

Personal performance portfolio anatomy and physiology warm-up and cool-down essay ...

[Science](#), [Anatomy](#)



Time spent on a warm up will improve performance. Benefits for the Skeletal system due to an increase in temperature of the muscles include- Greater strength of contraction due to improved elasticity of muscle fibres. Faster speed of contraction due to an increased speed of nerve transmission to the muscle fibres. Faster speed of contraction and relaxation of the muscle fibres due to a higher muscle temperature. Increased speed of strength of contraction due to an improvement in coordination between antagonistic pairs because of a reduction in muscle viscosity. Increased speed and strength of contraction due to an increase in enzyme activity in warmer muscle fibres. Reduced risk of injury despite and increase in speed of strength of contraction due to an increase in blood flow and oxygen to the muscle. The effects of a warm up on your Vascular System include - Gradual increase in blood flow (Q) due to the vascular shunt mechanism via: *

- * vasoconstriction of arterioles/precapillary sphincters to organs decreasing blood flow to organs and therefore increasing blood flow to working muscles
- * vasodilation of muscle arterioles/precapillary sphincters increasing blood flow delivery to working muscles.

Increased body/muscle temperature causing a more rapid increase in transport of the enzymes required for energy systems and muscle contraction.

Increase in body/muscle temperature which :

- * decreases blood viscosity, improving blood flow to working muscles
- * increases the dissociation of oxygen from haemoglobin in muscles tissues.

The effects of a Cool Down on the vascular system are as followed - Keeps metabolic activity elevated which gradually decreases HR and respiration. Maintains respiratory/muscle pumps which :

- * prevent blood flow
- * maintain venous return.

Maintains

blood flow (SV and Q) to supply oxygen maintaining blood pressure. Keeps capillaries dilated to flush muscles with oxygenated blood, which increases the removal of blood and muscle lactic acid and carbon dioxide. A typical warm up and cool down session for me would consist of – A pulse raising exercise. For my chosen activity (netball) my warm-ups, cool downs, etc would be done as a team with the other players. An example of a heart raising exercise we would normally do would be on the netball court. To start, we'd jog around the outline of the court, then cut in on all the other lines marked out but changing it to side-stepping, heel flicks or high knees so the warm up isn't so tedious.

After about 5 mins of this, we'd all line up on the backline of the court and say, jog up to the first line, come back to the backline, then run up to the second line, then back, then finally up to the other end of the court, then sprint back to bring in a bit of competition. After repeating that two or three times, we'd begin to stretch. To stretch, we usually start from the neck downwards. We'd stretch the neck by looking up, then down, then from side to side. We'd then move to shoulder rolls, pulling the arm over the chest while keeping your arm straight and bending the elbow so your hand can touch the back of your shoulder, to stretch the shoulders and top of the arms. To stretch the hips we would do a hip roll in alternative ways. Wrist flicks and rolls loosen up the wrists and hands. A more practical way to loosen the hand and wrist would be to flick a netball using only your fingertips from hand to hand. We'd then stretch the top of the legs, hamstring, quadriceps and groins. A stretch could be to face both feet

forward and one leg a pace in front of the other, then to lean forward and put all the pressure on the front leg. Another one would be to bend the knee and hold your foot by your gluteus maximus.

All stretches should be held for at least 8 seconds before swoping leg/arm to be able to feel a result. Finally, an ankle roll would loosen up the ankle joints. Skills are essential to the last part of the warm up. They can prepare you for a game and can also recap. One skill we could use is where the squad line up vertically and there is one feeder about 6 m, metres away from them. The first two players in the line would run up a few steps dodge and the second person would drive and indicate the opposite way to where the first player runs. The feeder then has the choice of who she wants to pass to out of the two players. This skill session helps your spacial awareness so you can pre-scan how much space is around you, awareness of other players so you can see where other players run and make sure that you dont run into the same space as them and also warms up your agility and explosive speed, by moving the body's position quickly into a dodge, then to explode into a sprint to 'run on' to the ball at speed.

Another practice we would do would be a slightly more complex one. The squad is divided into four and these four groups stand in the four corners of the center third. Two of the groups diagonally facing each other have a ball. The remaining two groups (also facing each other diagonally) are to receive the ball. The first player of each of the two groups receiving a pass run towards each other and as they are about to receive the ball turn left and receive from one of the feeders. This practice also helps spacial awareness

but also coordination. The player's receiving the ball must be aware of the person they're running to and the feeder. After this, we would go into a game situation for about half an hour as it is only a training session (matches usually last an hour). After the game, we'd start the cool down. This would be similar to the warm up but not as long or intense. We'd start with a gentle jog around the court for about 5mins whilst getting slower and slower so the body can recover. After stopping we'd stretch following the same routine as the warm up. This would decrease the risk of injury and would help prevent sore, tired muscles.