評価対象論文リスト(要因:身体活動、アウトカム:サルコペニア)

評価判定日:2023/10/20

①既存の系統的レビュー・メタ解析・統合解析

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②日本人集団の個別研究（総説は除く）

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③有力な研究

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■メタ解析、系統的レビュー（日本人の論文と、それに関わる統計解析数値を抽出）

Reference			Include study						Design		Relative risk (95% CI or p)
Author	Title	Year	Ref No.	First author	Year	Study period	Study location	Event (*Definition)		Category	
Hsu KJ, Liao CD, Tsai MW, Chen CN.	Effects of Exercise and Nutritional Intervention on Body Composition, Metabolic Health, and Physical Performance in Adults with Sarcopenic Obesity: A Meta-Analysis	2019	26	Kim	2016	12weeks	japan		RCT	control, combined exercise	Mean difference grip strength −0.60(−2.68,1.06) subtotal 2.33(−1.63,6.30) Aerobic,Resistance, Combined exercise合わせての効果は2.94（0.45,5.43） Walking speed 0.10(0.00,0.20) subtotal 0.23(0.00,0.46) Aerobic,Resistance, Combined exercise合わせての効果は0.20（0.07,0.33）
Yoshimura Y, Wakabayashi H, Yamada M, Kim H, Harada A. Arai H.	Interventions for Treating Sarcopenia: A Systematic Review and Meta-Analysis of Randomized Controlled Studies	2017	19	Kim	2012	3month	japan		RCT	control, Exercise(60-minute comprehensive training)	記載なし
			20	Kim	2013	3month	japan		RCT		記載なし
			21	Kim	2016	3month	japan		RCT		記載なし
Liao CD, Chen HC, Huang SW, Liou TH.	The Role of Muscle Mass Gain Following Protein Supplementation Plus Exercise Therapy in Older Adults with Sarcopenia and Frailty Risks: A Systematic Review and Meta-Regression Analysis of Randomized Trials	2019	46	Imaoka	2016	3month	japan		RCT	control, Exercise(multicomponent exercise training)	記載なし
			31	Kim	2016	3month	japan		RCT		記載なし
			47	Kim	2012	3month	japan		RCT		記載なし
			52	Yamada	2019	12wk	japan		RCT	control, Exercise(walking, weighted)	記載なし
Vlietstra L, Hendrickx W, Waters DL.	Exercise interventions in healthy older adults with sarcopenia: A systematic review and meta-analysis	2018	30	Kim	2012	3month	japan		RCT	control, combined exercise	Mean difference knee-extension strength 、0.14(0.03,0.26)
			29	Kim	2013	3month	japan		RCT		

			26	Maruya	2016	6month	japan		RCT	control, Exercise	timed up and go -1.67(-2.43, -0.91) appendicular muscle mass 0.45(0.03,0.87) leg muscle mass0.35(0.02, 0.68) significantly improved in response to exercise interventions
Wu PY, Huang KS, Chen KM, Chou CP, Tu YK.	Exercise, Nutrition, and Combined Exercise and Nutrition in Older Adults with Sarcopenia: A Systematic Review and Network Meta-analysis	2021	50	Kim	2012	3month	japan		RCT	control, Exercise	Mean change from baseline in handgrip strength [kg (95%CI)] Control：1 Exercise：1.12 (0.12, 2.11) Mean change from baseline in dynamic balance [seconds (95%CI)] Control：1 Exercise：-1.76 (-2.24, -1.28)
			14	Kim	2013	3month	japan		RCT		
			13	Kim	2016	3month	japan		RCT		
			52	Maruya	2016	6month	japan		RCT		
Oliveira JS, Pinheiro MB, Fairhall N, Walsh S, Chesterfield Franks T, Kwok W, Bauman A, Sherrington C.	Evidence on Physical Activity and the Prevention of Frailty and Sarcopenia Among Older People: A Systematic Review to Inform the World Health Organization Physical Activity Guidelines	2020	24	Maruya	2016	6month	japan		RCT	control, Exercise(Multiple: resistance, balance, and function)	Risk ratio (95% CI): 1.08 (0.095, 12.193)
Lu L, Mao L, Feng Y, Ainsworth BE, Liu Y, Chen N.	Effects of different exercise training modes on muscle strength and physical performance in older people with sarcopenia: a systematic review and meta-analysis	2021	58	Kim	2012	3month	japan		RCT	control Exercise (mixed training)	standard mean difference （Test for overall effect） KES knee extension strength:0.86(0.55,1.66)p<0.00001 TUG timed up and go:-0.66(-0.94, -0.38)p<0.00001 GS gait speed: 0.82(0.43, 1.21) p<0.00001 CS chair stand:0.11(-0.36, 0.57) p=0.65
			59	Kim	2013	3month	japan		RCT		
			60	Kim	2016	3month	japan		RCT		
			33	Makizako	2020	12weeks	japan		RCT		
			50	Maruya	2016	6month	japan		RCT		
Tomassini S, Abbasciano R, Murphy GJ.	Interventions to prevent and treat sarcopenia in a surgical population: a systematic review and meta-analysis	2021	67	Takarada	2000	2weeks	japan		RCT	control, Exercise	

			69	Tsukagoshi	2014	8weeks	japan		RCT	control, Exercise	Mean difference muscle mass 2.76(1.28,4.23)Takarada muscle mass0.26(-0.47,0.99), 0.28(-0.45,1.01)Tsukagoshi sub total 0.62(0.34,0.90) Test of overall effect: Z = 4.36, P < 0.001
Hita-Contreras F, Bueno-Notivol J, Martínez-Amat A, Cruz-Díaz D, Hernandez AV, Pérez-López FR.	Effect of exercise alone or combined with dietary supplements on anthropometric and physical performance measures in community-dwelling elderly people with sarcopenic obesity: A meta-analysis of randomized controlled trials	2018	37	Kim	2016	3month	japan		RCT	control, Exercise(mixed training)	mean difference skeltal muscle mass 0.00(-1.22,1.22) subtotal 0.22(-0.69,1.13) grip strength 0.10(-2.52,2.72) subtotal 1.67(0.09, 3.24) gait speed 0.10(-0.03,0.23) subtotal 0.11(0.05,0.18)
Yin YH, Liu JYW, Välimäki M.	Effectiveness of non-pharmacological interventions on the management of sarcopenic obesity: A systematic review and meta-analysis	2020	37	Kim	2016	3month	japan		RCT	control, Exercise(mixed training)	mean difference skeletal muscle0.00(-1.03,1.0) Total0.25(-0.47,0.98)p=0.50 fat free mass -0.25(-0.73,0.23) subtotal 0.51(-1.00,2.01) grip strength(0.10(-1.83,2.03) subtotal (-0.12,1.68) gait speed0.10(0.00,0.20) subtotal 0.11(0.44,0.17)
Rodrigo-Mallorca D, Loaiza-Betancur AF, Monteagudo P, Blasco-Lafarga C, Chulvi-Medrano I.	Resistance Training with Blood Flow Restriction Compared to Traditional Resistance Training on Strength and Muscle Mass in Non-Active Older Adults: A Systematic Review and Meta-Analysis	2021	37	Yasuda	2015	12weeks	japan	Low-intensity blood flow r	RCT	contro(RT)l, Exercise(LI-BFR)	Std.Mean Difference Muscular strength 0.61(-0.47,1.69) subtotal 0.61(0.10,1,11) muscle mass 1.59(0.34,2.85) subtotal 0.62(-0.09,1.34) elbow flexors and extensors 1.59(0.34,2.85) subtotal 1.65(0.75,2.54)

Wright J, Baldwin C.	Oral nutritional support with or without exercise in the management of malnutrition in nutritionally vulnerable older people: A systematic review and meta-analysis	2018	37	Kim	2012	3month	japan		RCT	contro(nutritional support only), Exercise+nutritional support	Std.Mean Difference Hand Grip strength0.02(-0.47,0.50)Kim2015 Subtotal 0.22(-0.14,0.58) Limb strength 0.45(-0.22,0.93)Kim2012 subtotal 0.33(0.13,0.53) gait speed0.50(0.02,0.97) Kiubtotal m2012 0.75(0.25,1.25) Kim2015 subtotal 0.38(0.19,0.56)
			38	Kim	2015	3month	japan		RCT		

■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
下方博史、安藤富士子	フレイル・サルコペニアの長期縦断疫学研究	2017	1997-2012(12年間)	記載なし	65歳以上の一般地域住民の男女	Incidence	記載なし	Japanese
			Category	Number among cases	Relative risk (95%CI or p)	P for trend	Confounding variables considered	
			Total energy expenditure(kcal/day)	記載なし	Hazard ratio, Risk factors for low muscle mass and/or low physical performance0.619(0.490, 0.783) Risk factor of low muscle strength 0.596(0.458,0.777)	いずれもp<0.001	Age 、sex	