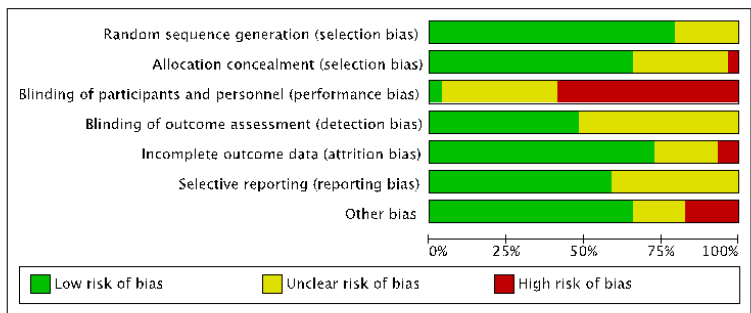
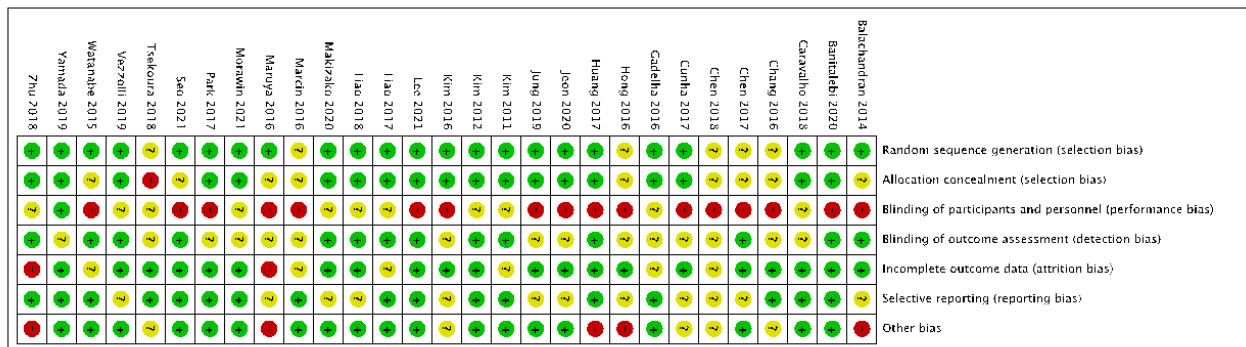


SUPPLEMENTARY DATA

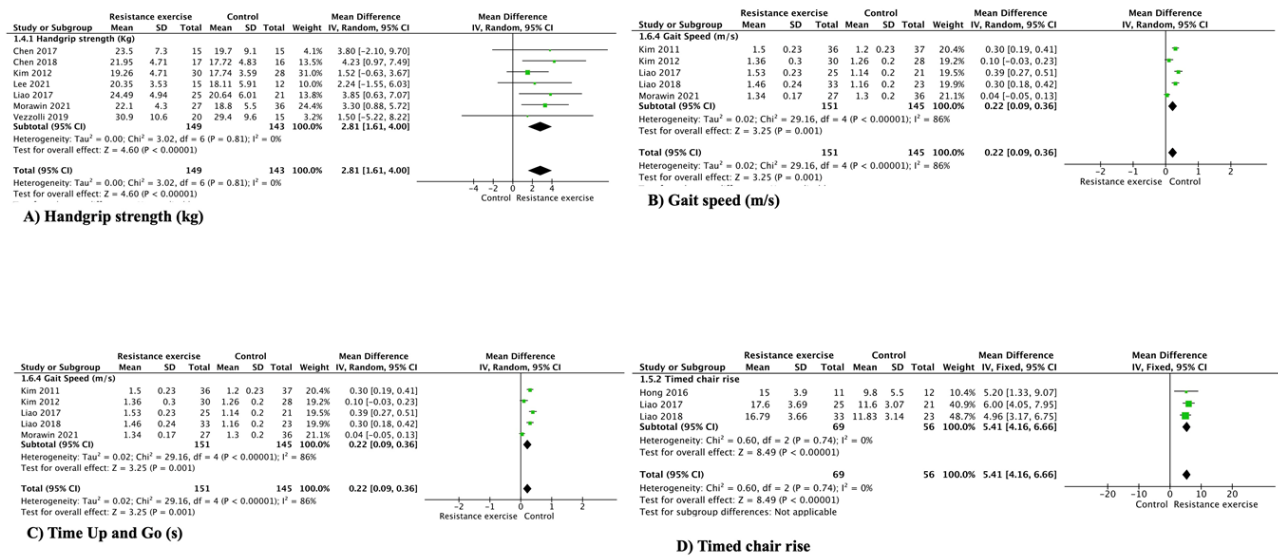
**Effect Of Exercise on Muscle Mass, Fat Mass, Bone Mass,  
Muscular Strength and Physical Performance in  
Community Dwelling Older Adults: Systematic Review  
and Meta-Analysis**

**Alejandra González-Rocha<sup>1,2</sup>, Lucia Mendez-Sanchez<sup>3\*</sup>, María Araceli Ortiz-Rodríguez<sup>4</sup>, Edgar  
Denova-Gutiérrez<sup>2\*</sup>**

# SUPPLEMENTARY DATA

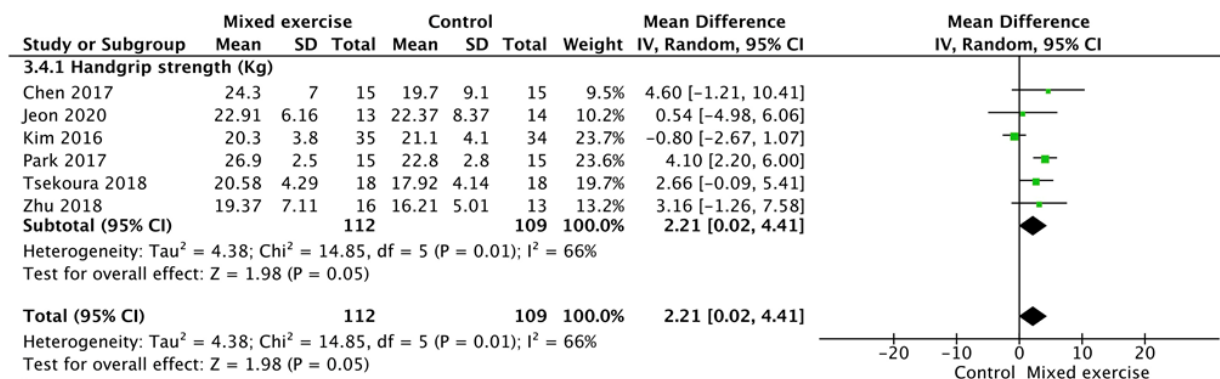


Supplementary Figure 1. Summary and graph of Risk of bias assessment.

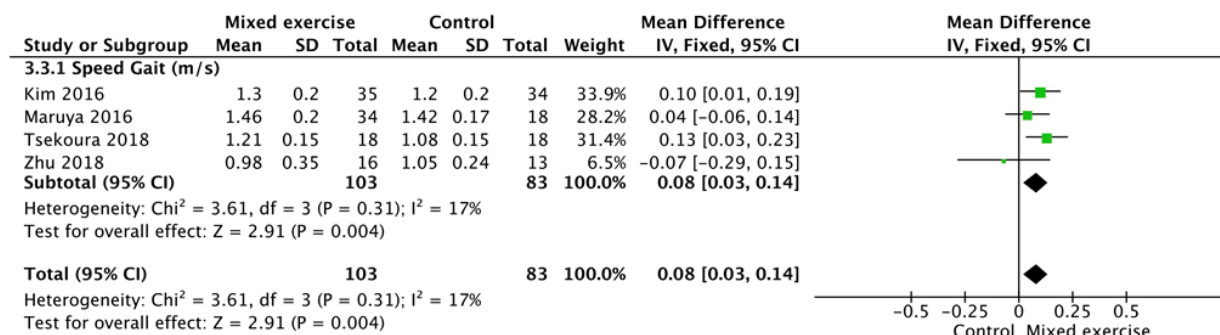


Supplementary Figure 2. Effect of resistance exercise intervention in community-dwelling older adults over muscle strength and physical performance. A) Handgrip strength (Kg) B) Gait speed (m/s) C) Time Up and Go (s) D) Timed chair rise.

# SUPPLEMENTARY DATA



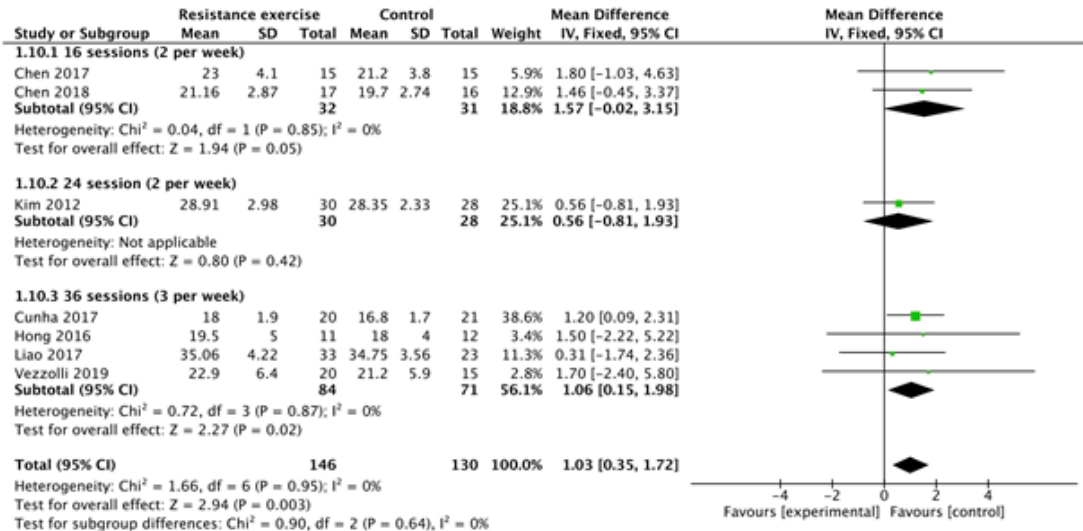
## A) Handgrip strength (Kg)



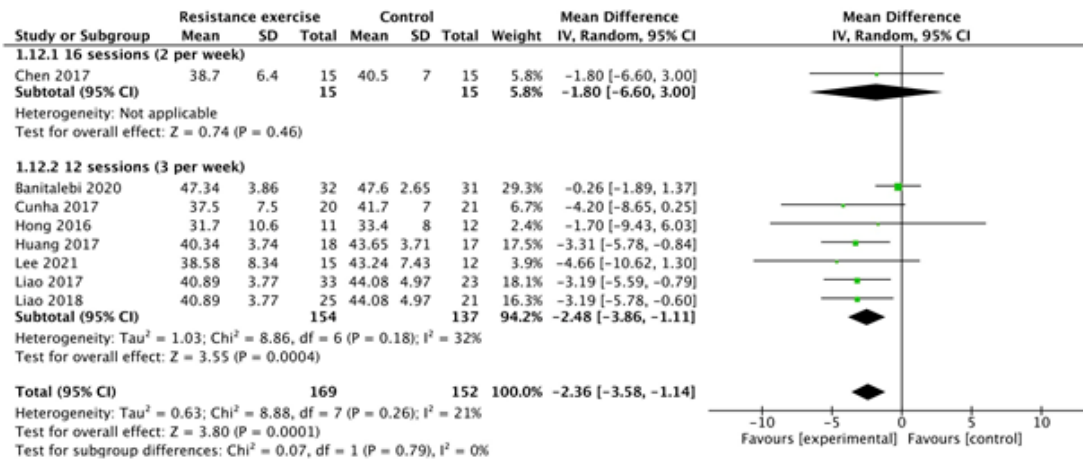
## B) Gait speed (m/s)

**Supplementary Figure 3. Effect of mixed exercise intervention in community-dwelling older adults over muscle strength and physical performance. A) Handgrip strength (Kg) B) Gait speed (m/s)**

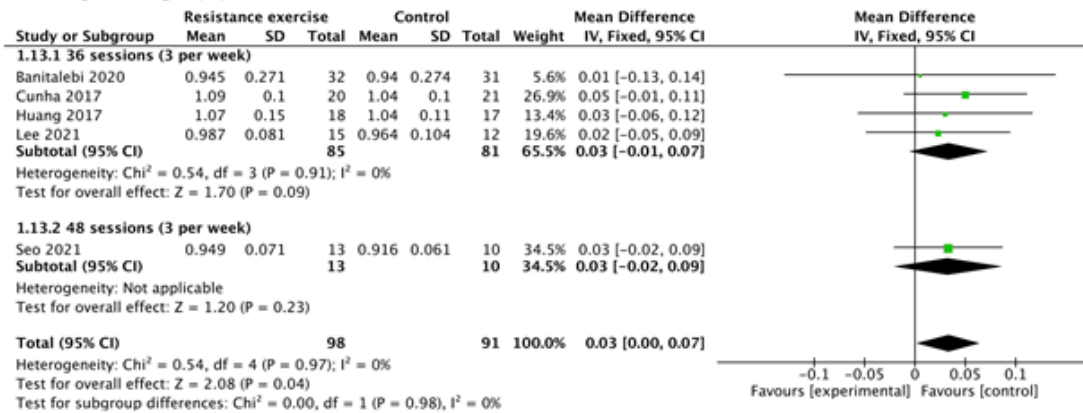
# SUPPLEMENTARY DATA



## A) Total muscle mass (Kg)



## B) Fat mass percentage (%)

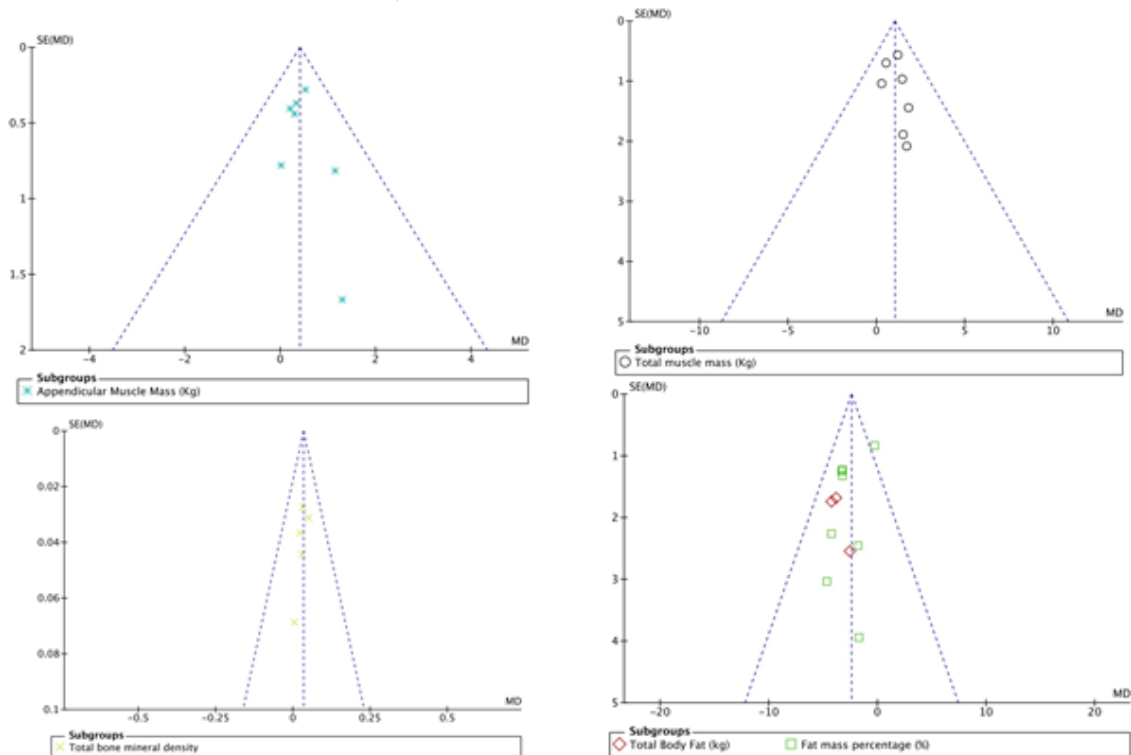


## C) Total bone mineral density g/cm<sup>2</sup>

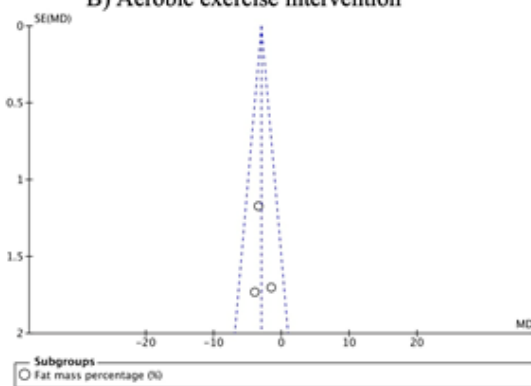
**Supplementary Figure 4.** Effect of resistance exercise intervention in community-dwelling older adults over total muscle mass, appendicular muscle mass and fat mass percentage stratified by total number of sessions (sessions per week): A) Total muscle mass (Kg), B) fat mass percentage (%) C) total bone mineral density g/cm<sup>2</sup>.

# SUPPLEMENTARY DATA

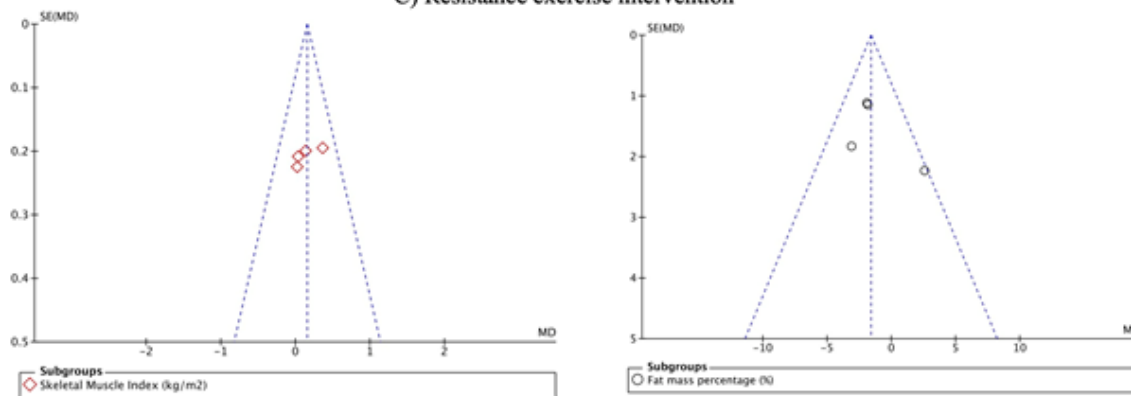
## A) Resistance exercise intervention



## B) Aerobic exercise intervention



## C) Resistance exercise intervention



# SUPPLEMENTARY DATA

**Supplementary Figure 5. Funnel plot of the primary outcome.** A) Resistance exercise intervention, B) Aerobic exercise intervention, C) Mixed exercise intervention

**Supplementary Table 1.** Search strategy used per database.

Database	Terms	Limits	Search strategy
<b>Pubmed 1</b>	Sarcopenia AND aged AND exercise	Title/Abstract, 10 years	("sarcopenia"[Title/Abstract] AND "aged"[Title/Abstract]) AND "exercise"[Title/Abstract]
<b>Pubmed 2</b>	Osteosarcopenic Obesity AND aged AND exercise	Title/Abstract, 10 years	((("osteosarcopenic"[All Fields] AND (((("obeses"[All Fields] OR "obesity"[MeSH Terms]) OR "obesity"[All Fields]) OR "obese"[All Fields]) OR "obesities"[All Fields]) OR "obesity s"[All Fields])) AND ("aged"[MeSH Terms] OR "aged"[All Fields])) AND (((((((("exercise"[MeSH Terms] OR "exercise"[All Fields]) OR "exercises"[All Fields]) OR "exercise therapy"[MeSH Terms]) OR ("exercise"[All Fields] AND "therapy"[All Fields])) OR "exercise therapy"[All Fields]) OR "exercise s"[All Fields]) OR "exercised"[All Fields]) OR "exerciser"[All Fields]) OR "exercisers"[All Fields]) OR "exercising"[All Fields])
<b>Pubmed 3</b>	Sarcopenic Obesity AND aged AND exercise	Title/Abstract, 10 years	((("sarcopenic"[All Fields] AND (((("obeses"[All Fields] OR "obesity"[MeSH Terms]) OR "obesity"[All Fields]) OR "obese"[All Fields]) OR "obesities"[All Fields]) OR "obesity s"[All Fields])) AND ("aged"[MeSH Terms] OR "aged"[All Fields])) AND (((((((("exercise"[MeSH Terms] OR "exercise"[All Fields]) OR "exercises"[All Fields]) OR "exercise therapy"[MeSH Terms]) OR ("exercise"[All Fields] AND "therapy"[All Fields])) OR "exercise therapy"[All Fields]) OR "exercise s"[All Fields]) OR "exercised"[All Fields]) OR "exerciser"[All Fields]) OR "exercisers"[All Fields]) OR "exercising"[All Fields])
<b>Tripdatabase</b>	elderly with sarcopenia AND exercise		(title:elderly with sarcopenia)(title:exercise)
<b>Tripdatabase</b>	osteosarcopenic Obesity AND aged AND exercise		(osteosarcopenic obesity elderly)(exercise)
<b>Tripdatabase</b>	Elderly with sarcopenic obesity AND exercise		(title:elderly with sarcopenic obesity)(title:exercise)
<b>Epistemonikos</b>	Sarcopenia AND aged AND exercise	Title/Abstract, 10 years	(title:(title:(sarcopenia) OR abstract:(sarcopenia)) AND (title:(aged) OR abstract:(aged)) AND (title:(exercise) OR abstract:(exercise))) OR abstract:(title:(sarcopenia) OR abstract:(sarcopenia)) AND (title:(aged) OR abstract:(aged)) AND (title:(exercise) OR abstract:(exercise)))
<b>Epistemonikos</b>	Osteosarcopenic Obesity AND aged AND exercise	Title/Abstract	(title:(title:(osteosarcopenic obesity) OR abstract:(osteosarcopenic obesity)) AND (title:(aged) OR abstract:(aged)) AND (title:(exercise) OR abstract:(exercise))) OR abstract:(title:(osteosarcopenic obesity) OR abstract:(osteosarcopenic obesity)) AND (title:(aged) OR abstract:(aged)) AND (title:(exercise) OR abstract:(exercise)))
<b>Epistemonikos</b>	Sarcopenic Obesity AND aged AND exercise	Title/Abstract, 10 years	(title:(title:(sarcopenic obesity) OR abstract:(sarcopenic obesity)) AND (title:(aged) OR abstract:(aged)) AND (title:(exercise) OR abstract:(exercise))) OR abstract:(title:(sarcopenic obesity) OR abstract:(sarcopenic obesity)) AND (title:(aged) OR abstract:(aged)) AND (title:(exercise) OR abstract:(exercise)))
<b>SPORTDiscus</b>	Sarcopenia AND aged AND exercise	Title, 10 years	TI Sarcopenia AND aged AND (exercise or physical activity )
<b>SPORTDiscus</b>	osteosarcopenic Obesity AND aged AND exercise		TI Osteosarcopenic obesity AND Aged AND (exercise or physical activity )

# SUPPLEMENTARY DATA

<b>SPORTDiscus</b>	Sarcopenic Obesity AND aged AND exercise	Title, 10 years	TI Sarcopenic obesity AND Aged AND ( exercise or physical activity )
<b>PeDRO 1</b>	Sarcopenia AND aged AND exercise	Title/Abstract	Sarcopenia AND aged AND exercise
<b>PeDRO 2</b>	Osteosarcopenic Obesity AND aged AND exercise	Title/Abstract	Osteosarcopenic obesity AND aged AND exercise
<b>PeDRO 3</b>	Sarcopenic Obesity AND aged AND exercise	Title/Abstract	Sarcopenia AND aged AND exercise
<b>Cochrane library</b>	Sarcopenic Obesity OR osteosarcopenic OR sarcopenia AND older adults AND exercise		older adults AND exercise AND (sarcopenia OR sarcopenic obesity OR osteosarcopenic)

**Supplementary Table 2.** Summary of Findings, GRADE certainty of evidence.

Outcomes	Anticipated absolute effects* (95% CI) Risk with Resistance exercise	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
<b>Resistance exercise compared to control group for body composition, physical performance and strength</b>				
<b>Body Composition/ Muscle mass</b> assessed with: Total Muscle Mass follow-up: range 8 weeks to 24 weeks	mean <b>1.03 kg more</b> (0.35 more to 1.72 more)	- 276 (7 RCTs)	⊕⊕⊕⊕ High	Resistance exercise results in a slight increase 1.03 kg (IC 95%: 0.35, 1.72) in Muscle Mass measured by total muscle mass. Heterogeneity I <sup>2</sup> =0%
<b>Body composition - Muscle mass</b> assessed with: Appendicular Muscle mass follow-up: range 8 weeks to 24 weeks	mean <b>0.41 kg higher</b> (0.36 lower to 1.17 higher)	- 300 (7 RCTs)	⊕⊕⊕⊕ High	Resistance exercise increases in 0.41 kg (IC 95%: 0.07, 0.74) in Muscle mass slightly. Heterogeneity I <sup>2</sup> =0%
<b>Body Composition Body Fat mass</b> assessed with: Total Fat Mass follow-up: range 8 weeks to 24 weeks	mean <b>3.72 Kg lower</b> (5.86 lower to 1.57 lower)	- 114 (3 RCTs)	⊕⊕⊕⊕ High	Resistance exercise results in large reduction of 3.72 kg (IC 95%: -5.86, -1.57) in Body Fat mass measured by Total Body Fat.
<b>Body Composition - Body fat</b> assessed with: % Body Fat follow-up: range 8 weeks to 24 weeks	mean <b>2.12% lower</b> (3.12 lower to 1.12 lower)	- 321 (8 RCTs)	⊕⊕⊕⊕ High	Resistance exercise results in large reduction of 2.12% (IC 95%: -3.12, -1.12) in Body Fat mass measured by Body Fat percentage. Heterogeneity I <sup>2</sup> = 21%.
<b>Body Composition- Bone Mineral Density</b> assessed with: Total Bone mineral Density follow-up: range 8 weeks to 24 weeks	mean <b>0.03 g/cm2 higher</b> (0 to 0.07 higher)	- 189 (5 RCTs)	⊕⊕⊕○ Moderate <sup>a</sup>	Resistance exercise 2-3 times per week intervention slightly increases Bone Mineral Density by 0.03 g/cm2 (IC 95%: 0.00, 0.07).
<b>Strength</b> assessed with: Handgrip strength follow-up: range 8 weeks to 24 weeks	mean <b>2.81 kg higher</b> (1.61 higher to 4.00 higher)	- 292 (7 RCTs)	⊕⊕⊕⊕ High	The evidence suggests resistance exercise results in a large increase 2.81 kg (IC 95%: 1.61, 4.00) in strength.
<b>Strength</b> assessed with: Timed chair rise follow-up: range 8 weeks to 24 weeks	mean <b>5.41 higher</b> (4.16 higher to 6.66 higher)	- 125 (3 RCTs)	⊕⊕⊕⊕ High	Resistance exercise results in large increase 5.41 times (IC 95%: 4.16, 6.66) in physical performance assessed with timed chair rise.



# SUPPLEMENTARY DATA

<b>Physical performance assessed with: Gait Speed follow-up: range 8 weeks to 24 weeks</b>	mean <b>0.22 m/s higher</b> (0.09 higher to 0.36 higher)	- 143 (3 RCTs)	⊕⊕○○ Low <sup>a,b</sup>	The overall difference observed has no clinical relevance and is inconsistent
<b>Physical performance assessed with: Time Up and Go follow-up: range 8 weeks to 24 weeks</b>	mean <b>2.06 s lower</b> (2.61 lower to 1.51 lower)	- 210 (5 RCTs)	⊕⊕⊕⊕ High	Resistance exercise results in large reduction -2.06 seconds (IC 95%: -2.61, -1.51) in physical performance measured by Time Up and Go test.
<b>Aerobic exercise compared to control for body composition, muscle strength and physical performance</b>				
<b>Body Composition - Fat mass assessed with: Fat mass percentage follow-up: range 8 weeks to 12 weeks</b>	MD 3.00 <b>lower</b> (4.65 lower to 1.35 lower)	- 101 (3 RCTs)	⊕⊕⊕⊕ High	Aerobic results in large reduction -3.00% (IC 95%: -4.65, -1.35) in body composition measured by fat mass percentage. Heterogeneity I <sup>2</sup> = 0%
<b>Mixed exercise compared to control group for body composition, physical performance and strength</b>				
<b>Body Composition assessed with: Muscle mass index follow-up: range 8 weeks to 24 weeks</b>	mean <b>0.15 kg/m2 higher</b> (0.05 lower to 0.36 higher)	- 151 (4 RCTs)	⊕⊕⊕○ Moderate <sup>b</sup>	The evidence is uncertain about the effect of mixed exercise on body Composition assessed by muscle mass index.
<b>Body mass composition: Fat mass assessed with: Fat mass percentage follow-up: range 8 weeks to 24 weeks</b>	mean <b>1.49 % lower</b> (3.21 lower to 0.23 higher)	- 189 (4 RCTs)	⊕⊕⊕⊕ High <sup>c</sup>	Mixed exercise results in a reduction in body mass composition: Fat mass percentage by -1.49% (95 CI -3.21, 0.23). Heterogeneity I <sup>2</sup> = 31%
<b>Physical performance assessed with: Gait Speed follow-up: range 8 weeks to 24 weeks</b>	mean <b>0.08 m/s higher</b> (0.03 higher to 0.14 higher)	- 186 (4 RCTs)	⊕⊕⊕⊕ High	Mixed exercise results in large increase 0.07m/s (IC 95%: 0.00, 0.14) in physical performance assessed by Gait Speed. Heterogeneity I <sup>2</sup> = 41%.
<b>Strength assessed with: Handgrip strength follow-up: range 8 weeks to 24 weeks</b>	mean <b>2.21 kg higher</b> (0.02 higher to 4.41 higher)	- 221 (6 RCTs)	⊕⊕⊕○ Moderate <sup>c</sup>	The evidence is very uncertain about the effect of mixed exercise on strength assessed by handgrip strength.
<b>GRADE Working Group grades of evidence</b>				
<b>High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.</b>				
<b>Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.</b>				
<b>Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.</b>				
<b>Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.</b>				

a. Downgraded one level for risk of bias unclear

b. Downgraded one level because intervals include the possibility of a small or no effect

c. Downgraded one level for inconsistency due to I<sup>2</sup>= 66%

CI: confidence interval