

Organic Relax Massage Feasibility Trial Report

— Dr Hayley Dickinson, PhD

Introduction

According to the World Health Organisation (WHO), stress has been classified as the health epidemic of the 21st century. Spending too much time with our bodies under stress, with insufficient periods of rest, negatively impacts our health. When we are stressed, our bodies are unable to effectively perform the vital tasks of resting, digesting, healing and reproducing. Thus in order to mitigate stress and optimise health, individuals must identify relaxation and rest strategies that easily fit into their lifestyle.

How stressed are Australians?

Findings by the Australian Psychological Society Stress and Wellbeing in Australia Survey 2015 show that 35% of Australians have a significant level of distress in their lives¹. 'Normal' levels of anxiety symptoms were reported by 26% of respondents and 26% reported moderate to extremely severe levels of depression symptoms. This 2015 report shows the highest levels of anxiety reported in Australians since the study commenced (5 years ago). The strategies used by Australians to mitigate their stress are potentially contributing to the problem and creating a perpetual cycle of poor health. Those individuals who reported the highest levels of anxiety and depression were more likely to gamble, smoke cigarettes and drink alcohol and take recreational drugs to manage their stress. The most popular ways of managing stress for Australians are: watching television (85% of respondents), focusing on positives (81%), spending time with friends /family (81%), listening to music (80%) and reading (75%).

Could massage be an effective strategy that Australians could use to manage their stress?

Massage is known to increase our bodies capacity to relax, by stimulating components of our parasympathetic nervous system. Massage is able to decrease our heart rate and blood pressure, increase the levels of the hormones, beta-endorphin and oxytocin, both known for their calming and relaxing effect on the body. Massage decreases the activity of our stress hormone cortisol, further contributing to the benefits of massage for our health and stress reduction. Massage also activates our immune system².

Despite these known benefits there is an absence of quality research on the health benefits of massage and a lack of data around how Australians use massage. A 2015 study reported that 20% of Australians had a consultation with a massage therapist in the previous 12 months. 1/3rd of Australian women use massage for pregnancy related health conditions and 44% of older Australians use massage therapy for treatment of back pain. This is a large portion of the Australian population using a therapy for which there is little understanding of how it benefits the body.

endota spa and massage

The endota spa network delivers over 100,000 Organic Relax Massages each year, of ~300,000 total massages. endota is therefore a significant provider of massages in Australia and could contribute meaningful data about the benefits or otherwise of massage and encourage the use of massage to reduce stress amongst Australians. In order to start this process, there is a need for endota to determine whether it can effectively collect data in the spa environment.

Study objectives

endota spa invited a small group of women to participate in a feasibility trial to determine whether physiological and self-reported emotional state and muscle tension data could be accurately collected within the spa environment without interfering with the spa experience for clients and therapists.

Methods

The endota spa Organic Relax Massage Feasibility Trial was completed by 16 women. These women gave informed written consent to be a part of the study.

Upon arrival at the spa, the inner balance device was attached to the women's left ear lobe to record their heart rate throughout their time in spa. Participants then completed a questionnaire about themselves including age,

level of physical activity (less than, meeting or more than the guidelines), frequency of massages (never, yearly, 6-monthly, quarterly, monthly), type of day they had had prior to arriving at spa (easy, moderate, busy, hectic, out of control), general emotional state (scale of 1-10 from relaxed to stressed), whether they took medication and whether they had a known heart condition.

Next women completed a questionnaire asking about their current emotional state and muscle tension (Figure 1). These questionnaires were repeated after the Organic Relax Massage.

Emotional State*

1 2 3 4 5 6 7 8 9 10
 Completely relaxed calm ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Most stressed ever

Muscle Tension*

1 2 3 4 5 6 7 8 9 10
 No muscle tension anywhere ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ Most tense everywhere

*All women received a complimentary 60 minute Organic Relax Massage.

Therapists recorded the time of major events, arrival at spa, completing paperwork, move to treatment room, start treatment, roll over, end treatment etc., to allow heart rate data to be compared across different periods of time during the spa experience.

After the treatment was finished, the 16 women and the therapists involved in the study were asked to provide independent feedback on their experience to allow us to determine whether collecting data interfered with the spa experience and environment for clients and/or therapists.

Data Analysis

This was a feasibility trial, therefore statistical analysis was not performed. Womens emotional and muscle tension data were compared before and after the massage. Heart rate data was analysed based on corresponding time measurements provided by the therapists time records. Data are reported as womens change from their own data, and group means and ranges, as described in the results. Data have been rounded to the nearest whole number where appropriate. Data were analysed blind to the participants personal details.

Results

Demographics

Answers provided in the 'about you' questionnaire prior to massage are provided in Table 1.

Women were aged 31-60 years (31-40=7 women; 41-50=8 women, 51-60=1 woman) at the time of the study. The majority of women in this feasibility study had 6 monthly (n=6), or quarterly (n=5) massages, 3 women had massages once a year, 1 woman had monthly massages and 1 woman reported not having any massages in a year. The majority of women reported doing less than the physical activity guidelines (n=7), 5 women met the recommendations and 4 exceeded the guidelines. Only 2 women described their day as easy, 6 described their day as moderate, 4 as busy, 3 as hectic and 1 as out of control. On average the participants described themselves as a little bit stressed, a score of 6 on a scale of 1 to 10, with 1 being relaxed and 10 being stressed). The range of scores was from 2 to 9.

Emotional state

In the recovery lounge, prior to being taken through for their Organic Relax Massage, we asked the women

Table 1

Demographic	Results
	Category: Number of responses (%)
Age	31-40: 7 41-50: 8 51-60: 1
Massage Frequency	Never: 1 (6%) Yearly: 3 (19%) 6 monthly: 6 (37%) Quarterly: 5 (51%) Monthly: 1 (6%)
Physical Activity	Less than guidelines: 7 Meet guidelines: 5 More than guidelines: 4
Type of Day	Easy: 2 Moderate: 6 Busy: 4 Hectic: 3 Out of control: 1
General Emotional State	Average: 6 Range: 2-9
Heart Condition	No: 16

to describe their emotion on a scale of 1 (completely relaxed/calm) to 10 (most stressed ever). The average score for the 16 women was 6, with the majority of women (n=11), scoring a 5, 6 or 7. Two women rated themselves as a 4 and 1 as a 3. One woman rated her emotion as an 8, and 1 as a 9.

In the recovery lounge, after the women had had their Organic Relax Massage, we asked them again to describe their emotion on the same scale of 1 to 10. After massage, the average score of the 16 women was 2 (Figure 2), with the majority of women (n=11) scoring a 1-2. Three women scored a 3, 1 scored a 4 and 1 scored a 5.

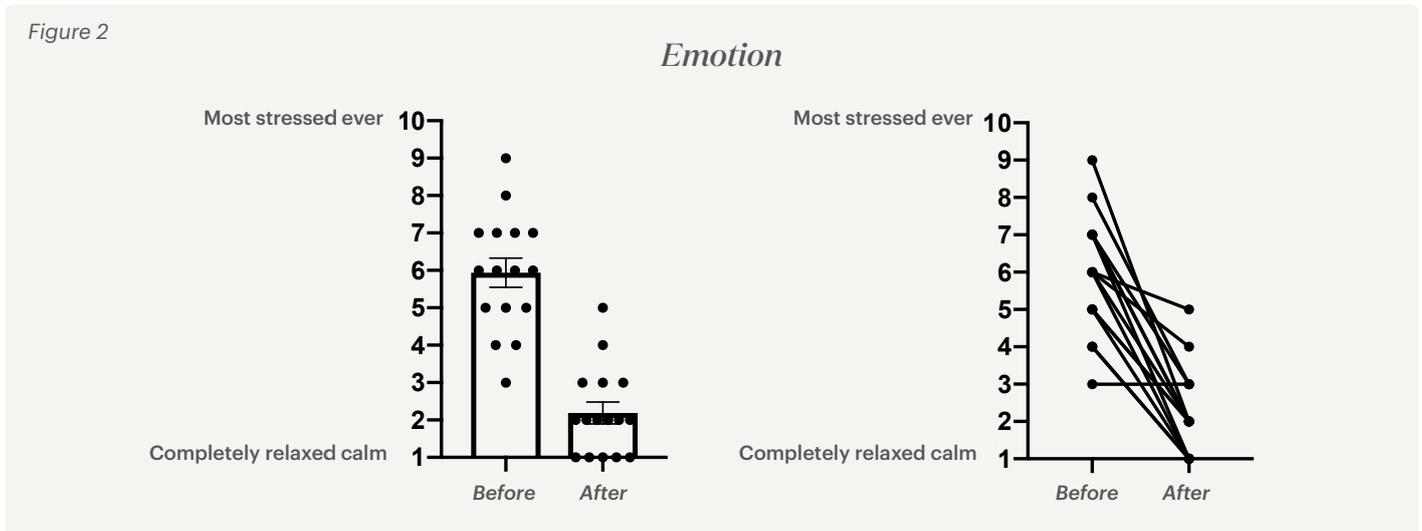


Figure 2: Shows the emotional state data from all women presented in 3 different ways. The left figure shows average (the open bars) and each individuals score (black circles). The right figure shows each individual score before and after (black circles), connected by a black line highlighting each individuals change from before to after massage.

Muscle tension

In the recovery lounge, prior to being taken through for their Organic Relax Massage, we asked the women to describe their muscle tension on a scale of 1 (no muscle tension anywhere) to 10 (most tense ever).

The average score for the 16 women was 6, with the majority of women (n=12), scoring a 5-7. Two women rated themselves as a 4. One woman rated her muscle tension as an 8 and 1 as a 9.

In the recovery lounge, after the women had completed their Organic Relax Massage, we asked them again to describe their muscle tension on the same scale of 1 to 10. After massage the average score of the 16 women was 3, with the majority of women (n=13) scoring a 1-3. One women scored a 4, 1 scored a 5 and 1 scored a 6.

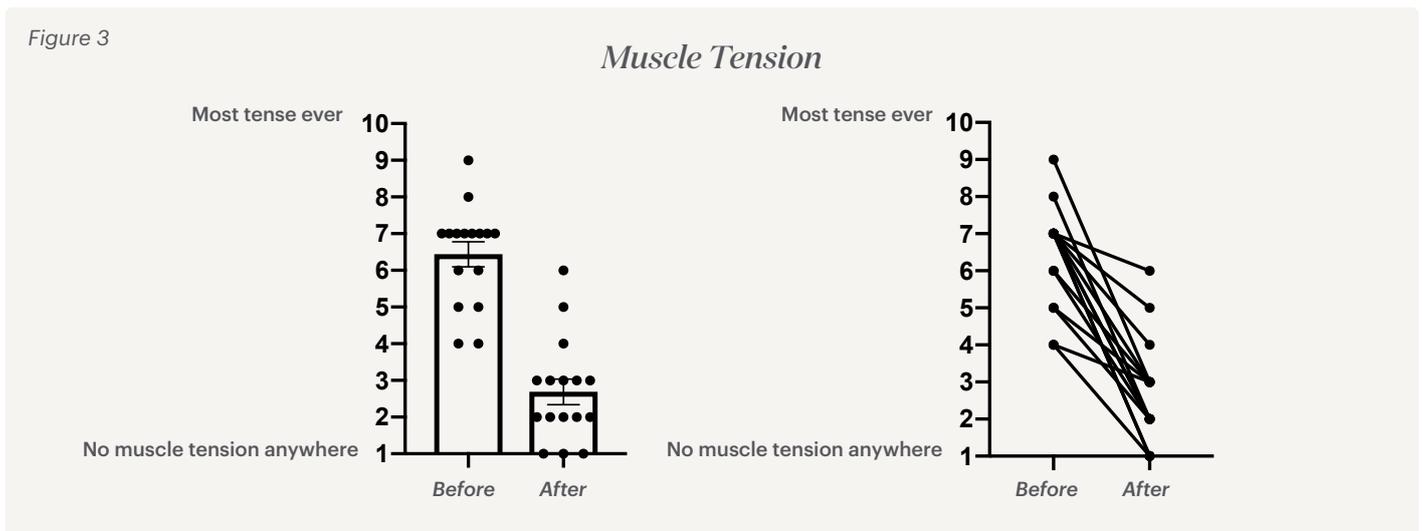


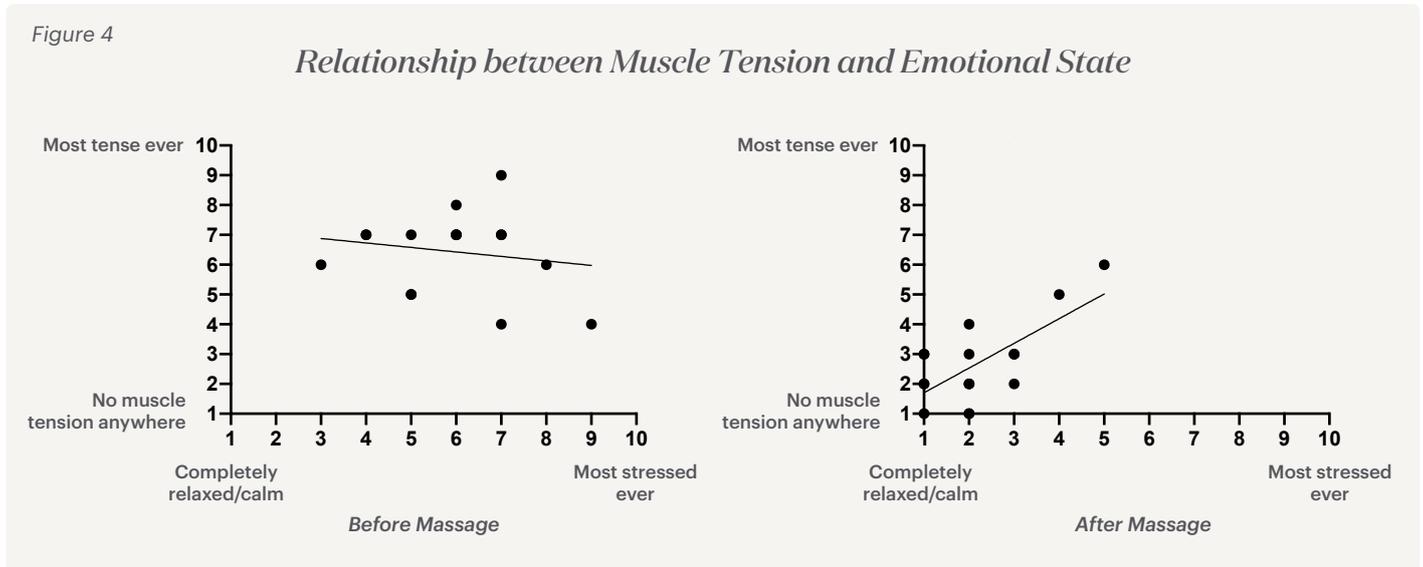
Figure 3: Shows the muscle tension data from all women presented in 3 different ways. The left figure shows average of all women before and after (the open bars) and each individuals score (black circles). The right figure shows each individual score before and after (black circles), connected by a black line highlighting each individuals change from before to after massage.

Relationship between emotional state and muscle tension

We next looked at the emotional state and muscle tension data together, wondering whether there was a

relationship between these two parameters in the women, for example, are women who perceive more stress in their days, also perceiving more muscle tension. Prior to the endota spa Organic Relax Massage, we observed no relationship between emotional state and muscle tension (Figure 4). After massage, we observed a positive linear relationship between muscle tension and emotional state. This means that the more muscle tension our participants perceived, the more stressed they perceived, and vice versa. Because the endota Organic Relax Massage reduced the women's perception of their muscle tension and stress, we see that muscle tension and emotional state are positively related to each other.

Figure 4: Shows the muscle tension data plotted on the Y axis (vertical) against the emotional state data plotted on the X axis (horizontal) before (left figure) and after (right figure) massage. Each participant is represented by 1 black circle, where their muscle tension and emotional state data align (some individuals overlay each other, that's why 16 circles are not visible). The black line is a line of 'best fit' between the data points, showing any relationships between the data. Before massage there is no relationship. After the massage, there is a positive linear relationship.



Heart rate

The heart rate monitor was placed on the left ear lobe of participants in the recovery lounge prior to being taken through for their massage. Below is a representative figure (Figure 5) showing how heart rate changes over the course of the clients experience at endota.

We analysed the heart rate data of all clients who we received quality heart rate data (n=9) and show that on average heart rate decreases by 10.6% when the period before massage is compared to the entire massage period (Figure 6). We also looked at the relationship between the change in heart rate and the emotional state of our participants before the massage and showed a negative linear relationship between emotional state and change in heart rate. The more stressed women were, the more likely they were to have a greater decrease in their heart rate during the massage compared to before.

Figure 5: This figure shows heart rate throughout the spa experience in 1 representative participant. It shows 3 relatively distinct heart rate patterns, with a few obvious peaks. The first phase of this figure represents the period between having the heart rate monitor placed on the participants ear and them being taken through to their treatment room, getting changed, and getting on the table. The heart rate during this period is higher than the remaining periods and characterised by more fluctuations, indicating our bodies natural response to movement and activities. The next period represents that time between the start of the massage and when the client is asked to turnover for the front body massage. You can see that this second phase of the figure has relatively lower heart rate readings and less variation than the first phase. The third phase represents the time between the client turning over for the front body massage and the end of the recording period. There is a clear peak in heart rate at the time the client turns over, again representing the natural physiological responses to movement. The clients heart rate soon decreases again and is generally lower than any other period.

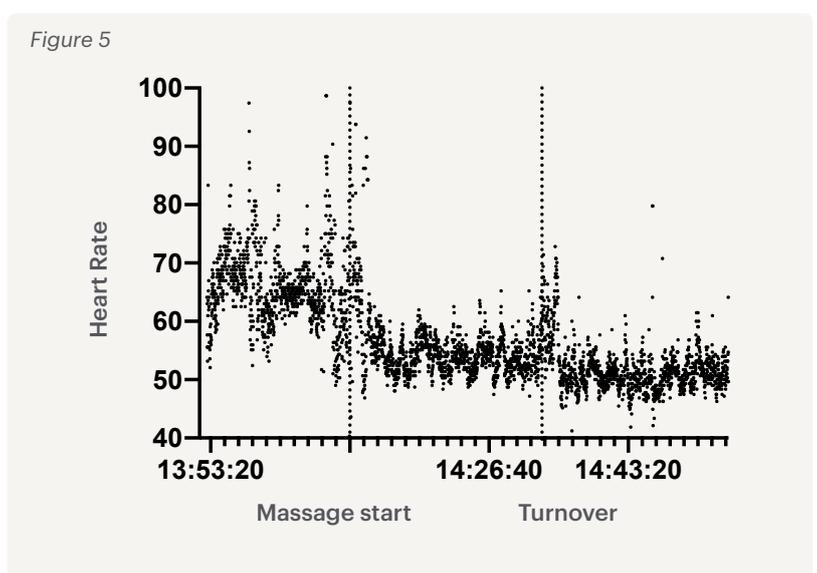


Figure 6

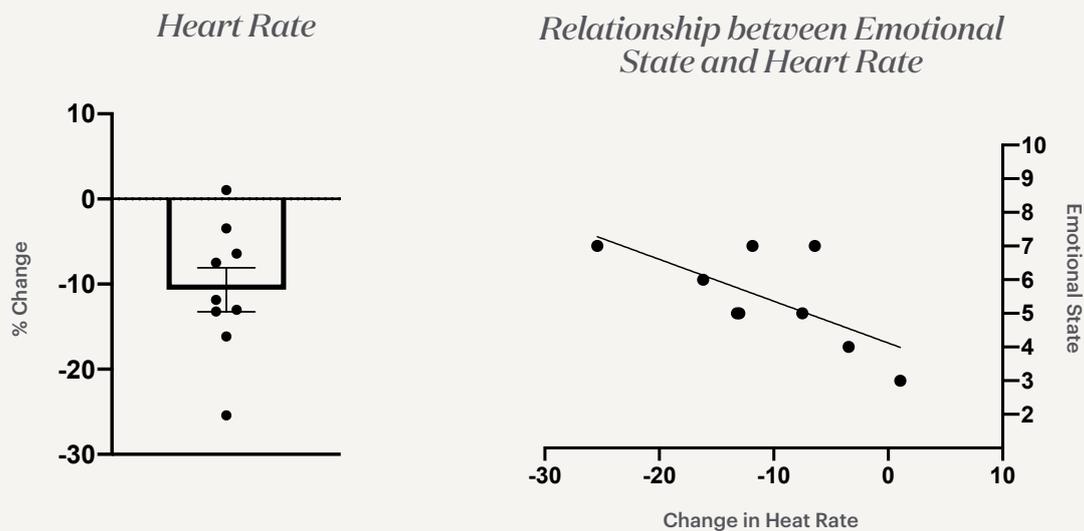


Figure 6: The left figure shows average % change in heart rate (open black bars) and individual % change in heart rate for $n=9$ participants (black circles) when the period before massage is compared to the entire massage period. The right figure shows the negative linear relationship between emotional state and change in heart rate.

Feedback

To address the objective of whether collection of research data negatively affected the endota spa Organic Relax Massage experience, we sought feedback from participants and therapists. All 16 women responded with a no to the question “Did the Inner Balance negatively affect the endota massage experience for you?”. All participants reported that they would be willing to be a part of future research with endota spa.

Of the therapists, 71% reported feeling no pressure/stress during the feasibility trial. 14% of therapists reported some additional pressure/stress during the trial and 14% were unsure. 12 of 15 therapists reported they would be interested in being a part of future research with endota spa.

Discussion

This is the first attempt to collect research quality data from within the endota spa network. Based on the data obtained, it is possible to collect research quality physiological and self-report data from women receiving Organic Relax Massage at endota spa, without negatively impacting on the spa experience for clients or therapists.

Our observation of reduced emotional state and muscle tension after the massage allows us to suggest that the endota spa Organic Relax Massage reduced these women’s perception of their stress levels and muscle tension. The presence of a positive relationship between emotional state and muscle tension after the massage, that was not observed before the massage suggests that after a massage, women are more balanced and connected with themselves in mind and body.

Our observation that heart rate was lower during the massage compared to before (expressed as % change) shows that women achieved a state of relaxation. Relaxation is characterised by a decreasing blood pressure, heart rate and reduced sympathetic nervous activation.

Based on the negative linear relationship between change in heart rate and pre-massage emotional state, women who were more stressed prior to the massage, experienced the greatest reduction in their heart rate during the massage. Stress negatively impacts our health. Stress affects our memory and learning. Stress impairs our immune system increasing our vulnerability to diseases. Stress can be a trigger for many diseases and conditions.

Our data show that an endota Organic Relax Massage is effective at reducing stress in these women.

Limitations

This is a small, feasibility trial, with women invited to participate that were known to research scientist Dr Hayley Dickinson. The offer of a complimentary massage may have increased the perceived benefit of the treatment. The numbers of participants are small and statistical analysis was not performed. Future, larger studies will address these limitations.

Conclusion

Based on the data collected during this feasibility trial we make the following conclusions:

1. We can collect quality physiological and self-report data from women receiving Organic Relax Massage at endota spa without negatively affecting their experience.
2. Therapists involved in the study were generally very positive about their experience. Some therapists (28%) found involvement to be somewhat stressful.
3. Women report less stress and muscle tension after an endota Organic Relax Massage, compared to their own pre massage observations.
4. Heart rate decreases during an Organic Relax Massage.
5. Self-reported 'stressed' women gained the most benefit from the Organic Relax Massage. These women showed:
 1. the greatest shift in their self reported emotional state
 2. the greatest decreases in heart rate during the massage, compared to prior to the massage.

References

1. Australian Psychological Society Stress and wellbeing in Australia survey 2015 - <https://www.psychology.org.au/getmedia/ae32e645-a4f0-4f7c-b3ce-dfd83237c281/stress-wellbeing-survey.pdf>
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3. Nakao M, 2019, Heart Rate Variability and Perceived Stress as Measurements of Relaxation Response. J. Clin. Med. Volume: 8(10), Page: 1704. <https://www.mdpi.com/2077-0383/8/10/1704/htm>