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# Complementary and alternative treatments for anxiety symptoms and disorders: Physical, cognitive, and spiritual interventions

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## INTRODUCTION

Epidemiologic studies have shown that anxiety disorders are among the most common mental health problems in the United States. Many patients with anxiety disorders find that conventional treatments are insufficient and turn to complementary and alternative medicine (CAM) as an adjunct to or substitute for Western mental health care.

Epidemiologic studies suggest that 30 to 43 percent of patients treated in primary care for anxiety use CAM remedies as at least part of their treatment [1-3]. Clinicians should be well prepared with knowledge about the efficacy and safety of CAM treatments marketed, available and/or used for anxiety and anxiety disorders.

Complementary and alternative treatments involving physical, cognitive, or spiritual activities for anxiety symptoms and disorders are described here. Herbal remedies and dietary supplements used as complementary and alternative medical treatments for anxiety symptoms and disorders are described separately. Yoga is discussed in greater detail separately. Acupuncture is discussed separately. (See "[Complementary and alternative treatments for anxiety symptoms and disorders: Herbs and medications](#)" and "[Overview of yoga](#)" and "[Overview of the clinical uses of acupuncture](#)".)

## OVERVIEW

Anxiety, when not addressed, can become excessive and cause stress to the body, contributing to, for example, heart disease, suicidality, and reduced quality of life [4-7]. If not reduced through effective interventions, high anxiety can contribute to overall morbidity and decrease quality of life [5,8-10].

Sixty-two percent of adults in the United States utilize some form of complementary and alternative medical treatment [3]. Individuals diagnosed with a psychiatric illness may be more likely than the general population to use these therapies, especially patients with elevated anxiety or anxiety disorders [11,12], in part because many who are treated psychiatrically respond only partially to treatment and have residual symptoms and impairment [13], for which further treatment options may be sought.

Available research evidence is supportive, to varying degrees, of efficacy in reducing anxiety for the physical, meditative, and spiritual/religious activities described in this topic. These clinical trials have significant methodologic limitations. Further clinical trials are needed with larger sample sizes, more appropriate control groups, and participants with higher levels of anxiety and with specific anxiety disorders (eg, generalized anxiety disorder, social anxiety disorder, panic disorder, and specific phobia) at enrollment.

Minimal adverse effects have been reported for the physical, meditative, and spiritual/religious activities described in this topic. This, in combination with available efficacy data, leads us to be generally supportive when patients with anxiety symptoms or disorders inquire about their use.

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## PHYSICAL ACTIVITIES

**Yoga** — Yoga is a practice of breathing, mindfulness, spirituality, body, and the connection among these factors. Through its three main components (postures, breathing, and meditation), as well as nonspecific events, yoga appears to be safe and to improve multiple parameters of health and quality of life. (See "[Overview of yoga](#)", [section on 'Clinical applications'](#).)

In several clinical trials, the practice of yoga has been found to reduce anxiety levels [14-18]. For example:

- In a randomized trial involving 226 subjects with generalized anxiety disorder, subjects were assigned to 12 weeks of Kundalini Yoga (KY) versus cognitive behavioral therapy

(CBT) versus stress education [17]. Response rates (defined as an improvement in the clinical global impression score) were higher in the KY group than in the stress education group at 12 weeks (54 versus 33 percent; odds ratio [OR] 2.46, 95% CI 1.12-5.42). At six-month follow-up, there was a trend towards higher response rates in the KY group compared with stress education, but the difference was not statistically significant (63 versus 48 percent; OR 1.86, 95% CI 0.52-6.69). Subjects in the CBT group had higher response rates than either KY or stress education at 12 weeks and six months.

- A clinical trial randomly assigned individuals with anxiety either to a five-week Yomi program or to a waitlist control condition [19]. The 10-session Yomi program combines psychoeducational training, yin yoga, and mindfulness training. At the end of the trial and at a five-week follow-up, subjects assigned to Yomi had decreased stress and worry, and increased mindfulness compared with the control group, with moderate to large effect sizes.
- Other randomized trials suggest that yoga may decrease stress and anxiety when compared with no treatment, but not when compared with stretching [20-22].

Available trials suffer from multiple methodologic limitations [7,8,10,23], such as small sample sizes and heterogeneity of interventions and participants. Further research is needed in order to assess the efficacy of yoga versus other forms of physical activity and as adjunctive treatment to CBT or medications.

**Tai chi** — Tai chi (also known as taiji or tai chi chuan) is a form of mind-body exercise that originated in China and involves martial arts, meditation, and dance-like movements that focus on the mind and body connection [24].

A review of 35 clinical trials studied the efficacy of tai chi (Qigong exercises) for anxiety and depression in 2765 participants, finding that the intervention reduced anxiety symptoms with a small-to-moderate effect size compared with control conditions [25-32]. The reviewers noted the need for further research with methodologically more rigorous trials, including higher initial symptom levels, blind allocation to groups, and standardized exposure to tai chi. Examples of these trials included:

- A clinical trial of 50 women (mean age 43 years) were assigned to practice tai chi two to four times per week or to daily activities as usual for 12 weeks. The group assigned to tai chi experienced decreased anxiety and improved quality of life over the course of treatment; mean scores in the control group did not change [26].

- A clinical trial of patients with chronic obstructive pulmonary disease were randomly assigned to practice tai chi three to five times a week or to continue with routine medications and discard any kind of exercise for a three-month period. Individuals in the tai chi group experienced reduced symptoms of anxiety and/or depression compared with the control group [27].
- A clinical trial of 133 healthy adult volunteers (mean age 55 years) were assigned to 60 minutes of tai chi exercise three times per week or to continue with their daily routine without change for a 12-week period. Participants assigned to tai chi experienced a decrease in anxiety levels compared with the control group [28].

**Physical exercise** — Physical exercise has been defined as movement(s) performed to become stronger and healthier [33]. Routine physical exercise is recommended for all adults by the US Department of Health and Human Services, among other groups, citing research findings of its beneficial health effects [34]. Only 30 percent of American adults achieve the recommended amount of exercise per week [34,35].

Clinical trials suggest that exercise may decrease anxiety in patients with anxiety symptoms or disorders [36-42]. As examples:

- High-intensity interval training (HIIT) and low-intensity training (LIT) have been found to be effective as a complement to first-line treatment for generalized anxiety disorder (GAD). In one trial, 33 subjects with GAD were randomly assigned to treatment with HIIT or LIT over a 12-day period [43]. While both treatment groups had improvements on clinical measures of anxiety according to various symptom scales, HIIT had greater changes in mean scores than LIT at the end of the intervention period and at 18-day follow-up.
- A 16-month randomized trial involving 74 outpatients with panic disorder, GAD, or social anxiety disorder compared the combination of CBT and exercise (assigned, at-home walking) with CBT combined with additional education-based sessions. A comparison of symptom levels before and after the 16-month intervention found reductions in subject-reported depression, anxiety, and stress in subjects assigned to CBT/exercise compared with CBT/education [36].
- A randomized clinical trial compared aerobic exercise (running), [clomipramine](#), combined exercise/clomipramine, and pill placebo in the treatment of adult outpatients with moderate to severe panic disorder [37,38]. After 10 weeks of treatment, subjects assigned to receive clomipramine experienced greater reduction in panic disorder symptoms compared with subjects assigned to exercise or placebo, and the exercise group experienced a greater reduction compared with the placebo group.

## MINDFULNESS MEDITATION

Mindfulness has been defined as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" [44]. Basic elements include self-regulation of attention and taking a nonjudgmental stance towards one's experience [45]. The practice of mindfulness meditation or mindfulness to relieve human suffering has existed for over 2500 years [45]. Mindfulness has been applied to psychological health issues in a Western, secular context since the 1970s.

A systematic review and meta-analysis of 47 trials with 3515 participants found that mindfulness meditation programs had moderate evidence of reducing anxiety (effect size 0.38 [95% CI 0.12-0.64] at eight weeks and 0.22 [0.02-0.43] at three to six months) [46]. Smaller effects were found for depression, pain reduction, stress/distress, and mental health-related quality of life. No effect or insufficient evidence of any effect was found for positive mood, attention, substance use, eating habits, sleep, and weight.

Mindfulness and its clinical variants such as mindfulness-based cognitive therapy have been used in the treatment of multiple psychiatric disorders, with varying degrees of supporting research evidence [47-64].

As an example, a clinical trial compared an eight-week group mindfulness-based stress reduction program to stress management education in 93 patients with generalized anxiety disorder (GAD). Compared with the education-only group, the mindfulness group experienced greater improvement in anxiety symptoms and in overall symptoms, and lower anxiety symptoms in response to a stressful challenge [65]. (See "[Unipolar major depression: Treatment with mindfulness-based cognitive therapy](#)" and "[Generalized anxiety disorder in adults: Cognitive-behavioral therapy and other psychotherapies](#)", section on 'Mindfulness and acceptance and commitment therapy'.)

Although the mechanisms by which meditation may improve symptoms of anxiety disorders are not known, biological, behavioral, and cognitive frameworks for anxiety disorders have shaped research investigation:

- Biological theories, such as the false suffocation alarm [66] and hyperventilation, focus on the role of respiratory abnormalities in anxiety. Meditation and relaxed breathing can reverse these abnormalities and alter the anxiogenic effects of biological challenges [67,68]. Meditation has been found to reduce cortisol and catecholamine levels, such as [epinephrine](#) and [norepinephrine](#), which would otherwise set off a biologically-based anxiety response [69-71].

- From a learning perspective, individuals can develop an anxiety disorder through classical conditioning, vicarious conditioning, and operant conditioning [72,73]. In line with research on reciprocal inhibition [74], meditation may serve to create a newly conditioned response, resulting in the extinction of the anxious or fear-related conditioned response.
- From a cognitive perspective, people with anxiety disorders tend to overestimate danger and its potential consequences [75]. Meditation helps the individual remain detached yet able to detect and change the cognitive distortions that accompany anxiety.

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## SPIRITUALITY AND RELIGION

Spirituality and religious activities, in general, can be thought of as relating to or affecting the human spirit or soul, as opposed to material or physical things. Religion typically involves, in addition, a relationship with God or a higher power. Spirituality and religion can supply a robust and flexible framework for understanding the world and the self, which may foster increased tolerance to uncertainty, enhanced coping, resourcefulness, and optimism [76-79]. Religions can also offer a community of support, which reduces social isolation [80-83].

Researchers have sought to determine whether a spiritual component is critical to the anxiety reducing effects of meditation [84], but available evidence from clinical trials is insufficient to provide an answer.

**Spiritual meditation** — Many cultures around the world integrate meditation into their religious and spiritual disciplines. Transcendental meditation and qigong meditation, types of spiritual meditation, have been tested for their effect on anxiety.

**Transcendental meditation** — Transcendental meditation (TM) involves the use of a mantra, while sitting comfortably, twice daily with eyes closed for 15 to 20 minutes. TM has a spiritual dimension; its practice moves the mind away from physical affairs to a focus on the larger universe and the individual's place within it. The use of a mantra involves focusing on its sound, as opposed to its conceptual meaning, allowing the mind to fully transcend into an unbounded field of pure being. These qualities distinguish TM from secular forms of meditation, such as mindfulness meditation [84].

A meta-analysis of 16 clinical trials with 1295 participants found that transcendental meditation reduced trait anxiety compared with treatment as usual ( $d = -0.62$  [95% CI  $-0.82$  to  $-0.43$ ]) and compared with active alternative treatments (10 trials;  $d = -0.50$  [95% CI  $-0.70$  to  $-0.30$ ]).

Populations with elevated initial anxiety levels (eg, patients with chronic anxiety, veterans with

posttraumatic stress disorder, and prison inmates) showed larger effects sizes (-0.74 to -1.2). No adverse effects were reported [85].

**Qigong meditation** — Qigong meditation is an ancient Chinese health practice that integrates movement, breathing, and meditation into one multifaceted practice [86]. The meditative practice utilizes breath awareness, mantra, chanting, sound, visualization, and focus on concepts such as qi circulation, aesthetics, and moral values. Qigong treatment incorporates mind-body operational skills or techniques that integrate body, breath, and mind adjustments into Oneness [87]. Qigong meditation focuses on the flow of qi, which is a universal, spiritual power that is a central force in all living things.

Clinical trials that included assessment of qigong therapy's effect on anxiety have found mostly positive but mixed results in diverse populations [86,88-90]:

- A trial of 65 subjects diagnosed with a cardiac disease were assigned to receive either progressive muscle relaxation or qigong training [90]. Each participant received eight 20-minute training sessions. At the end of treatment, improvements in anxiety and 12-item General Health Questionnaire scores were seen in both treatment groups.
- A trial of 86 male patients with heroin dependence undergoing medically supervised withdrawal were randomly assigned to the qigong treatment, medication treatment (with [lofexidine](#), an alpha-2 adrenergic agonist), or to a no-treatment control group [88]. Individuals in the qigong group experienced a reduction in anxiety and a more rapid reduction of withdrawal symptoms compared with the other two groups.

**Devotional meditation** — Devotional meditation, also referred to as contemplative prayer, is a form of Christian prayer with an emphasis on meditation – connecting to the Christian God in an open, passive, and nondemanding way [91-93]. Clinical trials have found mixed results for devotional meditation compared with control conditions.

As an example, a clinical trial randomly assigned 36 college-age students to devotional meditation training, progressive muscle relaxation, or a no-treatment control group [94]. The two intervention groups received three training sessions weekly. Participants from all three groups had their muscle tension monitored daily. After two weeks, the devotional meditation group reported less anxiety and anger when compared with the other two groups, and had less muscle tension as measured by electromyography activity.

- A clinical trial compared a group of 42 participants from similar religious and cultural backgrounds assigned to devotional meditation, progressive muscle relaxation, or a



control group [95]. After 10 days, the researchers found significant reductions in subjective stress for the two experimental groups.

- A clinical trial randomly assigned 36 college-age students to training in a form of devotional meditation, progressive muscle relaxation, and a no-treatment control group [94]. All three groups received an initial assessment and daily monitoring of their muscle tension. The two intervention groups received six sessions of training over two weeks. After two weeks, the devotional meditation group reported less anxiety and anger compared with the other two groups, and had less muscle tension, as measured by electromyography activity.

**Centering prayer** — Centering prayer is a contemporary approach, developed in 1974, as a more accessible alternative to contemplative prayer [96,97]. Special attention is given to posture, breath, and the space one occupies. Similar to mindfulness meditation, the goal of centering prayer is not to empty the mind, but rather to exercise a willingness to let thoughts come and go, while using a sacred word as a refocusing tool. Centering prayer differs from secular forms of meditation because the emphasis is on "intention" (a shared experience with God's presence) rather than attention or concentration.

Uncontrolled trials found several weeks of daily centering prayer to be associated with decreased anxiety in small samples [92,98-100].

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## ACUPUNCTURE

Discussion of use of acupuncture may be found elsewhere. (See "[Overview of the clinical uses of acupuncture](#)".)

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## SUMMARY

- **Overview** – Sixty-two percent of adults in the United States utilize some form of complementary and alternative medical treatments; the most commonly used are mind-body therapies. Individuals diagnosed with a psychiatric illness may be more likely to use these therapies compared with the general population, especially patients with anxiety. (See '[Overview](#)' above.)

Evidence of efficacy for the interventions above has significant methodologic limitations. Further clinical trials are needed with larger sample sizes, more appropriate control



groups, standardized interventions, and participants with higher levels of anxiety and diagnosed anxiety disorders at enrollment. (See ['Overview'](#) above.)

- **Yoga** – Yoga, a practice of breathing, mindfulness, spirituality, and body, has been shown in multiple clinical trials to reduce anxiety in practitioners compared with non-practitioners. Its effects compared with stretching and other physical exercise is unclear. (See ['Yoga'](#) above.)
- **Tai-chi** – Tai chi is a form of mind-body exercise that originated in China and involves martial arts, meditation, and dance-like movements that focus on the mind and body connection. A meta-analysis concluded that tai chi reduced anxiety in trial participants compared with active and inactive controls. (See ['Tai chi'](#) above.)
- **Physical exercise** – Routine physical exercise is recommended for all adults by the US Department of Health and Human Services, among other groups, citing research findings of its beneficial health effects. Clinical trials suggest that exercise may decrease anxiety in patients with anxiety symptoms or disorders. (See ['Physical exercise'](#) above.)
- **Mindfulness meditation** – Mindfulness meditation has been defined as paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally. Basic elements include self-regulation of attention and taking a nonjudgmental stance towards one's experience. A meta-analysis of 47 trials with 3515 participants found that mindfulness meditation programs had moderate evidence of reducing anxiety. (See ['Mindfulness meditation'](#) above.)
- **Spiritual meditation** – Transcendental meditation and qigong meditation are forms of spiritual meditation that have been shown in clinical trials to reduce anxiety. There are fewer clinical trials of devotional meditation and anxiety; study of centering prayer and anxiety is limited to case reports/series. (See ['Spiritual meditation'](#) above.)
- **Adjunctive treatment** – We are generally supportive of the physical, meditative, and spiritual/religious activities described in this topic. They may be helpful and are unlikely to be harmful. We would not encourage their use as a substitute for psychiatric treatment for anxiety disorders, because evidence of their efficacy is generally much weaker. These activities may be of use as adjunctive treatments or primary treatments in patients with relatively low anxiety (eg, beneath the diagnostic threshold of anxiety disorder diagnoses). (See ['Overview'](#) above and ["Generalized anxiety disorder in adults: Management"](#).)

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