# 評価対象論文リスト(要因:たんぱく質摂取、アウトカム:フレイル)

評価判定日:2024/8/22

**①既存の系統的レビュー・メタ解析・統合解析**

| | |
|---|---|
| 1 | Artaza-Artabe I, Sáez-López P, Sánchez-Hernández N, Fernández-Gutierrez N, Malafarina V. The relationship between nutrition and frailty: Effects of protein intake, nutritional supplementation, vitamin D and exercise on muscle metabolism in the elderly. A systematic review. Maturitas. 2016;93:89-99. doi:10.1016/j.maturitas.2016.04.009 |
| 2 | Coelho-Junior HJ, Calvani R, Picca A, Tosato M, Landi F, Marzetti E. Protein intake and frailty in older adults: a systematic review and meta-analysis of observational studies. Nutrients. 2022;14(13):2767. doi:10.3390/nu14132767 |
| 3 | Coelho-Júnior HJ, Rodrigues B, Uchida M, Marzetti E. Low protein intake is associated with frailty in older adults: a systematic review and meta-analysis of observational studies. Nutrients. 2018;10(9):1334. doi:10.3390/nu10091334 |
| 4 | Kirwan RP, Mazidi M, Rodríguez García C, et al. Protein interventions augment the effect of resistance exercise on appendicular lean mass and handgrip strength in older adults: a systematic review and meta-analysis of randomized controlled trials. The American Journal of Clinical Nutrition. 2022;115(3):897-913. doi:10.1093/ajcn/nqab355 |
| 5 | Lorenzo-López L, Maseda A, De Labra C, Regueiro-Folgueira L, Rodríguez-Villamil JL, Millán-Calenti JC. Nutritional determinants of frailty in older adults: A systematic review. BMC Geriatr. 2017;17(1):108. doi:10.1186/s12877-017-0496-2 |
| 6 | Nowson CA, Service C, Appleton J, Grieger JA. The impact of dietary factors on indices of chronic disease in older people: A systematic review. The Journal of nutrition, health and aging. 2018;22(2):282-296. doi:10.1007/s12603-017-0920-5 |
| 7 | Coelho-Júnior HJ, Calvani R, Tosato M, Landi F, Picca A, Marzetti E. Protein intake and physical function in older adults: A systematic review and meta-analysis. Ageing Research Reviews. 2022;81:101731. doi:10.1016/j.arr.2022.101731 |

**②日本人個別研究(ランダム化比較試験、コホート研究、症例対照研究、横断研究などの個別疫学研究)**

| | |
|---|---|
| 8 | Okada M, Hama Y, Futatsuya R, et al. Association between masticatory performance, nutritional intake, and frailty in japanese older adults. Nutrients. 2023;15(24):5075. doi:10.3390/nu15245075 |
| 9 | Huang CH, Okada K, Matsushita E, et al. Sex-specific association between social frailty and diet quality, diet quantity, and nutrition in community-dwelling elderly. Nutrients. 2020;12(9):2845. doi:10.3390/nu12092845 |
| 10 | Otsuka R, Tange C, Tomida M, et al. Dietary factors associated with the development of physical frailty in community-dwelling older adults. The Journal of nutrition, health and aging. 2019;23(1):89-95. doi:10.1007/s12603-018-1124-3 |
| 11 | Kobayashi S, Asakura K, Suga H, Sasaki S, the Three-generation Study of Women on Diets and Health Study Group. High protein intake is associated with low prevalence of frailty among old Japanese women: a multicenter cross-sectional study. Nutr J. 2013;12(1):164. |
| 12 | the Three-generation Study of Women on Diets and Health Study Group, Kobayashi S, Suga H, Sasaki S. Diet with a combination of high protein and high total antioxidant capacity is strongly associated with low prevalence of frailty among old Japanese women: a multicenter cross-sectional study. Nutr J. 2017;16(1):29. doi:10.1186/s12937-017-0250-9 |

| | |
|---|---|
| 13 | Hiroyasu Mori, Yasunobu Tokuda. Differences and overlap between sarcopenia and physical frailty in older community-dwelling Japanese. Asia Pacific Journal of Clinical Nutrition. 2019;28(1). doi:10.6133/apjcn.201903_28(1).0021 |
| 14 | Nanri H, Yamada Y, Yoshida T, et al. Sex difference in the association between protein intake and frailty: assessed using the kihon checklist indexes among older adults. Journal of the American Medical Directors Association. 2018;19(9):801-805. doi:10.1016/j.jamda.2018.04.005 |
| 15 | Kaimoto K, Yamashita M, Suzuki T, et al. Association of protein and magnesium intake with prevalence of prefrailty and frailty in community-dwelling older japanese women. J Nutr Sci Vitaminol. 2021;67(1):39-47. doi:10.3177/jnsv.67.39 |
| 16 | Nanri H, Watanabe D, Yoshida T, et al. Adequate protein intake on comprehensive frailty in older adults: kyoto-kameoka study. The Journal of nutrition, health and aging. 2022;26(2):161-168. doi:10.1007/s12603-022-1740-9 |

■メタ解析、系統的レビュー

| Reference | | | Include study | | | | | Design | Relative risk (95% CI or p) | **Magnitude of association** |
|---|---|---|---|---|---|---|---|---|---|---|
| Author | Title | Year | Ref No. | First author | Year | Study period | Study location | Event (*Definition) | Category | | |
| Coelho-Junior HJ, Calvani R, Picca A, Tosato M, Landi F, Marzetti E | Protein Intake and Frailty in Older Adults: A Systematic Review and Meta-Analysis of Observational Studies | 2022 | Pooled analysis of 10 cross-sectional studies (including Japanese studies) | | | | | | Log 10 = -0.08 (-0.19, 0.02) | |
| | | | Pooled analysis of 4 longitudinal studies (including Japanese studies) | | | | | | Log 10 = -0.132 (-0.207, -0.056) | |
| Coelho-Júnior HJ, Rodrigues B, Uchida M, Marzetti E. | Low Protein Intake Is Associated with Frailty in Older Adults: A Systematic Review and Meta-Analysis of Observational Studies | 2018 | Pooled analysis of 4 studies (including Japanese study) : Fig-2 (a) | | | | | | 0.67 (0.56, 0.82) | ↓ |
| | | | Pooled analysis of 4 studies (including Japanese study): Fig-2 (b) | | | | | | 0.66 (0.54, 0.80) | ↓ ↓ |

■コホート研究（コホートのプール解析含む）

| Reference | | | Study subjects | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Author | Title | Year | Study period | Number of subjects | Source of subjects | Event followed | Number of incident cases or deaths | Participant's race | Category | Number among cases | Relative risk (95%CI or p) | P for trend | Confounding variables considered | **Magnitude of association** |
| Huang CH, Okada K, Matsushita E, Uno C, Satake S, Arakawa Martins B, Kuzuya M. | Sex-Specific Association between Social Frailty and Diet Quality, Diet Quantity, and Nutrition in Community-Dwelling Elderly | 2020 | 2014-2017 | 429 | Nagoya Longitudinal Study for Healthy Elderly, | Social Prefrailty and Frailty | Social Robustness | japanese | Protein intake, g/kg/day | | nutrient intake changes(social prefrailty or frailty : robust)<br>GEE β Estimates (95%CI) | | age, body mass index, educational level, Geriatric Depression Scale score, and Charlson Comorbidity Index score,BMI | |
| | | | | | | | men n=194, women n=222<br>Social Prefrailty and Frailty<br>men n=97, women n=153 | | men<br>women | | -0.088( -0.12, -0.04)<br>0.03(-0.01, 0.08) | <0.01<br>0.15 | | |
| Otsuka R, Tange C, Tomida M, Nishita Y, Kato Y, Yuki A, Ando F, Shimokata H, Arai H. | Dietary factors associated with the development of physical frailty in community-dwelling older adults | 2019 | 2years<br>2006 to 2008 -<br>2010 to 2012 | 283 | NILS-LSA | physical frailty (Prefrail/frail) | Robust (n = 181)<br>Prefrail/frail (n = 102) | japanese | | mean(1sd) | OR(95%CI) | p-value | | |
| | | | | | | | | | Protein(g/day) | 78.6(15.5) | 0.72(0.53-0.97) | 0.029 | sex, baseline age, education, family income, smoking status, alcohol intake, BMI, and medical history | ↓ |