

The Well Body Group

A GUIDE TO INCREASING RUNNING PERFORMANCE AND PREVENTING INJURIES

Running provides an excellent opportunity for improving health and wellbeing. While running is a great form of exercise, there can be a number of elements to consider to help not only improve performance, but also prevent injuries along the way. In this article we will discuss some tips and ideas to incorporate into your daily routine to help with participating in a safe and effective running plan.

Pre-Run Routine

Some may believe that the act of going for a run begins with tying up your shoes and starting out the door, but this may not be the most beneficial to your body. Ensuring that you are optimally prepared for exercise means putting in place a pre-run ritual or routine that checks off everything you may need to prevent injuries and maximize performance.

✓ **Nutrition:** Running is a highly energy intensive activity which means that your body requires a significant amount of fuel to run well. The main source of energy used during running is carbohydrates. This nutrient is found in foods such as grains, fruits, and starches like as potatoes³. These carbohydrates are stored in the body in your muscles and liver³. Exercise, like running, triggers the breakdown of the stored nutrients so they can then be converted to usable energy. Use this helpful tool from the University of British Columbia to calculate your daily energy needs, adapted from the Government of Canada dietary reference intake: https://gothunderbirds.ca/documents/2017/7/14//Calculating_Energy_Requirements.pdf?id=1487

It is important to consume enough carbohydrates, along with other nutrients, throughout the day so your body is well fueled for your run. Two to three hours beforehand it is recommended to have a full meal with carbohydrates, protein, and a healthy fat⁷. However, in the hour leading up to your activity, a simple snack with easily digestible carbohydrates is recommended⁷. Avoiding foods that are heavy in fat, fiber and protein close to your run will help to limit any digestive discomfort during activity⁷. Instead, try snacks such as bananas, fruit bars, graham crackers, and applesauce. These are simple carbohydrates and are fast to digest for a quick source of energy³. A potential cause of fatigue during running could be a lack of available fuel; this fatigue can hinder performance³. Especially before longer or more intense runs, it is important to schedule time to fit in a carbohydrate snack. Some experimenting is necessary as every person is unique, so it is important to listen to your own body. As you increase training, it is important to also increase the amount you are eating as well³. This will help to improve energy levels during runs and prevent injuries by providing the body with fuel to build stronger muscle and other tissue.

✓ **Hydration:** Especially during warmer weather, proper hydration is important for not only feeling good during running but preventing any negative effects of dehydration. Dehydration occurs when the body is losing more fluid than is being taken in⁵. Loss of fluid occurs through mechanisms such as sweating⁵. As a runner, it is important to take this into account as dehydration can impair muscle function and heart rate. Proper hydration not only affects running performance but also reduces the chance of an injury. It is recommended to drink 500-600 mL of fluid around two hours before running and up to 360 mL in the 30 minutes before your run⁷. These recommendations may need to be increased when considering weather temperature and humidity. Electrolytes are a great way to hydrate before a run as these types of drinks help the body hold onto water for longer, prolonging the onset of dehydration⁵. Consider

electrolyte mixes to help stay hydrated for those hot summer runs. Alternatively, consuming fruit juices that are naturally high in electrolytes such as orange, cherry, and watermelon can be beneficial⁸.

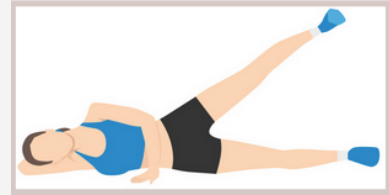
✓ **Activation:** The process of activation as the last step in the pre-run routine may be considered one of the most important for injury prevention. Activation involves doing a small set of exercises before your run to warm up and prepare your body for the activity to come. Activation helps in a number of ways²:

1. Prevents muscle compensations or irregular gait patterns that could lead to injury
2. Increases blood flow to the muscles which can reduce possibility of a muscle strain
3. Strengthens areas of muscle weakness

While each athlete is unique in what activation routine will be most effective for them, there are general exercises that practitioners recommend to prevent common injuries in runners. Activation does not have to take long, set aside 5-10 minutes before each run to complete your routine. No equipment is needed, use your own body weight or a resistance band for an added challenge. The repetitions of each exercise can vary, but generally around 6-10 reps are common practice. Glute bridges are an excellent pre-run activator as this exercise targets your glutes and hamstrings. Side leg raises are a good way to specifically target the gluteus medius. For the muscles of the calf, try heel raises while standing with your heel off a ledge or stair. To target the shin, doing toe raises while leaning against a wall will target these muscles.



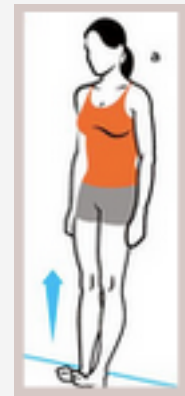
**Glute
Bridge**



**Leg
Raise**



**Heel
Raise**



**Toe
Raise**

Post-Run Routine

Now that the hard part is over, it is time to take care of your body so you can do it all again and be well prepared for race day. A post-run routine will look similar to the pre-run routine but with more emphasis on recovery.

✓ **Nutrition:** Remember to refuel your body after an energy intensive activity like running. Since carbohydrates stored in the body are used during running, it is important to replenish these carbohydrate stores so that the body has enough energy to help with recovery, preparing you for your next run⁷. In addition to foods with carbohydrates, protein is another important nutrient to have post run. This will help to build and strengthen muscles to not only optimize performance but also prevent injuries. Consuming 15-30 g of protein 30 to 60 minutes after your run will have the most positive effect on recovery⁷.

✓ **Hydration:** As another element of your post-run routine, re-hydrating 30 to 60 minutes after a run is important to help with recovery and prevent dehydration⁷. As mentioned before, adding electrolytes to your drink can help to re-hydrate the body faster and allow the body to hold onto fluid for longer.

✓ **Rolling and Stretching:** Both techniques have their own benefits in improving recovery and injury prevention. Consistency is key when looking to see the benefits of stretching and rolling after a run.

Rolling: Uses equipment such as a hand-held roller, foam roller, or lacrosse/tennis ball. The target muscle is placed on top of the roller and pressure is applied while moving along the length of the muscle fibers⁹. Foam rollers are relatively inexpensive ranging from \$15 to \$30 and are a great piece of recovery equipment to own. It is recommended to start at the lower part of the body and work upwards⁹. Foam rolling can help to increase blood flow to the muscles as well as helping to relieve tight muscles⁹. This technique may be helpful if you are experiencing sore or stiff muscles and will help to relieve tension for better recovery. An example routine is provided below:

Begin by resting the back of the ankle over the foam roller so it is perpendicular to the leg. With hands placed behind the body for support, lift the body and roll up to the back of the knee slowly. Complete 8-10 passes on each calf. Move the foam roller to behind the knee, using the same technique, roll up to the bottom of the buttocks to target the hamstrings. Complete 8-10 passes for both legs. Switch your body position and lie so your quadricep is over top of the foam roller with it positioned at the top of the knee. Extend the other leg out to the side for support. Roll up to the top of the hip and back down again for the required number of passes. Next, to target the gluteus muscles, sit on the foam roller and cross one ankle over the other knee. Shift your body weight to the side of the leg that is crossed, roll up and down along the glute muscles. Check out this helpful video for a visual demonstration: <https://www.youtube.com/watch?v=Lk13KFV00UA>

Stretching: If you are looking to specifically increase range of motion then stretching will be beneficial. Increasing the range of motion of muscles and joints will help to prevent muscle strains⁴. To see long term effects of stretching, begin by holding each stretch for at least 1 minute once a day and progressively increase your hold time to become between 4-8 minutes⁴. It is important to remember that you should not stretch the targeted muscle beyond your limit as this could risk injury⁴. Common stretches for runners include a leg raise to target the hamstrings, a lunge with the back heel on the ground to target the calves, standing quadriceps stretch to target the quads, and the Figure 4 stretch to target the gluteus muscles.



Leg Raise

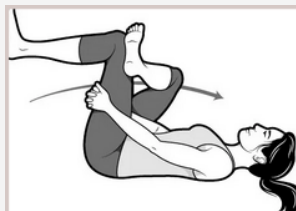
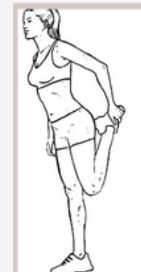


Figure 4



Lunge Stretch

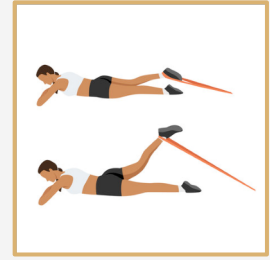


Quad Stretch

Strength Training

Strength training or resistance training is often overlooked by runners when creating a training plan. However, strength exercises are incredibly beneficial for specifically targeting at-risk muscles and improving performance. Running is a high impact and very repetitive motion, meaning many of the same muscles are stressed repeatedly while others are not as well targeted². As a result, some muscles become overworked while others are weak, risking injury. Strength training can be a great tool to prevent both overuse and overcompensation. Typical trouble areas for running athletes include the hamstrings, glutes, calves/shins, and abductors¹. Outlined are a few techniques to incorporate into your routine.

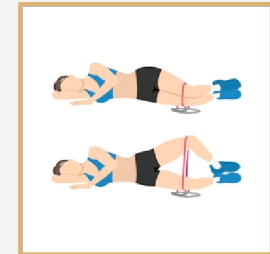
1. Beginning with the hamstrings, exercises such as glute bridges and hamstring curls can help strengthen this muscle group. Hamstring strains are a common injury in runners and unfortunately are hard to completely heal¹. These types of exercises may help to prevent such injuries. Glute bridges may be modified to a single leg to target one side of the body more. As well, adding a resistance band around the knees and/or a weight on top of the abdomen can add additional challenge. Hamstring curls can be done using a machine or simply looping a resistance band around the leg of a table with the other end looped around the ankle. Ensure the motion is slow and controlled while bringing your heel towards the buttocks.



2. The gluteal muscles are another common weak area for runners. This may result in injuries such as knee pain, low back pain, and problems with the IT band (Iliotibial Band)¹. The glute bridge can be used to strengthen the glute muscles as well as the split squat. To add an additional challenge, try holding a weight or heavy object. As well, by placing the rear foot on an elevated surface, this will also increase the difficulty of the exercise as stability and balance are challenged.



3. The abductor muscles run along the outer side of the leg. These muscles can be at risk for injuries as runners rarely move in the side-to-side motion, due to running being a predominantly forward movement¹. As a result, other muscles may become overworked due to abductor weakness. Exercises such as the clamshell and side leg raise can help to strengthen these muscles. These exercises can be increased in difficulty by adding a resistance band around the knees as well as going into a side plank position.



4. Exercise to help strengthen the shin and calves include toe curls. This is done by placing a towel on the ground and repeatedly curling it by scrunching the toes. Another exercise, the heel raise, can be done on a stair or other raised ledge, lifting the heel up into a calf raise. Try this exercise using a bent knee to target the muscles in a more specific running motion.



When to Seek Treatment

Treatment can have a significant impact on not only injury prevention but also running performance. There are many treatment options that may be beneficial that can be tailored to suit each individual's needs.

- **Massage therapy** is beneficial in helping to relieve muscle soreness and tight joints. Runners may seek out massage therapy after a hard run that has left their muscles feeling sore. Massage therapists are able to help reduce muscle tightness and relieve muscle knots by applying manual pressure to the body⁶.
- **Laser therapy** is a treatment technique that can help to reduce inflammation and promote tissue healing⁶. Injuries that caused damage to muscle, tendons, and/or ligaments may be benefited from the use of laser therapy. Use laser therapy in conjunction with a massage to receive even more relief from treatment.

- **Osteopath** treatments help to not only treat injuries but prevent them. Osteopaths focus on the injury and on the area around as well, being able to address its root cause⁶. Seeing an osteopath for regular maintenance may help to reduce injury risk by ensuring that the body is functioning properly without imbalances that could cause pain down the line⁶.
- **Acupuncture** is another treatment technique that runners may find to be beneficial. Acupuncture can increase blood flow and circulation in the body, which may be able to speed up recovery to injured muscles⁶. As well, acupuncture has been found to reduce stress and promote better sleep quality and relaxation⁶. These are both important factors to consider as both sleep and stress levels can have an impact on running performance.
- **Counselling may be able to assist with** feelings of anxiety or other forms of mental strain that can have a physical impact on performance. Seeing a counselor to help work through these emotions may be beneficial to improve your overall mental state and have an impact on your running performance.

Conclusion

Running is a great way to improve your health and wellbeing. Running can have a positive impact on both your physical and mental health, making it a great form of exercise to get involved in. It is important to take care of your body so that you can participate in this activity while also improving performance in a safe and healthy way. Happy jogging!

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