Exercise interventions significantly reduce fasting insulin, but not fasting glucose, in women with polycystic ovary syndrome when compared with no intervention: A systematic review and meta-analysis

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Exercise interventions significantly reduce fasting insulin, but not fasting glucose, in women with polycystic ovary syndrome when compared to no intervention: A systematic review and meta-analysis.

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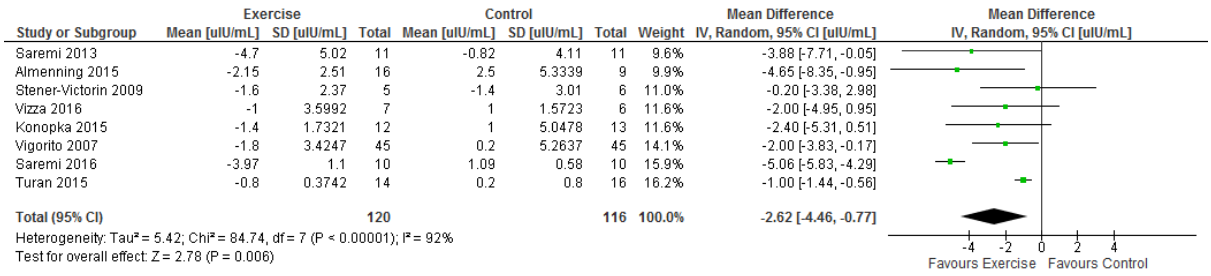
Aims: Polycystic ovary syndrome (PCOS) is a common condition that affects approximately 20% of reproductive-aged women. PCOS is also associated with insulin resistance (IR); women with PCOS are more insulin resistant than BMI-matched controls.

Methods: A systematic review was completed; randomised controlled trials that compared physical activity with control groups were evaluated in a meta-analysis. Outcomes related to glucose homeostasis were analysed. Change from baseline to end of intervention values were reported as mean difference (MD) and 95% confidence intervals (CI).

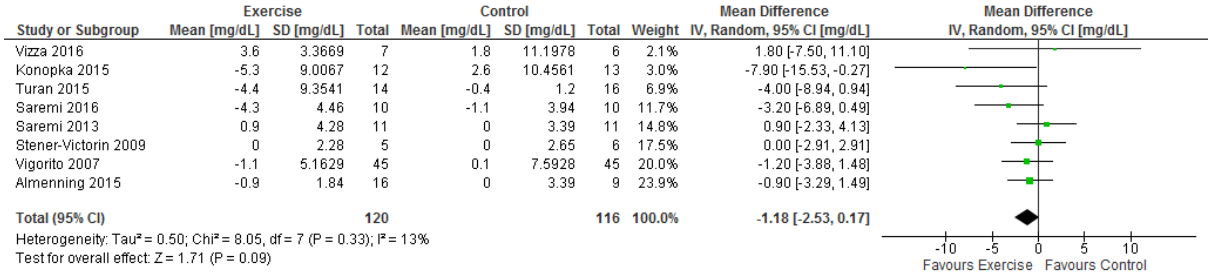
Results: There was evidence of a favourable effect of exercise on fasting insulin levels (MD -2.62 µIU/mL, CI -4.46 to -0.77; I^2=92%; 236 participants, 8 trials), but not for fasting blood glucose. Reductions in fasting insulin were found for all exercise modalities (aerobic, resistance or combined exercise), but were strongest in resistance training groups (MD -3.99 µIU/mL, CI -5.97 to -2.00; I^2=54%; 50 participants, 3 trials). Change from baseline HOMA-index also favoured exercise (MD -0.59, CI -1.02 to -0.17; I^2=89%; 146 participants, 7 trials) but evidence of effect was only present in aerobic exercise groups (MD -0.77, CI -1.28 to -0.26; I^2=65%; 75 participants, 4 trials).

Summary: Exercise, regardless of modality, reduces fasting insulin, but not fasting blood glucose, in women with PCOS compared to those receiving no intervention. However, a cautious approach should be adopted in interpreting these findings due to the wide CI's and evidence of considerable heterogeneity. Despite the statistically significant results, it is unclear if these improvements are clinically relevant.

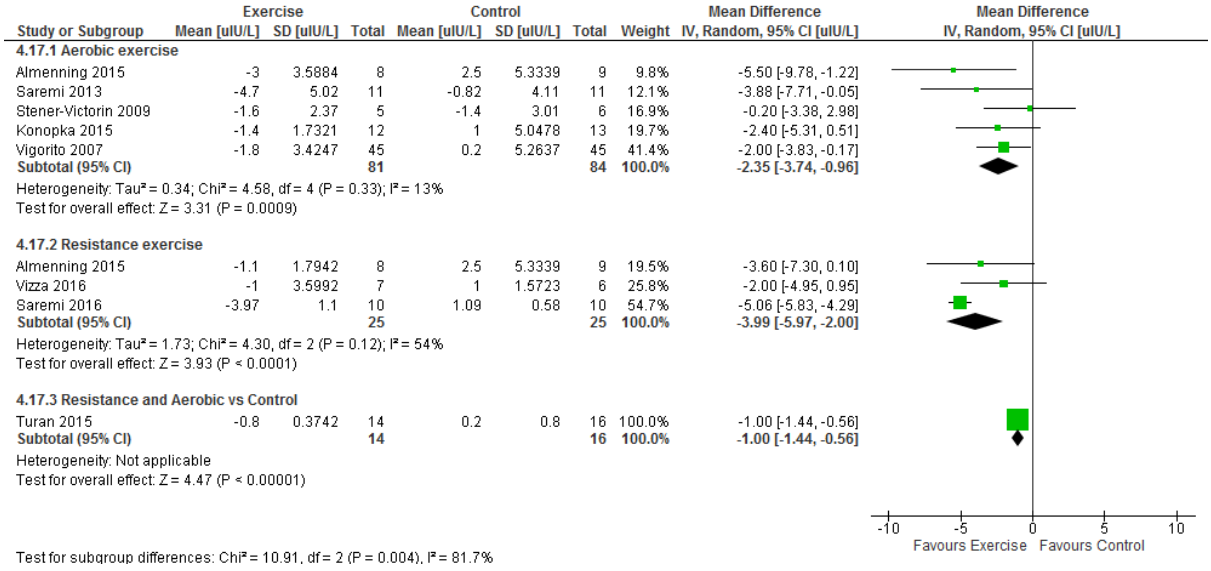
Exercise vs Control: Change from baseline fasting insulin (µIU/mL)



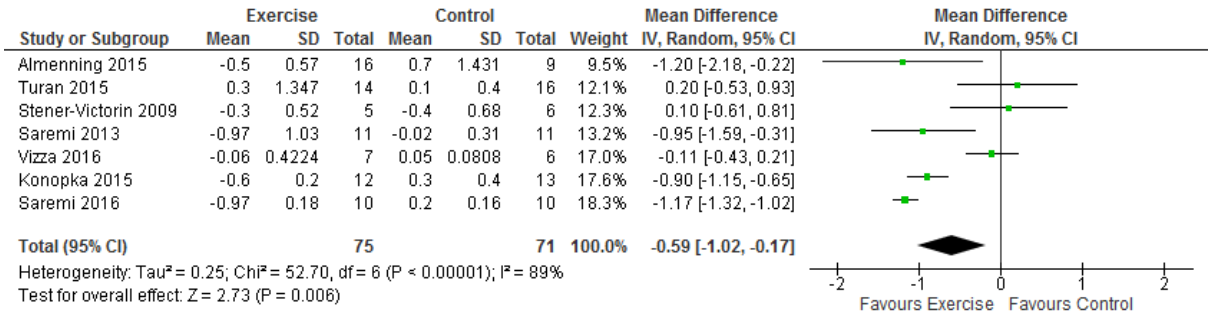
Exercise vs Control: Change from baseline fasting blood glucose (mg/dL)



Exercise vs Control: Change from baseline fasting insulin (µIU/mL): Sub-analysis by exercise modality.



Exercise vs Control: Change from baseline HOMA index



Exercise vs Control: Change from baseline HOMA index: sub-analysis by exercise modality