

Effectiveness of a 28-Day Digital Physical Activity Intervention on Physical Fitness and Behaviour Change in Sedentary Women: A 6-Month Follow-Up Study

Pedro Morouço

Directorate-General of Health, Leiria, Portugal

Background: Sedentary behaviour in middle-aged women is associated with increased health risks. Short-term interventions may promote long-term behaviour change, particularly when supported by digital tools. This study evaluated whether a 28-day mobile-based physical activity (PA) programme could induce lasting improvements in physical fitness and activity levels among sedentary women.

Methods: A total of 21 sedentary women (mean age 47.20 ± 5.6 years) participated in a 28-day digital intervention delivered via smartphone. The programme included daily exercise sessions and motivational content. At the end of the programme, participants attended a 15-minute one-on-one consultation with an exercise physiologist to review their results and receive personalised feedback. Assessments were conducted pre-intervention, post-intervention, and at 6-month follow-up. Outcomes included morphological measures (waist, hip, and abdominal circumference; body weight; fat mass) and physical fitness tests (squat repetitions, agility, handgrip strength).

Results: After 28 days, significant improvements ($p < 0.05$) were observed in squat performance (24.5 ± 2.74 vs 27.1 ± 2.8 reps), agility (2.44 m test: 5.55 ± 0.9 vs 4.95 ± 0.7 sec), and handgrip strength (26.01 ± 3.9 vs 30.0 ± 4.47 kg; $p < 0.05$). Morphological outcomes showed no significant changes. At 6-month follow-up, 19 participants were classified as physically active according to the IPAQ questionnaire: nine had joined gyms, and 10 reported maintaining an active lifestyle independently. Only two participants remained sedentary. Qualitative feedback highlighted the role of the physiologist consultation in sustaining motivation.

Discussion: This study suggests that short-term, mobile-based interventions, when combined with personalised feedback, can promote meaningful improvements in physical fitness and foster sustained PA in sedentary women. The high adherence to PA at six months reinforces the potential of digital health solutions as scalable, accessible strategies to target sedentary behaviour in middle-aged populations. Future research should explore the impact of longer intervention periods, integration with behavioural coaching, and the role of social support to maximise outcomes. Additionally, these findings may inform public health policies aimed at increasing PA through digital platforms, particularly in underserved or hard-to-reach populations.

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