of re-injury, be sure to warm up and begin with short efforts. These are not meant to be high intensity intervals, but rather LIGHT pick ups to allow your body to become familiarized with the forces of increased running speed.

Summary

Use the treadmill for running rehab

Specificity of treadmill to simulate outdoor running

The suspended deck and moving belt decrease impact and stress forces on the lower extremities

Ability to vary speed and incline allows for more control of workout

Tips for treadmill rehab

- Warm-up prior to your rehab workout to avoid re-injury
- Begin with small increments of running at low intensity
- The objective should be to introduce running specific muscular loads, rather than an aerobic workout.
- Use cross-training methods (i.e., elliptical trainer or pool running) to obtain your aerobic workout until you are able to return to your normal running program
- Gradually add brief intervals at faster paces
- Vary the incline, depending on the type of injury and gradually adjust as tolerated over time
- Keep stride rate between 85-95 and avoid over striding
- Build up time on the treadmill until you're eventually ready to return to outdoor running.
- For the first few weeks, continue to incorporate some treadmill running while transitioning to outdoor running to minimize risk of re-injury.

Note: These are general guidelines. As mentioned previously be sure to contact a licensed health care provider to determine the phase of rehab of your injury and follow their guidelines for return to running.

Scott Jurek, MA, PT
Prevention Solutions