



The Prediction of Adverse Health Effects for Dynapenia: A Systematic Review and Meta- Analysis of 19,632 Middle to Older Adults

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OUTLINE

- ◆ Background and objective
- ◆ Methods
- ◆ Results
- ◆ Conclusions



Where are we ?



Background

- ◆ The pre-sarcopenia stage is also known as dynapenia.
- ◆ Dynapenia has been shown to be health effects for disability and death.
- ◆ Early detection of dynapenia can more effectively assess and prevent sarcopenia.
- ◆ However, health effects of dynapenia are rare to be explored.

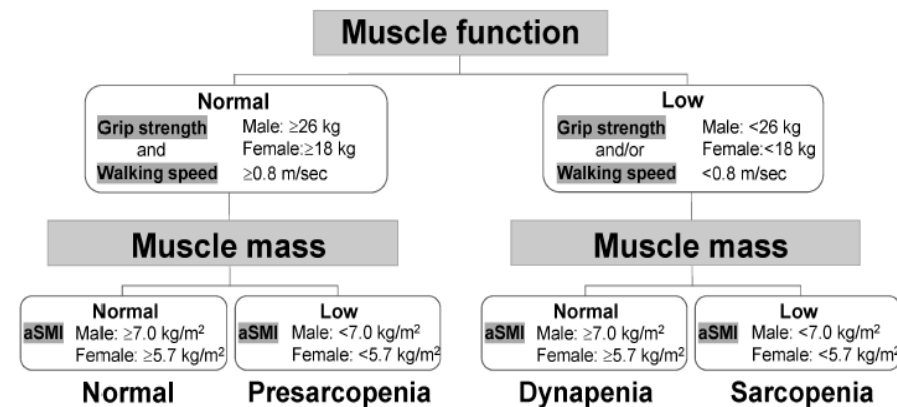
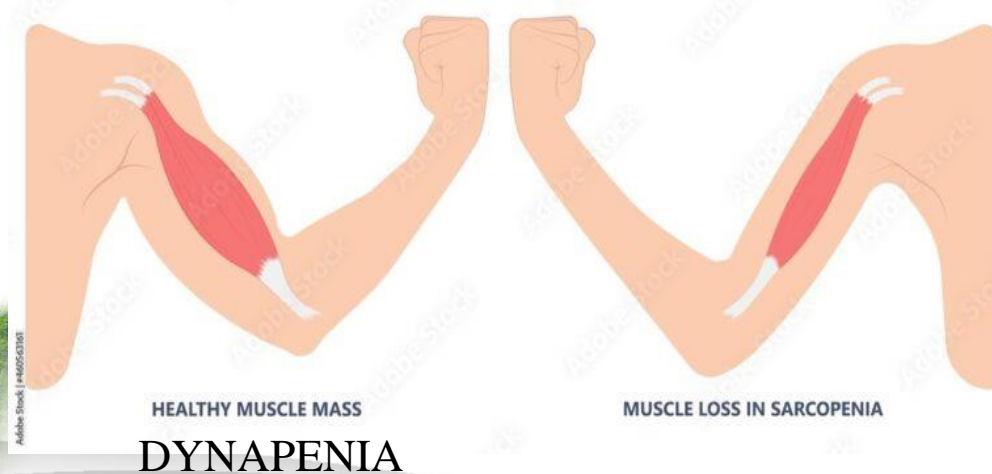


figure from functional medicine

from Kobayashi et al.(2017)



Objective

- ◆ The main objective of this study was investigated the correlation between health effects with dynapenic in middle to older adults.



Methods

- ◆ A systematic literature search was conducted to review and analyze relevant studies.
- ◆ Dynapenia was measured by handgrip strength was measured.
- ◆ The search keywords included "older people" OR "elderly" OR "middle age" AND "dynapenia". The search was not limited by time and included articles published up until May 2023.

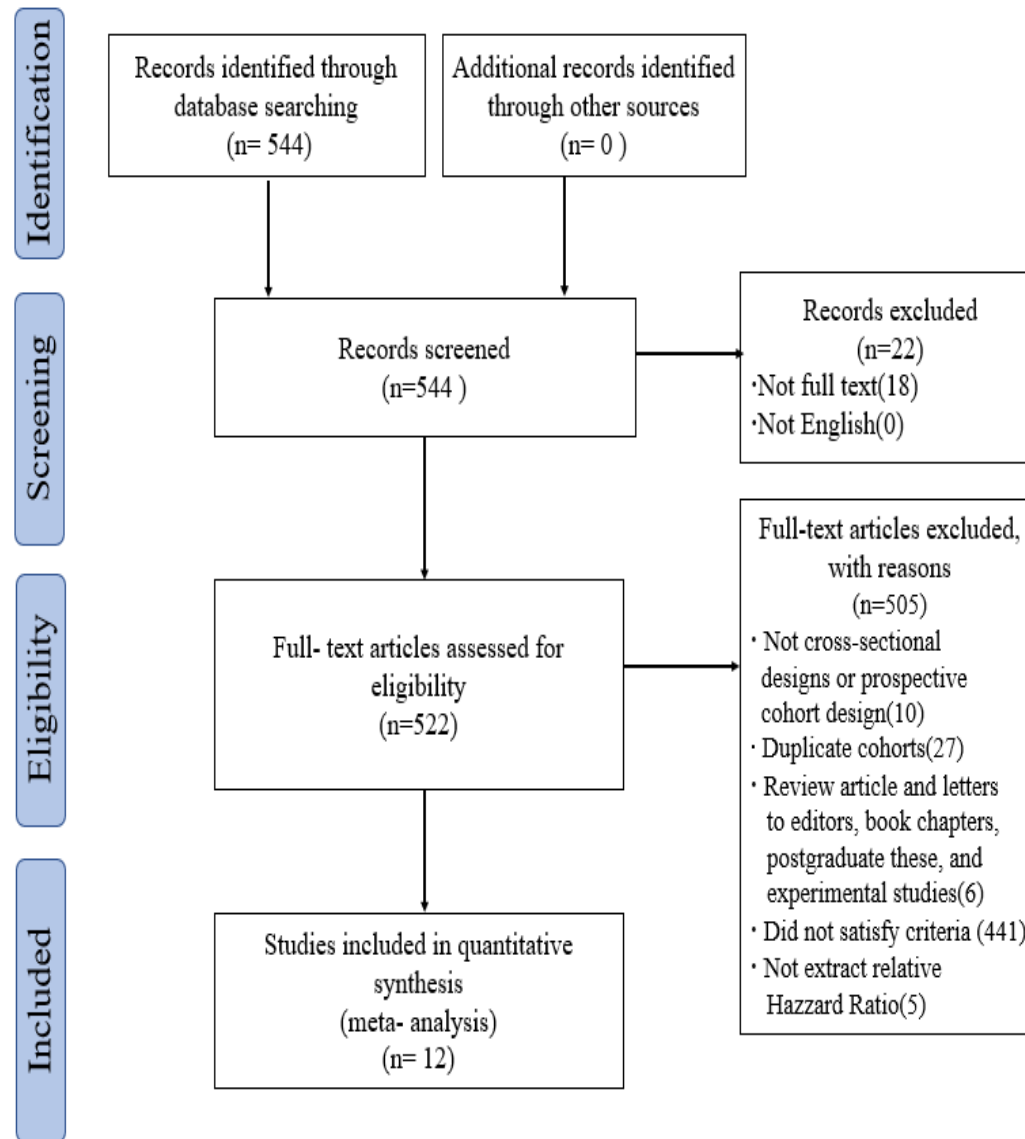


Figure 1. Research flowchart.



Results

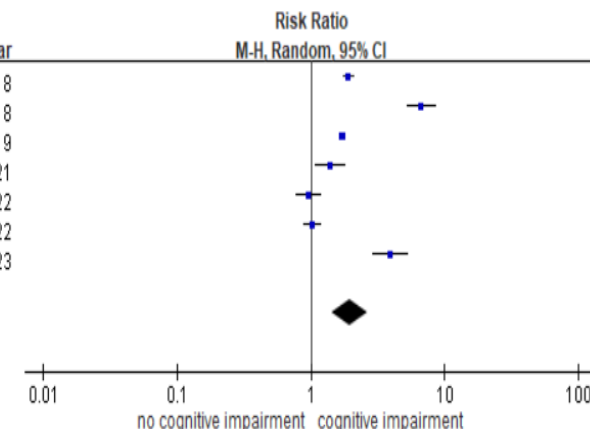
- ◆ This study collected a total of twelve articles with a combined sample size of 19,632 participants.
- ◆ The findings revealed that the average follow-up period for health effects was 3.8 years.
- ◆ All articles were from Europe, Asia, Australia, and South America.



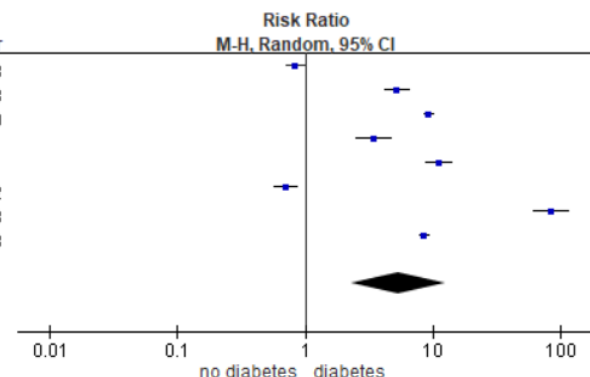
Results

- ◆ The results of the meta-analysis showed that middle to older adults with dynapenia was associated with cognitive impairment (RR= 1.95, 95% CI 1.43-2.64, p<0.0001), diabetes (RR= 5.42, 95% CI 2.32-12.64, p<0.0001), and cardiovascular (RR= 7.08, 95% CI 4.43-11.30, p<0.00001).

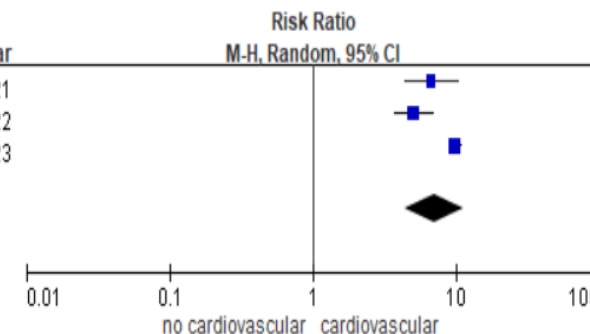
Study or Subgroup	no cognitive impairment		cognition impairment		Weight	Risk Ratio		Year
	Events	Total	Events	Total		M-H, Random, 95% CI		
Alexandre et al.(a) 2018	765	1168	403	1168	15.0%	1.90 [1.74, 2.08]	2018	
Benjumea et al. 2018	393	452	59	452	13.9%	6.66 [5.24, 8.47]	2018	
Carvalho et al. 2019	3331	5271	1940	5271	15.1%	1.72 [1.65, 1.79]	2019	
Pasco et al. 2021	74	127	53	127	13.8%	1.40 [1.08, 1.80]	2021	
Lv et al. 2022	90	184	94	184	14.2%	0.96 [0.78, 1.17]	2022	
Oba et al. 2022	211	417	206	417	14.7%	1.02 [0.89, 1.17]	2022	
Lin et al. 2023	142	178	36	178	13.2%	3.94 [2.92, 5.33]	2023	
Total (95% CI)		7797		7797	100.0%	1.95 [1.43, 2.64]		
Total events	5006		2791					
Heterogeneity: Tau ² = 0.16; Chi ² = 251.90, df = 6 (P < 0.00001); I ² = 98%								
Test for overall effect: Z = 4.27 (P < 0.0001)								



Study or Subgroup	no diabetes		diabetes		Weight	Risk Ratio		Year
	Events	Total	Events	Total		M-H, Random, 95% CI		
Aleandre et al. (b) 2018	124	273	149	273	12.5%	0.83 [0.70, 0.99]	2018	
Benjumea et al. 2018	379	452	73	452	12.5%	5.19 [4.19, 6.43]	2018	
Nebuloni et al. 2020	4772	5290	518	5290	12.6%	9.21 [8.48, 10.00]	2020	
Kao et al. 2021	114	147	33	147	12.4%	3.45 [2.53, 4.72]	2021	
Mori et al. 2021	754	822	68	822	12.5%	11.09 [8.82, 13.94]	2021	
Oba et al. 2022	85	206	121	206	12.5%	0.70 [0.58, 0.86]	2022	
Veronese et al. (a) 2023	3249	3288	39	3288	12.4%	83.31 [60.98, 113.81]	2023	
Dowling et al. 2023	3795	4239	444	4239	12.6%	8.55 [7.82, 9.34]	2023	
Total (95% CI)		14717		14717	100.0%	5.42 [2.32, 12.64]		
Total events	13272		1445					
Heterogeneity: Tau ² = 1.48; Chi ² = 1676.14, df = 7 (P < 0.00001); I ² = 100%								
Test for overall effect: Z = 3.91 (P < 0.0001)								



Study or Subgroup	no cardiovascular		cardiovascular		Weight	Risk Ratio		Year
	Events	Total	Events	Total		M-H, Random, 95% CI		
Kao et al. 2021	128	147	19	147	29.2%	6.74 [4.41, 10.30]	2021	
Oba et al. 2022	172	206	34	206	32.8%	5.06 [3.70, 6.92]	2022	
Dowling et al. 2023	3848	4239	391	4239	37.9%	9.84 [8.95, 10.82]	2023	
Total (95% CI)		4592		4592	100.0%	7.08 [4.43, 11.30]		
Total events	4148		444					
Heterogeneity: Tau ² = 0.15; Chi ² = 18.18, df = 2 (P = 0.0001); I ² = 89%								
Test for overall effect: Z = 8.20 (P < 0.00001)								



Conclusions

- ◆ Empirical studies have demonstrated that individuals with dynapenia have health effects.
- ◆ Based on the findings from the meta-analysis, cognition, diabetes, and cardiovascular were associated with dynapenia.
- ◆ The healthcare professionals should conduct early risk factors assessments and develop effective prevention strategies specifically targeted at individuals with dynapenia.



Thank You for Your Attention

