

# LAUGHTER YOGA, ADULTS LIVING WITH PARKINSON'S DISEASE, AND CAREGIVERS: A PILOT STUDY

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**Objective:** This study explored outcomes of Laughter Yoga in adults with Parkinson's disease (PD) and their caregivers. Laughter has been shown to generally improve mood in physically healthy adults, and specifically in adults with heart disease or cancer, but little research exists regarding the impact of laughter in adults with Parkinson's disease. Low mood is frequently a co-morbid condition for adults with Parkinson's disease, and can negatively affect their caregivers.

**Design:** Pre-experimental ( $O_1 \times O_2$ ) pretest–posttest design.

**Settings/Location:** Data collection occurred at six unique PD support groups in Southern California.

**Subjects:** Participants ( $N = 85$ ) comprised a convenience sample of adults diagnosed with Parkinson's disease ( $n = 47$ ) and accompanying caregivers ( $n = 38$ ).

**Intervention:** Subjects participated in a 45-min Laughter Yoga (LY) session conducted by a Certified Laughter Yoga Teacher.

**Outcome Measures:** This study utilized the Laughter Yoga “How Do You Feel?” (HDYF) form. The form consists of a series of 10 scales labeled “well-being” measures including enthusiasm, energy level, mood, optimism, stress level, level of friendship with group members, level of awareness about breathing, level of muscle relaxation, level of mental relaxation, and ability to laugh without a reason.

**Results and Conclusion:** Paired sample *t*-tests reveal statistically significant improvements in well-being for adults with PD and their caregivers after attending an LY session. Therapists and other clinicians should consider utilizing this unique technique with adults with PD to address co-morbid low-mood conditions and include caregivers in the LY sessions for support and their own benefit.

**Key words:** Laughter yoga, Parkinson's disease, well-being, caregivers

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## INTRODUCTION

Laughter has been widely shown to benefit physical and mental health across a variety of populations,<sup>1</sup> although few studies have been conducted with adults with Parkinson's disease. Parkinson's disease (PD) is progressive and physically incapacitating with possible co-morbid psychological involvement that can negatively affect quality of life.<sup>2</sup> Current PD treatments include psychotherapy and pharmacology, but many adults with PD have side effects with pharmacological treatment, resulting in a call for alternative treatment approaches for adults with PD who suffer with psychological symptoms.<sup>3</sup> The nature of PD makes it difficult to separate biological from psychological processes, therefore treatments should be considered that include body and mind. This study explores if laughter, in the form of

Laughter Yoga, constitutes an alternative body/mind exercise that may benefit adults with PD and their caregivers.

## Laughter

Laughter improves physical and psychological health-related outcomes across diseases and populations.<sup>4,5</sup> Research related to psychological outcomes is prevalent with studies showing that laughter helps with stress, mood, memory, interpersonal relationships, psychological well-being, and quality of life.<sup>4</sup> Laughter stimulates the amygdala, which may be helpful for adults with PD because deficits involving functions of the amygdala have been implicated in PD symptoms.<sup>6</sup> The connection between an increase in dopamine brought about by laughter, and an increase in positive mood in adults with PD has yet to be explored in randomized clinical studies, although anecdotal accounts attest to the benefits of laughter on mood. Laughter may be a viable intervention for adults with PD suffering from psychosocial symptoms and include positive physical effects, which resemble those brought about by physical exercise.<sup>1</sup>

Laughter can be categorized as spontaneous<sup>4</sup> or simulated (self-induced).<sup>1</sup> Spontaneous laughter arises from a stimulus, requiring some type of humor<sup>4</sup> whereas simulated laughter

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requires volition and does not require humorous stimuli.<sup>1</sup> Simulated laughter is based on the concept that a person can get the same physiological effect from self-induced laughter that they get from spontaneous laughter.<sup>4</sup> Since trying to induce spontaneous laughter can vary in effectiveness due to personal tastes in humor, Laughter Yoga focuses on volitional laughter.

### Laughter Yoga

Laughter Yoga (LY), started by Dr. Madan Kataria, utilizes breathing techniques, laughter exercises, core exercises, and meditation in a standardized form that can be easily replicated by trained instructors. Within the many ways to promote healthy laughter, LY stands as a method wherein one interacts within a group setting using exercises similar to improvisation or pantomime and simply “laughing for no reason” in order to induce laughter’s benefits. LY resembles traditional yoga in its emphasis on breathing techniques, but leaders and teachers who state they do LY must be trained in the method of Dr. Kataria.

LY has been associated with increased self-efficacy, including enhanced mood and productivity in nursing students.<sup>7</sup> Randomized controlled studies examined the effect of LY on elderly depressed women, indicating increased life satisfaction and decreased depressive symptoms.<sup>8</sup> Controlled studies within the medical arena utilized physiological measures and psychosocial measures, showing that LY increased positive feelings in patients waiting for an organ transplant,<sup>9</sup> controlled blood glucose levels and decreased stress in patients with type 2 diabetes,<sup>10</sup> and improved biopsychosocial functioning in stroke survivors in South Africa.<sup>11</sup> Laughter yoga improved motor function and flexibility in patients with PD in Iran, but the study did not include psychosocial measures of well-being.<sup>12</sup>

### Caregivers

Caregiving is inherently challenging,<sup>13,14</sup> and prior research has shown that the care recipient’s level of depression is a contributor to a caregiver’s mental health and sense of burden.<sup>14,15</sup> Research has also shown that the most effective interventions for supporting caregivers include the care recipient.<sup>16</sup>

The current study focuses on simulated, or self-induced, laughter in the form of Laughter Yoga with a Certified Laughter Yoga Teacher (CLYT). CLYTs undergo a five-day training on the core exercises and standardized forms of LY that includes using LY with vulnerable populations. The participating CLYT was chosen based on her interest in older adults and her years of experience using the method. The aims of the current study are to explore whether participation in LY increases subjective feelings of positive mood and well-being in adults with PD and their caregivers.

## MATERIALS AND METHOD

### Design and Sample

Using a pre-experimental ( $O_1 \times O_2$ ) pretest–posttest design, participants ( $N = 85$ ) comprised a convenience sample of adults with a diagnosis of Parkinson’s disease ( $n = 47$ ), and

accompanying caregivers ( $n = 38$ ), who took part in Parkinson’s disease support group. The California State University Standing Committee for the Protection of Human Subjects approved this study.

### Measures

This study utilized an adapted version of the Laughter Yoga “How Do You Feel?” (HDYF) form. The form consists of a series of 10 items that have been labeled “well-being” measures<sup>10,17</sup> including enthusiasm, energy level, mood, optimism, stress level, level of friendship with group members, level of awareness about your breathing, level of muscle relaxation, level of mental relaxation, and ability to laugh without a reason. Items are measured by subjective self-report on a scale from 1 to 10 with 1 being worst and 10 being best ( $\alpha = .84$ ).

Demographic and attitudinal data were gathered including current age, gender, age of onset of PD, whether the respondent was a caregiver, and whether it was their first time participating in LY. Understanding of LY was measured using a five-point Likert scale where 1 = not at all, 3 = somewhat, and 5 = very familiar with LY. Attitude toward LY was measured on a similar five-point Likert scale where 1 = negative, 3 = neutral, and 5 = positive feelings about LY.

### Data Collection and Analysis

Participants completed the HDYF Form, demographic, and attitudinal survey at the beginning and end of the 45-min LY session. Paper surveys, clipboards, and pens were distributed to all LY participants. The last four digits of their telephone number were utilized to match pretest to posttest.

Paired samples *t*-tests were used to explore whether exposure to the intervention corresponded to a change in mood and an increase in positive feelings about LY after the intervention. SPSS version 22 was used for statistical analyses.

## RESULTS

Participants with PD ( $n = 47$ ) ranged in age from 53 to 91 ( $M = 70$ ;  $SD = 8.19$ ), with 28 men and 19 women. Age at diagnosis ( $n = 44$ ) ranged from 30 to 78 ( $M = 60.50$ ;  $SD = 10.88$ ). The caregivers ( $n = 38$ ) ranged in age from 42 to 86, ( $M = 65$ ;  $SD = 12.05$ ), with 8 men and 30 women. In all, 92% of participants ( $N = 85$ ) had never participated in a session of LY prior to the support group.

Paired samples *t*-tests were conducted for the nine well-being measures on the HDYF survey (Table 1) with all showing statistically significant improvement with the exception of stress [ $t(38) = 1.95$ ,  $P = .058$ ], for caregivers, and optimism [ $t(44) = 1.23$ ,  $P = .225$ ], for adults with PD.

## DISCUSSION

LY may be beneficial both for adults with PD and for their caregivers. Findings from this study are congruent with laughter research conducted on adults in the general population, and adults with physical illnesses such as cancer or heart disease.<sup>1,4</sup> Improvements were found across all but two items, indicating at least temporary feelings of well-being

**Table 1.** Pretest and Posttest Scores by Survey Item for Adults With PD and Caregivers

Item	Pretest		Posttest		t-Score	Effect Size
	M	SD	M	SD		
Adults with PD ( <i>n</i> = 47)						
Enthusiasm	5.97	1.92	7.38	2.30	4.49**	.30
Energy level	5.70	1.89	7.00	2.09	4.52**	.30
Mood	6.25	1.83	7.08	2.22	3.32**	.19
Optimism	6.54	2.22	6.95	2.62	1.23	N/A
Stress level	5.47	1.94	6.95	2.15	4.06**	.26
Friendship	6.27	2.29	7.36	2.11	3.87**	.25
Awareness	6.31	2.11	7.17	2.12	2.40*	.11
Muscle relaxation	5.71	1.84	6.97	2.11	4.33**	.29
Mental relaxation	5.48	1.88	7.12	2.08	5.32**	.38
Laugh w/o reason	6.06	2.60	7.08	2.54	2.47*	.11
Caregivers ( <i>n</i> = 38)						
Enthusiasm	6.91	2.16	8.16	1.69	3.88**	.30
Energy level	6.81	1.97	8.34	1.87	5.28**	.42
Mood	6.65	1.89	8.63	1.32	7.36**	.59
Optimism	7.23	1.88	8.44	1.32	5.12**	.41
Stress level	6.13	2.63	7.00	2.71	1.95	N/A
Friendship	6.64	2.23	7.67	1.59	3.84**	.29
Awareness	6.89	2.19	8.42	1.38	4.59**	.36
Muscle relaxation	6.21	1.96	8.07	1.34	5.82**	.48
Mental relaxation	6.02	2.01	8.21	1.31	6.28**	.51
Laugh w/o reason	6.67	2.53	8.56	1.42	4.61**	.37

\**P* < .05.

\*\**P* < .01.

following one 45-min Laughter Yoga session. Future research should examine the long-term effects of Laughter Yoga on well-being, paying particular attention to the number and length of sessions provided to determine optimal benefits in relation to time and cost.

Congruent with previous research,<sup>18</sup> in the current study optimism for adults with PD and stress for caregivers did not significantly improve between pretest and posttest. PD is a debilitating, degenerative, progressive disease for which there is no known cure, which may explain why optimism did not improve in adults with PD. Likewise, caregivers are under tremendous stress caring for their loved ones with PD and it is possible that caregiving was not “turned off” during the LY session since the adult with PD was in attendance. However, one participant commented on the confusing nature of the stress item, likely because it is the only item inherently “negative” in direction, so this result could reflect a lack of clarity with the measure instead of caregiving issues.

The measure is a primary limitation of this study. The HDYF form was chosen over other mood and well-being measures because of its ease of completion, lack of time available and possible disability limitations, and as a way to stay consistent with previous LY research. Although the HDYF form was not developed for academic research and

has not been tested for reliability and validity, it has been used in previous LY studies,<sup>10,17</sup> and mood can be measured as a scale between two polar aggregates of nonspecific negative or positive affect.<sup>19</sup>

Areas for further study that arose from quantitative results and participants' comments include exploring LY's effect on energy and mental relaxation. These psychological well-being measures showed a large effect size for both adults with PD and caregivers on the HDYF form, and further research utilizing standardized measures of psychological well-being are needed. In terms of physical well-being, one participant wrote in the comment section, “Great for facial muscles!” and participants commented on laughter as exercise for the face. Since one of the symptoms of Parkinson's disease is a “stiff face,” or a lack of expression or mask, future research could investigate the effects of Laughter Yoga on the progression of this particular symptom. In addition to using standardized instruments, future studies should include a comparison group of adults with Parkinson's disease to increase the rigor of the study design.

The results of this study support previous findings that a shared experience between caregivers and patients is helpful,<sup>14</sup> as the majority of caregivers showed improved mood from participating in LY with their care recipient. One participant commented, “This session shared with my husband with PD was worthwhile ...” Parrish and Quinn<sup>20</sup> emphasize the importance of laughter and humor for caregivers as one means of alleviating stress. Access to LY could prove a valuable tool for caregivers of adults with PD, especially when it is a shared experience between the caregiver and care recipient. Future research should explore the effects of LY on different types of caregivers, including formal caregivers in facilities and home settings.

The advantages of an intervention like laughter, in the form of Laughter Yoga, include its accessibility, cost, body/mind focus, and strengths-based, positive approach. This may be a valuable tool for use by clinicians working with adults with PD and their caregivers, as a referral source for clients or patients suffering from low mood, or as a possible resource to help manage their PD symptoms. Randomized, clinical trials, with multiple LY sessions over time are warranted to further explore the ramifications and usefulness of laughter as a body/mind exercise that improves mood and well-being in adults with PD and caregivers.

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