

Effects of active meditation on physical and psycho-emotional stress indicators in Chilean health sciences students. A pilot study

Efectos de la meditación activa en indicadores físicos y psicoemocionales de estrés en estudiantes universitarios del área de la salud en Chile. Un estudio piloto

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Abstract

Introduction: The multiple academic demands in the university environment generate high levels of stress among students. Although said stress may be useful to meet such demands, in many cases, it can have a negative impact on their health.

Objective: To assess whether the implementation of active meditation in the daily routine of health sciences university students impacts their physical and psycho-emotional stress indicators.

Materials and methods: Exploratory and quantitative pilot study carried out in a sample of 22 university students who agreed to participate in a 3-month active meditation elective course (18 sessions). Participants were asked to fill out the Global State Perception Questionnaire (CPGE) ex-ante and ex-post taking the course.

Results: 18 participants completed the GSPC ex-ante and ex-post, but only 16 were valid for data processing. Most students reported an improvement in their perception of coping with different stressful situations after completing the course. For example, 87.5% reported remaining in a relaxed state during stressful situations, 81% stated feeling decreased mental exhaustion, and 81% said they were better at handling stressful situations.

Conclusions: The implementation of active meditation in the daily routine of this group of university students decreased their physical and psycho-emotional indicators of stress. Therefore, it is necessary to carry out new studies with larger samples to confirm the positive effect of this type of course on the health of university students, which will undoubtedly lead to better academic performance as a result of a better mental state.

Keywords: Meditation; Students; Health (MeSH).

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Resumen

Introducción. Las múltiples exigencias académicas a las que los estudiantes universitarios se enfrentan les generan altos niveles de estrés; si bien el estrés puede ayudarles a afrontar tales exigencias, en muchos casos este puede causarles diversos problemas de salud.

Objetivo. Evaluar si la implementación de la meditación activa en la rutina diaria de estudiantes universitarios de las ciencias de la salud tiene un efecto en sus indicadores físicos y psicoemocionales.

Materiales y métodos. Estudio piloto exploratorio y cuantitativo realizado en una muestra de 22 estudiantes universitarios que aceptaron participar en un curso electivo de meditación activa de 3 meses (18 sesiones). A los participantes se les solicitó diligenciar el Cuestionario de Percepción Global de Estado (CPGE) ex ante y ex post al curso.

Resultados. 18 participantes completaron el CPGE ex ante y ex post, pero solo 16 fueron válidos para el procesamiento de datos. La mayoría de los estudiantes reportó una mejora respecto a su percepción sobre cómo enfrentar diferentes situaciones estresantes luego de completar el curso, por ejemplo, el 87.5% manifestó permanecer en un estado de relajación en situaciones estresantes; el 81%, una disminución del agotamiento mental, y el 81%, un mejor manejo de las situaciones estresantes.

Conclusiones. La incorporación de la meditación activa en la rutina diaria de estos estudiantes disminuyó sus indicadores físicos y psicoemocionales de estrés, por lo que es necesario realizar nuevos estudios con muestras más grandes que permitan confirmar el efecto positivo de este tipo de cursos en la salud de los estudiantes universitarios, lo que sin duda repercutirá en un mejor rendimiento académico producto de un mejor estado mental.

Keywords: Meditación; Estudiantes; Salud (DeCS).

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Introduction

Research on the impact of meditation in different populations shows benefits for people's quality of life and establishes that this practice is a useful tool to combat stressful situations.¹⁻³

When university students, particularly in Chile, begin their academic life in higher education institutions, they experience a series of new situations that may generate stress patterns that affect their health.⁴ For that reason, incorporating meditation in their daily routine could improve their academic performance and quality of life, because, as mentioned above, there are many proven benefits of this practice.⁵⁻⁶

University students, daily routine and stress

Various authors state that adolescence is a transitional period in the development of the personality between childhood and adulthood. Adolescence is a phase of identity construction and delimitation⁷ during which, based on a family and social approach, young people are assigned various roles typical of adulthood⁸ that can generate uncertainty, a feeling of risk of failure⁹ and, in many cases, symptoms associated with stress, depression, and anxiety.¹⁰

Stress is associated with multiple challenges set by the environment that affect the skills that each person has to deal with new situations. Therefore, if a person perceives that the challenge weighs more heavily than their abilities, anxiety-related behaviors may appear.¹¹

In general, healthcare students feel more mental health issues, anxiety, and stress than students in other professions. In this regard, Jerez-Mendoza & Oyarzo-Barría¹² state that 98% of the students in the health department of a Chilean university presented symptoms associated with academic stress and that 85% of them were between the third and fifth year of their program. Dyrbye *et al.*¹³ and Frajerman *et al.*¹⁴, through systematic reviews, showed that medical and nursing students have higher levels of anxiety than the general population of the same age, and that this disorder occurs more frequently in women. Finally, Cheung *et al.*¹⁵ and Rotenstein *et al.*¹⁶ established that factors such as year of study, physical inactivity, family crises, unbalanced diets, financial difficulties and unhealthy lifestyles in nursing and medical students increase their levels of depression and anxiety.

Therefore, when the daily routine changes, it is essential to incorporate habits that foster a social and physical environment where people feel free and confident to explore their new circumstances. This could facilitate the adaptation of young people to university life and reduce stress levels.^{11,17}

Meditation

Meditation allows moving from a condition of attention directed to identifiable stimuli to unfocused attention by discouraging repetitive thoughts or through cognitive restructuring.¹⁸ It is also a practice that allows for an introspective and perceptual sensitization process that helps raise awareness about psychological and behavioral processes and habits, which increases interhemispheric synchronization and allows the practitioner to perceive increasingly subtle details by merely "observing" in silence.¹⁹

The objective of meditation is to be alert and "present" to face different events "without judging them." This reduces undesired interferences in mental processes or bodily automatisms to make the use of the totality of the consciousness easier and to put into practice mental capacities and resources.^{18,20}

Meditation is a contemplative technique that is not linked to religious or philosophical practices and can have initial effects similar to relaxation techniques. However, long-term benefits are greater,¹⁸ and, consequently, several researchers have addressed this subject, demonstrating its contributions to mental and physical health.

Among the proven benefits of meditation, Desai *et al.*²¹ report decreased anxiety, increased cognitive performance, beneficial changes at physiological levels and brain structures (increased gray matter), among others. In turn, Britton *et al.*²² state that it activates the brain amygdala and the prefrontal cortex, favoring the regulation of the physiological response to stress. Likewise, Telles *et al.*²³ claim that this practice facilitates information processing in the primary auditory cortex, while Ospina *et al.*²⁴ point that it reduces blood pressure in people with high blood pressure and reduces stress in patients with cardiovascular problems. Moreover, Petter *et al.*²⁵ and Zeidan *et al.*²⁶ state that it reduces pain in general; Zeidan *et al.*²⁷ report that it reduces chronic back, neck, and head pain caused by chronic tension headaches; and, finally, Najafidoulatabad *et al.*²⁸ state that it increases physical activity capacity and sexual satisfaction.

Meditation has a noticeable impact on mood disorders; for example, the chances of relapse in patients diagnosed with depression drops by half when a meditative practice is performed at least three times a week.²⁹ Moreover, in people who meditate regularly, there is a lower incidence of depression, stress, and anxiety.³⁰ Furthermore, studies such as Vadiraja *et al.*³¹ in a group of breast cancer patients treated with yoga sessions show that a covariance analysis revealed a significant decrease in anxiety ($p < 0.001$), depression ($p = 0.002$), stress perception ($p < 0.001$), salivary cortisol levels at 6:00 am ($p = 0.009$), and significant mean cortisol levels ($p = 0.03$) compared to the non-yoga control group.

Likewise, it has been shown that meditation in children under 18 years of age improves overall health,^{32,33} favors the positive resolution of tension, increases stress management^{34,35} and emotion management,³⁶ reduces suicidal ideation,²² and, in adolescents with attention-deficit/hyperactivity disorder, improves self-regulation and increases attention;³⁷ it also helps control chronic pain conditions.³⁸

Therefore, it can be inferred that including meditation in students' daily routine can provide great benefits to deal with stressful conditions.

Osho active meditation

There are different schools and techniques for meditation. One of them is the Osho active meditation, which is a form of meditation that does not require sitting still,⁵ as each session is carried out in stages that integrate physical movements while seeking relaxation and calmness.

This type of meditation, designed by Osho (an Indian guru), lasts an average of one hour and is an alternative to traditional passive techniques since it focuses on the search for a state of well-being through constant

movement. Its main purpose is to “calm the mind” in a routine, modern, and Western context.⁵ Active meditation requires some physical activity that involves activities ranging from shouting to dancing, integrating movements without intention or coordination to reach a passive status.³⁹

Evidence on the effects of active meditation is limited. The literature consulted for the present study only included three investigations that focused on dynamic meditation, a particular type of active meditation. The first article states that this practice reduces blood cortisol levels (identified in plasma) after a cycle of 21 days of meditation.⁴⁰ The second reports that it improves integration of personality, autonomy, environmental control and mental health in general after a cycle of 21 days of practice.⁵ Finally, the third work describes that it reduces several psychopathological variables such as mixed anxiety-depressive disorder, somatic symptoms, aggressive behaviors, and depression after a cycle of 7 days of practice.⁴¹

As mentioned above, there are several types of active meditations (Kundalini, Nataraj, Nadabrahma, Gourishankar, Mandala, Devavani, and Chakra Sounds or Chakra Breathing); however, there is no literature that discusses their benefits, so the present study may be one of the first that describe the effects of a meditation program in general terms.

In this context, the objective of this research was to establish if the incorporation of an active meditation protocol in the daily routine of health sciences university students for a period of three months has an effect on their physical and psycho-emotional indicators.

Materials and methods

An exploratory and quantitative pilot study was conducted in a sample of 22 health students who agreed to participate in a 4.5-month active meditation elective course. It was developed in 18 weekly sessions of one hour and thirty minutes each and was offered during the first term of 2018. The sessions began after giving instructions of each meditation (5 minutes approximately), then continued with the practice (1 hour approximately) and ended with a discussion about the experiences of each participant (20 minutes approximately).

The research sample was not representative of the universe of health school students due to the exploratory nature of the study.

To measure the results of the meditation practice implementation, the students were asked to fill out the Global State Perception Questionnaire (CPGE by its acronym in Spanish) before and after taking the course. This is a 22-item instrument validated in 2006 in Uruguayan adolescents that measures the symptoms experienced by a person who is exposed to psychological stress⁴² using a five-level Likert scale (never, barely, sometimes yes/sometimes not, frequently, always). The items evaluated are part of three dimensions: a) physiological aspects, b) emotional aspects and c) cognitive aspects. Moreover, an open-ended question was asked about the personal perception of the usefulness of the course. The answers were transcribed and organized by emerging categories through a content analysis.⁴³

Participants' responses were categorized according to the order in which they answered the questions.

Thus, for example, “Respondent 1” was the first person to respond.

The data obtained through the CPGE were analyzed in Microsoft Excel. The information was grouped and organized applying basic statistical criteria for the construction of percentages taking into account if the answers reflected a variation between the first and second application.

The course was carried out in two cycles and the following active meditation techniques were applied, in this order, during each session: Kundalini, Nataraj, Nadabrahma, Gourishankar, Mandala, Devavani, Sounds Chakra, and Breathing Chakra. There was also an introductory session in which the course was explained, and a final session in which the intervention was assessed. These techniques were selected due to the lack of scientific evidence about their positive effects. The researchers also decided to work with the whole set of active meditations since the students of previous courses had pointed out diverse benefits of this methodology. Dynamic meditation was not included because it has more evidence and because it requires some specific conditions such as practicing first thing in the morning (7:00 am) and having an isolated space since a lot of noise is produced during its execution.

An instructor, certified by a center affiliated to the Osho International Foundation and with more than 10 years of experience, was in charge of conducting the sessions, which were held in a heated space and with music according to each meditation. Students were required to have a yoga mat and a *zafu* (special meditation cushion) to participate in the meditations.

The study took into account the ethical principles for medical research in humans established by the Declaration of Helsinki,⁴⁴ the provisions of the International Ethical Guidelines for Research Involving Human Subjects,⁴⁵ and the E6(R1): Guideline for Good Clinical Practice.⁴⁶ This study was approved by the Ethics Committee of the Faculty of Medicine of the Universidad de Chile, as stated in Minutes No. 113-2017 of August 22, 2017. Participants signed an informed consent

Results

Of the 22 students who participated in the course, 17 were women and 18 completed the CPGE ex ante and ex post. However, only 16 questionnaires were valid for data processing because 2 were answered incorrectly. The minimum age of participants was 18 and the maximum was 26 (Table 1); the distribution by program was: 10 occupational therapy students, 4 speech therapy students, 4 medical students, 2 nutrition and dietetics students, 1 obstetrics and childcare student, and 1 nursing student.

Table 1. Age distribution of study participants.

Age	Number of students
18	3
19	1
20	2
21	5
22	8
23	2
26	1

Source: Own elaboration.

Most students reported an improvement in their perception of how to deal with different stressful situations after completing the course: 87.5% reported remaining in a relaxed state when dealing with stressful situations; 81% reported a decrease in mental exhaustion and better management of stressful situations; 69% reported appetite regulation in anxious moments; 62% reported

a feeling of permanent tranquility and improved concentration and sleep; and 56% reported a decrease in the number of excessive worries.

Tables 2, 3 and 4 describe the changes in the physiological, emotional, and cognitive dimensions, respectively, observed after the participants completed the course.

Table 2. Results of the intervention in the physiological dimension.

Physiological aspects assessed	Increased	Remained the same	Decreased
It can be a long time before getting a headache *	18.75%	62.5%	18.75%
I fall asleep easily *	50%	43.75%	6.25%
I eat as usual *	31.25%	62.5%	6.25%
I feel fit and healthy *	50%	50%	0%
I have neck and back pain †	18.75%	31.25%	50%
When I feel anxious, my appetite decreases or increases †	0%	31.25%	68.75%
I get headaches †	12.5%	56.25%	31.25%
I have insomnia or difficulty sleeping †	0%	37.5%	62.5%

* Dimensions that improve as the percentage increases.

† Dimensions that improve as the percentage decreases.

Source: Own elaboration.

Table 3. Results of the intervention in the emotional dimension.

Emotional aspects assessed	Increased	Remained the same	Decreased
I take things in a calm and relaxed manner *	81.25%	12.5%	6.25%
I can relax easily *	75%	25%	0%
I can stay relaxed despite the difficulties *	87.5%	12.5%	0%
I feel calm and clear *	62.5%	37.5%	0%
I feel that I worry excessively about every single detail †	6.25%	37.5%	56.25%
I have bouts of depression †	0%	62.5%	37.5%
I feel very nervous about small things †	6.25%	18.75%	75%
I feel sad and discouraged †	0%	56.25%	43.75%
I feel mentally exhausted †	6.25%	12.5%	81.25%
Even the little things make me very anxious †	0%	50%	50%

* Dimensions that improve as the percentage increases.

† Dimensions that improve as the percentage decreases.

Source: Own elaboration.

Table 4. Results of the intervention in the cognitive dimension.

Cognitive aspects assessed	Increased	Remained the same	Decreased
My memory is still normal *	25%	75%	0%
I have trouble concentrating †	12.50%	25%	62.50%
I find it difficult to stay focused †	6.25%	56.25%	37.5%
I forget things easily †	0%	81.25%	18.75%

* Dimensions that improve as the percentage increases.

† Dimensions that improve as the percentage decreases.

Source: Own elaboration.

In response to the open-ended question about personal perception, students noted that the course helped them stay calm during stressful events in both academic and everyday life.

In 13 of the 16 participants, a positive effect was observed in the three dimensions assessed, being the most relevant the emotional dimension:

“Knowing myself or learning to listen to myself, because now I recognize when my body or mind needs a break” (Interviewee 5).

Another significant aspect is related to a positive opinion on the state of mind and the perception of well-being since regular meditation during the academic term made

the students feel that they had a space in the university to relax, forget their worries, and feel at ease:

“This course helped me to deal with academic stress more easily; it became a break to clear my head and renew my energy for a new week. I face academic challenges better, with more tranquility and without so much despair” (Interview 13).

“It helped me a lot to relax and disconnect a little bit from all the stress that comes with the academic life. I was able to stop thinking in my studies and clear my head. It made me feel really good” (Interviewee 16).

Similarly, students reported a better mental disposition to face life:

“I think that the general training course (CFG by its acronym in Spanish or active meditation elective course) has allowed me to know myself and learn about relaxation and meditation techniques. This has been helpful to reduce my (sic) anxiety and stress levels generated by the studies. In addition, doing it on Mondays allowed me to be more active during the week” (Interview 1).

Discussion

Meditation has significant benefits to those who practice it,^{20,22,24,29} especially to university students during their professional training.³⁴⁻³⁷

The incorporation of active meditation into the daily routine of the students evaluated improved their conditions of well-being. This agrees with the literature in specific aspects such as the improvement of relaxation states and tranquility in general^{47,48} and when dealing with stressful situations.^{49,50} Furthermore, it increased the sensation of fitness and health;⁵¹⁻⁵³ helped to regulate appetite;⁵⁴ facilitated relaxation;⁴⁹ reduced sleeping difficulties,⁵⁵⁻⁵⁷ and helped to face stressful situations in a more relaxed manner.^{51,52}

Previous studies have already reported outstanding results regarding meditation in the school context,^{22,34} so it would be interesting to incorporate meditation into professional training and the daily routine of students as a measure to promote good mental health and well-being, as was the case of the present study and other research works.^{58,59} Likewise, since higher stress levels are observed at the end of each academic term,⁵⁸ the perception of students who did not practice meditation should be compared with the perception of those who did practice it in the same period, as this could show relevant results that would confirm the benefit of this practice.

Conclusions

The implementation of active meditation in the daily routine of this group of university students reduced their physical and psycho-emotional indicators of stress. Therefore, it is necessary to carry out new studies with larger samples to confirm the positive effect of this type of course on the health of university students, which will undoubtedly lead to better academic performance as a result of a better mental state.

Conflicts of interest

None stated by the authors.

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References

- Chin B, Slutsky J, Raye J, Creswell JD. Mindfulness Training Reduces Stress At Work: A Randomized Controlled Trial. *Mindfulness* (N Y). 2019;10(4):627-38. <http://doi.org/gg3c7n>.
- de Vibe M, Solhaug I, Tyssen R, Friborg O, Rosenvinge JH, Sorlie T, *et al*. Does Personality Moderate the Effects of Mindfulness Training for Medical and Psychology Students? *Mindfulness* (N Y). 2015;6(2):281-9. <http://doi.org/f6582m>.
- Recabarren RE, Gaillard C, Guillod M, Martin-Soelch C. Short-Term Effects of a Multidimensional Stress Prevention Program on Quality of Life, Well-Being and Psychological Resources. A Randomized Controlled Trial. *Front Psychol*. 2019;10:88. <http://doi.org/d6mg>.
- Bedoya-Lau FN, Matos LJ, Zelaya EC. Niveles de estrés académico, manifestaciones psicósomáticas y estrategias de afrontamiento en alumnos de la facultad de medicina de una universidad privada de Lima en el año 2012. *Rev Neuropsiquiatr*. 2014;77(4):262-70. <https://doi.org/d97x>.
- Iqbal N, Singh A, Aleem S. Effect of Dynamic Meditation on Mental Health. *J relig health*. 2016;55(1):241-54. <http://doi.org/d6jv>.
- Osho. Autobiografía de un Místico espiritualmente incorrecto. Bogotá D.C.: Planeta; 2001.
- Alarcón P, Vinet E, Salvo S. Estilos de personalidad y desadaptación social durante la adolescencia. *Psyche*. 2005;14(1):3-16. <http://doi.org/dpzf97>.
- Duarte-Quapper C. Sociedades adultocéntricas: sobre sus orígenes y reproducción. Última década. 2012;20(36):99-125. <http://doi.org/ck9k>.
- Corica A. Las expectativas sobre el futuro educativo y laboral de jóvenes de la escuela secundaria: entre lo posible y lo deseable. Última década. 2012;20(36):71-95. <http://doi.org/gg2s5k>.
- Jara D, Velarde H, Gordillo G, Guerra G, León I, Arroyo C, *et al*. Factores influyentes en el rendimiento académico de estudiantes del primer año de medicina. *An Fac Med*. 2008;69(3):193-7.
- Csikszentmihalyi M, Rathunde K. The measurement of flow in everyday life: toward a theory of emergent motivation. *Nebr Symp Motiv*. 1993;40:57-97.
- Jerez-Mendoza M, Oyarzo-Barría C. Estrés académico en estudiantes del Departamento de Salud de la Universidad de Los Lagos Osorno. *Rev. chil. neuro-psiquiatr*. 2015;53(3):149-57. <http://doi.org/d6h5>.
- Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. *Acad Med*. 2006;81(4):354-73. <http://doi.org/fq39xg>.
- Frajerman A, Morvan Y, Krebs MO, Gorwood P, Chaumette B. Burnout in medical students before residency: A systematic

- review and meta-analysis. *Eur Psychiatry*. 2019;55:36-42. <http://doi.org/ggwhf3>.
15. Cheung T, Wong SY, Wong KY, Law LY, Ng K, Tong MT, *et al*. Depression, Anxiety and Symptoms of Stress among Baccalaureate Nursing Students in Hong Kong: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2016;13(8):779. <http://doi.org/f82zg7>.
 16. Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C, *et al*. Prevalence of Depression, Depressive Symptoms, and Suicidal Ideation Among Medical Students: A Systematic Review and Meta-Analysis. *JAMA*. 2016;316(21):2214-36. <http://doi.org/gdsnfm>.
 17. Kielhofner G. Model of human occupation: Theory and application. 4th ed. Philadelphia: Lippincott Williams & Wilkins; 2008.
 18. Campagne DM. Teoría y fisiología de la meditación. *Cuad Med Psicosom Psiquiatr Enlace*. 2004;(69-70):15-30.
 19. Justo CF. Efectos de un programa de meditación sobre los niveles de creatividad verbal de un grupo de alumnos/as de Bachillerato. *Suma Psicológica*. 2009;16(2):113-20.
 20. Sánchez-Gutiérrez G. Meditación, mindfulness y sus efectos biopsicosociales. Revisión de literatura. *Revista Electrónica de Psicología Iztacala*. 2011;14(2):223-54.
 21. Desai R, Taylor A, Bhatt T. Effects of yoga on brain waves and structural activation: A review. *Complement Ther Clin Pract*. 2015;21(2):112-8. <http://doi.org/ggdkpg>.
 22. Britton WB, Lepp NE, Niles HF, Rocha T, Fisher NE, Gold JS. A randomized controlled pilot trial of classroom-based mindfulness meditation compared to an active control condition in sixth-grade children. *J Sch Psychol*. 2014;52(3):263-78. <http://doi.org/gdtkzv>.
 23. Telles S, Deepeshwar S, Naveen KV, Pailoor S. Long latency auditory evoked potentials during meditation. *Clin EEG Neurosci*. 2015;46(4):299-309. <http://doi.org/f7tg7t>.
 24. Ospina MB, Bond K, Karkhaneh M, Tjosvold L, VanderMeer B, Liang Y, *et al*. Meditation practices for health state of the research. *Evid Rep Technol Assess (Full Rep)*. 2007(155):1-263.
 25. Petter M, McGrath PJ, Chambers CT, Dick BD. The effects of mindful attention and state mindfulness on acute experimental pain among adolescents. *J Pediatr Psychol*. 2014;39(5):521-31. <http://doi.org/f5574s>.
 26. Zeidan F, Emerson NM, Farris SR, Ray JN, Jung Y, McHaffie JG, *et al*. Mindfulness Meditation-Based Pain Relief Employs Different Neural Mechanisms Than Placebo and Sham Mindfulness Meditation-Induced Analgesia. *J Neurosci*. 2015;35(46):15307-25. <http://doi.org/f73gh5>.
 27. Blödt S, Pach D, Roll S, Witt CM. Effectiveness of app-based relaxation for patients with chronic low back pain (Relaxback) and chronic neck pain (Relaxneck): study protocol for two randomized pragmatic trials. *Trials*. 2014;15:490. <http://doi.org/f6tngn>.
 28. Najafidoulatabad S, Mohebbi Z, Nooryan K. Yoga effects on physical activity and sexual satisfaction among the Iranian women with multiple sclerosis: a randomized controlled trial. *Afr J Tradit Complement Altern Med*. 2014;11(5):78-82. <http://doi.org/f6pxw9>.
 29. Crane C, Crane RS, Eames C, Fennell MJ, Silverton S, Williams JMG, *et al*. The effects of amount of home meditation practice in Mindfulness Based Cognitive Therapy on hazard of relapse to depression in the Staying Well after Depression Trial. *Behav Res Ther*. 2014;63:17-24. <http://doi.org/gb5fd4>.
 30. Tran US, Cebolla A, Gluck TM, Soler J, Garcia-Campayo J, von Moy T. The serenity of the meditating mind: a cross-cultural psychometric study on a two-factor higher order structure of mindfulness, its effects, and mechanisms related to mental health among experienced meditators. *PLoS One*. 2014;9(10):e110192. <http://doi.org/d6jt>.
 31. Vadiraja HS, Raghavendra RM, Nagarathna R, Nagendra HR, Rekha M, Vanitha N, *et al*. Effects of a yoga program on cortisol rhythm and mood states in early breast cancer patients undergoing adjuvant radiotherapy: a randomized controlled trial. *Integr Cancer Ther*. 2009;8(1):37-46. <http://doi.org/b7t7zg>.
 32. Simkin DR, Black NB. Meditation and mindfulness in clinical practice. *Child Adolesc Psychiatr Clin N Am*. 2014;23(3):487-534. <http://doi.org/f3h79t>.
 33. Ndetan H, Evans MW, Williams RD, Woolsey C, Swartz JH. Use of movement therapies and relaxation techniques and management of health conditions among children. *Altern Ther Health Med*. 2014;20(4):44-50.
 34. Bostic JQ, Nevarez MD, Potter MP, Prince JB, Benningfield MM, Aguirre BA. Being present at school: implementing mindfulness in schools. *Child Adolesc Psychiatr Clin N Am*. 2015;24(2):245-59. <http://doi.org/f3h8bw>.
 35. Greeson JM, Juberg MK, Maytan M, James K, Rogers H. A randomized controlled trial of Koru: a mindfulness program for college students and other emerging adults. *J Am Coll Health*. 2014;62(4):222-33. <http://doi.org/gg57z6>.
 36. Colasante T, Zuffiano A, Bae NY, Malti T. Inhibitory control and moral emotions: relations to reparation in early and middle childhood. *J Genet Psychol*. 2014;175(5-6):511-27. <http://doi.org/gg4nrv>.
 37. Schmiegeler S. [Mindfulness-based intervention in attention-deficit-/hyperactivity disorder (ADHD)]. *Z Kinder Jugendpsychiatr Psychother*. 2015;43(2):123-31. <http://doi.org/d6mj>.
 38. Jastrowski-Mano KE, Salamon KS, Hainsworth KR, Anderson-Khan KJ, Ladwig RJ, Davies WH, *et al*. A randomized, controlled pilot study of mindfulness-based stress reduction for pediatric chronic pain. *Altern Ther Health Med*. 2013;19(6):8-14.
 39. Hermosilla-Canessa A. Práctica espiritual en el Osho International Meditation Resort: ¿Crecimiento o Hedonismo Espiritual? [dissertation]. Barcelona: Universidad de Barcelona; 2014.
 40. Bansai A, Mittal A, Seth V. Osho dynamic meditation's effect on serum cortisol level. *J Clin Diagn Res*. 2016;10(11):CC05-8. <http://doi.org/f9k7pv>.
 41. Vyas A. Effects of seven-day Osho dynamic study: A pilot study. In: Fanti KA, editor. *Psychological Science: Research, Theory and Future Directions*. Athens: Atiner; 2007. p. 205-20.
 42. Oros-de Sapia LB, Neifert I. Construcción y validación de una Escala para evaluar Indicadores Físicos y Psicoemocionales de Estrés. *Revista Evaluar*. 2006;6(1):1-14.
 43. Piñuel-Raigada JL. Epistemología, metodología y técnicas del análisis de contenido. *Estudios de Sociolingüística*. 2002;3(1):1-42.
 44. World Medical Association (WMA). WMA Declaration of Helsinki – Ethical principles for medical research involving human subjects. Fortaleza: 64th WMA General Assembly; 2013.
 45. Organización Panamericana de la Salud, Consejo de Organizaciones Internacionales de las Ciencias Médicas (CIOMS). Pautas éticas internacionales para la investigación relacionada con la salud con seres humanos. 4th ed. Ginebra: CIOMS; 2016.
 46. ICH Expert Working Group. Guideline for good clinical practice E6(R1). ICH Expert Working Group; 1996.
 47. Nascimento MVN, Oliveira IF. As práticas integrativas e complementares grupais e sua inserção nos serviços de saúde da atenção básica. *Estud. Psicol. (Natal)*. 2016;21(3):272-81. <http://doi.org/d6mk>.
 48. Fennell AB, Benau EM, Atchley RA. A single session of meditation reduces of physiological indices of anger in both experienced and novice meditators. *Conscious Cogn*. 2016;40:54-66. <http://doi.org/f79x4t>.
 49. Jensen CG, Lansner J, Petersen A, Vangkilde SA, Ringkøbing SP, Frokjaer VG, *et al*. Open and Calm—a randomized controlled

- trial evaluating a public stress reduction program in Denmark. *BMC Public Health*. 2015;15:1245. <http://doi.org/gb3kn7>.
50. Marine A, Ruotsalainen J, Serra C, Verbeek J. Preventing occupational stress in healthcare workers. *Cochrane Database Syst Rev*. 2006(4):Cd002892. <http://doi.org/c8nqzmz>.
51. Archer S, Phillips E, Montague J, Bali A, Sowter H. "I'm 100% for it! I'm a convert!": women's experiences of a yoga programme during treatment for gynaecological cancer; an interpretative phenomenological analysis. *Complement Ther Med*. 2015;23(1):55-62. <http://doi.org/f63ktx>.
52. Galhardo A, Cunha M, Pinto-Gouveia J. Mindfulness-Based Program for Infertility: efficacy study. *Fertil Steril*. 2013;100(4):1059-67. <http://doi.org/f2m74g>.
53. van Uden-Kraan CF, Chinapaw MJM, Drossaert CHC, Verdonck-de Leeuw IM, Buffart LM. Cancer patients' experiences with and perceived outcomes of yoga: results from focus groups. *Support Care Cancer*. 2013;21(7):1861-70. <http://doi.org/f4zwwk>.
54. Stubing KS. Uma intervenção com meditação para pacientes internados com transtorno alimentar [Master's Dissertation]. São Paulo: Universidade de São Paulo; 2015.
55. Wu WW, Kwong E, Lan XY, Jiang XY. The Effect of a Meditative Movement Intervention on Quality of Sleep in the Elderly: A Systematic Review and Meta-Analysis. *J Altern Complement Med*. 2015;21(9):509-19. <http://doi.org/f7qcgm>.
56. Lipschitz DL, Kuhn R, Kinney AY, Grewen K, Donaldson GW, Nakamura Y. An Exploratory Study of the Effects of Mind-Body Interventions Targeting Sleep on Salivary Oxytocin Levels in Cancer Survivors. *Integr Cancer Ther*. 2015;14(4):366-80. <http://doi.org/f7r7wb>.
57. Barger MK, Weinrich S, Bormann JE, Bouvier M, Hardin SB. Mantram Repetition Program Decreases Insomnia Among Homeless Women: A Pilot Study. *J Psychosoc Nurs Ment Health Serv*. 2015;53(6):44-9. <http://doi.org/d6mm>.
58. Malpass A, Binnie K, Robson L. Medical Students' Experience of Mindfulness Training in the UK: Well-Being, Coping Reserve, and Professional Development. *Educ Res Int*. 2019;2019. <http://doi.org/d6mn>.
59. Kraemer KM, Luberto CM, O'Bryan EM, Mysinger E, Cotton S. Mind-Body Skills Training to Improve Distress Tolerance in Medical Students: A Pilot Study. *Teach Learn Med*. 2016;28(2):219-28. <http://doi.org/gd89tv>.