

**Effectiveness of a physical activity program on kidney function and cardiovascular risk factors in adults with type 2 diabetes: The “Pas-a-Pas” Randomized Controlled Trial**

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## Abstract

**Introduction:** There is an apparent lack of randomized controlled trials to evaluate the effect of physical activity on kidney function, especially that for type 2 diabetic patients who are at higher risk than most. This study aims to assess the 9-month efficacy of a moderately intense physical activity intervention on kidney function in type 2 diabetic patients.

**Methods:** Randomized controlled trial conducted in four Spanish primary care clinics, in Catalunya. Diabetic adults ( $n = 136$ ) aged 41-87 years were randomly assigned (1:1.5) to an intervention group (IG) or control group (CG). The IG underwent a biweekly physical activity intervention consisting of 120 minutes/week walking (396 METs/min/week) alongside strength and resistance exercises, while the CG received standard clinical care but no physical activity promotion. The intervention was made up of 120 minutes/week walking (396 METs/min/week). The primary outcomes were 9-month changes in estimated glomerular filtration rate (eGFR) and albumin levels. Secondary outcomes were 9-month changes in cardiovascular risk factors, including body weight, BMI, HbA1c, glucose, lipid profile and blood pressure.

**Results:** After the 9-month intervention, eGFR improved in the IG and declined in the CG. There were no between-group differences in mean urinary albumin. Stratification by specific subgroups of women, participants <65 years old, and participants without controlled diabetes, observed significant differences between the IG and CG, with favoured improvement in the IG. Clinically meaningful changes were observed for body weight and total cholesterol, showing significant decreases in the IG when compared with the CG, with BMI as an additional variable included.

**Conclusions:** The Pas-a-Pas physical activity intervention increased physical activity, may improve eGFR, and improved cardiometabolic risk factors to clinically meaningful levels in diabetic adults.