PRESS RELEASE N°5

ICFSR 2014

International Conference on Frailty & Sarcopenia Research

The conference will be held at
HOTEL REY JUAN CARLOS 1
Av Diagonal 661
Barcelona • Spain

Wednesday 12th, Thursday 13th & Friday 14th March, 2014 Barcelona, Spain

BUILDING MUSCLE MASS IN THE ELDERLY: THE ROLE OF EXERCISE AND NUTRITION

BARCELONA, SPAIN, March 14, 2014.

Declining muscle mass and strength in the elderly are major contributors to both physical and cognitive disability and thus, loss of independence. Since both physical inactivity and inadequate protein intake have been shown to accelerate the age-associate loss of muscle mass, strength, and function – a process called sarcopenia – exercise and nutritional interventions have been promoted as strategies to intervene in the process. However, studies of these interventions have been inconsistent, suggesting that a better understanding of mechanisms may be needed in order to develop more effective strategies.

At the International Conference on Frailty and Sarcopenia Research in Barcelona, Spain on Friday, March 14, 2014, a panel of scientists presented their latest findings on the mechanisms underlying muscle atrophy in the elderly and strategies to reverse this process. According to Michael Tieland of the Wageningen UR (University and Research centre) in The Netherlands, the age-related loss of skeletal muscle mass results from an imbalance between muscle protein synthesis and turnover. Research in the field suggests that muscle protein synthesis in response to food intake is blunted in the elderly, resulting in muscle atrophy. At the same time, physical exercise promotes protein synthesis, and this process appears to be at least partly preserved up to very old age. "Thus, prolonged resistance-type exercise training represents an effective therapeutic strategy to augment skeletal muscle mass and improve functional performance in the elderly," said Tieland.

However, Tieland said that the increase in protein synthesis in response to exercise largely depends on protein intake at certain times before, during and/or after exercise. Lex Verdijk, of the Maastricht University in The Netherlands added that in addition to the timing of intake, the amount, source, and amino acid composition of the protein, as well as the co-ingestion of other nutrients is important. Both scientists agreed that more research is needed to better understand the interaction between nutrition, exercise and the skeletal muscle adaptive response. "Such research will allow us to define more effective strategies that will maximize the therapeutic benefits of lifestyle intervention in the elderly," said Dr. Tieland.

One mechanism that underlies the increase in muscle mass as a result of exercise is an increase in satellite cells. Satellite cells are cells that normally exist in a resting state, but when activated begin to proliferate and facilitate the build-up of new muscle. Tim Snijders, a Ph.D. candidate working with Verdijk at Maastricht University, presented research showing that satellite cells decline with age in type II muscle fibers, but that 12 weeks of resistance exercise reverses this decline, leading to larger muscle fibers as well as more satellite cells.

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