

## **Effectiveness of Mobile Health Sedentary Time Interventions in Older Adults: A Systematic Review and Meta-Analysis**

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### **ABSTRACT**

mHealth is the provision of health care and health information through mobile electronic devices. The prevalence of sedentary behaviors (SB) among older adults is increasing, underscoring the urgent need for effective mHealth interventions. Evidence of the effectiveness of mHealth in older adults is unclear. **PURPOSE:** The study aims to 1) explore the effects of mHealth interventions on reducing SB; and 2) examine the influence of potential moderators on mHealth interventions' effectiveness by analyzing subgroups according to participants' characteristics and intervention specifics. **METHODS:** A systematic review and meta-analysis of randomized controlled trials were conducted. A literature search was conducted using multiple databases including articles published through October 2023, and following PRISMA guidelines. Subgroup analyses assessed variables such as mean age, intervention specifics, and behavior change techniques (BCTs) categories. Two independent reviewers screened and extracted study data, with methodological quality assessed using established criteria. **RESULTS:** 10 mHealth interventions were found, primarily in community and home settings, with durations of 25 days to 6 months. 3 studies aimed to decrease SB and 7 to increase physical activity (PA). Meta-analyses showed a significant decrease in SB (WMD=-59.07, 95% CI: -99.07, -20.20,  $p=0.003$ ) and an increase in PA (SMD=0.22, 95% CI: 0.01, 0.44,  $p=0.04$ ) among older adults through mHealth interventions, compared to conventional or no interventions. Subgroup meta-analysis revealed that targeted strategies, BCTs, specific durations, ActivPAL, and focusing solely on SB, were effectively reduced SB among older adults. **CONCLUSION:** mHealth interventions effectively reduce SB and increase PA in older adults, particularly when using targeted strategies. This underscores mHealth's potential as a key tool in promoting older adults' well-being through technology-driven public health efforts. Future research should utilize a comprehensive BCT framework for analyzing, designing, implementing, and evaluating health interventions to explore SB mechanisms, create and implement focused interventions with precise mHealth goals for older adults, and ensure long-term monitoring and extended durations for sustainable outcomes.