Scientific Research on Yoga as a Contemplative Practice

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“...a methodised effort towards self-perfection by the expression of the secret potentialities latent in the being ... a union of the human individual with the universal and transcendent Existence...”

Sri Aurobindo
Temporal Changes in Yoga Practice

- Arousal reduction, physical/mental well-being
- Mind/body awareness, resilience, self-regulation
- Psychological / philosophical transformation
The Mystical Experience

“They are transient states of consciousness, usually lasting for only a few minutes and distinctly different from normal consciousness. The person typically experiences them passively, not a product of personal will or control, and has a difficult time expressing the experience in words. They usually are intensely positive, joyful experiences, and often the person senses the presence of an awe-inspiring transcendent Other. Often there is a noetic element of revelation, a sudden knowing of a new truth. An experience of unity is common; for example, an ineffable oneness with all of humankind, with nature, or the universe.”

<table>
<thead>
<tr>
<th>The Mystical Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Samadhi</strong></td>
</tr>
<tr>
<td><strong>Sahaja</strong></td>
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<tr>
<td><strong>Nirvana</strong></td>
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<tr>
<td><strong>Turiya</strong></td>
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<td><strong>Moksha</strong></td>
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<td><strong>Bodhi</strong></td>
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<td><strong>Satori</strong></td>
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</tbody>
</table>
Studying Altered States of Consciousness

Fig. 1. Varieties of conscious states mapped on a perception-hallucination continuum of increasing ergotropic arousal (left) and a perception-meditation continuum of increasing trophotropic arousal (right). These levels of hyper- and hypoarousal are interpreted by man as normal, creative, psychotic, and ecstatic states (left) and Zazen and samadhi (right). The loop connecting ecstasy and samadhi represents the rebound from ecstasy to samadhi, which is observed in response to intense ergotropic excitation. The numbers 35 to 7 on the perception-hallucination continuum are Goldstein’s coefficient of variation (46), specifying the decrease in variability of the EEG amplitude with increasing ergotropic arousal. The numbers 26 to 4 on the perception-meditation continuum, on the other hand, refer to those beta, alpha, and theta EEG waves (measured in hertz) that predominate during, but are not specific to, these states (17).

MYSTICAL STATES OF CONSCIOUSNESS: NEUROPHYSIOLOGICAL AND CLINICAL ASPECTS

ERNST GELHORN, M.D., PH.D.¹ AND WILLIAM F. KIELY, M.D.²

The relationship of the trophotropic and ergotropic systems of autonomic-somatic integration and their relevance to a variety of emotional states and levels of consciousness is reviewed. The importance of proprioceptive afferent feedback to the reticular formation and hypothalamus for the maintenance of ergotropic responsivity is indicated together with the beneficial clinical effects of certain behavior therapies which employ skeletal muscular relaxation as a technique for modifying central nervous system arousal. The neurophysiological basis of Asian and Oriental meditation exercises is reviewed as well as the basis of Yoga ecstasy. EEG patterns in states of meditation indicate that conditions reflective of trophotropic dominance are compatible with full awareness. The failure of habituation of alpha-blocking by sensory input would appear to indicate that some ergotropic influence continues to be exerted upon the cerebral cortex in the meditation state and seems in some way to be a correlate of the heightened perceptual sensitivity reported by such subjects. Clinical observations suggest that certain formerly drug-dependent adolescents and young adults have achieved psychological benefit from systematic practice of meditation. Its potential for therapeutic benefit in certain states of anxiety, phobia, and psychosomatic disorder is suggested.
A SYSTEMATIC REVIEW OF TRANSCENDENT STATES ACROSS MEDITATION AND CONTEMPLATIVE TRADITIONS

Helané Wahbeh, ND, MCR¹* Amira Sagher, MSc¹ Wallis Back, MA¹ Pooja Pundhir, MD¹ and Frederick Travis, PhD²

Background: Across cultures and throughout history, transcedent states achieved through meditative practices have been reported. The practices to attain transcedent states vary from transcendental meditation to yoga to contemplative prayer, to other various forms of sitting meditation. While these transcendent states are ascribed many different terms, those who experience them describe a similar unitive, ineffable state of consciousness. Despite the common description, few studies have systematically examined transcendent states during meditation.

Objectives: The objectives of this systematic review were to: 1) characterize studies evaluating transcendent states associated with meditation in any tradition; 2) qualitatively describe physiological and phenomenological outcomes collected during transcendent states and; 3) evaluate the quality of these studies using the Quality Assessment Tool.

Methods: Medline, PsycINFO, CINAHL, AltHealthWatch, AMED, and the Institute of Noetic Science Meditation Library were searched for relevant papers in any language. Included studies required adult participants and the collection of outcomes before, during, or after a reported transcendent state associated with meditation.

Results: Twenty-five studies with a total of 672 combined participants were included in the final review. Participants were mostly male (61%; average age 39 ± 11 years) with 12.7 ± 6.6 (median 12.6; range 2–40) average years of meditation practice.

A variety of meditation traditions were represented: (Buddhist; Christian; Mixed (practitioners from multiple traditions); Vedic: Transcendental Meditation and Yoga). The mean quality score was 67 ± 13 (100 highest score possible). Subjective phenomenology and the objective outcomes of electroencephalography (EEG), electrocardiography, electromyography, electrooculogram, event-related potentials, functional magnetic resonance imaging, magnetoencephalography, respiration, and skin conductance and response were measured. Transcendent states were most consistently associated with slowed breathing, respiratory suspension, reduced muscle activity and EEG alpha blocking with external stimuli, and increased EEG alpha power, EEG coherence, and functional neural connectivity. The transcendent state is described as being in a state of relaxed wakefulness in a phenomenologically different space-time. Heterogeneity between studies precluded any formal meta-analysis and thus, conclusions about outcomes are qualitative and preliminary.

Conclusions: Future research is warranted into transcendent states during meditation using more refined phenomenological tools and consistent methods and outcome evaluation.

Key words: transcendent states, meditation, contemplative traditions, psychophysiology

(Explore 2018; 14:19-35 © 2018 Elsevier Inc. All rights reserved.)
Research Approaches to Mystical Experiences

- Psychoactive drug studies
- Clinical case studies (spontaneous, triggered)
- Retrospective surveys in practitioners
- Real-time capture with EEG or neuroimaging
- Prospective study with contemplative practices
## Quantifying the Mystical Experience

### Table 2. Four Factors of the MEQ30, With Corresponding Items

<table>
<thead>
<tr>
<th>Factor and cluster</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mystical</td>
<td></td>
</tr>
<tr>
<td><strong>Internal unity</strong></td>
<td>Freedom from the limitations of your personal self and feeling a unity or bond with what was felt to be greater than your personal self. Experience of pure being and pure awareness (beyond the world of sense impressions). Experience of oneness in relation to an “inner world” within. Experience of the fusion of your personal self into a larger whole. Experience of unity with ultimate reality. Feeling that you experienced eternity or infinity.</td>
</tr>
<tr>
<td><strong>External unity</strong></td>
<td>Experience of oneness or unity with objects and/or persons perceived in your surroundings. Experience of the insight that “all is One.” Awareness of the life or living presence in all things.</td>
</tr>
<tr>
<td><strong>Noetic quality</strong></td>
<td>Gain of insightful knowledge experienced at an intuitive level. Certainty of encounter with ultimate reality (in the sense of being able to “know” and “see” what is really real at some point during your experience). You are convinced now, as you look back on your experience, that in it you encountered ultimate reality (i.e., that you “knew” and “saw” what was really real).</td>
</tr>
<tr>
<td><strong>Sacredness</strong></td>
<td>Sense of being at a spiritual height. Sense of reverence. Feeling that you experienced something profoundly sacred and holy.</td>
</tr>
<tr>
<td><strong>Positive mood</strong></td>
<td>Experience of amazement. Feelings of tenderness and gentleness. Feelings of peace and tranquility.</td>
</tr>
<tr>
<td></td>
<td>Experience of ecstasy. Sense of awe or awesomeness. Feelings of joy.</td>
</tr>
<tr>
<td><strong>Space-time</strong></td>
<td>Loss of your usual sense of time. Loss of your usual sense of space.</td>
</tr>
<tr>
<td></td>
<td>Loss of usual awareness of where you were. Sense of being “outside of” time, beyond past and future. Being in a realm with no space boundaries. Experience of timelessness.</td>
</tr>
<tr>
<td><strong>Ineffability</strong></td>
<td>Sense that the experience cannot be described adequately in words. Feeling that you could not do justice to your experience by describing it in words. Feeling that it would be difficult to communicate your own experience to others who have not had similar experiences.</td>
</tr>
</tbody>
</table>

Note: MEQ30 = 30-item Mystical Experience Questionnaire. Based on Barrett et al. (2015). All of the items in the mystical factor load together. Barrett et al. used the cluster headings to organize the mystical items, presumably to show their relationship to Stace’s (1960) criteria.

"Far less research has been conducted on more challenging domains to measure, such as ... transpersonal and mystical ... and post-conventional stages of development associated with meditation. However, these components of meditation may be crucial to people’s psychological and spiritual development, could represent important mediators and/or mechanisms by which meditation confers benefits, and could themselves be important outcomes of meditation practices. In addition, since large numbers of novices are being introduced to meditation, it is helpful to investigate experiences they may encounter that are not well understood."

https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0205740&type=printable
Meditation Practitioners and ME


https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0205740

Fig 1. Frequencies of Mystical Experience Questionnaire items. MEQ Subscales: PM = Positive Mood, TTS = Transcendence of Time and Space, INF = Ineffability. MYS = Mystical (Facets of Mystical: MYS-NQ = Noetic Quality, MYS-SA = Sacredness, MYS-IU = Internal Unity, MYS-EU = External Unity). Some items have been truncated due to space. MEQ full items and MEQ subscale scores are available in the supplemental materials.
“…basic scientific studies using classic psychedelics have led to numerous advances in the experimental study of mystical experiences…these studies collectively suggest the possibility that the pattern and structure of communication between brain networks constitutes the neurobiological basis of consciousness, such that alterations of consciousness are driven by alterations of communication between brain regions.”

Neurophysiological Mechanisms

“Although the most fundamental questions regarding mystical experiences presently evade a reductive neuroscientific explanation, analysis of the biological correlates suggestive of underlying mechanisms of mystical experiences are tractable. We have highlighted an intriguing overlap in neural findings on classic hallucinogens and neural findings on meditative practices that may occasion mystical experiences. More specifically, changes in activity, connectivity, and neural oscillatory processes in regions of the default mode network may underlie dimensions of mystical experience, especially decreased self-referential processing and altered sense of time and space that accompany introvertive mystical experiences.”


Kundalini Awakening/Psychosis

“When a person has an altered sense of self, it becomes important to understand and be able to differentiate tendencies to schizophrenia from spiritually advancement. Although there may appear to be superficial similarities on a gross clinical level, the two differ in their intentions in subtle ways… In schizophrenia, alterations of ‘sense of self’ involve weakening of the ego leading to its derangement and loss of control over mind and senses. In spiritually advanced personalities, the ego is not deranged; rather, by surrendering to the higher Being, it undergoes a gradual merging into a higher unlimited-Self (ego-effacement). Such a person, in fact, becomes more aware of his ego and, by developing mastery over it, gains the freedom to use it or let it go.”

“Yoga changed my life”
Quantum Change

“A common response, when we asked people what had changed, was “everything.” …however, there were some common areas of transformation in our narratives.”

“…they often reported a sense of settled peacefulness and safety as an immediate and enduring aftereffect.”

“Another major change that quantum changers reported was in their values and priorities…an abrupt and enduring shift in their most central values…“They were no longer possessed by their possessions. Often, characteristics that had been valued least became most important, and those that had ranked as highest priorities fell to the bottom. Spirituality, though not necessarily religion, became central for many.”

Psychoactive Drug Studies

Psilocybin Plus Meditation Study


Figure 5. Participant ratings of effects attributed to psilocybin session experiences at the 6-month follow-up (Illustrative results from Table 5). Data on altruistic/social effects, behavior changes, and spirituality are expressed as percentage of maximum possible score (bars show means, brackets show 1 SEM, n=25). Data for the questions about spiritual significance and change in well-being or life satisfaction are either raw scores (bars show means, brackets show 1 SEM, n=25) or percentages of the group (n=25). * Indicates a significant difference from the Low-Dose Standard-Support group; + indicates a significant difference between the High-Dose High-Support group and the High-Dose Standard-Support group (Planned comparisons, p<0.05).
Spirituality vs. Religion

**Religion:** At its core, religion is about faith. That is to say, belief in something based upon unconditional acceptance of the religion’s teachings. Unlike the scientific worldview, religions don’t require evidence to validate their claims. Through religion, you are taught to have faith in God or the scriptures as being the infallible and ultimate truth of reality. Acceptance and surrender to the divine are taught as the path that leads to ultimate salvation.

**Spirituality:** Spirituality doesn’t dismiss faith; however, it often leans more heavily on direct experience of the soul or divinity. Spiritual practices such as meditation, yoga, silence, and contemplation allow you to make conscious contact with more expanded states of consciousness, thus helping to experientially validate the teachings rather than accepting them on faith alone. You know something because you have tasted the experience yourself and have allowed it to resonate, as opposed to taking the word of another.

Yoga Practices
Postures, Breathing, Relaxation, Meditation

Fitness
↑Flexibility
↑Strength
↑Coordination/Balance
↑Respiratory Function
↑Self-Efficacy

Self-Regulation
↑Stress Regulation
↑Emotion Regulation
↑Resilience
↑Equanimitiy
↑Self-Efficacy

Awareness
↑Attention
↑Mindfulness
↑Concentration
↑Cognition
↑Meta-cognition

Spirituality
↑Unitive State
↑Transcendence
↑Flow
↑Transformation
↑Life Meaning/Purpose

Global Human Functionality
↑Physical & Mental Health, ↑Physical Performance
↑Stress & Emotion Regulation, ↑Awareness/Mindfulness, ↑Meta-cognition
↑Positive Behavior, ↑Wellbeing, ↑Values, ↑Life Purpose & Meaning, ↑Spirituality
Retrospective Research on Yoga Practitioners
Reasons for Practice in a Beginners Program

# Reasons for Practice

<table>
<thead>
<tr>
<th>Reason</th>
<th>Original primary reason to adopt practice</th>
<th>Additional original reasons to adopt practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students, n (%)</td>
<td>Teachers, n (%)</td>
</tr>
<tr>
<td>Relaxation</td>
<td>25 (6.9)</td>
<td>5 (3.2)</td>
</tr>
<tr>
<td>Stress relief</td>
<td>52 (14.4)</td>
<td>31 (19.9)</td>
</tr>
<tr>
<td>Pain relief</td>
<td>12 (3.3)</td>
<td>3 (1.9)</td>
</tr>
<tr>
<td>Weight control</td>
<td>16 (4.4)</td>
<td>4 (2.6)</td>
</tr>
<tr>
<td>Flexibility</td>
<td>60 (16.7)</td>
<td>10 (6.4)</td>
</tr>
<tr>
<td>Spirituality</td>
<td>13 (5.0)</td>
<td>11 (7.1)</td>
</tr>
<tr>
<td>Depression/anxiety relief</td>
<td>18 (5.0)</td>
<td>15 (9.6)</td>
</tr>
<tr>
<td>Deal with physical health issues</td>
<td>29 (8.1)</td>
<td>10 (6.4)</td>
</tr>
<tr>
<td>Get into shape</td>
<td>40 (11.1)</td>
<td>9 (5.8)</td>
</tr>
<tr>
<td>Get exercise</td>
<td>70 (19.4)</td>
<td>33 (21.2)</td>
</tr>
<tr>
<td>Other</td>
<td>25 (6.9)</td>
<td>25 (16.0)</td>
</tr>
</tbody>
</table>

### Reasons for Practice

**Flexibility and Stress Relief and Reduction are the Two Top Reasons Practitioners Began and Continue**

50% of respondents cited improving overall health as a reason to start and to continue practicing.

#### Motivation to Start Practicing
- **Flexibility**: 61%
- **Stress relief/reduction**: 56%
- **General fitness/conditioning**: 49%
- **Improve overall health**: 49%
- **Physical fitness/getting in better shape**: 44%
- **Strength**: 42%
- **Mental health**: 37%
- **Spiritual development**: 24%
- **Weight loss**: 21%
- **Physical therapy**: 18%
- **Medical condition**: 10%
- **Prenatal health**: 3%
- **None of the above**: 2%
- **Other**: 1%

#### Motivation to Continue Practicing
- **Flexibility**: 59%
- **Stress relief/reduction**: 53%
- **General fitness/conditioning**: 47%
- **Improve overall health**: 48%
- **Physical fitness/getting in better shape**: 42%
- **Strength**: 40%
- **Mental health**: 35%
- **Spiritual development**: 23%
- **Weight loss**: 20%
- **Physical Therapy**: 14%
- **Medical condition**: 9%
- **Prenatal health**: 3%
- **None of the above**: 2%
- **Other**: 1%

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**Q. Which of the following personal reasons motivated you to start practicing yoga?**

**Q. Which of the following personal reasons currently motivate you to practice yoga?**
# Reasons for Practice

## Table 3: Motivations for beginning and continuing yoga practice

<table>
<thead>
<tr>
<th>Reason</th>
<th>Beginning (n=2, 456)</th>
<th>Continuing (n=2, 384)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trendy, in vogue</td>
<td>2.6% (64)</td>
<td>0.5% (11)</td>
</tr>
<tr>
<td>Increase health and fitness</td>
<td>71.9% (1,767)</td>
<td>82.3% (1,962)</td>
</tr>
<tr>
<td>Increase flexibility, muscle tone</td>
<td>70.5% (1,732)</td>
<td>86.5% (2,061)</td>
</tr>
<tr>
<td>Reduce stress or anxiety</td>
<td>58.4% (1,434)</td>
<td>79.4% (1,893)</td>
</tr>
<tr>
<td>Specific health or medical reason</td>
<td>19.7% (485)</td>
<td>21.2% (505)</td>
</tr>
<tr>
<td>Pregnancy, childbirth</td>
<td>3.2% (79)</td>
<td>3.8% (91)</td>
</tr>
<tr>
<td>Menopause or other women’s health</td>
<td>3.4% (83)</td>
<td>7.8% (187)</td>
</tr>
<tr>
<td>Spiritual path</td>
<td>18.9% (463)</td>
<td>42.7% (1,017)</td>
</tr>
<tr>
<td>Personal development</td>
<td>29.4% (723)</td>
<td>59.1% (1,410)</td>
</tr>
<tr>
<td>Enhance performance in other activity</td>
<td>10.9% (268)</td>
<td>19.6% (468)</td>
</tr>
<tr>
<td>Other</td>
<td>5.2% (127)</td>
<td>5.8% (138)</td>
</tr>
</tbody>
</table>

Respondents were able to make multiple selections.


[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3410203/?report=printable](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3410203/?report=printable)
Reasons for Practice

Table 2. Newly discovered primary and additional reasons for continuing to practice yoga for those who discovered new reasons to practice.

<table>
<thead>
<tr>
<th>Reason</th>
<th>New primary reason to continue practice</th>
<th>Additional new reasons to continue practice</th>
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</thead>
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<tr>
<td>Pain relief</td>
<td>3 (1.4)</td>
<td>3 (2.3)</td>
</tr>
<tr>
<td>Weight control</td>
<td>1 (0.5)</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Flexibility</td>
<td>15 (6.8)</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Spirituality</td>
<td>52 (23.5)</td>
<td>67 (50.4)</td>
</tr>
<tr>
<td>Depression/anxiety relief</td>
<td>20 (9.0)</td>
<td>10 (7.5)</td>
</tr>
<tr>
<td>Deal with physical health issues</td>
<td>8 (3.6)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Get into shape</td>
<td>15 (6.8)</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Get exercise</td>
<td>11 (5.0)</td>
<td>1 (0.8)</td>
</tr>
<tr>
<td>Other</td>
<td>37 (16.7)</td>
<td>27 (20.3)</td>
</tr>
</tbody>
</table>

“Over 62% of students and 85% of teachers reported having changed their primary reason for practicing or discovering other reasons; for both, the top changed primary reason was spirituality. Findings suggest that most initiate yoga practice for exercise and stress relief, but for many, spirituality becomes their primary reason for maintaining practice.”

# Reasons for Practice

| Table 2. Primary and Additional Reasons for Adopting and Maintaining Yoga Practice in n (%) |
|---|---|---|---|
| | Original reason for starting yoga | Current reason for practicing yoga |
| | Primary reason | Additional reasons | Primary reason | Additional reasons |
| Prevention/health promotion | 434 (25.5%) | 716 (42.1%) | 654 (38.4%) | 733 (43.1%) |
| Treating a health issue | 285 (16.7%) | 497 (29.2%) | 107 (6.3%) | 504 (29.6%) |
| Spirituality | 198 (11.6%) | 463 (27.2%) | 450 (26.4%) | 581 (34.1%) |
| Physician’s or therapist’s advice | 29 (1.7%) | 65 (3.8%) | 2 (0.1%) | 12 (0.7%) |
| Relaxation | 453 (26.6%) | 713 (41.9%) | 309 (18.2%) | 801 (47.1%) |
| Get fit/get into shape | 40 (2.4%) | 235 (13.8%) | 25 (1.5%) | 268 (15.7%) |
| Current popularity | 3 (0.2%) | 9 (0.5%) | 1 (0.1%) | 4 (0.2%) |
| Looking for a hobby | 14 (0.8%) | 58 (3.4%) | 1 (0.1%) | 24 (1.4%) |
| Socializing | 2 (0.1%) | 71 (4.2%) | 2 (0.1%) | 116 (6.8%) |
| Monetary incentive from health insurance | 2 (0.1%) | 21 (1.2%) | 0 (0.0%) | 16 (0.9%) |
| Advice from friends or family | 106 (6.2%) | 158 (9.3%) | 4 (0.2%) | 10 (0.6%) |
| Other reasons | 136 (8.0%) | 120 (7.1%) | 147 (8.6%) | 148 (8.7%) |

*More than one additional reason per participant possible.*

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Reasons for Practice

Figure 1  Initial and current principal reasons for practising yoga.


https://bmjopen.bmj.com/content/bmjopen/10/1/e031848.full.pdf
Reasons for Practice

“...practitioners had greater initial and continued physical intentions than spiritual intentions. However, spiritual intentions become more salient over time, suggesting that Western yoga can cultivate spirituality. Results also showed that practitioners with spiritual intentions reported significantly higher psychological wellbeing.”


Figure 2: Effect of yoga practice on perceptions of quality of life by category (respondents were able to report perceptions of quality of life in multiple categories. N=2,389 respondents reported, n=10,386 quality of life measures in 5 categories)


https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3410203/?report=printable
Mystical Experience in Yoga Practitioners

Subjective Effects

- Became aware of a new reality
- Felt a personality change
- Experience resulted in change in life
- Experience of oneness
- In touch with divine or spiritual

Transcendence in Yoga Practitioners

Table 4: Bivariate correlations: Hatha yoga experience with psychological outcomes

<table>
<thead>
<tr>
<th>Measure</th>
<th>Current hours per week</th>
<th>Total lifetime hours</th>
<th>Total calendar years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive psychological attitudes</td>
<td>209 0.28***</td>
<td>201 0.32***</td>
<td>201 0.19**</td>
</tr>
<tr>
<td>Transcendence</td>
<td>211 0.33***</td>
<td>203 0.28***</td>
<td>203 0.18**</td>
</tr>
<tr>
<td>Mental mastery</td>
<td>211 0.19**</td>
<td>203 0.18**</td>
<td>203 0.08</td>
</tr>
<tr>
<td>Subjective vitality</td>
<td>211 0.22***</td>
<td>203 0.20**</td>
<td>203 0.13</td>
</tr>
</tbody>
</table>

**P ≤ 0.01; ***P < 0.001

Self-transcendence in Yoga Practitioners

From: *Processing of proprioceptive and vestibular body signals and self-transcendence in Ashtanga yoga practitioners, Fiori F, David N, Aglioti SM, Frontiers in Human Neuroscience, 8:734, 2014.*

https://www.frontiersin.org/articles/10.3389/fnhum.2014.00734/full
Spirituality in Yoga Practitioners

Meditation has stronger relationships with mindfulness, kundalini, and mystical experiences than yoga or prayer. de Castro JM, Consciousness and Cognition, 35:115-27, 2015.
Serving the Yoga Community

Yoga Alliance® is committed to promoting and supporting the integrity and diversity of the teaching of yoga.
Scientific Research on Yoga

Substantial research has been done on many of the populations and parts of the body that COVID-19 preys on most. Use this section of Yoga Alliance’s website to learn more about scientific research on the effects of yoga on the elderly, respiratory function, anxiety, and depression, to name a few.

Perhaps more than ever, yoga is being widely studied and evaluated for its positive effects and benefits. At Yoga Alliance, we curate the latest and most relevant research on yoga’s applications in health, wellness, and disease. We have filtered it in a digestible manner for our Registered Yoga Schools and Registered Yoga Teachers as well as for the broader yoga community.

This evidence-based research not only reveals the science of yoga, it also explains its therapeutic efficacy when used in conjunction with conventional medicine. Our goal is that this impactful content will be utilized in a way that highlights even more of yoga’s ancient, multi-faceted ability to improve lives.

Join us! Let us know how research on yoga is important or valuable to you on social media (@YogaAlliance) or by emailing us at research@yogaalliance.org. We honor and value your personal experiences and look forward to featuring your stories.

Main Research Categories
- Basic Research
- Special Populations
- Disease and Disorders

Archived Videos
Browse our selection of yoga research videos to learn more about research done in specific categories of health and wellness.

Our Research Conversation
- Our Director of Yoga Research
- Featured Research Video
- Featured Health News

Our Director of Yoga Research Dr. Sat Bir Singh Khalsa is a renowned yoga research expert and yoga teacher who has committed his professional life to clinical research surrounding yoga’s full spectrum of healing efficacy.

Learn about the process of aging and how yoga affects (and even slows down) aging.

Visit our COVID-19 website, YourYI.org, for the most recent and applicable information on the coronavirus and the COVID-19 pandemic.

Learn More
Watch Now
Learn More
Transcendence/Spirituality  Flow State, Life Purpose and Meaning, Values, Life Satisfaction, Transformation, Subtle Energy

Our hope is for yoga schools and yoga teachers to utilize this impactful content in their teachings to promote and highlight yoga’s evident multi-faceted ability to improve lives. Let us know how research on yoga is important or valuable to you on social media (@YogaAlliance) or by emailing us at research@yogaalliance.org. We honor and value your personal experiences and look forward to featuring your stories.

These citations were curated by Yoga Alliance’s Director of Yoga Research, Dr. Sat Bir Singh Khalsa.

Review Papers (What’s this?)

Supple bodies, healthy minds: yoga, psychedelics and American mental health.
Richerit L, DeCloedt M.
[ full text ]

A Systematic Review of Transcendent States Across Meditation and Contemplative Traditions.
Wahbeh H, Sagher A, Back W, Pundhir P, Travis F.
[ full text ]

Meditation has stronger relationships with mindfulness, kundalini, and mystical experiences than yoga or prayer.
de Castro JM.
Conscious Cogn. 2015 Sep;35:115-27.
[ abstract ]

Self-transcending meditation is good for mental health: why this should be the case.
Hankey A, Shetkar R.
[ abstract ]

Notable Publications (What’s this?)

Interactions Between Body and Social Awareness in Yoga.
Fiori F, Aglioti SM, David N.
[ abstract ]

Genovese JE, Fondran KM.
[ full text ]

The relationship between yoga involvement, mindfulness and psychological well-being.
Gaiswinkler L, Unterrainer HF.
[ abstract ]

Processing of proprioceptive and vestibular body signals and self-transcendence in Ashtanga yoga practitioners.
Fiori F, David N, Aglioti SM.
Front Hum Neurosci. 2014 Sep 18;8:734.
[ full text ]