An overview on pain syndromes and its therapy in Yoga.

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Low back pain Low back pain has decreased after a course of yoga. Adults with chronic low back pain were randomly assigned to a yoga group (12 weekly sessions of yoga), a therapeutic exercise group or a self-care group (assigned to read and practice exercises in a book). After 12 weeks of yoga, back pain was reduced and back-related function was superior in the yoga group as compared to the therapeutic exercise and book-reading groups. In a more recent study by the same group of investigators the yoga participants after 12 weeks of weekly classes reported less analgesic use and less opiate use than the waitlist control group. Similar effects were noted for participants with non-specific chronic low back pain in a randomized controlled trial. The yoga participants attended weekly yoga sessions for 16 weeks [1]. The control group was given education on low back pain for the same time period. Results revealed reduced pain intensity (by 64%), functional disability (77%) and pain medication usage (88%) in the yoga group at the follow-up assessments. In a more recent study on back pain, women were randomly assigned to yoga and control groups. The yoga program was comprised of physical postures designed for back pain, breathing and meditation. The control group practiced physical exercises and was given didactic sessions on lifestyle change. Disability scores decreased in the yoga group compared to the control group. The yoga group also had greater increases in spinal flexion, right lateral flexion and left lateral flexion. Finally, the yoga group had fewer sleep disturbances as well as better scores on cognitive functions including long-term attention and concentration, delayed and immediate recall, verbal retention and recognition tests. In a multi-modal yoga intervention the same group of investigators more recently reported similar effects of yoga on low back pain but this time comparing Iyenger yoga and a waitlist control group. The yoga group at the end of the 24-week intervention period (90 min classes twice per week) had greater reductions in functional disability, pain and depression. A shorter, one-week intensive yoga program was also effective. This program included asanas (physical postures) designed for back pain, pranayamas (breathing practices), meditation, and didactic and interactive sessions on the philosophical concepts of yoga. The control group practiced physical exercises under a trained physiatrist and also had didactic and interactive sessions on lifestyle change. There was a significant reduction in disability scores in the yoga group as compared to the control group, and the yoga group had greater improvement as compared to the control group on spinal flexion, spinal extension, and right lateral flexion and left lateral flexion. Once again, however, the yoga sessions were multifaceted including physical postures, breathing practices and meditation, making the effects of any of these practices confounded by the others [2].

Potential underlying mechanisms for Yoga reducing pain

The mechanism that has been most frequently used to explain massage therapy effects on pain syndromes, the Gate theory, might also pertain to yoga inasmuch as yoga is a form of self-massage, as in limbs rubbing against limbs and against the floor and stimulating pressure receptors. According to the gate theory, pain stimulates shorter and less myelinated (or less insulated) nerve fibers so that the pain signal takes longer to reach the brain than the pressure signal which is carried by nerve fibers that are more insulated and longer and therefore able to transmit the stimulus faster. The message from the pressure stimulation reaches the brain prior to the pain message and "closes the gate" to the pain stimulus [3]. This metaphor for the electrical and biochemical changes that likely occur has been commonly used in explaining the effect of grabbing your crazy bone when it has been bumped. Another theory that is commonly referenced is the deep sleep theory. In deep sleep, less substance P is emitted and therefore less pain occurs because substance P causes pain. As already mentioned, we directly tested the "enhanced deep sleep leading to less substance P" theory in our study on massage therapy effects on fibromyalgia. Following a period of massage therapy, more time was spent in deep sleep, and lower levels of substance P were noted in the saliva samples taken. Still another theory is that less pain results from increased serotonin levels, serotonin being the body's natural anti-pain chemical. Serotonin also decreases cortisol and depression which are also important effects of massage therapy. And, serotonin is also noted to decrease substance P and other pain-causing chemicals, highlighting the complex interaction between massage therapy's effects on biochemistry. Future yoga studies might use multiple physiological and biochemical measures to enhance our understanding of the mechanisms underlying the pain reduction effects of yoga [4].

Headaches

Individuals with migraine headaches were randomly assigned to a yoga or self-care (stress reducing) group. After 3 months of weekly sessions, the intensity and frequency of headache pain ratings, the anxiety and depression scores and the medication use were lower in the yoga versus the self-care group.

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Labor pain

In still another pregnancy study, the yoga program involved six, 1-h sessions. The yoga group had higher levels of maternal comfort during labor and 2 h post-labor, and they experienced less labor pain than the control group. The yoga group also had a shorter duration of the first stage of labor as well as a shorter total time spent in labor.

Physiological effects of Yoga

A number of physiological effects of yoga have been examined including heartrate, heartrate variability, blood pressure, EEG, pulmonary function and oxygen consumption. Others have measured physical effects including weight loss and balance and flexibility [5].

Conclusion

Yoga poses on psychological conditions including anxiety and depression, on pain syndromes, cardiovascular, autoimmune and immune conditions and on pregnancy. Further, the physiological effects of yoga including decreased heart rate and blood pressure and the physical effects including weight loss and increased muscle strength are reviewed. Finally, potential underlying mechanisms are proposed including the stimulation of pressure receptors leading to enhanced vagal activity and reduced cortisol. The reduction in cortisol, in turn, may contribute to positive effects such as enhanced immune function and a lower prematurity rate.

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