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Healthy legs for life: a biker's guide

WHAT EXACTLY ARE THE LONG-TERM EFFECTS OF RIDING, OR EVEN THE EFFECTS OF RIDING LONG DISTANCES WITHOUT STOPPING? *ELLIE LINDSAY*, INDEPENDENT SPECIALIST PRACTITIONER AND ASSOCIATE LECTURER (CRICP) THAMES VALLEY UNIVERSITY, LONDON, HAS SOME IMPORTANT INFORMATION FOR THOSE WHO WANT TO BE ABLE TO THROW THEIR LEG OVER A MOTORCYCLE WELL INTO OLD AGE. HER SIMPLE ADVICE – DON'T STAY IN THE SADDLE FOR TOO LONG!

You don't have to flick through many pages of a magazine like *Rider* before you come across articles highlighting the importance of crash helmets, ear protection, use of one or two-piece leathers, general protective equipment and other issues relating to overall safety.

Take the 2007 April/May edition of *Rider* which addressed the pros and cons of protective clothing. PC Martyn Hillier, BikeSafe Co-ordinator was keen to point out that although the law only demands that you wear a crash helmet that meets set standards,

most riders wisely opt for more in the way of personal protective equipment. But how many motorcyclists think the same way about their health and wellbeing when out riding?

You don't find many articles exploring the anatomical position and the effect on circulation of blood flow while in a sitting position – either as a rider or pillion for long periods.

Cars and motorcycles are accepted as part of our daily life. Yet the human body, which is perfectly designed for walking, running and moving by activating all its parts, must now adapt to being

seated, sometimes for prolonged periods, in a posture that is far from ideal.

Riding a motorcycle whether for short or long periods demands total concentration, but gives ecstatic pleasure that is derived from the relationship between the rider and machine. To achieve the ultimate performance, challenge and gratification from a motorcycle, both the mechanical and human element need to be kept in perfect harmony.

So, it's understandable why the majority of motorcyclists pay particular attention to the maintenance of their bikes, ensuring tyres are at the correct pressure, oil is at the right level and brakes are in sound working order. This includes making sure personal equipment (crash helmet, leathers etc.) are safe and functional. Yet, as the average height increases and modern sports bikes become ever more compact, how often is consideration given to position when riding and the impact this has on circulation.

The media quickly latched on to the risks of deep vein thrombosis (DVT) when flying, but motorcycling is rarely mentioned. However, long periods in a cramped riding position, with legs and hips constrained to restrictive acute angles are equally risky.

In addition, leathers can create local pressure points, especially behind the knees. Of perhaps greater significance than a potential increased risk of DVT, is the cumulative and irreversible damage that can occur to the circulatory system as a result of restricted blood flow, which in the long term may lead to problems such as varicose veins, venous hypertension and leg ulcers.

As a nurse married to a motorcycle rider I was aware that my husband never considered his riding position and the impact it may have had on his lower limbs. Routine stops were never calculated into European trips, yet he spent hours meticulously planning routes, accommodation and so on. Planning regular breaks enables the rider to stretch his legs, which will relieve pressure and tension, and undertake foot and leg exercise.

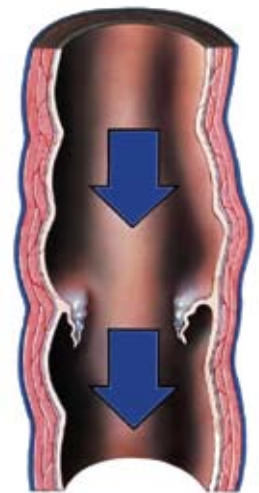
Think of it like having an elastic band around your wrist; you will notice that you may experience tingling of the fingers. When sitting on a bike in your leathers, you may experience pressure particularly behind your knee. Motorcycling is supposed to be fun, not painful, yet it's quite common for experienced motorcyclists to tolerate saddle discomfort believing it's simply an inevitable part of the sport.

To grin and bear it might seem like an acceptable trade-off but the problem is that our skeletal framework is not designed to carry weight in one position for an extended time. Vibration and pressure tends to restrict localised blood flow in the surrounding tissue; this eventually results in pain and sometimes cramp both during and after the trip.

The discomfort could be further exacerbated if there is a build-up of moisture under the leathers or other biking clothing such as waterproofs, which are frequently worn. Moisture means the skin is less able to resist friction. Cotton clothing may help wick away this moisture from the skin but all cotton has seams that can wrinkle causing pressure on the skin and on the subcutaneous tissues, which may impede circulation.

Advances in technology mean that current motorcycles have advanced through state-of-the-art design and engineering, with many machines delivering speed in excess of 150 mph, yet the rider must have the competence and skills to always be vigilant and have quick reflexes in order to assess all potentially dangerous situations that can arise on the road.

On the other hand, riding can have negative physiological effects deriving from incorrect posture. Just as we service and tune our



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vehicles, the way we look after our own body is fundamental too. Our arms allow us to use grip, ensuring control and reaction on the roads and performing manoeuvres as required, and we should compare our body's framework of bones, joints, muscles and our nervous system, to that of the machine.

Blood flow around the body is vital to our health, but the legs play an important role in that process. Pumped by the rhythmic contractions and relaxation of the heart muscle, blood flows around the body via three types of vessel: arteries, capillaries and veins, ensuring oxygen gets into every living cell and carbon dioxide is released from the body. Blood returns from all the farthest corners of the body to the heart by the veins, which have a system of one-way valves to prevent back flow.

Superficial veins in the legs contain blood under a low pressure. The superficial veins are connected to the high-pressure deep veins by so-called perforating veins. The deep vein – called the popliteal – is located behind the knee and is connected to the femoral vein in the upper leg and runs into the groin. The calf muscle is known as the secondary pump, after the primary pump which is the heart. This gently squeezes the deep veins on contraction, for example when walking. Muscular activity pumps blood from the superficial to the deep veins and valves prevent back flow due to gravity when the calf muscles relax. This pumping or ‘milking’ action assists the blood to travel uphill back to the heart.

These valves are quite fragile and when put under pressure can fail to close correctly allowing a back flow of blood into the superficial veins. This floods the veins and raises the internal vein pressure (venous hypertension) and is known to cause problems such as unsightly varicose veins, brown skin staining and chronic venous insufficiency in later life.

Venous hypertension and chronic venous insufficiency result from damage to the valves in the veins of the leg and inadequate functioning of the calf muscle pump (Nelson et al 2000). Under normal circumstances, blood collected from superficial venous capillaries near the skin is directed upward and inward via one-way valves into superficial veins. These in turn drain via perforator veins, which pass through muscle fascia into deeper veins buried under the fascia.

Fascia is the tough silver coloured coating seen on some joints of red meat and is an important structure to enable the calf pump to work. Leakage in a valve causes retrograde flow back down the vein, much like going the wrong way up a one-way street.

Unlike deep veins which are thick-walled and confined by fascia, superficial veins cannot withstand high pressure, and eventually become dilated and tortuous and are seen as varicose, spider and thread veins on the surface of the skin. The failure of one valve puts pressure on its neighbours back down the vein leading to further ‘blowouts’ and subsequent failure of the venous system leading onto the effects of chronic venous hypertension.

Apart from buying a laid back feet-forward cruiser, the effects of a cramped and restricted riding position can be minimised by a few simple precautions. Early intervention can prevent serious damage in later life. Being aware of the importance of regular stops, relieving pressure and taking daily good care of your skin with the use of simple moisturisers on to the lower legs will be simple but an effective way of preventing damage in later life.

Support (compression) socks and stockings are not the ‘Nora Battys’ any longer. Graduated compression hosiery looks and feels like regular men’s socks or women’s hosiery, but from the minute you put them on, you will experience the difference reducing the aching and throbbing sensations from inactive legs. Support socks and stockings are scientifically designed to improve and regulate the flow of blood in the legs and back to the heart. Many people routinely wear these socks simply to relieve tired, aching feet and legs.

Flight socks and light (Class 1) compression hosiery can be bought over the counter and are useful for prevention of problems, but for those riders with any of the signs and symptoms listed a visit to your GP, Leg Club (www.legclub.org) or Practice Nurse is advised for a fuller assessment and perhaps the prescription of firmer compression products. Avoidance of prolonged standing or sitting, control of risk factors (e.g. obesity), and use of compression hosiery when early signs of venous insufficiency are present, can all help to prevent the development of ulcers in later life.

As part of essential motorcyclist attire, by wearing compression socks you will experience the difference, making long rides more comfortable and helping maintain healthy legs for life.

The signs to watch out for

- Venous insufficiency is described as abnormal blood flow through veins that can cause local damage to affected legs. The symptoms of venous insufficiency can include throbbing, cramping, burning sensations, and leg fatigue. Varicose veins in the legs can bleed (since veins are delicate structures with thin walls) and often fluid retention (swelling known as oedema) in the lower part of affected limb and the foot.
- Skin changes can occur and affected areas can become thin, shiny, discoloured (blue-purple), and atrophic (areas of pale white scar like tissue that break down easily to minor knocks and turn into ulcers that can be difficult to heal without proper medical attention). The skin and subcutaneous tissues in the gaiter area (area between the bottom of the calf muscle and the ankle) usually becomes thick and stiff and being inflexible is prone to easy damage.
- Ankle flare, commonly seen on the inner side of the ankle is the result of distension of the superficial veins, and is one of the early signs of venous disease

Other warning signs include:

- aching, swollen legs
- redness and skin marks from clothing
- leg cramps during or after riding
- tingling sensation
- itchy dry skin
- scaly skin
- red patches of skin between the knee and ankle, which can often in the early stages feel hot and are painful and can be misdiagnosed as infection
- raised veins in the lower leg (varicose veins)
- broken veins – these small veins are present in everyone but are not normally visible until they expand and show through the skin. Often this type of vein will appear alongside varicose veins of one sort or another, and people who develop the thread veins have examples of other types of varicose veins in other areas because both types of vein appearance are probably caused by the same factors.

What are your thoughts on the long-term effects of riding? Do you already suffer from some of these symptoms? Email rider@bmf.co.uk with your thoughts and visit the www.legclub.org website for more information.

Reference

Nelson, E.A., Bell-Syer, S. and Cullum, N.A. (2000) Compression for preventing recurrence of venous ulcers (Cochrane Review). The Cochrane Library. Issue 4. John Wiley & Sons, Ltd. www.thecochranelibrary.com