

Can mindfulness alter pain sensitivity?

ANNABEL CHRISTIN BANTLE, IRENE URIARTE MERCADER, MARIA KAALUND KROUSTRUP
AND TOBY STEVEN WATERSTONE

Aalborg University

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Abstract

Objective: Methods: Results: Discussion:

I. INTRODUCTION

Approximately 20 % of the population suffer from chronic pain [1]. The characteristic of chronic pain is a duration of pain more than three months [2]. Due to the persistence of pain the patients get restricted physically as well as psychically. The patients' ability to participate in diverse activities decreases. Those activities are not only physically but also socially. Like maintaining an independent lifestyle and relationships to friends and family can be affected. Pain also has an impact on the work life, where 25% of the patients changed job, responsibilities at job or lose their job due to chronic pain. Furthermore, depression was diagnosed in 21 % of those patients. [3] One of the most documented types of chronic pain is neck pain where 25 % suffer from this in the UK [1]. Those patients are restricted by negatively affected fatigue and concentration [?]. Furthermore, they suffer like the majority of chronic pain patients from anxiety and depressed mood, cognitive distress and the resulting physical limitations. [4] At the moment there is no cure for chronic pain patients. The current treatment methods only provide possibilities to relieve the pain. [5?] Nevertheless, the majority of the patients feels pain daily and this pain is increasing throughout the day due to the daily activities. [3] Chronic pain is mainly treated by medication. However medications have side effects like abuse or organ damage. To avoid those risks, alternative meth-

ods are used. One of those methods is mindfulness meditation. Whereby, meditation is used as mental training to achieve diminished judgment of emotions, cognitive control and existential insight. [?] Previous studies show that mindfulness meditation provides the ability to enhance a broad spectrum of cognitive health outcomes. Furthermore, stress, depression and anxiety can be relieved. This improvements are due to the mental training achieved by mindfulness meditation. Especially because of emotion regulation, cognitive control, acceptance and positive mood. [? 6] Nevertheless, there are not many studies which show the effect of mindfulness meditation on chronic neck pain. [1] Additionally, the pain relieve properties are mostly investigated after practicing mindfulness meditation over a time period of two months or more. A shorter time period of mindfulness meditation has also shown to have an effect on pain relieve, but the amount of studies investigating neck pain is limited. The present study addressed the question if short-term mindfulness meditation can relieve neck pain by measuring pressure pain threshold and pressure pain tolerance. Therefore the hypothesis "Short-term mindfulness meditation increases the pressure pain threshold and the pressure pain tolerance in the upper trapezius" was tested.

II. METHOD

A controlled trial was designed, whereby the subjects were randomly, but with an equal gender distribution, assigned into a control and treatment group.

i. Subjects

40 healthy subjects with a normal BMI and an equal gender distribution were recruited (age: $2X \pm XX$ years). Excluded were subjects with ongoing meditation practice, acute or chronic pain, neurological, musculoskeletal or mental illness, pregnancy or medications that might influence the subjects' response to pain.

ii. Experimental Procedure

Testing points, which can be seen on I, were marked at the left and right upper trapezius (UT) to ensure reliable and rapid location during the experimental procedure. The baseline values of Pressure Pain Threshold and Pressure Pain Tolerance were measured with an algometer (Wagner Force Ten™ Digital force Gage) four times. The mean of four measurements, two on each UT, was computed.

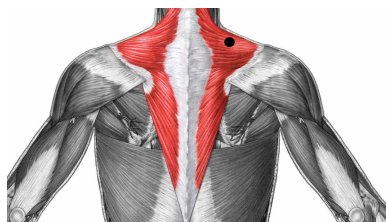


Figure I: Testing points on the upper trapezius.

The treatment group practiced 20 minutes mindfulness meditation on 5 consecutive days. After the last meditation session the second measurement was conducted likewise the baseline measurement. The subjects of the control group continued their normal routine. The same time interval between baseline and second measurement was used for the subjects of the control group.

iii. Meditation Technique

Short-term mindfulness meditation with 20 minutes of meditation on 5 consecutive days. To ensure same meditation conditions, a guided meditation in form of an audio file was used. A short introduction to mindfulness meditation was provided before the first meditation session. Here / In this section is missing a little bit! Maybe about FA

iv. Data Analysis

To test the effect of mindfulness meditation on chronic neck pain, a paired t-test / Mann-Whitney / Wilcoxon rank test was applied to the baseline and second measurement of both groups, the treatment and the control group.

III. RESULTS

IV. DISCUSSION

V. CONCLUSION

REFERENCES

- [1] Gary J. Macfarlane. The epidemiology of chronic pain. *Pain in the joints*, 157:2158–2159, 2016.
- [2] Bruna S. Mello, Tania M. Massutti, Vanessa K. Longaray, Daniela F. Trevisan, and Amalia de Fatima Lucena. Applicability of the Nursing Outcomes Classification (NOC) to the evaluation of cancer patients with acute or chronic pain in palliative care. *Applied Nursing Research*, 2016.
- [3] Harald Breivik, Beverly Collett, Vittorio Ventafridda, Rob Cohen, and Derek Gallacher. Survey of chronic pain in Europe: Prevalence, impact on daily life, and treatment. *European Journal of Pain*, 10(4):287–333, 2006.
- [4] Anita Gross, Faith Kaplan, Stacey Huang, Mahweesh Kahn, Lina Santaguida, Lisa Carlesso, Joy MacDermid, David Walton, Justin Kenardy, Anne Söderlund, Arienne Verhagen, and Jan Hartvigsen. Psychological Care, Patient Education Orthotics, Ergonomics and Prevention Strategies for Neck Pain: An Systematic Overview Update as Part of the ICON Project. *The Open Orthopaedics Journal*, 7:530–561, 2013.
- [5] Jason E. Pope and Timothy R. Deer. *Treatment of Chronic Pain Conditions*. 2017.

- [6] R. F. Zeidan, J. A. Grant^b, C. A. Brown^c, J. G. McHaffie^a, and R. C. Coghill^a. Mindfulness meditation-related pain relief: Evidence for unique brain mechanisms in the regulation of pain. pages 265–275, 2012.