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Dance Resources BY GEORGINA BUTLER

'WARMING UP AND COOLING DOWN'





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What is 'warming up' and why do we do it?

An effective warm up physically and mentally prepares an individual for a specific physical activity. The intention of a dance warm up is therefore to enable dancers to safely and successfully carry out dance movements in a class, rehearsal or performance.

The human body is a biomechanical system designed for movement. Like all mechanical systems, it will respond better after being warmed up.

Imagine trying to push a car's accelerator down to the floor on a cold morning. Expecting a car to immediately burst into action at full speed, with no opportunity to ease into the correct operating temperature, could result in serious damage to the engine over time.

Similarly, the human musculoskeletal system is vulnerable if it is not warmed up. Just like with a car, the damage may not be seen immediately but it will eventually have an impact.

New parts are easily available for cars, but the human body is significantly more precious. Consequently, an effective warm up routine is a must for any dancer.

A warm up carried out before dancing
should contribute to:

- A reduced risk of injury
- Improved coordination
- Improved technique
- Enhanced psychological focus



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What is the physiology behind warming up?

Circulation:

During a warm up, blood flow increases to the muscles (where it is needed to provide oxygen) and decreases to the digestive organs.

Continuous movement (e.g. walking; running; working the larger muscle groups with control through a full range of motion) rapidly increases blood flow, raising the body's core temperature quickly. This prepares the muscles, nerves and joints for the demands that will be placed on them during the dance activity.

As blood flow increases, warmth transfers to the skin. An indication that the body is getting warm is perspiration, the body's mechanism for cooling itself.

An effective warm up ensures that the body's circulation, breathing and energy production (known collectively as the aerobic system) increase gradually so that when dance activity begins these systems are working at the correct level to meet the increased demand for energy.

The ideal warm up will therefore gradually build in intensity, raising the core body temperature through movements that get progressively more demanding.

Joints:

When the body moves, the volume of synovial fluid and the thickness of cartilage (a tough, elastic, fibrous tissue that supports the joints) in the joints increases. This improves the joints' ability to absorb shock when the body experiences impact (from jumping, leaping and stamping), which prevents direct wear on the bones.

Movement in the joints increases blood flow and raises the internal body temperature, increasing elasticity in the joints' supporting tissues and muscles. Importantly, this all happens within 10 minutes of starting the movement and is almost completely gone 30 minutes after the movement is completed. Hence, after a 30-minute break from dancing, an individual must warm up again.

Most of the benefits gained from warming up disappear 15 to 45 minutes after the body has finished warming up. Consequently, it is important to keep moving and remember the importance of completing a thorough warm up after a break in between classes, stage appearances or performances.



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Muscles & Nerves:

Increasing the temperature of the muscles, which can be as low as 30°C at rest, improves their performance ability.

Nerve impulses travel faster in warm muscles and muscle viscosity (the rate at which muscles perform demands) is lower. This means that the muscles are prevented from reacting too quickly so there is less chance of them tearing.

Achieving a peak temperature of between 38.8°C to 39.4°C makes muscle contraction easier and more efficient.

The only efficient way for a muscle to reach the optimum 'warmed up' temperature is by exercising it.

Warming up:

- Increases blood flow to provide the fuel that muscles need to initiate and control movement
- Lubricates the joints so that they glide freely and smoothly during movement
- Activates muscles and nerves so that they work together to produce coordinated movement
- Focuses an individual's attention on the activity ahead



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What sort of movements should we use to warm up?

A thorough warm up includes general introductory mobility exercises and gentle dynamic stretches, followed by more specific movements.

The intention should be to achieve both general warm up principles (stimulating circulation, warming up the whole body and preparing the metabolism for exercise) and to address specific warm up needs (preparing the muscles which will be used in the dance activity).

By incorporating dance specific movements that mimic the dancing to come, both types of muscle fibres – fast twitch muscle fibres for power and strength and slow twitch muscle fibres for low intensity endurance exercises, balance and posture – can be stimulated while warming up.

Movement should be continuous and gradually build so that it becomes vigorous enough to increase the heart rate and blood flow and cause perspiration - without participants getting out of breath.

Begin by focusing on the large muscle groups with careful, controlled full-body movements that work against gravity. Then pick up the pace slightly to increase the internal body temperature so that participants begin to perspire.

This results in more efficient energy production to fuel muscle contraction, increase the flexibility of tissue, enable faster relaxation and contraction of muscle and increases the rate of transmission along the nerves.

Remember that the aim is to increase blood flow by slowly easing into exercising. This primes the muscles for the demands that will be placed on them and helps to reduce muscle soreness post-exercise.



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Elements that might be included in a warm up:

- Walking, marching, jogging
- Isolated movements of the shoulders, hips, knee and ankle joints, arm swings, ankle circles
 - Dynamic stretches (e.g. leg kicks, lunges)
 - Exercises to improve posture, balance and focus (demi-pliés, rises onto the demi-pointe, brief balances)

How is stretching used in a warm up?

The main purpose of stretching during a warm up is to gently prepare the muscles and joints for the range of movement required for the upcoming activity. It is not about trying to increase flexibility.

Warm up stretches are 'mobilising' dynamic stretches which move a muscle or joint through its full range of movement in a slow, controlled manner as part of a continuous movement. These stretches should be held for no longer than 15 seconds.

The stretches chosen for a warm up should ideally be simpler versions of the movement that will be used during the dance activity:

e.g. For hamstrings, inner thigh muscles and hip flexors - use a controlled grand battement / high straight leg kick, extending the leg to the front, side and back.

e.g. For calves, inner thigh muscles and hip flexors - use knee bends, plies and lunges.



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How long should a warm up be?

The length and intensity of a warm up will vary according to the dance genre, planned activity and age and fitness level of participants.

Generally, the older and fitter a dancer is, the longer the warm up needs to be.

As body temperature increases during the day, morning warm ups may need to be longer.

The temperature of the dance space also affects how long a warm up should be.

Is the ballet barre a warm up?

The ballet barre at the beginning of a technique class is not a warm up.

The progressive nature of the ballet barre does follow the principle of intensity which is applicable to a warm up as exercises at the barre are carefully chosen to prepare the body for subsequent class activities.

Nonetheless, the ballet barre itself is not a warm up – dancers should warm up before the barre begins to be ready to dance safely and to their full potential from the very first plié.

Remember:

A warm up should consist of gentle movements that do not over-exert or over-stretch the body and be specific to the activity that is about to be undertaken, the participants involved and the space and time available.



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What is 'cooling down' and why do we do it?

An effective cool down physically and mentally prepares an individual to end a session of physical activity. The intention of a cool down is therefore to gradually reduce the intensity of the movement demands being placed on the body, returning it to a state of rest.

If you suddenly stop moving after dancing, the heart will continue to pump blood around the body at a high rate but, without the muscle action in the legs and feet, this blood will not be pumped back to the heart. This can lead to blood pooling in the legs which may result in dizziness and feeling faint.

Additionally, the lactic acid which builds up in the muscles during exercise will not be dispersed effectively. This results in a greater likelihood of a dancer experiencing muscle soreness the next day.

Cooling down reverses the principles of warming up, allowing the blood in the muscles to be redistributed throughout the body and muscle energy levels to be replenished more efficiently.

A cool down carried out after dancing should contribute to:

- Reduced muscle soreness and stiffness
- Maintenance of, and potentially improvements in, flexibility
- Improved dispersal and removal of lactic acid (the waste substance that builds up in the muscles during vigorous exercise)
- A reduced risk of injury



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The physiological and psychological benefits of cooling down:

Effects of cooling down on the body:

- Fast removal of lactic acid (reducing muscle soreness)
- Prevents dizziness, fainting and nausea
- Lowers core body temperature for smooth readaptation to resting conditions
- Brings heart rate back to a resting level
- Reduces risk of muscle soreness, cramping and injury
- Speeds up the onset of muscle regeneration and repair after dancing

Effects of cooling down on the mind:

- Reflection on class activity
- Address points of concern and difficulty, notice areas that need further attention
- Psychologically finish the class before starting another activity

Cooling down:

- Gradually returns the body to a pedestrian activity level, adjusting from exercise to rest
- Stretches out the muscles groups that have been used
 - Releases excess tension acquired while dancing



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What sort of movements should we use to cool down?

When cooling down the key thing to remember is not to stop suddenly following exercise but to keep moving, gradually reducing the intensity. This may mean simply continuing to walk around the studio or moving on the spot while waiting for the breathing to gradually slow down.

The main purpose of a cool down is to encourage the muscles that have been active to return to their resting length. Doing this means we can actively work to prevent tightness and soreness.

Elements that might be included in a cool down:

- Avoid an abrupt end to a dance class by continuing with light activity such as walking around the dance studio or moving on the spot until the breathing has returned to normal
 - Keep the joints moving (ankle circles, hip circles)
 - Stretch out the main muscle groups
- Foam rolling to relax muscle tissue may also be used

How is stretching used in a cool down?

Stretching during the cool down provides the opportunity to maintain or improve flexibility as the muscles are warm and pliable following exercise. Dancers ought to spend up to 60 seconds relaxing and breathing into each static stretch.



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Muscle groups that most dancers will likely need to stretch after class include:

- Hip flexors
- Hamstrings
- Calves
- Hip rotators
- Lower back
- Front-of-shoulder muscles

Stretches do not have to be complicated but do need to be executed with care.

Practising the splits can count as hamstring and hip flexor stretches; while a kneeling cat stretch will stretch out the back and shoulders.

When time is limited, concentrate on working on tight muscles before turning attention to the more flexible ones.

How long should a cool down be?

No matter how little time is available, it is important to incorporate some sort of cool down into a dancer's post-class routine.

A complete cool down is achievable in 10 minutes
(less time if less stretching):

- Recovery (2-3 minutes)
 - gradually reduce the heart rate to resting level (e.g. by walking)
- Stretches (15 – 60 seconds each)
 - static stretches should be held for up to 60 seconds each
- Relaxation and tension release (2 minutes)
 - a momentary pause to centre body and mind

After the cool down: rehydrate fluid levels and wear warm, dry clothing



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