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Review Article

Effects of Yoga on Mental and Physical Health to Improve Quality of life: A Short Summary of Reviews

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The evidence reported in review articles, this study highlights the most recent research on the impact of yoga therapies on many aspects of mental and physical health. Collectively, these reviews point to a variety of circumstances in which yoga might be advantageous, although further research is necessary. However, certain meta-analyses show the benefits of yoga therapies, and a number of relatively high-quality randomized clinical trials (RCTs) show the advantages of yoga for pain-related impairment and mental health. Students frequently experience concentration and stress issues, which are indicators of academic challenges as well as other behavioral and emotional issues. Mind–body interventions such as yoga and meditation improve attention and reduce stress. In this study, we examined the impact of Hatha yoga on attention and stress. One important metric for assessing stress is cortisol.

Keywords: yoga, cortisol, stress, metal, physical health.

1. Introduction

The philosophical foundations of yoga initially appeared in ancient Indian philosophy. There are a number of modern yoga schools or styles (Iyengar, Viniyoga, Sivananda, etc.), each with its own emphasis on the relative content of physical exercises and postures (asanas), breathing techniques (pranayama), deep relaxation, and meditation implementation that foster awareness and, in the end, more profound states of consciousness.Cognitive reactions to stress are the root of the focus issues.[1]

The seventh limb of Ashtanga Yoga, or the practice of yoga, includes meditation. Yoga has been used therapeutically since the turn of the 20th century, and it makes use of the numerous psychophysiological advantages of its component practices[1], which eventually improve the quality of life. Additional benefits can include a decrease in anxiety.[2]

Meditation is part of the yoga practice known as Ashtanga Yoga's seventh limb. The therapeutic application of yoga was established in the early 20th century, and it makes use of the multiple psychophysiological benefits of its component practices.[3], Additional benefits could include a reduction in anxiety, a decrease in blood pressure, and improvements in fortitude, mood, and metabolic

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control. According to Khalsa, the majority of the research on yoga as a therapeutic intervention was carried out in the mediterranean region. India and a significant fraction of these were published in Indian journals, [4]. There is still a dearth of strong data regarding yoga's clinical usefulness for many symptoms and medical problems, despite an expanding number of clinical research studies and some systematic reviews on its therapeutic effects. There is conflicting evidence for many specific indications and diseases, with some research claiming beneficial outcomes of yoga therapies but others being less certain.. In some instances, these discrepancies may result from differences between the study populations (e.g., age, gender, and health status), the details of the yoga interventions, and follow-up rates. In this paper, we summarize the current evidence on the clinical effects of yoga interventions on various components of mental and physical health. (Table 1)shows, which cites also studies on yoga [6], include a heterogeneous set of studies with varying effect sizes, heterogeneous diagnoses and outcome variables, often limited methodological quality, small sample sizes, varying control interventions, different yoga styles, and strongly divergent duration of interventions. [7].

Table 1: Systematic reviews for the different domains discussed

S. No	Descriptive term	Part of solvent required per part of solute
1	Depression	2 reviews 1 description of studies on yogic breathing 1 summary
2	Fatigue	1 systematic review 1 systematic review 1 cochrane review
3	Anxiety and anxiety disorders	1 description of studies on yogic breathing
4	Stress	1 systematic review
5	Posttraumatic stress disorder	1 Critical review
6	Physical fitness	1 critical review
7	Glucose regulation	3 systematic reviews

2. Purpose of the Present Study

Preliminary research suggests that providing yoga within the college curriculum may be an effective and feasible way to help youth develop stress management skills. However, limited data exists on College-based yoga interventions, particularly with regard to objective measures of stress such as cortisol concentrations.

It's also important to remember that, biologically speaking, there are multiple different kinds of stress, including:

Acute stress: Acute stress happens when you're in sudden danger within a short period of time. For example, barely avoiding a car accident or being chased by an animal are situations that cause acute stress.

Chronic stress: Chronic (long-term) stress happens when you experience ongoing situations that cause frustration or anxiety. For example, having a difficult or frustrating job or having a chronic illness can cause chronic stress.

Traumatic stress: Traumatic stress happens when you experience a life-threatening event that induces fear and a feeling of helplessness. For example, experiencing an extreme weather event, such as a tornado, or experiencing war or sexual assault can cause traumatic stress. In some cases, these events can lead to post-traumatic stress disorder (PTSD)[10].

Your body releases cortisol when you experience any of these types of stress.

More specifically, cortisol affects your body in the following ways:

Regulating your body's stress response: During times of stress, your body can release cortisol.

Regulating metabolism: Cortisol helps control how your body uses fats, proteins and carbohydrates for energy.

Suppressing inflammation: In short spurts, cortisol can boost your immunity by limiting inflammation.

Regulating blood pressure: The exact way in which cortisol regulates blood pressure in humans is unclear. However, elevated levels of cortisol can cause high blood pressure, and lower-than-normal levels of cortisol can cause low blood pressure.

Increasing and regulating blood sugar: Under normal circumstances, cortisol counterbalances the effect of insulin, a hormone your pancreas makes, to regulate your blood sugar. Cortisol raises blood sugar by releasing stored glucose, while insulin lowers blood sugar. Having chronically high cortisol levels can lead

to persistent high blood sugar (hyperglycemia). This can cause Type 2 diabetes.

Helping control your sleep-wake cycle: Under regular circumstances, you have lower cortisol levels in the evening when you go to sleep and peak levels in the morning right before you wake up.

If you work a night shift and sleep at different times of the day, this pattern can vary. Normally, the level of cortisol in your blood, urine, and saliva peaks in the early morning and impacts throughout the day, reaching its lowest level about midnight.

• 6 a.m. to 8 a.m.: 10 to 20 micrograms per deciliter (mcg/dL).

• Around 4 p.m.: 3 to 10 mcg/dL

Normal ranges can vary from lab to lab, time to time and person to person.

3. Yoga and Physical Fitness

There was one critical review which evaluated whether yoga can engender fitness in older adults. Ten studies with 544 participants (mean age 69.9±6.3) were included;5 of these studies had a single-arm pre/post-design . With respect to physical fitness and function, the studies reported moderate effect sizes for gait, balance, body flexibility ,body strength ,and weight loss. However, there is still a need for additional research trials with adequate control intervention (active and specific) to verify these promising findings [14].

One may expect that retaining physical fitness and improving physical functioning can have a positive effect on functional abilities and self – autonomy in older adults. Further studies should address whether or not individuals ‘ self-esteem and self- confidence will increase during the courses, and whether or not regular classes may also improve social competence and involvement.

4. Yoga and Mental Health

We found four relevant publications, including two reviews on the effects of yoga on depression [15], a description of studies on yogic breathing for depression, and one “summary”. The reviewing authors have reported that the studies reviewed showed a large variety of diagnoses ranging from “major depression or some other type of diagnosed depression” to “elevated depressive symptoms”. Although several randomized controlled trials (RCTs) reported beneficial effects of yoga interventions for treating depressive symptoms, the quality and quantity of the data from these studies appear insufficient to conclude whether there is substantial clinical justification to consider yoga as a treatment of depression. Compared to passive controls, the yoga interventions seem to be effective; when compared with active controls, not surprisingly, the effects are less conclusive [18]. The study results are so far not sufficient in quantity and quality to determine whether studies with a focus on the asanas are more effective as compared to studies with meditation-focussed or pranayama-focussed styles. Thus, there is a strong need to conduct more conclusive studies with high methodological quality and larger patient samples.

Fatigue: We found one systematic review/meta-analysis evaluating the effects of yoga on fatigue in a variety of medical conditions. The review included 19healthy persons as well as patients with cancer, multiple sclerosis, dialysis, chronic pancreatitis, fibromyalgia, and asthma [20]. Overall, a small positive effect with an SMD of 0.28 [0.24–0.33] was found.

Anxiety and Anxiety Disorders: There is one systematic review examining the effects of yoga on anxiety and anxiety disorders , a Cochrane review on meditation therapy for anxiety disorders (citing one yoga study), a description of studies on yogic breathing (which are also addressed in the systematic review) [6], and one summary [8]. Most studies described beneficial effects in favour of the yoga interventions, particularly when compared with passive controls (i.e., examination anxiety), but also compared with active controls such as relaxation response or compared to standard drugs.

Stress: One systematic review describes the effects of yoga on stress-associated symptoms. Chong et al. identified 8 controlled trials, 4 of which were randomized, which fulfilled their selection criteria [23]. Most studies described beneficial effects of yoga interventions. Although not all studies used adequate and/or consistent instruments to measure stress, they nevertheless indicate that yoga may reduce perceived stress as effective as other active control interventions such as relaxation, cognitive behavioural therapy, or

dance. Also the AHRQ report stated that "yoga helped reduce stress" [24].

Posttraumatic Stress Disorder: A single review article looked at the existing research on yoga for posttraumatic stress disorder (PTSD). Seven articles were reviewed which included 8 studies on PTSD following exposure to natural disasters such as a tsunami and a hurricane (1 RCT, 1 NRCT, 3 group study, 2 single-arm studies, 1 cross-sectional study) and 2 studies on PTSD due to combat and terrorism (1 RCT, 1 single-arm study). After a natural disaster, yoga practice was reported to significantly reduce symptoms of PTSD, self-rated symptoms of stress (fear, anxiety, disturbed sleep, and sadness) and respiration rate.

Blood Pressure and Hypertension: Innes et al. reported on 37 studies investigating the effects of yoga on blood pressure and hypertension, among them 12 RCTs, 12 nonrandomized clinical trials, 11 uncontrolled studies, 1 cross-sectional study, and 1 single yoga session examination. Most reported a reduction of systolic and/or diastolic pressure. However, there were several noted potential biases in the studies reviewed (i.e., confounding by lifestyle or other factors) and limitations in several of the studies which makes it "difficult to detect an effect specific to yoga" [26]. Ospina et al.'s AHRQ cites two studies which found small, insignificant improvements of systolic (weighted mean difference = −8.10; 95% CI, −16.94 to 0.74) and diastolic blood pressure (weighted mean difference = −6.09; 95% CI, −16.83 to 4.64) in favour of yoga when compared to no treatment [30]. When compared to health education, yoga interventions resulted only in small and insignificant improvements of systolic blood pressure (weighted mean difference = −15.32; 95% CI, −38.77 to 8.14) and diastolic blood pressure (weighted mean difference = −11.35; 95% CI, −30.17 to 7.47).

Yoga and Metabolic/Endocrine Conditions:

Glucose Regulation: Three systematic reviews examined the effects of yoga on risk indices associated with insulin resistance syndrome [27], risk profiles in adults with type 2 diabetes mellitus [16], and the management of type 2 diabetes mellitus . Innes et al. [14] identified several studies on the effects of yoga on insulin resistance syndrome associated variables, that is, 2 RCTs, 2 non-RCTs, and 8 uncontrolled clinical trials. These studies reported post intervention improvement in various indices in adults. However, the results varied by population (healthy adults, adults at cardiovascular disease risk, adults with type 2 diabetes, etc.) and study design. Another systematic review by Aljasir et al. [28] addressed the management of type 2 diabetes mellitus and concluded that the reviewed trials "suggest favourable effects of yoga on short-term parameters related to diabetes but not necessarily for the long-term outcomes." However, the duration of treatment in the reviewed studies was variable (ranging from 20 min. session per day to three to five 90 min. sessions in the review of Aljasir et al. [17]; 3-4 h per day for 8 days, 2 sessions per day (25–35 min) for 3 months to 40 min per day for 6 months, and 72 4 h sessions during 12 months in the review by Innes and Vincent.

A recent systematic review included 5 RCTs, which addressed effects of yoga on menopausal symptoms, particularly psychological symptoms, somatic symptoms, vasomotor symptoms, and/or urogenital symptoms . However, yoga was associated with small effects on psychological symptoms (SMD = −0.37; 95% CI −0.67 to −0.07; P = 0.02), but no effects on "total menopausal symptoms, somatic symptoms, vasomotor symptoms, or urogenital symptoms".

5. Discussion

These reviews suggest a number of areas where yoga may be beneficial, but more research is required for virtually all of them to more definitively establish benefits. However, this is not surprising given that research studies on yoga as a therapeutic intervention have been conducted only over the past 4 decades and are relatively few in number. Typically, individual studies on yoga for various conditions are small, poor-quality trials with multiple instances for bias. In addition, there is substantial heterogeneity in the populations studied, yoga interventions, duration and frequency of yoga practice, comparison groups, and outcome measures for many conditions (e.g., depression and pain). Disentangling the effects of this heterogeneity to better understand the value of yoga interventions under various circumstances is challenging. For many conditions, heterogeneity and poor quality of the original trials indicated that meta-

analyses could not be appropriately conducted. Nevertheless, some RCTs of better quality found beneficial effects of yoga on mental health (see Uebelacker et al.'s critical review [31]). Further investigations in this area are recommended, particularly because of the plausibility of the underlying psychophysiological rationale (including the efficacy of frequent physical exercises, deep breathing practices, mental and physical relaxation, healthy diet, etc.). Conceivably, asanas particularly have a positive effect on fitness and physical flexibility with a secondary effect on the mental state, while the pranayama practices and relaxation/meditation techniques may result in greater awareness, less stress, and higher well-being and quality of life. However, this remains to be shown in well-performed future studies. Because patients are engaged in the yoga practices as a self-care behavioural treatment, yoga interventions might well increase self-confidence and self-efficacy. On the other hand, patients with psychological burdens and/or low motivation (i.e., depression, anxiety, fatigue, etc.) might be less willing to participate fully in intensive yoga interventions. Some of these studies found relatively low participation and high dropout rates in some of the analysed studies. Innes et al. argued that most studies were from India where "yoga is an integral part of a longstanding cultural and spiritual tradition.". Many of the Indian clinical trials, which have been conducted in residential settings, not typically found outside India, include yoga class interventions 5 to 7 days per week, whereas such compliance would not be possible with patient populations outside India. However, such practices are unlikely to be continued, at least at such intensity. If as believed by some yoga practitioners, the intensity of the practice should be greater at the beginning of therapy, such programs would be an excellent way to begin yoga treatment. In India, there is a gradual shift in the attitude towards yoga with most urban Indians under the age of 35 believing yoga is a way to keep fit rather than attaching the same cultural importance to it, which earlier generations did. For these reasons, cross-cultural studies (which are lacking) using an identical intervention given to a population in India and parallel conducted elsewhere would be very useful. Motivation might be a crucial point. To overcome this, shorter time interventions might be an option for some specific indications (i.e., pain and depressive symptoms).This would indicate a putative lack of motivation to be physically active. Indeed, a couple of reviews noted that data on subject treatment compliance was not routinely reported in most studies [4, 33]. Clearly yoga intervention programs require an active participation of the individuals as do all behavioral interventions, and thus adherence might be a crucial point that limits potentially beneficial effects of yoga. It is apparent in many lifestyle diseases, that patients must change attitudes and behavior in order to successfully treat these diseases. A positive feature of yoga interventions is that they may in fact.

Table 2: Level of action and observed effects of yoga interventions (27)

	Specific effects	Unspecific effects
Physiology	Vagal afferent activity; Heart rate/Respratory; Relaxation response/ Stress reduction	Social contacts
Cognition	Contemplativestates; Mindfulness; Self-identity; self- efficacy; Beliefs; Expectations	Control of attentional networks
Emotions	Emotional control/ regulation	Quality of life
Physical body	Physical flexibility, Fitness Endurance	Healthy life style

6. Conclusion

The nonsignificant results may be explained by the adequacy of the intervention relative to a lack of specific focus on training, regarding the awareness of and conscious coping mechanisms related to stressful events. Future yoga studies may consider designing a yoga intervention that successfully competes with comparison groups for students' attention and desirability and which specifically and explicitly focuses on the student's approach to stressful events.

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