INPLASY PROTOCOL

To cite: Yang et al. Effects of WB-EMS and Protein Supplementation on Body Composition, Physical Function, Metabolism and Inflammatory Biomarkers in Middle-Aged and Elderly Patients with Sarcopenic Obesity: A Meta-Analysis of Randomized Controlled Trials. Inplasy protocol 202190096. doi: 10.37766/inplasy2021.9.0096

Received: 26 September 2021

Published: 26 September 2021

Corresponding author:
Mao-yuan Wang

wmy.gmu.kf@gmail.com

Author Affiliation:
First Affiliated Hospital of Gannan Medical University.

Support: **NSFC (82060420).**

Review Stage at time of this submission: **Data extraction.**

Conflicts of interest:
None declared.

Effects of WB-EMS and Protein Supplementation on Body Composition, Physical Function, Metabolism and Inflammatory Biomarkers in Middle-Aged and Elderly Patients with Sarcopenic Obesity: A Meta-Analysis of Randomized Controlled Trials

Yang, JM[1]; Luo, Y[2]; Zhang, JH[3]; Liu, QQ[4]; Zhu, Q[5]; Ye, H[6]; Niu, YL[7]; Wang, MY[8]; Huang, H[9]; Xie, HY[10]; Long, Y[11].

Review question / Objective: **To investigate the effects of whole-body electromyostimulation (WB-EMS) training and protein supplementation intervention on body composition, physical function, metabolism and inflammatory biomarkers in middle-aged and elderly patients with SO.**
Condition being studied: **The patients with sarcopenic obesity (SO) have the characteristics of both sarcopenia and obesity, that is, less muscle mass and increased fat mass, and their morbidity, disability and mortality are higher than patients with sarcopenia or obesity alone.**
Information sources: **We searched for randomized controlled trials in seven databases, including PubMed, Web of Science, Embase, Cochrane Library, Scopus, SinoMed, and CNKI.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 26 September 2021 and was last updated on 26 September 2021 (registration number INPLASY202190096).

INTRODUCTION

Review question / Objective: **To investigate the effects of whole-body electromyostimulation (WB-EMS) training and protein supplementation intervention on body composition, physical function, metabolism and inflammatory biomarkers in middle-aged and elderly patients with SO.**

Condition being studied: The patients with sarcopenic obesity (SO) have the characteristics of both sarcopenia and obesity, that is, less muscle mass and increased fat mass, and their morbidity, disability and mortality are higher than patients with sarcopenia or obesity alone.

METHODS

Search strategy: We searched for randomized controlled trials in seven databases, including PubMed, Web of Science, Embase, Cochrane Library, Scopus, SinoMed, and CNKI.

Participant or population: Patients with sarcopenic obesity.

Intervention: Whole-body electromyostimulation (WB-EMS) and/or protein supplementation.

Comparator: Blank control.

Study designs to be included: Only a randomized controlled trial was included in this meta-analysis.

Eligibility criteria: The inclusion criteria of the studies were based on the PICOS (population, intervention, comparator, outcome, and study) principle, as shown below:P: people with SO (participants were required to have both sarcopenia and obesity, and have no other diseases, such as fractures, heart failure, diabetes, and the like). The age requirements are middle-aged and elderly, but there are no restrictions of gender and environment (such as the community, hospitals, or nursing homes).I: interventions include WB-EMS, high protein diet or essential amino acid supplementation.C: WB-EMS training, protein or amino acid supplement intervention, placebo or blank control.O: outcomes included one of the following: body composition (e.g., body fat percentage, skeletal muscle mass index, waist circumference, etc.), physical function (e.g., grip strength etc.), metabolism and inflammatory biomarkers (e.g., triglycerides, etc.).S: only a randomized controlled trial was included in this meta-analysis.

Information sources: We searched for randomized controlled trials in seven databases, including PubMed, Web of Science, Embase, Cochrane Library, Scopus, SinoMed, and CNKI.

Main outcome(s): Body Composition, Physical Function, Metabolism and Inflammatory Biomarkers.

Additional outcome(s): Sarcopenia Z-Score.

Quality assessment / Risk of bias analysis: The methodological quality of each included study was assessed using the Physiotherapy Evidence Database (PEDro) scale. The Cochrane Risk of Bias Tool was used to assess the risk of bias.

Strategy of data synthesis: Statistical analysis was performed using Review Manager 5.3 (The Nordic Cochrane Centre, Copenhagen, Denmark). Input the pre-extracted mean value, standard deviation and sample size into the statistical software. In our meta-analyses, we reported the effect size by the mean difference (MD) with 95% confidence intervals (95% CIs) for studies that used the same measuring methods, and the standardized mean difference (SMD) for those that measured the same outcome with different units for continuous outcomes.

Subgroup analysis: According to different intervention methods, they were divided into three subgroups: a. WB-EMS and protein supplementation; b. WB-EMS or protein supplementation alone; c. blank control.

Sensitivity analysis: When the heterogeneity is high, sensitivity analysis is used to find the source of heterogeneity.

Language: English and Chinese.

Country(ies) involved: China.

Keywords: sarcopenic obesity; WB-EMS; protein supplementation; meta-analysis.

Contributions of each author:

Author 1 - Jia-ming Yang - Designed and conceived research, and wrote the manuscript.
Author 2 - Yun Luo - Modified the manuscript.
Author 3 - Jia-hong Zhang - Searched the database and filtered the studies.
Author 4 - Qin-qin Liu - Extracted initial data.
Author 5 - Qiang Zhu - Extracted initial data.
Author 6 - Hua Ye - Analyzed the data.
Author 7 - Yan-long Niu - Modified the manuscript.
Author 8 - Mao-yuan Wang - Final checked and reviewed of the manuscript.
Author 9 - Hui Huang - Performed the quality assessment and risk of bias of the included studies.
Author 10 - Hui-yong Xie - Performed the quality assessment and risk of bias of the included studies.
Author 11 - Yi Long - Performed the quality assessment and risk of bias of the included studies.