

## Warming Up and Cooling Down

(Source: Dance UK Information Sheet 3)

### The Difference Between Being Warm and Warming Up

By Tony Geeves

#### What is Warm-Up?

A lay definition of this concept could be:

- anything and everything that is done to prepare the body before physical exertion.

Another way to explain the process of warm-up would be:

- something that prepares the body for increased exertion.

#### Without it, you run the risk of injury.

As the muscles become warmer, they also become more pliable. The best muscle warmer is your own circulation, so the trick is to increase your blood flow by slowly exercising. In addition to tuning your body, this also cuts down on muscle soreness when the session is completed.

A more precise definition of the term 'warm-up' in relationship to dance training is offered by Shelloch (1983): "Each class should include a section of continuous movement of 15 minutes or longer which uses large muscle groups and is of sufficient intensity to increase the internal body temperature by one or two degrees so that the dancer begins to perspire.

This temperature elevation allows more efficient energy production to fuel muscle contraction, increases the flexibility of the tissue, allows for faster relaxation and contraction of muscle, and increases the rate of transmission of messages along the nerves."

The significant words here are "internal body temperature".

During the summer, the differences between being warm and warming-up are not always so apparent to the uninitiated.

The sweat pouring down your face at the beginning of class may be induced by stress related to a new environment, a different teacher or the combination of a number of other seemingly unrelated factors.

I have known dancers who took a hot shower, applied liniment, put on woollen body tights, sat on the heater and were convinced that they had warmed-up! This was a sure sign of a short career.

A thorough warm-up includes general preliminary mobility exercises and stretches followed by more specific steps, movements and combinations, initiated gradually and vigorous enough to cause perspiration without becoming out of breath.

## Why you have to Warm-Up ...

Elements of the concept 'warm-up' are:

### **Circulation**

An increase of heart activity and blood circulation with a simultaneous redistribution of the blood. The blood flow increases to the muscles and decreases to the digestive organs. With hard or constant work the body's warmth is transported to the skin by an increased flow of blood.

This transition occurs with muscle activity and is necessary so that the work can continue for an extended period. Different psychological factors can also influence circulation, and this transition can begin before muscle activity takes place.

Fear and the adrenalin shock that follows or mental exercises such as bio-feedback, yoga, meditation and autogenic training can also have this influence on the circulation.

With muscle activity the circulation and breathing stabilises after approximately 3–6 minutes (second breath).

### **Joints**

Movement in the body's joints increases the volume of fluid and the thickness of the cartilage. This improves the joint's shock absorbing ability and prevents direct wear on the bones.

Movement in the joint increases the flow of blood and raises the temperature, which in turn increases the elasticity and movement in the joint's supporting tissue. This transition happens within 10 minutes of the movement's beginning and is almost completely gone 30 minutes after the movement is completed.

*This makes it clear that if you have a 30 minute break, you must warm up again.*

### **Muscles**

In order to execute hard work, the muscle's metabolism must begin and this demands an increased flow of oxygen through the blood. An increase in the muscle's temperature, which can be as low as 30°C when resting, improves the muscle's performance ability.

### **Nerves**

Nerve impulses travel faster in warm muscle and muscle viscosity is less, making contraction easier and more efficient. The optimum temperature for the speed of chemical reactions and metabolism involved in muscle functioning is in the neighbourhood of 102 to 103 Fahrenheit, and the only efficient way to reach this temperature in the muscle is by working it.

### **Relaxation/concentration**

Relaxation can enhance the interplay between the agonists (the contracting or working muscles) and antagonistics (the muscles being released to allow the movement to take place) and in this way increase the effectiveness of the work.

*Lack of concentration because of tiredness or stress increases the risk of injuries.*

Both concentration and relaxation are techniques that can be learnt. These areas of sports psychology are easily adapted to dance and may hold one of the keys to a safer future.

## **Stretching**

Ballistic (eg. bobbing, lunging and bouncing) forms of stretching can result in muscle or tendon injuries and should be avoided.

Static stretching exercises are recommended over the ballistic because they do not invoke a strong stretch reflex. In this type of stretching the muscles are slowly placed in a stretch and then held in that position for 10–15 seconds.

*Take care of yourself all the time and remember that pain is not progress but a signal that you have gone too far.*

There are other forms of stretching to increase your range of movement but remember this is about warm-up, so easy does it.

## **References**

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And also:

## **Cooling Down**

*By Caroline Marsh MCSP SRP GDPHYS*

After any activity where the circulatory and breathing rates have been increased it is beneficial to slowly reduce the work rate and reverse the principles outlined in “Warming Up”. To reduce stress on the body it is important, therefore, to continue movement in some way rather than suddenly stopping to allow the pulse and breathing rates to return gradually to normal.

By slowly reducing the intensity, remobilising the joints and stretching the muscles (with cooling down hold the passive stretch for at least 15 seconds) the body can more efficiently distribute the bi-products of exercise preventing the risk of muscle soreness and potential injury.

The benefits of cooling down can be achieved within 10 minutes. It is therefore important to add this to a dancer's repertoire at all levels of skill and it is especially relevant for anyone prior to travelling e.g. after performance on tour.

**Ideally** also consider the following:

- add a cool down period prior to a warm shower
- rehydrate fluid levels at this time
- wear warm, dry clothing.

Dance UK can be contacted at: 23 Crisp Road, London W6 9RL. Telephone – 0181 741 1932. Fax – 0181 748 0186.

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