SARCOPENIA - Hand out prepared by Franco Navazio, M.D.

SARCOPENIA age-associated loss of muscle mass seems to be an inevitable event and a most significant contributing factor in the decline, with age, of muscle strength. In fact, between ages 30 and 75, lean body mass decreases primarily due to loss of skeletal muscle mass due as well to a progressive decrease in number and size of muscle fibers.

In healthy young persons from 35 to 45% of body weight is muscular mass, while 20% is adipose tissue and 10% is bone. By age 75 the muscular mass has decreased to less than 15% while 40% is adipose tissue and 8% is bone. So about half of the muscular mass has disappeared due to SARCOPENIA.

The etiology for this process, at least in part, is still obscure but we are well aware of some definite phenomena:
1) decrease of the muscular mitochondrial mass (mitochondria being the powerhouse for the production of energy).
2) reduced amount of protein synthesis (in part related to a reduced protein intake).
3) abnormal changes occurring in the central and peripheral nervous system do affect negatively the neuro-muscular unit.
4) relative and progressive decrease of powerful anabolic hormones like growth-hormone, insulin-like growth hormone and dehydroepiandrosterone or DHEA.

Still a most powerful reason for the occurrence of SARCOPENIA is the state of progressive inactivity in the elderly (incidentally this being the aspect most amenable to correction).

Of the 2 kind of muscle fibers present in the human body it is the TYPE II or faster and pale contracting type which appears to decrease to a much greater extent then the slower contracting and redder TYPE I fibers. It is appropriate to remember that TYPE II fibers usually participate in the powerful sudden type of muscle contraction whereas the TYPE I fibers are more responsible for posture and endurance kind of efforts.

These variations will help explain why a 10 y.o. boy will easily outrun his 70 y.o. grandfather in a 50 or 100 meters race, whereas grandpa might still defeat junior in a 5 mile trail walk.

In addition, any illness forcing elderly persons to bed-rest, is provoking a loss of muscle mass of about 1.5% per day and in fact for each day of bed rest at least 2 weeks of appropriate reconditioning will be necessary.

It should be very clear in this context, the beneficial effects of regular and appropriate kind of exercises. Of course guidance concerning intensity, duration and type of muscular efforts will need to be provided by qualified individuals.

Despite this, elderly people, still maintain a good degree of functional abilities, in fact they can still easily climb upstairs (incidentally this being an excellent type of exercise) but also rise from a squatting position or walk along a straight line.

As a final comment Sarcopenia is a typical physiological variation occurring with the advancing age and it is not a disease unlike, for instance, OSTEOPOROSIS.