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O S T E O P A T H Y

Safety in Dance.

Dance for Longer, reduce injury, feel less shattered at the end of dancing, less aches the day after.

To achieve this in the Long term - prepare for the dancing by getting enough exercise, enhancing energy production, promote good blood flow and drainage. And in the short term – Warm up and cool down

Background understanding

At rest a body is mainly concerned with processing foods, filling stores and healing tissues that were previously damaged. This allows the body to obtain the best survivability it can.

Exercise is purely about survival. Whether this is fleeing, fighting, enhancing social ties, hunting for or growing food depends on circumstance.

During exercise the resources are used up and the immediate needs of the body are met on a moment to moment basis, stores replenishment is not one of these needs and this process is shut down, temporarily. In effect the blood supply is switched from “mainly to the gut” to “mainly to the muscles and nerves”.

To choose to exercise requires one to “convince” the body that this blood flow alteration is needed in order to meet the muscular and nervous need.

Warming up is effectively doing just that – convincing the body to move stores to the areas that will be required and reduce the stress on the body in completion of the exercise. The main features are

- Increase heart rate
- Enhance nerve transmission
- Open blood flow to muscles
- Improve joint movement and lubrication
- Improves muscular pliability
- Makes a mind/body connection
- Reduces injury

Begin by slow, low impact, movement; this raises the pulse and begins the shift of blood from gut to muscle, it begins to activate the nerves and joints.

Increase this to make bigger, more vigorous movements that allow the furthering of the initial objectives and increase the muscular flexibility – DO NOT stretch for any length of time as this reduces performance and muscular engagement, it has no injury reduction benefit.

Increase the activity to include movements that are particular to what you will be doing so add Morris movements like galleys and jumps, hocklebacks and, lastly, lunges and RTB style movements.



This reminds the muscle of their usable length but short term and dynamic and not to full stretch point.

Dynamic Stretch means – non-resisted full length contraction and relaxation - effectively move the joint from one extreme to the other. It should be controlled and continuous in style.

In time terms this need not be very long and an easy 1st dance can form part of the warm up.

Keep moving after the dance to keep the blood return moving and the body activated. You should consider starting the warm up again if you are static for even as little as 10 minutes.

At the end of the exercise COOL DOWN.

A time frame for this is slightly longer than it takes for your breathing to return to resting tidal breath.

Cooling down is about re-supply of the muscular reserves (so it is in a position to act again with the best performance) and drainage of waste products from the tissues.

Cooling Down prevents

- Blood pooling – aggravating cramp and producing dizziness
- Reduces tension around the joints
- Reduces lactic acid build up in the muscles (tired ache) reduces tension and improves the length and elasticity of the muscles
- Prevents some injuries e.g. muscle tears and muscular tendinous junction injuries.

Begin by reducing the exercise allow the pulse to lower, perform big, no resistance movements slowly and without resistance, keep the muscles contracting and relaxing to pump the fluids out and allow resupply of new resources. Long slow stretches to increase length of muscles will stimulate the inhibitory nerves to further reduce the muscular tension. Mix the moving and stretching elements together and continue the routine until the normal tidal breathing is achieved. Full length stretching is preferred at this time but avoid bouncing into the end range of the movement.

Any increase in breathing indicates a greater oxygen need and shows that the cells require an increased need for resources. To deny them the oxygen will increase the lactic acid and lead to aches and stiffness with possible cramping.

In the gaps between dances keep mobile to maintain the activity in the body use the dynamic stretches not to full length and keep the muscles moving.

Maintaining fitness to dance

How much exercise and how frequently – get enough dancing or do some other exercise. Dancing for 2 hours a week in the club setting and then to expect that fitness will improve and ability and learning will be enhanced is an error.

The net benefit of exercise is delivered at 36 hours after that exercise and the whole benefit and recovery process is fully complete at 48 hours. Muscle groups and ability are declining in strength if not used again shortly after the 48-hour point, so some form of whole body exercise every second day to help with and maintain dancing fitness is needed.

Energy Production - All the energy used by the body is produced from the burning of glucose or fat. In extreme circumstances glucose, can be made from proteins and then used in the same cycle as



fat/ glucose. The process is described in “Kreb’s Cycle” and this informs of the various nutrients required to make the process run. A pictorial representation is available here <http://www.epigenetics-international.com/uploads/Energy%20Flowchart-1.pdf> for interest.

The nutrients are Zinc, Magnesium, vitamins B1 B2 B3 B6 Biotin. One can also see from this chart how and where in the process the lactic acid build up occurs.

Foods - A Morris dance or jig is akin to a short sprint (what that means to each in their own ability). So, macro nutrients that provide the glucose and fat supply to allow the system to work are the appropriate foods to take in. Any complex carbohydrate (that will break down to sugars in the gut) will take 3 hours to digest so eating those immediately before dancing leave them sitting in the gut.

Carbohydrates and fats in advance will offer nutrition but most of the fuel used will come from muscle stores and fat stores already laid down. The Glycogen stores last about 30 minutes of continual usage before exhausted and will be replenished in resting phases. This is sped up by the proper cooling down stretches. Only when the Glycogen stores are used up do we switch to Fat use – runners call this “hitting the wall” as the energy production switch is noticeable.

Considerations for dancers of different ages

Pre-adolescent – they are not “little Adults” their bodies are not fully developed physically or mentally. Their temperature control is less efficient than an adult. Their perception of continual exercise is not as an adult and they will continue into fatigue without realising. They adapt to change faster and recover faster.

Adolescents - growing fast and bones and ligaments are at greater risk at this age Boys generally have an increased risk over girls. The changes in strength and flexibility as rapid and they have a fast alteration in self-image and esteem. Need more warm ups, more fluids and foods more frequently. Overstretching to be avoided.

Older dancers – less elastic and possible osteoporosis risks to be taken into account. Tire more quickly and alterations in strength and flexibility are notable. HOWEVER – keeping dancing reduces the onset of the aging changes.

Water

Your body will inform you of your water or hydration needs. If you urinate dark urine you are dehydrated – drink some water. If you urinate pale gold, then you are about right. If you need to urinate often and the urine is clear and watery you have drunk too much. The prescriptive “thou shalt drink 2 litres a day” Is a guide only and whilst it should be respected as a reminder – be your own sensible judge. If you are thirsty – drink something – you are already dehydrated to more than 5%. Tea, Coffee, Alcoholic drinks (even weak beer) are diuretic and will lose you water overall.

Injuries and avoiding them

60-75% of all dance injuries and due to overuse (Potts and Irrang 2001, Thomas and Tarr 2009 Russell 2013)

About 50% are muscle, 35% joint, 22% tendon and 20 % bone (Laws 2005)
Common locations are 40% lower back, 30% knees 30% ankles, 20% feet Laws 2005)

According to Laws (2005) the perceived causes of injuries in dancers are mainly overwork (32%), Fatigue (27%), Recurrence of old injury (27%), Ignoring warning signs (21%), Repetitive movements (21%), incorrect technique (19%), insufficient warm up (16%), being higher than issues from props, floors, new dances or cold environments. This list shows the parameters for dancers and foremen to consider in teaching schedules and dance outs.



Muscle - injuries are produced by over stretching in an uncontrolled or “ballistic” manner. Joints that are limited in movement by muscles will show muscle pulls if they are thrown or forced to the ends of their ranges; muscles that are over exerted when their supplies are limited and they are “cold” or have fibrous knots noted in them will suffer pulls of the fibres. Most of these injuries occur as the muscle joins its tendon. Treat with ice initially (2 days) and then massage and heat.

Joint – surface abrasions are noted when there is a pre-existing arthritic complaint or the muscle operating a joint is under powered or out of balance. Corrective directed exercise will assist the balance issue and only palliative care will allow continued dancing in the arthritic case. It is true that altering technique can assist in the arthritic example but this would need advice from a professional to achieve.

Tendon attachments to bones – sudden pull trauma produced by the sharp snappy stop to a movement at the extreme of the range of movement for that joint.

Ligament – stretch and elasticity. Ligaments are designed to limit movement at a joint but only in certain directions – forced movement into that movement will stretch and injure the ligaments. Treat with ice (2 days) then heat and local irritation (rub them) to promote the healing and blood flow. severe strains should be immobilised.

Joint injuries

Foot and ankle - Dropped arches – supports and professional exercises and possibly podiatry are indicated. The feet are one of the 2 human foundation areas and care of these is highly recommended. Twisted ankle / sprains are ligament injuries – see above.

Exercise for balancing on one foot is recommended to provide ankle control and muscular integration. Good muscular integration will protect an ankle that is prone to “turning” it will also help support the arch of the foot. One common issue that relates to ankles is “shin splints” and this is caused by non-use of the ankle movement and loss of blood return from the calf. The pain is felt on the front of the leg. This is also seen when one lands on the heels repeatedly – the shock induced can in some cases lead to micro-fracture of the tibia.

Knee – Meniscus injuries are caused by twisting on a weight bearing knee – don’t. These are going to finish your dancing career or at least finish it for more than a year.

Knees are vulnerable to weight bearing twisting movements and need to be operated straight. The line of the middle of the thigh muscles should line up through the kneecap and point at the 2nd toe through a straight foot. This allows a balanced use of muscular power through the knee. Common issues are seen when a flat foot allows too much force to the inside of the knee and the with repeated use a medial ligament strain ensues or the run of the knee cap is unbalanced and there is wear on one surface.

Lower back – over extension of the lower spine (hollow back) is mainly due to inadequate core strength – some abdominal curls done daily will assist in this, Yoga and Pilates classes include these exercises.

Shoulder – pulls and over range injuries from throwing type motions are a cause of muscular tendinous injuries in the rotator cuff. Frozen Shoulder – where the range of shoulder motion is limited is an inflammatory condition that requires professional help.

Summary – Injury avoidance

Warm up and cool down.



Layer clothing to maintain core body temperature
Maintain muscular strength and stamina with exercises between dance sessions
Gradually increase dance intensity
Take sufficient rest
Remain hydrated and eat the correct foods and nutrients
Control alcohol intake while dancing.

Acute injuries need protection, rest ice compression elevation diagnosis
Avoid Heat alcohol running massage
Recover with treatment reassurance understanding support and targeted training

Chronic injuries require professional advice and a targeted treatment and return programme.

