



Q/ Can mobile technology improve weight loss in overweight and obese patients?

EVIDENCE-BASED ANSWER

A | YES, THIS TECHNOLOGY CAN HELP in the short term. Mobile technology compared with minimal or no intervention increases short-term (<6 months) weight loss (1.4 to 2.7 kg) in overweight and obese patients (strength of recommendation [SOR]: A, meta-analysis of good-quality studies and randomized controlled trials [RCTs]).

Interventions that combine nonelectronic measures with mobile technology increase weight loss more effectively (3.7 kg) than no intervention (SOR: A, meta-analysis of good-quality studies and RCTs).

Using mobile technology shows no significant benefits for weight loss after 12 months (SOR: A, multiple good-quality RCTs).

Evidence summary

A systematic review and meta-analysis of 84 moderate- to high-quality RCTs with 24,010 patients evaluated the use of “eHealth” interventions in preventing and treating overweight and obesity in adults 35 to 65 years of age (75% female).¹ The studies included 183 active intervention arms with durations as long as 24 months (64% <6 months, 46% >6 months). The term eHealth included all forms of information technology used to deliver health care, but predominantly the Internet (Web site/Web-based), e-mail, and text messaging. Sixty percent (84) of eHealth interventional arms used one modality and 34% (47) used 2. Some intervention arms included non-eHealth modalities, such as paper-based measures and counseling.

The eHealth interventions were associated with significantly greater weight loss than minimal or no intervention (TABLE).¹ Comparing eHealth interventions with no intervention showed significant differences by eHealth type ($P=.05$). The greatest weight loss accompanied interventions that combined Web-based measures with a

non-eHealth intervention, (mean difference [MD]= -3.7 kg; 95% confidence interval [CI], -4.46 to -2.94), followed by mobile interventions alone (MD= -2.4 kg; 95% CI, -4.09 to -0.71) and Web-based interventions alone (MD= -2.2 kg; 95% CI, -2.98 to -1.44).

Similarly, comparing combined interventions (eHealth + eHealth or eHealth + non-eHealth) with a minimal intervention control showed a trend for difference by eHealth type ($P=.005$). Only a combination of eHealth with non-eHealth interventions resulted in significantly greater weight loss (Web site + non-eHealth: MD= -2.7 kg; 95% CI, -3.76 to -1.54; text + non-eHealth: MD= -1.8 kg; 95% CI, -2.49 to -1.12; computer + non-eHealth: MD=1.1 kg; 95% CI, -1.36 to -0.89).

Personal coaching plus smartphone monitoring beats interactive app

A 3-arm RCT of 385 overweight and obese participants (mean body mass index [BMI], 35 kg/m²) 18 to 35 years of age compared the effectiveness of weight loss interventions delivered by interactive smartphone application (CP [cell phone]), personal coaching enhanced by smartphone self-monitoring

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TABLE

How eHealth interventions compare for overweight and obese patients¹

eHealth intervention	Control	Studies (N)	Patients (N)	Outcome (MD of eHealth vs comparator)
Web site and/or mobile app	No intervention	9	760	MD= -2.7 kg (95% CI, -3.33 to -2.08)
Web site, text, and/or monitoring device	Minimal intervention (written self-help materials)	16	1596	MD= -1.4 kg (95% CI, -1.98 to -0.82)
Web-based and mobile app	Web-based and mobile app + face-to-face session	5	357	MD= 0.6 kg (95% CI, -0.13 to 1.29)
Monitoring device, Web-based, and mobile app + Standard care (face-to-face)	Standard care alone (face-to-face)	7	363	MD= -2.3 kg (95% CI, -4.69 to 0.07)

CI, confidence interval; MD, mean difference.

(PC), and usual care (control).² The PC arm attended 6 weekly group sessions and received monthly phone calls. The usual care arm received 3 handouts on healthy eating and physical activity.

The CP arm showed the least amount of weight loss (-0.9 kg, -1.5 kg, and -1.0 kg at 6, 12, and 24 months, respectively) and no significant difference compared with controls at all measurement points. The PC arm had significantly greater weight loss than controls at 6 months (-1.9 kg; 95% CI, -3.17 to -0.67) and significantly greater weight loss than CP at 6 months (-2.2 kg; 95% CI, -3.42 to -0.97) and 12 months (-2.1 kg; 95% CI, -3.94 to -0.27). After 24 months, however, there was no significant difference in mean weight loss among treatment arms.

Automated behavioral program reduced weight and waist circumference

An RCT of 339 prediabetic, overweight, and obese patients 30 to 69 years old (mean BMI, 31 kg/m²) compared the effectiveness of Alive-PD, a fully automated, tailored, behavioral program, to usual care (control) for diabetes prevention.³ In addition to behavioral support, the program included weekly emails, Web-based tracking, a mobile phone app, and automated phone calls.

At 6 months, the intervention group had significantly greater mean weight loss (-3.4 kg

vs -1.3 kg; *P*<.001), mean BMI (-1.1 kg/m² vs -0.4 kg/m²; *P*<.001), and mean waist circumference (-4.6 cm vs 2.2 cm; *P*<.001).

Web-based program improves weight loss at 3 months, but not 12 months

An RCT of 65 overweight and obese participants (mean BMI, 32 kg/m²) with at least one cardiovascular risk factor compared the effect of a Web-based program with usual care on weight change at 3, 6, and 12 months.⁴ Participants in the intervention group were provided with Bluetooth-enabled scales and accelerometer activity bands to allow daily uploads. The Web-based program also provided weekly feedback based on the participant's performance and a food diary.

The Web-based group had significantly greater weight loss at 3 months (mean=-3.4 kg [95% CI, -4.70 to -2.13] vs -0.5 kg [95% CI, -1.55 to 0.52]; *P*<.001) and 6 months (mean=-3.4 kg [95% CI, -4.95 to -1.98] vs -0.8 kg [95% CI, -2.23 to 0.61]; *P*=.02). At 12 months, however, the groups showed no significant difference (mean=-2.4 kg [95% CI, -3.48 to -0.97] vs -1.8 kg [95% CI, -3.15 to -0.44]; *P*=.77).

Recommendations

Guidelines from the American College of Cardiology, American Heart Association,

and Obesity Society state that electronically delivered weight-loss programs may be prescribed, but may result in smaller weight loss than face-to-face interventions (SOR: **B**, moderate evidence from RCTs with some limitations or non-randomized trials).⁵ **JFP**

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