

Talking Knees part 2

from Chris Easton, Chartered Physiotherapist working with England Men's Team



Chris described the anatomy and injuries that can occur to the knees with particular reference to volleyball in the last issue of 3T, here he looks at prevention of injury.

Many aspects of strength and conditioning for volleyball have been covered previously in 3T. Opposite are some examples of simple exercises that can be added to your training programme to help reduce the occurrence of knee injuries.

Strength training will help to reduce incidence of injury. Training with free weights has the advantage over machine weights as it works to combine muscle activity across many joints making it a more functional way of training.

Training should be specific to volleyball and so the emphasis should be placed on strengthening the quadriceps and hamstring muscles, as well as the muscles that work to stabilise the hips, pelvis and ankles. This will prepare the player for the jumping, landing, and quick changes of direction that are an essential part of the game.

Players must work on the neuromuscular control of the knee and lower limbs and practice the coordinated movement skills in a functional situation on court. Focusing on fundamental movement patterns when learning how to play volleyball not only allows a player to move faster and more efficiently on court, but also reduces the likelihood of injury.

Tired or fatigued muscles can not provide the control or stability to other structures increasing the risk of injury, so it is important to structure training to ensure planned rest days.

Players need overall flexibility in the quadriceps, hamstrings, hip, groin and calf muscles, but more emphasis in the warm-up should be placed on dynamic exercises to prepare the body for activity and ballistic movement, while the warm-down should contain relatively more prolonged stretches.

Players invest a lot of effort in improving jump height but could do well to look at improving their landing technique. Specific coaching to emphasise landing technique will make a player more efficient in absorbing landing forces that are translated through the knee.

It is important to use correct footwear to play volleyball. There are a number trainers on the market specifically designed for volleyball, and a large range of general court shoe and cross trainer that are also suitable. The shoe must have a cushioned sole to absorb some of the impact when landing from a jump and enough stability in the sole to control the foot when changing direction quickly. This cushioning of the landing will reduce the forces translated to the knee and reduce the risk of overuse injuries. A shoe designed for running provides cushioning of the high impact of landing but does not provide enough control of the foot. Old or worn trainers should be replaced as the shock absorbency properties of the sole become much less.

If you experience knee pain within a session it is advisable to stop. It is far better to miss part of a session and manage a minor, acute injury correctly, than to keep training and playing with an injury that may become more severe and chronic.

A major factor leading to injury is the players' inability to cope with the demands of the sport. To reduce the risk of knee injuries you should get fit to play volleyball, and not play volleyball to get fit.

Box jumping. This is a very basic and effective exercise for developing explosive quadriceps strength, without the high impact forces of landing. The player initially jumps up onto a suitable height box in front from a

two footed takeoff. This exercise can be developed by jumping laterally and from a single leg takeoff and/or landing. Progression is achieved by increasing the height of the box and the number of repetitions.



Exercises demonstrated by Albrecht Götze
all photographs © A.Hopper

Static wall sits. This is a common exercise used by physiotherapists in the rehabilitation of knee injuries. It works to strengthen the quadriceps muscles and is performed with the knee joint at 90 degrees. However, if this provokes pain then a greater angle (less bent knees) should be used. Progression is gained by increasing the time of the holding the position.



Bridging. This exercise is performed by lying on the floor with knees bent up and feet flat on the floor. The player then raises their hips and pelvis clear of the floor. This can be progressed by placing the feet on a bench, chair, or gym ball.

Single leg dead-lift. Start by standing on one leg and bend forward to touch the foot keeping the torso and supporting leg straight then return to standing.

This exercise should be used as a dynamic stretch as part of a volleyball warm-up by combining reciprocal dead-lifts to walk across the court. It can also be used as part of a gym routine to strengthen the hamstrings and muscles that stabilise the ankle and hip joints, by repeating the exercise on the same leg while holding a dumbbell weight.

