



Warming up

- an important part of your training

By: Lene Gilkrog



Every form of exercise should start with a warm-up phase. Unfortunately, this is often a neglected part of training – especially when training alone. That is not how it should be! Instead, warm-up should be a natural part of your training.

Warm-up - why?

Warm-up consists of a gradual physical and mental preparation of the body for the coming physical exercise. The goal of a warm-up is to increase the ability to perform as well as to reduce the risk on injuries.

When you work with the large muscle groups, there is an increase in body and muscle temperature. The muscles release a large part of the produced warmth to the blood, which spreads the warmth over the whole body.

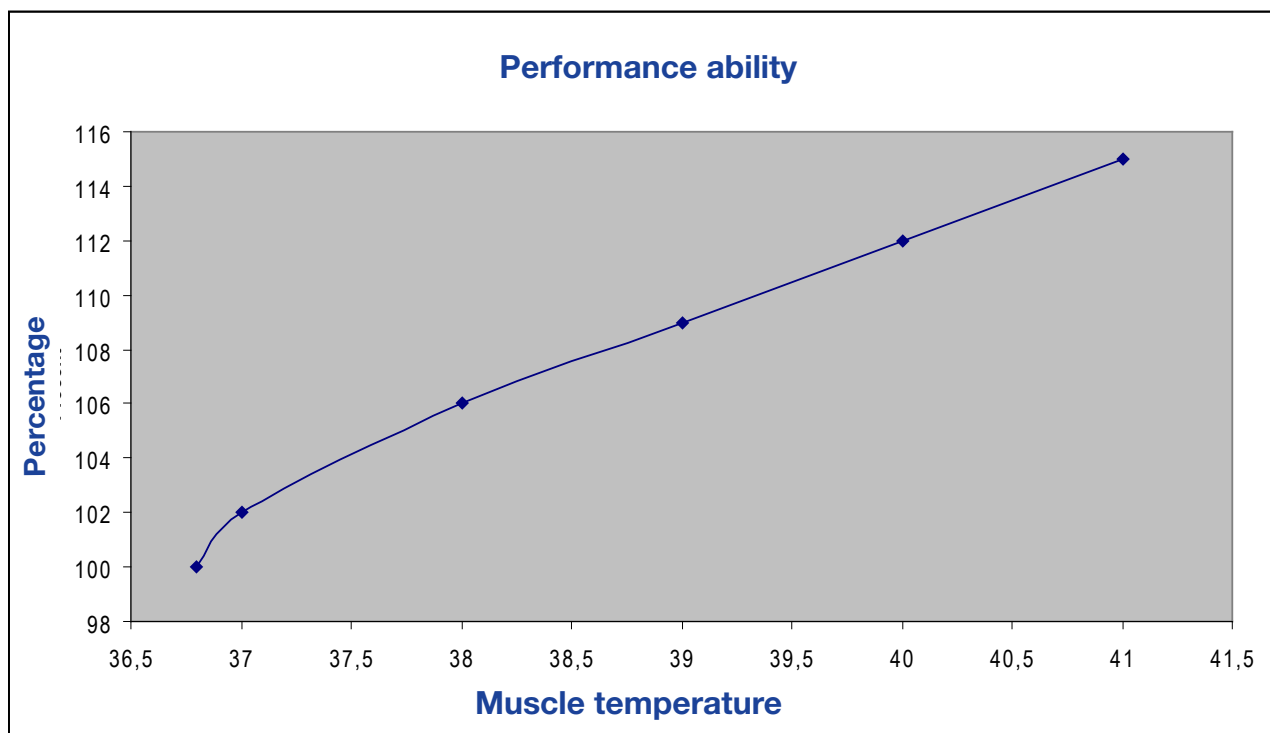
The body temperature rises to 40°C during a serious warm-up. The muscle temperature can even increase up to 42°C. Several research projects have shown that the performance ability

increases after warm-up. Higher muscle temperature – better performance ability!

The body's temperature regulation

When you start endurance training, the useful effect of the high muscle temperature is counteracted by the blood circulation, because the temperature increase changes even faster due to the body's temperature regulation system. This results in a large blood supply to the skin, so the body can release the heat. This also results in fluid loss when you start to sweat, whereby there is less blood available for the working muscles. Warm-up for a long training session should therefore not be as long or with a high intensity as for a short training.

When the temperature in the body rises the enzyme activity in the cells increases. This is the main reason for an improved performance after



Connection between muscle temperature and performance ability of sprinters. The figure shows that the performance ability goes up with the muscle temperature. When the muscle temperature was 41 °C, the performance ability was 15% better than before the warm-up. (Michalsik & Bangsbo, 2002: 137)

warm-up. Furthermore, the blood's ability to release oxygen to the muscles is increased.

The warm-up affects both respiratory and blood circulations that are being prepared for hard physical activity. The pulse frequency goes up and the oxygen uptake increases. In addition, the sweat glands are affected, which results in a faster heat release. Lack of (or inadequate) warm-up often results in injuries. When the muscles are not warm, they are not as flexible as when they are warm and injuries can occur more easily.

Also remember stretching

Stretching is also a sensible element of one's training, as it influences the joint capsules, ligaments, nerves and other tissues. By stretching before exercise, the tight nerves will be relaxed. This results in an even load on the muscles, where the whole muscle will be used, instead of just a small part. This diminishes the risk of overloading the muscle.

By stretching when warming up, where the muscles are lengthened and in their full range

Maxim Energy Drink - it is important that you drink both before, during and after exercise. With Maxim Energy Drink you maintain your fluid balance and energy levels.



of motion, the muscles will be better prepared for the different situations during training and racing, where they will have to perform the same movements as just done by stretching.

PHYSIOLOGICAL EFFECTS OF WARMING UP

- Increase of the body and muscle temperature
- Increased enzyme activity
- Increased speed of chemical processes in the body
- Better release of oxygen from the blood to the muscles
- Faster nerve transmission
- Improvement of the joint fluid's ability to lubricate
- Faster adaptation of the circulation and lung function for the next exercise
- Better activation of the sweat glands

How to warm up

Research has shown that the warm-up should take at least 10 minutes to have a positive effect on performance. In practice, in many sports the warm-up takes longer – especially in ball games. It is, however, important that the warm-up does not too long, so you do not risk getting tired. Stretching exercises should be done with slow movements, which are held for 5-15 seconds.

Warm-up also has a psychological effect, as you are mentally preparing to perform. Remember to vary your warm-up, so it is not just something to get over with.

A warm-up should always start with a general part, where the large muscle groups are used; for example running, jumping and cycling. After that follows the more specific part, which entails sport-specific exercises.

If the training/race itself is an endurance activity (e.g. running, cycling), it is not necessary to have advanced warm-up



programmes. Here it is enough just to start slowly. This is because you only use the lower part of your body that has to work, and the movements have the same pattern. That is why it is alright to start cycling or running slowly. Later you can start to increase intensity in different intervals, until your body has warmed up.

The warm-up should be immediately before exercise, as the muscle temperature decreases fast when the activity is stopped. The effect decreases after 15 minutes. The effect of stretching will also decrease in 20-30 minutes.

References:

Bojsen-Møller, F. (1998): Stræk og udspænding – sådan er effekten. I: PULS 4/98

McArdle, W.D., Katch, F. & Katch, V. (2006): Exercise Physiology: Energy Nutrition and Human Performance. 6. udgave.

Michalsik, L. & Bangsbo, J. (2002): Aerob og anerob træning. Danmarks Idræts-Forbund

Nielsen, B. (1992): Opvarmning – myte eller realitet? I: PULS 3/92

REMEMBER

- **Minimum 10 minutes warm-up**
- **Should contain general and a sports-specific exercises**
- **Gradual increased activity**
- **Should contain stretching exercises**
- **Should be done immediately before training/race**