



Exercises for Mechanical Neck Pain

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Background

- Neck pain (NP) is common, disabling, and costly and typically treated with exercise
- Uncertainty exists around exercise efficacy for NP as well as from exercise element and dosage
- **Purpose:** To update a Cochrane review on the effectiveness of exercise vs a control or as an adjuvant to a conservative care for NP w or w/o radiculopathy, Whiplash Associated Disorder (WAD), (Cervicogenic Headache (CGH) in adults in Randomized Controlled Trials (RCTs). Primary outcomes: pain and function-disability

Methods

Search: MEDLINE, CINAHL, EMBASE, ICL, CENTRAL, ClinicalTrials.gov and ICTRP up to March 03, 2021 for published or unpublished RCTs in any language

Data Extraction: Pairs of independent reviewers conducted the study selection, data extraction, risk of bias assessment and GRADE

Data Analysis: Meta-analyses using mean differences (MDp) were completed. In our synthesis, we restricted analysis to include studies with low risk of bias. Subgroup analyses was performed by exercise element and dose and a sensitivity analysis was performed to investigate the influence of risk of bias

Results

Eighty-eight studies (n = 11,618 randomised; 33% low risk of bias, Figure 1) compared exercise against a control or as an adjuvant at short-term (ST) and long-term (LT).

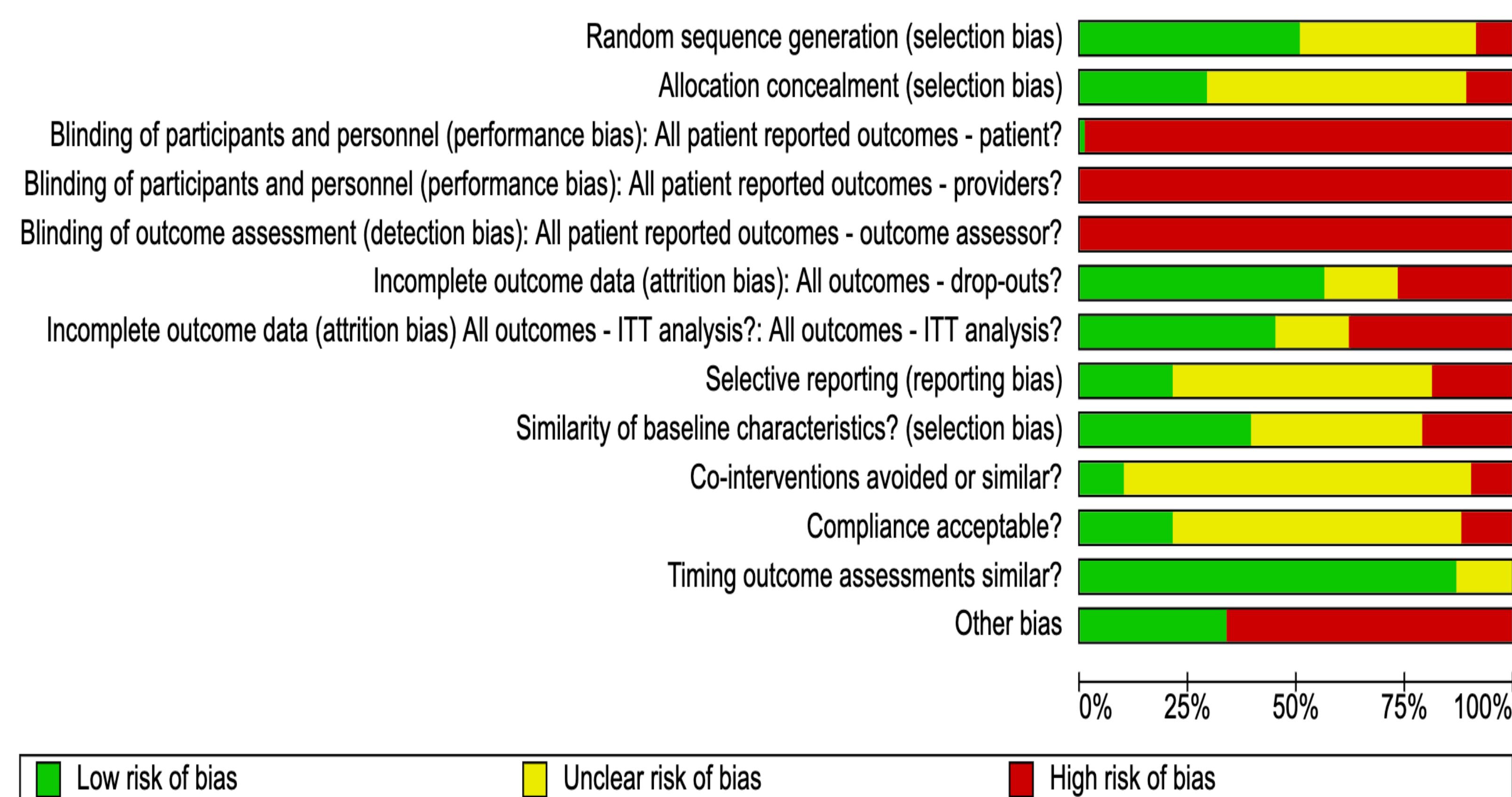
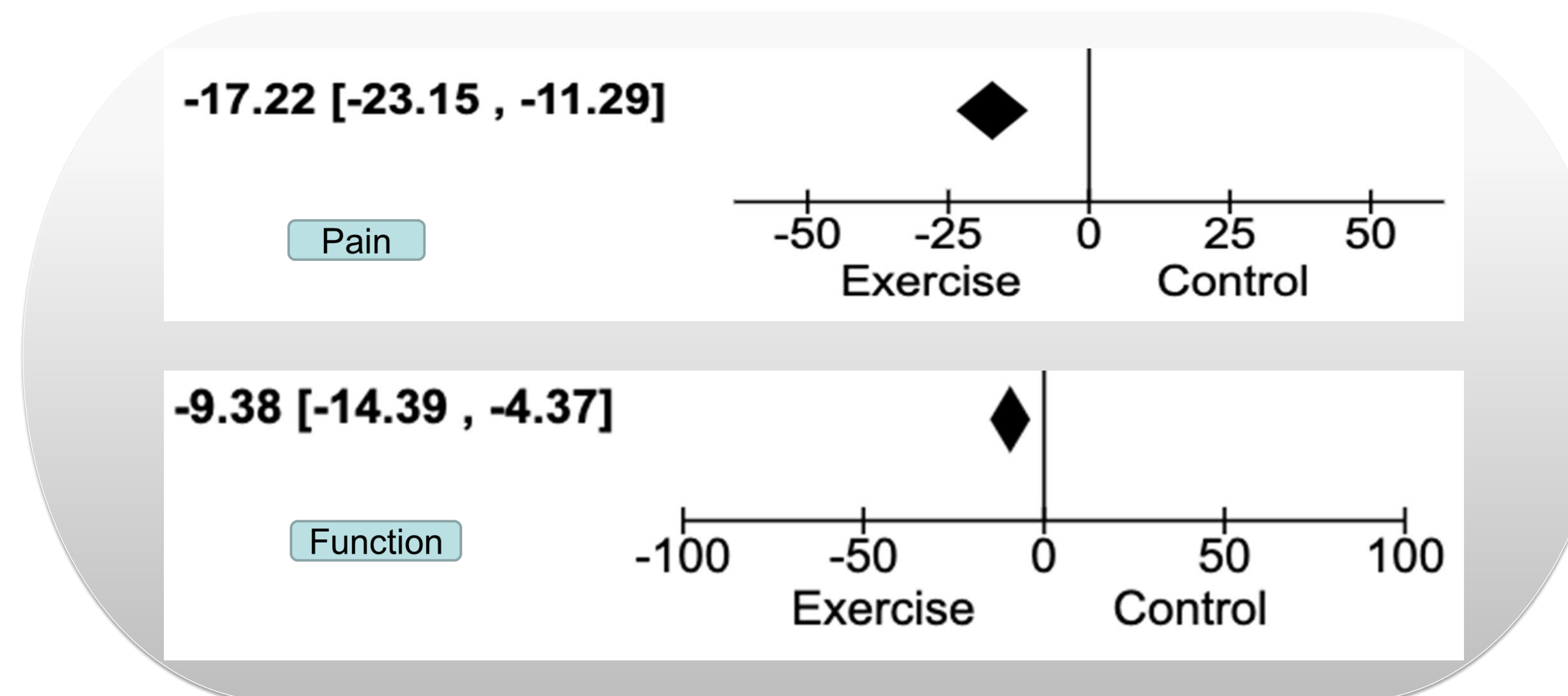


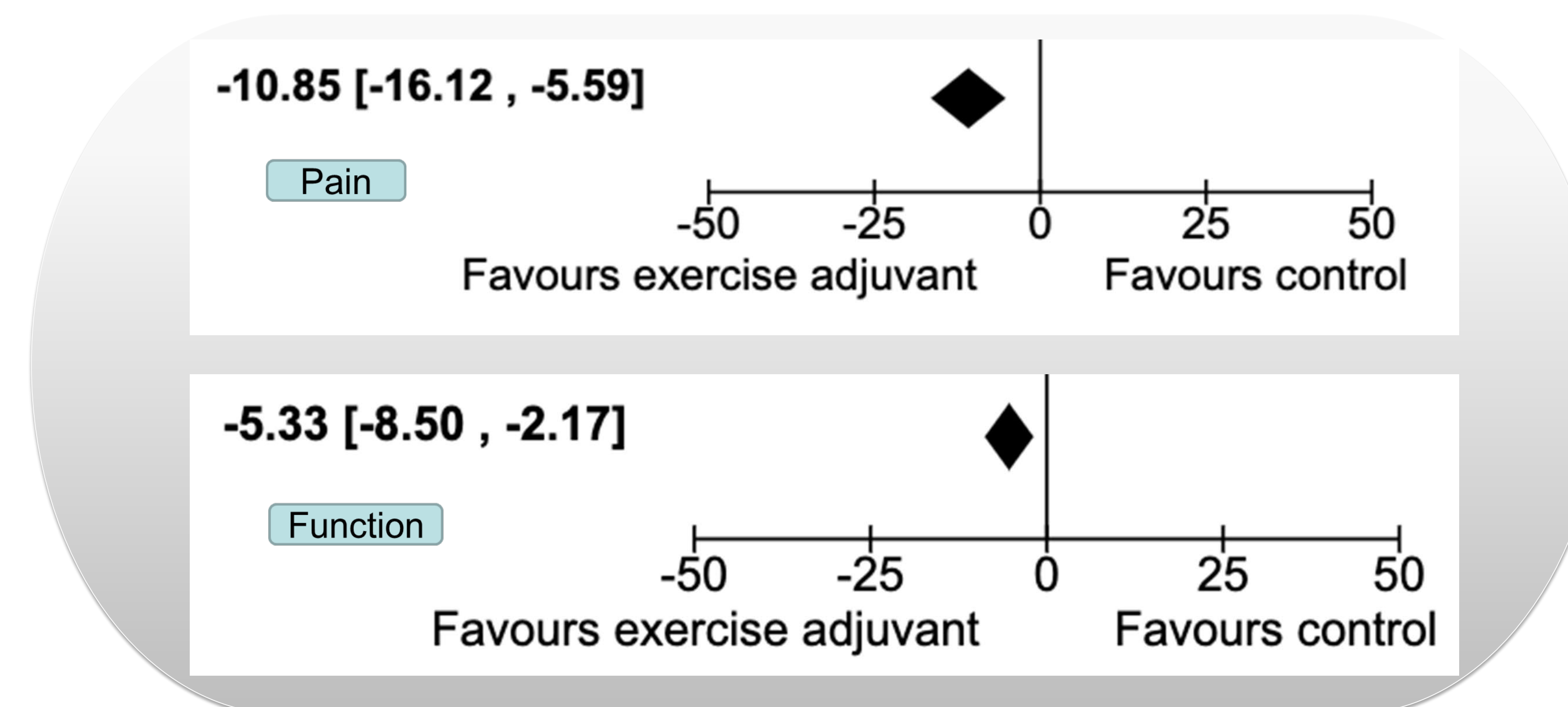
Figure 1: Risk of Bias Chart

Exercise vs Control



- MODERATE certainty evidence, moderate to small effect size for pain reduction at ST (MDp -17.22 VAS 0 to 100, 95% CI -23.15 to -11.29; P < 0.00001, I² = 81%, 12 studies, 728 participants)
- MODERATE certainty evidence, a small-trivial but unimportant effect size for function-disability at ST (MDp -9.38 NDI 0 to 100, 95% CI -14.39 to -4.37; P < 0.00001, I² = 83%, 9 studies, 617 participants)

Exercise as an Adjuvant



- MODERATE certainty evidence, a small but important effect size for pain reduction at ST (MDp -10.85 VAS 0 to 100, 95% CI -16.12 to -5.59; P < 0.0001, I² = 92%, 11 studies, 890 participants)
- MODERATE certainty evidence, a small-trivial unimportant effect size for function-disability at ST (MDp -5.33 NDI 0 to 100, 95% CI -8.5 to -2.17; P < 0.00001, I² = 87%, 12 studies, 4222 participants)

Discussion

Which exercise by element? Motor control, mind-body balance and strengthening exercises (including Pilates) seemed to improve pain and disability for chronic neck pain.

Which exercise by body region (route)? Adding cervico - scapulothoracic exercise with lumbopelvic core exercises had greater effect on function than just cervical alone or in combination with scapulothoracic exercises.

Which exercise by dose? We found that treatment frequency (2-3x/week) and duration (>7 weeks), but not total time were important factors for both pain and functional improvements.

Do adherence or supervision matter? The test for subgroup differences by supervision demonstrated heterogeneity for pain, with larger treatment effects present in fully supervised treatment protocols.

Conclusions

- Moderate certainty evidence suggests the use of exercises alone or adding exercise to conservative care showed a moderate to small-trivial unimportant effect magnitude for subacute-chronic NP and function respectively in the short-term.
- Monitoring adherence in large trials with dose analysis and long-term follow-up are needed. RoB-patient blinding requires performance-based measures.

Clinical Implications

- Exercises for neck pain can be helpful to reduce pain and improve function in the short-term.
- Supervised exercises focused on cervical, scapulo-thoracic and lumbopelvic regions can have clinically meaningful change in pain score in acute or chronic conditions at short term. There is a paucity of quality evidence for proprioceptive retraining, pattern synchronization, feedback-feedforward system exercise thus due to the high RoB in these trials they were not included. Further quality research needs to be conducted in these populations on these exercise elements.
- The exercise element and prescription characteristic support strengthening-stretching, strengthening-endurance with motor control, supervision and route of exercise for a frequency of 2- to 3-times per week over a duration of more than 7-weeks.