SHEFFIELD THERAPY CENTRE GUIDE FOR RUNNERS

The tips below are designed as a general guide to help you get the most from your training.

Warm-up

The aim of the warm up is for the cardiovascular (heart and blood vessels), respiratory (lungs) and neuromuscular (nerves and muscles) systems to be put in a state of readiness for the run. To reach this aim, you should meet three main objectives. These are to raise the pulse rate, mobilise major joints and raise the body temperature.
By warming up, a number of things happen to the body. Each in its own right prepares the body against injury, but also aids in a better performance overall.

Core temperature rises during the warm up and with this comes an expansion in blood vessel diameter. This allows more oxygen to the tissues and muscles therefore allowing you to create more energy and last longer when running. Muscle temperature also increases giving the muscles a more elastic consistency, lessening the chance of tearing the muscle fibres and also allowing a greater range of motion around joints.

Increased blood flow brings with it a number of benefits, one such includes increasing the amount of fuel available to the working muscles. This will aid performance again. Smoother contractions in the muscles allow greater power to be produced and due to the fact that more oxygen is readily available in the muscles there is a decrease of lactic acid build up in the initial stages of exercise. Because lactic acid causes the muscles to fatigue quickly, this response in the warm up will again aid a longer lasting performance.

Three final benefits of performing a full warm up include an increase in the ability of the nervous system to stimulate the muscles, the heart can cope better with strenuous exercise and the joints and connective tissue become lubricated and stretched, again reducing the risk of injury.

3 exercises in a running warm-up

Pulse Raiser

This involves using the large muscle of the legs to raise pulse rate gradually. The length of time it takes will be dependent upon individual and environmental factors but a good guide is to make sure it lasts between 5mins – 20mins. The warm up should be gradual and progressive in intensity. The onset of sweating is a good indication that warm-up has been achieved. Initially use slower than session pace; gradually building to session pace. At the end of the warm-up the heart rate should be close to the main run heart rate.

Mobility

The warm up should ensure that the joints can move through their full range of motion before the main running session. Again a small range of motion progressing to large range of motion for all major joints should be followed. This aids in correct technique, aids performance and reduces risk of injury. So if you were going to run, your stride length should start short at the beginning and gradually increase to longer strides as you warm up. If you do the above correctly, you will find that you will naturally gradually increase your pace and stride length as you warm up without even thinking about it.

Stretching

The stretching should be done after the above sections of the warm up. There is still debate as to whether or not you should stretch before running. As a rule of thumb use dynamic stretching first and if you still feel areas of tightness, use static stretching to relieve specific muscle tightness.

Dynamic stretching (stretching whilst moving) is beneficial for maintaining heart rate whilst stretching and also stretches the muscles in the range of motion they are to be used in the main activity. An example of this would be to perform leg swings from the hip in a kicking motion, very controlled and short to start with, increasing in height naturally without any forcing the height at all. There should be no pain or discomfort when you perform dynamic stretching.

Static stretching (no movement occurs) is beneficial for reliving tight muscles therefore correcting muscle alignment and posture; therefore reducing the risk of injury and increasing performance.

Cool Down

The aim of the cool down is for the cardiovascular (heart and blood vessels), respiratory (lungs) and neuromuscular (nerves and muscles) systems to be returned to their near resting state. To achieve this aim you must perform movements that allow lowering of the pulse rate to pre exercise levels, return of blood from the muscles to the circulation and lengthening of the muscles to aid flexibility.

The way you should meet these above objectives is to reverse the intensity and range of motion at the joints that you did in the warm-up. Light rhythmical large muscle group activity should be performed for a minimum of 5mins to 20mins. The intensity should progress from that of the main session level to very light activity ensuring this decrease is steady and deliberate. For example after running, pace should gradually decrease and stride length gradually shorten accordingly.

As with the warm – up, there are many physiological benefits to cooling down after exercise. This includes the prevention of blood pooling in the muscles – especially the legs and therefore prevent nausea and dizziness due to lack of oxygen to the vital organs – in extreme cases this can also prevent strokes and heart attacks! The cool down will help disperse any lactic acid that has been produced in the main session and aid in the maintenance of muscle elasticity which will also improve flexibility as it returns the muscle fibres to resting length.

Finally the cool down also aids mental relaxation after running and helps recovery for the next day. This is where you should get the feel good factor that comes with running.

Stretching during the cool down

All muscle groups used in the session should undergo static stretching to return the muscles to their original length.

Maintenance stretches

For muscles that do not need an increase in flexibility stretches should be held for 10 – 15 seconds.

Developmental stretches

For muscles that need attention to flexibility issues stretches should be held for 30+ seconds progressively increasing the range of stretch every 8 – 10 seconds until a near maximal stretch has been found. There should never be any pain felt when stretching, if there is, ease back and make the stretch more progressive.

Importance of Good Posture

Posture and core strength (deep abdominal and spinal muscle strength) are two factors that will limit the chances of injury. Human bodies are designed to work as a functional unit, meaning that the muscles and other systems of the body work together, not in isolation to keep the body in motion. If the core strength of an individual is weak, meaning that the very deep layers of muscles underneath the large major muscles that we can see, the chance of injury increases as the body has a weak foundation to work from. This will place extra stress on our larger muscles and joints to take up the responsibility of absorbing the stress placed on the body. Lower back pain can increase through the stress put on certain muscles that have to compensate for the small muscles underneath that can't cope with the demands.

Sedentary living and incorrect training lead to neglect of the deep muscles. If they are not used, such as when your body is being supported by a chair, our natural supportive muscles will switch off through lack of use. If this happens “we are only as strong as our weakest link” and thus injury is a likely outcome. Correcting these problems first, or at least integrating it into a current programme will help the body to function how it was supposed to do, increasing performance whilst limiting injury. It will also be surprising how easy everyday tasks become.

Incorrect posture places some muscles in a shortened position and some muscles in a lengthened position. Each situation will cause the muscle to be weak and cause pain somewhere in the body. To give an example, take an office worker. All day they spend time sitting at their desk, knees and hips constantly in a flexed position. This will over time cause the muscles at the back of the thigh and in front of the hips to shorten and pull the pelvis into unnatural positions when you stand. Because this posture is adopted all day, when you get up to walk or run your pelvis will still be in the unnatural position. This can place strain on the lower back and legs. Trying to exercise with this posture can lead to aches, pains and injury.

It is also important to understand that an imbalance in posture in the upper body, will also have a knock on effect in the lower body as a chain reaction of events occurs to try to keep the body upright. Over time this causes injury and pain over all areas of the body. A way to make sure this doesn’t happen is to make sure you adopt good posture at all times of the day and stretch regularly, not just after running, to keep muscles at their optimal length. So the key message here is that when running the key to success is to pay attention to detail.

Start with the basics and work up from there. You will get results quicker and safer as you are working with your body’s natural alignment rather than against it.

Recovery and Nutrition

It is when you rest that the body is able to play catch up and adapt to what you have just done to it. This is why any hard session you do should be followed by a lighter session or a complete day off. For the body to adapt it needs quality nutrients to help with the rebuilding and changing process and therefore it is vitally important that this is considered whatever the goal of the exercise program including fat loss. You should always give your body EVERY essential nutrient it needs DAILY to keep feeling great and boost energy levels.

If the body doesn’t get sufficient rest it never has time to adapt to what you are doing to it and this can lead to overuse injuries or chronic fatigue. Tiredness can also be a factor in getting injured towards the end of a run due to lack of ability to generate muscle force, mental tiredness therefore lack of concentration and also poor movements that place extra stress on the body.

It may be worth remembering that when you exercise you are less fit at the end of the session than the beginning due to tiredness and stress placed on the body. Whilst resting the body rebuilds and gives you a little more fitness so that it can cope next time with the same intensity. If the recovery time is too short, you are placing a very high demand on the body and improvements may not be seen and injury can occur. If you leave it too long a recovery before you challenge the body again than this can also hinder improvements as the body doesn’t adapt because it sees each session as a one off. This is important to remember so that optimal improvements are made and you stay safe.

Simple nutrition for running (A general guide)

Eating correctly for running has a massive influence on reaching your goals. Whether they are weight management, race specific or general health, the timing of your food and drink intake before, during and after a run will need to be planned into your day.

If you feel tired or "heavy" during your run the chances are that you are partially dehydrated or "running on empty" both of which have a detrimental effect on your performance and can potentially lead to injury through fatigue. What and when you eat will make a big difference to your energy and performance. We are all unique and have varying metabolisms so the key is listening to your own body as to when and what you should eat and use the information below as a guide.

Before running

Before a run you should have a main meal 2-4 hours before. This should consist moderately high in carbohydrate to fuel the run. If you eat too far away from training you'll feel tired and lethargic. The same goes to eating a meal too soon to a run. To keep blood sugar levels optimal to fuel your run eat a snack such as an apple 1 hour before the session. Be careful what this is and when you have it, as if it is a high sugar food it will cause an insulin spike and may actually decrease blood sugar levels. Eating a bit of protein and fat with each meal avoids this.

The body is around 70% water which shows why it is such an important part of nutrition. Especially when you can lose around 1.5 litres of water a day just through metabolism. Drinking water steadily (to avoid overloading the kidneys and causing excessive urination and elimination of vital minerals!) throughout the day avoids dehydration. The complications of dehydration include:

- Reduced stamina and strength
- Increased thickness of blood meaning the heart has to beat faster at lower workloads creating fatigue and poor performance
- Headaches and muscle cramps
- Nausea
- Confusion
- Loss of concentration
- Increased appetite

During running

Continue to drink water to top up fluid stores that are lost in the process of running. If you weigh yourself before and after training, the difference is actually the amount of water you have lost and not the amount of body fat.

After running

After your run you have a 20-30minute window where you will be able to refill your stored carbohydrate levels at an increased rate. This will ensure you do not become extremely hungry later and either over eat or burn calorie consuming muscle. This is where it would be good to eat a high sugar (make sure it's healthy though!) snack such as a banana.

1 – 2 hours after training should consist of a main meal to keep the chances of muscle wastage at a minimum. This should consist or a good amount of carbohydrates, protein and healthy fats. Continue to drink water to offset dehydration. A key to recovery is to make sure you eat/drink foods high in antioxidants. Free Radicals (molecules that have one or more unpaired electrons in their orbit) are generated during exercise and can cause soreness in the muscles. In serious cases free radicals lead to heart disease and cancer but in the short term they attack cell membranes and cause muscle soreness. Regular exercise enables your body to find its own natural defences against free radicals but by eating foods high in antioxidants you will speed up this process. Antioxidants are found in fruits, vegetables, whole grains and pulses.

Injury

Unfortunately, with all the best preparation and recovery taken into consideration, injuries can still happen.

For the best recovery from an injury, the first 72 hours, are vital. Looking after yourself can make the difference between early recovery, and a chronic niggle that can last months or even years! Individuals of all age groups, of all levels of fitness, and who participate in all levels of physical activity, from everyday functional activities to international athletic competition, should benefit from adhering to the recommendations for management in the immediate (up to 72 hours) post-injury management.

Always Remember P.R.I.C.E. (Protection, Rest, Ice, Compression, Elevation).. (Details modified from the Chartered Society of Physiotherapy Guidelines).

Protection
Protection is needed to protect the injured tissues from undue stress which may disrupt the healing process and delay rather than promote healing. Possibly the best form of protection is to stop playing, and use plaster cast, taping, bandaging, splints, slings, or crutches.

Rest
Rest is required to reduce the metabolic demands of the injured area, avoid increased blood flow, and to avoid placing undue stress on the injured tissues. It is ok for some general activity, but avoid any activity directly involving the injured area, or healing will be compromised. Don't perform any movements which replicate the mechanism of the injury and movements which increase the pain. Although the injured structures should be rested during the early stages of the healing process, it is important to exercise adjacent structures.

Ice
Ice is used to limit the damage caused by the injury, by reducing the temperature of the tissues, limiting bleeding and reducing swelling. It may also reduce pain. Ice is best applied, in crushed form, wrapped in a damp towel for a period of 15-20 minutes every 2 hours. It is a good idea to check the skin condition every 5 minutes.

Compression
Compression is applied to limit the amount of swelling caused by the injury. Compression should be applied from distal areas to proximal. E.g. for a knee injury, start the bandaging below the knee and finish it nearer the thigh. Elastic bandages and tubigrip are most effective. However they should not be worn when laying down or in association with elevation.

Elevation
Elevation of the injured part lowers the pressure in local blood vessels and helps to limit the bleeding. You should aim to elevate the injured part above the level of the heart as much as possible during the first 72 hours following injury and ensure that the elevated part is adequately supported. If a severe injury is suspected, the best course of action is always to go to A&E. Signs of severe injury include:

- Severe pain which does not subside
- Immediate and profuse swelling
- Deformity
- Extreme loss of function
- Guarding, or unusual or false motion
- Noises (grating / cracking) at injury site

Our running guidelines have been kindly provided by James Marvin, Sports and Remedial Therapist based at Sheffield Therapy Centre, home of The Mark Roe Sports Physio Academy. For more details and advise on sports injuries visit www.sheffieldtherapycentre.co.uk or www.markroesportsphysioacademy.co.uk For appointments or to speak to a physiotherapist call 0114 2390022 (Gleadless Branch) or 0114 2336309 (Hillsborough Branch).

HALF MARATHON RUNNING TIPS

With your Half Marathon fast approaching here are a few tips to anyone running their first race. Ideally you should be starting to think about a pre-race planning.

Let's assume your training has gone to plan, now don't forget to make sure you consider these things for your kit bag on the day, or bum bag if you run with one.

- Vaseline can be a runner's best friend. Rubbing Vaseline on anywhere that may chafe will be helpful! Between toes to prevent blisters, between thighs, and don't forget to put on your nipples! It's also good for exposed flesh if the weather is cold and wet. A plaster over the nipples can also help (unless you are hairy!).
- If the weather is warm, sun block will be a big help as would a cap or bandana. On no occasion does a sunburnt head look good!
- Spare shoe laces are worth packing as although they are usually ok, you don't want one to break at the start line.
- If you get your name put on the vest that you will be running in, it will be a nice boost of encouragement when the crowd call your name as you run past.
- Stick to your usual diet and remember to eat carbohydrates the day before. Eating a curry the night before the race if you don't usually eat spicy foods may make your tummy churn a little more than it normally would. If you like it, try some porridge around 4 hours before the race.
- Remember to hydrate the day before, and on race day, drinking sips of water little and often. If you are thirsty, you are already dehydrated and therefore your performance will suffer.
- The day before the race do nothing! Sit back and use as little energy as possible. Let your muscles recharge, and joints recover.
- Don't worry if you don't sleep well the night before if your mind is ticking away with excitement. As long as you sleep well 2 days before the race, your body will perform well.
- So the big day has arrived, don't forget to warm-up and cool down. Don't have a long soak in the bath after. Have a quick shower and apply ice-packs to any aching muscles. It's a good idea to pre-book an appointment with a Chartered Physio for a sports massage if you need to speed recovery.

Most importantly... enjoy it!

For more details and advice on sports injuries visit **www.sheffieldtherapycentre.co.uk** or **www.markroesportsphysioacademy.co.uk** For appointments or to speak to a physiotherapist call 0114 2390022 (Gleadless Branch) or 0114 2336309 (Hillsborough Branch).