

The Impact of Sleep on the Effectiveness of Meditation and Contemplative Prayer

Abstract: Meditation and contemplative prayer have been shown to calm the brain, improve health and relaxation, increase cognitive ability and concentration, etc. In this article we shall present the reverse process, namely the effects of a rested brain on the practice of meditation and contemplative prayer. Based on a survey (interviews) of people who regularly meditate and practise contemplative prayer, we will show whether rest, sleep quality, and time spent practising contemplative prayer or meditation have an impact on the results that these two activities bring. Finally, we will show whether the relationship between rest and contemplative prayer or meditation is a one-way or two-way process.

Keywords: meditation, Christian contemplation, impact of sleep

Wpływ snu na skuteczność medytacji i modlitwy kontemplacyjnej

Streszczenie: Wykazano, że medytacja i modlitwa kontemplacyjna uspokajają mózg, poprawiają zdrowie i relaks, zwiększają zdolności poznawcze i koncentrację itp. W niniejszym artykule chcielibyśmy przedstawić proces odwrotny, czyli wpływ wypoczętego mózgu na praktykę medytacji i modlitwy kontemplacyjnej. Na podstawie badania (wywiadów) osób regularnie medytujących i praktykujących modlitwę kontemplacyjną pokażemy, czy odpoczynek, jakość snu i czas poświęcony na praktykowanie modlitwy kontemplacyjnej lub medytacji mają wpływ na rezultaty, jakie przynoszą te dwie aktywności. Wreszcie pokażemy, czy związek między odpoczynkiem a modlitwą kontemplacyjną lub medytacją jest procesem jedno- czy dwukierunkowym.

Słowa kluczowe: medytacja, kontemplacja chrześcijańska, wpływ snu

Introduction

Sleep is a biological necessity that humans (like all animals) have retained throughout evolution. With the development of the industrial age, artificial lighting and the fast pace of life, man has put sleep on the back burner, seriously endangering his health. Too little sleep (less than seven hours per night) prevents the complete breakdown of adenosine and consequently increases the risk of developing cancer, dementia, cardiological diseases, etc. One of the visible signs of sleep deprivation is fatigue and, as a result, a lower ability to concentrate. People who sleep too little are less efficient at work, make more mistakes, forget what they wanted to do and take longer to complete tasks.

The phenomenon of sleep has not yet been conclusively researched. However, scientists have managed to find out how to increase the quality of sleep and what methods help to overcome insomnia. Sleep quality is largely influenced by “sleep hygiene,” in which calming down before falling asleep plays an essential role. It is important to lower cortisol levels before going to bed, to leave worries behind and also to calm down physically. It is advisable to end the day with positive affirmations, gratitude, prayer and meditation. In particular, contemplative prayer and meditation are thought to help one calm down and achieve theta brain waves, which allows one to achieve the neurological processes characteristic of sleep even while awake.

However, in investigating the positive effects of meditation and contemplative prayer on sleep, we questioned whether this is a one-way process or a two-way process. Can a person reap the full benefits of meditation and contemplative prayer if he or she is tired during the practice and therefore less able to concentrate? Or is there more to contemplative prayer and meditation, and does one feel more rested after meditation and contemplative prayer despite being tired?

In this post we will try to answer these questions using the results of a survey we conducted for this purpose. We would like to point out that we included only 15 respondents in our study. Therefore, our results are not fully representative. Nevertheless, they indicate the direction in which we are moving in studying the influence of sleep on the quality of contemplative prayer and meditation. At the same time, the research conducted encourages further research on this problem.

1. Meditation

The word meditation encompasses a wide variety of practices and techniques. Various etymological interpretations already indicate a broad understanding of the term. The most common etymological explanation is that the word meditation derives from the Latin word *meditatio*, meaning meditation, which is thought to have evolved from the Latin root *matum*, “to think” (Ludden 2012). This also denies a relationship with the Latin word *mederi*

‘to heal’, which has been argued by some other authors (Koopsen and Young 2009). At the same time, it is related to the Greek word *medomai* meaning ‘to care for’. Leddy (2012), on the other hand, argues that the word meditation evolved from the Sanskrit word *medha*, ‘wisdom’.

Just as there are different etymological interpretations, there are also different types of meditation. Meditation is a characteristic religious practice of various religions and philosophical views. In Indian religions it is given special importance, and with the spread of Buddhism it has also influenced the religious practice of Chinese religions (Confucianism and Taoism). When we talk about meditation, we too often forget that it is also part of Jewish, Christian, and Islamic religious practice (cf. Sufis). In Gen 24:63, we are told that Isaac took a walk. The word “walk” is written in Greek as *blebetat* and means to meditate in Latin. But in Jewish mysticism, meditation is given a much greater role. Kabbalah itself studies the field of meditation, but for Kabbalists the main goal of this study is to understand the Divine and come closer to God. Jewish mysticism is primarily concerned with the practice of “*hitbodedut*,” an unstructured, spontaneous, and individual form of prayer and meditation through which one can establish a close, personal relationship with God and ultimately realize the inherent divinity of all beings.

Different types of meditation have developed in different traditions, with different techniques of practice and effects on the individual. However, the goal of all meditations is to calm the mind and focus on the breath. In most cases, the meditations are also intended to reflect on fundamental spiritual questions, often accompanied by spiritual insight.

2. Contemplative prayer

Contemplatio (looking, contemplating) is an inner prayer in which the person praying spontaneously focuses on the things of God. In Catholicism, the best known prayers are the Examen, Ignatian contemplative prayer, and *lectio divina*. Some people also find praying the rosary, reading the litanies, and adoring the Blessed Sacrament to be contemplation. The purpose of contemplative prayer is to deepen our gratitude to God, to read God’s Word, and to let God’s Word speak to us. Ignatius of Loyola, who gave great importance to contemplative prayer, said that prayer should not be hurried and that it is necessary to take time for God.

Contemplative prayer and meditation are not exactly the same, of course. Different types of meditation have different goals, but none of the Eastern meditations is directed toward God. The goal of the meditator is to gain knowledge, enlightenment, insight, etc. The goal of contemplative prayer is primarily to listen to God’s word, to discern God’s will, and to integrate it into one’s life.

What connects contemplative prayer and meditation, and why can we compare them at all? Both are characterised by preparation. It is necessary to find a quiet place, get comfortable

and relax. Many meditators and contemplative practitioners use breathing exercises. Both, when practised regularly, are believed to reduce stress, have a positive impact on daily life, benefit health, and positively influence relationships. Previous research has also found that meditation and contemplation affect brain waves that are otherwise unavailable or rarely reached during waking hours.

3. The benefits of contemplative prayer and meditation

Over the past several decades, some 40,000 studies have been conducted demonstrating the benefits of meditation for human physical, mental, and spiritual health. Significantly fewer scientific studies have addressed the positive effects of contemplative prayer on humans. These are the subject of various testimonies from believers. Considering that contemplation is an extension of meditation, and that even Buddhist monks find it more appropriate to use the term contemplation instead of meditation, it is safe to say that both contemplation and meditation have similar, if not identical, effects on humans.

Research shows that meditation (and by extension contemplation) has a positive effect on lowering cortisol levels (Davidson et al. 2003; Pace et al. 2009; Bergland 2013) and serotonin production, slowing cellular ageing (Epel et al. 2009) while increasing the concentration of brain grey matter (Hoelzel et al. 2011). Because of their positive effect on hormone balance, meditation and contemplation prevent or counteract the onset of many other new-age diseases. The list of benefits of meditation and contemplation is not yet complete. Numerous studies have shown the positive effects of meditation on human mental and emotional health. For example, meditation has been shown to help treat depression (Vieten 2011), improve concentration (Davidson et al. 2008; Pettersen 2015; Levy et al. 2011), panic disorders (Kabat-Zinn et al. 1992), and have positive effects on our emotional responses.

Survey also shows that meditation and contemplation reduce insomnia (Brooks et al. 1985) and can acutely improve psychomotor alertness and reduce the need for sleep (Kaul et al. 2010).

Lagopoulos (et al. 2009) and colleagues studied the relationship between brainwaves and meditation »Previous studies have shown that theta waves indicate deep relaxation and occur more frequently in highly experienced meditation practitioners. The source is probably frontal parts of the brain, which are associated with monitoring of other mental processes.« He also said: »When we measure mental calm, these regions signal to lower parts of the brain, inducing the physical relaxation response that occurs during meditation.«

Different types of meditation have different effects on the brain. Meditations that focus on concentration release fast beta and delta waves. Theta waves are characteristic of meditations based on open observation (e.g., Zen meditation, Vipassana, mindfulness, guided meditations). Alpha waves are released most strongly during transcendental meditation.

Contemplative prayer has a similar effect on the brain. “Praying involves the deeper parts of the brain: the medial prefrontal cortex and the posterior cingulate cortex — the mid-front and back portions,” says Spiegel (2006), adding that this can be seen through magnetic image resonance (MRI), which render detailed anatomical pictures. “These parts of the brain are involved in self-reflection and self-soothing.” (Spector 2016) Studies show that prayer helps in overcoming addiction, mainly due to its positive effect on the prefrontal cortex, which is responsible for controlling emotions. Platovnjak adds that rest, including spiritual rest, is also important for human health. Christians can find this rest on Sunday. »Sunday can help the person to pause momentarily and become aware of everything good that happened to him in spite of his circumstances. This will help him become more attentive to what is good and beautiful as well as to the things that are not so good and that he is lacking. The person is also invited to attend Sunday services as a form of shared offering of praise for everything he and his neighbors receive as a gift. The thanksgiving dimension of the Sunday service can be an encouragement for the person to, together with Jesus, thank the Father for everything good and beautiful he receives in spite of the difficult circumstances of his illness. The giving dimension of the services stimulates the person to accept the giving love of Jesus Christ and to unite himself with Jesus so that he himself can give this love to others and can thus become like Jesus.« (Platovnjak 2020, 269–270).

4. Brainwaves

Existing research shows that the benefits of meditation and contemplative prayer are associated with changes in brain waves. To understand the relationship between rest, meditation, or contemplation and brain function, it is necessary to say a few words about brain waves. Our mood and response to the environment depend on the speed of our brain activity. The faster the brain waves, the faster the flow of our thoughts.

There are alpha, beta, delta, theta and gamma waves. Delta waves (0.1-3.9 Hz) are most beneficial to our health and are achieved in deep sleep when the brain relaxes and our cells regenerate. Delta brain waves are also reached in the deepest state of meditation, which is why meditation has a positive effect on human health and functioning. During meditation, two other states of brain activity are reached: theta waves and alpha waves. Theta waves usually lead to sleep, but also enable extremely intense visualisations through pictorial imaginations. In the theta state, one can experience time and space travel without limitations. At the same time, one can enter a state of conscious manifestation that one’s ego cannot penetrate. As a result, in this state, one can become aware of one’s traumas, improve self-awareness, solve problems more quickly, and be more motivated to complete tasks (Yi-Yuang et al. 2019).

Alpha waves are most commonly achieved during transcendental meditation. It is a state of relaxation and high concentration. Relaxed attention enables inspiration, rapid recall, and connection to the subconscious mind. (Ibid.) At the same time, the alpha state is the only way to reach the “ego”, which is one of the goals of meditation.

5. The effect of sleep on the brain

Sleep is food for the brain, because while we sleep, our brain renews itself. The glymphatic system, which protects the brain, is ten times more active during sleep than during wakefulness. During sleep, brain cells shrink, allowing cerebrospinal fluid to flush the brain and rid it of waste. Therefore, the restorative role of sleep is thought to be primarily to put the brain in a functional state that facilitates the removal of waste products from neuronal activity during wakefulness (Xia et al. 2014). During sleep, amyloid-beta, which causes Alzheimer's disease in large amounts, is also removed from our brains (Walker 2020). The hypothalamus plays a key role in sleep, through which certain nuclei in the diencephalon are activated at different stages of sleep. Different neurotransmitters are responsible for the different stages of sleep. The most important neurotransmitter in sleep is GABA.

There are 4 phases of sleep. The first three belong to the NREM phase, one to REM (Rapid Eyes Movement). N1 is characterised by shallow sleep that occurs after falling asleep. In this sleep stage, brain waves change from alpha waves to theta waves. Sleep spindle graphs are characteristic of N2, in which a person is 50% asleep. This is deep sleep, and it is good to have as much of it as possible. N3 and REM are classified as deep sleep. REM is characterised by rapid eye movements, altered breathing, rapid heartbeat, and interrupted thermoregulation. The pattern of brain activity in REM sleep is similar to that of an awake person. (Arthur et al. 2006) Cycles are between 90 and 120 minutes long. How many cycles we go through per night depends on the length and quality of sleep. Deep sleep gets shorter with each cycle and REM sleep gets longer.

Sleep deprivation can have serious consequences for a person who can go longer without food than without sleep. The first visible indicator of our body's need for sleep is fatigue. When a person is tired for a long period of time or suffers from chronic fatigue, he or she usually has other symptoms such as headaches, concentration problems, poorer memory, frequent mood swings, slow metabolic and physical reaction times, irritability, etc. Lack of sleep disrupts hormone balance, which can lead to other diseases such as diabetes, weight problems, high blood pressure, heart disease and dementia.

6. The influence of sleep on contemplative prayer and meditation

This article attempts to answer a research question, namely, what is the impact of sleep on contemplative prayer and meditation. Are contemplative prayer and meditation more effective when one is tired? Does it matter what time one practises contemplative prayer and meditation? Does fatigue affect only one of the practises discussed, and what are the consequences of praying or meditating while tired? We will answer these questions below, but before we do, let us look at the sample of our study.

Sample

15 volunteers participated in the study; 7 of them are regular meditators, 8 are contemplative practitioners. 45% of the respondents were women and 55% were men. The research method used was interview. Interviews were conducted in person, by Zoom, and by email between September and October 2021. The average age of the interviewees was 33 years. The oldest respondent was 89 years old and the youngest was 18. Experts say that an adult should sleep at least 7 hours per night.

Results of the survey

With the survey we wanted to find out how important rest is for the practise of contemplative prayer or meditation. Our thought processes and concentration, which are important for both meditation and contemplation, depend on the rest of our brain. It is well known that sleep deprivation affects concentration, thought focus, and most importantly, stress. We hypothesised that fatigue can also affect the ability to concentrate in meditation and contemplative prayer. Let us take the example of contemplative prayer according to the principle of *lectio divina*. When the person praying is tired, it is difficult for him to concentrate on the chosen passage. It may happen that the praying person has to read the chosen passage several times because his thoughts digress during the reading and he cannot concentrate on the content of the text itself. The *lectio divina* method also invites reflection (meditation) on the subject of the selected passage. Several respondents said that if they were too tired, they might fall asleep and find it harder to gather their thoughts. Sleep can also interfere with other forms of meditation, where the person remains in a static position, and with other forms of prayer (cf. praying the rosary).

Wandering thoughts and the imposition of other thoughts during meditation and contemplative prayer (e.g., what else I need to do for work, who I need to call, what I need to buy at the supermarket, etc.) are also associated with fatigue, which diverts our attention to other things. Constantly consciously focusing the mind on meditating on a Bible passage or concentrating on a thought while meditating can become fatiguing. Hypothetically, after such a prayer, the praying person might feel disappointed because it seems at first glance that he did not get what he expected from the prayer and meditation. We will see below that this is not entirely true.

Respondents told us that their meditation or contemplation is more effective when they meditate or pray in a quiet way. One respondent (I 7) said, "I never meditate if I do not feel rested enough. When I realise I am too tired, I stop meditating and go to sleep. You can not meditate sitting down if you are tired." Most of the other respondents also mentioned that contemplation is less effective if they pray when they are tired. They note that their

concentration is lower, they are less absorbed in God's Word, and they take less time for contemplation.

One-third of our respondents feel that meditation can be different, but no less effective, when they are tired. The latter depends on the type of meditation one practises, as well as other factors. The quality of meditation (and contemplative prayer) is affected not only by fatigue, but also by the stage of life one is in, physical and mental health, relationships, contentment, etc. Roberto R. Pango (et al. 1976) and his colleagues found that meditation affects people's sleep in very different ways. It is reasonable to assume that whether or not a person can meditate and pray in a state of fatigue varies from person to person. In fact, some of our interviewees said that the effect of meditation is even more pronounced when they are tired because it is easier to calm down and focus on oneself when one is tired than when one is under adrenaline. Often, meditative music, breathing exercises and repetition of mothers also contribute to calmness and serenity. All of these relax people and influence the transition from beta brain waves to alpha, delta, and theta brain waves.

During the interview, respondents were asked to choose the statement they thought was more true. They could choose between the following two statements:

- a) The more rested I am, the more effective the contemplative prayer and meditation I do.
- b) The effectiveness of the contemplative prayer or meditation depends on how rested I feel.

Respondents felt that each of the statements was true to some extent. However, the majority were in favour of statement b. Thus, we find that contemplation and meditation have a positive effect on human fatigue. Most respondents meditate or pray even when they are tired because prayer and meditation calm them down, cheer them up, and have an effect on their general well-being. Those who meditate or practise contemplative prayer during the day even find that they are fresher and more focused after prayer or meditation and find it easier to complete other tasks.

It can be argued that both contemplative prayer and meditation are excellent skills for reducing fatigue, stress, overwork, and exhaustion. The latter can be related to the results of previous research that have shown that prayer and meditation have an impact on reducing stress, which consumes a lot of energy and, as a result, exhausts a person physically and mentally. During contemplation and meditation, people come to rest. Respondents who practise contemplation and meditation in the morning or during the day find that they are calmer, more focused, and better able to handle stressful situations during the day. Meditation and contemplation have a positive effect on the quality of sleep and thus on the ability to recover. One respondent who practises contemplative prayer before bed said that his well-being the next day depends on contemplative prayer. He said that he wakes up more rested in the morning if he says contemplative prayer before going to bed.

Discussion

Based on our study and previous research, we hypothesise that contemplation and meditation have a positive effect on modern man, mainly because they calm him down. Respondents seem to prefer mental rest to physical rest. Past research has investigated whether it is possible for meditation and contemplation to replace sleep. They have found that people who meditate are able to sleep more deeply and that, as a result, their sleep is of higher quality and more effective. No exercise can replace sleep, but it can reduce the need for sleep by improving psychomotor wakefulness (Prashant et al. 2010). Just as meditation and contemplation cannot replace sleep, neither can sleep replace the benefits of meditation and contemplation.

At this point, it is necessary to mention the difference between Christian contemplation and certain Eastern (Buddhist, Hindu) meditations. Prayer is a conversation with God. In prayer, one devotes one's time to the Creator, opens one's heart to Him, and invites God to speak to one. During prayer, one becomes aware of God's presence, which in most cases calms one, fills one with renewed strength, and enriches one with hope. For Jesus says (Mt. 11:28-30), "Come to me, all of you who are tired from carrying heavy loads, and I will give you rest. Take my yoke and put it on you, and learn from me, because I am gentle and humble in spirit; and you will find rest. For the yoke I will give you is easy, and the load I will put on you is light."

Prayer gives us the spiritual rest that man so desperately needs. "For those who receive that rest which God promised will rest from their own work, just as God rested from his. Let us, then, do our best to receive that rest, so that no one of us will fail as they did because of their lack of faith." (He 4:10-11)

Through prayer, man connects with God and establishes a relationship with Him, the Other, the Transcendent. Eastern forms of meditation, on the other hand, focus on the relationship with oneself. If Christian meditation is about the relationship between man and God, meditation is about the relationship between man and self (ego). At this point it is necessary to point out that there are many forms of meditation that differ greatly from each other. Even Eastern forms of meditation are not always directed inward. After all, Hinduism is also a religion with a multitude of deities to whom believers turn precisely through meditation and yoga. On the other hand, forms of meditation have also developed throughout history that are not deity-centred but self-centred, where the believer also has the opportunity to connect with the universe or the One. The two best known forms of this type of meditation are Vipassana Meditation and Transcendental Meditation. "Vipassana seeks self transformation through self observation, where the meditator pays disciplined attention to the physical sensations that continuously interact with and condition the mind" (Srinivasan 1992).

Transcendental Meditation is also purely focused on the human being. "The technique which originated in the Vedic tradition in India uses a mantra (a word, sound, or phrase repeated silently) to prevent distracting thoughts from entering the mind. The intent of transcendental meditation is to allow the mind to settle into a quieter state and the body into a state of deep rest. This is seen as ultimately leading to a state of relaxed alertness." (Kenneth et. al 1989). Concentration and a relaxed mind are even more important in this type of meditation. We have seen that some meditators believe that one's own calmness is essential for meditation, while others argue that one can also become calm through breathing exercises and concentration of the mind, and that meditation can be effective even when one is tired.

Nonetheless, fatigue can make one unable to meditate. One is empty because one cannot achieve what one wanted. In researching the effectiveness of contemplative prayer and meditation, it is necessary to find answers to the questions: Why does someone meditate or pray? What does he or she want to achieve? Does one meditate and pray to calm down and feel more rested, or is the main purpose of meditation and contemplative prayer different? An affirmative answer to the last question is acceptable for meditation, while the intention of the person praying in this case is wrong. The first reason for our prayer should be our relationship with God. Man's relationship with God is comparable to interpersonal relationships. Prayer is not always of the same intensity, and the gifts of grace that we receive or that we can recognise in our daily life are also different. All the positive effects of prayer are a gift from God and cannot be forced. Praying to rest will not bring any benefit. Prayer is not a mental or physical exercise. It is a living relationship and we always get something out of it, even if we are very tired when we pray. Therefore, it is important to place prayer in the hands of the Holy Spirit at the beginning and ask for the gifts of grace, including the ability to calm down and clear our minds. "Ask and you will receive, so that your happiness may be complete." (John 16:24)

Because of the size of our sample, we cannot draw general conclusions. It seems that it is better to make time for contemplative prayer and meditation despite fatigue, which in this case should be done shortly and in time for bedtime. Five minutes more sleep will not make a significant difference to our health, but five minutes of prayer can have many benefits; one is calmer, more content, more emotionally rested. God instructed man at creation to take care of himself and take time for mental and physical rest. In all monotheistic religions, there is one day a week to participate in corporate worship and spend time with family. We have noticed that the amount of sleep has decreased by one to two hours per night over the last hundred years. People in the developed world focus primarily on their efficiency and success, even at the expense of sleep. When a person pushes God out of his life, he quickly puts himself in the position - I can do whatever I want, I do not have to obey the laws of nature. But doctors warn that this is not the case. Man is not God and the human body is not a robot. Therefore, it is necessary to stop and take time to sleep. Let us conclude with the words of our interlocutor: "A man who does not sleep enough violates the laws of God."

Bibliography

- Bergland, C. 2013. Cortisol: Why the “Stress Hormone” Is Public Enemy <https://www.psychologytoday.com/us/blog/the-athletes-way/201301/cortisol-why-the-stress-hormone-is-public-enemy-no-1> (access 15/11/2021)
- Bible. 2021. <https://www.catholic.org/bible/> (access 19/08/2022)
- Brooks, J.S., Scarano T. 1985. Transcendental Meditation in the Treatment of Post-Vietnam Adjustment, *Journal of Counseling & Development*, 64 (3), 212–215.
- Davidson R.J., Kabat Zinn J., Schumacher J., Rosenkranz M., Muller D., Santorelli S.F., Urbanowski F., Harrington A., Bonus K., Sheriden J.F. 2003. Alterations in Brain and Immune Function Product by Mindfulness Meditation. *Psychosomatic Medicine*, 65 (4), 564–570.
- Davidson R.J., Lutz A. 2008. Buddhas Brain: Neuroplasticity and Meditation. *IEEE Signal Processing Magazine*, 25 (1), 176–184.
- Epel E., Daubenmier J., Moskowitz J.T., Folkman S., Blackburn E. 2009. Can Meditation Slow Rate of Cellular Aging? Cognitive Stress, Mindfulness, and Telomeres. *Annals of the New York Academy of Science*, 1172 (1), 34–53.
- Guyton A., Hall J.E. 2012. States of Brain Activity—Sleep, Brain Waves, Epilepsy, Psychoses. In: *Textbook of medical physiology (12th ed.)*. Philadelphia: Saunders Elsevier.
- Hölzel B.K., Carmody J., Vangel M., Congleton C., Yerramsetti S.M., Gard T., Lazar S.W. 2011. Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research: Neuroimaging*, 191 (1), 36–43.
- Kabat-Zinn J., Massion A.O., Kristeller J., Peterson L.G., Fletcher K.E., Pbert L., Lenderking W.R., Santorelli, S.F. 1992. Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *The American Journal of Psychiatry*, 149 (7), 936–943.
- Kaul P., Passafiume J., Sargent R.C., O’Hara B.F. *Meditation acutely improves psychomotor vigilance, and may decrease sleep need*. <https://pubmed.ncbi.nlm.nih.gov/20670413/> (access 15/11/2021).
- Kenneth R.E, Abrams A.I., Shear J. 1989. Differential effects of relaxation techniques on trait anxiety: A meta-analysis. *Journal of Clinical Psychology*, 45 (6), 957–974.
- Koopsen C. and Young C. 2009. *Integrative Health: a holistic approach for health professionals*, red. Sudbury, MA: Jones and Bartlett.
- Leddy S. 2006. *Integrative health promotion: conceptual bases for nursing practice*, red. Sudbury, MA: Jones and Bartlett.
- Levy D.M., Wobbrock J.O., Kaszniak A.W., Ostergen M. 2011. *Initial results from a study of the effects of meditation on multitasking performance*, *Proceeding of the 2011 annual conference extended abstracts on Human factors in computing systems – CHI EA 11*, <https://doi.org/10.1145/1979742.1979862> (access 15/11/2021)
- Lush P., Naish P., Dienes Z. 2016. Metacognition of intentions in mindfulness and hypnosis. *Neuroscience of Consciousness*, 1, 1–10.
- Pace T.W., Negi L.T., Adame D.D., Cole S.P., Sivilli T.I., Brown, T.D., Issa M.J., Raison C.L. 2009. Effect of compassion meditation on neuroendocrine, innate immune and behavioral responses to psychosocial stress, *Psychoneuroendocrinology*, 34 (1), 87–98.
- Pagano R.R., Rose R.M., Stivers R.M., Warremburg S. 1976. Sleep During Transcendental Meditation. *Science*, 23 (jan), 308–310.
- Pedersen T., Meditation’s Effects on Emotion Shown to Persist. <https://psychcentral.com/news/2013/06/23/meditations-effects-on-emotion-shown-to-persist#1> (access 15/11/2021)

- Platovnjak, I. 2020. Spiritual Help for Persons Suffering from Depression. <https://hrcak.srce.hr/file/350358> (access 19/08/2022).
- Prashant K., Passafiume J., Sargent C.R., O'Hara B.F. 2010. Meditation acutely improves psychomotor vigilance, and may decrease sleep need, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2919439/> (access 15/11/2021)
- Srinivasan S. 1992. Understanding the process of Vipassana meditation. *Int J Psychol*, 27, 447.
- Spector N. 2017. This is your brain on prayer and meditation. <https://www.nbcnews.com/better/health/your-brain-prayer-meditation-ncna812376> (access 13/11/2021)
- Tang Y.Y., Tang, R., Rothbart M.K., Posner M.I. 2019. Frontal theta activity and white matter plasticity following mindfulness meditation. *Current Opinion in Psychology*, 28 (august), 294–297.
- Vieten C. 2011. Mindfulness for Moms: The Basics, <https://www.psychologytoday.com/us/blog/consciousness-matters/201105/mindfulness-moms-the-basics> (access 15/11/2021)
- Walker M. 2020. *Why we sleep: Unlocking the Power of Sleep and Dreams*. Ljubljana: Mladinska knjiga.
- Xia L., Kang H., Xu Q., Chen M.J., Liao Y., Thiyagarajan M., O'Donnell J., Christensen J.D., Nicholson C., Iliff J.J., Takano T., Deane R., Nedergaar M. 2014. Sleep drives metabolite clearance from the adult brain. *Science* 342 (october), 373–377.