**2B13-5** Serum C1q level is associated with aging-induced reduction in muscle mass and function

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**Purpose:** The aim of this study was to investigate whether serum C1q level is associated with aging-induced reduction of muscle mass and strength.

**Methods:** One hundred thirty-one healthy subjects (69 men and 62 women) aged 20–81 years were enrolled in a cross-sectional study. Cross-sectional area (CSA) of the thigh muscle was measured by using magnetic resonance imaging. Isometric peak knee extension and flexion powers were measured by Biodex. The serum C1q level was determined using ELISA kit.

**Results:** The muscle CSA and muscle strength were significantly lower in middle-aged and older adults (≥ 40 years) compared with young adults (< 40 years, P < 0.01) and, concomitantly, serum C1q concentration was significantly higher in middle-aged and older group compared with young group (P<0.01). The muscle CSA of the thigh was negatively correlated with age, as well as serum C1q level was positively correlated with age in both men and women. Additionally, the serum C1q level was negatively correlated with the muscle CSA of the thigh (P<0.01) and isometric peak knee extension (P<0.05) and flexion (P<0.05) powers in both gender.

**Conclusion:** These results suggest that the serum C1q level may be associated with aging-induced reduction of muscle mass and strength.

**Key word:** muscle mass, muscle strength, aging, C1q

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**2C14-1** Time-dependent changes in individual differences in components of the pressor responses to isometric handgrip exercise in humans

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**Purpose:** The aim of the present study was to investigate time-dependent changes in magnitude of the individual differences in cardiac output (CO) and total peripheral vascular resistance (TPR) responses to isometric handgrip exercise (HG) and the changes in the mechanism underlying those individual differences, focusing on the muscle metaboreflex.

**Methods:** Healthy subjects (n = 34) performed HG at 50% of maximal voluntary contraction for 15-s, 30-s, 45-s, 60-s and until exhaustion (81 ± 2-s). Each bout of exercise was followed by a 4-min period of post-exercise muscle ischemia (PEMI) to selectively maintain activation of the muscle metaboreflex.

**Results and Discussion:** Interindividual coefficients of variation (CVs) for the changes in CO and TPR between rest and exercise periods were 1.9- to 2.8-fold greater than the CV for changes in mean arterial pressure when 30-s or more HGs were performed. These CO and TPR responses correlated positively with the corresponding responses during PEMI if HGs were performed 60-s and until exhaustion. We conclude that once over ~35% of exhaustion the CO and TPR responses to HG vary considerably among individuals, and that the marked individual differences especially during ~75% of exhaustion or more HG are attributable in part to variations in muscle metaboreflex-mediated responses.

**Key words:** cardiac output, peripheral vascular resistance, muscle metaboreflex