

## EDITORIAL

# Is it now appropriate to assert that creatine supplementation holds cognitive benefits for the older adults?

Marco Machado\*

Fundação Universitária de Itaperuna, Itaperuna, RJ, Brazil

## ABSTRACT

This paper explores the potential cognitive benefits of creatine supplementation for the older adult population. Creatine, known for its role in muscular and neuronal energy metabolism, is primarily obtained through dietary intake, particularly from meat sources. The literature underscores creatine's significance in neural tissue development and cognitive capacity, with deficiencies linked to impaired cognitive function, especially in infants. In the context of the aging global population, cognitive decline is a prevalent concern, and reduced creatine concentration is implicated in this process. While association studies suggest a connection between creatine intake and cognitive performance in older adults, the absence of robust clinical trials calls for further investigation. Physiological plausibility supports the idea that increased creatine intake, combined with physical activities, could positively impact cognition in older adults. However, the existing evidence remains inconclusive, and rigorous randomized placebo-controlled clinical trials are essential to establish a cause-and-effect relationship and elucidate underlying mechanisms. Confirmation of cognitive benefits could pave the way for determining optimal dosages to enhance cognitive function in the elderly.

**Keywords:** Creatine Supplement

## 1. Editorial Content

Creatine, a nitrogenous non-essential compound, plays a role in muscular and neuronal energy metabolism. While the body can produce it endogenous-

ly, optimal concentrations are maintained through dietary intake, primarily from meat sources (Wyss and Kaddurah-Daouk 2000). The literature strongly supports the fundamental role of creatine in neural tissue development and cognitive capacity, with

### \*CORRESPONDING AUTHOR:

Marco Machado, Fundação Universitária de Itaperuna, Itaperuna, RJ, Brazil; Email: marcomachado1@gmail.com

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metabolism deficiencies linked to impaired cognitive function, especially in infants (Stromberger et al 2003, Sklirou and Lichter-Konecki 2018).

In the context of the older adults, a demographic experiencing a global increase, cognitive decline is a prevalent concern (Shafqat 2023). Though multifactorial, reduced creatine concentration is implicated in the process. Factors such as diminished neuronal energy production and increased reactive oxygen species contribute to cognitive decline. The precise reasons for the decline in brain creatine levels in the older adults remain uncertain, with potential factors including reduced synthesis/transport by neurons (Forbes et al 2022) and challenges in meat ingestion and digestion (Kossioni 2023).

While association studies highlight a connection between creatine intake and cognitive performance (Ostojic et al 2021, Machado et al 2022), the absence of robust clinical trials leaves room for further investigation. The physiological plausibility of increased creatine intake positively impacting cognition in the older adults is evident, always combined with physical activities. Some studies indirectly explore the effects of creatine supplementation plus exercise on cognitive performance, yielding promising but inconclusive results regarding causation and mechanisms (Roschel et al 2021, Forbes et al 2022).

Despite a wealth of studies on creatine supplementation, primarily involving young people and motor performance analyses, a definitive conclusion on its influence on older adults cognitive capacity remains elusive (Stares and Bains 2020, Eckert and Pascher 2023). While findings in young and adult populations generally show limited clinical relevance, there is a growing body of promising evidence for the elderly (Stares and Bains 2020, Forbes et al 2022, Roschel et al 2021).

One cannot disregard the compelling research indicating that creatine enhances physical performance across various age groups (Stares and Bains 2020, Forbes et al 2022). Furthermore, it is essential to acknowledge that heightened physical performance can play a pivotal role in enhancing functional abilities among the elderly, with positive implications for

cognitive functions.

Rigorous randomized placebo-controlled clinical trials are essential to establish a cause-and-effect relationship and elucidate underlying mechanisms. If confirmed, subsequent studies will be necessary to determine optimal dosages for effective cognitive enhancement.

## Conflict of Interest

The author declares no conflict of interest.

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