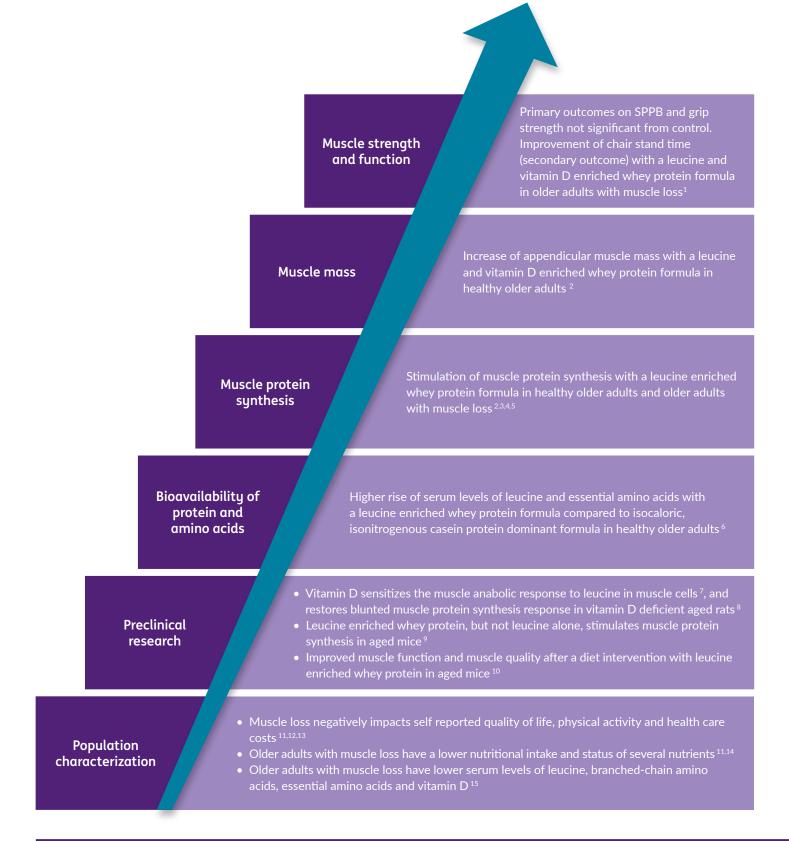
EVIDENCE BUILDING FOR A COMBINATION OF WHEY PROTEIN, LEUCINE AND VITAMIN D





NUTRICIA RESEARCH



References

- ^{1.} Bauer JM et al. Effects of a vitamin D and leucine-enriched whey protein nutritional supplement on measures of sarcopenia in older adults, the PROVIDE study: a randomized, double-blind, placebo-controlled trial. J Am Med Dir Assoc. 2015;16(9):740-7. https://www.ncbi.nlm.nih.gov/pubmed/26170041
- ² Chanet A, et al. Supplementing breakfast with a vitamin D and leucine-enriched whey protein medical nutrition drink enhances postprandial muscle protein synthesis and muscle mass in healthy older men. J Nutr. 2017;147(12):2262-71. https://www.ncbi.nlm.nih.gov/pubmed/28835387
- ^{3.} Luiking YC, et al. Postprandial muscle protein synthesis is higher after a high whey protein, leucine-enriched supplement than after a dairy-like product in healthy older people: a randomized controlled trial. Nutr J. 2014;13:9. https://www.ncbi.nlm.nih.gov/pubmed/24450500
- ^{4.} Kramer IF, et al. Impact of the macronutrient composition of a nutritional supplement on muscle protein synthesis rates in older men: a randomized, double blind, controlled trial. J Clin Endocrinol Metab. 2015;100(11):4124-32. https://www.ncbi.nlm.nih.gov/pubmed/26308291
- ^{5.} Kramer IF, et al. Both basal and post-prandial muscle protein synthesis rates, following the ingestion of a leucine-enriched whey protein supplement, are not impaired in sarcopenic older males. Clin Nutr. 2017;36(5):1440-9. https://www.ncbi.nlm.nih.gov/ pubmed/27743615
- ^{6.} Luiking YC, et al. Protein type and caloric density of protein supplements modulate postprandial amino acid profile through changes in gastrointestinal behaviour: A randomized trial. Clin Nutr. 2016;35(1):48-58. https://www.ncbi.nlm.nih.gov/pubmed/25790724
- ^{7.} Salles J, et al. 1,25(OH)2-vitamin D3 enhances the stimulating effect of leucine and insulin on protein synthesis rate through Akt/PKB and mTOR mediated pathways in murine C2C12 skeletal myotubes. Mol Nutr Food Res. 2013;57(12):2137-46. https://www.ncbi.nlm.nih.gov/pubmed/23929734
- ^{8.} Chanet A, et al. Vitamin D supplementation restores the blunted muscle protein synthesis response in deficient old rats through an impact on ectopic fat deposition. J Nutr Biochem. 2017;46:30-8. https://www.ncbi.nlm.nih.gov/pubmed/28445792
- ^{9.} Dijk FJ, et al. Differential effects of leucine and leucine-enriched whey protein on skeletal muscle protein synthesis in aged mice. Clin Nutr ESPEN. 2018;24:127-33. https://www.ncbi.nlm.nih.gov/pubmed/29576350
- ^{10.} van Dijk M, et al. Improved muscle function and quality after diet intervention with leucine-enriched whey and antioxidants in antioxidant deficient aged mice. Oncotarget. 2016;7(14):17338-55. https://www.ncbi.nlm.nih.gov/pubmed/26943770
- ^{11.} Verlaan S, et al. Nutritional status, body composition, and quality of life in community-dwelling sarcopenic and non-sarcopenic older adults: A case-control study. Clin Nutr. 2017;36(1):267-74. https://www.ncbi.nlm.nih.gov/pubmed/26689868
- ^{12.} Mijnarends DM, et al. Burden-of-illness of Dutch community-dwelling older adults with sarcopenia: Health related outcomes and costs. Eur Geriatr Med. 2016;7(3):276-84. https://www.sciencedirect.com/science/article/pii/S1878764915002454
- ^{13.} Mijnarends DM, et al. muscle, health and costs: a glance at their relationship. J Nutr Health Aging. 2018;22(7):766-73. https://www.ncbi.nlm.nih.gov/pubmed/30080217
- ^{14.} ter Borg S, et al. Differences in nutrient intake and biochemical nutrient status between sarcopenic and nonsarcopenic older adults - Results from the Maastricht Sarcopenia Study. J Am Med Dir Assoc. 2016;17(5):393-401. https://www.ncbi.nlm.nih.gov/pubmed/26825685
- ^{15.} ter Borg S, et al. Low levels of branched chain amino acids, eicosapentaenoic acid and micronutrients are associated with low muscle mass, strength and function in community-dwelling older adults. J Nutr Health Aging. 2018. In press.



