

## ORIGINAL RESEARCH

# Preliminary Research into the Effects of Higher Brain Living on Well-being

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### ABSTRACT

**Context** • Higher Brain Living (HBL) is a light-touch therapy, which practitioners claim can increase well-being. Although studies have suggested that its component elements—light touch, focused breathing, and positive self-talk—can increase well-being for specific populations in specific contexts, no empirical research has occurred on HBL's efficacy.

**Objective** • The study intended to measure the effects of HBL therapy on the well-being of individuals who have received it.

**Design** • The research team designed a quasi-experimental controlled trial that used a survey to gather self-reported data related to well-being.

**Setting** • The study took place in individual HBL practitioners' locations throughout the USA.

**Participants** • Participants were adults who had attended an introductory presentation about HBL.

**Intervention** • Participants were assigned to one of three groups: (1) the intervention group, who had responded to the baseline and postintervention surveys and had participated in HBL sessions ( $n = 14$ ); (2) the control group, who had responded to the baseline and postintervention surveys and had not participated in HBL

sessions ( $n = 9$ ); and (3) the noncompleter group who had responded to the baseline surveys and had not completed the postintervention survey ( $n = 54$ ).

**Outcome Measures** • Well-being was assessed using five measures that evaluated constructs associated with well-being: (1) happiness using the Subjective Happiness Scale (SHS), (2) anxiety using the Anxiety Index (AI), (3) depression using Depression Index (DI) (4) mastery using the Pearlin Mastery Scale (PM), and (5) flourishing using the Flourishing Scale (FS).

**Results** • The study included baseline data from 77 respondents; 23 participants completed the surveys at baseline and postintervention, 14 in the intervention group and 9 in the control group. A statistically significant, greater improvement occurred for the intervention group in the measures for flourishing, mastery, and happiness compared to the control group.

**Conclusions** • The current study provides a foundation of empirical evidence suggesting the effectiveness of HBL as a potential treatment for improving well-being, upon which further investigation can be based. (*Adv Mind Body Med.* 2022;36(2):8-13.)

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The Higher Brain Living (HBL) program provides a treatment protocol which practitioners claim can increase well-being.<sup>1</sup> The program consists of 22 one-hour sessions performed on a massage table, once a week for a period of 22 weeks. The technique incorporates three component modalities: light touch, focused breathing, and positive self-talk, in a phased approach.<sup>2</sup>

One challenge in inferring the efficacy of HBL is the sparsity of relevant empirical research on HBL's efficacy. The most relevant research has examined only the individual components, has been limited to specific populations, and had measured outcomes other than well-being. Although some studies have suggested that the component elements can increase well-being for specific populations in specific contexts, it has been difficult to directly establish the equivalence of other therapy modalities to HBL because of its unique nature and the way it combines the individual modalities.

Therefore, the research team's review of the relevant literature focused on examining the empirical evidence regarding the efficacy of HBL's component parts.

## Light Touch

Light-touch massage is a treatment that involves light pressure on the body as opposed to the heavier mechanical pressure used in traditional massage. Few studies have focused on its effects. When it does appear in the literature, it has been mainly used as a control-group modality for interventions that use a more traditional pressure massage, such as Swedish massage.<sup>3</sup>

In 2010, Field et al demonstrated that moderate pressure was necessary to produce a therapeutic effect,<sup>4</sup> but more recently, Espi-Lopez et al used light touch as a control in a pilot study that examined psychological and physical-function variables in athletes. That study found that some mood-state changes were significant in the light-touch control group.<sup>5</sup>

One primary exception to the need for pressure is Network Spinal Analysis (NSA), which uses a specific pattern of intricate light touch with the intention of triggering a release of postural stress, improved spinal alignment, and improved neurocommunication.<sup>6</sup> NSA hasn't been widely researched; however, one major study involving 2818 people receiving NSA found that its use was associated with "improvement in self-rated perceptions of health, wellness, and overall quality of life."<sup>7</sup> That study had two major limitations; it didn't include a control group, and the participants didn't complete a baseline survey but only recalled improvements to health and well-being retrospectively in a single postintervention survey.

## Focused Breathing

Focused breathing involves different ways of controlling the direction, speed, and intensity of breath. Yogic Breathing, which is the most prevalent and researched focused-breathing technique, dates back over 2500 years and is rooted in Indian philosophy and religion.<sup>8</sup>

A comprehensive review of research on different types of yogic breathing found that it could "...influence the neurocognitive abilities and the autonomic and pulmonary functions as well as the biochemical and metabolic activities in the body."<sup>9</sup>

Very little peer-reviewed research has occurred on yogic breathing as it specifically relates to well-being. However, one study in India with 110 males between 20 and 40 years old, found a significant improvement in depression for the intervention group.<sup>10</sup> Research in Sweden in 2007 on 103 participants recruited from a small university community found a significant reduction of stress, anxiety, and depression and an increase in optimism for the intervention group.<sup>11</sup> However, both studies included yogic postures in addition to breathing, which aren't present in HBL treatment.

## Positive Self-talk

Research on positive self-talk has been primarily focused on enhancing athletic performance and improving reactions to stress. It has been defined as a "psychological skill that benefits motor performance by controlling and organizing performers' thoughts."<sup>12</sup> A meta-analysis of 47 studies

indicated that positive self-talk could have a positive effect on athletic performance.<sup>13</sup>

Dutcher et al found that positive self-talk could increase neural activity in the brain's reward-related regions and reduce the neural stress response.<sup>14</sup> Although literature that demonstrates well-being improvements for self-talk is scarce, some research has indicated that improvements in anxiety and depressive symptoms can occur. In a study of 72 amateur tennis players, self-talk positively affected task performance, increased self-confidence, and reduced cognitive anxiety for the intervention group.<sup>15</sup> In addition, a randomized controlled trial of 92 college women, who were 18 to 24 years old, showed that cognitive behavioral therapy, with an emphasis on affirmations and positive self-talk, could significantly decrease self-reported depressive symptoms.<sup>16</sup>

## Comparisons to HBL

As indicated previously, it's challenging to examine the efficacy of HBL because most research on its component elements hasn't evaluated those elements' effects on well-being. For example, much of the self-talk research is associated primarily with sports performance and reduction of stress, not well-being. Similarly, research on focused-breathing modalities have rarely focused specifically on well-being, and furthermore, the breathing techniques were combined with yogic postures. With regard to light touch, few, if any, controlled studies have been published that document its effectiveness.

Much of the research fails to address well-being at all, or when it does, it lacks a sufficiently robust range of well-being measures. For these reasons, it's difficult to presume that researchers can draw conclusions regarding HBL's effectiveness for a general population based on previous studies. To evaluate such a claim, additional research is needed.

The current study intended to evaluate whether HBL protocols can provide an effective technique for increasing well-being in a general population. It was designed as a preliminary study to address two shortcomings of the literature: the lack of a comparable treatment modality, and the absence of any robust assessment of well-being. The current study addresses both of those shortcomings by directly studying HBL's specific multimodality protocol and by assessing well-being in a more comprehensive manner by determining its effects on five core components of well-being: happiness, anxiety, depression, mastery, and flourishing. In this way, the study has been designed to determine if the combination of modalities as applied in the HBL treatment protocol can result in empirical effects on well-being.

## METHODS

### Participants

The research team designed a quasi-experimental controlled trial that used a survey to gather data. The study took place in individual HBL practitioners' locations throughout the USA. The potential respondents were adults who had attended an introductory presentation about HBL.

Participants were found through distribution of a flyer that was handed out by certified HBL facilitators at introductory events, and directed potential participants to a website with more information about the study and a link to the online survey.

For inclusion in the study, potential participants must have been over 18 years old, had an interest in learning about HBL, and not have participated in any previous HBL sessions.

The study was approved by the Institutional Review Board through the University of Iowa, in Iowa City, Iowa. All participants acknowledged informed consent including use of data for research report purposes.

### Procedures

**Surveys.** A self-administered, brief online survey at baseline qualified potential participants as not having had any previous HBL sessions as well as measured their responses to the study's outcome measures.

Approximately five months after completing that baseline survey, participants were contacted by email, or by phone if necessary, and asked to complete the online survey again postintervention. This survey determined whether respondents had participated in the HBL program and again measured their responses to the study's outcome measures.

**Groups.** The intervention group consisted of those participants who reported in the postintervention survey that they had participated in HBL sessions; the control group consisted of those who reported that they hadn't participated in any HBL sessions. Those who had completed only the baseline survey, the noncompleter group, weren't included in the analysis of changes that occurred between baseline and postintervention.

The research team doesn't know whether the respondents who completed only the baseline survey had participated in any HBL sessions, because information on treatment participation was collected only in the postintervention survey. However, the demographic characteristics and scores at baseline were analyzed for the noncompleter group in comparison to the intervention and control groups to provide a more robust estimate of the study's population.

**Intervention.** At the start of the HBL program, participants received an *HBL Guidebook*, which contained the program's philosophy and written assignments.<sup>2</sup> The HBL treatment consisted of weekly sessions with a certified facilitator for up to 22 weeks. Sessions were conducted in various locations throughout the USA where the facilitators had established a practice. The sessions were generally conducted in a private, quiet, and relaxed environment. They were done both on an individual basis and in groups.

**Outcome measures.** The construct of well-being can be measured on a variety of dimensions. To reflect a range of well-accepted constructs associated with well-being, five basic well-being dimensions were chosen. They span both emotional and psychological health as well as personal

**Table 1.** Dimensions and Measures Used

Dimension	Measure	Range	Questions	Cronbach's $\alpha$
Happiness	Subjective Happiness Scale <sup>18</sup>	4-28	4	0.86
Anxiety	Anxiety Index <sup>19</sup>	4-16	4	0.75
Depression	Depression Index <sup>20</sup>	4-16	4	0.77
Mastery	Pearlin Mastery Scale <sup>21</sup>	7-28	7	0.723
Flourishing	Flourishing Scale <sup>20</sup>	8-56	8	0.87

efficacy and mastery, as Caunt et al has suggested.<sup>17</sup> Established scales were chosen, all with high values of Cronbach's  $\alpha$  (Table 1). Because the study was conducted by online surveys, it was important that the instruments be brief.

The study used five outcome measures: (1) happiness using the Subjective Happiness Scale (SHS),<sup>18</sup> (2) anxiety using Anxiety Index<sup>19</sup> (AI), (3) depression using Depression Index<sup>19</sup> (DI), (4) Mastery using the Pearlin Mastery Scale (PM),<sup>20</sup> and (5) Flourishing using the Flourishing Scale (FS).<sup>22</sup>

### Intervention

**HBL sessions.** HBL sessions were administered on a massage or chiropractic table and consisted of light touch, focused breathing and positive self-talk.

**Intervention phases.** The intervention was divided into three phases, all of which contained the light-touch and focused breathing components. Positive self-talk was added in the second and third phases. In the first phase, participants were asked to read the material in the *Guidebook* between sessions.

In the second phase, they were asked to evaluate their lives using the four dimensions of mind, body, relationships, and environment; to write about the current state of these areas, and to indicate what an ideal life would look like for them. During this phase participants were also asked to create short resolutions in all four life areas. These consisted of a "call to action" statement combined with a "like I want it" statement. An example of a "call to action" statement in the body dimension might be, "I eat healthy food every day," and an example of the "like I want it" statement might be, "my body is at its ideal weight."

During the second phase, these resolutions were integrated into the weekly session by having the participant repeat those phrases out loud before light touch was applied. Participants were also asked to review their goals and re-evaluate their progress as the sessions progressed.

In the third phase, participants were asked to complete a process of creating a multi-sentence declaration of their ideal, authentic self. This was then integrated into the weekly session by having the participant repeat the statement out loud before light touch was applied. They were also instructed to practice daily focused breathing exercises at home while repeating their resolutions and declaration.

**Length of participation.** Participation in the intervention group varied from one to 28 sessions. Because

the timing of the postintervention survey's administration was based on an estimate of the time needed to complete the program and because not all participants in the intervention group completed all 22 sessions, considerable variation existed in the time between the administration of the postintervention survey and the participant's last HBL session. For example, a participant who had participated in one session only indicated that it had been six months since the last session, while another respondent reported having had a session just a few days previously.

### Outcome Measures

**SHS.**<sup>18</sup> Subjective Happiness Scale measures self-perceived level of happiness and has an alpha of 0.86. It contains four questions, which ask respondents to characterize their level of happiness in general, and related to peers. The response choices are scored with different seven-point scales. An example question from the scale is "I consider myself a:" with seven responses ranging from 1 "not a very happy person" to 7 "a very happy person." Question four was negatively phrased and therefore reverse coded. The one reverse coded item and the remaining three items were added together for a composite scale variable, with a range from 4-28, with higher scores indicating more happiness.

**AI.**<sup>19</sup> The Anxiety Index was created by Scheiman, McCullen and Swan for research published in 2005 to obtain a score for anxiety level within the past week. It has a reported alpha of 0.75. It contains four questions which all start with the phrase "In the past week, on how many days did you..." and then four items, "feel tense or keyed up," "feel afraid or fearful," "worry," "feel nervous or shaky inside." The response scale consists of four choices: 1 "no days," 2 "one or two days," 3 "three or four days," and 4 "five or more days." The response scores are summed to obtain a range of 4-16 with higher scores indicating more anxiety.

**DI.**<sup>19</sup> The Depression Index was created by Scheiman, McCullen and Swan for research published in 2005 to measure depression levels. It has a reported alpha of 0.77. It contains four questions, which all start with the phrase "In the past week, on how many days did you..." and then four choices "lack enthusiasm for doing anything," "feel bored or have little interest in things," "feel downhearted or blue," and "feel slowed down or low in energy." The response scale consists of four choices: 1 "no days," 2 "one or two days," 3 "three or four days," and 4 "five or more days." The response scores are summed to obtain a range of 4-16 with higher scores indicating more depression.

**PM.**<sup>20</sup> Pearlin Mastery Scale measures the extent to which an individual regards their life chances as being under their personal control rather than fatalistically ruled. It contains seven items with a four-point Likert scale from 4 "strongly agree" to 1 "strongly disagree." It contains two positively worded statements like "I can do just about anything I really set my mind to," and five negatively worded statements like "I often feel helpless in dealing with the problems of life." The scale is summed, with negatively

worded questions being reverse coded, yielding a range from 7-28 with higher scores indicating more sense of mastery. A slightly shorter version of this same scale had a reported alpha of 0.723<sup>21</sup>

**FS.**<sup>22</sup> Flourishing Scale is an 8-item measure of self-perceived success in areas such as relationships, self-esteem, purpose, and optimism and has an alpha of 0.87. Questions are scored with a seven-point Likert scale. Examples of questions are "I lead a purposeful and meaningful life," and "I actively contribute to the happiness and well-being of others." All questions were phrased in a positive way and the range of scores is between 8-56. Higher scores indicate a higher value of flourishing.

### Statistical Analysis

Composite scores were obtained by summing the scores of each measure for each respondent. In cases of negatively worded questions, reverse coding was used. In the few cases of missing data points, the missing data point was replaced by the mean of the respondents remaining responses for that measure.

The three groups—intervention group, control group, and noncompleters—were compared at baseline using Welch's version of the analysis of variance (ANOVA) on continuous variables—age and outcome variables—and chi-square tests on categorical demographic variables. Dunnett's T3 posthoc test was used when the p value from the ANOVA was statistically significant. To compare the intervention and control groups on changes between baseline and postintervention on each outcome variable, an analysis of co-variance (ANCOVA) was performed with baseline scores for the outcome variable as the covariate.

### RESULTS

Seventy-seven respondents completed the first survey. In the postintervention survey, 14 respondents indicated that they had participated in one or more HBL sessions, becoming the intervention group, whereas 9 respondents indicated they didn't participate in any HBL sessions, becoming the control group. Of the 77 respondents to the baseline survey, 54 didn't complete the postintervention survey, becoming the noncompleter group.

### Demographics

The baseline online survey obtained demographics: age, gender, level of education, marital status, household income, and ethnicity. The mean age of the 77 respondents was 48.8 ± 15.1 years. Of them, 83.1% were women (n = 64); 75.3% were white (n = 58); 40.3% worked more than 35 hours a week (n = 31); 72.7% had either a bachelors, graduate, or professional degree (n = 56); and 58.4% had combined household incomes of less than \$75 000 (n = 45). The characteristics of the intervention, control, and noncompleter groups are compared in Table 2. No statistically significant differences existed between the three groups for the demographic variables at baseline.

**Table 2.** Demographic Characteristics and Levels of Outcome Variables at Baseline by Group. Means (SDs) indicate continuous variables, and percentages indicate categorical variables.

Variable	Intervention Group n (%)	Control Group n (%)	Noncompleter Group n (%)	P Value (All groups)
Age, mean ± SD	47.1 (15.1)	56.3 (19.0)	48.0 (14.4)	.46
Gender: Female	93%	100%	78%	.14
Race: Caucasian	64%	89%	76%	.40
Marital status: Married	36%	44%	35%	.87
Bachelor Deg. or higher	71%	78%	72%	.94
Employment >35 hrs/week	50%	33%	39%	.68
Income: >\$75 000	50%	44%	39%	.74
Well-being variables				
Flourishing	45.9 (10.4)	48.6 (6.9)	45.2 (8.4)	.44
Mastery	21.9 (3.4)	23.4 (2.7)	21.4 (3.8)	.18
Happiness	21.1 (5.5)	20.9 (3.3)	19.0 (5.0)	.26
Anxiety	8.3 (2.6)	6.8 (1.8)	9.4 (3.3)	.009
Depression	7.5 (2.9)	6.2 (1.9)	8.4 (3.2)	.04

**Baseline Well-being Scores**

Comparisons between the three groups at baseline using ANOVA showed no statistically significant differences for Flourishing, Mastery and Happiness, but did indicate differences for Anxiety ( $P = .009$ ) and Depression ( $P = .04$ ). Post hoc tests revealed that the noncompleter group had statistically significant, higher scores at baseline than the control group for anxiety, at 9.4 compared to 6.8 ( $P = .008$ ), as well as for depression at 8.4 and 6.2 ( $P = .038$ ). The post hoc tests did not indicate any significant differences at baseline between the intervention group and the control group or between the intervention group and the noncompleter group (all  $P$  values  $>.30$ ).

**Treatment Outcomes**

Table 3 compares the postintervention values of the intervention group to those of the control group. The ANCOVA indicated significantly greater improvements for the intervention group compared to the control group for the scores on the mastery, flourishing, and happiness scales. In the intervention group, those scores all increased, while in the control group, they decreased slightly.

The Mastery scores in the intervention group increased by 2.3 points, with a large effect size of 1.06 SD, while scores for the control group decreased by 1.1 points, with the change being statistically significant ( $P = .012$ ). The Flourishing scores in the intervention group increased by 3.8 points, with a medium effect size of 0.69 SD, whereas the control group’s scores decreased by 0.1 points, with the change being statistically significant ( $P = .022$ ). The Happiness scores of the intervention group increased by 3.1 points, with a medium effect size of 0.68 SD, while the control group’s declined by 0.1 points, with the change being statistically significant ( $P = .002$ ).

The improvements in the point scores are shown in Figure 1. The mean changes in outcomes are shown in Figure 2.

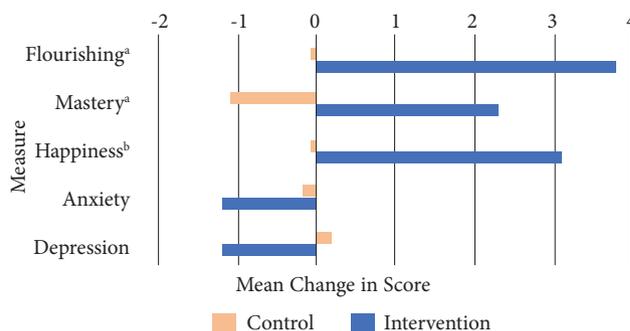
**Table 3.** Results of Analysis of Co-variance (ANCOVA) Comparing Intervention and Control Groups on Mean Changes Postintervention. The results are based on the ANCOVA covarying for the baseline score for each outcome variable. Data are reported as adjusted means ± standard errors of the mean (SEs).

Variables	Intervention Group Changes	Control Group Changes	P Value	Effect Size
Flourishing	3.8 ± 1.0	-0.1 ± 1.2	.022 <sup>a</sup>	0.69
Mastery	2.3 ± 0.7	-1.1 ± 0.9	.012 <sup>a</sup>	1.06
Happiness	3.1 ± 0.5	-0.1 ± 0.7	.002 <sup>b</sup>	0.68
Anxiety	-1.2 ± 0.7	-0.2 ± 0.9	.354	-0.43
Depression	-1.2 ± 0.6	0.2 ± 0.8	.172	-0.54

<sup>a</sup> $P < .05$  for statistically significant differences between the intervention group and the control group postintervention

<sup>b</sup> $P < .005$  for statistically significant differences between the intervention group and the control group postintervention

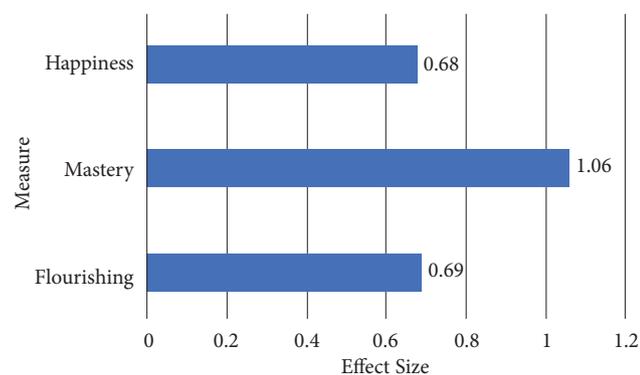
**Figure 1.** Change in Scores Between Baseline and Postintervention for the Intervention Group Compared to the Control Group



<sup>a</sup> $P < .05$

<sup>b</sup> $P < .005$

**Figure 2.** Analysis of Covariance (ANCOVA) Mean Change in Outcome - Effect Size



## DISCUSSION

The current study's preliminary research represents the first empirical investigation into the efficacy of HBL, by examining its effects for adults who had demonstrated an interest by attending an introductory presentation. The dependent measures were chosen to represent a broad range of well-being outcomes. The results suggest that HBL does demonstrate efficacy in improving well-being, because significant improvements were found in the mean scores for mastery, flourishing, and happiness.

The current study is an important first step in establishing the efficacy of HBL in increasing well-being. However, additional research is needed to improve the strength of the evidence. While the changes in mastery, flourishing, and happiness demonstrated a large enough effect size to be statistically significant, even with a relatively small sample, a larger sample of participants would provide more statistical power to detect with more confidence whether or not HBL treatment can result in changes to anxiety or depression.

Also, the fact that the intervention group's members self-selected to participate in HBL may have introduced a bias based on their personal level of commitment to change. Random assignment into an intervention or control group would reduce the possibility of this self-selection sampling bias. Randomization would also be useful to examine the effects of baseline levels of well-being on treatment outcomes.

The variations in the number of treatments and the time between the baseline and postintervention surveys is another limitation of the current study. Because HBL is a relatively new treatment, with participants determining their own levels of participation, it's not yet possible to understand the effect of these variations. In future studies, it may be useful to measure compliance with HBL treatment to investigate a dose-response curve, to evaluate the level of compliance that can be expected to HBL protocols, and to examine the relationship between compliance and outcomes.

Future research may also benefit from including objective physiological measures to complement the subjective measures used in the current study.

These limitations notwithstanding, one area where HBL may have an important role is as an adjunct to established mental

health therapies such as Cognitive Behavioral Therapy (CBT). In 2020, Widnall et al found that while CBT can be effective at reducing the psychopathology symptoms of anxiety and depression, it was less effective at increasing well-being.<sup>23</sup> They concluded that "it's important to consider alternative treatment approaches" to improve well-being. CBT might be supplemented with HBL to provide a more robust impact on positive outcomes.

## CONCLUSIONS

The current study provides a foundation of empirical evidence suggesting the effectiveness of HBL as a potential treatment for improving well-being, upon which further investigation can be based.

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