

# FPIN's Help Desk Answers

## Wearable Devices for Weight Loss

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### Clinical Question

Do wearable devices aid with weight loss when combined with behavioral interventions?

### Evidence-Based Answer

Although there is inconsistent evidence, the combination of wearable technology and intensive lifestyle interventions may be more effective for weight loss than lifestyle interventions alone. There is no effect on outcomes of body composition, fitness level, overall physical activity, or dietary choices. (Strength of Recommendation: C, disease-oriented evidence.)

### Evidence Summary

A 2016 multicenter randomized controlled trial (n = 471) compared the effectiveness of intensive lifestyle behavioral interventions vs. lifestyle interventions plus a wearable device for weight loss.<sup>1</sup> The study participants were 18 to 35 years of age with body mass indices of 25 to 40 kg per m<sup>2</sup> and indicated they were interested in weight loss. Those who had weight loss surgery or self-reported weight loss of more than 5% of current body weight in the previous three months were excluded. Participants were placed on a low-calorie diet (1,200 kcal per day for those weighing less than 200 lb [90.7 kg], 1,500 kcal per day for those weighing 200 to 250 lb [113.4 kg], or 1,800 kcal per day for those weighing more than 250 lb), were prescribed physical activity (100 to 300 minutes per week), and had group

counseling sessions for six months. After six months, monthly telephone counseling sessions, weekly text message prompts, and access to online study materials were added. At that time, participants were randomized to two groups: the control group continued with the previous activity and diet plan, and the intervention group received the BodyMedia Fit Core armband to monitor physical activity and software to allow self-monitoring of dietary intake. Outcomes were measured every six months for 24 months. The primary outcome was change in weight; secondary outcomes included body composition, cardiorespiratory fitness, physical activity, and dietary intake. Patients in the intervention group did not lose significantly more weight over the 24-month period than the control group (13 lb [5.9 kg] vs. 7.7 lb [3.5 kg], respectively; mean difference = 5.3 lb [2.4 kg]; 95% CI, 2.2 to 8.2 lb [1.0 to 3.7 kg]). There were no significant changes in the secondary outcome measures.

A 2011 randomized controlled trial (n = 197) evaluated whether continuous self-monitoring using wearable technology (SenseWear armband) with real-time feedback could enhance weight loss outcomes.<sup>2</sup> Participants were 18 to 64 years of age with body mass indices of 25 to 45 kg per m<sup>2</sup>. All participants had Internet access and performed at least 150 minutes per week of moderate to vigorous physical activity in bouts of at least 10 minutes each. Participants were randomized into four groups: a self-directed program (standard care), ►

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## HELP DESK ANSWERS

a group-based behavioral program (GWL), the armband alone (SWA), or the group-based behavioral program plus the armband (GWL+SWA). All groups received a self-directed weight-loss manual. In the GWL group, participants received 14 group sessions and weekly weigh-ins for the first four months of the trial. During the final five months, participants received six one-on-one telephone counseling sessions. The SWA group received the SenseWear armband, a watch display, and access to a weight-management website. The watch provided real-time feedback including energy expenditure, minutes spent in moderate to vigorous physical activity, and steps taken per day. Participants wore the armband 16 hours per day, seven days per week and recorded daily energy intake and body weight. The primary outcomes were change in weight and waist circumference. After nine months, follow-up data were available from only 62% of participants. Participants in all three intervention groups experienced significant weight loss (4.2 lb [1.9 kg] in the GWL group,  $P = .05$ ; 7.9 lb [3.6 kg] in the SWA group,  $P = .0002$ ; and 14.6 lb [6.6 kg] in the GWL+SWA group,

$P < .0001$ ); the standard care group did not (2 lb [0.9 kg],  $P = .39$ ). The GWL+SWA group was the only one to achieve statistically significant weight loss compared with standard care ( $P = .04$ ). This study was funded by an unrestricted research grant from the armband manufacturer. Limitations of the study include the high attrition rate and a largely female and college-educated population, which limited the generalizability of results.

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