

# The Question:

## What are the effects of Laughter Yoga on stress in the workplace?

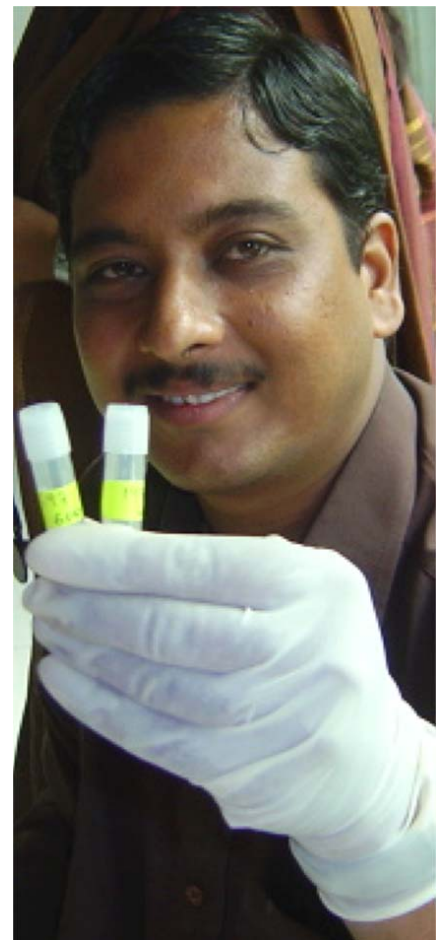
### THE RESEARCH INSTITUTE

SVYASA in Bangalore India is one of the world's leading Yoga Research Organizations.

They are recognized as "Scientific & Industrial Research Organization, (SIRO)" by the Department of Scientific and Industrial Research, Ministry of Science & Technology, Government of India.

Their work includes studies on the effects of yoga on computer users, diabetes, cancer and more.

They regularly collaborate with the Indian government and institutions including the Center for Integrative Medicine at the University of California, the University of Houston Wellness Center and more. They have affiliate centers in USA, Germany, Japan Singapore, Turkey, Australia, Czech Republic and other countries.





## PREVIOUS STUDIES

While countless studies have shown the beneficial effects of laughter, especially regarding stress, most of these have used humor – normally funny movies – to stimulate subjects to laughter.

This humor technique is not reliable as different people will laugh at different things on different days, so it could never be prescribed.

## UNCONDITIONAL LAUGHTER

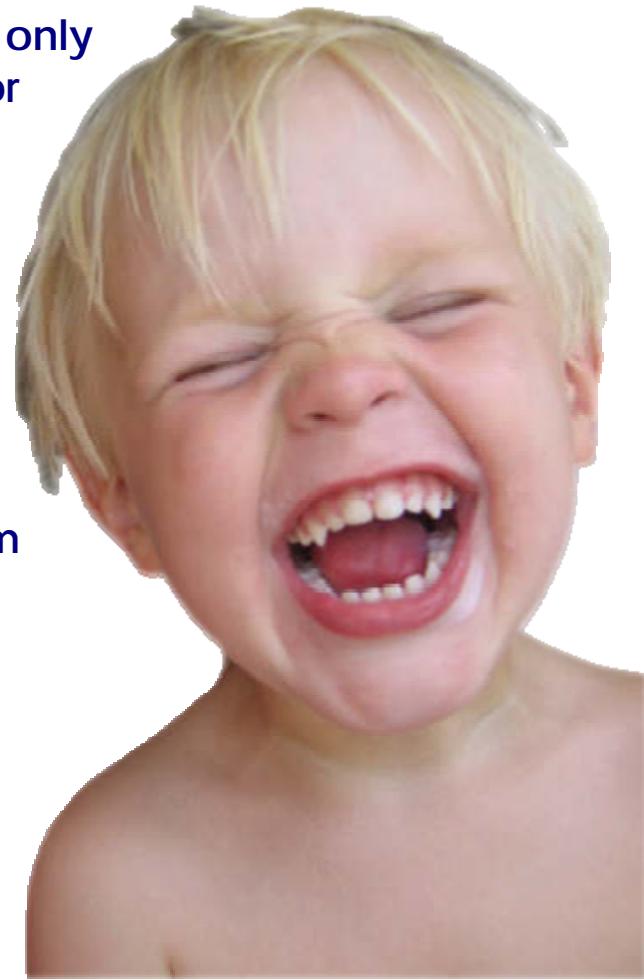
Laughter Yoga is unique in that it stimulates laughter without jokes, humor or comedy.

This leads to the same laughter that young children enjoy 300-400 times a day – we call it 'unconditional laughter'.

Normal adult laughter is 'conditional' – we only laugh if the trigger meets our conditions, for example 'is it funny?', 'is it appropriate to laugh here?', 'is it appropriate to laugh with these people?' and so on.

Conditional laughter requires humor, jokes or comedy as a trigger.

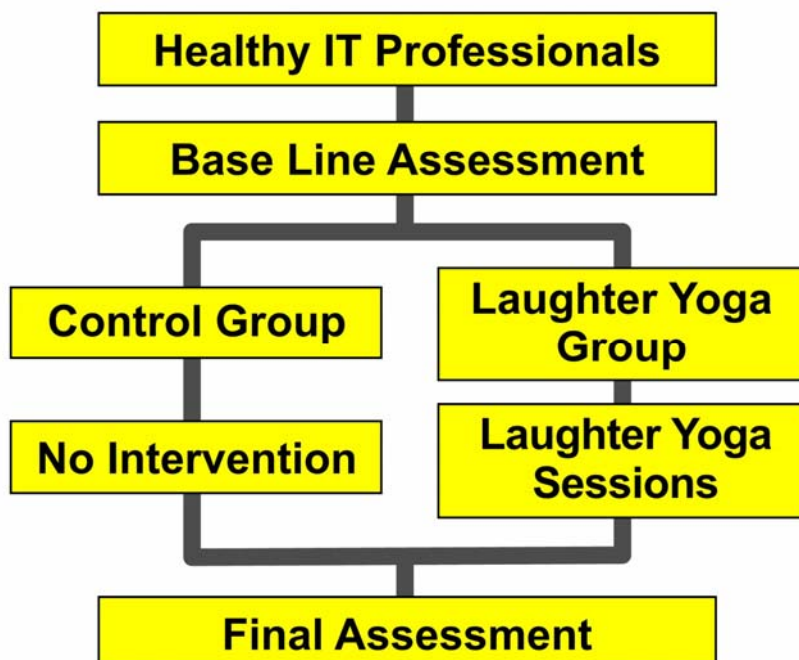
Unconditional laughter can be easily induced as required, so it can be prescribed for persons who will benefit from laughing more.



# SVYASA designed a scientific study to determine the effects of Laughter Yoga on stress in the workplace.

200 participants were randomly selected from 3 Bangalore IT companies.

All were non-smokers aged 20-50 yrs with normal weight, no infections, no alcohol consumption within 4-6 days, not on medications, without high BP, diabetes or other clinical conditions, and had not previously tried or practiced Laughter Yoga.



Participants were divided into two groups.

One group had laughter yoga sessions every 2-3 days for 18 days, while the other group was told they would have laughter yoga sessions later.

Both groups were tested again after the laughter sessions.

# The tests.

## PHYSIOLOGICAL

- Autonomic & respiratory variables by Polygraph



## BIOCHEMICAL

- Salivary Cortisol: early morning test

## PSYCHOLOGICAL

- PANAS: Positive & Negative Affect Scale
- PSS: Perceived Stress Scale
- TAS: Toronto Alexythemia Scale



Tests were carried out by trained technicians and researchers at the company premises.





# The Laughter Yoga.

## DEEP BREATHING & STRETCHING

Prepares body for laughter yoga exercises.



## CLAPPING & CHANTING

Bring out our natural child-like playfulness.



## LAUGHTER YOGA

Exercises include elements of role-play and improvisation.

Many are designed to reduce stress and provide tools to deal with future stress more effectively.



# Results: Heart Rate

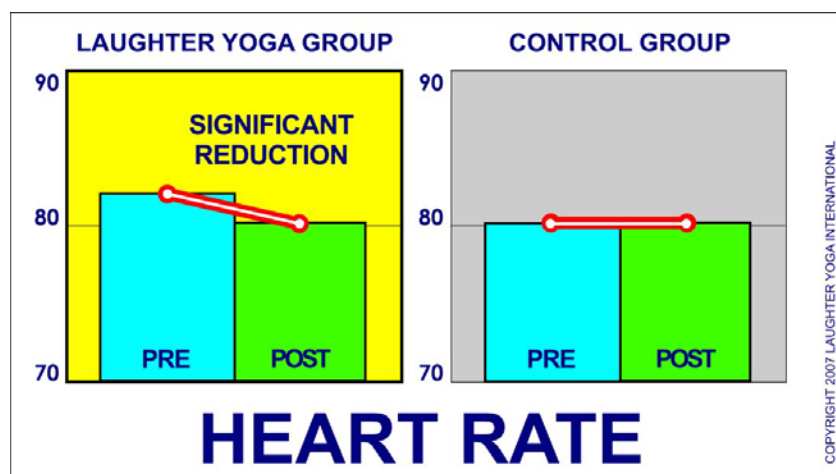
VARIABLES	LAUGHTER YOGA GROUP			CONTROL GROUP		
	PRE	POST	CHANGE	PRE	POST	CHANGE
HEART RATE	82.15 ± 8.56	80.28 ± 8.35	-2.33%	80.28 ± 9.23	80.46 ± 9.80	0.22%
RESPIRATORY RATE	15.58 ± 3.33	16.71 ± 4.03	6.76%	15.58 ± 3.33	16.71 ± 4.03	6.76%
LOW FREQ. (n.u.)	54.79 ± 16.97	54.82 ± 18.10	0.05%	59.58 ± 18.67	58.64 ± 18.16	-1.60%
HIGH FREQ. (n.u.)	45.2 ± 16.97	45.16 ± 18.13	-0.09%	40.41 ± 18.67	41.35 ± 18.16	2.27%
RATIO LOW/HI FREQ.	1.72 ± 1.81	2.06 ± 2.7		2.5 ± 2.41	2.01 ± 1.56	

There was no significant change in low or high frequency HRV.

The group means values  $\pm$  standard deviations of the autonomic and respiratory variables for laughter yoga and control groups.

After seven sessions over 18 days a downward trend in heart rate is apparent, indicating that heart rate might continue to reduce.

This indicates a relaxation from stress and could also indicate improvement in fitness levels. A longer study is required to further investigate this extremely interesting result.



# Results: Blood Pressure

BLOOD PRESSURE	LAUGHTER YOGA GROUP	CONTROL GROUP
PRE SYSTOLIC (mm/Hg)	128.24 ±14.99	125.89 ±13.13
POST SYSTOLIC (mm/Hg)	120.78 <sup>BC</sup> ±14.42	125.96 <sup>NS</sup> ±12.80
CHANGE	-6.18%	0.06%
PRE DIASTOLIC (mm/Hg)	82.37 ±9.18	82.34 ±8.28
POST DIASTOLIC (mm/Hg)	79.34 <sup>A</sup> ±8.64	81.81 <sup>NS</sup> ±8.50 <sup>ns</sup>
CHANGE	-3.82%	-0.65%

Values Mean ± SD

A P < 0.05 Paired t-test pre- compared to post intervention.

B P < 0.001 Paired t-test pre- compared to post intervention.

C P < 0.05 Independent t-test comparison between LY and WLC groups.

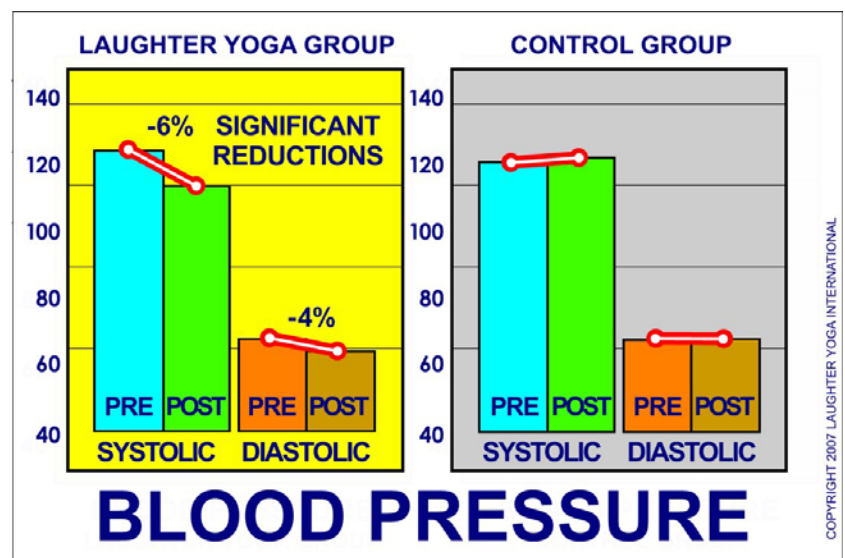
NS Not significant, mmHg= millimeter of mercury

The 6% reduction in Systolic BP is significant & suggests reduced sympathetic nervous system activity or reduced stress levels.

The 4% reduction in Diastolic BP is also significant and suggests relaxation from stress.

There was no change in the control group.

The significant reductions in BP indicate that Laughter Yoga helps reduce stress and improves ongoing stress management.



# Results: Cortisol

Cortisol is a stress hormone that accurately reflects perceived stress levels. Early morning cortisol levels were measured in both groups before starting and after completing the laughter interventions.

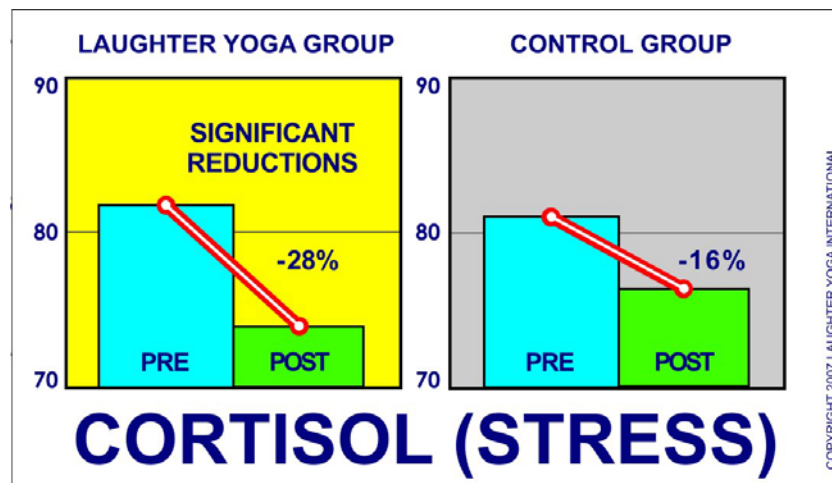
CORTISOL	LAUGHTER YOGA GROUP	CONTROL GROUP
PRE CC ( $\mu\text{g/dL}$ )	0.25 $\pm$ 0.14	0.24 $\pm$ 0.16
POST CC ( $\mu\text{g/dL}$ )	0.18 <sup>A,NS</sup> $\pm$ 0.11	0.20 $\pm$ 0.12 <sup>ns</sup>
CHANGE	-28% ( $P < 0.001$ )	-16.6% ( $P < 0.190$ )

Values Mean  $\pm$  SD

A  $P < 0.05$  Wilcoxon signed ranks test - pre-compared to post (LY group)

NS Not significant between groups-Mann Whitney test.

There was a 28% reduction in cortisol levels in the Laughter Yoga Group and a less significant change in the control group.



This demonstrates that Laughter Yoga is effective in reducing stress.



# Results: PANAS

The PANAS (Positive Affectivity and Negative Affectivity Scale) test assesses the "emotional style" a person uses to cope with events in their life.

PANAS TEST	LAUGHTER YOGA GROUP	CONTROL GROUP
PRE POSITIVE	33.15 ±10.42	30.79 ±9.11
POST POSITIVE	38.87 <sup>B</sup> ±9.30	32.64 ±7.69
CHANGE	17.25 %	6.0 %
PRE NEGATIVE	16.59 ±11.93	17.82 ±9.86
POST NEGATIVE	12.07 <sup>A,C</sup> ±9.34	17.64 ±11.23
CHANGE	- 27.2 %	1.0 %

Values Mean ± SD

A P < 0.05 Paired t-test pre- compared to post

B P < 0.001 Paired t-test pre- compared to post

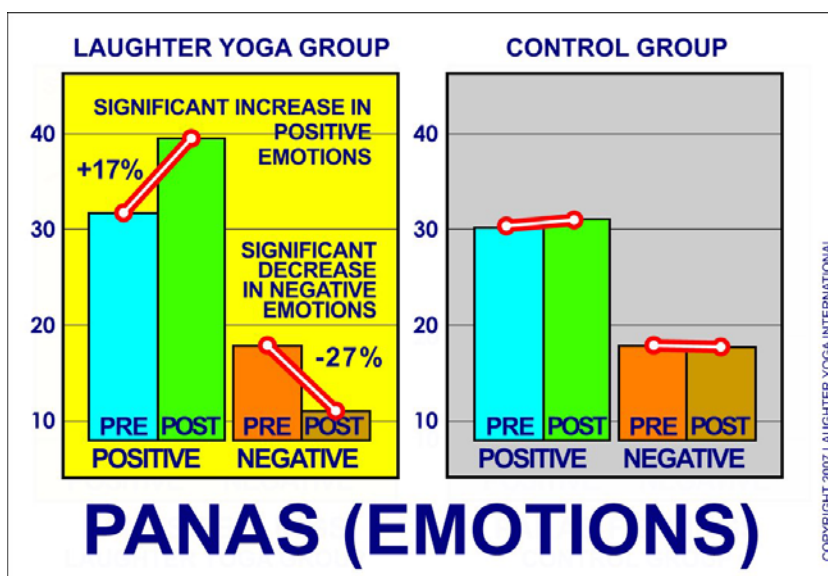
C P < 0.000 independent t test comparing LY group and WLC group

NS Not significant, mmHg= millimeter of mercury

Negative emotions like fear, disappointment, distress, upset, sadness, guilt, nervousness, shame, and misery have decreased by 27% after the Laughter Yoga sessions.

There were no significant changes in the control group.

This strongly indicates that Laughter Yoga removes negative emotions and increases positive emotions. This results in improved communication skills, better workplace motivation and a more positive mental outlook.



# Results: Perceived Stress Scale

The PSS test measures an individual's perceived stress.

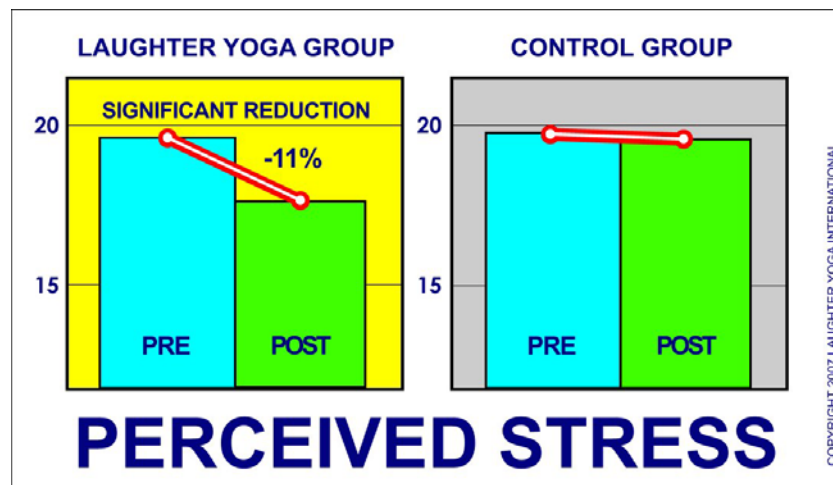
Both groups were measured before starting and after completing the laughter interventions.

PSS TEST	LAUGHTER YOGA GROUP	CONTROL GROUP
PRE PSS	17.79 $\pm$ 6.89	19.33 $\pm$ 5.04
POST PSS	15.80 <sup>A,B</sup> $\pm$ 5.28	18.14 $\pm$ 5.78
CHANGE	11.1 %	6.1 %

Values Mean  $\pm$  SD

A P < 0.05 Paired t-test pre- compared to post

B P < 0.05 independent t test comparing LY group and WLC group.



There was an 11% reduction in perceived stress in the Laughter Yoga group, against a small change in the control group.

This indicates significant stress release, and that individuals were now able handle new stressful events better.

# Results: Alexithymia

Alexithymia is a serious condition in which people have difficulty in identifying and expressing emotions.

People with a high Alexithymia scale tend to fight with other people frequently, be cold & distant in their behavior, be socially inhibited, experience anxiety in the presence of others, show a lack of initiative, and have difficulty coping with social challenges.

TAS TEST	LAUGHTER YOGA GROUP	CONTROL GROUP
PRE TAS	50 $\pm$ 13.17	49.25 $\pm$ 12.35
POST TAS	45.58 <sup>A,NS</sup> $\pm$ 11.20*ns	49.33 $\pm$ 11.36
CHANGE	-8.84 %	0.16 %

Values Mean  $\pm$  SD

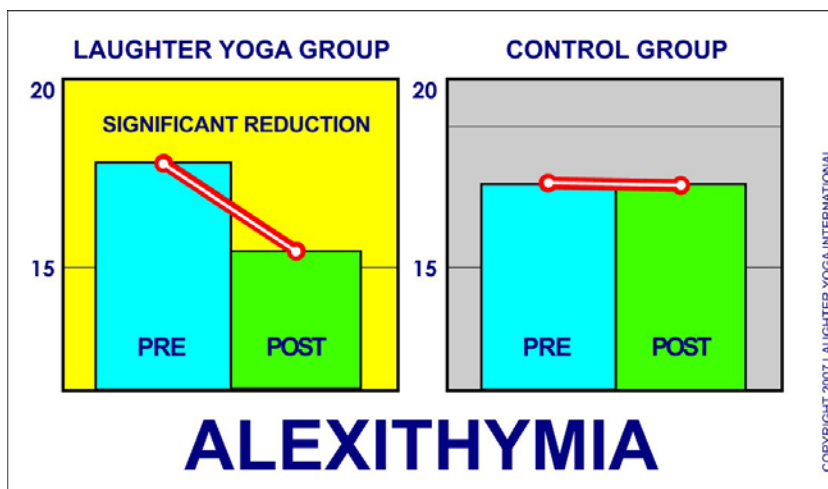
A P < 0.05 Paired t-test pre- compared to post

NS Not significant between groups

TAS Toronto Alexithymia Scale

Alexithymia is strongly inverse to 'Emotional Intelligence'.

It reduces empathy, communication skills, creativity and innovation – all skills that are identified as critical for success in the workplace.



Our tests showed a significant 8% decrease in Alexithymia within the Laughter Yoga group after seven sessions against no change in the control group.

# Answers: What are the effects of laughter yoga on stress in the workplace?

**HEART RATE:** Down. Indicates reduced stress.

**BLOOD PRESSURE:** Down. Indicates lower stress and improved stress management.

**CORTISOL:** Down. Indicates reduced stress levels.

**PANAS TEST:** Increase in positive emotions & decrease in negative emotions that will lead to improved work performance.

**PSS TEST:** Down. Perceived stress is reduced.

**TAS TEST:** Down. Alexithymia is reduced, Emotional Intelligence is increased.





# Conclusion.

There can be no doubt that Laughter Yoga significantly reduces stress levels in the workplace.

Physiological, biochemical, and psychological tests all indicate reductions in stress and improvements in the subjects' abilities to cope with stress. This will result in improved physical and mental health. We observed the Laughter Yoga participants develop of a deep sense of physical, mental and emotional well-being.

Reduced stress is an indicator of wellness of the mind and body, and we would expect to see resulting reductions in illness and disease with corresponding drops in absence and sick leave.

We would also expect Laughter Yoga to result in increased productivity and quality of work, better communication and interpersonal relationships, and a more harmonious workplace.

It is remarkable that such significant changes were found after only seven 20-minute sessions of Laughter Yoga over a short period of time.

*Dr. M S Chaya – Principal Investigator*



# Sponsors.

*This study was made possible through the financial support of MAJOR SPONSOR Mr Vishwa Prakash – Entrepreneur and philanthropist of New York.*

*Additional sponsors include Laughter Club International – India, and Dr Kataria School of Laughter Yoga – India and Liechtenstein.*

# Special Thanks.

*We thank Dr. Madan Kataria, Mr Atmaram Torne, Mr Basavaraj, Mr Vishwanath & his wife for their assistance in conducting the Laughter Yoga sessions.*

*We thank the staff and management of the participating Bangalore IT companies:*

- 1. KYOCERA*
- 2. IFLEX SOLUTIONS*
- 3. MPHASIS*

*Thanks to Bill Gee for the edit & design of this document.*

# Research Team.

*It was a challenge taking our research team and equipment to IT companies across Bangalore and completing scientific research in the field. Thanks to great teamwork it proved an enjoyable experience.*

*Heartfelt thanks to Dr. Madan Kataria, Dr. H R Nagendra, Dr. Nagarathna, the team, companies, Laughter Yoga leaders and participants for their help and support.*

*We hope to continue with longer studies to discover how the changes shown in this study continue over longer periods.*

*Dr M S Chaya – Principal Investigator*

*The SVYASA University research team further included:*

*Dr N K Manjunath*

*Sri Vinod Kumar*

*Dr Rao Raghavendra*

*Sri Rajesh*

*Dr Vadiraj*

*Sri Pawan*

*Dr Sudha Rani Shenoy*

*Kumari Sneha Shekar*

*Sri Gopal Krishna*

*Sister Jija Shantha*

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