

WARMING –UP, COOLING DOWN- MEANING AND SIGNIFICANCE

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There is no doubt that time spend on warming up and cooling down will improve an athlete's level of performance and accelerate the recovery process needed before and after training and competition. As a result, the coach must encourage the athlete to regard the warm up and cool down as an essential part of both the training session and competition itself.

Research work by McNair (2000) and Knudson (2001) suggests that the use of dyanamic stretches – slow controlled movements through the full range of motion- are the most appropriate exercises for the worm up. By contrast, static stretches are more appropriate for the cool down.

Warm up

Muscle stiffness is thought to be directly related to muscle injury and therefore the warm up should be aimed at reducing muscle stiffness.

Warming up should at least consist of the following :

- 5 to 10 minutes jogging – to increase body temperature
- 10 to 15 minutes dynamic stretching exercises – reduced muscle stiffness
- 10 to 15 minutes general and specific drills- preparation for the session and computation. e.g. for a runner
- Lower leg drills
- Leg drills
- Technique drill
- 4 to 8 easy run outs over 30 to 60 meters – focus on correct running technique (Tall, Relaxed, Smooth and Drive)

Dynamic stretches are more appropriate to the warm up as they help reduce muscle stiffness. Static stretching exercises do not reduce muscle stiffness. For further information see the following articles :

- How dose static stretching affect an athlete's performance
- Dynamic versue passive stretches
- Static vs. Dynamic Flexibility

Flexibility

Flexibility isgenerally defined as a looseness or suppleness of the joint. More specifically, flexibility is the range and the extent of the movement of a joint. Some individuals have a wide range of motion; others range of motion is fairly limited.

Joint flexibility is controlled by a number of factor: the joint capsule contributes approximately 47 percent to the range of motion, the tendons contribute 10 percent, and the skin contributes 2 percent. Because the joint capsule itself is rigid, the emphasis when attempting to increase or decrease flexibility is based on the muscle and skin tissue.

Stretching exercises enable these tissues to increase the range of the movement. Conversely, strengthening exercises may tighten up the muscles and the tendons and can decrease the range of movement if not done correctly through the full range of motion.

Women tend to have a greater range of movement in the joints than men primary because men have generally larger and bulkier skeletal muscles, which tends to reduce joint movement. However, flexibility is one characteristics of well developed muscles, regardless of gender.

All activities require varying degrees of flexibility. A competitive tennis player needs good shoulder flexibility. A laborer requires good lower - back flexibility. Even such everyday movements as walking and running require flexibility.

Good flexibility reduces the possibility of the aches, pains, and inflammations associated with joints that are stressed through rigorous activity. Running for the long period of time without pre- and post-stretching activities may lead to reduced flexibility in the legs and back and may result in lower back problems.

Warm-up and exercises

The term warm-up has a variety of meanings. To one person, it may mean a few push-ups and jumping jacks; to another, it may mean stretching and flexibility exercise; to someone else, it may mean jogging for fifteen or twenty minutes.

Regardless, there is a general agreement that warm-up exercises are essential to prepare the heart, lungs, and muscle to adequately meet the demands places on them during rigorous physical exercise, and that they are an important prerequisite to all physical activity.

Generally, there are three types of warm-up exercises. The first type involves static stretching techniques that stretch the muscles prior to an activity. Stretching increases extensibility and reduces the resistances of the muscles. It also produces more efficient muscles contraction and reduces the chances of injury or soreness.

The second type of warm-up exercise is concerned with general body warm-up. These exercise, such as jogging or calisthenics, are aimed at increasing the body temperature and gradually stimulating the heart. Substantial evidence indicates that when body temperature is increased at least one degree Fahrenheit, a number of changes that aid physical performance occurs in the muscles and circulatory system.

Generally body warm-up also prepares the heart to efficiently meet the stressful demands placed upon it during rigorous exercise and helps to prevent the possibility of heart damage during the initial stages of exercise. Various researches have shown abnormalities in electrocardiograms of individuals who did a warm-up can result in a reduced flow of blood to the heart muscles, which could lead to serious consequences. It is therefore vital to gradually stimulate the cardiovascular system with a general warm-up activity before engaging ink rigirius exercise.

The third type is a specific neuromuscular warm-up where the skill is performed at a less intense level prior to the actual activity to ensure that the proper muscles are being stimulated and that the coordination and skill level are maximized.

In other words, the type of warm-up is specific to the type of activity that is to follow. For example, hurdlers generally do not do push-ups before a race but engage in some mild running and practice the specific leg movement involves in hurdling. Many athletes believe that this type of warm-up must proceed an activity to produce optimal skilled performance.

BENEFITS OF WARM UP

Performance may be improved, as an appropriate warm up will result in an:

- Increased speed of contraction and relaxation of warmed muscles
- Dynamic exercises reduce muscle stiffness

- Greater economy of movement because of lowered viscous resistance within warmed muscles
- Facilitated oxygen utilization by warmed muscles because hemoglobin releases oxygen more readily at higher muscle temperatures
- Facilitated nerve transmission and muscle metabolism at higher temperatures; a specific warm up can facilitate motor unit recruitment required in subsequent all out activity
- Increased blood flow through active tissues as local vascular beds dilate, increasing metabolism and muscle temperatures
- Allows the heart rate get to a workable rate for beginning exercise
- Mentally focused on the training or competition

COOL DOWN

Cooling down should consist of the following

5 to 10 minutes jogging/walking – decrease body temperature and remove waste products from the working muscles

- 5 to 10 minutes static stretching exercises

Static stretches are more appropriate to the cool down as they help muscles to relax, realign muscle fibres and re-establish their normal range of movement. These stretches should be held for approximately 10 seconds.

BENEFITS OF A COOL DOWN

An appropriate cool down will :

- Aid in the dissipation of waste products – including lactic acid
- Reduce the potential for DOMS
- reduce the chances of dizziness or fainting caused by the pooling of venous blood at the extremities
- reduce the level of adrenaline in the blood
- allows the heart rate to return to its resting rate