

# Skinny Genes' Six-week, Online, Clinical Emotional Freedom Techniques Program: Durable Weight Loss and Improved Psychological Symptoms

Dawson Church, PhD; Peta Stapleton, PhD; Danielle Raynor

## ABSTRACT

**Context** • With obesity a mounting global issue, efficacious treatments can make a contribution to both personal and public health. Prior clinical trials have demonstrated that an evidence-based method, Clinical Emotional Freedom Techniques (EFT), can produce a durable weight reduction.

**Objective** • The study evaluated whether Skinny Genes, a six-week online program applying EFT to emotional eating, was associated with behavioral change and reductions in weight.

**Design** • A pre-post outcome study design evaluated the results of a convenience sample of participants enrolled in an online weight loss course.

**Participants** • Participant were recruited through EFT websites. Pre, post and follow-up measures were available for 72 participants and all analysis was performed on this sample.

**Intervention** • Participants used EFT to address cognitions, behaviors, and adverse experiences that could contribute to binge eating, intermittent dieting, and resistance to exercise.

**Outcome Measures** • Behaviors to restrain eating were measured using the Revised Restraint Scale (RRS); the association of food with reward using the Power of Food

Scale (PFS); anxiety and depression using the Hospital Anxiety and Depression Scale (HADS). Weight was measured pre and postintervention and at six-month follow-up.

**Results** • Postintervention, a 36.8% reduction in anxiety ( $P < .001$ ) and a 48.5% reduction in depression ( $P < .001$ ) were found. The perceived power of food decreased significantly as did restraint behaviors. Participants lost an average of 12.9 lbs during the six weeks of the program ( $P < .001$ ), and at follow-up, a further 2.6 lbs. All psychological gains were maintained ( $P < .001$ ).

**Conclusions** • The findings are consistent with those of other clinical trials studying the benefits of EFT for weight loss, demonstrating simultaneous reductions in both weight and psychological distress. The continued weight reduction found on follow-up was consistent with other EFT studies but counter to the pattern of weight regain noted in the literature. Addressing emotional issues using an online delivery format was associated with durable weight-loss maintenance as well as improved mental health. App-based and virtual programs such as *Skinny Genes* have the potential to bring effective therapies to underserved populations. (*Adv Mind Body Med.* 2021;36(1):##-##.)

**Dawson Church, PhD**, Executive Director, National Institute for Integrative Healthcare, Fulton, California, USA. **Peta Stapleton, PhD**, Program Director - Masters of Psychology, School of Psychology, Bond University, Gold Coast, Australia. **Danielle Raynor**, Grad Dip (Psych), Master Psychology (Clin), Clinical Psychology Registrar, School of Psychology, Bond University, Gold Coast, Australia.

Corresponding author: Dawson Church, PhD  
E-mail address: dawsonchurch@gmail.com

Obesity and overweight are a global health concern that impinges on both the lifespan and quality of life of those affected.<sup>1,2</sup> Public efforts to combat the problem have primarily centered around physiological approaches—primarily nutrition and exercise—while largely ignoring psychological factors, such as resistance to exercising and the prevalence of overeating as a response to emotional stress, termed emotional eating.<sup>3</sup>

In addition, while standard-of-care psychotherapy is relatively effective in addressing obesity-related psychological issues,<sup>4</sup> it's inadequate as a sole treatment option in that area, chiefly because access to it is suboptimal for important affected subgroups, including people who are economically disadvantaged or have impaired mobility.

A search of Google Scholar, the most inclusive study database available, found no systematic reviews or meta-analyses examining psychotherapy for weight loss. The counseling component of weight-loss programs, rather than psychotherapy, utilized dietary, lifestyle, and exercise advice by professionals such as nutritionists and dieticians.

The single available meta-analysis of such interventions concluded that “dietary-counseling interventions produce modest weight losses that diminish over time.”<sup>25</sup> A 2007 systematic review of psychotherapy for obesity also found little research on the topic and relied on “a small number of studies on psychotherapy-related approaches, such as relaxation therapy or hypnotherapy” and found that they “failed to demonstrate any decisive positive outcome.”<sup>26</sup> Cost-effective and accessible alternatives are thus needed for addressing psychological contributors to the weight pandemic.

The World Health Organization (WHO) has reported that the worldwide prevalence of obesity more than doubled between 1980 and 2014 and that a majority of the world’s population lives in countries where excess weight is linked to more deaths than being underweight.<sup>7</sup> It’s well-documented that overweight and obesity are associated with many prevalent diseases, such as heart disease, stroke, Type 2 diabetes, and cancer; with physical disability; and with overall mortality.<sup>8,9</sup>

According to a 2020 report from the US Centers for Disease Control and Prevention, about 74% of adults in the USA are overweight.<sup>10</sup> The proportion has grown even greater during the coronavirus pandemic of 2020-2021.<sup>11</sup> The problem is especially prevalent among ethnic minorities<sup>12</sup> and people of lower socioeconomic levels,<sup>13</sup> socially vulnerable groups that are frequently underserved with regard to healthcare, including mental healthcare. Numbers in some cross-sections are remarkably high. For example, the US Department of Health and Human Services has reported that four out of five African-American women are overweight or obese.<sup>14</sup>

### **Psychology and Weight**

Obesity and clinical overweight issues constitute a complex, multifaceted treatment challenge. Maintaining long term treatment effects requires addressing the distress and psychopathology that frequently co-occur with weight.<sup>15,16</sup> Emotional pathology has been found to frequently be comorbid with obesity and overweight.<sup>17</sup>

Obesity and overweight are strongly linked with the overconsumption of food and are preventable, but they constitute a complex phenomenon with psychological as well as physiological components.<sup>18</sup> Although governments, institutions, and organizations have sought to address the problem, much of their response has centered on the dissemination of nutritional and activity guidelines while ignoring the psychological components.

Psychology can affect weight in multiple ways. Emotional eating has been identified as a major contributor to obesity and overweight.<sup>16</sup> Emotions such as anger, anxiety, resentment,

excitement, helplessness, boredom, worry, frustration, loneliness, confusion, and nervousness have all been linked to emotional eating.<sup>3</sup> Some individuals develop patterns of eating to please others; mental resistance to engaging in exercise presents a significant block to wellness; and psychological stress can derail diet plans in a myriad of ways.

### **Conventional Psychological Treatments**

Addressing the psychological factors that underlie emotional eating appears to be an effective approach to weight loss, with cognitive behavioral therapy (CBT) in a traditional setting being the standard of care,<sup>4</sup> but several factors specific to the obesity problem have created an imperative for exploring additional therapeutic approaches and alternate means of delivery.

First, CBT and one-on-one psychotherapy in general are costly. People with limited financial resources often don’t have access to it, a fact that makes it inadequate as a sole treatment approach because obesity is especially prevalent in economically disadvantaged communities. Second, perceived social stigma about mental healthcare prevents many people from visiting psychotherapists,<sup>19</sup> and this problem is likely compounded by the stigma associated with being overweight. Third, individuals at the upper extremes of weight—those who might benefit most from help with emotional eating—often have limited mobility. Finally, the prominent role of the psychotherapist in CBT may be a disadvantage in addressing stress-related eating, because these behaviors are usually linked to self-soothing outside of clinical encounters.

Previous studies investigating the use of self-administered stress-reduction techniques for addressing issues related to being overweight have most commonly employed mindfulness-based stress reduction (MBSR) as the treatment approach and have focused primarily on maladaptive eating. MBSR is a simple technique that is relatively easy to teach and has been found to produce positive outcomes for several psychological conditions,<sup>20-22</sup> but evidence to date doesn’t support that it as being particularly effective for weight control. Where treatment effects have been found, they have generally been modest in size, and most trials have been too small to produce significant results.<sup>23,24</sup>

### **Emotional Freedom Techniques (EFT)**

Emotional Freedom Techniques (EFT) is a stress-reduction method that combines elements of Western treatments, such as exposure therapy (systematically confronting feared stimuli) with Eastern-based acupuncture, a manual technique that produces treatment effects by stimulating specific areas of the body known as acupoints. Over 100 studies, many of them randomized controlled trials (RCTs), have validated EFT’s use in contexts where emotional stress figures prominently (Research.EFTuniverse.com). Over 20 review papers and meta-analyses have demonstrated that EFT is an evidence-based modality that is effective for a wide range of conditions, including anxiety, depression, phobias, posttraumatic stress syndrome (PTSD), and pain.<sup>25,26</sup>

A 2012 review published in the American Psychological Association's Review of General Psychology found that EFT meets the criteria for an evidence-based treatment.<sup>27</sup> Its results for most studies showed a high-to-very-high statistical significance, clinically meaningful change, and treatment effect sizes much larger than those found in conventional talk-therapy trials.

A meta-analysis of 14 RTCs that measured anxiety found that EFT was associated with large treatment effects.<sup>28</sup> Similarly, very large treatment effects were demonstrated in a meta-analysis of six RCTs studying EFT for PTSD.<sup>29</sup> A meta-analysis of EFT for depression found that the treatment produced effect sizes "larger than that measured in meta-analyses of antidepressant drug trials and psychotherapy studies."<sup>30</sup> The ability of EFT to treat a wide variety of psychological diagnoses suggests its utility for addressing emotional eating.<sup>31</sup>

EFT has been shown to lower cortisol levels.<sup>32</sup> This is pertinent to weight control, given that elevated cortisol is a known contributor to obesity.<sup>33</sup> Several other physiological trials have found that EFT operates as an epigenetic treatment. In an RCT of veterans with PTSD, genes that play a role in inflammation were regulated<sup>34</sup>; inflammation is often comorbid with obesity. In a study of individuals receiving psychotherapy, 72 genes were found to be upregulated after a single EFT session.<sup>35</sup> The function of those genes included insulin regulation, inflammation suppression, increases to immunity, metabolic efficiency, and cancer suppression.

### **EFT for Psychological Conditions and Weight Management**

A meta-analysis of 14 diet programs found successful weight loss whatever the method used, but weight regain occurred in the subsequent two years.<sup>36</sup> Up to two-thirds of participants were heavier two years later than they had been prior to starting their diets.

Some trials have found EFT to be effective in reducing food cravings,<sup>37,38</sup> with participants experiencing durable weight loss over time. This may be due to the very large reductions in cravings reported in the EFT literature; an analysis of five groups of healthcare workers taking a one-day EFT workshop identified positive effects.<sup>39</sup> Participants were exposed to trays of their most-craved foods, including cake, pizza, chocolate, snack bars, potato chips, sweets, and similar items. They rated their degree of craving, after which they used EFT for an hour. Their cravings were reduced by 83% ( $P < .0001$ ).

EFT studies have shown effects opposite to those from diet programs. In a long-term study, an RCT of a group program, participants continued to lose weight in the six months and 12 months postintervention.<sup>37</sup>

After successful weight loss with EFT, comorbid depression symptoms also can improve.<sup>40</sup> In a pilot study of participants with self-identified addiction issues, emotional conditions, such as anxiety and depression, were reduced after a two-day EFT workshop.<sup>41</sup>

### **Virtual Treatment**

Due to its growing prevalence and technical advancements in recent years, the Internet has become a powerful, economical means of delivering information, training, and even treatment in the service of public health. Although access isn't yet universal, over 60% of the global population currently has access,<sup>42</sup> and the Internet counts among its users those groups that are in some degree excluded by more traditional channels, such as housebound disabled persons, making it a good match for delivering therapy.

A body of evidence for EFT is available related to its delivery as an online intervention. A study of fibromyalgia patients taking an eight-week EFT course found remission in two-thirds of the participants.<sup>43</sup>

Another study compared an online to an in-person relationship skills group training. A 29% improvement in relationship satisfaction was found in both groups ( $P < .003$ ), and both maintained their gains over time. However anxiety reduced significantly in the in-person but not the online group, while sharper symptom declines for depression were found in the in-person group.<sup>44</sup> Interestingly, the study also found large disparities in the baseline characteristics of the two groups. Those who sought in-person treatment had a significantly higher anxiety baseline than those electing the online option.

Other studies have examined the efficacy of EFT to address weight loss when delivered virtually. A study of *Naturally Thin You*,<sup>45</sup> another six-week program, examined weight loss in 76 participants over the course of the program. Statistically significant improvements were identified in depression symptoms, weight, and the subjective emotional power of food. Participants lost an average of 6 lbs, one pound per week during the six weeks. More important, they didn't regain the lost weight in the ensuing year. They continued to lose weight at an average of 2 lbs per month, for a total weight loss averaging 22 lbs for the year. The durable gains found in the study of *Naturally Thin You* are important and contrary to the trend of weight regain usually found in weight-loss studies.

A randomized controlled trial using magnetic resonance imaging (MRI) identified a physiological mechanism of action that might underlie those results.<sup>46</sup> When obese adults were shown images of craved foods, structures in their brains associated with attention, such as the orbitofrontal cortex, exhibited enhanced activity. After four weeks of EFT treatment, images of these foods failed to elicit a similar response. Their mean scores for food cravings were reduced by 18%, compared to 5% for the no-treatment control group.

Studies applying EFT virtually generally have found clinically meaningful gains. An eight-week, online, weight-loss program compared EFT to a wait list.<sup>47</sup> For 314 participants with an average body mass index (BMI) in the obese range, the study found improvements on all measures. Treatment gains were maintained at six-month and 12-month follow-ups.

Another analysis used available data to compare online versus in-person treatment. It found both treatment delivery formats were comparable in efficacy. Both the online and the in-person group experienced significant reductions in food cravings, depression and weight. Reductions remained significant at 6-month follow up for most measures.<sup>48</sup> Finally, a large-scale study of 270 461 users of an EFT app measured changes in their self-reported symptoms.<sup>49</sup> It found a 45% reduction in anxiety and stress after about 10 minutes of app use.

In all, EFT's sound evidence base, large effect sizes, durable improvements, and potential for delivery in a cost-effective and highly accessible online format make it an ideal choice for investigation as an alternative to conventional weight-loss treatment.

### Current Study

The current study intended to evaluate whether *Skinny Genes*, a six-week online program using EFT, could provide individuals with skills to control emotional eating. The current study's hypothesis was that effects similar to those found in earlier studies would be identified in participants completing the *Skinny Genes* program: decreased anxiety and depression, a lower body weight, the association of food with reward, and eating restraint behaviors. The investigators also predicted that participants would continue to lose weight postintervention, as in other trials, as recorded at a six-month follow-up.

## METHODS

### Participants

Participants responded to notices posted on EFT websites. Inclusion criteria included the ability to complete an English-language program and the associated assessments. There were no exclusion criteria because this was a study of a convenience sample.

All participants completed informed-consent forms online, with any questions answered by the study coordinator. The study was reviewed for human-subject protection by the ethics committee of the National Institute for Integrative Healthcare (NIIH231114).

### Procedures

**Study design.** A pre-post outcome study using a convenience sample of those enrolling in an online weight loss course was selected in preference to an RCT. Despite its gold-standard status as a higher level of evidence, RCTs are simply one component of an iterative research cycle.<sup>50</sup> Leichsenring<sup>51</sup> has proposed that while carefully controlled laboratory RCTs are critical to demonstrating the efficacy of a new psychotherapeutic method in its infancy, other designs are more appropriate later in the research cycle. How real-world participants use a treatment, and whether they find it effective, are the most clinically relevant questions after the basic efficacy of a therapy has been established by RCTs.

**Data collection.** The Internet was chosen as a delivery vehicle for the weight loss program. Data was collected via

online forms at baseline, immediately before week one of the *Skinny Genes* program, postintervention after six weeks of the program, and at six months postintervention.

**Intervention.** Naturally Thin You,<sup>45</sup> the six-week course described previously, is substantially the same course as *Skinny Genes*. They both consist of psychoeducation sessions, weekly weight-loss themes such as resistance to exercise and craving control, and scripts that apply EFT to the most common barriers to successful weight loss. Both use a Facebook group and teleclasses to encourage user engagement. The primary difference between *Naturally Thin You* and *Skinny Genes* is that the instructor in the former is a licensed dietician and registered nutritionist, while the instructor in the latter is an unlicensed health coach.

**Outcome measures.** The outcome measures were the Revised Restraint Scale (RRS),<sup>52</sup> the Power of Food Scale (PFS),<sup>53</sup> and the Hospital Anxiety and Depression Scale (HADS).<sup>54</sup> All three outcome measures have been found to be reliable and valid, with a Cronbach's alpha for the RRS of 0.77,<sup>52</sup> for the PFS of 0.88,<sup>53</sup> and for the HAD depression value of 0.84 and the HAD anxiety value of 0.83.<sup>54</sup> Participants recorded their weights at home at baseline and postintervention after the *Skinny Genes* program and at six months postintervention.

### Intervention

The *Skinny Genes* program trains participants to use EFT to address cognitions, behaviors, and adverse experiences that contribute to emotional eating, binge eating, intermittent dieting and resistance to exercise. The course includes a written handbook,<sup>55</sup> with six chapters, one for each week. Each week's material also includes audio programs in which participants practice EFT and video interviews with weight-loss experts.

The first week of the *Skinny Genes* program introduces participants to the basics of EFT. The cognitive components of EFT include exposure; participants are encouraged to use EFT in the presence of a craved food. During this in-vivo exposure, participants apply pressure to 13 acupuncture points using light fingertip percussion, which is why EFT is commonly referred to as tapping. The points on the torso and head are the side of the hand on the Small Intestine meridian, the top of the head on the Governing Meridian, the junction between nose and eyebrow on the Bladder Meridian, the side of the eye on the Gall Bladder Meridian, under the pupil of the eye on the Stomach Meridian, under the nose where the Governing Meridian terminates, under the lips at the end point of the Conception Vessel, where the collarbone meets the breastbone, the terminus of the Kidney Meridian, under the armpit on the Spleen Meridian. The points on the hands are the base of the cuticle of the thumb and all fingers with the exception of the ring finger, which does not have an acupuncture meridian in this position.

In subsequent weeks, participants identify triggers for emotional eating, such as encounters with specific people, times of day, reward, and emotions. The final weeks of the

program focus on exercise and nutrition, specifically overcoming psychological resistance to movement and the consumption of healthy foods.

### Outcome Measures

**RRS.**<sup>52</sup> The scale consists of 10 items related to eating behavior and dieting habits that are used to determine restraint status. Items are scored on a five-point Likert scale from 0 to 4, and sample items include, “How often are you dieting?” and “In a typical week how much does your weight fluctuate?” The items are summed for a total score, with a possible range between 0 and 40 and with higher scores reflecting a higher degree of restraint-evoking behaviors.

**PFS.**<sup>53</sup> The scale is an internally consistent measure of food-reward sensitivity. It contains 21 items scored from 1 to 5, yielding a total score ranging from 21 to 105, with higher scores reflecting greater responsiveness to food rewards in the environment. The scale assesses appetite for and motivation to consume palatable foods, such as “If I see or smell a food I like, I get a powerful urge to have some.” The scale’s designers have indicated the scale’s potential utility in identifying heightened sensitivity in individuals for whom a predisposition to obesity and some eating disorders may exist.

**HADS.**<sup>54</sup> The scale aims to provide a measure of anxiety and depression symptomatology in a nonpsychiatric population. It contains 14 items, seven of which are designed to measure anxiety symptoms and seven to measure depression symptoms. Items are scored on a scale from 0 to 3. Responses are summed to provide separate scores for anxiety and depression symptomatology, with possible scores ranging from 0 to 21 for each scale.

### Statistical Analysis

Participants’ scores on the measures were calculated provided they had completed more than 50% of the items comprising a scale. If fewer than the complete number of items were filled out, scores were prorated based on the remaining items within the scale. For all analyses, individuals with missing data at any timepoint were excluded on an analysis-by-analysis basis. Independent-samples *t* tests were used to determine whether participants who had completed the six-month follow-up, differed from those who didn’t on any baseline characteristics. Data were maintained on an encrypted server and analyzed using SPSS version 20 (IBM, Armonk, NY, United States).

To assess whether participants’ scores differed between baseline and postintervention, paired-sample *t* tests were used. Analyses were conducted for the participant’s weight and the RRS, PFS, HADS Anxiety, and HADS Depression self-report measures. Due to missing data for some participants at each timepoint, this method was selected rather than a repeated measures multivariate analysis of variance (MANOVA) of all measures simultaneously, to maximize the sample size for each analysis.

To account for the multiple tests being conducted, the Bonferroni correction to the familywise error rate was

employed to maintain the alpha level at 0.05 for the group of analyses. Thus, the corrected alpha rate was calculated as  $\alpha/k$ , or 0.05/5, yielding an  $\alpha$  of 0.01 for statistical significance. Cohen’s *d* for paired data was calculated to provide a measure of the size of the treatment effect. By convention, the size of Cohen’s *d* can be interpreted as small:  $d = 0.2$ , medium:  $d = 0.5$ , and large:  $d = 0.8$ .

Five repeated-measures MANOVAs were used to compare the scores at baseline, postintervention, and at the six-month follow-up. As above, the rationale for conducting separate analyses rather than a doubly multivariate ANOVA was to maximize sample size. The multivariate approach was assessed rather than the univariate method, due to violations of the sphericity assumption as well as to the adequate sample size for multivariate methodology. The corrected alpha rate for the five analyses was 0.01 (Bonferroni correction). Pairwise comparisons between time points were undertaken using the Bonferroni correction. The multivariate partial  $\eta^2$  ( $\eta^2_p$ ) was provided as a measure of effect size. Partial  $\eta^2$  can range from 0 to 1, with larger values indicating a greater proportion of variance that is accounted for by the effect.

### RESULTS

Of the participants, 238 completed the assessment at baseline or postintervention, and 72 completed both, with all analysis being performed on that group. The remaining participants failed to complete either the pre or post assessment. Forty of the study’s participants (56%) completed the six-month follow-up in addition to pre and post.

#### Participants’ Characteristics

All participants were female, with an mean age of 49.69  $\pm$  12.05 years and a range in age from 18 to 75 years (data not shown). The mean initial starting weight was 191.32  $\pm$  43.36 lbs, with a range from 105 to 335 lbs (data not shown). The distribution of responses to selected items on the RRS at baseline are shown in Table 1.

#### Group Comparisons at Follow-up

Independent samples *t* test analyses were conducted to compare participants with and without follow-up data. Individuals who completed the six-month follow-up were significantly older on average, 52.25  $\pm$  11.62 years, than those who didn’t complete the follow-up, 46.50  $\pm$  11.98 years, with  $t(70) = 2.06$ ,  $P = .043$  (data not shown). No differences existed between participants with and without follow-up data in their baseline starting weights or scores on any of the questionnaires.

#### Changes Between Baseline and Postintervention

The results of the paired *t* tests comparing the data at baseline and postintervention are shown in Table 2. Statistically significant decreases were observed between those timepoints for weight and all self-report measures ( $P < .001$ ).

Postintervention, a 36.8% reduction in anxiety ( $P < .001$ ) and a 48.5% reduction in depression ( $P < .001$ ) were found.

**Table 1.** Distribution of Responses at Baseline to Selected Questions About Weight From the Revised Restraint Scale (RRS). The corresponding numeric values assigned to responses are in parentheses.

	n	Distribution of Responses				
		(0)	(1)	(2)	(3)	(4)
		0-4 lbs	5-9 lbs	10-14 lbs	15-19 lbs	20+ lbs
What is the maximum amount of weight (in pounds) you have ever lost in one month?	71	10%	32%	18%	27%	13%
		1 lb	1.1-2 lbs	2.1-3 lbs	3.1-5 lbs	5.1+ lbs
What is your maximum weight gain within a week?	70	1%	4%	24%	41%	29%
In a typical week, how much does your weight fluctuate?	70	7%	26%	31%	21%	14%
		0-1 lbs	2-5 lbs	6-10 lbs	11-10 lbs	21+ lbs
How many pounds over your ideal weight were you at your maximum weight?	71	0%	0%	6%	8%	86%
		Never	Rarely	Sometimes	Often	Always
In general, how often are you dieting?	71	15%	18%	20%	13%	34%

**Table 2.** Comparisons of Mean Changes Between Baseline and Postintervention

	n	Baseline	Postintervention	t	P Value	ES d
Weight, lbs	72	191.32 ± 43.36	179.53 ± 39.69	8.47	<.001 <sup>a</sup>	1.00
RRS Total	68	26.95 ± 6.09	22.46 ± 5.52	7.24	<.001 <sup>a</sup>	0.88
PFS Total	68	74.92 ± 18.94	61.07 ± 16.91	8.18	<.001 <sup>a</sup>	0.99
HADS Anxiety	63	10.48 ± 4.82	6.62 ± 3.35	7.87	<.001 <sup>a</sup>	0.99
HADS Depression	63	6.88 ± 5.61	3.54 ± 2.75	5.60	<.001 <sup>a</sup>	0.71

<sup>a</sup> $P < .01$  for significant decreases between baseline and postintervention for all measures

**Abbreviations:** RRS, Revised Restraint Scale; PFS, Power of Food Scale; HADS, Hospital Anxiety and Depression Scale; ES d, Effect size  $d$  for paired  $t$  test, computed as  $M_D/SD_D$

**Table 3.** Comparisons of Mean Changes Between Baseline and Postintervention and Postintervention and Six Months Postintervention. The results reported are multivariate repeated measures. Each  $F$  statistic tests the multivariate effect of the timepoint. Pairwise comparisons (Bonferroni correction) revealed that the values decreased significantly between baseline and postintervention, but no differences existed between the results postintervention and at the six-month follow-up for any of the measures ( $P < .05$ ).

	n	Baseline	Postintervention	Six Months Postintervention	Multivariate F	df	P Value	Multivariate $\eta^2_p$
Weight, lbs	40	191.10 ± 35.56	178.20 ± 31.26	175.58 ± 30.16	24.96	2.38	<.001 <sup>a</sup>	0.57
RRS Total	37	26.37 ± 5.85	21.54 ± 4.45	22.07 ± 4.71	16.66	2.35	<.001 <sup>a</sup>	0.49
PFS Total	36	70.85 ± 19.83	58.96 ± 16.45	56.40 ± 19.30	20.22	2.34	<.001 <sup>a</sup>	0.54
HADS Anxiety	34	10.50 ± 4.86	6.21 ± 3.29	6.97 ± 4.12	24.55	2.32	<.001 <sup>a</sup>	0.61
HADS Depression	34	7.03 ± 5.70	3.94 ± 3.01	3.68 ± 3.67	8.03	2.32	.001 <sup>a</sup>	0.33

<sup>a</sup>Significant differences between baseline and postintervention for all measures.

**Abbreviations:** RRS, Revised Restraint Scale; PFS, Power of Food Scale; HADS, Hospital Anxiety and Depression Scale; ES d, Effect size  $d$  for paired  $t$ -test, computed as  $M_D/SD_D$

The perceived power of food-overeating behavior decreased significantly as did maladaptive restraint responses. Participants lost an average of 12.9 lbs between baseline and postintervention ( $P < .001$ ), and at follow-up, showed a further 2.6 lbs of weight loss as well as maintenance of psychological gains ( $P < .001$ ).

The decrease in scores was considerable, as evidenced by the large treatment effect size, at  $>0.8$ , for all measures except for the HADS Depression scale, which had a medium effect size at  $d = 0.71$ .

### Timepoint Comparisons of Changes

Separate repeated measure MANOVAs were conducted to examine changes over time for weight and the self-report measures. The results are provided in Table 3. Significant effects over time were evident for all measures ( $P < .01$ ). Pairwise comparisons revealed that the values decreased significantly between baseline and postintervention, but no differences existed between the results postintervention and at the six-month follow-up for any of the measures. Thus, the decreases in symptomatology evident postintervention were maintained at the six-month follow-up period.

### DISCUSSION

The current study found a significant decrease in weight during the six-week program, with further reductions occurring between postintervention and the six-month follow-up. Furthermore, decreases in correlates of emotional eating, such as the power of food, maladaptive restraint responses, depression, and anxiety, were also found. Large treatment effect sizes were identified for all measures except for depression, for which a medium effect size was found. The results and effect sizes are consistent with those of previous studies.<sup>37,38,41,45,47,48</sup>

#### Emotions, Accessibility and Long-term Efficacy

The current study's findings support EFT's efficacy in addressing emotional pathology. Its finding that participants maintained the decreases in all psychological factors for six months following the course highlights the multimodal nature of EFT and the durability of treatment gains. The long-term efficacy of EFT is counter to the usual pattern of weight regain identified by earlier studies and meta-analyses of other techniques.

The current study's findings support the conclusions of prior research into online EFT treatment for the psychological symptoms of disordered eating.<sup>45,47</sup> The effects notes are comparable to those found for in-person treatment,<sup>56,57</sup> suggesting that online EFT delivery can extend the range of populations served. It may also ameliorate the barrier of stigma about consulting a mental health practitioner and/or stigma in the form of anti-obesity attitudes, which may be the product of having experienced previous discrimination in health care settings.<sup>58</sup>

#### Limitations

The study had several limitations. The attrition rate was high and comparable to that in the six-week EFT study of *Naturally Thin You*.<sup>45</sup> An even more limited number of participants completed the six-month follow-up in the current study (56%). Notably, the difference in the ages of retained participants in the current study was appreciable, with those who completed the six-month follow-up being significantly older, on average, than those who didn't. The exclusively female sample further limits the study's generalizability. As noted in the study comparing an online to an in-person relationship skills program,<sup>44</sup> the

demographics and baseline characteristics of those enrolling for online or virtual courses can differ greatly from those seeking in-person treatment.

The current study had no control group, so it's impossible to compare the results with those of another group receiving a placebo or alternative treatment. Demand characteristics, expectancy effects, therapeutic allegiance, and the nonspecific effect of any therapy may all have contributed to the result, so it's not possible to claim that they were due solely to EFT treatment. Furthermore, all measures were participant rated, and the absence of an observer-rated assessment means that no objective categorical diagnoses were made. Participants' self-ratings for weight could have been inaccurate, although available data indicates that no significant differences exist between self-reported and observer-reported weight.<sup>59</sup>

The current study's participants were recruited from EFT web sites. This limits the generalizability of the study, because all participants understood and presumably practiced EFT to at least some degree on intake. Whether this would apply to a general population unfamiliar with EFT is unknown. The participants' familiarity with EFT, and presumed prior success with the method, might have made them more compliant and also enhanced the expectancy effect.

The substantial dropout rate suggests that only the most motivated of participants completed the program and posttests, while the majority of those who enrolled didn't persist through completion. Virtual programs in general might have lower compliance than in-person programs that provide accountability to a coach or therapist.

Therapeutic allegiance represented an additional limitation. Two members of the research team train professionals to use EFT in their clinical practices, have authored books on the method, and derive income from programs using EFT for weight loss. The statistician who analyzed the data, however, was independent and had little familiarity with the method beyond the outline found in this account.

Despite these limitations, several aspects of the study's findings are nonetheless striking. Even if participants knew and used EFT previously, practicing it in the structured way offered by *Naturally Thin You* and *Skinny Genes* produced substantial and durable weight loss. In the current study, EFT was effective when delivered online, although no comparison with an in-person class is available.

EFT is accessible and cost-effective when delivered in a virtual format, not requiring the professional services of a clinician. Studies that account for a placebo, expectancy effects, and therapeutic alliance to various weight-loss methods rarely demonstrate results as robust and durable as those found in the EFT literature. The findings of the current study are thus notable despite its limitations.

#### Further Research Directions

The average decrease in weight of 12.9 lbs observed during the six weeks of the *Skinny Genes* course exceeded

that of the *Naturally Thin You* study<sup>45</sup> at 6 lbs for the 6 weeks, while the continued reduction in subsequent months was markedly less at 2.6 lbs for *Skinny Genes* versus 22 lbs for *Naturally Thin You*. The researchers for the *Naturally Thin You* study hypothesized that the high degree of social interaction via Facebook and teleseminars in the months postintervention may have improved the long-term results and stressed the importance of social support in weight-loss maintenance.

Future studies should include the use of a control group as well as observer-rated measures. It would be particularly interesting to compare a group receiving an in-person six-week intervention with an online group. Lab tests could measure BMI and many other physical variables. Larger sample sizes and stratification of data to distinguish obese from overweight participants would enable investigators to determine EFT's effects for various levels of obesity.

Week by week sampling could distinguish the effects of each of the components of the *Skinny Genes* and *Naturally Thin You* programs; for instance, measuring the results of week 5 (exercise) and week 2 (emotional eating) separately. Given the likely importance of social support, Facebook and other social media usage could be monitored and correlated with other data. Because of the growing adoption of apps by the general public, the contribution of an app-based delivery method is worth exploring.

## CONCLUSIONS

The current study found that online delivery of EFT was effective, although the demographic characteristics of those seeking online treatment differed from those of in-person groups examined in other studies. The online delivery format is particularly promising for those individuals for whom accessibility and stigma have discouraged treatment previously. Online, virtual, and app-based delivery methods have the potential to reach exponentially larger numbers of patients cost-effectively. The results of the current study reinforce those of previous studies indicating that EFT is a robust method for durable weight loss and should be part of public health efforts to reduce obesity and its accompanying psychological conditions.

## AUTHORS' DISCLOSURE STATEMENT

The first and second authors derive income from publications and presentations relative to the therapeutic approach examined. The third author declares no conflict of interest.

## REFERENCES

- Taylor VH, Forhan M, Vigod SN, McIntyre RS, Morrison KM. The impact of obesity on quality of life. *Best Practice & Research Clinical Endocrinology & Metabolism*. 2013; 27(2):139-146. doi:10.1016/j.beem.2013.04.004
- Wee C, Davis R, Chiodi S, Huskey K, Hamel M. Sex, race, and the adverse effects of social stigma vs other quality of life factors among primary care patients with moderate to severe obesity. *Journal of General Internal Medicine*. 2015; 30(2):229-235. doi:10.1007/s11606-014-3041-4
- Arnow B, Kenardy J, Agras W S. The Emotional Eating Scale: The development of a measure to assess coping with negative affect by eating. *International Journal of Eating Disorders*. 1995; 18(1):79-90.
- Shaw K, O'Rourke P, Del Mar C, Kenardy J. Psychological interventions for overweight or obesity. *Cochrane Database Systematic Review*. 2005; 2(2). doi:10.1002/14651858.cd003818.pub2
- Dansinger ML, Tatsioni A, Wong J B, Chung M, Balk EM. Meta-analysis: The effect of dietary counseling for weight loss. *Annals of Internal Medicine*. 2007; 147(1):41-50.
- Becker S, Rapps N, Zipfel S. Psychotherapy in obesity- A systematic review. *Psychotherapie, Psychosomatik, Medizinische Psychologie*. 2007; 57(11):420-427.
- World Health Organization. Obesity and overweight [fact sheet], 2018. Retrieved from [www.who.int/mediacentre/factsheets/fs311/en](http://www.who.int/mediacentre/factsheets/fs311/en)
- National Health and Medical Research Council. Clinical practice guidelines for the management of overweight and obesity in adults, children, and adolescents (Clinical practice guidelines for primary care health professionals). Public Consultation Draft. Canberra, Australia: Department of Health and Ageing, 2012. Retrieved from <https://nhmrc.gov.au/about-us/publications/clinical-practice-guidelines-management-overweight-and-obesity>
- Xu H, Cupples LA, Stokes A, Liu C. Association of obesity with mortality over 24 years of weight history. *JAMA Network Open*. 2018; 1(7):e184587. doi:10.1001/jamanetworkopen.2018.4587
- Centers for Disease Control. Adult obesity prevalence maps, 2021. Retrieved 1/1/2022 from <https://www.cdc.gov/obesity/data/prevalence-maps.html>
- Trust for America's Health. The state of obesity 2021: Special feature: COVID-19, social determinants of health, and obesity. Retrieved 1/1/2022 from [https://www.tfah.org/wp-content/uploads/2021/09/2021ObesityReport\\_Fnl.pdf](https://www.tfah.org/wp-content/uploads/2021/09/2021ObesityReport_Fnl.pdf)
- Kumanyika SK. Environmental influences on childhood obesity: Ethnic and cultural influences in context. *Physiology & Behavior*. 2008; 94(1):61-70. doi:10.1016/j.physbeh.2007.11.019
- Drewnowski A, Buszkiewicz J, Moudon AV, Aggarwal A. Soda, salad, and socioeconomic status: Findings from the Seattle obesity study (SOS). *SSM - Population Health*. 2018; 100339. doi:10.1016/j.ssmph.2018.100339
- US Department of Health and Human Services. Health, United States, 2016: With chartbook on long-term trends in health (DHHS Publication No. 2017-1232). Hyattsville, MD: National Center for Health Statistics, 2017. Retrieved from <http://www.cdc.gov/nchs/hus.htm>.
- Frayn M, Knauper B. Emotional eating and weight in adults: A review. *Current Psychology*. 2017; 37(4):924-933. doi:10.1007/s12144-017-9577-9
- Ryden A, Karlsson J, Persson L, Sjostrom L, Taft C, Sullivan M. Obesity related coping and distress and relationship to treatment preference. *British Journal of Clinical Psychology*. 2001; 40:177-188. doi: 10.1348/014466501163625
- Greenberg I, Perna F, Kaplan M, Sullivan MA. Behavioral and psychological factors in the assessment and treatment of obesity surgery patients. *Obesity Research*. 2005; 13(2):244-249. <http://dx.doi.org/10.1038/oby.2005.33>.
- Buckroyd J, Rother S (Eds). Psychological responses to eating disorders and obesity: Recent and innovative work. Chichester, England; Hoboken, NJ: John Wiley & Sons, 2008.
- Corrigan PW, Druss, BG, Perlick, DA. The impact of mental illness stigma on seeking and participating in mental health care. *Psychological Science in the Public Interest*. 2014; 15(2):37-70. doi:10.1177/1529100614531398
- Chiesa A, Serretti A. Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *The Journal of Alternative and Complementary Medicine*. 2009; 15(5):593-600. <http://dx.doi.org/10.1089/acm.2008.0495>
- Green SM, Bieling PJ. Expanding the scope of mindfulness-based cognitive therapy: Evidence for effectiveness in a heterogeneous psychiatric sample. *Cognitive and Behavioral Practice*. 2012; 19(1):174-180. <http://dx.doi.org/10.1016/j.cbpra.2011.02.006>.
- Strauss C, Cavanagh K, Oliver A, Pettman D. Mindfulness-based interventions for people diagnosed with a current episode of an anxiety or depressive disorder: A meta-analysis of randomized controlled trials. *PLoS One*. 2014; 9(4):e96110. <http://dx.doi.org/10.1371/journal.pone.0096110>.
- Ruffault A, Czernichow S, Hagger MS, Ferrand M, Erichot N, Carette C, et al. The effects of mindfulness training on weight-loss and health-related behaviors in adults with overweight and obesity: A systematic review and meta-analysis. *Obesity Research & Clinical Practice*. 2017; 11(5):90-111. doi:10.1016/j.orcp.2016.09.002
- Smith BW, Shelley BM, Leahigh L, Vanleit B. A preliminary study of the effects of a modified mindfulness intervention on binge eating. *Complementary Health Practice Review*. 2006; 11(3):133-143. doi:10.1177/1533210106297217
- Church D, Feinstein D. The manual stimulation of acupuncture points in the treatment of post-traumatic stress disorder: A review of Clinical Emotional Freedom Techniques. *Medical Acupuncture*. 2017; 29(4):1-12. doi:10.1089/acu.2017.1213
- Church D, Feinstein D, Palmer-Hoffman J, Stein P K, Tranguch A. Empirically supported psychological treatments: The challenge of evaluating clinical innovations. *Journal of Nervous and Mental Disease*. 2014; 202(10):699-709. doi:10.1097/NMD.0000000000000188
- Feinstein D. Acupoint stimulation in treating psychological disorders: Evidence of efficacy. *Review of General Psychology*. 2012; 16:364-380. doi:10.1037/a0028602
- Clond M. Emotional freedom techniques for anxiety. *The Journal of Nervous and Mental Disease*. 2016; 204(5):388-395. doi:10.1097/nmd.0000000000000483
- Sebastian B, Nelms J. The effectiveness of emotional freedom techniques in the treatment of posttraumatic stress disorder: A meta-analysis. *Explore*. 2017; 13(1):16-25. doi:10.1016/j.explore.2016.10.001

30. Nelms JA, Castel L. A systematic review and meta-analysis of randomized and nonrandomized trials of clinical emotional freedom techniques (EFT) for the treatment of depression. *Explore*. 2016; 12(6):416-426. doi:10.1016/j.explore.2016.08.001
31. Church D. *EFT for weight loss* (2nd ed.). Santa Rosa, CA: Energy Psychology Press, 2013.
32. Church D, Yount G, Brooks AJ. The effect of emotional freedom techniques on stress biochemistry: A randomized controlled trial. *Journal of Nervous and Mental Disease*. 2012; 200(10):891-896. doi:10.1097/NMD.0b013e31826b9fc1
33. Bjorntorp P. Do stress reactions cause abdominal obesity and comorbidities? *Obesity Reviews*. 2001; 2(2):73-86. doi:10.1046/j.1467-789x.2001.00027.x
34. Church D, Yount G, Rachlin K, Fox L, Nelms J. Epigenetic effects of PTSD remediation in veterans using clinical EFT (Emotional Freedom Techniques): A randomized controlled pilot study. *American Journal of Health Promotion*. 2016; 1-11. doi:10.1177/0890117116661154
35. Maharaj ME. Differential gene expression after Emotional Freedom Techniques (EFT) treatment: A novel pilot protocol for salivary mRNA assessment. *Energy Psychology: Theory, Research, and Treatment*. 2016; 8(1):17-32. doi:10.9769/EPJ.2016.8.1.MM
36. Mann T, Tomiyama A J, Westling E, Lew A-M, Samuels B, Chatman J. Medicare's search for effective obesity treatments: Diets are not the answer. *American Psychologist*. 2007; 62(3):220-233.
37. Stapleton P, Sheldon T, Porter B. Clinical benefits of emotional freedom techniques on food cravings at 12-months follow-up: A randomized controlled trial. *Energy Psychology Journal*. 2012; 4:13-24. doi:10.9769/EPJ.2012.4.1.PS
38. Stapleton P, Sheldon T, Porter B, Whitty J. A randomized clinical trial of a meridian-based intervention for food cravings with six-month follow-up. *Behavior Change*. 2011; 28(1):1-16. doi:10.1375/bech.28.1.1
39. Church D, Brooks AJ. The effect of a brief EFT (Emotional Freedom Techniques) self-intervention on anxiety, depression, pain and cravings in healthcare workers. *Integrative Medicine: A Clinician's Journal*. 2010; 9(5):40-44.
40. Stapleton P, Church D, Sheldon T, Porter B, Carlopio C. Depression symptoms improve after successful weight loss with Emotional Freedom Techniques: A randomized controlled trial. *ISRN Psychiatry*. 2013; 573532. doi:10.1155/2013/573532
41. Church D, Brooks A J. The effect of EFT (Emotional Freedom Techniques) on psychological symptoms in addiction treatment: A pilot study. *Journal of Scientific Research and Reports*. 2013; 2(1):315-323. doi:10.9734/JRRR/2013/3500
42. Kemp S. Digital 2021 April global statshot report. Retrieved Sep 6 from <https://datareportal.com/reports/digital-2021-april-global-statshot>
43. Brattberg G. Self-administered EFT (Emotional Freedom Techniques) in Individuals With Fibromyalgia: A Randomized Trial. *Integrative Medicine: A Clinician's Journal (IMCJ)*. 2008;7(4):30-5.
44. Church D, Clond M. Is online treatment as effective as in person treatment? Psychological change in two relationship skills groups. *Journal of Nervous and Mental Disease*. 2019;207(5):315-9.
45. Church D, Stapleton, P, Sheppard, L, Carter, B. Naturally thin you: Weight loss and psychological symptoms after a six-week online clinical EFT (emotional freedom techniques) course. *Explore: The Journal of Science and Healing*. 2018; 14(2):131-136. doi:10.1016/j.explore.2017.10.009
46. Stapleton P, Buchan C, Mitchell I, McGrath Y, Gorton P, Carter B. An initial investigation of neural changes in overweight adults with food cravings after emotional freedom techniques. *OBM Integrative and Complementary Medicine*. 2019; 4(14):10-21926.
47. Stapleton P, Roos T, Mackintosh G, Sparenburg E, Sabot D, Carter B. Online delivery of Emotional Freedom Techniques in the treatment of food cravings and weight management: A randomized controlled trial. *OBM Integrative and Complementary Medicine*. 2019; 4(4).
48. Stapleton P, Stewart M. Comparison of the Effectiveness of Two Modalities of Group Delivery of Emotional Freedom Technique (EFT) Intervention for Food Cravings: Online versus In-Person. *Open Journal of Social Sciences*. 2020; 8(2):158-181.
49. Church D, Stapleton P, Sabot D. App-based delivery of clinical EFT: Cross-sectional study of app user self-ratings. *JMIR mHealth and uHealth*. 2020; 8(10):e18545.
50. Roth A D, Parry G. The implications of psychotherapy research for clinical practice and service development: Lessons and limitations. *Journal of Mental Health*. 1997; 6(4):367-380, doi: 10.1080/09638239718699
51. Leichsenring F. Randomized controlled versus naturalistic studies: A new research agenda. *Bulletin of the Menninger Clinic*. 2004; 68(2):137-151. doi:10.1521/bumc.68.2.137.35952
52. Herman C, Polivy J. Restrained eating. In *Obesity*, AJ Stunkard (Ed). Philadelphia: WB Saunders; 1980, pp. 208-225.
53. Lowe M R, Butryn M L, Didie E R, Annunziato R A, Thomas J G, Crerand C E, et al. The power of food scale. A new measure of the psychological influence of the food environment. *Appetite*. 2009; 53(1):114-118. doi:10.1016/j.appet.2009.05.016
54. Zigmond AS, Snaith RP. Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*. 1983; 67(6):361-370. doi: 10.1037/t03589-000
55. Church D, Watkins B. *Skinny genes*. Energy Psychology Press; 2013.
56. Stapleton P, Bannatyne A, Porter B, Urzi KC, Sheldon T. Food for thought: A randomized controlled trial of emotional freedom techniques and cognitive behavioral therapy in the treatment of food cravings. *Applied Psychology: Health and Well-Being*. 2016; 8:232-257, doi: 10.1111/aphw.12070
57. Stapleton P, Stewart M. Comparison of the effectiveness of two modalities of group delivery of Emotional Freedom Techniques (EFT) intervention for food cravings: Online versus in-person. *Open Journal of Social Sciences*. 2020 Feb 10;8(2):158-161.
58. Durso L E, Latner J D. Understanding self-directed stigma: Development of the Weight Bias Internalization Scale. *Obesity*. 2008; 16:S80-S86. doi:10.1038/oby.2008.448
59. Steinberg DM, Bennett GG, Askew S, Tate DF. Weighing everyday matters: daily weighing improves weight loss and adoption of weight control behaviors. *Journal of the Academy of Nutrition and Dietetics*. 2015; 115(4):511-518.