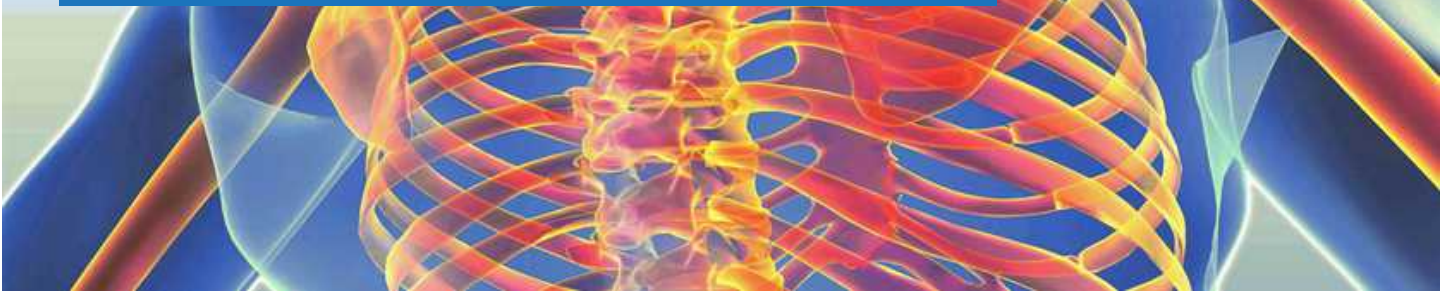


IMPORTANCE OF MONITORING YOUR HEART RATE

By : Charlotte Manning

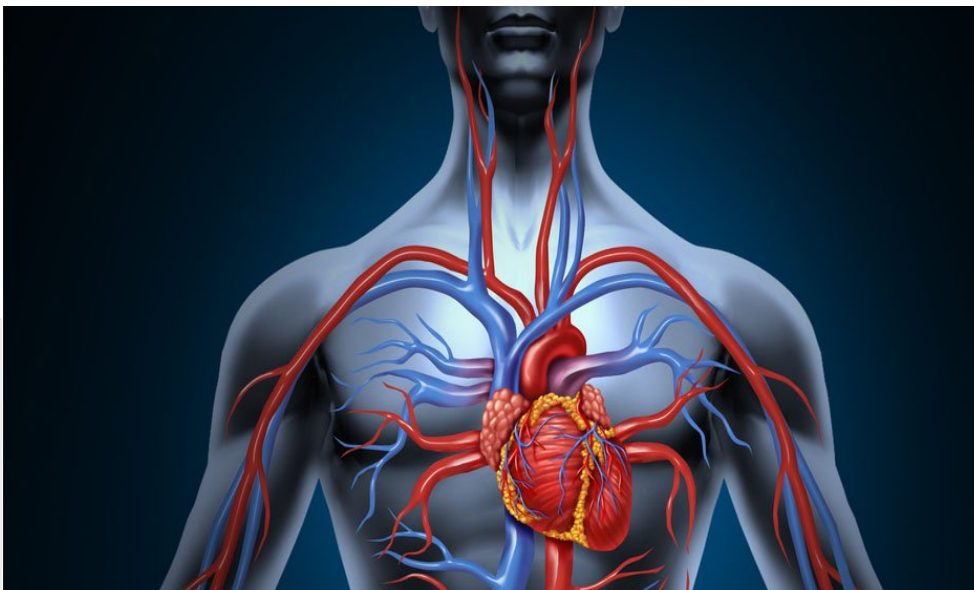


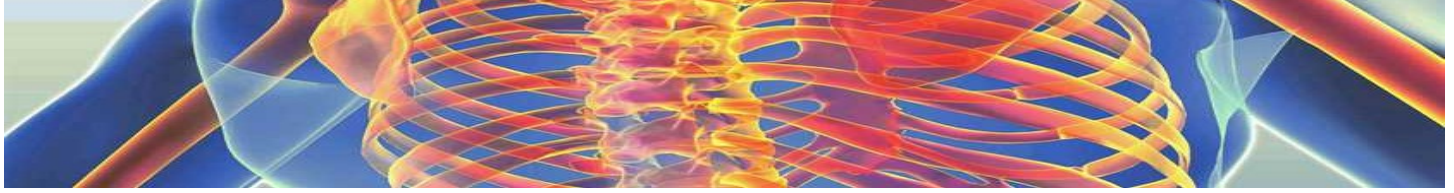
BAD CIRCULATION AND BLOOD QUALITY

The majority of patients who walk into my treatment room present with musculoskeletal complaints that have developed due to over-training, muscular imbalances, improper management of long-term tissue damage or injury as a result of overloaded training plans. As Osteopaths we consider all tissues in the body, from lymph to nerve to bone, but most importantly we look at the cardiovascular system and it's efficiency in order to understand the cause of a particular complaint or perhaps question what is prolonging the healing of that injury.

Has ITB Syndrome developed in a patient because of poor tissue health due to bad circulation and blood quality? Is this ultra-marathon runner experiencing dizziness because of a nutritional deficiency or is it because he isn't getting a sufficient supply of oxygen pumped around his body due to an undiagnosed heart defect? When diagnosing cases it is vital to always consider 'the engine' of the body and ensure that it is being looked after and working as efficiently as possible.

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It's important for runners to keep an eye on their cardiovascular output and monitor their heart rate when training not just to track their performance but also to ensure they are not putting unnecessary stress on their most vital organ.

A number of different factors should be analyzed when it comes to getting the most out of your training but this article will mainly focus on the importance of monitoring your heart rate. Other factors to be considered include oxygen consumption (VO_2), the type of exercise being undertaken and the recovery period afterwards. It is important to note that oxygen is used by skeletal muscles in the body to burn fat and carbohydrates for energy so by measuring oxygen intake and output, it is possible to identify overall oxygen consumption of the body and monitor fitness progression.

There are a huge selection of heart rate monitors to choose from but the biggest question you ask yourself shouldn't be regarding the colour, shape or brand of your exciting new gadget, instead the value that this piece of kit will add not only to your exercise regime but also your health in general.

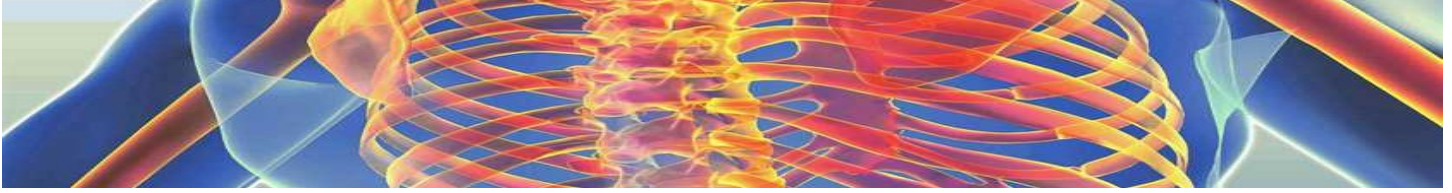
If you regularly participate in endurance activities, it is important to understand a few figures. First of all, ensure you know what your resting heart rate is by counting heart beats per minute when you are sat and relaxed. Try doing this at different times of the day and take an average. A healthy heart is capable of pumping blood around the body with fewer contractions and more efficiency (a lower heart rate). Following this you should gauge what your limitations are by establishing your Target Heart Rate (THR) and your Maximum Heart Rate (MHR). Your THR is the optimal cardiovascular output which is typically 50-80% of your MHR. You can roughly calculate your MHR by subtracting your age from 220 according to the American Heart Association. So if you are 40 years of age, your MHR will be 180. There are various running tests which you can do to try and find your MHR more accurately, but make sure you have had a recent medical check-up first as the tests involve you pushing yourself to a maximal level. Here is an example of a 30 minute treadmill MHR test:

MHR and THR levels are important because parameters are needed when training. You don't want to be over training, or in fact under training.

- 5 minutes: warm up
- 3 minutes: increase pace so you are breathing a little harder
- 2 minutes: increase pace so you are breathing hard
- 2 minutes: decrease pace to a jog.
- 2 minutes: increase pace so you are breathing hard
- 3 minutes: add some incline and increase pace so you are breathing very hard
- 2 minutes: sprint at the same incline
- 1 minute: add a little more pace and try and keep going for a minute.
- Record MHR
- 10 minutes: cool down and stretch.



GETTY IMAGES



When your MHR is being exceeded you begin to put excessive stress on the heart and cardiac complications such as coronary artery disease and stroke may occur. It will also take longer for the heart to recover from this stress and muscles will suffer from soreness due to the lack of oxygen provided to them while the heart strains to deliver oxygen-rich blood to oxygen-thirsty muscles around the body. MHR and THR levels are important because parameters are needed when training. You don't want to be overtraining, or in fact, under-training. Many people undertake regular weekly exercises but are in fact under-training while doing so. Consequences of this include minimal cardiovascular improvement, little to no calorie burning, low muscle development and overall, a waste of allocated exercise time each week.

You under-train when you fail to reach your THR and remain within your resting heart rate zone.

Over-training is equally as unhelpful for the body. Spending the majority of the workout near your MHR can have a negative cardiovascular impact on your body due factors such as dehydration, which can lead to low blood pressure and dizziness, muscle strain including that of the heart muscle and can lead to permanent tissue damage and scarring, namely of the heart.

There are a few heart related facts that some athletes are unaware of which I want to highlight. The heart is a muscle and has the potential to grow larger when the body requires more from it following such events as high performance or endurance exercises. A healthy heart will pump around 5 litres of blood per minute at rest compared to the 25 litres of blood that will be pumped per minute during endurance activity.

The heart will physically grow larger in size in order to supply the body with oxygen-rich blood during exertion. It is a common misconception that athletes and those who regularly partake in strenuous exercise are likely to be the least at risk of cardiovascular incidences. Common conditions affecting athletes include heart muscle scarring which could lead to arrhythmias (irregular heart beat), athlete's heart, cardiac hypertrophy, and more specifically, enlargement of the left ventricle and the left atrium. "Athlete's heart" refers to a decrease in pulse along with sinus arrhythmia where pulse speed alters on breathing without regularity. Enlargement of the left atrium (the chamber of the heart which receives oxygenated blood from the lungs) could lead to atrial fibrillation which is a commonly diagnosed condition in athletes whose left atrium contracts abnormally affecting it's efficiency. Symptoms of this could be dizziness or sudden fluctuations of heart beat. The chamber will occasionally contract without rest and even when little to no blood has filled it; therefore, less oxygenated blood will flow from this chamber to the left ventricle and then onto the rest of the body via the aorta. Not all athletes will develop these conditions, but high intensity training puts them at risk of them.

You will get the most out of your fitness regime by ensuring you are pushing yourself hard enough cardiovascularly without causing long-term tissue damage. By not putting too much strain on the heart muscle itself, it will work more efficiently, you will reduce the risk of cardiovascular events, and you can get the most out of your training plan and monitor any possible fluctuations that may develop. Take care of your heart and it will take care of you.

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