

**Introduction:** Cognitive function has traditionally been associated with mental abilities, but there are reports that it may be associated with performance in physical function and even in ADLs. This relationship between the mental and the physical raises important questions about comprehensive health across the life course.

**Methods:** A cross-sectional descriptive observational study was carried out with correlation analysis between the main variables under study. The purpose of the research was to establish the functional relationship between muscle strength, gait speed, and cognitive functions in elderly people with or without cognitive impairments at 55 years of age. Cognitive function (MOCA), ABVD (Barthel index), IADL (Lawton and Brody questionnaire), and anthropometric and physical function variables were studied. A descriptive and inferential analysis of the data obtained was performed together with a correlation analysis to establish the functional relationship between the groups of variables. Ethical safeguards were taken in all cases, and informed consent approved by the Ethics Committee of the Catholic University of Temuco, Chile, was applied.

**Results:** The primary findings of this study show that, in older individuals with or without cognitive impairment, muscle strength, gait speed, and cognitive function have a functional relationship. There is also a strong correlation between these variables' performance in the physical domain. In addition, sex-associated differences were detected that are relevant to study and investigate in further studies. The effect of aging was differentiated in the case of women (younger than 75 years and older than 75 years) without detecting significant differences, but there was a tendency to increase deterioration with increasing cognitive and physical age.

**Conclusions:** Cognitive function is related to physical performance variables, and these may be predictors of aging as attenuators or aggravators. Therefore, it is of utmost importance to consider the interrelationship of these variables when addressing the health and well-being of this population. It is necessary to investigate aspects that generate preventive actions aimed at healthy and active aging, especially in the performance of cognitive function related to activities of daily living (basic and instrumental).

**Keywords:** Cognitive impairment; Executive functions; Basic activities of daily living (BADL); Instrumental activities of daily living (IADL).

## **P5: PREMATURE FUNCTIONAL DECLINE IN WOMEN OVER 40 YEARS OF AGE**

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**Introduction:** Early functional changes in women compromise elements such as muscle mass and strength, physical function, and gait speed, leading to a physiological decline that may contribute to frailty in old age.

**Objectives:** This study aimed to relate strength and physical performance to premature functional decline in women aged 40 years and older.

**Methods:** A cross-sectional descriptive observational study was conducted, and two groups of women were contrasted (40 to 60 years old and 60 and over), completing a sample of 31 women. Functional decline, lower limb

muscle power, prehensile strength, physical performance, gait speed, phenotype of frailty status, level of physical activity, and other sociodemographic factors were contrasted. The UCT internal ethics committee.

**Results:** Preliminary results showed that, among the demographic variables, women over 60 had a lower level of schooling, with 29% having incomplete basic education. Both groups reported a similar number of children: 93% in those under 60 and 100% in those over 60, with an average of 2.3 and 3.06 children, respectively. Statistically significant differences were detected in physical performance, lower limb strength, and gait speed, which were higher in women under 60.

**Conclusions:** The present report detected that lower limb strength, a determinant of great relevance in the aging population, affects gait speed. Likewise, muscle strength leads to a more rapid decline in older people. In both groups, physical performance played a crucial role in characterizing aging and frailty, particularly at ages over 60, when a decline in performance was evident. Notably, there were no variations in grip strength or physical activity levels, possibly because both groups performed poorly, raising the possibility of functional decline in women who have not yet reached old age.

**Keywords:** muscle strength, physical performance, gait speed, frailty.

## **P6: Functional relationship between locomotion and structural muscle fibers in Alzheimer's Disease, an experimental report from 3xTg-AD mice**

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**Introduction:** Motor impairment remains underexplored in Alzheimer's disease. We previously described the functional impairment of gait and exploratory activity of male 3xTg-AD mice at different stages of Alzheimer's disease progression. We describe movement limitations and muscle weakness as indicators of severity.

**Methods:** In the present report, a cross-sectional study was carried out that analyzed the muscular structure of the quadriceps and triceps surae muscles of transgenic (3xTg-AD) and non-transgenic males in the early (6 months), intermediate (12 months), and advanced (16 months) stages of Alzheimer's disease. Longitudinal sections of the quadriceps and triceps surae stained with hematoxylin and eosin (H&E) were evaluated. Using conventional histological techniques, they were then rinsed with PBS, pH 7.4. For the F-actine immunohistochemistry, the sections were blocked by incubating them in IgG-free 2% bovine serum albumin (BSA, Sigma) for 60 min. Then specimens were incubated for 10 minutes with 0.2% Triton X-100 in PBS at room temperature. The slides were incubated overnight at 4 °C with F-actin (Santa Cruz Biotechnology Inc., CA, USA). Slides were counterstained with VectaShield using 4, 6-diamino-2-phenylindole dihydrochloride (DAPI) (Vector Labs., CA, USA) for nuclei staining and visualized in the blue channel.

**Results:** Lower fluorescence labeling was detected in 3xTg-AD mice at all ages, with a greater decline at older ages. Signs of sarcopenia are also present in an advanced stage of AD, with differences in fiber distribution, the number of cell nuclei, and the presence of adipose tissue.