

# Sleep Quality as a Major Factor in Fibromyalgia and Chronic Pain and Fatigue Disorders

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Sleep is one of the most vital elements of achieving good health, and its importance cannot be overstated. Nearly every system of the body depends on satisfactory sleep quality and quantity for routine healing, repair, and restoration. Insufficient sleep robs the body of renewable energy sources and cell restoration, creating a suboptimal environment in the body, and eventually leading to dysfunction, imbalance, and poor health.

Sleep disturbances are common in nearly all chronic pain and fatigue conditions, and notably in fibromyalgia and chronic fatigue syndrome. In some cases, chronic pain and fatigue are a result of underlying sleep problems; while in other cases, sleep problems are actually caused by chronic pain and fatigue. In both scenarios, restoring quality sleep is imperative for healing and pain management.

## **Circadian Rhythms**

The human body functions on an internal 24-hour cycle, known as a circadian rhythm, which functions to align the body's internal activities with its external environment. This rhythm dictates both physiological and behavioral activities, including the sleep-wake cycle, body temperature, metabolism, eating schedules, hormone secretion, glucose control (homeostasis), and cell reproduction.<sup>1</sup> A healthy circadian rhythm will be

synchronized to the earth's rotation, meaning light is the most influential trigger for determining an individual's circadian rhythm. Other elements that can influence the rhythm include genetics, eating schedules, activity, and hormones such as melatonin.<sup>2</sup> Activities such as staying up late, working odd shifts, and eating at unusual hours defy natural influences that establish a healthy circadian rhythm and therefore, can disrupt various internal activities, leading to poor health.

The sleep-wake cycle is one of the initial activities damaged by a disrupted circadian rhythm, prompting chronic insomnia and sleep disturbances. The inability to fall asleep or stay asleep, excessive daytime sleepiness, chronic fatigue, increased pain perception, and randomly falling asleep at unusual times are all roadblocks to quality sleep that will result in a lack of restoration and healing. Establishing a healthy sleep-wake cycle by means of supporting a natural circadian rhythm is foundational for anyone struggling with suboptimal health.

## **Stages of Sleep**

While a healthy circadian rhythm will promote a routine sleep schedule, the next goal for establishing quality sleep is to ensure the body successfully passes through all five stages of sleep. Stage 1 (alpha wave) sleep is a light sleep in which muscle activity slows (sometimes

sudden muscle jerks are experienced during this stage), preparing us for stage 2 (beta wave). Nearly 50 percent of our sleep time is spent in stage 2, during which eye movement ceases and brain activity slows, for the purpose of healing and restoration. As the body passes into stage 3 and stage 4 (collectively known as deep sleep), extremely slow delta brain waves are active, while muscle and eye activity remain silent. Finally, the body spends approximately 20 percent of its total sleep time in REM (rapid eye movement) sleep. In this final stage, breathing is rapid, irregular and shallow, while blood pressure and heart rate increase. The eyes rapidly move in various directions, and muscles are temporarily paralyzed. Each night, the body consecutively passes through the stages of sleep multiple times. Each cycle may last up to two hours. As the night progresses, REM sleep lengthens while stage 3 and 4 sleep shorten. Waking up during a sleep cycle can often disrupt the continuity of the sleep stages as the body decides whether it should resume the previous sleep stage or start over, leading to insomnia and common sleep disturbances.<sup>2</sup>

## **Sleep and Chronic Pain and Fatigue Syndromes**

Chronic pain and fatigue syndromes such as fibromyalgia and chronic fatigue syndrome are often classified by sleep disturbances. Pain can act as

both a cause and consequence of sleep disturbances; and in the case of chronic pain and fatigue syndromes, both elements are present. Neuroimaging studies on fibromyalgia patients have revealed functional sleep disturbances including reduced short-wave sleep and the presence of abnormal  $\alpha$ -rhythms or waves (usually present when we are awake, but relaxed), during delta wave deep sleep, which suggest frequent awakenings during non-REM sleep (stages 1-4).<sup>3,4</sup> Deprivation of stage 4 deep sleep is common with these findings and can exacerbate pain and impair pathways that function to inhibit pain.<sup>5,6</sup> These pathways are already compromised in fibromyalgia patients, leading to abnormal pain sensitivity. Improving sleep has resulted in better pain management and less fatigue while impaired sleep in healthy individuals has created pain and fatigue.<sup>6</sup> This illustrates the critical role of sleep in pain management and its importance in those with chronic pain and fatigue syndromes.

### Sleep and Neurological Regeneration

Several important activities that affect both physical health and mental wellbeing are established while we pass through the stages of sleep. One important activity is the production, proliferation, and connection of new neurons, a process known as neurogenesis.<sup>7</sup> As new neurons are produced, to replace old neurons, new neurological pathways (circuits) are also developed to improve and restore activity of the central nervous system. This is one example of how sleep can improve learning, memory, and other cognitive functions. As new neurons are generated, new receptors for key neurotransmitters such as GABA and dopamine, are also established.<sup>7</sup> Improved transmission of these neurotransmitters can account for the positive effect sleep has on mood, depression and anxiety.

### Healthy Sleep Habits

A healthy circadian rhythm will establish a sleep-wake cycle that follows

the natural patterns of the sun. Most adults benefit most from obtaining at least eight hours of uninterrupted sleep between the hours of 10 or 11 pm and 6 or 7 am. Naturally, the body desires more sleep during the longer nights of the winter season. Likewise, the body is more vibrant and energetic during the long days of the summer, when exposure to sunlight is more direct and lengthier. Both quantity and the specific time of the day are important for sleep quality. Sleeping for an adequate length of time during daylight hours when the body's circadian rhythm is fighting its external environment, creates disrupted, low-quality sleep. This is often seen in third shift workers who may obtain an adequate amount of sleep, but still experience sleep deprivation.<sup>8</sup> Similarly, lack of adequate sleep during an appropriate time can result in sleep deprivation.

Allowing the body to adequately prepare for sleep is equally important. The brain begins releasing melatonin approximately two hours before it assumes sleep, for the purpose of calming and relaxing the body, which promotes uninterrupted sleep. This preparation can be aided by turning off all electronic devices an hour before sleeping to remove the blue light that cancels the effects of melatonin. The use of blue-blocking apps or software for electronic device displays, or the use of amber-lensed glasses, which also block blue light from entering the eye and disrupting melatonin production, can also be very helpful.<sup>8,9</sup> Some individuals find that a warm bath with magnesium

salts is relaxing and promotes better sleep. Alternatively, taking magnesium can help relax muscles and encourage better rest. Engaging in calming activities, reading encouraging literature, practicing meditation, guided imagery, deep-breathing, progressive relaxation techniques, and using an oil diffuser with calming essential oils can further establish sound sleep. Finally, it is important to sleep in a dark room, void of startling sounds and lights, to support optimal melatonin production and uninterrupted sleep.

### Botanicals and Nutraceuticals to Promote Sleep

Establishing healthy sleep habits can require patience and perseverance, especially when trying to build them in the context of a chronic pain and fatigue syndrome. In these cases, calming botanicals and nutrients that promote melatonin production and relaxation can help restore good sleep habits. Chamomile has been used as a mild tranquilizer for centuries and helps promote sleep.<sup>10</sup> It makes a delicious bedtime tea. Valerian is another popular botanical, used in many cultures, for improving sleep quality. It has been shown to induce a sedative-like effect by inhibiting the breakdown of GABA, a calming neurotransmitter.<sup>11</sup> Valerian can also help relax muscles, which encourages relaxation and sleep. Both lemon balm and passionflower are useful when sleep is disturbed by chronic stress and anxiety, common comorbidities with chronic pain and



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# Sleep Quality

➤ fatigue syndromes. Lemon balm and passion flower have been shown, in studies, to significantly improve difficulties in falling asleep and improves the calming activity of GABA, similar to valerian.<sup>12</sup> Additionally, lemon balm may help to decrease pain sensations, leading to better sleep quality.<sup>12</sup> Often a combination of calming botanicals is most effective for improving sleep quality.

Other nutrients that support relaxation and sleep include L-theanine, GABA, phosphatidylserine, melatonin, and 5-hydroxytryptophan (5-HTP). L-theanine is an amino acid found primarily in green tea. It is a precursor to the production of the calming neurotransmitter, GABA. In some cases, supplementing with GABA directly can be temporarily helpful while supporting the body's natural production of this neurotransmitter. GABA's calming actions can be attributed to its ability to balance excitatory neurotransmitters such as dopamine, promote muscle relaxation, and reduce anxiety, all of which contribute to poor sleep. Phosphatidylserine is particularly useful when chronic stress is inhibiting sleep quality, marked by frequent awakenings in the early morning with the inability to resume sleep. Phosphatidylserine is a fatty molecule that is integrated into cell membranes

and especially those of the brain cells. It helps improve the transmission of neurotransmitters between cells. 5-HTP supplies the necessary precursor for the endogenous production of serotonin, a neurotransmitter essential to quality sleep. Finally, melatonin (like its precursor, 5-HTP) may be helpful in rebuilding neurotransmitters that help regulate the sleep-wake cycle.

Regardless of the state of one's health, sleep is foundational for regaining health and maintaining health. In our Western-industrialized societies that idolizes productivity, busy schedules, late nights, and early mornings often rob us of the most important element of health. As a result, health challenges sneak up on us sooner than we would expect and leave us struggling to regain the health we once possessed. It is paramount to correct and preserve this vital activity we call sleep if we would choose health.

Dr. Brady's latest book, *The Fibro Fix*, will give you a wealth of information on how to negotiate your way toward getting the proper diagnosis and the proper treatment for your symptoms of widespread pain and fatigue. The book can be ordered on Amazon, Barnes & Noble, Books-A-Million and other fine book vendors, or at FibroFix.com. Also, learn more about **The Fibro Fix Summit**

where Dr. Brady interviews 30+ experts on FM at FibroFixSummit.com. Also, please visit Dr. Brady's main website at DrDavidBrady.com and follow him on Facebook at DrDavidBrady.

## References

1. Zee P C, et al. Circadian Rhythm Abnormalities. *Continuum: Lifelong Learning in Neurology*, 2013;19(1 Sleep Disorders):132-147.
2. National Institute of Neurological Disorders and Stroke. (2014). Brain basics: understanding sleep. *National Institute of Health*. Retrieved from [http://www.ninds.nih.gov/disorders/brain\\_basics/understanding\\_sleep.htm](http://www.ninds.nih.gov/disorders/brain_basics/understanding_sleep.htm)
3. Choy EH. Current treatments to counter sleep dysfunction as a pathogenic stimulus of fibromyalgia. *Pain Management*. 2016;6(4): 339-46.
4. Diaz-Piedra C, et al. Sleep disturbances in fibromyalgia syndrome: the role of clinical and polysomnographic variables explaining poor sleep quality in patients. *Sleep Medicine*. 2015;16(8), 917-25.
5. Vijayan S, et al. Thalamic mechanisms underlying alpha-delta sleep with implications for fibromyalgia. *Journal of Neurophysiology*. 2015;114(3):1923-1930.
6. Choy EH. The role of sleep in pain and fibromyalgia. *Nature Reviews. Rheumatology*. 2016;11(9):513-20.
7. Fernandes C, et al. Detrimental role of prolonged sleep deprivation on adult neurogenesis. *Frontiers in Cellular Neuroscience*. 2015; 9: 140.
8. Sasseville A, et al. Wearing blue-blockers in the morning could improve sleep of workers on a permanent night schedule: a pilot study. *Chronobiology International*. 2009;26(5): 913-25.
9. Burkhart K, Phelps JR. Amber lenses to block blue light and improve sleep: a randomized trial. *Chronobiology International*. 2009;26(8):1602-12.
10. Srivastava J K, et al. Chamomile: A herbal medicine of the past with bright future. *Molecular Medicine Reports*. 2010;3(6):895-901.
11. Bent S, et al. Valerian for Sleep: A Systematic Review and Meta-Analysis. *The American Journal of Medicine*. 2006;119(12):1005-1012.
12. Cases J, et al. Pilot trial of *Melissa officinalis* L. leaf extract in the treatment of volunteers suffering from mild-to-moderate anxiety disorders and sleep disturbances. *Mediterranean Journal of Nutrition and Metabolism*. 2011;4(3): 211-218. ◆



Dr. David M. Brady has over 25 years of experience as an integrative medical practitioner and academic. He is a licensed naturopathic medical physician in Connecticut and Vermont and a board-certified clinical nutritionist. Dr. Brady is also a prolific author of medical papers and research articles on fibromyalgia and has dedicated a large part of his professional career to helping people recover from this mysterious disorder. He currently serves as the Vice President for Health Sciences, Director of the Human Nutrition Institute, and Associate Professor of Clinical Sciences at the University of Bridgeport in Connecticut. He maintains a private practice, Whole Body Medicine, in Fairfield, Connecticut, and is also the Chief Medical Officer for Designs for Health, Inc. and Diagnostic Solutions Labs, LLC.