

Warm-Up

Warm-up is one of those things that everyone talks about, everybody believes in, and everybody tries to do, but most people really are clueless as to the EXACT physiology of warm-up, and therefore the incredible influence for good, or bad, or worse, on your performance. If you ask people what they warm up for, you will most likely get the same response, “because it’s important... Isn’t it?” When queried further, the reasons given are, “to prevent injury”, “to get the muscles warmed up”, and other non-specific answers. What I hope to cover in this article is the physiology behind warm-up. The types of warm-up, and some suggestions as to how to best accomplish warm-up, for your type of event.

First, let's divide warm-up into two basic types. These are sometimes referred to as “specific” warm-up, and “general” warm-up. The differences are many, and the reasons, range from simple to complex. It is not in the scope of this article to go into great depth, although some of you will not believe this after you finish the article, as to all the specifics of metabolic/hormonal changes that occur during warm-up. But we will cover the overall concepts that take place, and therefore the reasons that you, as an endurance athlete, would want to make sure you take advantage of this newfound knowledge. In fact, if done correctly, you can gain a very distinct advantage over most of the people that ride, run, and swim with you now.

Let's start with “general” warm-up. The main reason that I tell athletes that they should warm-up. Is that it will enhance their performance. If I can get an athlete to understand, and realize, the benefits of a proper warm-up, then they will continue to practice and refine their warm-up, until it becomes a basic ingredient to their success strategy. I mean really, if it did not enhance your performance, why do it? So let's look at it from that perspective. Now that you understand the reason, let's look at how it performs this amazing feat. Here is a listing of some of the physiological changes that take place. That in theory, should enhance your performance:

1. Increased core temperature. This is accomplished when your muscles start producing heat as a side effect of the progressive workload you're placing on them. The blood that circulates through them gets heated and your core temperature increases. Warm muscles can contract more forcefully and relax more quickly, so your chances of injury are decreased.
2. Your Range of Motion increases. This is especially true if you include some light (and I mean LIGHT flexibility movements). More and more coaches are not recommending stretching prior to activity since it has been shown that stretching impairs the muscles' ability to contract forcefully for a while. You can see the problems here if your event requires some immediate high intensity activity, such as racing a criterium, triathlon, or 10 Km road race. Stretching is believed to be beneficial following exercise, and I can enthusiastically endorse that habit.

3. Your ability to get Oxygen to your muscles increases. With the increase of blood temperature, the ability to release oxygen to the muscle cell increases. Here is one of those places that we could spend hours discussing the physiology of hemoglobin and O² and CO² transport and exchange, but we won't. All we need to know is that as the blood becomes warmer, as your muscles call for more fuel, your blood is able to release more O². If we have to explain why you need more of that good stuff, try this experiment, hold your breath until you pass out, then when you wake up, try and remember what it felt like right before the lights went out. Did you want to breath? Well, wouldn't it have been nice to get some more air? If that doesn't help, then click on this www.askjeeves.com and type in "physiology for dummies" and click on "ask".
4. Your engines computer starts to make changes that will allow you to use the most appropriate fuel for the type of work your about to do. In more scientific jargon, there are some hormonal changes that set up the carbohydrate and free fatty acid burning mechanism, so important to endurance athletes. Now just as a side note here, can you see the problem if you don't warm-up properly for the event your about to do? Can you imagine putting the wrong fuel in your car? You have probably done this more than once and don't even know it!

Now lets take a look at some of these concepts put together into a single package of thoughts. I would like to quote a colleague who I think has the best short, concise, explanation. "When most people think of warming up, they think of starting to sweat, breathing harder, warming up the muscles and stretching. Well, there is more to it than that...The things that happen when you warm up properly are increased blood flow, increased efficiency of the nervous system, lubrication of the joints and tendons, excretion of phlegm from the lungs, (yuk!) increased efficiency of oxygen exchange, increased utilization of micronutrients and increased efficiency of heat radiation...When you warm up, you also increase the efficiency of nutrient utilization. The enzymes that burn fat and carbohydrate increase in number and get better at burning these fuels. The other enzymes that convert lactic acid back to glucose also become greater in number and better at their job. Your cells become more receptive to taking in nutrients like vitamins, minerals, and hormones, making you a healthier person." Kevin Lippert, 1996 USA Cycling coach of the year, USA Cycling Elite level coach.

Well you can hopefully see why it would be important for an endurance athlete to warm up different than a sprint athlete. For example, if your participating in a century or road race that will last 3-4 hours or more, the need to warm up slowly so that you don't use up to much of your glycogen stores (blood sugar that is stored in the muscle for immediate energy need), is critical. On the contrary, if your going to race a criterium (like a particular course that will go unnamed in Eugene, OR.), or time trial, and you will need to go out hot from the start, and you will want to be fully race ready at the start, as their will be no time to "ramp up" after the whistle blows, you need to be "amped" from the start! In a road race, you all roll out at

about 75% (most of the time) and then roll faster and faster, until “it’s show time!” and everyone is going for it.

In a tour, or Gran Fondo type event, you can slow up a little if you go out to fast, and possible recover. Although, it is your best interest to warm up right.

Before we close I want to mention one aspect of warm up that I feel is most often overlooked. That is the “psychological” changes that we can go through during warm up that can have a huge effect on our performance. Warm up is a great time to “pre-play your upcoming event. Walk or drive the course and look for potential problems, traffic, potholes, grooves, and other critters (remember Murphy’s law) that could impede your progress or line of attack though a corner. This will give you more confidence, and let you have more “psychological disk space” to concentrate on what you need to think about prior to the event. If you remember from your high school biology class, the fight or flight response, you will remember that there are some very powerful chemicals released in our bodies, that have a direct effect on your metabolism. If you’re over stimulated, you will probably burned up most of the stored glycogen in your muscles. I see people on their trainers all the time with their headphones on just hammering away right before a race. When asked after the race what they do for warm up, they respond typically, “I get pumped up!”, “you know, a little (insert your favorite workout music here) while on the trainer gets me going!” Well here is news for you. Do you know for sure what type of personality you are when it comes to riding? If you don’t know what I am talking about, or you don’t know for sure, then you can bet your not taking advantage of the benefits of a well planned “psychological” warm up plan.

Well, hopefully this article has been helpful in stimulating interest in you researching out more information on the subject. Please e-mail us back with your comments. If you would like to chat with a coach on this subject, or get input as to how you can develop a personal war up plan, don’t hesitate to just ask! Ciao!