

## **Clinical Trial of a Mobile Health Intervention for Simultaneous versus Sequential Diet and Activity Change**

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**Background:** Because unhealthy behaviors often co-occur, the Make Better Choices 1 trial tested whether increasing healthy or decreasing unhealthy diet and activity behaviors maximized overall healthy lifestyle change in adults with all of 4 risk behaviors: low fruits/vegetables, high saturated fat, low moderate-vigorous physical activity, high leisure screen time. Coaching to increase fruits/vegetables and decrease sedentary leisure also spontaneously reduced saturated fat intake, but did not increase physical activity.

**Hypotheses:** Make Better Choices 2 tested the hypothesis that adding physical activity coaching sequentially rather than simultaneously would maximize healthy change. **Methods:** Adults (n=212) with all 4 risk behaviors were randomized to 3 different interventions that used a smartphone app, wireless accelerometer, and remote coaching to: increase physical activity while changing fruits/vegetables and sedentary leisure (Simultaneous), improve fruits/vegetables and sedentary leisure first, followed by physical activity (Sequential), or improve stress and sleep (Control). Intent to treat analyses using linear mixed-effects models examined change in the behaviors from baseline through 6 and 9 month follow-up.

**Results:** Attrition through 9 month follow-up was 16% and not differential across treatments. At 9 month follow-up, there were significant differences between the control group and both the simultaneous and sequential treatment groups in terms of daily increased fruit/vegetable intake (mean difference=5.9 credits, 95% CI [4.5, 7.2]), decreased leisure screen time (mean difference=126.9 min, 95% CI [100.3, 153.4]), and decreased saturated fat intake (mean difference=3.7%, 95% CI [2.1, 5.4]). At 6 month follow-up there was increased daily moderate-vigorous physical activity in the treatment groups (mean difference=15.8 min, 95% CI [0.7, 30.9]).

**Conclusions:** A mobile health intervention incorporating smartphone technology and remote coaching can produce sustained improvements in multiple diet and activity lifestyle behaviors regardless of whether moderate vigorous physical activity is targeted simultaneously or sequentially with other diet and activity behaviors.

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