

# ASSOCIATION OF BODY MASS INDEX AND ABDOMINAL ADIPOSITY WITH COGNITIVE FUNCTION AND FUNCTIONAL STATUS IN THE ELDERLY



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## Introduction

Several studies have reported that obesity is a strong risk factor for developing dementia in later life (1) and it has shown to be associated with functional status (2). However, high BMI in older ages has been proposed as a protective factor for dementia and higher amounts of visceral fat seems to give survival benefit in older adults (3).

## Purpose

To examine the association between body composition, functional status and cognitive function in the elderly, including potential gender differences.

## Methods

A total of 145 elderly (Age  $81.1 \pm 9.3$  years; Weight  $66.2 \pm 14.4$  Kg; BMI  $27.5 \pm 5.5$  Kg/m<sup>2</sup>), were volunteers.

Abdominal bioelectrical impedance analysis and waist circumference (WC) was measured using the ViScan® (AB 140-Tanita Corporation, Japan). In addition, anthropometric measurements were performed. BMI and waist-hip ratio (WHR) were calculated using classical equations, and sagittal abdominal diameter (SAD) as abdominal adiposity markers.

Cognitive function was evaluated through the Mini-Examination Cognitive (MEC) score and functional status was measured using the Barthel Index. The Kendall-Tau and Spearman rank correlation coefficients were used to explore associations between variables.

## Results

Barthel score was positively associated with weight (Kendall  $\tau = 0.12$ ,  $P < 0.05$ ) and BMI (Rho = 0.03,  $P > 0.05$ ), and inversely with age (Rho = -0.33,  $P < 0.01$ ). WC, WHR and SAD were not significantly associated with Barthel score. No significant gender differences were found between variables.

MEC score was positively associated with BMI, SAD and WC (Rho = 0.19; Rho = 0.17,  $P < 0.05$ ; Rho = 0.22,  $P < 0.01$ , respectively), visceral fat (Fig. 1) and gluteal circumference (Kendall  $\tau = 0.17$  both,  $P < 0.05$ ), and inversely with age and WHR, not significantly. These associations were strengthened in women.

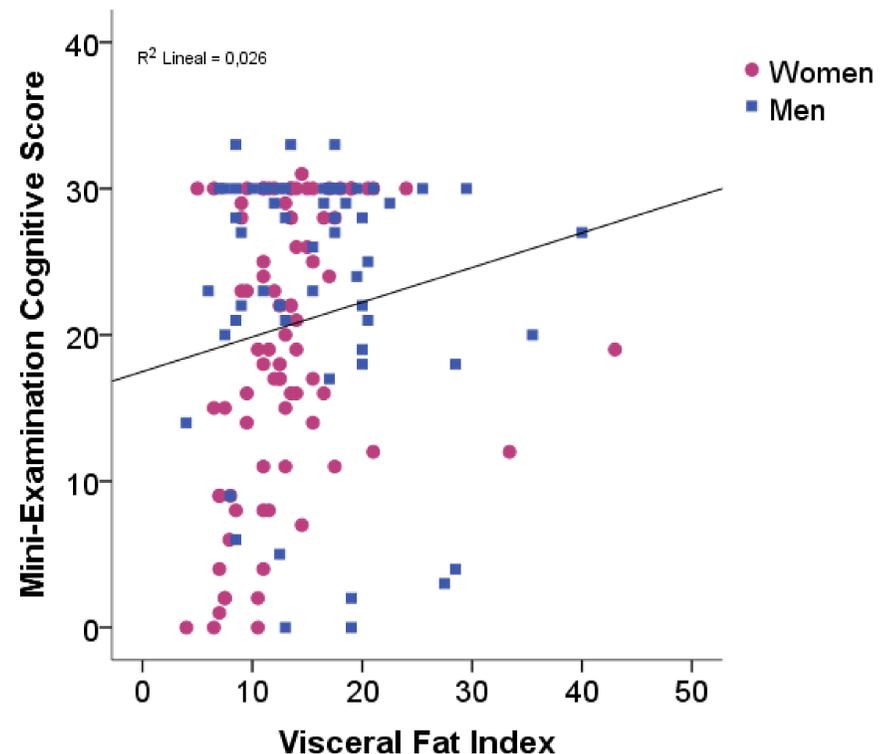


Figure 1. Correlations between visceral fat index (ViScan) and cognitive function (MEC).

## Conclusions

- Our results suggest that high BMI and prevent weight loss could be a positive factor for physical functioning level and a protective factor for dementia in the oldest old.
- In this observational study, visceral fat were associated with decreased risk of developing dementia, but not with functional status.
- A plausible explanation should be higher BMI and weight might be related with higher lean mass. However, when the analysis was performed, separated by gender, this association was observed only in women for dementia.
- In view of the fact that loss of lean tissues occurs exponentially with aging, promotion of physical activity programs targeted at weight maintenance would be important.

## Acknowledgments

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## References

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Table 1. Characteristics of participants by sex.

	All (n=145)	Men (n=60)	Women (n=85)
Age (years)	81.1±9.3	77.1±15.4	83.9±7.9
Weight (Kg)	66.2±14.4	71.7±15.4	62.3±12.2
Height (cm)	155.1±9.5	162.3±8.4	149.8±6.4
BMI (Kg/m <sup>2</sup> )	27.6±5.5	27.3±5.6	27.8±5.4
Trunk fat (%)	39.5±36.2	30.7±9.9	45.7±45.6
Visceral fat	14.3±6.5	16.2±7.3	13.0±5.7
MEC Score	20.9±9.6	23.4±9.0	19.1±9.7
Barthel Index	69.5±29.3	76.9±24.8	64.3±31.2

Values are presented as mean ±SD.

BMI, Body Mass Index; FMP, Fat Mass; MEC, Mini-Examination Cognitive

