Circuit Video
Men's National Volleyball Team

1. Warm-up activation circuit

The intent of this circuit is to activate the neuro-muscular system by offering tasks that gradually increase the muscle temperature and thus increasing the muscle poperties which are : excitability, contractility, extensibility and elasticity.

The excitability of the muscle is that the muscle responds well to action potential which is electricity send from the brain to the spinal cord to the muscles. When the temperature is increased, the speed of conduction of the action potential (electricity) is faster. Contractility is that once that electricity will reach the muscle, it will produce a contraction. Extensibility is the property of the muscle to lengthen through a passive or active stretch. An increase in muscle temperature will increase muscle extensibility. Eleasticity is the property of the muscle to recover its original length after a stretch.

This warm up can be adapted to different ages by varying the stimulus through different movement patterns that can be borrowed from track and field or martial arts.

1A) Agility Ladders

This circuit is meant to increase body temperature in a ludic environnment. It is also used to gradually prepare the muscles to generate low intensity reactive strength which is the strength that will help the volleyball player to switch from excentric to concentric muscle actions (From lowering to going up or stetching to shortening) without collapsing. For young players, it will participate in the process of inter-muscular development by developping controlaterality which is moving the arms and legs rapidly in an opposite manner. Players should always prioritise quality of movement over speed. You want to develop good movement patterns.

1B) Hurdles

-Low hurdles

The exercise with the low hurdles is a slow dynamic (movement) hip mobility exercise that will help to stretch the hamstrings and groin muscles to improve the quality of the defense positionning. To do it properly, the player should : bend the support knee, extend the other leg, have the chest out and have a straight lower back.

-High hurdles (one leg)

This exercise is meant to develop dynamic hip mobility, controlateral arm and leg action, reactive strength of legs and torso stability. To do it poperly, both arms need to move, not just the one that is opposite to the leg passing over the hurdle and the torso needs to be stable.

-High hurdles (two legs)

This exercise has the same intent as the previous one but it's a more advanced progression because the player has to deal with more torso shearing force to stabilize and more foot movements to have both legs pass over the hurdle one after the other which is more challenging for coordination. To do it poperly, both arms need to move, the torso needs to be stable and the legs should never cross while moving side way from hurdle to hurdle.

1C) Elastic

This exercise is meant to mobilize one shoulder while stabilizing the other one and stabilizing the torso with isometric contractions. An interesting progression to this exercise is to have a board on the back. The board must have three points of contact: buttocks, chest area and the back of the head. Wth all three, we ensure that the position is correct.

2-Speed-endurance circuit

- **Station 1 :** Improves work capacity on passing abilities by improving shoulder endurance speed strength and by improving speed-strength endurance on jumping.

- **Station 2 :** Improves work capacity by improving shoulder endurance speed strength and torso stabilisation for « touche ».

- **Station 3 :** Improves hand eye coordination while training obliques in endurance in a ludic way.

- **Station 4 :** Improves work capacity in reactive strength and controlateral arm action to stabilize torso. This is also a good metabolic work if the density (work to rest time ratio) is high enough.

- **Station 5 :** Improves obliques endurance speed strength but can induce tightness in hip flexors if done for too long or too often.

- **Station 6 :** Improves work capacity in reactive strength for a movement that prepares for acceleration or reception. This is also a good metabolic work if the density (work to rest time ratio) is high enough.

- **Station 7 :** This lateral shuffle improves work capacity in reactive strength. It is also a good metabolic work if the density (work to rest time ratio) is high enough.

- **Station 8 :** It develops upper body speed strength endurance, torso stabilisation and is a good metabolic work if the density (work to rest time ratio) is high enough.

Obviously, the intensity (height, speed or overload resistance movement) will vary depending on the age and ability of the athletes. For example, some young people use basketballs rather than medicine balls.

Density (ratio of working hours compared to the rest period) will also vary depending on several aspects including: the duration of exchanges and the fitness level of the athletes. We want to maintain a quality of movement so we need to make sure the duration of the exersise is not too long. The short intermittent training is used to develop the aerobic power and often goes up to 30 seconds of effort for 30 seconds rest. However this duration is often too long to maintain adequate positions and dynamic movement. The 10-10, 15-15 or 20-20 ratio is more interesting. It should be noted that the 20-20 ratio requires strength endurance and speed, and do not often reflects the duration of the rallies.

Volleyball is not a sport that is predominantly aerobic power but expanding slightly helps promote recovery of training volume that is at a high intensity. However, you need to be vigilant because overdoing it will produce fatigue and adaptations that will interfere with explosiveness.

Description by **Nicolas Roy**, men's national volleyball team physical trainer.