

Combined aerobic and resistance training, rather than either method alone, is best for controlling blood sugar

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Credit: Darren Lewis/public domain

A systematic review and meta-analysis of available data published in *Diabetologia* (the journal of the European Association for the Study of Diabetes) suggests that combined aerobic and resistance training, rather than either alone, is best for controlling both blood sugar and blood fat profiles among people with type 2 diabetes. However the authors stress that the strength of the results is weakened when studies with high risk of bias are removed, and thus more high quality trials are needed to

make more definitive conclusions. The study is by Lukas Schwingshackl, University of Vienna, Austria, and colleagues.

To date, no [systematic review](#) has compared the direct and indirect effects of these three different training modalities on the outcomes of [blood sugar control](#) and blood fats in patients with type 2 diabetes. The aim of the present study was to assess the efficacy of aerobic exercise training (AET), resistance training (RT) and combined training (CT) on [blood sugar](#) control, blood pressure and blood fats in patients with type 2 diabetes in a systematic review and meta-analysis.

A total of 14 trials enrolling 915 participants were included. The results showed that, in patients with established diabetes, AET might be more effective in reducing HbA1c (a measure of blood sugar control) and fasting glucose when compared with RT. CT was more powerful in reducing HbA1c compared with AET, and more effective in reducing HbA1c, fasting blood glucose and blood fats when compared with RT. However, these results could not be confirmed when only low risk of bias studies were included. Pooling both direct and indirect evidence on AET, RT and CT via meta-analysis demonstrated that CT was the most efficacious exercise intervention regarding its impact on HbA1c, fasting glucose, good cholesterol, [blood fats](#), [diastolic blood pressure](#) and bodyweight.

The authors note that only studies where the training was supervised (and thus objectively validated) were included in the analysis. There is evidence that supervised exercise is more effective than unsupervised training, but in practice it seems unlikely that most patients would have access to supervised exercise regimens of this intensity. The authors say: "It is possible that either AET, RT or CT may be easier to perform effectively without supervision, thus affecting the external validity of these results since only studies with supervised training were included."

They add: "This systematic review and meta-analysis focused on randomised controlled trials comparing AET, RT and CT. Compared with AET or RT, CT interventions resulted in significantly more pronounced improvements in variables related to blood [sugar control](#). With respect to single types of exercise intervention, AET was more effective in reducing HbA1c and fasting glucose when compared with RT. However, the interpretation of these findings with respect to their clinical relevance is limited by the overall low to moderate quality of the studies included, the lack of information on clinically important outcomes, and the limited information on the adverse effects of exercise."

They conclude: "Further high quality with long-term exercise interventions are needed to develop definitive recommendations. In the meantime, combined aerobic and [resistance training](#) can be recommended as part of a lifestyle programme in the management of [type 2 diabetes](#) wherever possible. Due to the limited information on potential [adverse effects](#) of exercise, supervised workouts should be favoured, though of course we accept it is not possible for most people to have supervised workouts in the course of day-to-day living."

Provided by Diabetologia

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