



## Can cognitive reserve protect frail individuals from dementia?

Fanny Petermann-Rocha and colleagues<sup>1</sup> reported the findings of a large prospective study, which was aimed at investigating the association of physical frailty and all-cause dementia incidence. The principal finding was that individuals clustered as pre-frail and frail (according to the diagnostic criteria of the Fried frailty phenotype) showed a higher risk of dementia incidence than non-frail individuals. This study investigated the potential predictive role of physical frailty in the development of dementia for the first time, and thus substantially improved the current knowledge that was often limited to the investigation of sole components of physical frailty, such as handgrip strength and gait speed, as potential predictors of dementia. Nevertheless, a multidimensional frailty approach in predicting dementia appears increasingly necessary, because several biological, psychological, and social factors concur to define the frailty status of individuals.<sup>2</sup> Furthermore, cognitive functions and functional performances appear mutually able to accelerate the evolution of each other; therefore, rather than two independent events, the progressive reduction of cognitive functions and the decrease of motor and physical performances could alternatively represent a joint pathway towards age-related outcomes, such as dementia or frailty.<sup>3</sup>

In line with this bidirectional perspective, the early identification of common antecedent factors, which could jointly contribute to cognitive and functional performances, might represent the upcoming challenge. The concept of reserve has originally been suggested as a protective factor against the onset of negative age-related outcomes; besides availing of passive stores of reserves, such as the brain reserve, each individual could actively improve own dispositional reserves.

Consistently, the active model of cognitive reserve has been a challenging topic of investigation, because it embraces several domains and related factors. Education, premorbid intelligence quotient, occupation, and leisure time activities are acknowledged as representative indexes of cognitive reserve,<sup>4</sup> which are able to interact with cognitive trajectories towards dementia, and also with frailty in older adults.<sup>5</sup> The study of Petermann-Rocha and colleagues reported that compared with non-frail individuals, physically frail individuals had lower education, lower socioeconomic status, and reduced engagement in social activities,<sup>1</sup> indirectly suggesting that physically frail individuals have a lower cognitive reserve than non-frail individuals.

Because of its dynamic nature, cognitive reserve might be involved in future studies as a potential shared antecedent factor for dementia and frailty, and as a novel target of interventions aimed at preventing both cognitive and functional decline in older adults.

We declare no competing interests.

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