Abstract
Title: Can supplements of essential amino acids increase muscle mass in healthy elderly and elderly with sarcopenia? - A systematic review
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Background: Older people (> 65 years) form a large part of the population and are the largest patient group in health care. Reduced muscle mass and muscle function are a natural part of aging, and in elderly patients the process of muscle synthesis is impaired. Loss of muscle mass can cause increased fragility and reduced quality of life in the elderly. High intake of protein in the form of essential amino acids (EAA) with content of the branched amino acid Leucine has been shown to have a positive effect on muscle synthesis in healthy adults and elderly at concomitant weight training compared to placebo. However, few studies and surveys have investigated whether supplements of EAA to elderly have an effect on muscle mass without simultaneous exercise.

Objective: The purpose of this systematic review article was to investigate the scientific basis for supplementation with essential amino acids without simultaneous exercise in healthy elderly and elderly with sarcopenia has a single effect on muscle mass.

Search strategy: The databases PubMed and Scopus were used to find scientific original articles. Block containing keywords and synonyms were used and merge to capture all articles that could affect our issue.

Selection criteria: Studies that investigated the potential effect of essential amino acids as increased muscle mass in elderly people.

Data collection and analysis: Four articles were selected according to the inclusion criteria and quality-reviewed using SBU's "RCT review template". Evidence strength for selected endpoint of muscle mass was then graded from the University of Gothenburg template "Underlag för sammanvägd bedömning enligt GRADE".

Main results: Significant increases in muscle mass were seen in the EAA groups from baseline in both studies for healthy elderly. However, mixed results were shown in the two studies for elderly patients with sarcopenia where one study showed significant difference from baseline after EAA supplementation and the second study showed no significant increase in muscle mass in the EAA group, either from baseline or compared to control group.

Conclusions: Evidence strength for supplementation of amino acids without simultaneous exercise increases muscle mass in healthy elderly patients was low (+++) and evidence of elderly with sarcopenia very low (+).

Keywords: essential amino acids, muscle mass, elderly, sarcopenia, frailty