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Role of Yoga practices on cognitive functions: A review

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Abstract--Yoga is the science of conditioning one's mind and body via the practise of shatkarma, asana, pranayama, mudra, and meditation. The aim of this review of literature is to give theoretical rationale for identifying. (a) the specific attributes of yoga poses that have been used in yoga protocols of various studies but have not been explicitly explored, & (b) the minimum time necessary to keep a posture to bring about a corresponding change in performance among the aforementioned cognitive functions (s) In humans, The most prevalent and under-treated problems are cognitive decline & psychological health problems. Different studies have been carried out to determine the influence of Yoga on human cognitive and psychological health indices. However, no comprehensive examination of the effects of yoga-based therapy on human cognitive and mental health has been undertaken to far. Yoga is an ancient science that places a premium on disease prevention and treatment, as well as the percentage of health. Yoga is recognized to delay the effects of aging and has been found to be effective in the therapy of aging-related disorders. Yoga is a centuries-old discipline that is said to improve both physical and emotional well-being. Yoga blends physical positions, rhythmic breathing, and meditation activities to create a comprehensive mind-body experience for practitioners. While the advantages of exercising are widely recognized, neuroscience studying exercise has recently

developed an interest in the active selective attention component of breathing and meditation practise. The aim of this research is to evaluate the impact of yoga on cognitive functions. Yoga combines physical poses, regular breathing, and meditation to provide a holistic mind- body experience for practitioners. Despite the widespread acceptance of the advantages of physical activity, new study appears on a regular basis.

Keywords---memory, concentration, yoga, attention, cognitive function.

Introduction

Yoga is a distinct breathing and postural exercise that can achieve calm. Yoga is a religious, moral, physical, and physiological system that originated in ancient India. Yoga is a type of spiritual activity or it is an elixir for human life. It is a philosophical, scientific, and artistic genre in India. It is a way of life in a broader sense. It aimed to achieve a larger goal, such as uniting personal and universal consciousness. The practise of spiritual procedures and practises as outlined by *Maharshi Patanjali* in the *Yoga Sutras* and *Hatha Yoga* traditions is at the centre of Yoga science. Yoga has become increasingly popular over the last few decades has resulted of its positive effects on general health.

Self-control, social behavior, cleansing methods (*Kriya*), yoga *Asanas* (postures), *pranayama* (breathing exercises), & meditation (*Dharana* & *Dhyan*) are all part of it [1]. Yoga-based interventions are those that incorporate at least one of these activities. Yoga helps with general personality development and prevents various illnesses and spiritual upliftment. In scientific studies, yoga has been found to benefit cardiac diseases such as pressure, cardiovascular disease, cardiovascular disease, and heart rate variability [2]. It is beneficial for metabolic diseases such as lowering blood cholesterol, losing weight, and lowering blood sugar[3]. It also helps with mental health, cognitive capacities, sadness, anxiety, & mood [4-5]. Heart disease, asthmatic, osteoporosis, scleroderma, gait and balancing dysfunction, and general quality of life are just a few of the chronic health problems that yoga can help with in older people[6-7]. Yoga has been found to be a practical, safe, and helpful [8-9] mind-body intervention in prior studies. Yoga-based techniques include physical, cognitive, and emotional elements [10]. As a result, they are more successful than non-pharmaceutical therapies. Cognitive decline is just a frequently seen condition that adds to a severe impairment that impairs the quality of life. According to a health and ageing study conducted in Mexico, the total incidence of cognitive impairment in the elderly is 34% [11,12]. Cognitive decline is a common occurrence in the elderly, resulting in severe disability and a decreased quality of life. According to Journal Pre-proof, another study on rural aged people in China found that 23.3 percent have cognitive impairment without dementia [13]. According to a review, the annual conversion of mental problems to dementia is between 5 and 10% [14]. These findings point to the growing issue of cognitive decline.

Yoga

Yoga is a large combination of religious, ethical, and physical exercises that aims to achieve the purest measure of self. It originated in Indian culture. *Asanas* (postures), *pranayama* (breathing exercises), and *dhyana* (meditation) are the three core components of Hatha yoga (meditation). Much of Western yoga is built on the foundation of *Hatha* yoga (meditation). Postures that help build flexibility and strength include standing, bowing, rolling, and balancing the body. Meditation is a technique for calming the mind while retaining focus. Breathing exercises help the mind concentrate while also relaxing the body (Riley, 2004). While yoga has Hindu roots, it may be performed anywhere on a humanism level and used as a therapeutic in therapeutic settings. To explain yoga's potential to cure a range of ailments, many ideas aspects of Western physiology have been offered. The excitation of the ventral tegmental area primarily through yoga *Nidra* (Riley, 2004) [15] can be summarised as the adjustment of nervous system tone and the eventually results decrease in increased sympathetic, the commencement of antagonism nerve component structures, which may enhance the nerve and muscle system's deep relaxation, and the adjustment of nervous system tone and the resulting decrease in sympathetic stimulation.

Many people practise yoga to improve their overall health and prevent sickness. [16,17] Anxiety, depression, back pain, asthma, hypotension, musculoskeletal difficulties, obstructive pulmonary disease (copd, and cancer are among the conditions for which it is becoming increasingly popular as a complementary treatment[26] . Yoga has been shown to enhance cardiovascular disease risk and sleep while also reducing anxiety, melancholy, and chronic pain symptoms[31]. Yoga has been demonstrated to boost cognitive performance, as well as psychosocial and happiness. Yoga has a considerable influence on numerous aspects of cognitive capacity in healthy people, particularly concentration and information processing, executive function, and memory, according to a new meta-analysis. Hariprasad et al., [33] conducted a randomised trial of yoga on 87 non-dementia older people living in a senior home. 6 months of yoga (body posture, breathing, and meditation) greatly enhanced visual and verbal cognition, attention, and processing speed.

Cognitive impairment & dementia: Dementia and cognitive impairment are more common in the elderly. In the elderly with cognitive deficits, it was demonstrated that a yoga-based intervention is a feasible intervention. Trataka (visual cleansing method), a sort of yoga practise, has been proven to improve a variety of cognitive activities, such as Digit Span Scores, Six Scores on the Alphabet Cancellation Test, and the Trail Making Test-B, after just one month of practise. As a result, yoga could be a useful tool for improving cognitive in the elderly. Six months of Hatha-Yoga had no perceptible influence on brain functions, according to another study [34]. Typical yoga sessions included the following:

- Surya Namaskar- 4 min (Also known as Surya Namaskar, or sun salutation, is one of the most beneficial exercises one can do. The advantages that these exercises provide are one-of-a-kind and exceptional. Surya Namaskar is frequently done first thing in the morning, facing the rising sun. It is performed in 12 steps, each with its own posture and breathing rhythm.

Shrimant Suryanamaskar was made a mandatory part of the physical training regimen in his kingdom's schools by *Bhavanrao Pant Pratinidhi*. He popularised *Suryanamaskar* as just a simple physical activity for an individual's overall growth. According to Hagins et al, yoga practise using SN for more than 10 minutes can provide a portion of adequately intensive physical exercise and increase cardiorespiratory fitness in unfit or sedentary individuals[35].

- *Padmasana*- 4 min (*Padmasana* means lotus posture. This asana gives the appearance of a lotus. It is the best asana for contemplation.) P. B. Joshi adds that soldiers on horseback who use the *Padmasana* as their seat, elephant, or chariot achieve victory, & that if the figure is a design that is drawn beside a house, it gives good fortune to the occupants. He also discusses the traditional origins of belief in the impact of *Padmasana*, namely that after a battle between angels & demons, Vishnu blessed this at the request of his consort Laxmi, vowing that it would be more fortunate & sacred in the future than his own vehicle[36].
- *Dhanurasana*- It can strengthen the abdominal muscles, organs and increase the appetite. Therapeutically *Dhanurasanam* can be applied for Keel noigal[2] (Musculoskeletal Joint ailments). Most of the clinical trials on Diabetes Mellitus included *Dhanurasanam* as one of the Yoga-Posture for intervention. The posture of *Dhanurasanam* can increase the abdominal pressure and blood circulation[37].
- *Sarvangasanas*- 4 min (*Sarvangasana* is a more advanced form of yoga that is filled with several health advantages. It is a mindset centred on entire body conditioning. Because it strengthens and maintains the interior components of your body. It is often referred to as the shoulder posture.) Selvamurthy et al. found a substantial drop in blood pressure in hypertension patients following three weeks of practise of nine sets of nine asanas; SVGN being one of these.
- Given the apparent haemodynamic as well as many other perturbations produced by the upside-down position assumed in SVGN, one cannot be assured of the advisability of practising this even by a healthy individual[38]. There is currently no information available on the effect of this yoga practice on arterial blood pressure or other cardiovascular factors.
- *Superbrainyoga*- 1 min (Super Brain Yoga revitalises the mind by harmonising our alpha brain waves) The exercise alleviates stress and promotes psychological stability. It supports normal cognitive function.
- *Vajrasana*- 2 minutes (A sensation is felt all through the body when this asana is practised.) We should go into the movement with a relaxed attitude. Inhale slowly and exhale slowly. Concentrate on your breathing while drawing your abdomen inward and stretching your chest.)
- *Vrikshasana* (tree stance) -1 minute (*Vrksasana* is a freestanding *asana* that increases mental clarity, balance, and attention. The phrase is derived from the Sanskrit words *vrksa* (tree) and *asana* (position) in Sanskrit. Standing on one leg, the practitioner must flex the other leg so that the foot rests on the inside of thigh. The palms of the hands are touching and extended over the head.)
- *Shavasana* (corpse pose) 6 minutes Yoga practitioners who practise regularly had a lower risk of developing hypertension with their age and sex

matched contemporaries. The night dip in blood pressure, which is present in healthy individuals but may be missing in some hypertensives, is usually regained. Even in an unskilled person who may not practise Yoga consistently, Each of *Shavasana* and *Omkar* chanting can reduce B.P. by approximately 10 - 15 mm / Hg (Chandratreya., 2011) [39].

Benefits of Yoga

Higher-intensity and integrated yoga practices have been linked to increased health benefits [40,41]. These advantages are becoming increasingly obvious to the general public as yoga becomes more commercialized. Yoga is gaining popularity in the United States as it finds its way into the public. The most fundamental question concerning yoga is why individuals do it and what inspires them to do (or not do) it. Certain *yogis* (male) and *yoginis* (female) practitioners claim that they were drawn to yoga because of its well-known cosmetic benefits, which include health development, maintenance, and even weight loss. Others seek more profound benefits of yoga, desiring individual well-being and yogic qualities such as self-acceptance, mindfulness, and a semi-spiritual state [42]. Others employ yoga as a preventative measure, reducing or controlling disease and its associated risk factors [43]. As stated below, yoga can be regarded as a complementary therapeutic modality and healing outlet for persons battling a chronic illness or rehabbing an injury. However, the most frequently cited reason for cultivating personal yoga is to enhance one's ability to manage stress more efficiently.

Yoga's ability to alleviate stress may have a beneficial effect on a variety of risk of chronic disease. Because hypertension, diabetes, high cholesterol, & obesity all increase the likelihood of developing chronic illnesses, finding solutions to prevent, reduce, or treat these health problems is critical. When yoga is employed as just an integrative health therapy, it has the potential to affect all four connected aspects concurrently[44].

- Davidson et al. (2012) discovered that benefits of yoga demonstrated in adults are also applicable to children and adolescents[45].
- Hayes & Chase (2010) conducted a review of the literature and issued suggestions to primary care physicians regarding yoga prescribe [46].
 - Reduce anxiety and tension.
 - Improve your functional status and the symptoms of low back pain.
 - Improve asthmatic subjective and objective outcomes.
 - In elderly adults, improve physical and quality-of-life factors.
 - Eventually be able for a baby to be born.
 - The treatment of eating problems will be aided.
 - Improve the quality of births.

Yoga as cognition function

Yoga may enhance cognitive function in a variety of ways. The researchers believe that an increase in general body awareness and also attention may have a generalization effect on cognition. Similarly, it has been demonstrated that

depression impairs cognitive function; because yoga improves moods, this provides another probable explanation for the research findings. Memory is the capacity to recall or recall previously learned experiences, knowledge, or skills. Amit and Neelam (2012) did a study in adolescents and discovered that those who practise yoga have improved concentration and short-term memory[47]. Despite the facilitate importance of meditation & yoga in our daily activities, cognitive processes, and well-being, yoga has not yet been a required component of four curricula in order to ascertain the effect of consistent meditation and yoga practise on cognitive functions.

Yoga practise has a variety of physical benefits, including an increase in (HRV), a decrease in blood, a continued keep increasing in respiration rate and receptor sensitivity, and an attempting to manage impact on the sympathetic nerves (ANS) through reduced empathetic and increased sympathetic activity [48]. According to previous research, practicing yoga substantially affects the central nervous system's performance and helps individuals improve their concentration, focus, and other cognitive capacities [49]. Yoga practise on a regular basis benefits the body, mind, & spirit, helping one toward a healthier and much more meaningful existence [50]. Yoga has been demonstrated that practise increases the volume of grey matter in the temporal lobe & frontal lobes, resulting in improved mental health and cognitive functions [51]. Additionally, yoga practise may improve performance on activities requiring selective attention, focus, visual processing capacity, & motor activity enhancement [52]. Another study found that practising yoga increased eye-hand coordination, reversing abilities, speed, and accuracy, as well as cognitive processes.

Cognitive functions tests

- Montreal Cognitive Assessment (MoCA)
- Mini-Mental State Exam (MMSE)
- Mini-cog

The effects of Yoga on the Formation of the Brain

The researchers used magnetic resonance (MRI) to examine how the structure of the brain changes in persons who have practice meditation in order to assess the impact of yoga on brain structure (see Fig.1).

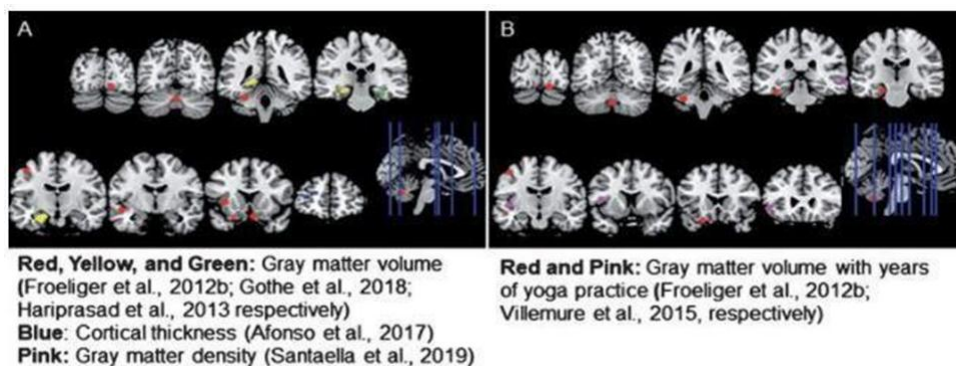


Fig. 1: Physical distinctions between mediators and non-practitioners in brain areas, as well as a dose-dependent link between decades of practicing yoga and structure of the brain in yoga practitioners. The cortical walls of yoga practitioners were thicker, with a higher volume of grey matter (GM). Yoga practitioners also have a higher GM density in various areas than non-yoga practitioners. Years of yoga practise and GM volume had a positive correlation among yoga practitioners of various categories. Except for one, all regions were generated by constructing a five-pointed sphere around the research locations. A mask of the complete structure is provided because Gothe et al. (2018) did not analyse volume variations on a voxel-by-voxel basis. (Copyright 2019; IOS Press in collaboration with the authors[53,54,55]).

In order to discover cross-sectional differences between the groups, the bulk of these studies compared the brain structures of expert yoga practitioners to those of non-practitioners, yoga-naïve controls. Afonso et al. [56] discovered changes in the cortical thickness of females over the age of 60 who had eight years of *Hathayoga* practise and a control group of non-practitioners. In a region of left prefrontal cortex comprised of segments of the middle and superior frontal gyri, yoga practitioners had such a thicker cortical layer. Notably, Both groups were comparable for their average level of non-yoga physical exercise, indicating that changes in cortical thickness are not solely due to yoga practitioners' increased levels of total physical activity.

Other studies that compared the brain structures of yogis and non-yogis on a cross-sectional basis focused on grey matter (GM) density differences rather than cortical thickness differences. Our own study [57] looked at whether the volume of the hippocampal formation, a subcortical memory region, changed among Yoga practitioners with such a minimum of three years of experience and non-practitioners are welcome. Yoga practitioners showed a significantly higher left hippocampus volume than age- & Control subjects were matched for gender and had comparable physical activity levels & fitness. We also looked at the differences between the thalamus and the anterior cingulate, which functioned as control regions. There are still no statistically substantial variations groups, indicating that the benefits of yoga for the brains are limited and equivalent to those shown in earlier cardio and cognition studies. Another study [58] found volume variations in the left hippocampus and para-hippocampal gyrus in healthy people who had or had not done yoga, which is consistent with our findings. Yoga practitioners had larger brains (right middle brain & left anterior cingulate gyri), (left temporal lobe gyrus), (left para-hippocampal gyrus, hippocampus, and insula), occipital (right tongue gyrus), and cerebellar areas. The researchers looked at the association between the frequency of mental errors indicated by respondents and the amount of areas with group differences, given that yoga practitioners made less mistakes than their yoga-naïve counterparts. As previously documented, lower GM volume was linked to worsening cognitive deficits in the hippocampus, amygdala, parietal, occipital, and cerebellar areas.

Yoga & mental health

Depression. We identified four pertinent papers, included two reviews on yoga's antidepressant benefits [59,60]. The authors of the study found a wide range of

diagnoses in the papers they looked at, going from "major depression or another sort of depressed mood" to "elevated depression symptoms." While several randomised controlled trials have demonstrated that yoga practises can lessen depressive symptoms, the quantity and variety of data from these research appear insufficient to conclude whether meditation as a treatment for depression is clinically justified. Yoga treatments are often beneficial when compared to passive controls; however, when active rules are compared to passive controls, the results are less compelling. The amount and quality of research data are currently insufficient to identify whether studies concentrating exclusively on yoga poses are more effective than studies focusing solely on meditation and *pranayama*. As a result, there is an urgent need for more conclusive research with a broader patient group. It is unknown whether inspiration is a problem for depressed patients. There has been an attempt to explain the processes behind yoga's antidepressant effects by investigating electro physiological indicators of attention and neurotransmitters known to change in response to yoga[63,64].

Yoga and critical fitness

One critical review examined whether yoga may assist older persons maintain their fitness levels. Ten studies with a total of 544 participants (mean age 69.9 6.3) were considered; five were RCTs and five were pre/post studies with a single arm. According to the studies, gait, balance, body flexibility, body strength, and weight loss had a moderate effect on physical fitness and function. Additional research studies utilizing suitable control treatments (both active and specific) are required to confirm these encouraging findings. Maintaining physical fitness and enhancing physical function may appear to benefit functional capacities and self-autonomy in older adults. Additional research should be conducted to determine whether or not the courses improve individuals' self-esteem & self-confidence and whether or not frequent lessons can help promote social competence & involvement. Compliance with study protocol might be a challenge when enrolling older people; low research completion rates and long-term follow-up data have resulted from this. Future research should focus on determining the best time to start doing yoga and the best postures and yoga styles for the elderly [65].

Effects & contraindication

Yoga techniques carry a low risk of harmful effects or repercussions. Although it has been stated that meditation practise is contraindicated under some circumstances, such as cognition, there is no good study evidence supporting or refuting this contention. Numerous case reports describing detrimental repercussions of yoga practise have appeared. A significant issue with evidence that is limited to case reports of psychological adverse events "triggered" by relaxation is that one cannot preclude the possibility that events occurred spontaneously in accordance with the disorder's natural history and were triggered by the other ongoing normal true life circumstances. Additionally, many of these bad case reports include individuals who practise techniques in an excessively severe or contraindicated manner on their own. It should go without saying that any medical or psychological issue with the potential for significant consequences should be treated [66].

Influence of yoga on cognitive function

Tests of selective executive function processes were used to examine cognitive functions. The results indicated that patients who practiced yoga exhibited a substantial improvement on the selective attention test ($p = 0.005$), but not those who participated in the climbing programme. Additionally, neither groups showed substantial changes on executive function tests. Executive functions & selective attention were assessed to determine cognitive functions [67].

Meditation to improve cognition function in stress

Each meditation practice involves two attention-focused exercises. The first is a singular point of focus on a single item. The second urges the practitioner that remain silent and passively observe their thoughts without responding. Multiple symptom management intervention strategies have been confirmed as a result of the expanding science and clinical interest in mindfulness meditation. They work to boost the immune system, control brain activity to improve emotional reactions, and avoid episodes of depression, anxiety, and negative effects in patients with a variety of health issues. Multiple facets of cognitive decline, including diverse recollection, attention, and alertness components, were considerably reduced after two months of practice. During a night of sleep deprivation, standard neuro physiological tests were performed, including Raven's Accelerated Modern Matrix, Auditory Evoked Prospective elements, Middle Delay - sensitive Reaction, Conditional Critical Variability, Potentially Event-Related P300-ERP, and Potentially Event-Related P300-ERP tests. Sleep deprivation impairs all measures of cognition. The "Om" meditation practice reduced the impairment caused by the standard deviation in cognitive decline [68].

- Telles et. al. (2013) revealed that both yoga and physical exercise significant effect on the cognitive performance of the adolescents. These findings have further been substantiated by Vhavle (2017) revealed that there is a considerable improvement in health & learning and memory, cognitive ability, behaviour, and good emotions (allps)[69].
- Davidson et. al. (2012) found that benefits of yoga demonstrated in adults also apply to children and adolescents in school-based settings[70].

Yoga as a complementary medicine

Complementary medicine is just a broad term that encompasses a variety of treatments that have gained popularity over the last few decades. A range of medical and mental ailments, such as post-traumatic stress disorder as well as other trauma-related disorders, have been proven to respond well to combination therapy. These treatments have been demonstrated to be quite effective at lowering mindfulness-based stress in cancer patients with fatigue and symptoms. Yoga is a way of life that blends physical exercise, breathing, and Meditation can help you enhance your health and happiness. Additionally, it alters human haematological and metabolic functions. In recent decades, yoga has become the focus of research due to its possible therapeutic effects in the treatment of contemporary epidemic diseases such as depression, Obesity, diabetes, hypertension, heart disease, & obstructive pulmonary disease are

among conditions that can lead to death.. Individual studies have established that yoga has a therapeutic benefit in a variety of diseases, demonstrating that it can be used alone or in conjunction with medication to treat various conditions. Numerous clinical studies suggest that yoga is an efficient and safe method of managing hypertension that does not carry an elevated risk of harmful in comparison to other types of physical activity. Additionally, yoga practise has been shown to boost parasympathetic activity while decreasing sympathetic activity, possibly through an increase in GABA activity [71,72].

Researchers from all over the world have proved yoga's neuroprotective properties. Yoga protects the brain against degradation associated with ageing and also educates the brain to operate in a parasympathetic mode and in positive states. Breathing exercises, meditation, and posture-based yoga, according to previous research, enhanced total brain waves, such as activation of the grey matter, amygdala, & frontal cortex. Additionally, evidence indicates that practitioners of yoga and meditation have a stronger functional link with the feedback loops than the general population. Additionally, these methods are safe and effective for controlling multiple sclerosis symptoms, such as fatigue, Cognitive impairment, bowel & bladder dysfunction, vision & speech impairments, depression, sensory disturbance, & mobility impairment are all examples of cognitive impairment.

Brenes (2018) [73] reviewed all of the known evidence on the advantages of yoga for adults with alzheimer and cognitive impairment. They determined that yoga could be a potent non- pharmacological therapy for this group of individuals after reviewing six trials that comprehensive role changes in mood and behaviour in people with cognitive impairment. As a result, I've left this subject out of this work and directed readers to their website instead. Park et al.(2020) randomly assigned 31 dementia patients to one of three groups: chair yoga, music therapy, or no treatment. In other dimensions, such as functional ability, mood, or behavioural symptoms, the chair yoga group improved life quality.

Gothe, Kramer, and McAuley (2014) discovered that particular yoga postures, *pranayama* practises, breathing techniques, and meditations have a beneficial effect on psychological and cognitive processes. In older individuals, Hatha yoga for eight weeks improved cognitive capacities such as working memory and mental flexibility. Luu&Hall (2016) found that hatha yoga and mindfulness meditation enhanced cognition[74]. Practitioners' executive function improved significantly immediately following *Hatha yoga* and breath, emotion, and thought mindfulness meditation. Other studies, Marciniaketal., 2014, revealed that meditation can help people lose weight significantly improved cognitive skills in elderly adults suffering from neurodegenerative disorders[75]. The following are the eight limbs and steps of yoga:

- *Yama*: Self-control, abstinences, and codes of restraint;
- *Niyama*: Observances, practices, self training;
- *Asana*: Meditation posture (Figure 1)
- *Pranayama*: Expansion of breath and prana, regulation, control;
- *Pratyahara*: Withdrawal of senses & concentration on the interior;
- *Dharana*: Focus;
- *Focus*: Meditation and

- *Samadhi*: Intense concentration, the pinnacle of meditation, the state of perfect attention.

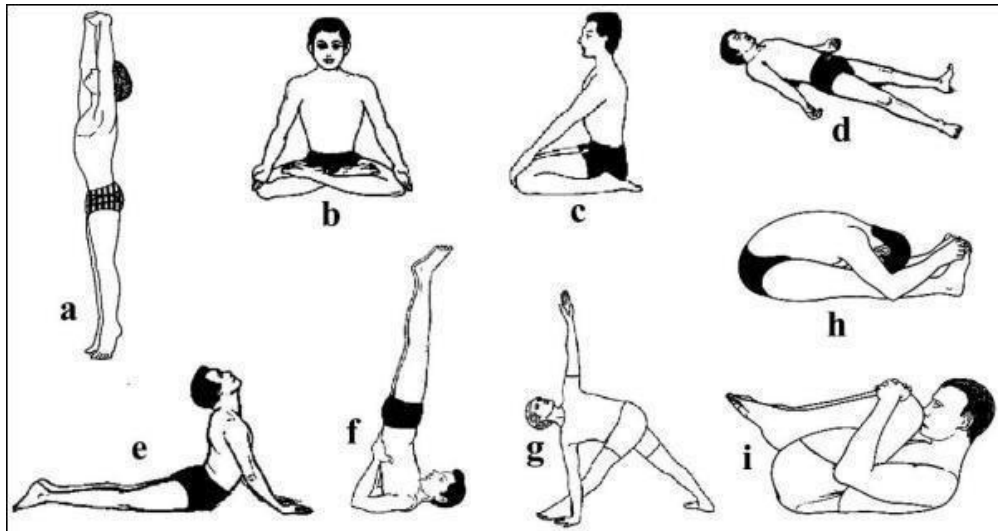


Fig. 1. Numerous Popular Asanas (Postures) That Are Beneficial to Both Physical and Mental Health a) Tadasana; b) Padasana; c) Vajrasana; d) Shavasana; e) Bhujangasana; f) Sarvangasana; g) Trikonasana; h) Paschimottasana; I) Pawanmuktasana.

Villemure and colleagues [76] looked at whether yoga practitioners and non-practitioners had different relationships between age and total GM frequency in the entire brain. While there was a negative association between age and total GM capacity of the brain in a sample of healthy people who had never heard of yoga, there was no such link in a group of yoga practitioners. The variation in slope between the groups, on the other hand, was not statically important. In none of these investigations, non-practitioners had larger or thicker brain regions than expert yoga practitioners.

Garner et al. [77] looked at how yoga affected GM concentrations, which are proportionate to voxel signal strength and reflect how much forebrain is contained in each voxel. They studied how GM density altered in healthy young people after a ten-week therapy that included Hatha yoga, athletics control, and a sedentary control group. The yoga and sport control groups both practised for ten hours a week and used the identical physical motions, but the sport control group's methods lacked the meditation and breathing components seen in comprehensive yoga. However unlike individuals in these categories, who had refrained from their preferred activities for at least six months previous to the trial, the suspension system group resumed their normal behaviours. There were no substantial differences between the yoga and inactive control groups, however there were substantial differences between the sports and yoga groups.

The purpose of Kauts and Sharma's (2009) [78] This study aimed to ascertain the effect of yoga on academic performance in terms of stress management. The

results indicate that students who practiced yoga improved their academic performance, physical health, & psychological well-being, decreased their frequency of thought, decreased substance abuse, & improved their overall quality of life. Still, there is a difference in cognitive functions between those who practice & those who do not practice yoga. Additionally, while numerous study reports indicate that yoga has a beneficial influence on mental health and psychological aspects, only a few research studies explore yoga's effect on cognition performance and social-emotional development in school-aged adolescents. , there are only a few research exploring yoga's impact on adolescents that would be incomplete without examining aspects of cognitive function and emotional development, specifically self-esteem, stress, emotional regulation, and academic performance; consequently, all of these aspects will be discussed in this study.

Conclusion

The current study finds that yoga-based therapies have some evidence for improving attention, executive functions, and cognitive recollection in the elderly, but not for depression, when compared to active control. Methodological difficulties and a paucity of study, on the other hand, make it difficult to demonstrate the potential advantages of meditation treatment on cognition and mental wellbeing in the elderly. Additionally, this study strongly suggests that multiple randomized control studies using the usual research design be conducted utilizing validated yoga intervention modules & conducting long-term follow-up to obtain conclusive results. The public's interest in meditation and yoga continues to expand daily due to its demonstrated health advantages. Since ancient times, yoga has been employed as a comprehensive soothing practice. Yoga-related interventions appear to have a significant favorable influence on cognitive skills such as verbal attention recall, learning and memory, executive function, & psychomotor speed, visual memory, processing speed, attention, and mental ability, as well as on emotional upheavals, aggression, and laziness, as well as on mood, psychological well-being, and academic performance. Incorporating yoga into one's daily life may be a beneficial means of reducing stress and enhancing other functioning capacities.

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