# MUSCULOSKELETAL HEALTH ISSUES

## Use it or lose it!

Ageing changes the human body, rendering elderly people more at risk to overloading of the muscles and bones. Connective tissue becomes stiffer as one ages, which makes muscles and tendons more prone to injury.

There is a decrease in muscle mass and strength, as well as in bone mass. However, inactivity is as much a cause for these changes as aging is. Over half of the decline can be attributed to inactivity.

Tennis may help reduce or prevent a number of these negative changes associated with aging. Furthermore, tennis helps offset loss in muscle mass and strength, reduces the risk of osteoporosis. Thus, playing tennis regularly contributes to a healthier, independent lifestyle, improving the functional capacity and quality of life of elderly people.

## Osteoporosis

Osteoporosis is defined as a decrease in bone mass and strength, which leads to more fragile bones and increased risk of fractures, particularly in the spine, hip, and wrist.

Osteoporosis is often called the "silent disease" because bone loss occurs without symptoms. Bone mass decreases slowly after the age of 30, in women more than in men.

Loss of bone mass occurs as a result of ageing, low hormone levels, inactivity, insufficient calcium intake, and increased calcium loss, and it may lead to osteoporosis.

There is a lower bone mass among women with menstrual cycle changes compared with control women with a normal menstrual cycle. This is because the decreased hormone levels associated with the interruption of the menstrual cycle cause increased bone loss, despite the positive effect of physical activity on bone density.

This may lead to an increased risk of stress fractures in exercising women with menstrual cycle changes. Also, at the time of menopause there is a sudden increase in the rate of bone loss, because levels of the female sex hormone oestrogen fall rapidly at this time.

**Positive influence of tennis on the prevention of osteoporosis**

A regularly maintained exercise programme reduces the rate of bone mass loss accompanying age, particularly after menopause. Mean bone mass and density has been shown to be significantly higher in tennis players compared to sedentary controls.

In tennis players, bone gain has been shown in the playing arm, hips, and vertebral column. Thus, playing tennis regularly (approx. 3 hours/week) may help to reduce the loss of bone mass.

The risk of formation and progression of osteoporosis is reduced by adding movements with controlled reactive strengthening of lower extremities and backbone besides versatile coordination and flexibility to normal tennis training. Therefore, training forms with fast changes of movement and integration of vertical jumps are very effective in preventing osteoporosis.

**Practical examples for tennis training**

1. Groundstroke Drill - Coach (or one player) hits four to six balls either side of a player standing at the baseline. The player runs left and right on baseline and plays either a forehand or backhand (possibly with predetermined target area), returning back to the middle of the court after every shot. The order the coach feeds the balls should be randomised to ensure the player is making fast changes in direction.

2. Volley and Jump Smash Drill - Coach (or one player) feeds a player a volley, one overhead smash, followed by another volley. After hitting the first volley, the player should run and touch the net with their racket before moving backwards to hit the smash. This will make it more likely for the player to have to jump while hitting the smash to prevent the ball going over their head. The player then moves forward quickly to play the second volley.