Systematic review and meta-analysis of protein intake to support muscle mass and function in healthy adults

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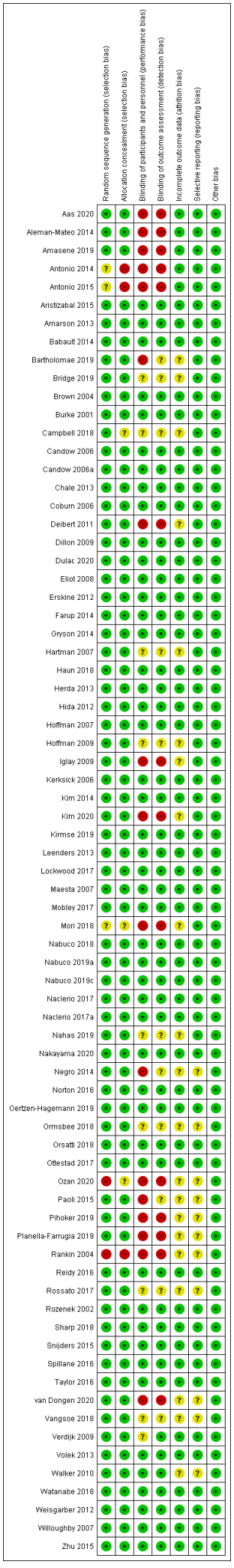
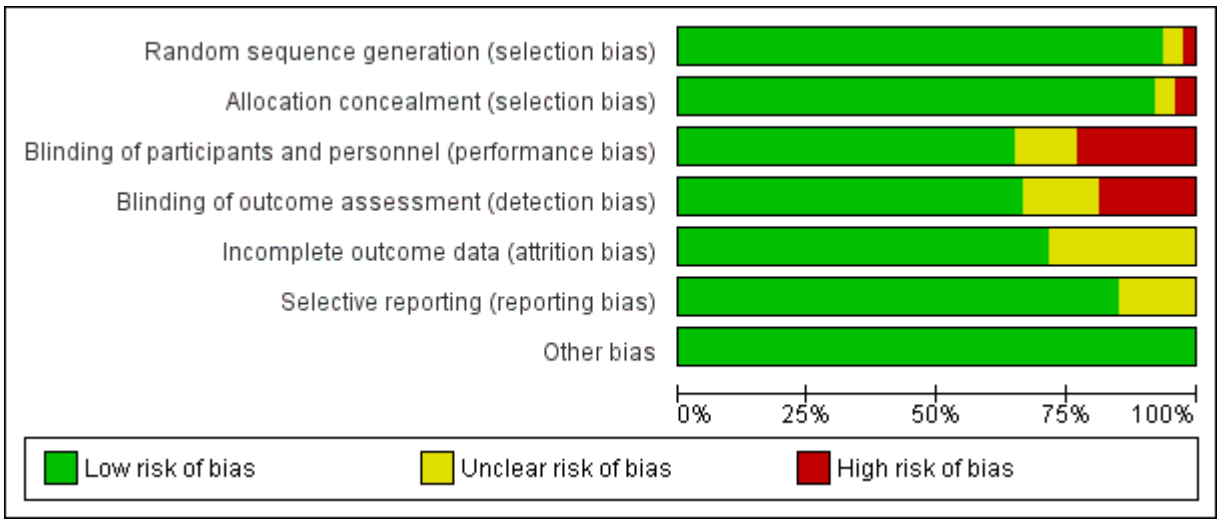
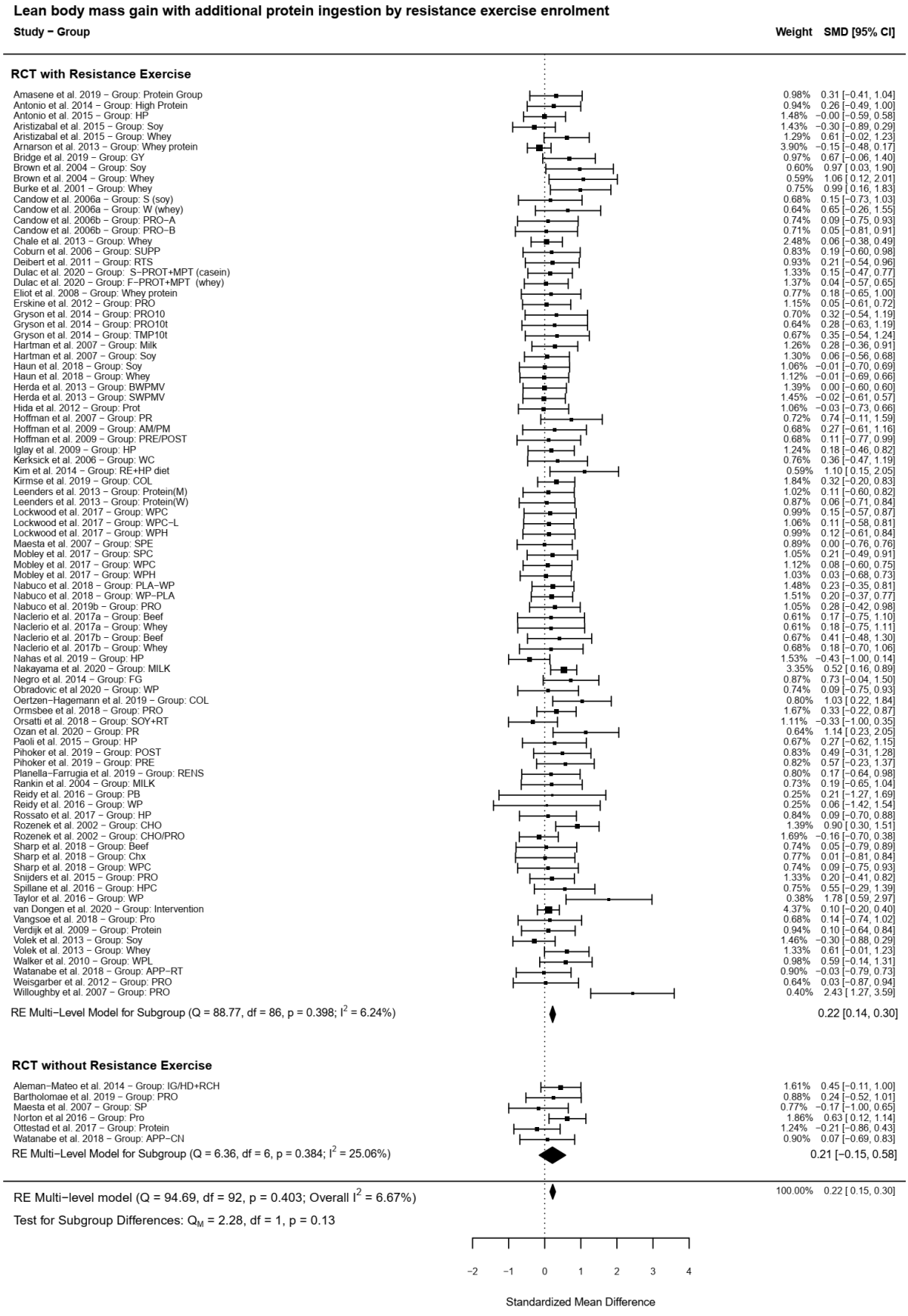


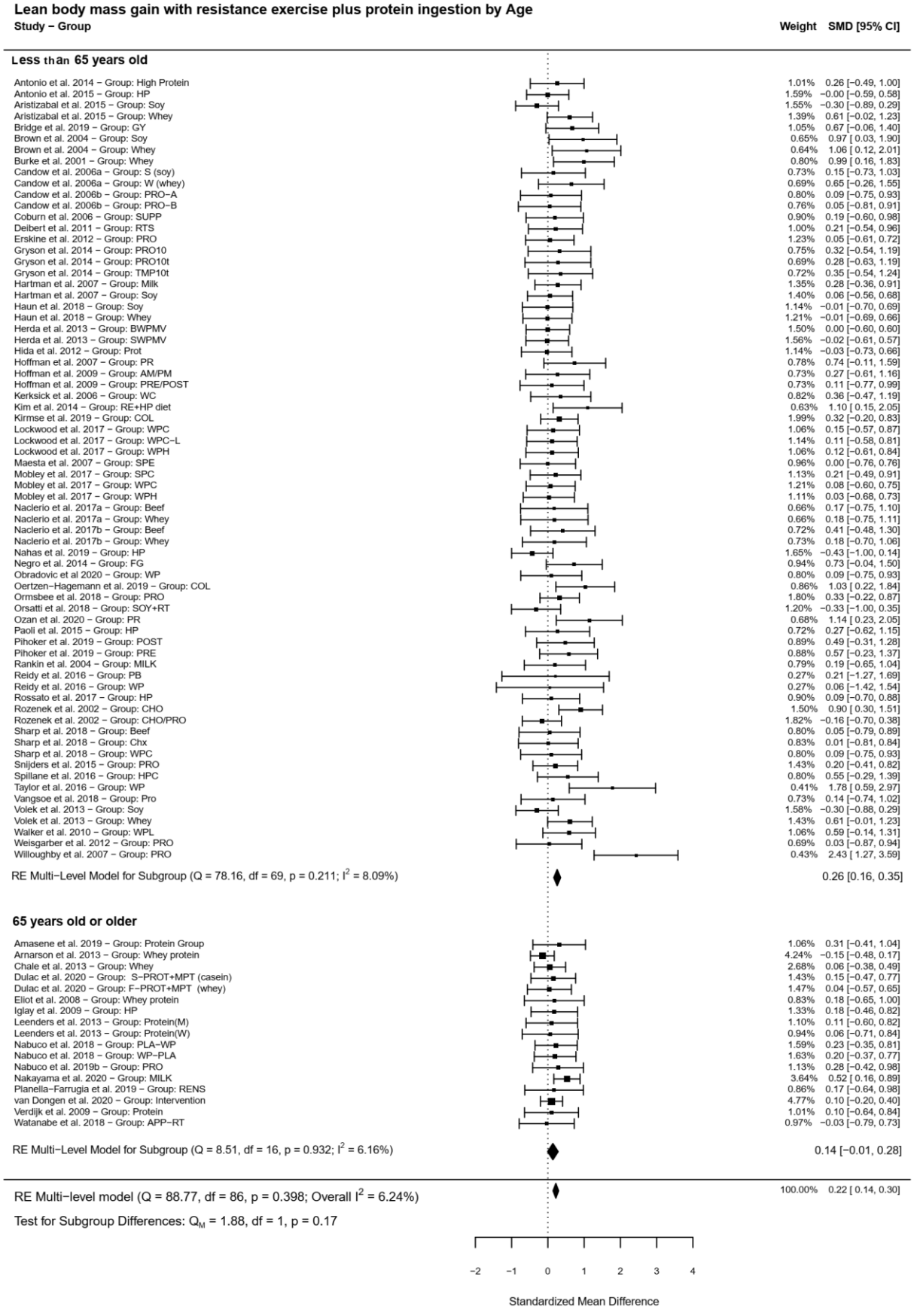
Supplementary Figure 1 – Risk of bias analysis of all studies included in the meta-analysis. (+) – Circles filled in green = Low risk of bias; (?) – Circles filled in yellow = Unclear risk of bias; (-) – Circles filled in red = High risk of bias.



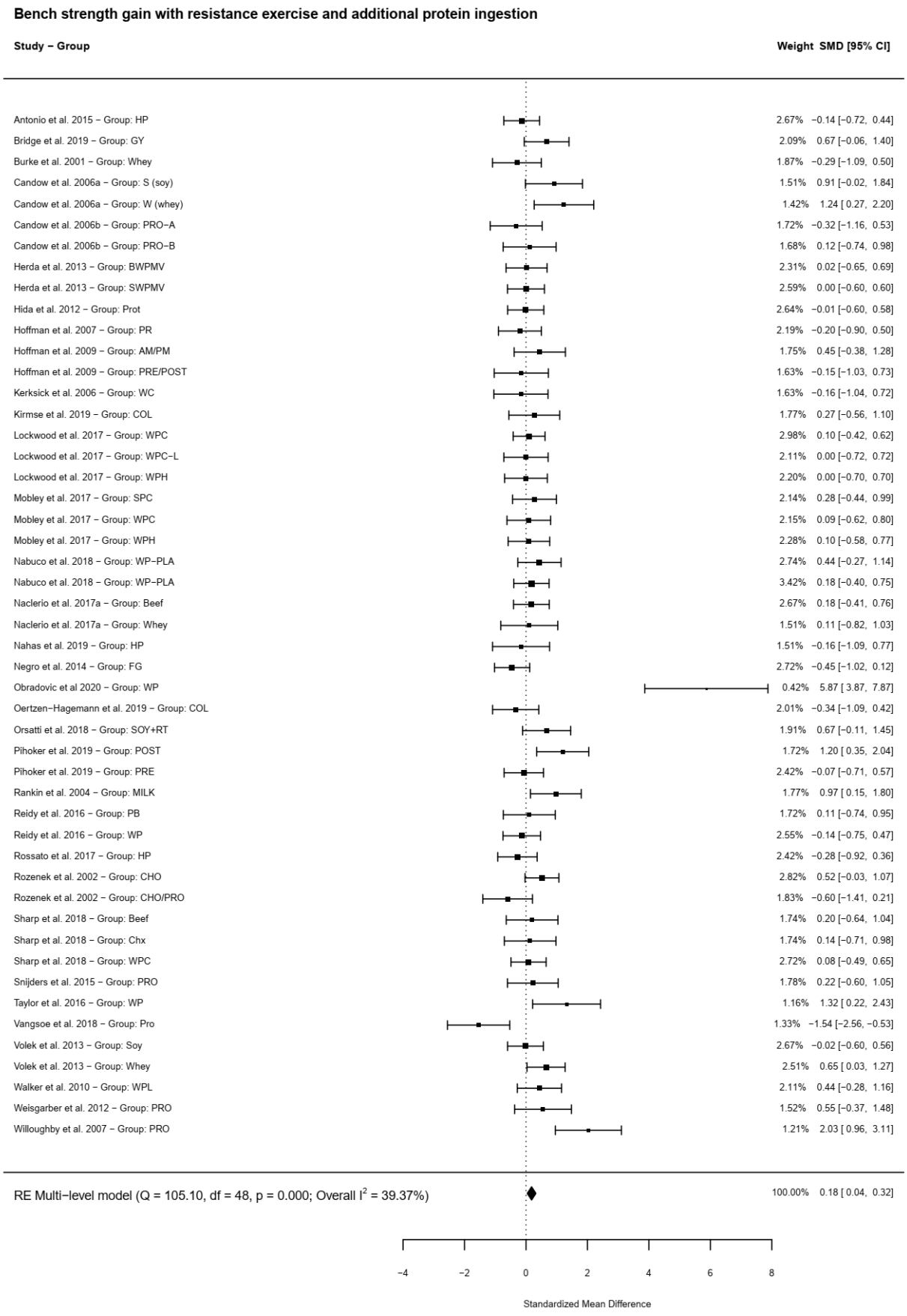
Supplementary Figure 2 – Summary of risk of bias analysis showing the percentage of studies with potential unclear or high risk of selection, performance, detection, attrition, reporting, or other bias.



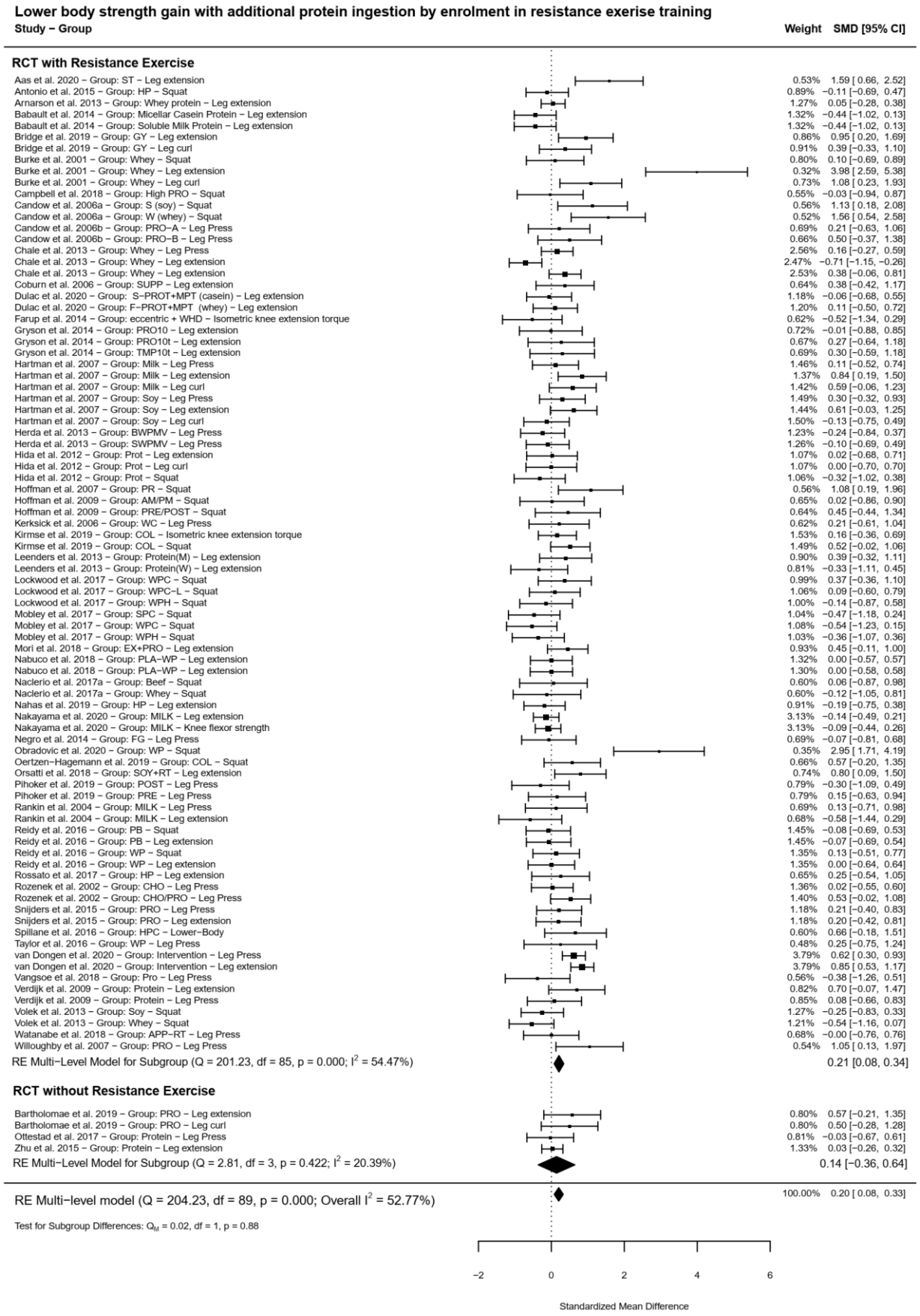
Supplementary Figure 3 – Forest plot showing results of the three-level random-effects meta-analysis of studies testing the effects of ingesting additional protein on adults' lean body or muscle mass, including or not a resistance exercise program.



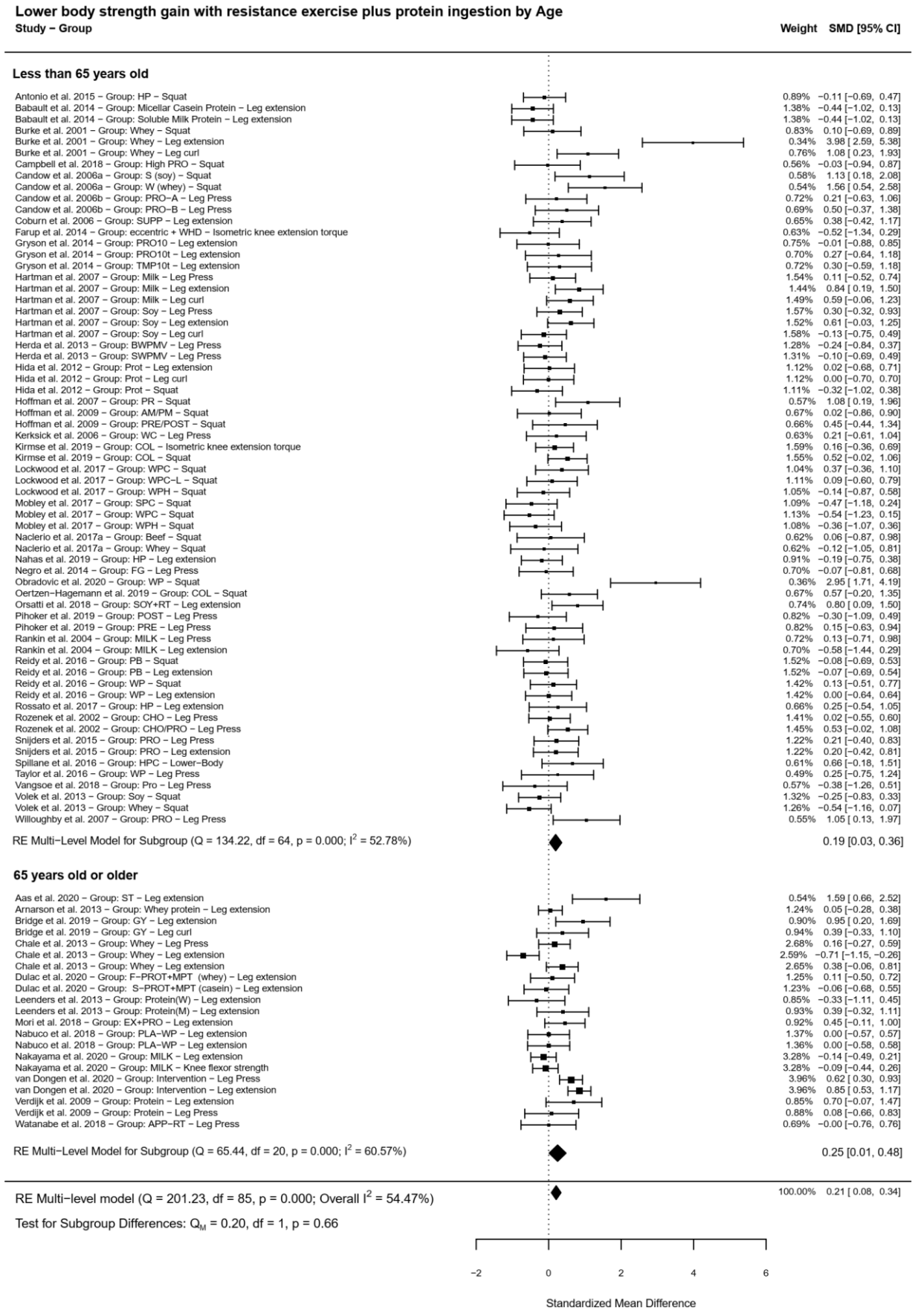
Supplementary Figure 4 – Forest plot showing results of the three-level random-effects meta-analysis of studies testing the effects of ingesting additional protein on adults' lean body or muscle mass of subjects categorized by age < 65 or ≥ 65 years old in studies including a resistance exercise program.



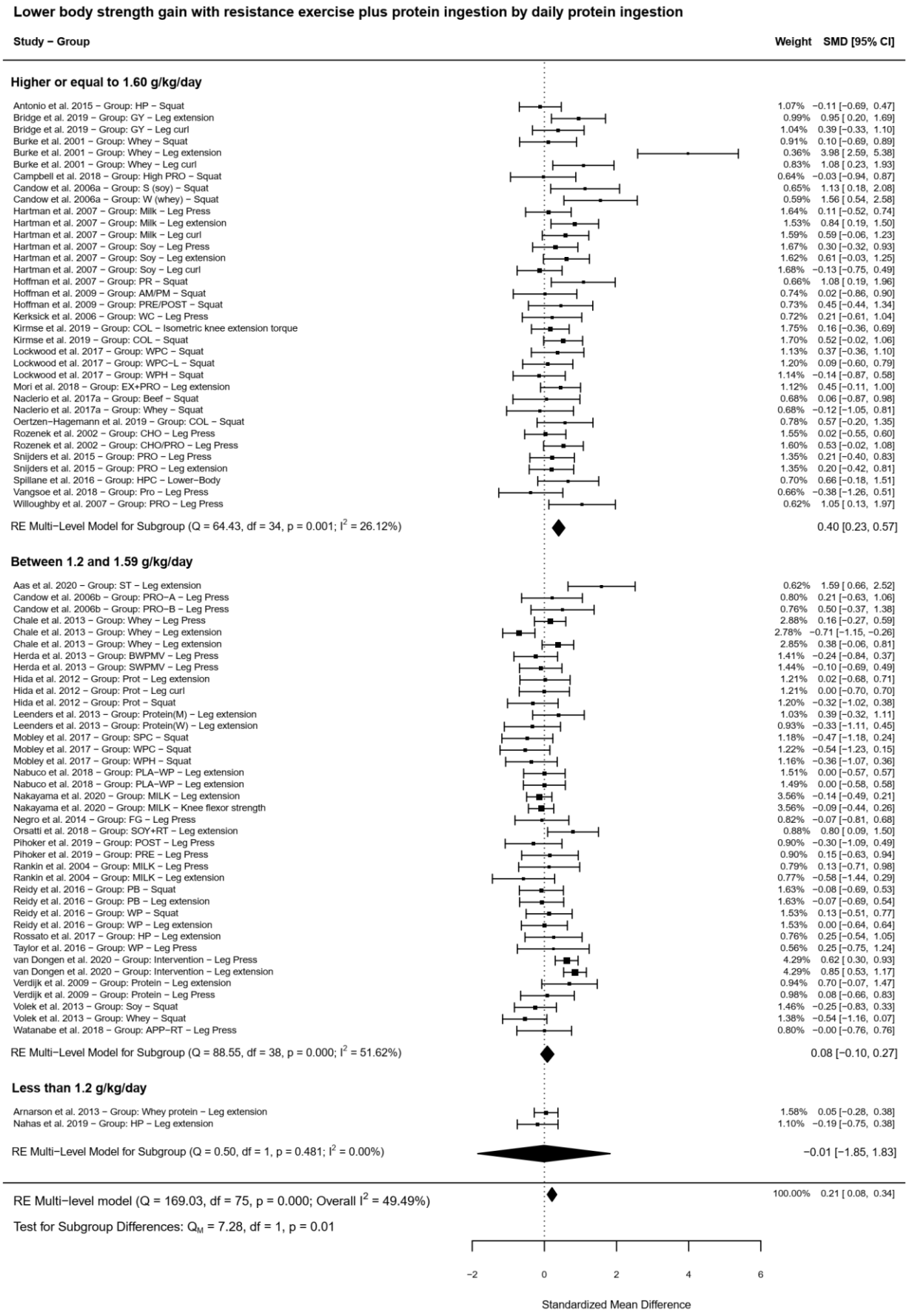
Supplementary Figure 5 – Forest plot showing results of the three-level random-effects meta-analysis of studies testing the effects of ingesting additional protein and resistance exercise on adults' bench press strength.



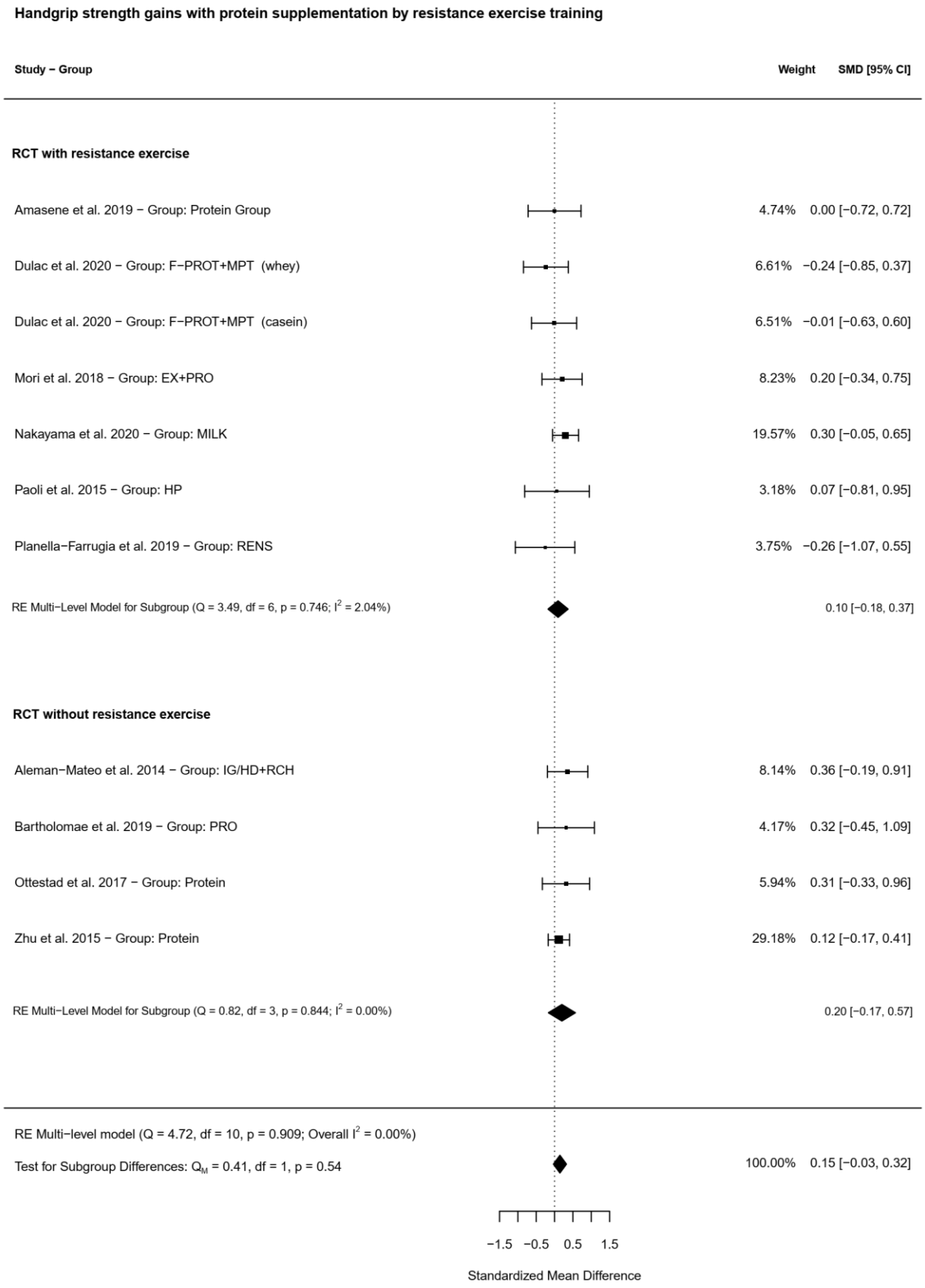
Supplementary Figure 6 – Forest plot showing results of the three-level random-effects meta-analysis of studies testing the effects of ingesting additional protein on adults' lower-body strength by the presence or not of resistance exercise training in a study research protocol.



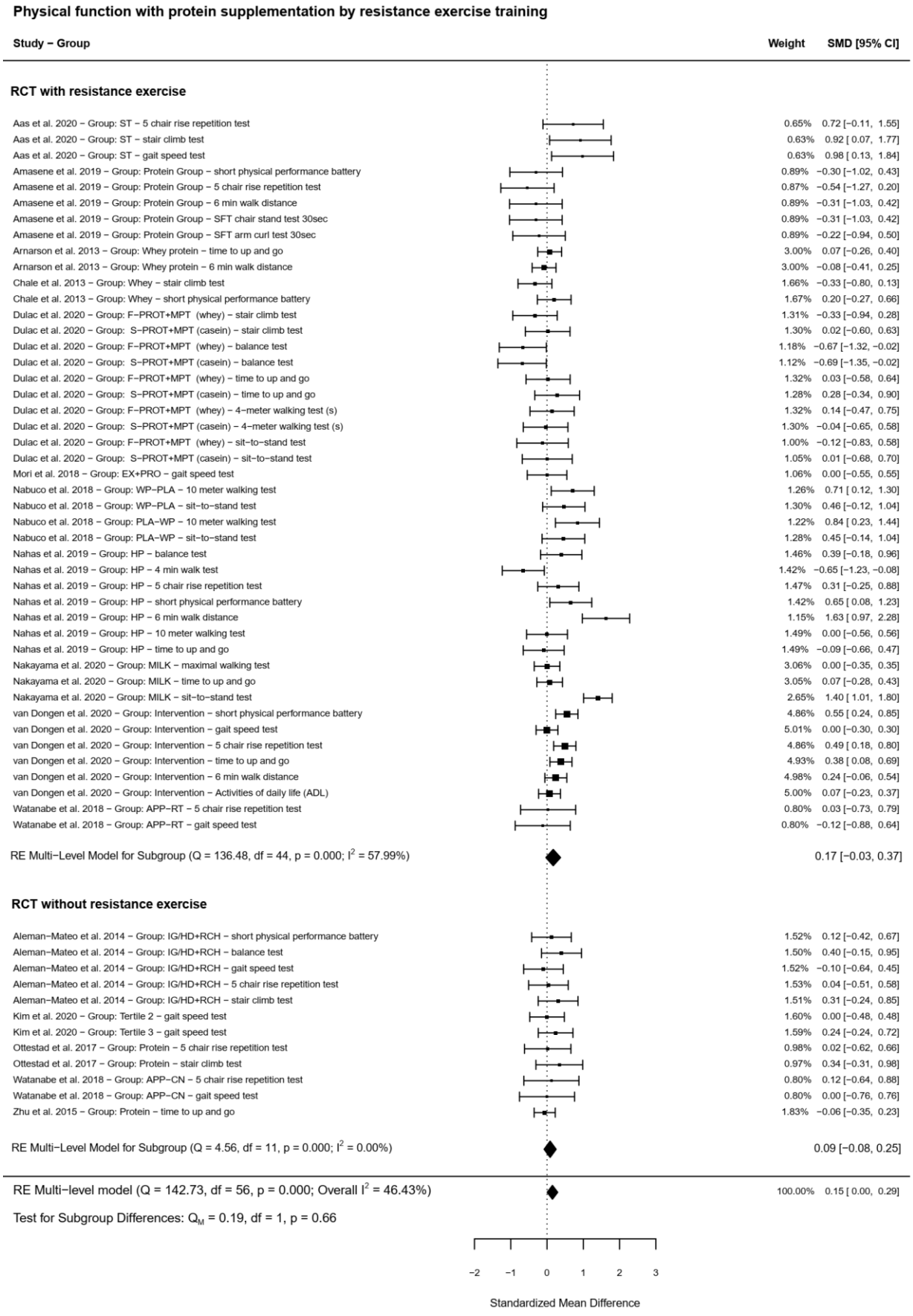
Supplementary Figure 7 – Forest plot showing results of the three-level random-effects meta-analysis of studies reporting daily protein ingestion and testing the effects of ingesting additional protein and resistance exercise on adults' lower body strength by age < 65 or ≥ 65 years old.



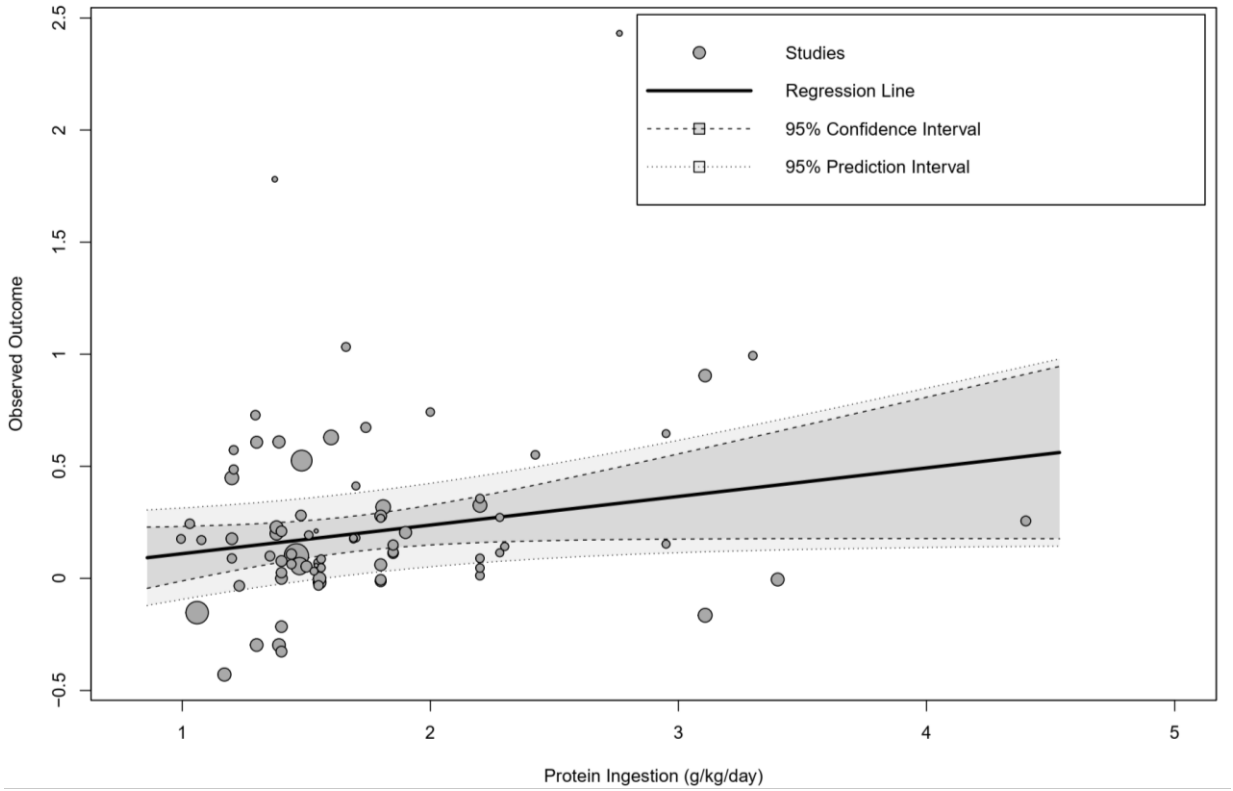
Supplementary Figure 8 – Forest plot showing results of the three-level random-effects meta-analysis of studies reporting daily protein ingestion and testing the effects of ingesting additional protein on adults' lower body strength by the level of protein ingestion.



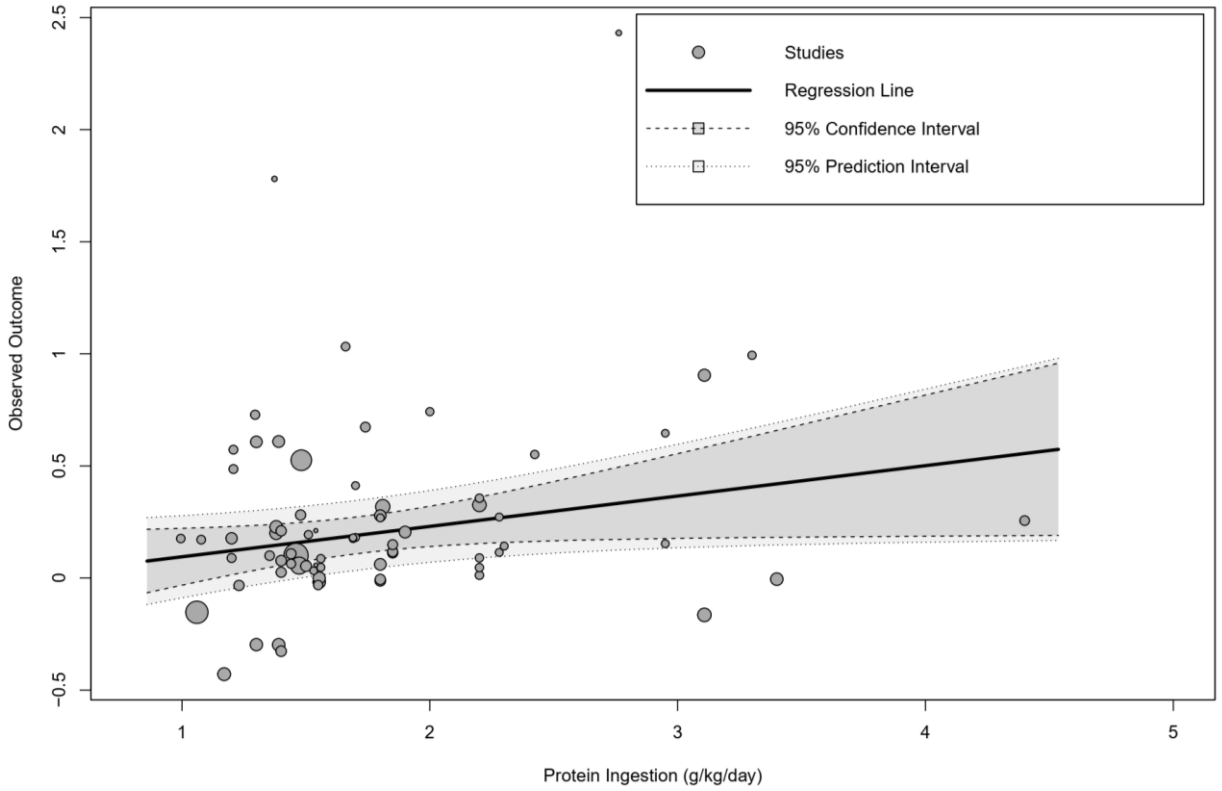
Supplementary Figure 9 – Forest plot showing results of the three-level random-effects meta-analysis of studies testing the effects of ingesting additional protein on adults' handgrip strength by the presence or not of resistance exercise training in a study research protocol.



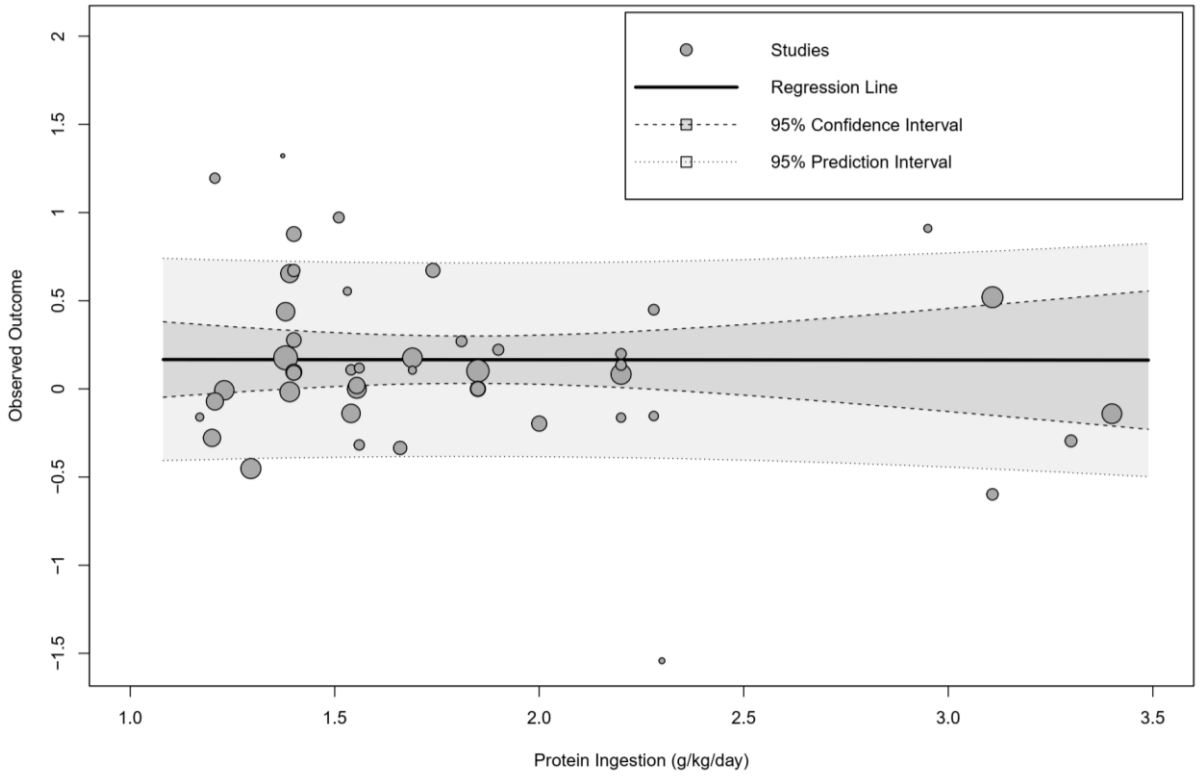
Supplementary Figure 10 – Forest plot showing results of the three-level random-effects meta-analysis of studies testing the effects of ingesting additional protein on adults' physical testing performance by the presence or not of resistance exercise training in a study research protocol.



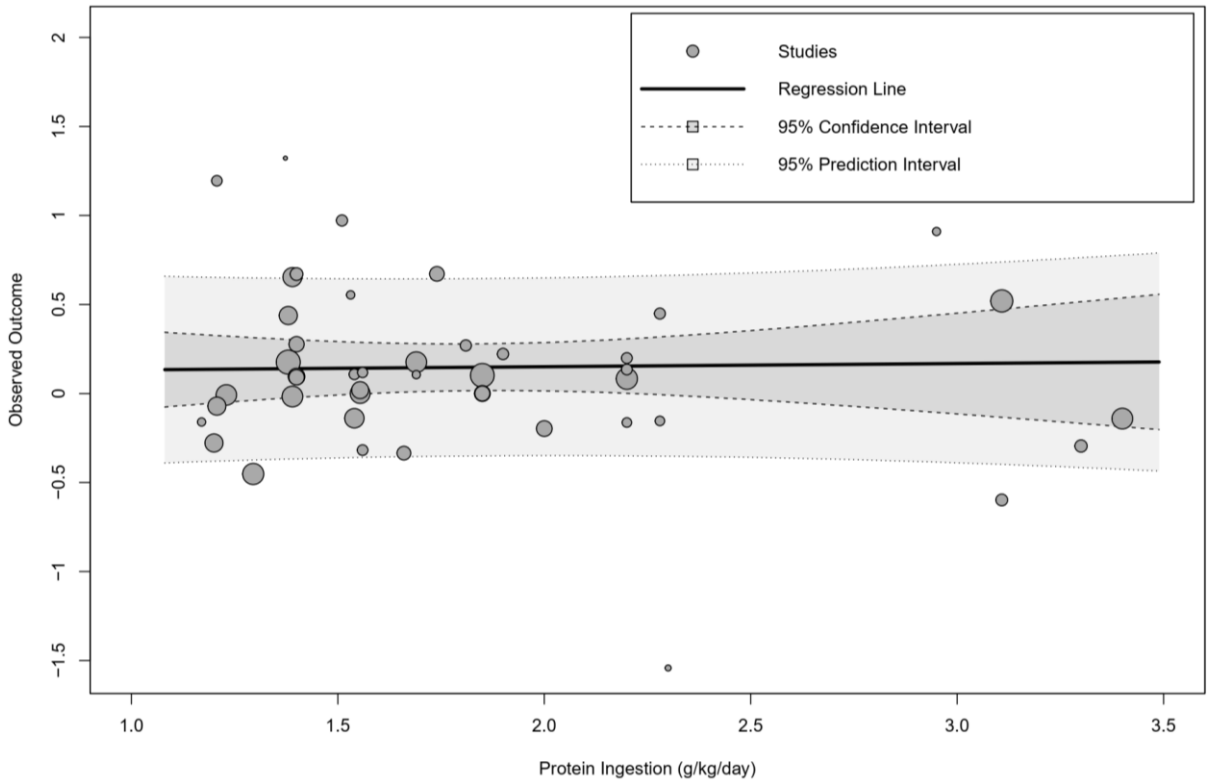
Supplementary Figure 11 – Bubble plot of three-level meta-regression analysis of the main effect on lean body mass vs. total daily protein ingestion (g/kg/day) in studies testing interventions to increase protein ingestion in all included RCT reporting protein ingestion.



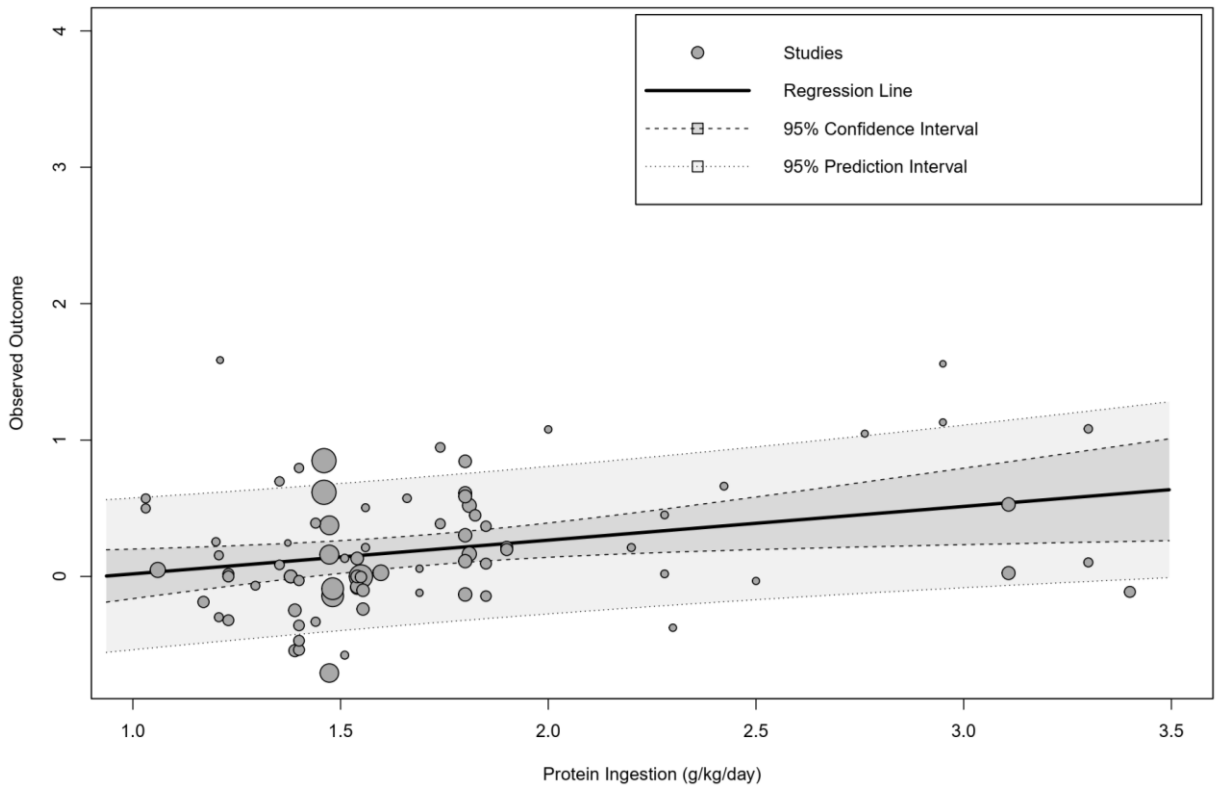
Supplementary Figure 12 – Bubble plot of three-level meta-regression analysis of the main effect on lean body mass vs. total daily protein ingestion (g/kg/day) in studies testing interventions to increase protein ingestion in all included RCT using resistance exercise training and reporting protein ingestion.



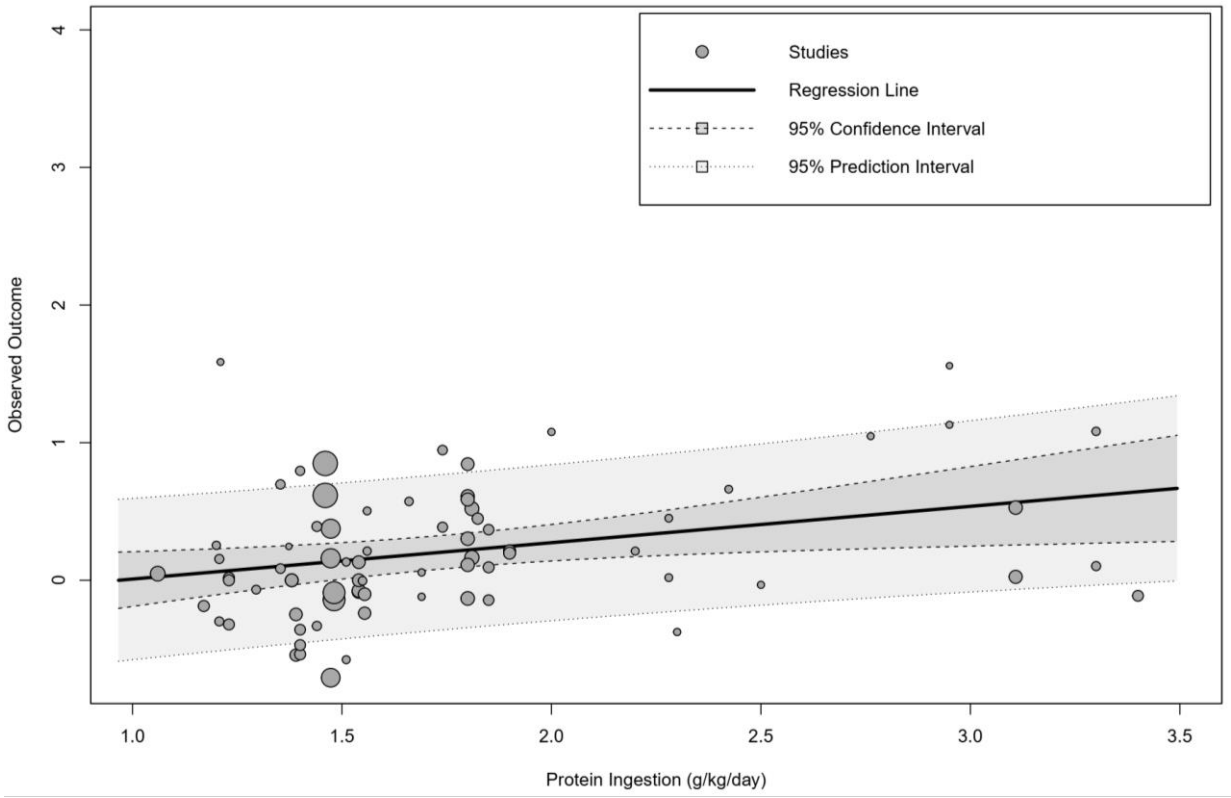
Supplementary Figure 13 – Bubble plot of three-level meta-regression analysis of the main effect on bench press strength vs. total daily protein ingestion (g/kg/day) in studies testing interventions to increase protein ingestion in all included RCT reporting protein ingestion.



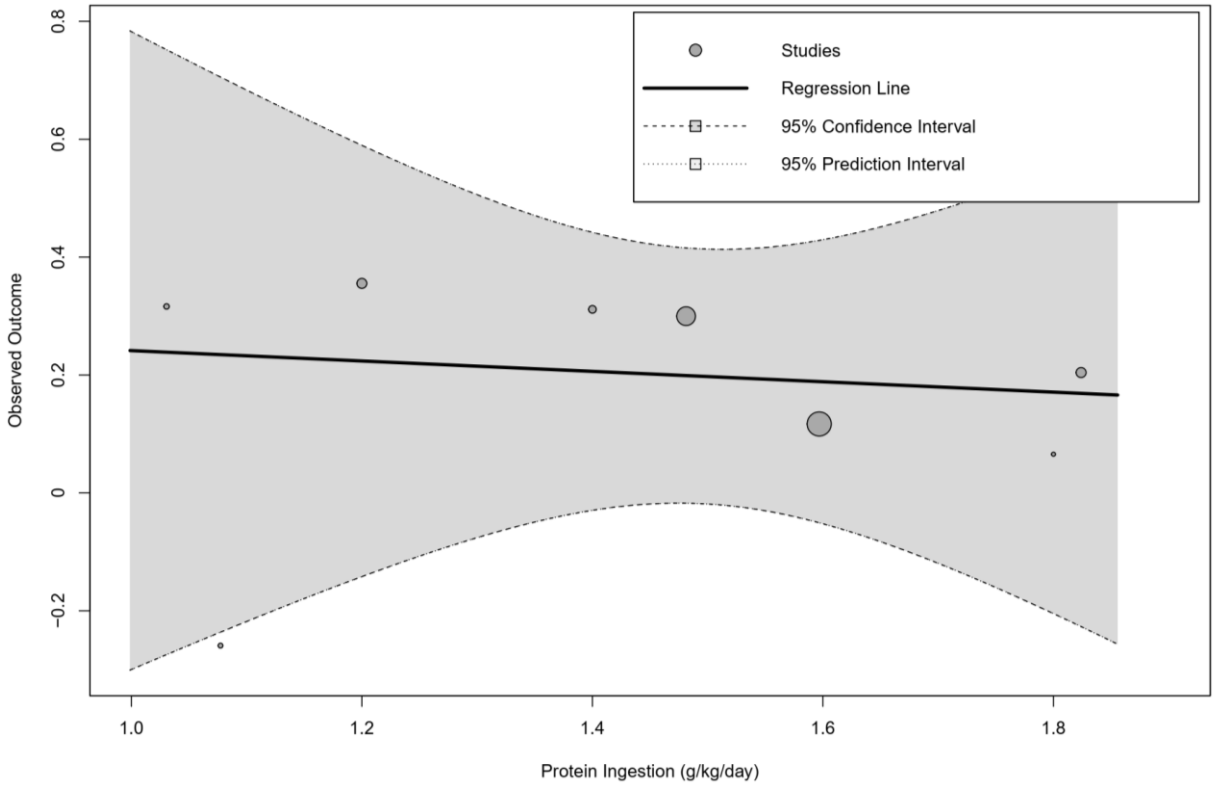
Supplementary Figure 14 – Bubble plot of three-level meta-regression analysis of the main effect on bench press strength vs. total daily protein ingestion (g/kg/day) in studies testing interventions to increase protein ingestion in all included RCT using resistance exercise training and reporting protein ingestion.



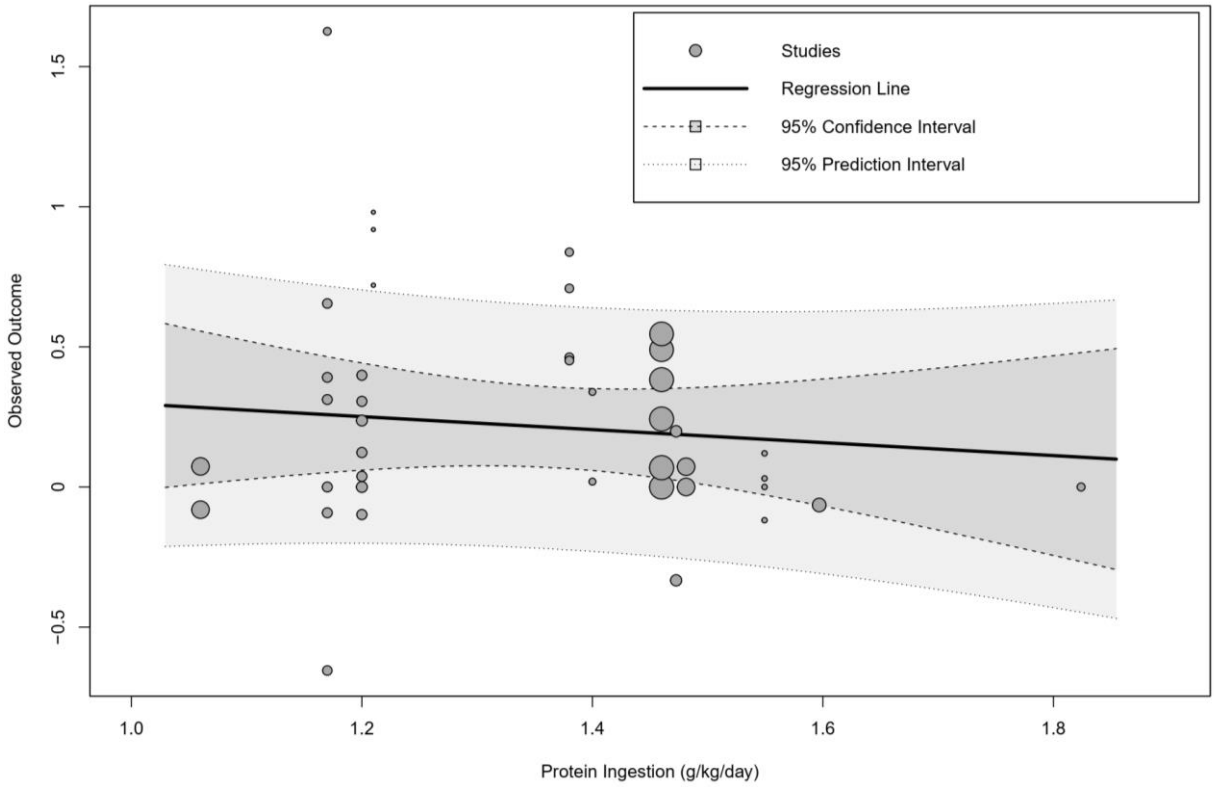
Supplementary Figure 15 – Bubble plot of three-level meta-regression analysis of the main effect on lower-body strength vs. total daily protein ingestion (g/kg/day) in studies testing interventions to increase protein ingestion in all included RCT reporting protein ingestion.



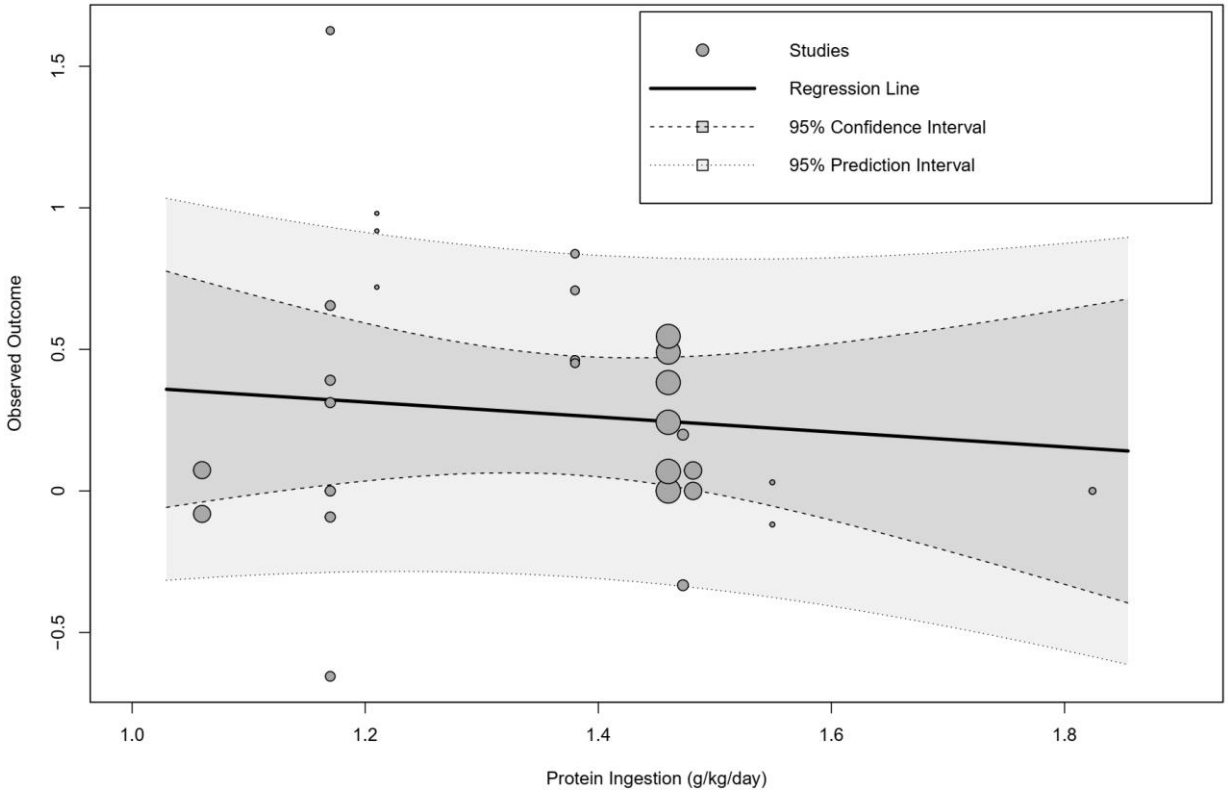
Supplementary Figure 16 – Bubble plot of three-level meta-regression analysis of the main effect on lower-body strength vs. total daily protein ingestion (g/kg/day) in studies testing interventions to increase protein ingestion in all included RCT using resistance exercise training and reporting protein ingestion.



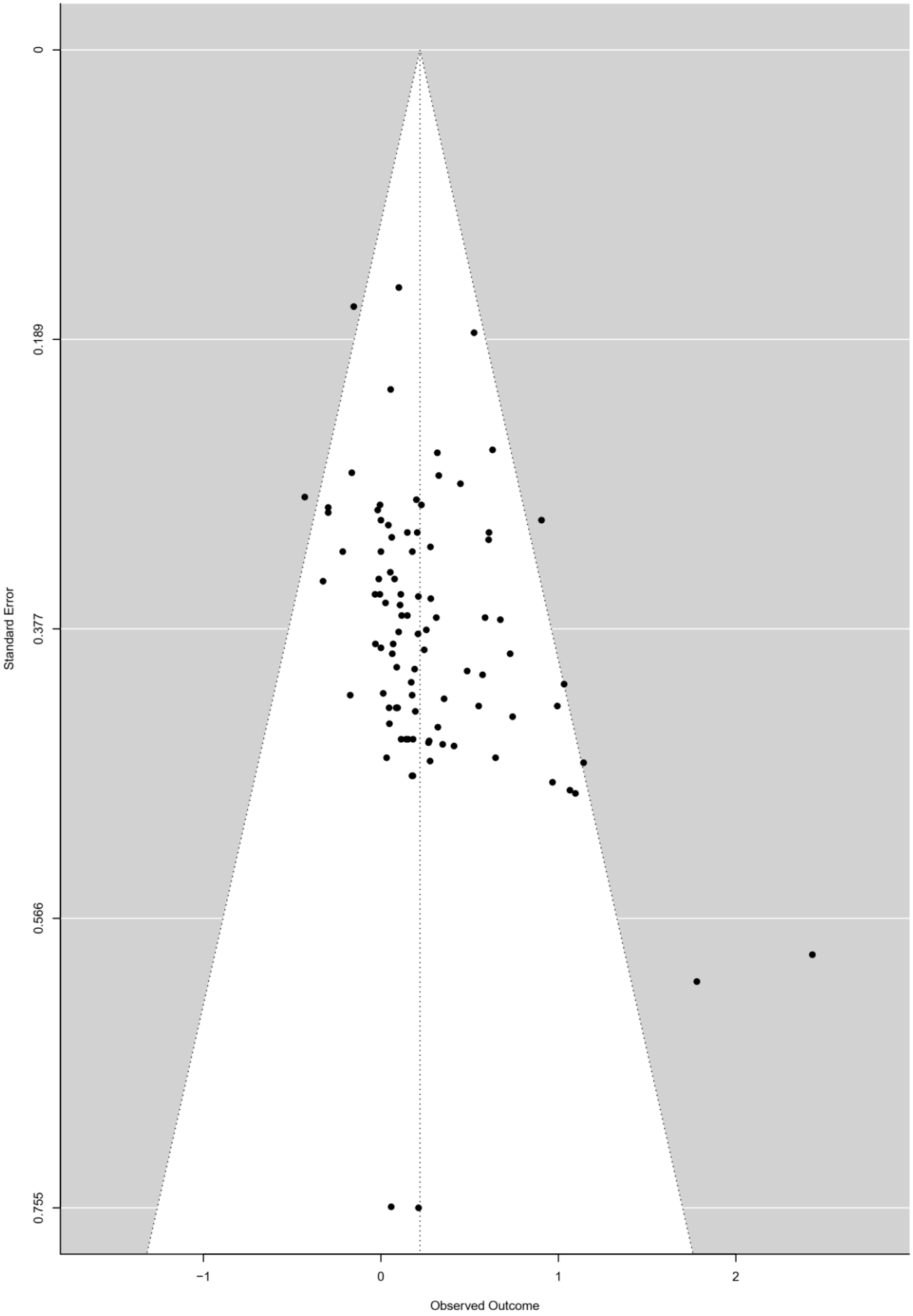
Supplementary Figure 17 – Bubble plot of three-level meta-regression analysis of the main effect on handgrip strength vs. total daily protein ingestion (g/kg/day) in studies testing interventions to increase protein ingestion in all included RCT reporting protein ingestion.



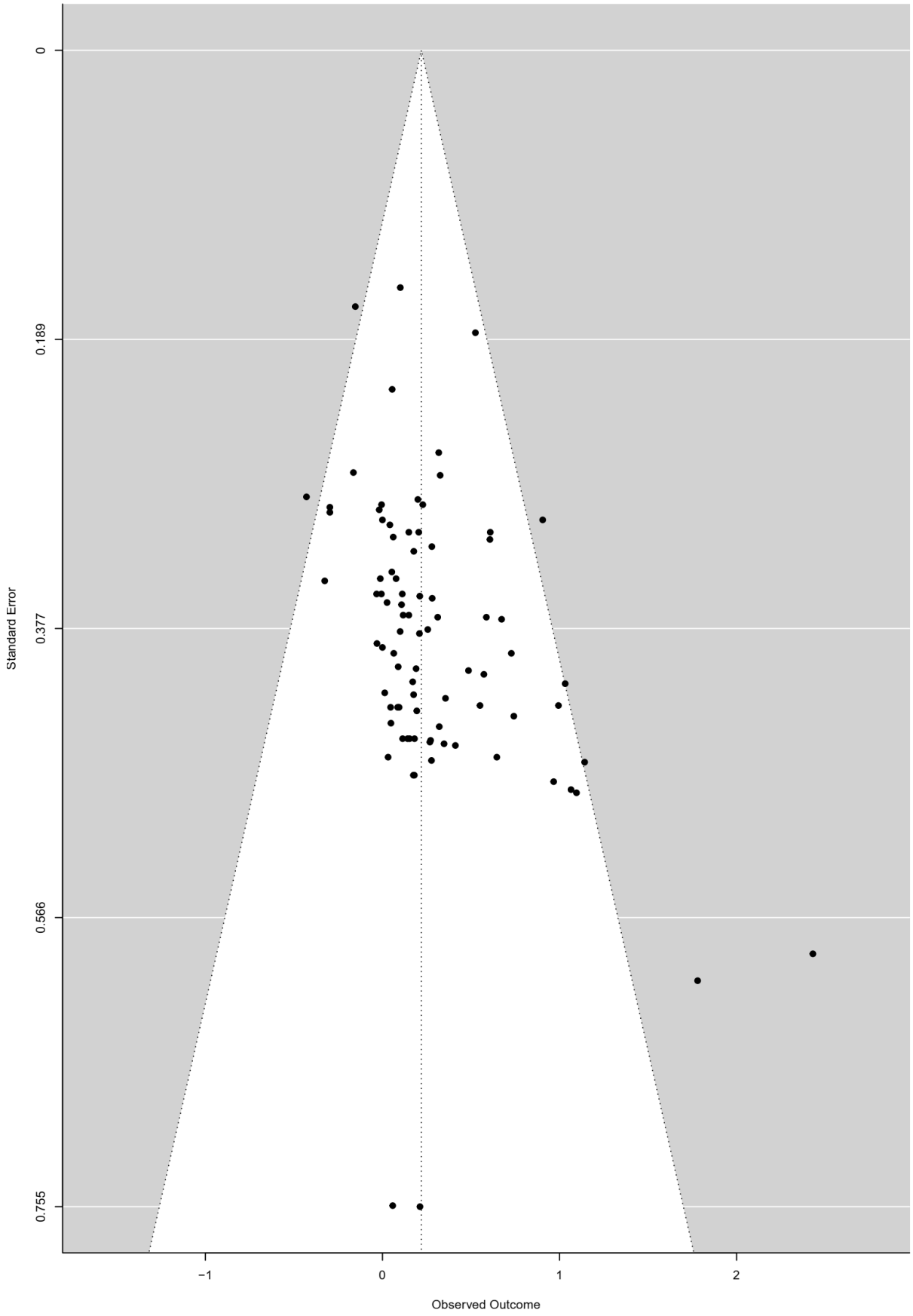
Supplementary Figure 18 – Bubble plot of three-level meta-regression analysis of the main effect on performance in physical and functional tests vs. total daily protein ingestion (g/kg/day) in studies testing interventions to increase protein ingestion in all included RCT reporting protein ingestion.



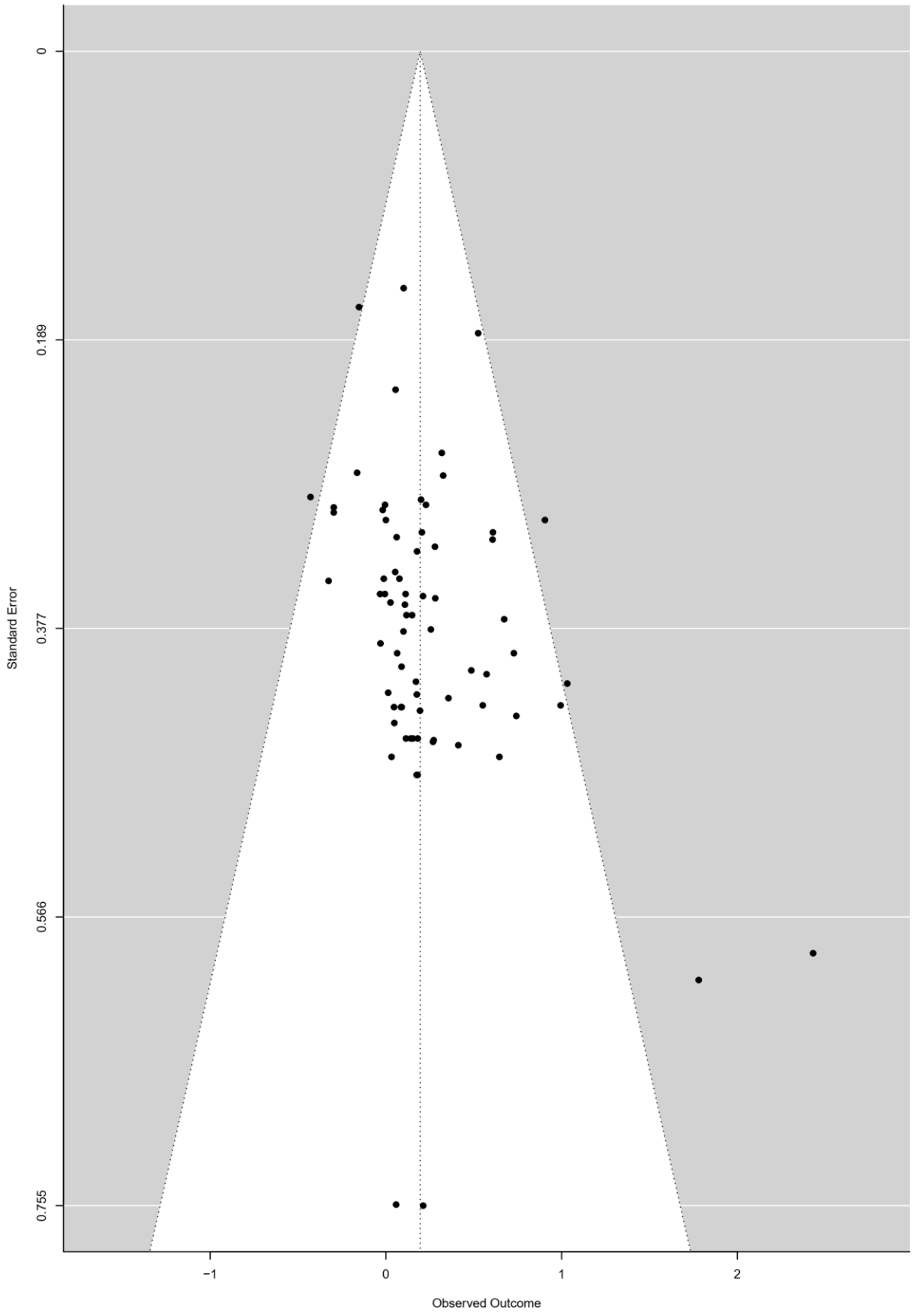
Supplementary Figure 19 – Bubble plot of three-level meta-regression analysis of the main effect on performance in physical and functional tests vs. total daily protein ingestion (g/kg/day) in studies testing interventions to increase protein ingestion in all included RCT using resistance exercise training and reporting protein ingestion.



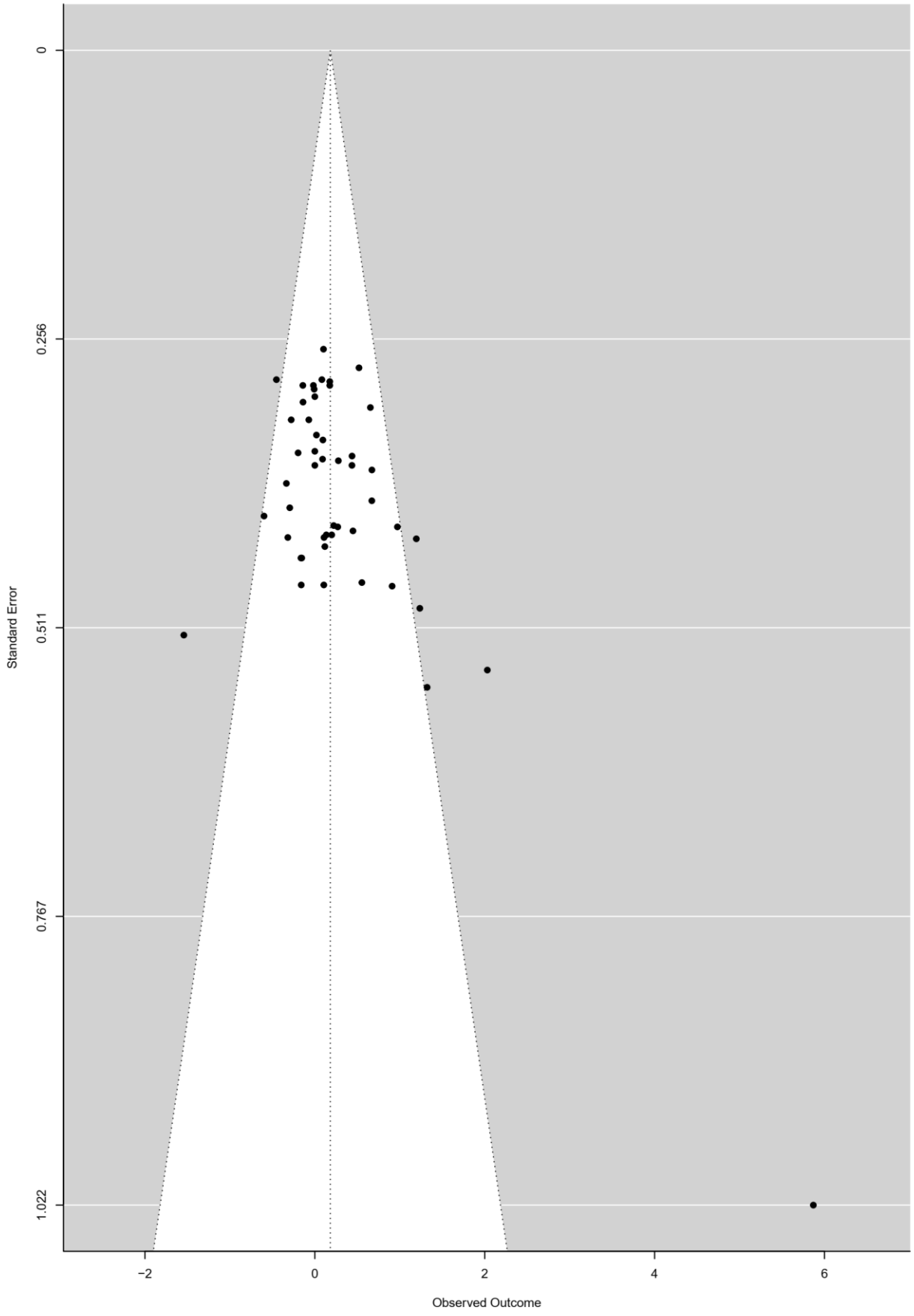
Supplementary Figure 20 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' lean body or muscle mass including or not a resistance exercise program.



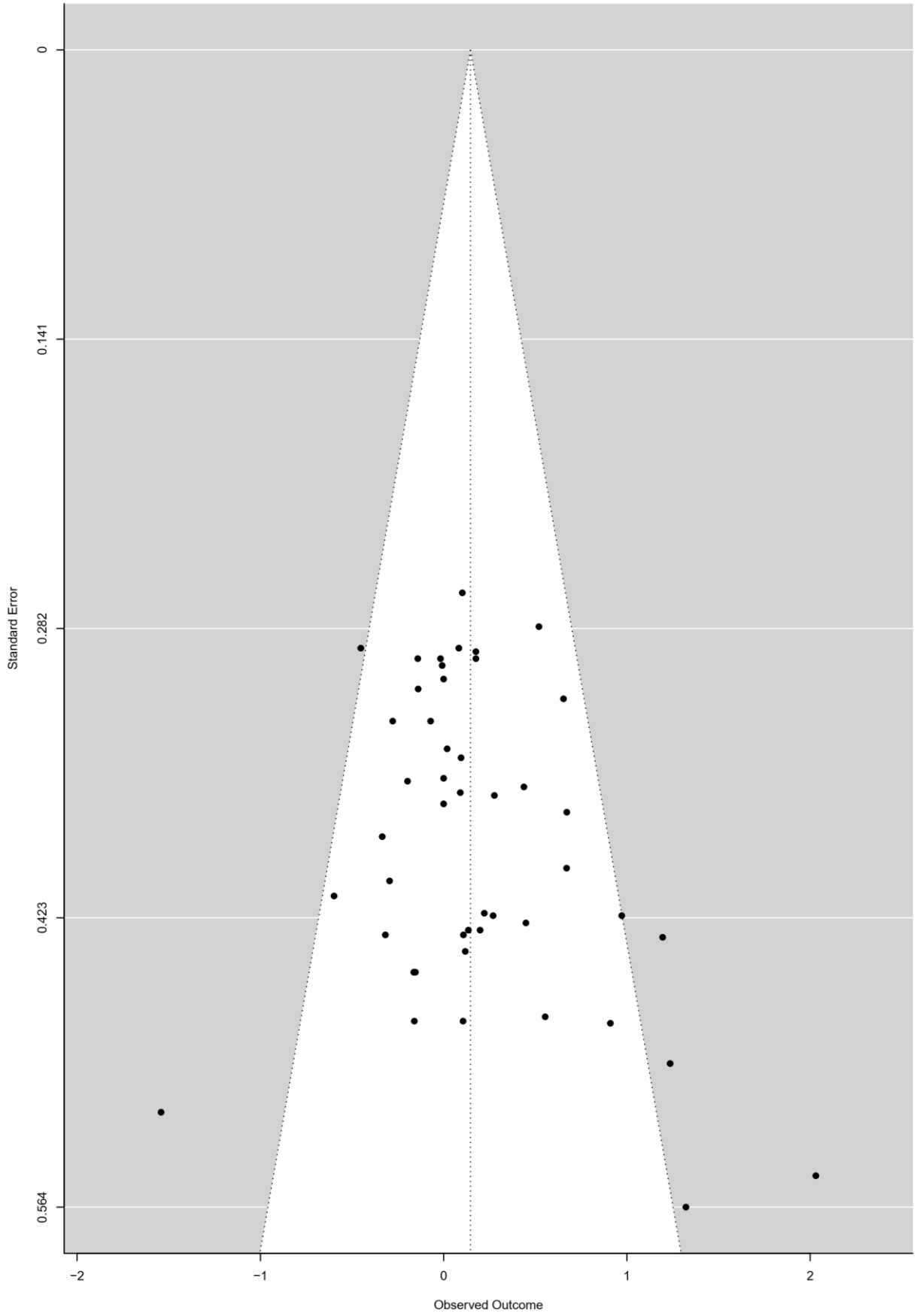
Supplementary Figure 21 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' lean body or muscle mass only in studies including a resistance exercise program.



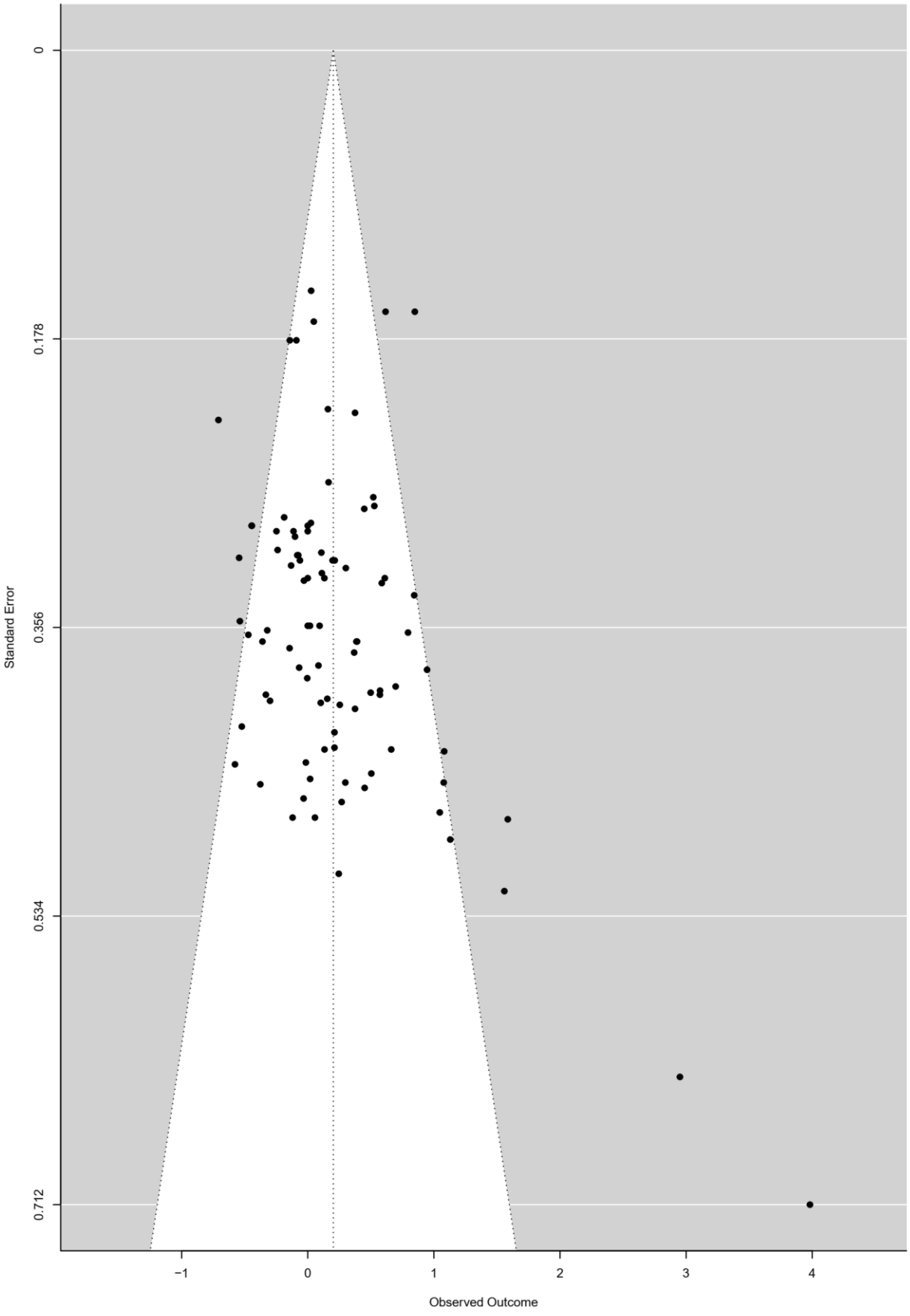
Supplementary Figure 22 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' lean body or muscle mass only in studies including a resistance exercise program reporting protein ingestion.



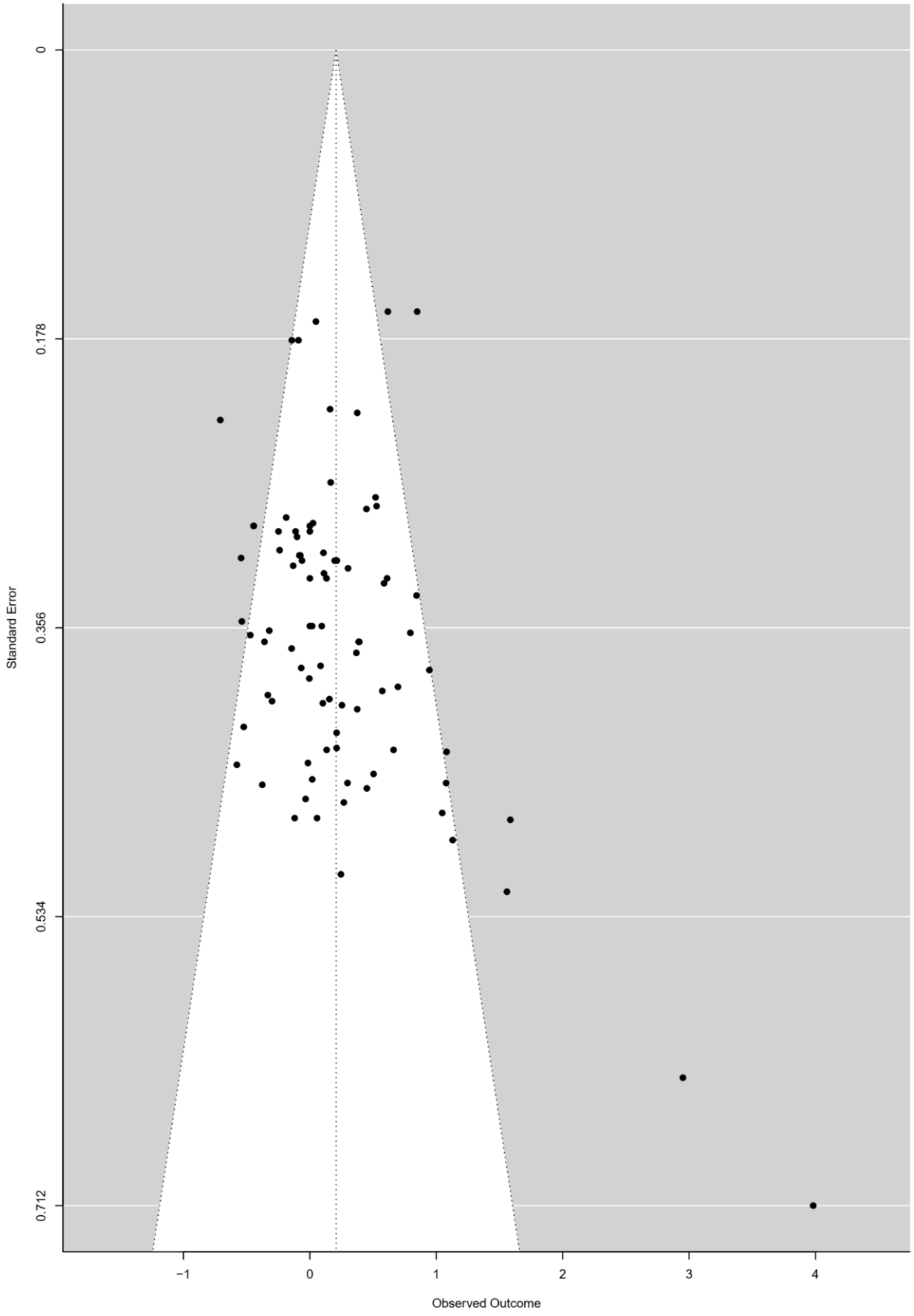
Supplementary Figure 23 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' bench press strength in studies including or not a resistance exercise program.



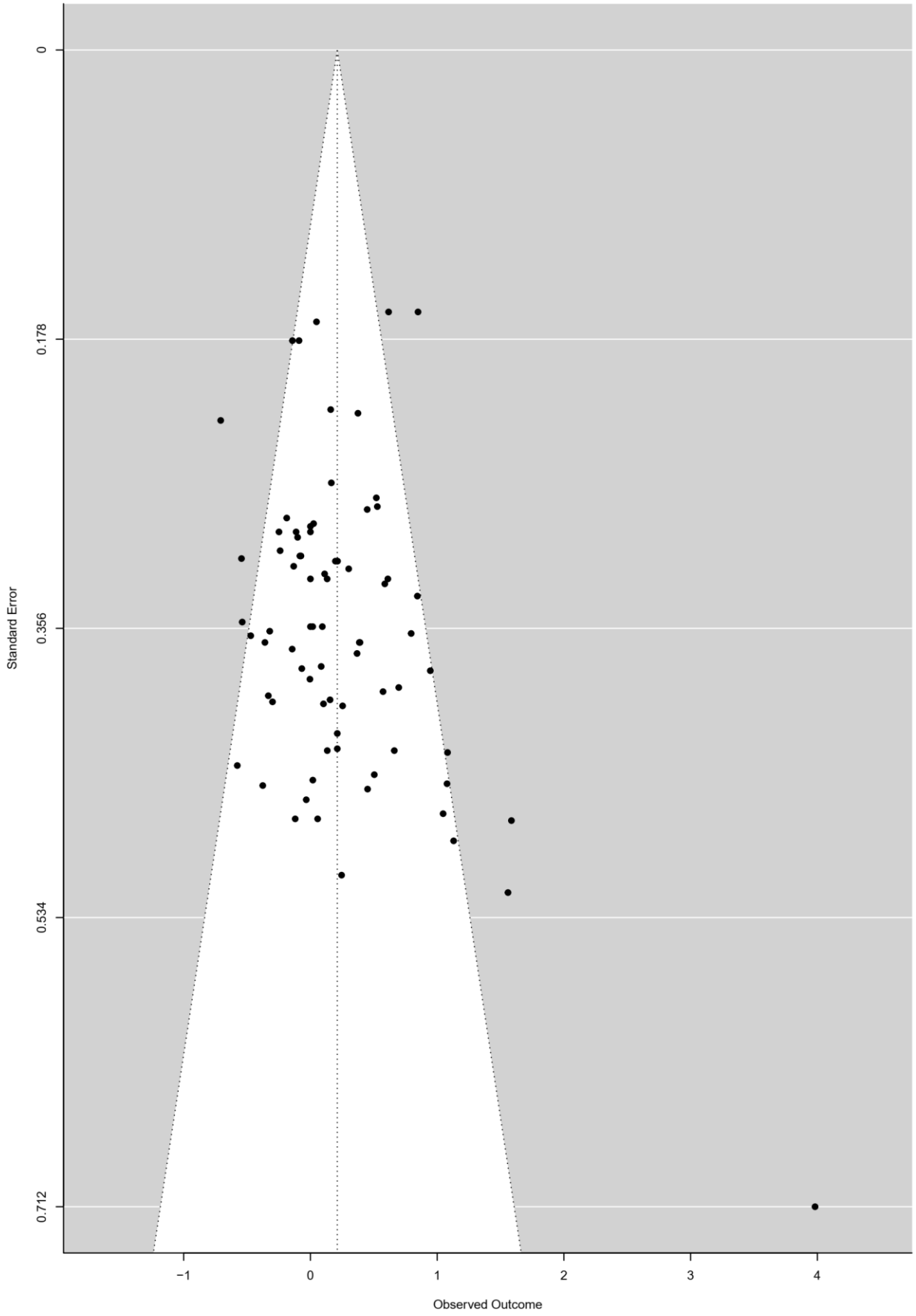
Supplementary Figure 24 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' bench press strength only in studies including a resistance exercise program reporting protein ingestion.



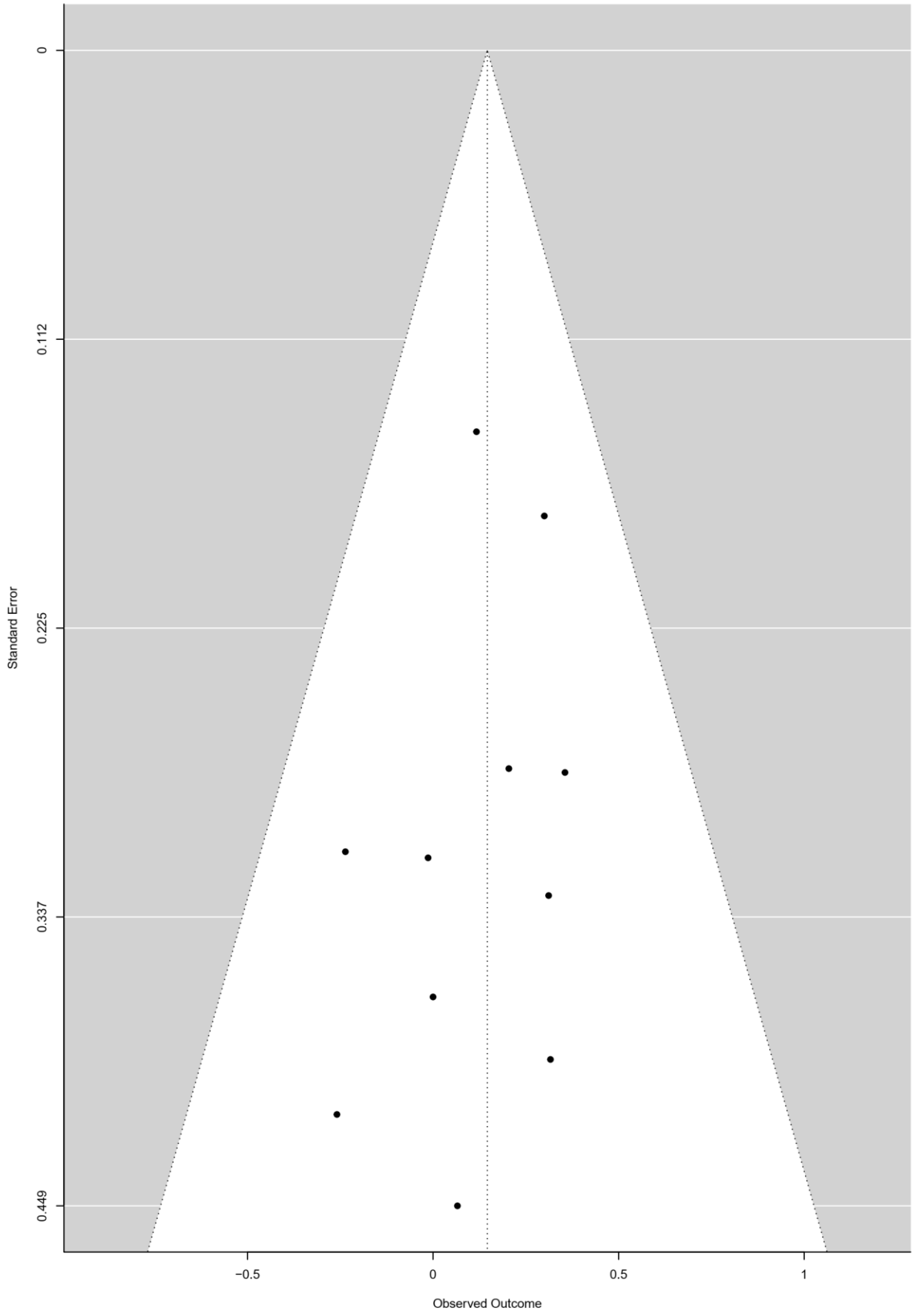
Supplementary Figure 25 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' lower-body strength in studies including or not a resistance exercise program.



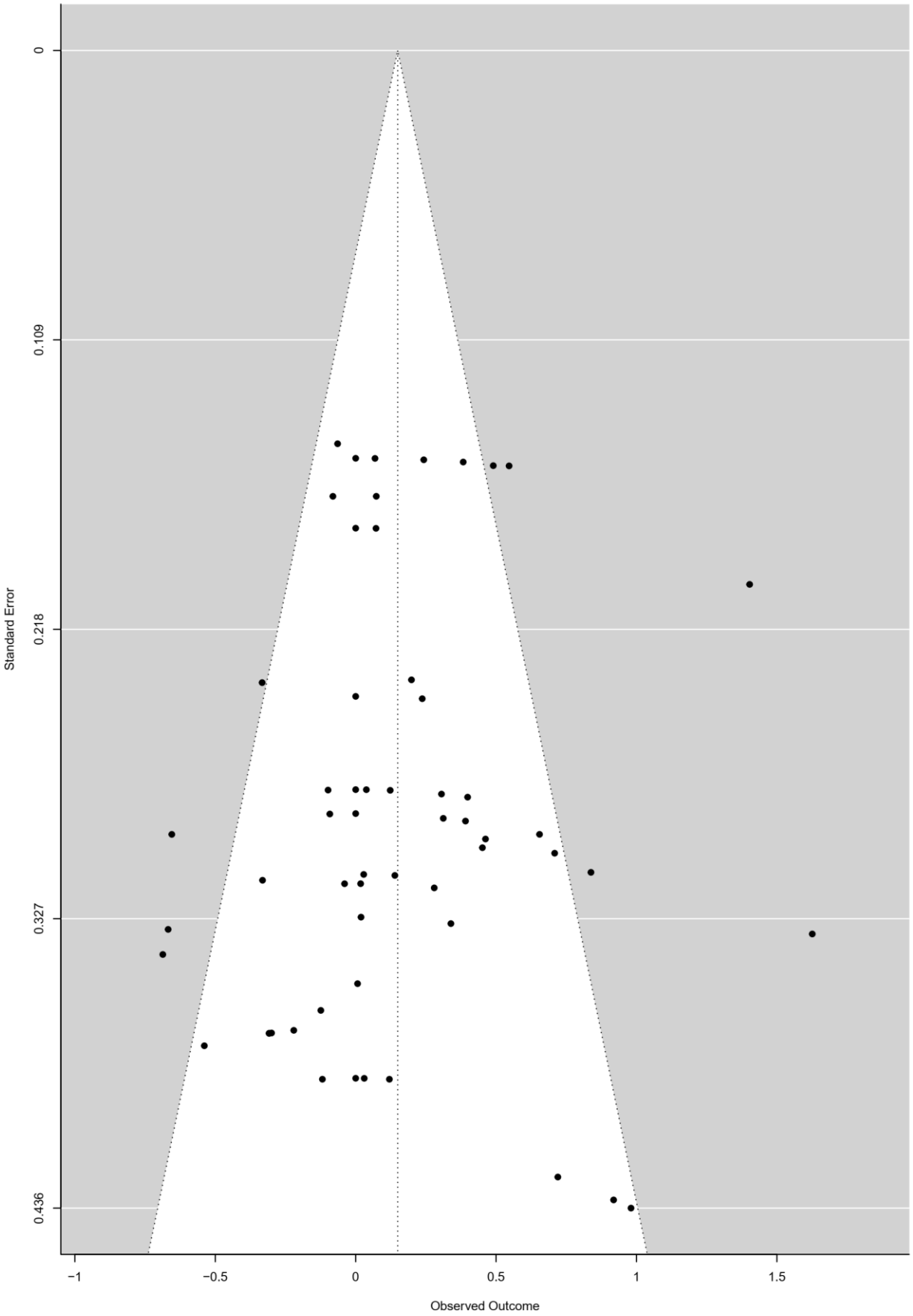
Supplementary Figure 26 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' lower-body strength only in studies including a resistance exercise program.



Supplementary Figure 27 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' lower-body strength only in studies including a resistance exercise program reporting protein ingestion.



Supplementary Figure 28 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' handgrip strength in studies including or not a resistance exercise program.



Supplementary Figure 29 – Funnel plot showing results studies testing the effects of ingesting additional protein on adults' performance in physical and functional tests in studies including or not a resistance exercise program.