Multidisciplinary Reviews

MINI REVIEW
Published Online: May 5, 2025
https://doi.org/10.31893/multirev.2025295

The enhancing sleep and reducing anxiety in the elderly: A narrative review of tai chi and benson relaxation techniques

Mahek Mohani[a] ✉ | **Snehal Samal**[a] | **Purva Gulrandhe**[b]

[a]Department of Neuro Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Higher Education and Research, Sawangi (Meghe), Wardha, Maharashtra.
[b]IIHMR University, Jaipur, Rajasthan.

Abstract One major public health concern is the incidence of anxiety and sleep disorders in the senior population. Since conventional treatments frequently have poor long-term success rates, alternative therapies are gaining popularity. This review highlights the importance of two such therapies, tai chi and benson relaxation, in enhancing elderly patients' sleep and reducing their anxiety. Benson relaxation, a type of relaxation response training, and tai chi, an ancient Chinese martial art that blends movement and meditation, have gained popularity due to their potential health benefits. The most recent research on these therapies is summarized in this review. These findings demonstrate that tai chi and benson relaxation significantly enhance sleep quality and lessen anxiety in older people. Owing to its physical and meditative elements, tai chi appears particularly effective in promoting sleep through better physical and psychological well-being. Benson relaxation focuses on triggering the relaxation response, which lowers stress levels, promotes better sleep and reduces anxiety. The physiological mechanisms underlying these practices include the modulation of autonomic nervous system activity. By enhancing the parasympathetic nervous system activity and reducing sympathetic dominance, these therapies facilitate a state of relaxation, which supports improved mental and physical health. Studies suggest that regular participation in tai chi can also improve balance and mobility, reducing the risk of falls, a common issue among older adults. Similarly, Benson relaxation has been shown to improve mindfulness and emotional regulation, which are crucial for managing anxiety and promoting restful sleep. The incorporation of these strategies into routine care for elderly individuals presents practical problems as well, underscoring the need for conventionally accessible, cost-effective nonpharmacological therapy options. Research has shown that tai chi and benson relaxation are effective, scientifically validated techniques for improving sleep quality and reducing anxiety in older adults.

Keywords: anxiety, geriatric patients, benson relaxation technique, tai chi, sleep quality

1. Introduction

As the world's population ages more quickly and chronic diseases become more common, older adults are burdened with greater physical and psychological problems, which negatively impacts their quality of life (QoL) (Choo et al., 2020). Age-related sleep disruptions are widespread, and pathological ageing is associated with increase in sleep disorders (Gadie et al., 2017). Numerous studies have demonstrated the connection between aging-related poor sleep quality and a reduction in cognitive capacity, including overall cognitive impairment (Martella et al., 2014), attentional and executive deficits and excessive diurnal sleepiness.

Rapid-eye movement (REM) sleep decreases in proportion to the reduction in overall sleep length, but lighter stages of sleep (stages 1 and 2) increase in response. As people age, their sleep efficiency and overall sleep time decrease, and the number of sleep stage transitions increases (Ohayon & Vecchierini, 2005). Elderly patients with insomnia respond well to sedatives, hypnotics, antihistamines, antidepressants, antipsychotics, and anticonvulsants, among other drug types (Cooke & Ancoli-Israel, 2011). It has been demonstrated that behavioural therapies work well for treating insomnia (Morin et al., 1999). Physiological changes are closely associated with the ageing process. An elevated susceptibility to physical and mental disorders may result from these physiological alterations (Hemmeter & Ngamsri, 2022).

According to previous findings, the prevalence of anxiety in Old Age Home (OAH) residents is 5%, and the prevalence of anxiety in elderly individuals living in the community is 6.7% (Akbar et al., 2018). On the basis of the use of the GHQ-12 questionnaire as a study tool, 33.9% of the elderly population in the chosen region met the criteria for mental health issues. In contrast to men, who had a prevalence of 42.4% (72 out of 170), women had a higher prevalence of mental disorders, at 77.6%

 Received: November 13, 2024 | Accepted: January 9, 2025

(152 out of 196). Depression accounts for 21.9% of all psychiatric disorders, with generalized anxiety disorder occurring in 10.7% of the study participants (Nair et al., 2015).

In the context of general medicine, the two most prevalent mental illnesses are anxiety and depression. Research has shown that physical activity can effectively decrease symptoms of depression and anxiety (Carek et al., 2011). It seems that regular exercise can help reduce anxiety symptoms and panic disorder, as can relaxation or meditation (Paluska & Schwenk, 2000). Many treatment modalities can help patients feel less nervous and sad, including cognitive-behavioral therapy, regular exercise, and relaxation methods such as acupressure treatments and Benson's relaxation method (Gerogianni et al., 2019). Anxiety and depression sufferers frequently turn to nonpharmacologic and unconventional therapy, such as exercise, yoga, meditation, tai chi, or qi gong. According to systematic reviews and meta-analyses, these treatments can reduce the symptoms of sadness and anxiety. It functions as an adjuvant therapy for anxiety disorders, particularly panic disorder (Saeed et al., 2019).

2. Methodology

2.1. Data sources and search engines

The present review examines research from randomized controlled trials (RCTs), systemic reviews, and experimental studies. The articles were gathered via Google Scholar, PubMed, and Scopus as online search engines. The following keywords were used to choose the articles: anxiety, geriatric patients, Benson relaxation, Tai chi, and sleep quality.

2.2. Eligibility criteria

The inclusion criteria were as follows: elderly people and elderly people with anxiety and/or sleep disturbances.

The exclusion criteria were as follows: no full-text articles were found, the study's abstract was the only reference made, and the population selected for the study was not elderly people.

2.3. Benson relaxation technique

The Benson relaxation method (BRM) is a behavioural approach to stress management that does not involve the use of drugs. Among relaxation techniques, BRM is one of the simplest to understand and implement for a particular patient (Heidari Gorji et al., 2014). Benson et al. described the "relaxation response" as a physiological and homeostatic state that opposes the stress-induced state (Beary & Benson, 1974). An unpleasant mental state known as anxiety is a body's normal reaction to perceived threats; it activates the autonomic nervous system and causes hormone alterations (Sun et al., 2019). The Benson relaxation technique (BRT) lowers adrenaline, suppresses sympathetic nervous system activity, controls the hypothalamus, and increases serotonin and endorphin levels. Thus, anxiety can be reduced by utilizing these processes. In addition to its many benefits and ease of use, people experiencing BRT experience no adverse effects (Abarghoee et al., 2022).

BRT effectively enhances sleep quality through several processes, such as stress reduction, enhanced sleep patterns and rituals, and relaxation response activation. Engaging in relaxation exercises puts the body in a state of relaxation that reduces physiological stimulation and promotes calm. This could help lower high stress and alertness levels that often interfere with sleep (Gharehbaghi et al., 2024). Additionally, relaxation techniques can reduce stress and worry, two things that often lead to trouble falling asleep. People who use relaxation techniques can reduce their stress levels and stop their minds from racing, which can cause them to stay up late (Abu Maloh et al., 2022).

2.4. Tai chi technique

Tai chi is a form of Chinese mind-body training that encourages balance and healing at both the physical and mental levels. This is commonly referred to as tai chi chuan or taiji. It is a series of relaxed, dance-like poses that blend Chinese martial arts with meditation techniques. It is a series of relaxed, dance-like poses that blend Chinese martial arts with contemplation techniques. Since tai chi combines psychological awareness, physical steadiness, bodily relaxation, and calm breathing, it has the potential to be widely employed in the prevention and treatment of a wide spectrum of bodily and intellectual health (Wang et al., 2010). Exercises using tai chi have been shown to help treat and prevent insomnia, improve several physiological processes and lessen patients' feelings of worry and sadness (Siu et al., 2021). Among other health benefits, tai chi is a mental-body workout that has been demonstrated to improve self-reported sleep quality (Irwin et al., 2008). It has also been demonstrated that daily tai chi training improves elderly people's balance, hence preventing falls, by reducing health issues related to aging and inactivity. Anxiety reduction can enhance a person's vitality, life satisfaction, memory, and cognitive abilities (Sharma & Haider, 2015).

3. Discussion

One major public health concern is the incidence of anxiety and sleep disorders among the senior population. It is imperative to discover efficacious, nonpharmacological therapies to address these concerns as the population ages. Two such therapies that have drawn interest are tai chi and Benson's relaxation technique, which may help senior citizens sleep better

and experience less worry. The objective of this review article is to assess the effeciency of these strategies in light of previous findings. People who seek rehabilitation with complementary and alternative therapies, such as yoga, tai chi, qigong, and meditation, frequently cite anxiety and depression as among their conditions. These treatments are being used more frequently. Numerous studies on yoga and exercise have shown their therapeutic efficacy to be on par with that of developed depression and anxiety treatments. Yoga and physical exercise have also been shown to be beneficial for anxiety disorders (Saeed et al., 2010). In one of the studies conducted, after four weeks of intervention, the Benson Relaxation group's perceived quality of sleep, latency, duration, disruptions, problems related to sleep, and overall sleep quality were greatly enhanced (Bagheri et al., 2021). The results of Rambod et al.'s study, which used a randomized controlled trial design to evaluate the impact of the BR method on the sleep quality of hemodialysis patients over eight weeks, are consistent with our findings. After the intervention, the patient's subjective sleep quality, total sleep quality, usage of sleep medicine, and daytime dysfunction improved (Rambod et al., 2013). Table 1 summarizes several studies on tai chi and the benson relaxation technique.

Table 1 Summary of various studies on tai chi and the Benson relaxation technique.

Authors and the year of publication	Study type/ methodology	Study sample	Intervention	Results	Conclusion
(Nguyen & Kruse, 2012)	Randomized control trial	102 subjects were included in the study	Two groups of subjects were allocated at random. The group doing Tai Chi received instruction for six months. The control group was told to carry on with their usual everyday routines. Outcome measures used in the study were the Pittsburgh Sleep Quality Index (PSQI), Trail Making Test (TMT), and Falls Efficacy Scale (FES).	In comparison to the control group, the Tai Chi group's participants reported significant improvements in TMT (part A) and TMT (part B). In comparison to the control group, tai chi practitioners showed higher FES and PSQI scores.	Seniors who practice tai chi benefit from better balance, better sleep, and enhanced cognitive function.
(Parsa Yekta et al., 2017)	Randomized control trial	90 postoperated mastectomy patients	Three groups were randomly selected: Benson relaxation, which includes the somatic relaxation technique, periodic breathing, which involves the cognitive relaxation technique type, and control groups.	Following surgery, patients' anxiety levels were lowered by the use of both approaches. Only the alleviation of somatic anxiety was noted by the patients in Benson's relaxation technique group. However, those who used the breathing technique said their bodily and cognitive anxiety had decreased.	Patients experiencing a mastectomy may experience less postoperative anxiety if they use Benson's relaxation and rhythmic breathing techniques.
(Zou et al., 2019)	Randomized control trial	43 elderly individuals	Elderly members were separated into two intervention groups, Tai Chi Chuan (TCC) and Core Stability	The current study's findings imply that while CST and Chen-style TCC both reduce nonspecific chronic pain, they also have protective	Compared to the evidence-based CST program, Chen-style TCC significantly improved the muscle endurance of the left

			Training (CST) each consisting of three sessions per week, lasting 1 hour each, and a control group at random.	benefits on neuromuscular function in older people with Non-Specific Low Back Pain (NLBP).	knee extension in the current study.
(Harorani et al., 2020)	Randomized control trial	84 patients in all were recruited	The patients were split into two groups randomly: the experimental group and the control group. The experimental group received Benson's relaxation response twice a day for five days in a row.	In comparison to the control group, the experimental group's sleep quality significantly improved 24 and 48 hours following the intervention, according to the study's findings.	When used in conjunction with chemotherapy, Benson's relaxation response has been shown to improve anorexia and sleep excellence in cancer patients.
(Irwin et al., 2008)	Randomized control trial	A volunteer sample of 112 healthy older adults	Two groups were randomly selected from among the subjects, Tai Chi Chih (n=59) and health education (n=53). Within that subjects were divided into groups of seven to ten people and given either sixteen weeks of TCC or HE instruction. Three 40-minute TCC sessions every week made for a total of 120 minutes of instruction each week. HE received the same weekly allotment of 120 minutes of instruction. And a follow-up at 25 weeks.	Those who performed Tai Chi Chih were more likely to have improved sleep (PSQI score < 5) than those who received health information (P < 0.05) in a study of people with moderate sleep difficulties (PSQI score ≥ 5). Furthermore, the Tai Chi Chih group showed substantial improvements in reported sleep quality, habitual sleep efficiency, sleep duration, and sleep disturbance as well as overall sleep quality.	Tai Chi Chih has the potential to alleviate sleep complaints in older persons with mild complaints and may even be able to prevent the onset of syndromal insomnia. It is a valuable nonpharmacologic strategy for improving sleep quality.
(Abarghoee et al., 2022)	Randomized control trial	105 women scheduled with cesarean section	Three groups (n = 35 per group) were randomly assigned to them: Benson Relaxation Technique (BRT), Music Therapy (MT), and control. Before having a cesarean section, the women in the BRT and MT	Comparing the women in the BRT and MT within-group comparisons revealed that the anxiety levels were considerably lower following the interventions than before them. Additionally, after the intervention, anxiety was considerably	While both BRT and MT assisted primiparous women in reducing their anxiety before cesarean section, research indicated that BRT was more successful.

			groups spent 20 minutes exercising and listening to music, respectively. The women's anxiety in the groups was assessed both before and after the intervention using the State Anxiety Inventory.	lower in the BRT and MT groups than in the control group, according to between-group comparisons (p = 0.007).	
(Cheng et al., 2023)	Cross-sectional study	1352 participants	Separated into six age and gender-based groups based on Tai Chi exercise habits, depression propensity, and sleep quality.	Overall, the findings of this study suggest that long-term engagement in Tai Chi exercise may not only reduce depression tendency but also improve sleep quality in older adults.	This study underscores the importance of regular physical activity like Tai Chi in promoting mental health and overall well-being among the elderly population.
(Gao et al., 2022)	Experimental study	80 mild-moderate old adults with dementia	Three groups were chosen at random. A 12-week Tai Chi or traditional exercise intervention was given to the intervention groups.	Research showed, from 0 to 12 weeks, there was a significant difference between the two intervention groups in terms of short physical performance battery, sleep efficiency, and quality of life, with the Tai Chi group showing a considerable advantage over the conventional exercise group.	For elderly dementia patients, tai chi and traditional exercise may enhance quality of life, physical performance, and sleep efficiency. Moreover, Tai chi might be a better strategy for enhancing physical performance.
(Sun et al., 2023)	Experimental study	50 middle-aged or elderly patients with hypertension no more than level II.	The patients were separated into a control group (n=25) and a Tai Chi exercise group (n=25)	According to the research findings, patients' systolic and diastolic blood pressures as well as their pulse pressure difference all significantly drop with Tai Chi activity. In addition, Taijiquan can lower body fat percentage, increase body fat rate and body mass index, increase the body's burning and consumption of fat, and enhance older people's central neuromodulation.	The study's conclusions show that practicing Tai Chi considerably lowers patients' systolic and diastolic blood pressures as well as their pulse pressure differential. Taijiquan can also improve the body's ability to burn and consume fat, decrease body fat percentage, raise body fat rate, and improve body mass index in elderly individuals.
(Zhou et al., 2024)	Cross-sectional study	493 older adults	Questionnaires on mortality anxiety, psychological capital, social	In older persons living alone, tai chi exercise greatly reduced death anxiety. Additionally,	Tai chi exercise, through the chain-mediated benefits of psychological capital

	support and tai chi practice were used to evaluate the participants.	it had a positive correlation with psychological capital and social support, both of which had a negative correlation with death anxiety.	and social support may help elderly persons who live alone feel less afraid of dying.

Six months of low- to moderate-intensity tai chi can help older persons with mild sleep issues enhance their self-rated quality of sleep. It appears that tai chi is a helpful nonpharmacological way to obtain better sleep (Li et al., 2004). Li et al.'s study provides a possibly helpful nonpharmacological therapy option as a workable method to reduce the likelihood of medication side effects in older persons with sleep disturbances. When tai chi is practiced regularly- for example, by practicing at a set time each day or week- it helps older adults with their sleep issues and enhances their overall quality of life (Li et al., 2024). According to Ancoli-Israel et al., Tai chi exercises are slow, gentle, and incorporate deep diaphragmatic breathing, relaxation, and fluid, flowing motions (postures). These elements contribute to a better sense of well-being and a changed state of mind, which may improve the quality of sleep. Additionally, tai chi may assist alter circadian rhythm (Ancoli-Israel et al., 1997). Beyond these advantages, tai chi offers the following: it is inexpensive, simple to use (e.g., indoors or outdoors), and may be done at low to moderate intensity in community or clinical settings (Li et al., 2004).

Although research on tai chi and the bensons' relaxation technique has shown promise in lowering anxiety and improving the quality of sleep for senior citizens, there are some limits to the findings. An important obstacle is that older adults tend to be less cooperative, which might affect how well the intervention protocols are followed. Age-related restrictions also come into play since some senior people may experience physical or mental disabilities that make it difficult for them to be completely involved in these activities. Furthermore, these procedures frequently take longer to generate noticeable outcomes, which may be a disadvantage for people who need results right now. Finally, adherence to the protocol is frequently inconsistent among the elderly population, which may have had an impact on the overall results of the investigations.

4. Conclusion

Two effective nonpharmacological therapies that help seniors sleep better and feel less worried are tai chi and bensons relaxation technique. Even though these operations can be challenging, they offer significant benefits. Future research should examine the relative effectiveness of these techniques as well as any potential synergistic advantages of combining them. Healthcare professionals should incorporate these techniques into comprehensive care plans that are customized to meet the individual needs of each elderly patient to address anxiety and sleep disorders.

Ethical Considerations

Not applicable.

Conflict of Interest

The authors declare no conflicts of interest.

Funding

This research did not receive any financial support.

References

Abarghoee, S. N., Mardani, A., Baha, R., Aghdam, N. F., Khajeh, M., Eskandari, F., & Vaismoradi, M. (2022). Effects of Benson relaxation technique and music therapy on the anxiety of primiparous women prior to cesarean section: A randomized controlled trial. *Anesthesiology Research and Practice*, *2022*, 9986587. https://doi.org/10.1155/2022/9986587

Abu Maloh, H. I. A., Soh, K. L., AbuRuz, M. E., Chong, S. C., Ismail, S. I. F., Soh, K. G., & Abu Maloh, D. I. (2022). Efficacy of Benson's relaxation technique on anxiety and depression among patients undergoing hemodialysis: A systematic review. *Clinical Nursing Research*, *31*(1), 122–135. https://doi.org/10.1177/10547738211024797

Akbar, S., Tiwari, S. C., Tripathi, R. K., Pandey, N. M., & Kumar, A. (2018). Prevalence of psychiatric illness among residents of old age homes in Northern India. *Journal of Neurosciences in Rural Practice*, *9*(2), 193–196. https://doi.org/10.4103/jnrp.jnrp_340_17

Ancoli-Israel, S., Poceta, J. S., Stepnowsky, C., Martin, J., & Gehrman, P. (1997). Identification and treatment of sleep problems in the elderly. *Sleep Medicine Reviews*, *1*(1), 3–17. https://doi.org/10.1016/S1087-0792(97)90002-2

Bagheri, H., Moradi-Mohammadi, F., Khosravi, A., Ameri, M., Khajeh, M., Chan, S. W.-C., Abbasinia, M., & Mardani, A. (2021). Effect of Benson and progressive muscle relaxation techniques on sleep quality after coronary artery bypass graft: A randomized controlled trial. *Complementary Therapies in Medicine*, *63*, 102784. https://doi.org/10.1016/j.ctim.2021.102784

Beary, J. F., & Benson, H. (1974). A simple psychophysiologic technique which elicits the hypometabolic changes of the relaxation response. *Psychosomatic Medicine*, *36*(2), 115–120. https://doi.org/10.1097/00006842-197403000-00003

Carek, P. J., Laibstain, S. E., & Carek, S. M. (2011). Exercise for the treatment of depression and anxiety. *International Journal of Psychiatry in Medicine*, *41*(1), 15–28. https://doi.org/10.2190/PM.41.1.c

Cheng, L., Chang, S., Wang, B., He, B., & Tan, Y. (2023). Cross-sectional study of depression tendency and sleep quality in 1352 people practicing Tai Chi. *Research in Sports Medicine*, *31*(5), 650–662. https://doi.org/10.1080/15438627.2021.2024832

Choo, Y. T., Jiang, Y., Hong, J., & Wang, W. (2020). Effectiveness of Tai Chi on quality of life, depressive symptoms and physical function among community-dwelling older adults with chronic disease: A systematic review and meta-analysis. *International Journal of Nursing Studies*, *111*, 103737. https://doi.org/10.1016/j.ijnurstu.2020.103737

Cooke, J. R., & Ancoli-Israel, S. (2011). Normal and abnormal sleep in the elderly. In P. J. Vinken & G. W. Bruyn (Eds.), *Handbook of clinical neurology* (Vol. 98, pp. 653–665). Elsevier. https://doi.org/10.1016/B978-0-444-52006-7.00041-1

Gadie, A., Shafto, M., Leng, Y., & Kievit, R. A. (2017). How are age-related differences in sleep quality associated with health outcomes? An epidemiological investigation in a UK cohort of 2406 adults. *BMJ Open*, *7*(7), e014920. https://doi.org/10.1136/bmjopen-2016-014920

Gao, R., Greiner, C., Ryuno, H., & Gao, S. (2022). Tai Chi or conventional exercise on physical performance, sleep, and quality of life in older people with dementia. *Innovation in Aging*, *6*(Suppl 1), 467. https://doi.org/10.1093/geroni/igac059.1813

Gerogianni, G., Babatsikou, F., Polikandrioti, M., & Grapsa, E. (2019). Management of anxiety and depression in haemodialysis patients: The role of non-pharmacological methods. *International Urology and Nephrology*, *51*(1), 113–118. https://doi.org/10.1007/s11255-018-2022-7

Gharehbaghi, M., Mirhosseini, S., Minaei Moghadam, S., Salari, M., Grimwood, S., & Vaghee, S. (2024). Benson relaxation technique to address sleep quality and aggression among patients with bipolar type I disorder: A randomized clinical trial study. *Heliyon*, *10*, e30648. https://doi.org/10.1016/j.heliyon.2024.e30648

Harorani, M., Davodabady, F., Farahani, Z., Hezave, A. K., & Rafiei, F. (2020). The effect of Benson's relaxation response on sleep quality and anorexia in cancer patients undergoing chemotherapy: A randomized controlled trial. *Complementary Therapies in Medicine*, *50*, 102344. https://doi.org/10.1016/j.ctim.2020.102344

Heidari Gorji, M. A., Davanloo, A. A., & Heidarigorji, A. M. (2014). The efficacy of relaxation training on stress, anxiety, and pain perception in hemodialysis patients. *Indian Journal of Nephrology*, *24*(6), 356–361. https://doi.org/10.4103/0971-4065.132998

Hemmeter, U. M., & Ngamsri, T. (2022). Physical activity and mental health in the elderly. *Praxis*, *110*(4), 193–198. https://doi.org/10.1024/1661-8157/a003853

Irwin, M. R., Olmstead, R., & Motivala, S. J. (2008). Improving sleep quality in older adults with moderate sleep complaints: A randomized controlled trial of Tai Chi Chih. *Sleep*, *31*(7), 1001–1008.

Li, F., Fisher, K. J., Harmer, P., Irbe, D., Tearse, R. G., & Weimer, C. (2004). Tai Chi and self-rated quality of sleep and daytime sleepiness in older adults: A randomized controlled trial. *Journal of the American Geriatrics Society*, *52*(6), 892–900. https://doi.org/10.1111/j.1532-5415.2004.52255.x

Li, L., Li, X., Huang, Y., Li, H., Li, C., Ma, Y., Zhang, J., Peng, F., & Lyu, S. (2024). An RCT meta-analysis based on the effect of Tai Chi exercise therapy on the outcome of elderly patients with moderate-to-severe sleep disorders: A systematic review study. *Heliyon*, *10*(2), e24085. https://doi.org/10.1016/j.heliyon.2024.e24085

Martella, D., Marotta, A., Fuentes, L. J., & Casagrande, M. (2014). Inhibition of return, but not facilitation, disappears under vigilance decrease due to sleep deprivation. *Experimental Psychology*, *61*(2), 99–109. https://doi.org/10.1027/1618-3169/a000229

Morin, C. M., Hauri, P. J., Espie, C. A., Spielman, A. J., Buysse, D. J., & Bootzin, R. R. (1999). Nonpharmacologic treatment of chronic insomnia: An American Academy of Sleep Medicine review. *Sleep*, *22*(8), 1134–1156. https://doi.org/10.1093/sleep/22.8.1134

Nair, S. S., Raghunath, P., & Nair, S. S. (2015). Prevalence of psychiatric disorders among the rural geriatric population: A pilot study in Karnataka, India. *Central Asian Journal of Global Health*, *4*(1), 138. https://doi.org/10.5195/cajgh.2015.138

Nguyen, M. H., & Kruse, A. (2012). A randomized controlled trial of Tai Chi for balance, sleep quality and cognitive performance in elderly Vietnamese. *Clinical Interventions in Aging*, *7*, 185–190. https://doi.org/10.2147/CIA.S32600

Ohayon, M. M., & Vecchierini, M.-F. (2005). Normative sleep data, cognitive function and daily living activities in older adults in the community. *Sleep*, *28*(8), 981–989.

Paluska, S. A., & Schwenk, T. L. (2000). Physical activity and mental health: Current concepts. *Sports Medicine*, *29*(3), 167–180. https://doi.org/10.2165/00007256-200029030-00003

Parsa Yekta, Z., Sadeghian, F., Taghavi Larijani, T., & Mehran, A. (2017). The comparison of two types of relaxation techniques on postoperative state anxiety in candidates for the mastectomy surgery: A randomized controlled clinical trial. *International Journal of Community Based Nursing and Midwifery*, *5*(1), 61–69.

Rambod, M., Pourali-Mohammadi, N., Pasyar, N., Rafii, F., & Sharif, F. (2013). The effect of Benson's relaxation technique on the quality of sleep of Iranian hemodialysis patients: A randomized trial. *Complementary Therapies in Medicine*, *21*(6), 577–584. https://doi.org/10.1016/j.ctim.2013.08.009

Saeed, S. A., Antonacci, D. J., & Bloch, R. M. (2010). Exercise, yoga, and meditation for depressive and anxiety disorders. *American Family Physician*, *81*(8), 981–986.

Saeed, S. A., Cunningham, K., & Bloch, R. M. (2019). Depression and anxiety disorders: Benefits of exercise, yoga, and meditation. *American Family Physician*, *99*(10), 620–627.

Sharma, M., & Haider, T. (2015). Tai Chi as an alternative and complementary therapy for anxiety: A systematic review. *Journal of Evidence-Based Complementary & Alternative Medicine*, *20*(2), 143–153. https://doi.org/10.1177/2156587214561327

Siu, P. M., Yu, A. P., Tam, B. T., Chin, E. C., Yu, D. S., Chung, K.-F., Hui, S. S., Woo, J., Fong, D. Y., Lee, P. H., Wei, G. X., & Irwin, M. R. (2021). Effects of Tai Chi or exercise on sleep in older adults with insomnia: A randomized clinical trial. *JAMA Network Open*, *4*(2), e2037199. https://doi.org/10.1001/jamanetworkopen.2020.37199

Sun, H., Lv, W., & Lee, J. (2023). Effect of Tai Chi exercise on healthcare and quality of life of middle-aged and elderly patients with hypertension. *International Journal of Healthcare Information Systems and Informatics*, *18*, 1–12. https://doi.org/10.4018/IJHISI.326130

Sun, Y., Huang, K., Hu, Y., Yan, S., Xu, Y., Zhu, P., & Tao, F. (2019). Pregnancy-specific anxiety and elective cesarean section in primiparas: A cohort study in China. *PLOS ONE*, *14*(5), e0216870. https://doi.org/10.1371/journal.pone.0216870

Wang, C., Bannuru, R., Ramel, J., Kupelnick, B., Scott, T., & Schmid, C. H. (2010). Tai Chi on psychological well-being: Systematic review and meta-analysis. *BMC Complementary and Alternative Medicine*, *10*, 23. https://doi.org/10.1186/1472-6882-10-23

Zhou, J., Wu, B., Su, L., & Ma, X. (2024). The influence of Tai Chi on the death anxiety of elderly people living alone: The chain mediating effect of social support and psychological capital. *Frontiers in Psychology*, *14*, 1303524. https://doi.org/10.3389/fpsyg.2023.1303524

Zou, L., Zhang, Y., Liu, Y., Tian, X., Xiao, T., Liu, X., Yeung, A. S., Liu, J., Wang, X., & Yang, Q. (2019). The effects of Tai Chi Chuan versus core stability training on lower-limb neuromuscular function in aging individuals with non-specific chronic lower back pain. *Medicina*, *55*(3), 60. https://doi.org/10.3390/medicina55030060