

EFFECTS OF PROTEIN SUPPLEMENTATION ON CARDIORESPIRATORY, METABOLIC, IMMUNOLOGICAL, RENAL VARIABLES AND BODY COMPOSITION IN THE ELDERLY

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ABSTRACT

The aging process is associated with impairments in strength, lean mass (LM), cardiovascular health (CH), and cardiorespiratory health (CRH), due to metabolic, hemodynamic, and body composition changes in the elderly. The implications of these changes within the aging process can have their effects mitigated through nutritional intervention. To test this hypothesis, a randomized clinical trial was determined to be conducted at the Evangelical University of Goiás (UniEVANGÉLICA), where elderly volunteers (60 to 85 years old) will be randomized ($n = 40/\text{group}$) into groups (1) Control (no protein supplementation), group (2) Supplementation (only protein supplementation). The supplementation protocol will be carried out for 3 months, and the evaluations will take place before the start of the protocol and after 3 months. Numerous cardiovascular, pulmonary, immunological, renal, muscular, and hematological parameters will be evaluated. The analyses will be expressed as mean and standard deviation. A significance level of $p \leq 0.05$ will be adopted for comparisons made in the paired T-test and for multiparametric analyses. It is expected that the effects of the protein supplementation protocol will significantly improve the parameters described above, bringing positive results for the elderly volunteers in the study.

Keywords: Elderly; protein supplementation; metabolism; hemodynamic processes.

INTRODUCTION

This master's project aims to evaluate the effects of protein supplementation on physiological parameters in the elderly. The project is justified by the fact that the aging process is avoided and viewed negatively by many in society, as this process is commonly associated with problems in aesthetics, strength, loss of lean mass (LM), cardiovascular health (CVH), and cardiorespiratory health (CRH), as well as with dependence for activities of daily living (ADLs). As the years go by, metabolic changes (glucose, lipid profile, renal function), hemodynamic changes (heart rate, blood pressure), and body composition changes (dehydration, muscle mass loss, decrease in weight and height, reduction in bone mass) occur in the elderly, which result in a

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decline in quality of life and the development of non-communicable chronic diseases (CHEN et al, 2022).

Thinking about an appropriate lifestyle, these individuals should follow a daily routine of health protection during adulthood, with continuous exercise, a balanced diet, and avoiding the consumption of tobacco and its derivatives or alcohol. We know that not everyone has had this personal awareness of their habits, which is why it is necessary to raise awareness among the population about the need for a change in the lifestyle of the elderly. (KOLOKOTRONI, et al.2021).

The implications within the aging process can have their effects mitigated by reducing aggravating factors. It is possible for aging to occur in a healthy manner and to avoid the occurrence of pathologies. Since this process is extremely natural and immutable, aging should not be viewed through a stigmatized lens but rather respected (CAO, et al. 2019).

In addition to resistance training, protein supplementation, particularly with whey protein, has also been identified as a great ally in the prevention and recovery of muscle mass and strength in elderly individuals with sarcopenia (Cuyul-Vásquez et al., 2023).

It is believed that this study may be promising for the foundation of future research, with the aim of enhancing the scientific literature on the effects of protein supplementation, as there may be differences in hemodynamic, metabolic, and body composition values in the elderly.

METHODOLOGY

Population and Study Design

Eighty elderly individuals (80) aged between 60 and 85 years, sedentary and/or physically active, and residents of the city of Anápolis-GO. The elderly participants should be between 60 and 85 years old and will be randomly distributed into two groups, with $n = 40$ in each group: Control Group (CG; not supplemented; $n = 40$), Supplemented Group (SG; supplemented; $n = 40$).

Inclusion Criteria

- a) Individuals who volunteer to participate in the study;

- b) Sign the Free and Informed Consent Form – FICF;
- c) Be willing to participate in all evaluations;

Exclusion Criteria

- a) To be carriers of neurological diseases that prevent the completion of assessments and the physical training program.

Study Design

The controlled, non-blind clinical study will be conducted at the Exercise Physiology Laboratory of the Evangelical University of Anápolis (UniEvangélica), Anápolis-GO, and will only begin after approval by the UniEvangélica Research Ethics Committee.

The 80 elderly individuals will be recruited and randomly distributed into 2 groups, namely, Control Group (CG; non-supplemented; n = 40), Supplemented Group (SG; supplemented; n = 40).

At the first meeting, the volunteers will receive explanations about the research and will be invited to sign the Free and Informed Consent Term – FICT. After signing the term, they will be invited to answer the elderly's anamnesis and the proposed questionnaires. Next, they will proceed to carry out the evaluations described below.

General Description of the Parameters and Evaluations to be Analyzed

The parameters that will be analyzed are: questionnaires, resting electrocardiogram (ECG), complete blood count and serum cytokines, body composition assessment through Bioimpedance Analysis (BIA), cardiovascular hemodynamic variables (Blood Pressure, Heart Rate, and impedance cardiography through PhysioFlow™), pulmonary function analysis through spirometry, urine analysis through reactive strip urinalysis and cytokine measurement, lower limb muscle strength test (sit-to-stand test), handgrip strength test (Handgrip Dynamometer), respiratory muscle strength test (manovacuometry).

Protein Supplementation Protocol

The protein supplementation will be provided through isolated whey protein, commonly known as whey protein isolate, which was supplied free of charge by the Heroes

Science Institute (HSI). It is an isolated whey protein, vanilla flavor, which comes in 25-gram sachets, providing a total of 20 grams of protein per dose/sachet.

THANK YOU

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