



# A Landmark Scientific study on Laughter Yoga

**Comparing the cardiovascular effects of simulated  
Laughter ( Laughter Yoga) and Spontaneous Laughter  
New Zealand Study**

# New Zealand Study

## **A comparison of the cardiovascular effects of simulated and spontaneous laughter**

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# Hypothesis

Laughter is a form of aerobic exercise. It increases heart rate and increases respiratory rate, activates internal oblique muscles to similar levels as crunches and back lifting exercises.

Cardiovascular and pulmonary demands are the same whether laughter is spontaneous or voluntary. Therefore, the act of laughter itself is the critical component, even in the absence of humour.



# Protocol

**Interventions:** A sample of 72 participants were randomised to one of three 6 minutes interventions.

**Group 1 :** Participants in the simulated laughter condition were asked to generate fake laughter by doing laughter exercises. Simulated laughter is triggered by oneself at will and therefore is not elicited by humorous stimuli. This form of laughter is commonly known as voluntary laughter and involves laughing on command.

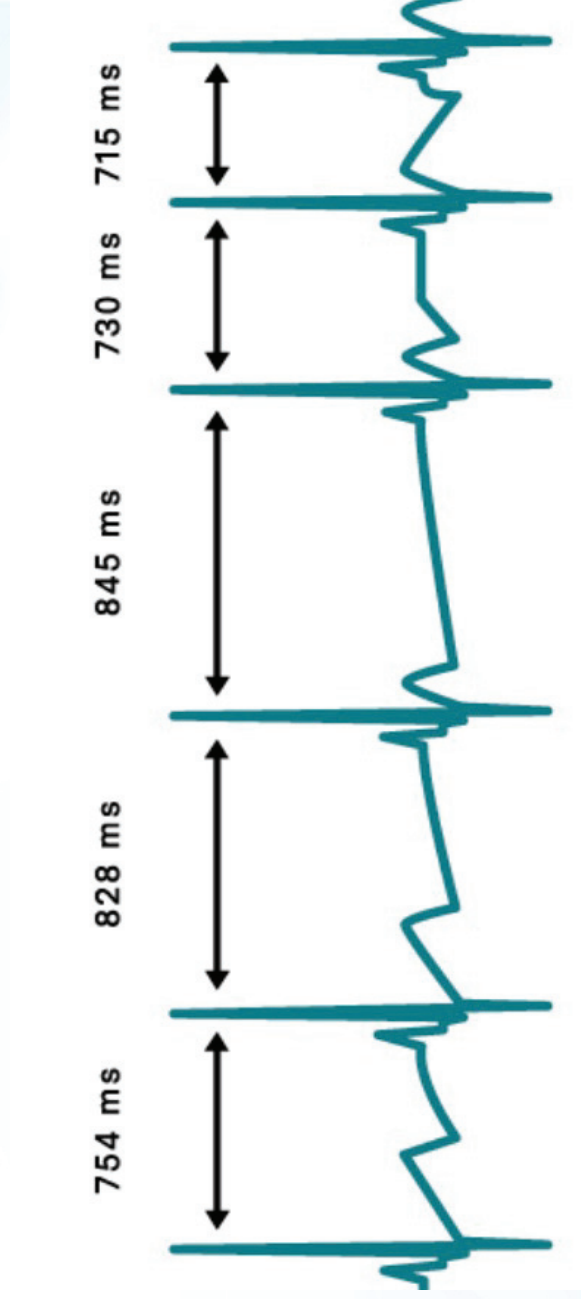
**Group 2 :** The spontaneous laughter condition viewed a humorous video. - Spontaneous laughter, commonly referred to as 'real' laughter, is triggered by external humorous stimuli

**Group 3 :** the control condition watched a non-humorous documentary.

# What was Measured

## 1. Heart Rate Variability ( HRV)

The interval between the normal heart beats is not same it keeps changing from beat to beat. There is variation between the heart beats depending upon stress signals or relaxation response.



# Heart Rate Variability HRV

Hypothalamus keeps sending signals to the rest of the body through Sympathetic and Parasympathetic system. It regulates our heart rate, blood pressure, breathing, and digestion.

Your Sympathetic system, fight-or-flight system tells your heart to speed up and the variation between subsequent heartbeats is low ( Low HRV)

Your Parasympathetic System tells your heart to slow down, making room for variability between beats (Higher HRV)



# Heart rate variability

There is increased Heart rate HR and decreased HRV during exercise and Heart rate Variability ( HRV) increases after exercise and throughout the day.

Increased HRV shows activation of Vagus Nerve (parasympathetic system) following laughter and other exercises.

# Why check heart rate variability?

People who have a high HRV may have greater cardiovascular fitness and be more resilient to stress.

Those with Low HRV are more prone to Hypertension heart disease and stroke.

Measuring and Monitoring HRV will tell you about how stressful situations are negatively affecting your health.

HRV will tell you about your lifestyle and the outcome of your exercises programs, yoga, meditation and Laughter Yoga.



# Stress Response after Laughter

## 2. Stress Response after Laughter

The study also compared the ability of these two types of laughter to buffer the cardiovascular stress response to a laboratory stress task. After their assigned intervention, participants were exposed to a shortened version of the Trier Social Stress Test (TSST).

Participants were given three minutes to prepare and three minutes to present a speech to convince the experimenter to give them their dream job.

# Amount of Laughter

## 3. Laughter Intensity and Frequency Scale (LIFS)

The study investigated whether the effects observed were correlated with the amount of laughter produced.

The amount of laughter produced by each participant was measured by the Laughter Intensity and Frequency Scale (LIFS), Humour Response Scale.

These scores for each scale were then combined to give an overall score for the six minutes

# Result

The simulated laughter condition had a significantly higher heart rate ( $p < .001$ ,  $\eta p2 = .26$ ) and lower rMSSD ( $p < .001$ ,  $\eta p2 = .13$ ) during the laughter task compared to the other two conditions.

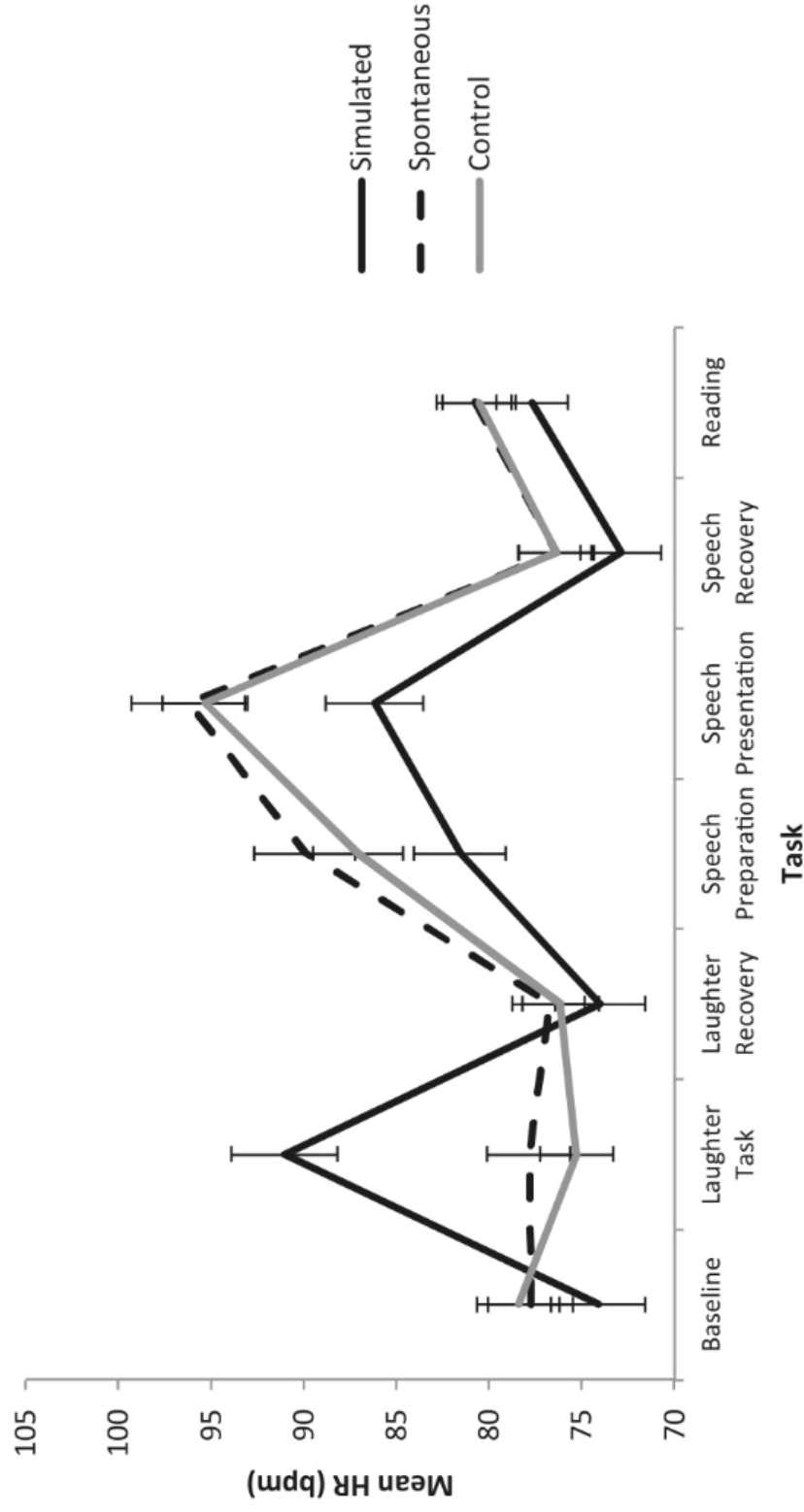


Fig. 2. Mean HR across tasks split by condition.



# Result

Contrary to this hypothesis, simulated laughter resulted in a larger increase in HR and decrease in rMSSD than spontaneous laughter.

It was also hypothesised that both forms of laughter would attenuate the stress response compared to a control condition.

However, only the simulated laughter condition had an attenuated stress response to the TSST as represented by a smaller increase in HR than the other two conditions.

# Conclusions

This research suggests that simulated laughter may have stronger effects on HR and HRV than spontaneous laughter, and the reduction in rMSSD may not be solely due to the amount of laughter produced.

One can become more resilient to daily stresses of life with Laughter exercises. It modifies our response to stressful situations. Simulated laughter has better stress buffering effect.



Thank You