



## THE INTERRELATIONS BETWEEN THE COGNITIVE PERFORMANCE AND MOBILITY IN ELDERLY PATIENTS

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### Abstract

**Introduction:** An evidence-based general consensus agrees there is a positive impact of physical exercises within a balanced lifestyle on the cognitive function in aging persons. Research showed that both cardiovascular and metabolic function are improved by physical activity, which further enhance the formation of neural network, increase brain neurotrophins and could lead to better synaptic plasticity and neurogenesis, and reduced oxidative stress.

**Material and Methods:** Researchers use different instruments to assess mobility and also cognitive function. A recent literature review was performed using some relevant keywords: mobility, cognitive function, dementia, elderly. The focus of the literature search was both on gathering data on the relationship between cognitive performance and mobility in elderly as well as on identifying the measurements and instruments used in evaluation, trying to pinpoint the most accurate, precise but also easy-to-use approaches for clinical practice.

**Results and Discussion:** Our database search identified in PubMed 285 relevant articles published only in the last 10 years, approaching the topic of mobility in relation to cognitive function in the elderly from different perspectives. Data from longitudinal cohort studies support the hypothesis of the reduced or delayed age-related cognitive decline in elderly persons engaging in some type of physical activity- whether it involves aerobic (cardio-) training or resistance training (focus on muscle strength). The positive impact was recognized across different clinical populations: in MCI (Mild Cognitive Impairment), some dementia types (vascular, Alzheimer) and demonstrated effects like improved cerebral flow, increased volumes of the cortex and hippocampal area. The LIFE study [2019] is one of the research initiatives that confirmed also the direct role of cognitive function in the development of mobility disabilities in geriatric patients, showing that a positive change in processing speed was significantly associated with the lower risk of evolving to a major mobility disability in community- dwelling older patients having an impaired physical function. There is evidence of a dose- response pattern of the association between cognitive function and mobility, and that lower extremity impairment is more significantly influencing the global cognition. Our literature overview showed that different parameters may be used for mobility performance assessment, some of the easier applicable in geriatric healthcare clinical setting are: validated questionnaire- type instruments (like The Quick Physical Activity Rating- QPAR- scale), physical activity tests (mini Physical Performance Test- mPPT- includes the following tasks: pick-up-penny, 50-ft usual-pace walking test, 5 complete chair-raises, and the progressive Romberg balance-test, each ranging from 0 to 4, with 4 indicating highest level of performance) or evaluations (major mobility disability- MMD- defined as the inability to walk 400 m without assistance in under 15 min; quality of turning, quantified by mean turn duration, mean peak speed of turning, and mean number of steps to complete a turn).

**Conclusion:** Recent literature review provide supportive evidence on the complex interrelation between cognitive function and mobility in elderly. There seems to be a vicious circle in which decline in physical capacity triggers pathological changes in the brain, determining an increase of the mobility deficiency and so on. For an efficient intervention, screening elderly patients using brief, simple, validated tools for early symptoms of cognitive impairment and dysfunctions in mobility is essential.