

# The Tracking Study: description of a randomized controlled trial of variations on weight tracking frequency in a behavioral weight loss program



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## ABSTRACT

**Background:** Observational evidence from behavioral weight control trials and community studies suggests that greater frequency of weighing oneself, or tracking weight, is associated with better weight outcomes. Conversely, it has also been suggested that frequent weight tracking may have a negative impact on mental health and outcomes during weight loss, but there are minimal experimental data that address this concern in the context of an active weight loss program. To achieve the long-term goal of strengthening behavioral weight loss programs, the purpose of this randomized controlled trial (the Tracking Study) is to test variations on frequency of self-weighing during a behavioral weight loss program, and to examine psychosocial and mental health correlates of weight tracking and weight loss outcomes. This paper describes the study design, intervention features, recruitment, and baseline characteristics of participants enrolled in the Tracking Study.

**Methods/design:** Three hundred thirty-nine overweight and obese adults were recruited and randomized to one of three variations on weight tracking frequency during a 12-month weight loss program with a 12-month follow-up: daily weight tracking, weekly weight tracking, or no weight tracking. The primary outcome is weight in kilograms at 24 months. The weight loss program integrates each weight tracking instruction with standard behavioral weight loss techniques (goal setting, self-monitoring, stimulus control, dietary and physical activity enhancements, lifestyle modifications); participants in weight tracking conditions were provided with wireless Internet technology (wi-fi-enabled digital scales and touchscreen personal devices) to facilitate weight tracking during the study.

**Conclusion:** This study was successful in recruiting adult male and female participants and is positioned to enhance the standard of care with regard to weight tracking recommendations.

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## 1. Introduction

Given the pernicious reach of obesity [1], efforts to improve approaches to weight loss intervention are crucial. Frequency of tracking body weight is potentially a prime target for behavioral enhancement during weight loss. Daily self-monitoring (e.g., of

dietary intake and physical activity) is already well established as a central component of the behavioral weight loss process [2], and there has been work to suggest that frequent weighing may augment the weight loss process as well [3]. However, the current standard of care in behavioral weight loss for weight self-monitoring is weekly tracking of weight, and some programs caution against any weight tracking [4].

It has been suggested that frequent weighing may have a negative impact on mental health and outcomes during weight

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loss [5], but there are minimal data to address this concern experimentally in the context of an active weight loss program. Observational evidence from behavioral weight control trials and community studies suggests that greater frequency of weight tracking is associated with better weight outcomes [6–9]. Stronger experimental evidence is needed to establish a causal link between weight tracking and weight outcomes and to elucidate the impact of weight tracking, if any, on mental health during weight loss.

This paper describes the study design, intervention features, recruitment, and baseline characteristics of participants enrolled in the Tracking Study, a three-arm randomized controlled behavioral weight loss trial. The Tracking Study was designed to test variations on frequency of weight self-monitoring during a behavioral weight loss program, and to examine psychosocial and mental health correlates of weight tracking and weight loss outcomes.

## 2. Methods

### 2.1. Theoretical model

Given the associations of excess body weight with adverse health conditions [10,11] and with ever-increasing health care expenditures [12], it is crucial to provide evidence-based recommendations in weight loss programs. Social-ecological models emphasize the importance of considering health behavior changes within a broad framework that accounts for interactions with the environment [13–15]. Within this context, successful behavior change programs should enhance the environment to improve health outcomes. One way to accomplish this task is to modify the technological environment with enhancements that change perceptions of engagement in the behavior of interest, thus improving the culture around self-monitoring of that behavior [15]. Weight tracking is a good example to test within this framework, as it lends itself to technology and is in need of experimental data to solidify its value as a weight loss self-monitoring tool.

Behavior modification is critical to a social-ecological perspective on health behavior change [13]. Within this framework, weight tracking may act as a functional reinforcer that promotes weight control by providing an environmental cue (e.g., scale and tracking tool) during weight loss. In this sense, favorable weight changes, as tracked by weighing regularly, may reinforce continued behavior engagement to promote ongoing weight loss [13], thus positioning weight tracking as a central part of the feedback loop of behavior change [16]. Within the context of this self-regulation model, if weight is to be regulated, then weight tracking provides a reference from which to compare success or failure of actions to control weight, in terms of how weight has changed on the scale. This measure of progress then serves to maintain goal-driven behaviors enacted to improve weight status.

From another perspective, this highly personalized feedback (individual weight, recorded daily) may act as a cue to action that enhances motivation during weight loss, promoting healthy behavior changes to facilitate this process [17]. Unfortunately, little attention has been paid to collecting data on self-monitoring of weight in this context. A model illustrating a proposed mechanism of weight change via weight

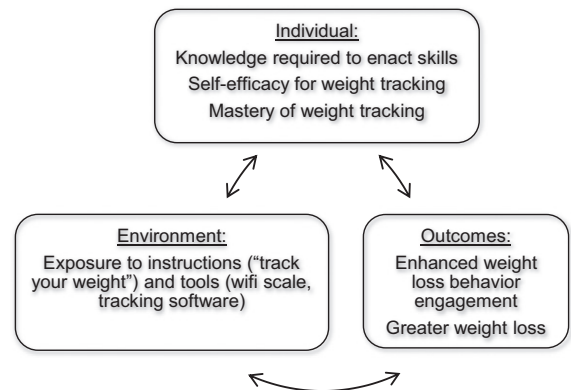


Fig. 1. Social-cognitive model of weight tracking and behavior change.

tracking, using a social cognitive theory (SCT) framework [18] is presented in Fig. 1.

According to SCT, the relative simplicity of the skills associated with weight tracking instructions will promote knowledge acquisition and mastery of weight tracking skills, which will favorably influence self-efficacy [19,20]. Self-efficacy, knowledge, and mastery will work in concert to promote greater engagement in weight tracking behavior and, in turn, more effective weight control. Finally, provision of tools with which to enact behaviors will enhance adoption and related behavioral outcomes by enhancing the environment with regard to the skills to be performed [18,20,21].

### 2.2. Intervention description

The base weight loss intervention for all groups follows a standard behavioral weight loss protocol adapted from programs developed at the University of Minnesota over the past 30 years. This program has successfully produced weight loss in numerous randomized trials [22–25]; most recently, this program was delivered by the same intervention team in place for the present trial and produced sustained weight losses over 12 months [26]. Groups comprise approximately 15–20 and no more than 23 persons; groups meet weekly for the first six months, then biweekly for two months and monthly for the remaining four months of the 12-month treatment period. Interventionists were highly experienced weight loss counselors with nutrition training.

Session content was centered on behavioral goal setting and attention to caloric intake and physical activity. Each session contained didactic presentations, group interactions, and motivational messages to enhance behavior engagement, particularly around adherence to specified weight tracking instructions (see 2.3, *Weight tracking intervention protocol*). Participants were instructed to set caloric intake goals of no less than 1200 kilocalories per day, based on starting weight and appropriate to produce weight loss of one to two pounds per week. Participants were asked to restrict fat intake to 20–30% of daily caloric intake. Participants received structured meal plans and specific skills training in environmental stimulus control (e.g., not keeping high calorie snacks in the home). Physical activity goals were increased in weekly increments, based on each individual's starting point, until a goal of at least 250 minutes per week of moderate to vigorous physical activity was reached. Some

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