



**IMPROVING COGNITIVE FUNCTION WITH NUTRITIONAL SUPPLEMENTS IN AGING: A COMPREHENSIVE NARRATIVE REVIEW OF CLINICAL STUDIES INVESTIGATING THE EFFECTS OF VITAMINS, MINERALS, ANTIOXIDANTS, AND OTHER DIETARY SUPPLEMENTS.**

Fekete, M ; Lehoczki, A ; Tarantini, S ; Fazekas-Pongor, V ; Csípő, T ; Csizmadia, Z ; Varga, JT  
Nutrients. 2023;15(24)

Dementia has multiple mechanisms involved in its development, which makes treating it with pharmaceuticals a challenge. Alternative approaches have included nutritional change and supplementation with certain nutrients. This review paper aimed to discuss potential nutritional supplements for use in dementia. The results showed that there were several supplements that had clinical data on their use for brain function, including vitamins, minerals, essential fatty acids, and naturally occurring plant chemicals. The data was very mixed between and within each of the supplements and showed that dosage and individual requirements play a large part in success of supplementation. It was concluded that there was clinical evidence to support the supplementation of vitamins B, C, D, E, magnesium, iron, selenium, and omega-3 for benefits to brain function, however several factors need to be considered including age, sex, nutritional status, lifestyle, stress levels, and physical activity. Healthcare professionals could use this study to understand that vitamins and minerals play a prominent role in brain health, but everyone has different nutritional requirements and that supplemental recommendations for brain function need to be individually tailored.

**THE EFFECT OF WEIGHT LOSS FOLLOWING 18 MONTHS OF LIFESTYLE INTERVENTION ON BRAIN AGE ASSESSED WITH RESTING-STATE FUNCTIONAL CONNECTIVITY.**

Levakov, G ; Kaplan, A ; Yaskolka Meir, A ; et al.  
eLife. 2023;12

Obesity is linked to premature brain ageing and subsequent development of diseases such as dementia and Alzheimer's disease. Weight loss through lifestyle modifications may be able to attenuate brain ageing. This sub-study of 102 individuals from a randomised control trial known as the Dietary Intervention Randomised Controlled Trial Polyphenols Unprocessed Study (DIRECT-PLUS), aimed to determine the effect of 18 months lifestyle modifications and weight loss on brain age.

The results showed that a decrease in BMI attenuated brain ageing and that 1% body weight loss reduced brain ageing by 8.9 months. Reduced brain age was also associated with decreased waist circumference and fat mass. Interestingly, reduced consumption of processed foods was also associated with reduced brain age. It was concluded that weight loss can be of benefit to brain health. This study could be used by healthcare professionals to understand that people with obesity are at a higher risk of brain related diseases, and that weight loss may be an effective way to prevent their development.



**EFFECT OF GUT MICROBIOME MODULATION ON MUSCLE FUNCTION AND COGNITION: THE PROMOTE RANDOMISED CONTROLLED TRIAL.**

Ni Lochlainn, M ; Bowyer, RCE ; Moll, JM ; et al.  
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Humans lose skeletal muscle with advancing age, and this can progress to sarcopenia. Dietary protein is crucial for maintaining skeletal muscle health; however, several factors can lead to reduced protein intake in older age. The aim of this study was to test whether the addition of gut microbiome modulation could augment established muscle function improvements from combined protein (branched chain amino acids [BCAA]) and resistance exercise.

This study was based on the PROMOTe (effect of PRebiotic and prOtein on Muscle in Older Twins) trial which was a randomised controlled trial in which twin pairs (n= 72) were randomised, one twin to each study arm.

Results showed that prebiotics improved cognition but did not impact muscle strength and function, compared with placebo. Furthermore, gut microbiome modulation via prebiotic supplementation in the context of ageing-muscle research is feasible and well tolerated, with clear responses noted in the gut microbiota composition and function. Authors concluded that cheap and readily available gut microbiome interventions hold promise for improving cognitive frailty in our ageing population.



**EFFECT OF CALORIE RESTRICTION AND INTERMITTENT FASTING REGIMENS ON BRAIN-DERIVED NEUROTROPHIC FACTOR LEVELS AND COGNITIVE FUNCTION IN HUMANS: A SYSTEMATIC REVIEW.**

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Medicina (Kaunas, Lithuania). 2024;60(1)

Brain-derived neurotrophic factor (BDNF) is a protein that plays a crucial role in brain development, cognition and metabolism. Intermittent fasting (IF) is a promising therapeutic strategy for managing metabolic disorders and improving cognitive function. Therefore, this systematic review of sixteen experimental and observational studies investigated the effect of IF on BDNF production and improvements in cognition through the BDNF pathway in healthy adults and people with metabolic disorders. Included studies focused on different IF regimens such as calorie restriction (CR), alternate-day fasting (ADF), time-restricted eating (TRE) and Ramadan model of intermittent fasting (RIF). Future, well-controlled, long-term, robust studies are required to assess the effect of different IF regimens on the production of BDNF and cognitive function in people with metabolic disorders, as the current research is inconclusive. However, healthcare professionals can use the review to understand the potential beneficial effects of IF on cognition and metabolic health in humans.

