

## **Description for the general public**

**Sarcopenia** age-related muscle wasting is characterised by not only the loss of skeletal muscle mass, but also the gradual decline in muscle function, including a decrease in force producing capacity, maximum velocity of shortening, and a general slowing of contraction and relaxation. Sarcopenia affects all elderly and does not discriminate based on ethnicity, gender, or wealth. It can deprive a person of their functional independence, and increase their risk for sudden falls and fractures (*Ryall et al. 2008*).

As the number and proportion of older persons in the population continues to escalate, sarcopenia will impact dramatically on quality of life and place ever-increasing demands on health care systems (*Arai et al. 2012, Berrut et al. 2013, Janssen et al. 2004, Lynch 2004, Rom et al. 2012*). **Therefore, developing strategies to prevent and treat sarcopenia are of great importance.** In order to develop strategies to prevent and treat sarcopenia, the risk factors and causes of sarcopenia must be identified. Age-related muscle loss is characterized by the contribution of multiple factors, and there is growing evidence for a prominent role of **chronic molecular inflammation** in sarcopenia (*Berrut et al. 2013, Caldow et al. 2013, Cruz-Jentoft et al. 2010, Meng and Yu 2010, Sakuma and Yamaguchi 2012*).

**The scientific purpose of the study will observe the molecular mechanisms related with muscle aging, and will demonstrate that apoptosis and low-grade inflammation is a marker of functional limitations in older persons. Furthermore, based on the inflammaging study, we hypothesise that Tai-Chi will reduce inflammation and fragmentation DNA, and will modulate DNA methylation that affects the aging process and is the central mechanism by which aging predisposes to many age-related diseases.**

**The social purpose of the study will health-oriented physical activity among the elderly (students AT University of Third Age) according AGE Platform Europe (<http://www.age-platform.eu/>) promoting active and responsible aging as well as integration of the elderly into younger generation.**