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# Effectiveness of mindfulness meditation on improving mental well being of undergraduate physiotherapy students : A quasi-experimental study

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## ABSTRACT :

**Aim-** To study the effectiveness of mindfulness meditation on the mental wellbeing of undergraduate physiotherapy students.

**Objective-** To see the improvement in mental wellbeing after mindfulness meditation by using the Warwick Edinburg mental wellbeing scale in undergraduate physiotherapy students.

**Methodology-** A pre-test and post-test Quasi-experimental study was done on underground physiotherapy students in Jalgaon. A total of 56 participants were taken in a group using a purposive sampling method according to inclusion and exclusion criteria. Warwick- Edinburg scale was used to check the Mindfulness of the participant.

**Result-** the mean difference of the pre and post intervention was 6.786. The t and p values were 39.823 and < 0.0001 respectively.

**Conclusion-** There was significant improvement in the mental wellbeing of the undergraduate physiotherapy students following one month mindfulness meditation.

### Introduction

Mindfulness has been defined as the awareness that results from "paying attention in a particular way: on purpose, in the present moment and non-judgmentally." [1,19]

According to the World Health Organization (WHO), 'Health' is defined as a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity.[1] It is determined by the interaction between body, mind, consciousness, and emotions. Approximately 11% of the world's population suffers from some kind of mental illness.[1]

Research indicates that graduate students are driven to achieve and are willing to make financial, relationship, and time sacrifices to attain academic success. [2] They see themselves as leaders, and are self-reliant, goal-oriented, and serious, but may take little time for self-care.[2] Consequently, many of their seemingly positive qualities may contribute to 'crippling anxiety' associated with struggling to maintain an effective work-life balance.[2]

Various factors are possible facilitators of this condition, such as an unhealthy mind, long hours working and studying, unhealthy learning environments, sleep deprivation, and factors that interfere with daily personal life.[3,4] Nevertheless, these factors do not completely justify why the students have begun their activities already having high levels of anxiety and burnout.[5,6,7] The need to deal with the unknown and expectations of beginning a new phase in their lives.[5]

Indeed, studies have found that some graduate students' quality of life is negatively impacted by factors such as emotional exhaustion, burnout, sleep deprivation, and poor nutrition.[8] Medical students are particularly vulnerable to symptoms of stress, anxiety, and depression.[9] Few studies have shown high rates of mental health problems during medical training in different parts of the world, as demonstrated in a systematic review and meta-analysis of 195 studies involving 129,123 medical

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students in 47 countries.[9] In this review, 27.2% of students presented positive symptoms of depression, and 11.1% demonstrated suicidal thoughts.[9]

Now, days Mental Health issues are becoming the focus of attention in academic settings to enhance psychological wellbeing and to add to capacity building.[11] Sound Mental Health is a prerequisite for any kind of academic achievement.[1] In addition to the professional education of the students, it is also imperative to look into the factors that maintain the quality of life and mental wellbeing of the students during the years of training. One of the options to support and improve Mental Health is Mindfulness meditation.[10]

The Oxford Dictionary (2014) defines Mindfulness as "a mental state achieved by focusing one's awareness on the present moment while calmly acknowledging and accepting one's feelings, thoughts, and bodily sensations."[11] Mindfulness has also been defined as “the awareness that emerges through paying attention, on purpose, in the present moment and non-judgmentally to the unfolding of experience moment by moment.[12] Mindfulness often refers to specific practices used to focus a person’s attention – meditation, yoga, breathing, single-pointed concentration on an object – and is characterized by intentionality and non-judgmental observation of experience.[11] Mindfulness is often associated with Eastern spirituality, but mindfulness’ purely secular applications have been increasingly explored in settings as varied as the workplace, correctional facilities, and educational institutions.[11]

Mindfulness-based interventions such as mindfulness-based stress reduction[13] and mindfulness-based cognitive therapy[14] have proven effective in increasing Mindfulness, self-efficacy, and empathy and decreasing stress, anxiety, and depression in groups of medical, psychology, nursing, and other health profession students.[15] Qualitative studies with psychology[16], occupational therapy[17], and nursing[18] students report better ability to cope with stress, improved self-awareness, and better patient/client care following such programs.[15]

There are few studies that have especially investigated mindfulness-based interventions for physiotherapy students.[15] Lo, Francis-Cracknel, and Hassed (2017) evaluated a mindfulness-based lifestyle program (Health Enhancement Program) for physiotherapy students at Monash University, where Mindfulness has been incorporated as part of the core curriculum.[15]

Mindfulness meditation can be traced back to Eastern Buddhist practices.[19] There is no need to be religious or spiritual to practice Mindfulness.[20] It is a technique that helps people to pay attention to the present moment.[13] and uses practices such as yoga, meditation and breathing. Mindfulness enables people to become more aware of their body sensations and the way they are thinking and feeling.[21] Mindfulness is now considered to have the potential to produce benefits in the treatment of physical and mental illnesses (Hooker and Fodor, 2008), and there are no side effects.[22]

Mindfulness interventions are frequently used in health care to assist patients in managing pain, stress, and anxiety and in targeting additional health, wellness, and quality-of-life outcomes. Although mindfulness practices originate from Buddhism, mindfulness interventions have become largely secular and are based on the philosophy that full and non-judgmental experience of the present moment creates positive outcomes for mental and physical health.[23] This paradigm assumes that many people experience a high volume of future- or past-focused thoughts that produce anxiety. Hence, Mindfulness is the practice of refocusing away from these distractions and toward lived experiences.[24]

Mindfulness has its origins in Indian yoga traditions.[25] The most striking assertion in yoga text is that the body and mind are not separate entities but a composite unit. Body and mind work in unison; one affects the other positively and negatively.[25]Mindfulness-based interventions generally include formal meditation practices like body scan and breath meditation, and informal practices and applications where participants are taught how to use mindfulness practice during everyday activities or for specific challenges, such as study or stress reduction.[15] These sitting, formal practices of Mindfulness commonly use the body and senses as an anchor for the present moment and, as a result, lead to increased bodily awareness and interception.[15]

Nervous activity is the base of the brain (limbic system), which in turn activates the Hypothalamus, which, further on, sets reverberations in the Autonomic system.[25] These Autonomic (visceral) sensations and feelings are carried back to the central

nervous system for their proper cognition, and perception.[25] The activation of the Autonomic nervous system (mobilization of energy) or an increase in the activities of the Parasympathetic Nervous System (conservation of energy).[25] Hence a conscious process of attention and concentration can bring about better balance for mind and sound body.[25]

Meditative concentration can thus bring about subtle, unconscious changes in the far-flung organs of the body.[25] The structural concept implies that it is not so much the environmental stimuli but the specific nerves and the specific brain areas that are stimulated by them, which are primarily involved in the specific appreciation of sensation.[25] Functional Functional coding suggests that it is not necessary for specific anatomical areas toto give rise to the differentiation of specific sensations;; they are also differentiated according to the degree of neural activity produced within a given area.[25] Probably attention improve because such stimulation somehow selectively inhibits sensory inputs. Pavlov called this "Orienting Reflex". [25]

Mindfulness practice supports decentering (defined as seeing thoughts and feelings as temporary and separate from oneself), emotion regulation, focused attention, decreased attachment/aversion to feelings, and decreased mental proliferation, all of which can lead to an increase in wellbeing and reductions in mental agitation. [27,28]

The benefits of Mindfulness can be realized in the other aspects of students' lives too. It improves skills in focus, problem-solving, impulse control, relationship-building, and stress reduction.[29] More research in Mindfulness would be useful to guide, how it can be implemented with the greatest impact on students.[29]

**Aim**

This study aimed to study the effectiveness of mindfulness meditation on the mental wellbeing of undergraduate physiotherapy students.

**Objective**

To see the improvement in the mental wellbeing after mindfulness meditation by using the Warwick Edinburg mental wellbeing scale in undergraduate physiotherapy students.

**Hypothesis**

Hypothesis: there will be significant effect of mindfulness meditation on the mental wellbeing of undergraduate physiotherapy students.

Null hypothesis: there will be no effect of mindfulness meditation on the mental wellbeing of undergraduate physiotherapy students.

**Methodology**

This study was a pre-test post-test quasi-experimental study design. The total sample size for this study was 56. The samples were taken by purposive sampling method. The duration of the study was 6 months. Physiotherapy students undertaking undergraduate degrees whose Warwick Edinburg mental wellbeing scale score is average and below average were included. Undergraduate physiotherapy students who were not willing to participate and whoseWarwick Edinburg mental wellbeing scale score was above average were excluded.

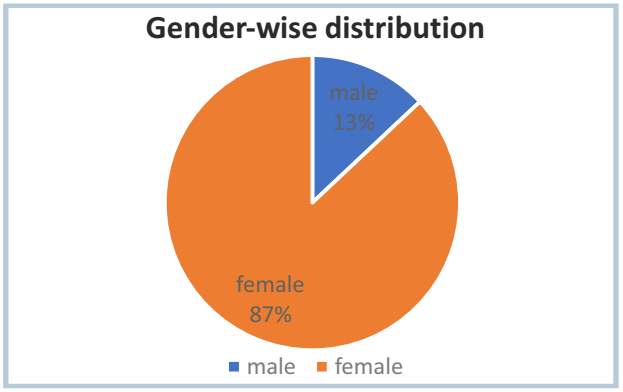
**Outcome measure**

The Warwick Edinburg mental wellbeing scale:

There are 14 items which are all worded positively and cover both feeling and functioning aspects of mental wellbeing. The respondent's score ranged from 14 to 70. The NHS Choice (2011) indicated that a score between 41 and 59 is an average scorefor mental wellbeing; 32–40 is below average and denotes some issues in relation to mental wellbeing for general populations, whilst 59–70 is perceived as above average for the general population.

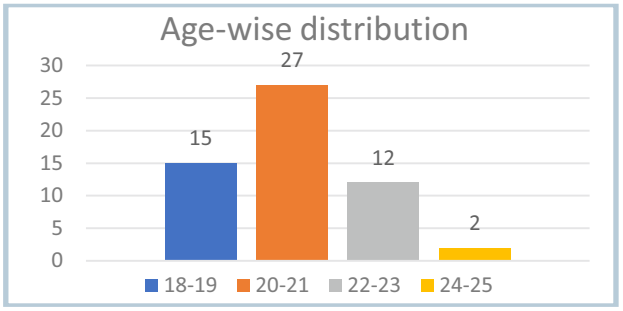
**Procedure**

To conduct the study permission was taken by the ethical committee. A brief demographic data was obtained and a written consent was taken from all the participants, and the nature and purpose of the study was explain to them. Mindfulness meditation was given to participants for a month, which mainly included mindfulness exercises like mini mindfulness exercises, square breathing exercises, willing hands method, five senses exercise, and gratitude meditation. Data was collected from all the participants. Mean was calculated for all the needed variables and was statistically analyzed.

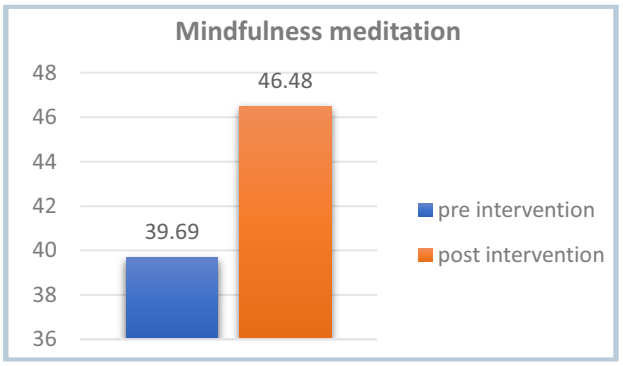



**Graph1:** Illustratesgender-wise distribution.

There were 13% of the male participants and remaining 87%were female.




**Graph 2:** Illustrates participants according to age. The age range spans from 18 to 25 years. Within this range, there were 15 participants aged 18-19 years, 27 participants aged 20-21years, 12 participants aged 22-23 years and 2 participants aged 24-25 years.




**Graph 3:** Illustrates pre and post intervention.

**Statistical analysis**

A total 56 participants were screened in the study. Microsoft excel 2010 was used for data entry and basic descriptive statistics. Descriptive statistics were applied to categorical variables. Where mean, SD and frequency was express in %. Mean and SD were computed. Simple graphs were analyzed using Microsoft excel 2010. The collected data was analyzed using the INSTAT software. The t-test and paired t-test were used for analysis.

**Results**

**Table 1:** Gender wise distribution.

| Gender wise distribution | |
|---|---|
| Female | 49 |
| Male | 7 |

There was total 56 participants out of which 49 were female and 7 were male

**Table 2 :** Depicts pre and post – test mean ± SD and mean difference.

| Outcome | Follow up | (Mean±SD) | Difference | T value | P value | Significance |
|---|---|---|---|---|---|---|
| Edinburg-Warwick mental wellbeing scale | Pre-intervention | 39.69±5.12 | 6.786 | 39.823 | <0.0001 | Extremely significant |
| | Post-intervention | 46.48±5.23 | | | | |

**Discussion**

The study revealed a significant enhancement in mental wellbeing following one month mindfulness meditation intervention. Mindfulness meditation stimulates copingmechanisms. Many scientists also found that Mindfulness influences stress pathways in the brain,changing brain structures and activity in regions associated with specifically attention and emotion regulation by lowering the stress response.[31]

Mindfulness practices positively impact the areas of the brain associated with learning, memory, emotion regulation, empathy, compassion, perspective thinking, and stress response.

Mindfulness may have downstream effects throughout the body. By following Mindfulness,one will be more positive, will have a more positive attitude toward one's activities, and will be successful in coping with any situation.[15]

Enhanced wellbeing meditation develops certain areas of the brain, such as those responsiblefor memory, compassion, and empathy. Also, parts of the brain associated with fear, stress, and anxiety, such as the amygdala (the fight or flight center), begin to shrink.[27]

Studies have also shown that mindfulness meditation practice brings about positive physiological changes that make the connection even more profound. Researchers also stated that mindfulness training can actually train the brain to optimize to be even better than its typical healthy function.[31]

Also, long-termlong-term benefits of mindfulness includeinclude promoting metacognitive awareness, enhancedenhanced attention capacities, and and working memory,, which in turn contributes to effective regulation strategies. [31]

Many cohort studies in students have consistently reveled the potential of mindfulness interventions to ameliorate mental wellbeing, reduce stress and enhance resilience. For instance, Roulston et al. in year 2017 demonstrated that a six-week mindfulness course significantly improved mental wellbeing, stress management and resilience among undergraduate social work students. This emphasizes that mindfulness meditation intervention can indeed cultivate a sense of wellbeing and equip students with effective stress-coping mechanisms.[28]

A systemic review done by Rinske A. Gotink MSc et. al in year 2016, on 8-week mindfulness meditation inducing brain changes similar to traditional long term meditation practice says that the prefrontal cortex, the cingulate cortex, the insula and the hippocampus showed increased activity, connectivity and volume in stressed, anxiety, anxious and healthy participants. Additionally,the amygdala showed decreased functional activity, improved functional connectivity with the prefrontal cortex, and earlier deactivation after exposure to emotional stimuli. These findings indicate that mindfulness-based interventioninduce emotional and behavioral changes are related to functional and structural changes in the brain.[32]

In accordance with the study conducted by Britta K. Holze et. alin year 2011,about mindfulness practice leads to increase in regional brain gray matter density. In this study analyzes in a priori regions of interest conformed increase in grey matter concentration within the left hippocampus. Whole brain analyses identified increase in posterior cingulate cortex, the temporo-parietal junction, and the cerebellum in the MBSR group compared with the controls. The results suggest that participation in MBSR is associated with changes in grey matter concentration in brain regions involved in learning and memory process, emotion regulation, self-referential processing and perspective taking. [27]

This noticed benefits of mindfulness meditation may be associated with its capacity to enhance self-regulation which in turn enhances neuroplasticity and leads to health benefits.[18]

In the context of physiotherapy students, Arunoda et al in the year 2019 conducted a study in which a 3-month mindfulness meditation program reporting substantial improvements in mental wellbeing, satisfaction, kindness and happiness, stress management within the intervention group. [1]

The study by McConville et al in the year 2019 with physiotherapy students on clinical placementhighlighted that, six-weeks mindfulness program promoted self-awareness, mental health, communication skills, study engagement and awareness of movement.[15]

The research was driven by a growing acknowledgment of mental health challenges faced by graduate student, emphasizing the significance of proactive measures to support their overall wellbeing.[2]

In light to this extensive body of literature, our study

adds a distinctive contribution by specifically examining the impact of mindfulness meditation on undergraduate physiotherapy student. This study highlights the importance of mental wellbeing in undergraduate physiotherapy students as Mindfulness boosting their capacity for listening inner worlds of bodily sensation, need and stressors.

Along with that mindfulness meditation have potential to enhance learning improve professional practice it can be use as a part of curriculum for future young budding physiotherapist.

**Conclusion**

Mindfulness meditation showed significant improvement in mental wellbeing among undergraduate physiotherapy students.

**Limitation**

1. Lack of spare time hectic schedule for group intervention.

2. Only one outcome measure was used.

3. Limited sample size.

4. Brief intervention period, which induces the possibility that more lasting effects might have emerged with longer intervention.

**Clinical implication**

Mindfulness meditation helps to enhance positiveness tin behavior and helps in improving overall perspective towards life. So, it is beneficial if mindfulness meditation is practiced in daily life.

Mindfulness meditation will help enhance the overall academic performance of undergraduate physiotherapy students by improving their awareness of present movements.

**Future scope**

Further study can be done:

1. With a longer intervention period.

2. With a comparative approach by opposing effects of mindfulness meditation with alternative interventions such as physical exercise, cognitive behavioral therapy, etc.

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**References**

1. Mkpd A, Gunathunga M, Yobas P. The Effectiveness of Mindfulness Meditation Program on Selected Aspects of Health among Students of the B. Sc. Physiotherapy, University of Colombo, Sri Lanka. Psychol Behav Sci Int J. 2019;13(1):555854.
2. Bonifas RP, Napoli M. Mindfully increasing quality of life: A promising curriculum for MSW students. Social Work Education. 2014 May 19;33(4):469-84.
3. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among US and Canadian medical students. Academic medicine. 2006 Apr 1;81(4):354-73.
4. Ghodasara SL, Davidson MA, Reich MS, Savoie CV, Rodgers SM. Assessing student mental health at the Vanderbilt University School of Medicine. Academic Medicine. 2011 Jan 1;86(1):116-21.
5. Moutinho IL, Maddalena ND, Roland RK, Lucchetti AL, Tibiriçá SH, Ezequiel OD, Lucchetti G. Depression, stress and anxiety in medical students: A cross-sectional comparison between students from different semesters. Revista da Associação Médica Brasileira. 2017 Jan;63(1):21-8.
6. Bassols AM, Okabayashi LS, Silva AB, Carneiro BB, Feijó F, Guimarães GC, Cortes GN, Rohde LA, Eizirik CL. First-and last-year medical students: is there a difference in the prevalence and intensity of anxiety and depressive symptoms?. Brazilian Journal of Psychiatry. 2014 Jul;36:233-40.
7. Boni RA, Paiva CE, De Oliveira MA, Lucchetti G, Fregnani JH, Paiva BS. Burnout among medical students during the first years of undergraduate school: Prevalence and associated factors. PloS one. 2018 Mar 7;13(3):e0191746.
8. Bishop SR, Lau M, Shapiro S, Carlson L,

Anderson ND, Carmody J, Segal ZV, Abbey S, Speca M, Velting D, Devins G. Mindfulness: A proposed operational definition. Clinical psychology: Science and practice. 2004;11(3):230.

9. Damião Neto A, Lucchetti AL, da Silva Ezequiel O, Lucchetti G. Effects of a required large-group mindfulness meditation course on first-year medical students' mental health and quality of life: a randomized controlled trial. Journal of general internal medicine. 2020 Mar;35:672-8.
10. DeLuca S, Gregory J, Day D. Efficacy of mindfulness in the classroom. Eur. J. Appl. Posit. Psychol. 2018;2:1-8.
11. Broderick PC, Jennings PA. Mindfulness for adolescents: A promising approach to supporting emotion regulation and preventing risky behavior. New directions for youth development. 2012 Dec;2012(136):111-26.
12. Thomson D, Gowing F, English M, Hassenkamp AM. Exploring the role of mindfulness as a potential self-management strategy for physiotherapy students when on placement. International Journal of Practice-based Learning in Health and Social Care. 2017 Dec 31;5(2):19-37.
13. Kabat-Zinn J. Mindfulness-based interventions in context: past, present, and future.
14. Segal ZV, Williams JM, Teasdale JD. Mindfulness-based cognitive therapy for depression. Guilford press; 2012 Oct 23.
15. McConville J, McAleer R, Hahne A. Mindfulness training for health profession students—the effect of mindfulness training on psychological well-being, learning and clinical performance of health professional students: a systematic review of randomized and non-randomized controlled trials. Explore. 2017 Jan 1;13(1):26-45.
16. Hopkins A, Proeve M. Teaching mindfulness-based cognitive therapy to trainee psychologists: Qualitative and quantitative effects. Counselling Psychology Quarterly. 2013 Jun 1;26(2):115-30.
17. Stew G. Mindfulness training for occupational therapy students. British Journal of Occupational Therapy. 2011 Jun;74(6):269-76.
18. Van der Riet P, Rossiter R, Kirby D, Dluzewska T, Harmon C. Piloting a stress management and mindfulness program for undergraduate nursing students: Student feedback and lessons learned. Nurse Education Today. 2015 Jan 1;35(1):44-9.
19. Krolikowski AM. The effectiveness of internet-based mindfulness interventions for physical and mental illnesses: A narrative review. International Journal of Cyber Behavior, Psychology and Learning (IJCBPL). 2013 Oct 1;3(4):84-96.
20. Grossman P, Niemann L, Schmidt S, Walach H. Mindfulness-based stress reduction and health benefits: A meta-analysis. Journal of psychosomatic research. 2004 Jul 1;57(1):35-43.
21. Hardy S. Mindfulness: Enhancing physical and mental wellbeing. Practice Nursing. 2015 Sep 2;26(9):450-3.
22. Hooker K, Fodor I (2008) Teaching mindfulness to children. Gestalt Review 12(1): 75–91
23. Williams, J. M. G., & Kabat-Zinn, J. (2011). Mindfulness: Diverse perspectives on its meaning, origins, and multiple applications at the intersection of science and Dharma. Contemporary Buddhism, 12. http://dx.doi.org/10.1080/14639947.2011.564811
24. Hardison, M. E., & Roll, S. C. (2016). Mindfulness interventions in physical rehabilitation: A scoping review. American Journal of Occupational Therapy, 70, 7003290030.
25. Ray S D. (2003). Yogic exercises: Psychologic and psychic process. Jaypee Brothers Medical publisher
26. Grabovac, A. D., Lau, M. A., & Willett, B. R. (2011). Mechanisms of mindfulness: A Buddhist psychological model. Mindfulness, 2(3), 154–166. https://doi.org/10.1007/s12671-011-0062-5
27. Hölzel, B. K., Lazar, S. W., Gard, T., Schuman-Olivier, Z., Vago, D. R., & Ott, U. (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. Perspectives on

Psychological Science, 6(6), 537– 559. https://doi.org/10.1177/1745691611419671

28. Roulsten, A., Montogomery, L., Campbell, A., & Davidson, G. (2017). Exploring the impact of mindfulnesson mental well-being, stress and resiliene of undergraduate social work students. Social Work Education, 37(2), 157-172.
29. Leland, M. Mindfulness and Student Success. Journal of Adult Education.2015.44(1)-23
30. Solhaug, I., Eriksen, T. E., de Vibe, M., Haavind, H., Friborg, O., Sørlie, T., & Rosenvinge, J. H. (2016). Medical and psychology student's experiences in learning mindfulness: Benefits, paradoxes, and pitfalls. Mindfulness, 7(4), 838–850. doi:10.1007/s12671-016-0521-0
31. A. Grecucci, E. Pappaianni, R. Siugzdait, A. Theuninck &R. Job (2015). Mindful Emotion Regulation: Exploring the Neurocognitive Mechanisms behind Mindfulness, BioMed Research International
32. Gotink R. , Smits M. , Hunink M.et al.(2016). 8-week Mindfulness Based Stress Reduction induces brain changes similar to traditional long-term meditation practice – a Systematic Review. 10.1016/j.bandc.2016.07.0