



# The Origin and Clinical Relevance of Yoga Nidra

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## Abstract

Yoga nidra, also known as ‘yogic sleep’, is a simplified form of an ancient tantric relaxation technique. The most general description of the practice is that it combines guided mental imagery with a specific yoga posture called Shavasana (or “corpse pose”). The goal of yoga nidra is to promote a profound state of relaxation, which differs from sleep inasmuch as there is still an awareness of one’s surroundings. While several components of the practice have been known since ancient times, it was not until the 1960s that an updated and systematized system of practice was introduced to the public through the writings of Swami Satyananda Saraswati. Unlike other schools of yoga, which emphasize concentration or contemplation, yoga nidra’s goal is complete relaxation. As such, its advocates claim that it is suitable for all individuals, from beginners to advanced practitioners of yoga. The calm inner stillness induced by yoga nidra is claimed by practitioners to be an effective stress management tool as well as a means for attaining greater receptivity to personal resolutions. These resolutions can range from the goal of achieving self-transformation, enhancing creativity, or improving one’s learning ability. Additionally, yoga nidra is claimed to promote beneficial changes in physiological and mental health. The following narrative review summarizes the basic steps used to achieve the final state of yoga nidra relaxation as well as some recent experimental findings regarding its physiological and psychological effects. Standard research databases were searched for relevant articles. Clinical studies have shown that yoga nidra meditation is associated with positive physiological changes, including improvements in several hematological variables, red blood cell counts, blood glucose levels, and hormonal status. Two neuroimaging studies have shown that yoga nidra produces changes in endogenous dopamine release and cerebral blood flow, a further confirmation that its effects on the CNS are objectively measurable. The practice has also been shown to reduce psychometrically measured indices of mild depression and anxiety, although these benefits were not shown in an experimental study to extend to severe depression or severe anxiety.

**Keywords** Clinical · Corpse pose · Medicine · Nidra · Shavasana · Sleep · Yoga nidra · Yogic sleep

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The authors dedicate this manuscript to Prof. Neena Srivastava for her contribution to the scientific study of Yoga Nidra.

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Neena Srivastava Deceased.

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**“When awareness is separate and distinct from mental activity,  
when waking, dream and deep sleep pass like clouds,  
yet awareness of Self remains,  
this is the experience of total relaxation...  
That is why, in tantra,  
yoga nidra is said to be the doorway to Sama-dhi.”[1]**

**- Swami Satyananda**

It has been suggested that the various techniques of yoga often produce a number of both physical and mental changes referred to as the relaxation response [2]. In this paper, one of these techniques, as well as the scientific evidence supporting it, is reviewed. *‘Yoga nidra’*, variously meaning ‘*yogic sleep*’, ‘*psychic sleep*’, or ‘*sleeping consciously*’, is a meditative procedure whose goal is to transform the mind and body. The name ‘yoga nidra’ derives from two Sanskrit words: ‘yoga,’ which means union, and ‘nidra,’ which means sleep. Acharya Sankara (Adi Shankaracharya) wrote in his text *Yoga Taravali* in the eighth century that

**“vicchinna saṅkalpavikalpamūle niḥśeṣanirmūlita  
karmajāle |  
nirantarābhyāsanitānta bhadrāsā jṛmbhate  
yogini yoganidrā || 25**

This passage means that when the ego has become quiescent, i.e., when the messages between the perceptions of the senses are no longer being registered in the mind, and when the feeling of personal identity has slipped away, this is when the quieting process of yoga nidra starts

**viśrāntimāsādyā turīyatalpe viśvādyavasthātrīṭay  
oparisthe |  
saṁvinmayīm kāmapī sarvakālaṁ nidrā sakhe  
nirviśā nirvikalpām || 26**

The source documents for yoga nidra, the *Taravali* of Acharya Shankara, also advised, “O’ friend, getting convinced of and getting established in the state of turiya—which is beyond the three states of vishva, waking; taijasa, dreaming; and prajna, deep sleep—constantly experience the bliss of yoga nidra that is full of consciousness, free from doubts, and inexplicable” [3]. The ancient *Vijñāna bhairava*, a major source document for yoga, describes roughly 112 types of yogic meditation practises (around seventh century CE). Of these, yoga nidra is defined as

**Anāgatāyām nidrāyām pranaste bāhyagocare |  
Sāvastha manasā gamyā parā devī prakāśate || 75**

Meaning, “When sleep has not yet fully appeared, i.e., when one is about to fall asleep, and all the external

objects (though present) have faded out of sight, then the state (between sleep and waking) is one in which one should concentrate. In that state, the Supreme Goddess will reveal Herself” [4].

In the epic *Mahabharata* [5], Lord Krishna is related with Yoga Nidra

**[The Ocean] becomes the bed of the lotus-aveled Vishnu  
when at the termination of every Yuga that  
deity of immeasurable power enjoys Yoga-Nidra,  
the deep sleep under the spell of spiritual medita-tion.**

**— Mahabharata, Book 1, section XXI**

The *Bhagavad Gita* (“Song of God” or “Song of the Lord”) belongs to the second half of 1st millennium BC. The *Bhagavad Gita* was originally part of the *Mahābhārata*, India’s great epic [6]. It is one of the great ancient texts on Hinduism and yoga, a core attitude expressed about sleep is that it represents a state which occurs in the unenlightened mind. As Lord Krishna describes both the condition and himself

**“aham ātmā guḍākeśha sarva-bhūtāśhaya-sthitaḥ |  
aham ādiś cha madhyaṁ cha bhūtānām anta eva  
cha” || 10:20**

*Meaning*, “I am the Self, O Guḍākeśa, seated in the hearts of all creatures. I am the beginning, the middle and the end of all beings” [6]. Lord Krishna referred to Arjuna as ‘Guḍākeśa,’ meaning one who has achieved such a state of mastery and is so highly evolved that he has overcome the need for sleep. An additional meaning of this passage is that sleep is regarded as a state of darkness or ignorance, and one that the great Arjuna has transcended.

Yoga nidra is believed to be old as yoga itself in terms of history, with the first reference of it being in the *Upanishads* (circa 600 BCE). Yoga nidra is sometimes referred to as the third of four levels of consciousness in the *Mandukya Upanishad*

**amātraś caturtho’vyavahāryaḥ  
prapañcopaśamaḥ sivo’dvaita  
evam auṅkāra ātmaiva,  
saṁviśaty ātmanā’tmānam  
ya evaṁ veda ya evaṁ veda || 12 [7, 8].**

Meaning, in the third or deep sleep state, the need or desire for any object of external experience has been lost. Essentially, it is a state of dreamless sleep or undifferentiated consciousness. At the same time, those who are in this state experience bliss, and have also achieved a condition in which there is a clearer understanding of the two states of sleep that have preceded it [8]. Yoga Nidra practice is performed in *Shavasana*, which implies a depth of release that

goes beyond simple relaxation. This asana is described as a relaxation tool in various Indian hatha yoga texts.

Appearing in the Hatha Yoga Pradipika (Light on Hatha Yoga), a fifteenth century manual on Hatha Yoga written by Svātmārāma [9] has this passage

**Uttānam śabavadbhūmau śayanam  
tachchavāsanam |  
Śavāsanam śrāntiharam chittaviśrāntikāra  
kam || 1:32**

Meaning, the practitioner of yoga nidra should lie flat on the ground facing upwards, and assume the posture or condition of a dead body, a physical and mental state that is referred to as Shavasana. In this position, normal fatigue is dissolved.

Gheraṇḍa-Saṃhita (“Gheranda's collection”) [10], likely a late seventeenth-century manual on Hatha Yoga, says

**Uttānam Savodbhumo Śhayanāntu śhavāsanam |  
Śavāsanam shramharam chiittavishrāntikara  
nam || 2:19**

In Hatha Yoga, lying flat on the ground like a corpse is called the “Mirtasana,” (‘Mrit’ = Corpse/dead body; Asana = Pose; Corpse Pose). It is believed that this posture dissolves fatigue and quiets the agitation of the mind and is used as a relaxation practice.

Haṭha Ratnāvalī (a Treatise on Haṭhayoga) [11] written in the seventeenth century by Śrīnīvāsayogī says

**Prasaryā hastpadau cha vishranyā shayanam tathā |  
Sarvāsanam shramharam shayitamtu shavāsanam  
|| 3:76**

Lying comfortably extended arms and legs, this is Shavasana. It removes all kinds of fatigue due to the practice of different asanas.

Practitioners of yoga nidra may appear to be asleep, but their consciousness is operating at a deep level of awareness [12]. This level of consciousness is accompanied by a profound sense of relaxation. Yoga nidra is derived from ‘pratyahara,’ one of the eight ashtanga (eight-limbed) branches of the yoga system as conceptualized in Patanjali’s (an Indian sage who lived circa 200 B.C) well-known codification method of yogic practice and tantric ritual of ‘nyasa’ (“to place”; a practice in which mantras [a sacred utterance, a numinous sound, a syllable, a word or phonemes, or a set of words] are placed and felt at different parts of the body). Thus, the meaning of ‘Nyasa’ is ‘to place or to take the mind to that point’. Yoga nidra is neither nyasa nor meditation as nyasa and meditation both are done in a sitting position while keeping your spine straight. Unlike mediation and nyasa, yoga nidra is performed in a supine position. Furthermore, while meditation is practiced in an aware awake state, yoga nidra is classified as a sleep state in which awareness

is preserved [13]. Yoga Nidra is a ‘pratyāhāra’ (control or withdrawal of senses) practice in which mind and mental activities are disengaged from perceptual awareness. This results in profound relaxation, stress reduction, initiating healing processes, and personal transformation. “There is a method called yoga nidra in which you can have conscious sleep

**Yoga nidra is a state between sleep and samadhi.”  
- Swami Rama**

The connection with the environment is never fully lost with yoga nidra; it is just that the arousal-producing effects are reduced. The deeper layers of mental activity become more accessible to the practitioner with prolonged practice. Yoga Nidra bears some resemblance to sleep inasmuch as in both states there is a disconnection from the arousal-promoting effects of the environment, a decrease in sympathetic nervous system (SNS) activity (i.e., a reduction in stress responses), and a manifestation of ‘dream-like’ visual experiences [1]. It is claimed that during the deep state of relaxation that yoga nidra induces, an awareness of one’s surroundings is increased and that receptivity and learning abilities are enhanced [14].

Yoga Nidra is usually practiced for about 30 min to an hour at a time. During the deepest part of the state, which is considered qualitatively different from ordinary waking consciousness, practitioners are thought to be re-aligned with the most spiritual part of their inner nature. Practitioners of yoga nidra claim, however, that it is not a substitute for sleep, but that its benefits go far beyond that of relaxation. It is further claimed that 1 h of yoga nidra practice equates to about 4 h of sleep [15]. This has led to the suggestion that yoga nidra is a “third mental state”, related to both sleep and relaxation, but still possessing properties that make it unique. It is asserted that yoga nidra is qualitatively different from normal relaxation inasmuch as many of the ongoing mental preoccupations of daily life are thrown off, even though awareness of the environment remains intact. Additionally, however, it is thought that yoga nidra is also different from sleep, since in ordinary sleep, one’s mental tensions cannot always be resolved. It is claimed further that with time, the practice can produce a major transformation of the self, one that extends to the promotion of physical, emotional, and spiritual health and well-being.

## 1 The Principles and Practice of Yoga Nidra

The foundation of yoga nidra is knowledge of one's complete physical element of personality (annamaya kosha), which is attained by simply resting one's joyful awareness by relaxing each physical part and biological function. As a result, the

component of one's psyche that involves all breathing processes (pranamaya kosha) and nerve centers (chakra) experiences tranquilly and clarity. Realizing one's actual, natural, and tranquil annamaya kosha and pranamaya kosha has a positive impact on the mind, allowing shades of ignorance, anger, and anxiety to fade away. This beneficial effect on the mind and all mental formations (manonmaya kosha) lead to the realization of one's true potential. As a result, one can naturally progress to finer and higher levels of spirituality to achieve inner bliss and serenity. Without a doubt, this is the ultimate desire of every enthusiastic practitioners.

Yoga Nidra practice involves a specific set of steps, initially quite deliberate, but becoming more natural and automatic with time and experience [16]. These steps involve preparation for the practice, then the presentation of one's self of a personal resolution or commitment to later action (Sankalpa), followed by the directing of awareness to various body parts, then breath awareness, recall of various feelings and sensations, mental visualization, a restatement of the personal resolution or Sankalpa, and then an ending of the practice session.

## 2 Preparation

Before initiating the mental steps that are required to enter into the conscious sleep state of yoga nidra, the practitioner adopts the classic Shavasana or “corpse pose” (Fig. 1).

This posture, one of the most important in yoga practice, includes turning the palms upward and preventing contact between the limbs of the body. This minimizes the sensation of touch, and is considered to be a key preparatory stage for relaxing the body and inducing quiescence in the mind. It is also required that practitioners refrain from making any bodily movements and remain awake and aware of all instructions delivered. Lying supine with the eyes closed,

the practitioner spreads his arms and legs (to about 45°), and breathes deeply.

## 3 Sankalpa

The next stage of the yoga nidra technique is for the practitioner to mentally affirm to himself a personal resolution, a “Sankalpa”, which should be short, clear, and positive (i.e., usually dedicated to some goal of self-realization or improvement). The goal could be quite profound or something as basic as overcoming a personal habit, such as “I resolve to stop smoking”. The practitioner should mentally repeat the chosen Sankalpa three times with complete determination. The state of mental dissociation that this resolution produces is expressed in what yoga nidra masters refer to as passivity. In this passive state, there is a separation of the self from the experiences that would normally be emotionally arousing. Under these conditions, the auto-suggested resolution is absorbed more quickly into the unconscious.

## 4 Rotation of Consciousness

In the third stage, the practitioner's mental visualization is shifted among different body locations in a systematic and organized manner. The sequencing of this mental awareness proceeds in defined steps: The practitioner starts with the right side of the body, with awareness first being directed at the right-hand thumb and then ending with the little toe of the right foot; awareness is then directed at the left side of the body, and the sequence is repeated, i.e., from the digits of the left hand to the digits of the left foot; next, awareness is directed toward the back of the body, progressing from the heels to the back of the head; and, finally, the



**Fig. 1** An illustration of a yoga nidra stance in schematic form

sequence is repeated for the front of the body, from the forehead and the individual facial features to the legs. It has been suggested that this overall exercise might in itself be an effective means of establishing relevant motor skill learning. This further enhances the value of the process as the student of yoga nidra advances to the later and deeper stages of practice [17].

## 5 Breath Awareness

In the breath awareness stage, several techniques are employed simultaneously to enable the practitioner to focus on the natural breathing process without attempting to induce any changes in its flow. Visualization is very important for the mastery of this. The yoga nidra student is instructed to visualize the breath flowing in and out of the nostrils, the chest, and abdomen, as well as between the navel and the throat. Additionally, the student is asked to mentally count each incoming and outgoing flow of the breath.

## 6 Opposite Feelings and Sensations

In this stage, the student is instructed to recall physical or emotional experiences and their associated sensations, but to do so with an increased vividness, so that the impact can be made to the maximum extent. Various examples of this process include experiencing opposite feelings or sensations such as heaviness and lightness, heat and cold, pain and pleasure, and so forth.

## 7 Visualization

Visualization is again a central process in the next stage of practice. The student is instructed to direct the awareness toward the dark space in front of the closed eyes, the area being referred to in yogic terminology as *Chidākāsha* (internally visualized as being centered just behind the forehead). The yoga nidra practitioner then is asked to visualize various scenes or situations in the *Chidākāsha*.

## 8 Sankalpa

The Sankalpa, as described in stage two, is again mentally repeated by the student three times “with full dedication, faith, and optimism”.

## 9 Ending the Practice Session

Just prior to terminating the yoga nidra session, the mental focus is slowly directed toward external sounds, objects, and persons. The practitioner gradually becomes aware of his body and surroundings, and turns to his right side but remains lying down for a few minutes more. Each body part is slowly moved and the body is stretched. Gradually the practitioner sits up, and whenever he feels comfortable, slowly opens his eyes.

## 10 The Distinction Between Yoga Nidra and Other Altered States of Consciousness

Practitioners assert that while yoga nidra in some ways resembles a sleep or a dream state, it is, in fact, neither of these. It is further claimed that the practice is closer to the altered state known in yoga as Samadhi (the ultimate “deathless”, “breathless” state), but differs inasmuch as it is far easier to achieve. Yoga nidra is perhaps more appropriately thought of as a valuable stepping stone on the path to Samadhi. Paramahansa Yogananda has vividly described yoga nidra’s associated perceptual experiences in his famous autobiography [18]

**“During the practice session, if one falls into Samadhi, the walls of the room will actually shimmer and disappear, and then sequentially the walls of the house, and all other remaining points of material reference.”**

## 11 Scientific Studies on Yoga Nidra

Since the 1960s, the various claims and reported benefits of the practice of yoga nidra have been the subject of a wide range of scientific studies. These have investigated the effects of the practice on numerous neurological, neurocognitive, and psychological disorders, as well as its systemic physical effects. The latter have included pain responses, cardiovascular effects, inflammatory conditions, immune system effects, diabetes, and long-term degenerative diseases. In the following sections, the numerous scientific studies of yoga nidra’s putative clinical benefits are discussed briefly (refer Table 1).

## 12 Stress, Anxiety, and Depression

Yoga nidra has been widely employed as a technique for managing stress and associated stress-induced disorders. Yoga nidra emphasizes relaxation itself rather than the more complicated procedures of other schools of yoga. Despite its simplicity yoga, nidra has tended to show favorable results in terms of anxiety reduction.

A randomized and controlled study has been done on the effects of yoga nidra on feelings of general well-being, including psychological variables such as depression and anxiety, in patients suffering from menstrual irregularities. One-hundred and fifty female patients were randomly assigned to either an intervention group ( $N=75$ ) using yoga nidra or a control group ( $N=75$ ) that did not practice yoga nidra. The assessment was done using the Assessment of Psychological General Wellbeing rating scale in both groups at the outset of the study and after 6 months. It was found that measures of both anxiety and depression decreased significantly in the yoga nidra group ( $P < 0.003$  and  $P < 0.01$ , respectively). Additionally, measures of positive well-being and general health improved significantly ( $P < 0.02$ ), as did feelings of vitality ( $P < 0.01$ ). [19] Another study on yoga nidra sought to determine its impact on stress and anxiety. One-hundred and twenty post-graduate students were assigned to either the yoga nidra intervention group ( $N=80$ ) or a control group ( $N=30$ ). Both groups were practicing yoga regularly, while the intervention group was additionally practicing 30 min of yoga nidra. In the yoga nidra intervention group, stress decreased significantly ( $P < 0.01$ ) in all members of the group, while anxiety decreased significantly in male subjects only [20].

In another study, the authors have evaluated the effects of yoga nidra on depression and anxiety in patients with menstrual disorders who were being seen for treatment at a medical university hospital in India. The patients were randomly divided into 2 groups: an intervention group (with yoga nidra intervention,  $n=65$ ) and a control group (without yoga nidra intervention,  $n=61$ ). The Hamilton Anxiety Scale (HAM-A) and the Hamilton Rating Scale for Depression (HAM-D) were administered at the beginning of the study and again after 6 months. The mean age of patients was around 26.5 years. Symptoms of mild-to-moderate anxiety and depression were significantly reduced (anxiety,  $P < 0.003$ ; depression,  $P < 0.02$ ) after 6 months of yoga nidra therapy when compared to the control group. Yoga nidra practice was not found to be significantly beneficial for those with severe levels of depression or anxiety [21].

A study has been done on the effect of yoga nidra practice on stress levels in the first-year nursing students. A pre-experimental study was conducted to assess and compare the stress levels of first-year nursing students before and

after the administration of yoga nidra. A sample of 50 nursing students was randomly selected and data were collected using a modified stress assessment scale. The stress levels were categorized into five categories of “severe” (57–80), “high” (47–56), “moderate” (37–46), “low” (27–36), and “very low” (0–26). The investigators found that following 20 days of yoga nidra practice, the mean stress scores were significantly reduced (before yoga nidra, 28.82; after yoga nidra, 17.8 [ $p < 0.05$ ]), thus supporting the conclusion that yoga nidra is a practical and easily applied stress prevention technique for students of demanding professions such as nursing [22].

A study was also conducted among students to assess the impact of yoga nidra on alpha EEG and GSR. Forty students were selected from the MBPG College Hladwani, Uttarakhand, India for the study. They were asked to practice yoga nidra for 30 min for 40 days regularly. The results show a significant positive change in alpha electroencephalogram (EEG) and galvanic skin resistance (GSR level) [23].

The ultimate goal of yoga nidra is to produce a relaxation response that is incompatible with anxiety and depression and which therefore counters their disruptive internal processes. The studies which have been reviewed here thus support the conclusion that yoga nidra reduces anxiety responses, which are central causes of many other psychological difficulties.

## 13 Other Psychological Effects

A study that has seen the effect of yoga nidra on 20 male and 20 female adolescents aged between 13 and 19 who had suffered emotional and physical abuse. The subjects drawn from various schools and coaching centers in Chandausi district, Uttar Pradesh in India. The subjects were assessed using the Emotional Abuse Test as well as the Mental Health Battery. Training in yoga nidra practice was provided, and subjects practiced the technique for a total of 2 months under supervised conditions. Scores on the mental health battery were used to evaluate the effectiveness of the experimental intervention. A Chi-square analysis showed a significant reduction [ $P < 0.01$ ] in scores on the Mental Health Battery in a before-after comparison [24].

In another study, the authors investigated the effect of yoga nidra practice on skills among wrestlers. More specifically, the researchers sought to determine if yoga nidra could improve their reaction times and anticipation times. Forty Indian wrestlers, aged 18–25, were selected for the study. They were divided into an experimental group that received yoga nidra training, ( $N=20$ ) and a control group, which did not receive such training ( $N=20$ ). The dependent measures, which were based on

an audiovisual reaction timer and the Basin Anticipation timer, quantified the wrestlers' early and late responses, i.e., their reaction and anticipation times. Yoga nidra practice (45 min each day for 45 days) improved the wrestlers' performance by improving their focus and attention. Compared to the control group, the scores for the simple visual reaction time (SVRT) and choice visual reaction time (CVRT) for the experimental group were found to be significantly faster ( $P < 0.05$  and  $P < 0.01$ , respectively) [25].

## 14 Psychosomatic Disorders

The use of the Shavasana posture, or “corpse pose” (described above), is one of the most important components of yoga nidra practice. A study compared the relative effectiveness of this posture versus biofeedback therapy for reducing symptom severity. Sixteen patients suffering from tension headaches were selected and evaluated by obtaining a clinical history and then the following assessment with detailed cardiovascular, neurological, ENT, ophthalmic examinations. They were randomized into EMG biofeedback and Shavasana sessions for 4 weeks. In a comparative evaluation, the two methods were found to be equally effective in the treatment of a tension headaches. It was found that more patients in the younger age group (16–25 years) showed a significant (83.3%) successful response to both modes of treatment than patients in the older groups (26–35 years) and (36–45 years) [26].

## 15 Endocrine System and Hormonal Status

A study measured the effects of yoga nidra meditation on hormonal imbalances among 75 female patients with menstrual irregularities. Compared to a matched sample of 75 controls, the yoga nidra group showed a significant rebalancing of hormonal status. The intervention group showed reductions in prolactin ( $P < 0.02$ ), follicle-stimulating hormone ( $P < 0.02$ ), thyroid-stimulating hormone ( $p < 0.002$ ), and luteinizing hormone ( $P < 0.001$ ) [27].

## 16 Cognition and Brain Functioning

The earliest scientific efforts to investigate changes in brain activity following yoga meditation were carried out in the 1970s [28]. A study was done in 1970s on the neurophysiological correlates of yoga nidra meditation in the yoga master Swami Rama. The author found that, unlike normal individuals, Swami Rama was able, at will, to nearly

immediately achieve a state of profound relaxation. Testing using electroencephalography (EEG) showed that Swami was able to produce a unified form of consciousness that had not previously been shown scientifically [15]. Additionally, Swami Rama was able to demonstrate remarkable control of his cardiovascular system [28]. Findings such as those of Green et al. provoked questions such as “Is it necessary to be a yoga master to attain such mastery over one’s bodily activity?” and, “Can normal individuals attain such control after a course of training in yoga nidra?” In the ensuing years since Green’s pioneering work, the measurable correlates of yoga meditation have been investigated with more study participants whose principal introduction to yoga practice has been training in yoga nidra.

Evidence has now been provided in at least two imaging studies that the conscious states observed during or following yoga nidra meditation are associated with measurable changes in brain activity. In another study, the author investigated the effects of yoga nidra meditation on endogenous dopamine release using 11c-raclopride positron emission tomography (PET) scanning. Participants in the study were scanned while listening to a speech with their eyes closed and then underwent a second scan as they actively practiced yoga nidra meditation. It was found that 11c-raclopride binding in the ventral striatum decreased by 7.9%, while subjects were in the meditative state, a finding that corresponded to increases in endogenous dopamine release of 65%. These responses were also correlated with significant increases in EEG theta activity, which is commonly associated with meditation [29].

In another imaging study, cerebral blood flow (CBF) distribution was investigated with a 150-H2O PET scanner as well as with spectral EEG analysis in nine highly experienced yoga teachers during yoga nidra meditation and during normal consciousness. The differential activity was seen in several brain areas that are known to be involved in imagery tasks [30]. For example, during meditation, spectral EEG analysis indicated differential activity in the posterior sensory and associative cortices known to participate in visualization tasks, except for the primary visual cortex (V1). The differential activity was found in the dorso-lateral (DLPFC or DL-PFC) and orbital frontal cortex (OFC), anterior cingulate gyri, left temporal gyri, left inferior parietal lobule, striatal and thalamic regions, pons and cerebellar vermis and hemispheres, and structures thought to support an executive attentional network, in the resting state of normal consciousness (compared to meditation as a baseline). Throughout the study, both participants' mean global flow remained constant ( $39 \pm 5$  and  $38 \pm 4$  ml/100 g/min, uncorrected for partial volume effects). It is concluded that the (H2)150 PET approach can quantify CBF distribution in both the contemplative and resting states of normal consciousness, and that each condition is supported by distinct patterns of brain activity. These

discoveries add to our knowledge of the neurological underpinnings of several aspects of consciousness.

## 17 Pain Responses

A study that has been done on the effect of yoga nidra on perceptions of pain and related variables among patients undergoing colonoscopy. The patients ( $N=144$ ) were selected and divided into three groups (control group, relaxation music group, and yoga nidra group) to undergo colonoscopy. Testing consisted of assessments of several variables, including patients' perceived pain, their overall satisfaction, perceived colonoscope insertion difficulty, and willingness to repeat the procedure. Systolic and diastolic blood pressures were also measured during the procedure. Both the music and the yoga nidra significantly ( $p < 0.05$ ) reduced patients' perceptions of pain and colonoscope insertion difficulty when scores were compared to the control group. The music and the yoga nidra also significantly ( $p < 0.05$ ) improved overall patient satisfaction with the procedure. Compared to controls, patients who listened to either the music or the yoga nidra recording showed significantly ( $p < 0.05$ ) greater improvements in willingness to repeat the procedure or satisfaction with the colonoscopy procedure overall, although differences between the yoga nidra and music groups were not significant. Differences among the three groups in terms of blood pressure were not significant [31].

## 18 Cardiovascular Effects and Inflammatory Conditions

A study has been done on the effect of yoga nidra on blood pressure and psychological variables in hypertensive patients. A sample of 40 patients (30 males and 10 females) were selected to practice yoga nidra for a half hour each day for 15 days. The before and after comparisons showed that yoga nidra practice was associated with significant and beneficial changes in blood pressure ( $P < 0.001$ ), [both diastolic ( $P < 0.001$ ) and systolic ( $P < 0.001$ )] as well as pulse rate ( $P < 0.001$ ), respiration rate ( $P < 0.001$ ), stress ( $P < 0.001$ ), anger ( $P < 0.001$ ), and fear ( $P < 0.001$ ). Yoga nidra was not associated with significant improvements in mood. These findings support the value of yoga nidra in reducing hypertension and associated psychological conditions. As reviewed above, an increasing number of studies have shown that yoga nidra improves heart functioning, including the lowering of blood pressure [32].

Another study that was been done on 130 post-graduate students (control group,  $N=30$ ; experimental group,  $N=80$ ) to study the effect of the additional practice of yoga nidra on

the erythrocyte sedimentation rate (ESR). The erythrocyte sedimentation rate (ESR) is a simple, non-specific, hematological screening test that can be used to determine the presence of inflammation in the body. Increases in plasma fibrinogen (Fib), immunoglobulins (Ig), and other acute-phase response proteins (APPs) lead red blood cells (RBCs) to settle more quickly in the face of some illness conditions. The study subjects from the experimental group were trained in yoga nidra and were asked to practice it for 30 min, 6 days/week for 6 months in addition to their regular practice of yoga. Students from the control group were asked to practice their regular yoga protocol (asana and pranayama). A comparison of the two groups supported the conclusion that the addition of yoga nidra practice was associated with significantly greater reductions in ESR among both male ( $P < 0.01$ ) and female ( $P < 0.01$ ) students when compared to results of those who practiced only the regular yoga protocol. These findings thus supported the further conclusion that yoga nidra may be beneficial for combating stress, regulating metabolism, and improving body functions [33].

Another study looked at how yoga nidra practice affected hematologic markers including hemoglobin and total leucocyte count (TLC), both of which are known to improve the body's ability to resist infection [34]. In another study ( $n=110$ ; 80 experimental group; 30 control group; age range 20–30 years), students were recruited for the study. Both groups of students were additionally enrolled in a yoga class in which they were practicing asana (postures) and pranayama (breathing). After being given training in the yoga nidra, the active study group members were asked to practice it daily for 30 min (6 days (and occasional holidays)/week) for 6 months. In both sexes, the investigators found a significant ( $P < 0.01$ ) improvement in the hemoglobin and TLC levels of the active yoga nidra practice group [34]. The authors argued in their preliminary study that the level of hemoglobin and TLC levels was due to yoga nidra practice and that it is capable of increasing a person's immune status.

In a related study, the effects of yoga nidra were investigated on physiological variables in female patients with menstrual irregularities throughout various stages of the menstrual cycle. One-hundred and fifty females, with a mean age of 28.08 years, participated in the study. They were randomly divided into a practicing yoga nidra group, or into a control group, which did not practice yoga nidra. Following 35 to 40 min of yoga nidra practice for 5 days a week for 6 months, the participating patient group, when compared to controls, showed positive improvements in measures of blood pressure (systolic  $P < 0.01$ , diastolic  $p < 0.0005$ ), postural hypertension ( $P < 0.01$ ), sustained handgrip ( $P < 0.0001$ ), heart rate expiration/inspiration ratio ( $P < 0.03$ ), and 30:15 beat ratios ( $P < 0.01$ ) [35].



In another study, the authors have evaluated the effects of a single session of yoga nidra meditation or relaxation only on heart rate variability in 20 adult male and female volunteers with an average age of 29 years. The randomized study used a counter-balanced design with participants completing a relaxation-only (*R*) session and a yoga plus relaxation (*YR*) session. The current findings show that Yoga Nidra relaxation increases HRV, and that the responses are unaffected by a previous Hatha yoga session [36].

A recent study compared a widely practiced yoga technique, Nadi Shodhan Pranayama (Alternate Nostril Breathing; *Nadi* = subtle energy channel; *Shodhan* = cleaning, purification; *Pranayama* = breathing technique), against yoga nidra in terms of their respective effects on several psychophysiological measures. A total sample of 120 practitioners was selected from district Sambalpur, Odisha, and was randomly divided into a Nadi sodhan pranayama group ( $N = 60$ , 30-min daily for 4 weeks) and a yoga nidra group ( $N = 60$ , 60 min daily for 4 weeks). It was found that, compared to the nadi sodhan pranayama group, yoga nidra practitioners showed significantly greater reductions ( $P < 0.01$ ) in blood pressure (systolic and diastolic), pulse rate ( $P < 0.01$ ), breath rate ( $P < 0.01$ ), and BMI, as well as reductions in anxiety ( $P < 0.01$ ) as measured by the Hamilton Anxiety Rating Scale (HARS) [37].

## 19 Yoga Nidra in Non-communicable Disease: Diabetes

A study has been done on 41 middle-aged, type-2 diabetic (T2DM) patients who were taking hypoglycemic medications but no other treatments. The patients consisted of two groups, with 20 patients taking oral hypoglycemics combined with yoga nidra, while 21 patients made up the control group, consisting of those who continued to take hypoglycemic medications only. Patients in the experimental group practiced yoga nidra for a half hour per day for up to 90 days. It was found that, in the medication plus yoga nidra group, most of the diabetic symptoms were reduced in severity. Following 3 months of yoga nidra practice plus oral hypoglycemic medication, there was an observed reduction in mean blood glucose levels, in fasting  $21.3 \text{ mg/dL}$  (from  $159 \pm 12.27$  to  $137.7 \pm 23.15$ ,  $P < 0.0007$ ) and in postprandial  $17.95 \text{ mg/dL}$  (from  $255.45 \pm 16.85$  to  $237.5 \pm 30.54$ ,  $P = 0.02$ ). This study supports the conclusion that yoga nidra practice combined with oral hypoglycemic medications provides considerable control over fluctuating blood glucose in T2DM patients, and, when compared to oral hypoglycemics

alone, the combined regimen, i.e., yoga nidra practice plus oral hypoglycemic medications, is superior [38].

## 20 COVID-19, Sleep, and Insomnia

During COVID-19 lockdown, Gulia and Sreedharan (2021) used an actigraphy-based longitudinal case study ( $n = 1$ ; 56-year-old menopausal woman) to examine the therapeutic potential of yoga nidra and exercise module (a dual protocol). Using 24 h actigraphy and a sleep diary, the effect of 24 weeks of intervention module on metrics such as SOL, TST, the mood on waking and during the day, BMI, and body activity pattern in postmenopausal women after a baseline of 4 weeks. From the fifth week onwards, the results showed a significant improvement in mood, both at waking up and throughout the day. The mood changed to a more positive one. After 4 weeks, SOL decreased, but overall sleep time improved only after 16 weeks of dual management. From a starting value of 30.3, the BMI was decreased to 28.4. Morning rising patterns remained unchanged, but there was no pain or headache. The study indicated that yoga nidra may be easily practiced at home, making it a promising non-pharmacological technique for enhancing the well-being of the elderly population [39].

Datta and colleagues (2021) engaged 41 patients with chronic insomnia in a randomized parallel-design trial that took place between 2012 and 2016. The patients were randomly assigned to either cognitive behavioral therapy for insomnia (CBTi;  $n = 20$ ) or yoga nidra ( $n = 21$ ). The outcome measures were both subjective and objective, using a sleep diary and polysomnography (PSG), respectively. Cortisol levels in the saliva were also tested. PSG was performed on all patients before the intervention and only those who volunteered for it were repeated. The authors reported that both therapies improved subjective TST, SE, WASO, and total wake length, as well as improved subjective sleep quality. TST and total wake time were improved, and Stage N1 percent of TST was improved objectively. In TST, yoga nidra demonstrated significant improvement in Stages N2 and N3. After a yoga nidra intervention, salivary cortisol levels dropped statistically significantly ( $p = 0.041$ ). Following yoga nidra practice, the authors found that Stage N3 sleep, total wake length, and subjective sleep quality all improved. According to the authors, after supervised practice sessions, yoga nidra practice can be utilized to cure chronic insomnia [40].

## 21 Conclusions

**“In yoga nidra we experience a state of harmony between body, brain, and mind. Then the unconscious barriers and blockages within the personality, which exist due to our negativity, are removed and the healing power of the mind begins to manifest.”**

**- Swami Niranjanananda Saraswati**

Yoga nidra, also known as yogic or psychic slumber, is a state of consciousness (awareness) that occurs between waking and sleeping, similar to the “going-to-sleep” stage (hypnagogia), and is usually brought on by an active guided meditation technique. Yoga Nidra is a type of profound relaxation method (the deepest form of all meditations) that is usually performed while lying down in a supine position and consists of a series of perceptual exercises such as focusing on the breath or specific regions of the body. The practitioner follows directions for numerous types of activities without becoming distracted while remaining completely awake and concentrated. Although practitioners appear to be sleeping, their consciousness is operating at a higher degree of awareness. Thus, yoga nidra is a form of Pratyahara (withdrawal of the senses), which entails gradually dissociating and dis-identify oneself emotionally from one's body and mind. It corresponds to the higher levels of Raja Yoga.

It is critical to learn how to provide the instructions and perform yoga nidra practices correctly. However, many trainers and practitioners have corrupted yoga nidra in recent years due to a lack of understanding of the basic concepts and sufficient instruction, and the classic form has been lost in many situations. As a result, practitioners will not be able to get the full benefits.

Although we have attempted to discuss several medical benefits, more detailed and elaborate research needs to be carried out to characterize the effects and underlying

mechanisms of yoga nidra. For example, many current studies on yoga nidra may suffer from being divergent and/or speculative, with limited scope, lack of rigorous methodology, insufficient sample size, weak correlations, the presence of potential confounding variables, overgeneralization of the findings, and difficulty explaining the actual effects, and thus fail to convincingly provide sufficient research evidence in favor. Moreover, several research have been published in lesser known scientific journals. As a result, this lack of parsimony and regularity may lead to skepticism on yoga nidra's clinical utility. As we move forward, our accumulating knowledge will undoubtedly resolve some of the issues.

A number of the currently available studies contain some shortcomings, including deviating from the original yoga nidra practice protocols, the inclusion of a limited number of subjects, confounding of the independent variable, inclusion of other interventions along with yoga nidra, or lack of control conditions, and thus, their generalizability must remain qualified. Additionally, it would be desirable to have more studies of neurotransmitter systems, which correlate with the physiological measures that have been employed in the various investigations. Nevertheless, the physiological and psychological effects that have been observed during yoga nidra meditation are consistent in identifying a pattern of changes, suggesting that brain areas that are central to the autonomic arousal system may be the target of the relaxation effects of the practice.

The evidence that has been presented to date, including at least one imaging study, shows that the physiological and psychological effects of yoga nidra are real and can be demonstrated objectively. It is hoped that further elaborate investigations will be undertaken to elucidate the mechanisms of yoga nidra practice, which is useful for promoting physical and psychological well-being.

**Table 1** A summary of clinical studies related to yoga nidra

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
1	Sethi et al. (1981) [25]	N=16; patients with tension headaches; Age range 16–45 years; Residents of Lucknow, India	Randomized Controlled Trial	Comparing the effectiveness of EMG biofeedback and Shavasana (yoga) asana in relieving tension headaches	3 months	Not provided	Shavasana (corpse pose) was found to be equivalent to EMG biofeedback. EMG biofeedback was effective in relieving headaches in 50% of cases, while Shavasana was effective in 43%. The further trial demonstrated a better response rate (83%) in the younger group (16–25 years) for both methods
2	Kumar (2006) [41]	N=110; Age range 20–30 years; 80 students (M=40; F=40) participated in the trial, while 30 age and sex-matched controls	Controlled before-after design	Determining the efficacy of yoga nidra on Alpha EEG and G.S.R. level of the subjects	6 months	Significant improvement was observed both in alpha EEG and GSR values ( $P < 0.01$ ) in the experimental group	Yoga nidra Improves alertness in both male and female students
3	Kumar and Pandya (2012) [33]	N=110, 80 (M=40; F=40) DSVV students aged between 20–30 were in the experimental group and 30 (M=15; F=15) of similar ages served as control subjects	Controlled before-after design	The study aimed to determine the effect of yoga nidra on the erythrocyte sedimentation rate (ESR) in healthy subjects	6 months	Both male and female study subjects showed significant reductions in measured ESR rates when before-after comparisons were made (males $t = 5.06$ , females $t = 2.82$ )	The experimental findings demonstrate that yoga nidra can be of benefit even to supposedly healthy subjects and thus may be a useful practice for promoting optimal health
4	Kumar, (2008) [20]	N=110, 80 (M=40; F=40) from PG classes of Dev Sanskriti University, aged 20–30 years. 30 age and sex-matched control subjects	Controlled before-after design	The study sought to determine the effect of yoga plus yoga nidra practice on the overall stress and anxiety levels of the study subjects as measured by the Hamilton Depression Rating Scale and the Hamilton Anxiety Rating Scale	6 months	Following 6-month practice both stress ( $P < 2.5$ ) and anxiety ( $P < 2.48$ ) were reduced	These findings show that the addition of yoga nidra to the practice regimen of yoga students may provide incrementally greater stress reduction, although further research is needed to quantify the amount of this benefit

Table 1 (continued)

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
5	Manik et al. (2017) [42]	<i>N</i> = 172 participants with lumbar Spondylitis Age range = 21–79 years; from the outpatient department (OPD) of Neurosurgery, AIIMS, Bhubaneswar	Uncontrolled randomized prospective (longitudinal) study	Participants practice yoga (including nidra yoga) for one hour a day The study intended to find out the relationship between the duration of yoga (including nidra yoga) and symptomatic improvement in lumbar spondylitis	IRPG- had just one session of yoga [1], STPG group practiced for 15 days, while LTPG for one month	In I.R.P.G, $P < 0.001$ . Moreover, the pre-score of pain was 15.203, and the post-score was 11.737. In S.T.P.H, the <i>P</i> -value is lesser than 0.01, and in L.T.P.G, $P < 0.001$ . The LTPG group showed a better result than the STPG group and IRPG ( $P < 0.01$ )	Pain relief in lumbar spondylitis was directly related to the duration of practice of yoga, with the highest score and benefit in LTPG IRPG pain-score improvement of $3.333 \pm 2.967$ in 22.8% of participants, STPG had a pain improvement score of $7.308 \pm 1.995$ in 51.35%. While LTPG had an improvement of $10.00 \pm 1.915$ in 64.02% of cases
6	Sethi and Singh, (2016) [25]	40 Athletes (wrestlers); Age range = 18–25 years	Controlled before and after design	The goal of the study was to demonstrate the effect of yoga nidra on the anticipation time and reaction time of athletes	45 days	Subjects in the experimental group demonstrated significant improvement in reaction time ( $P < 0.05$ )	Yoga nidra improved the performance and reaction time of the athletes (wrestlers) Simple visual reaction time ( $t = 5.42$ ) and Choice visual reaction time ( $t = 3.14$ ) were found to be significant Anticipation time did not show any statistically relevant improvement in both groups

Table 1 (continued)

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
7	Kumar (2005) [32]	<i>N</i> =40; people suffering from mild hypertension ( <i>M</i> = 30; <i>F</i> = 10); Age range = 30–60 years; Where men belonged to various professions, females were predominantly housewives, the trial was carried out at Patliputra Seva Sansthan, Patna City, Patna	Uncontrolled before and after design	The practice of 30 min of nidra yoga or 15 days continually. The study sought to determine the effect of nidra yoga on hypertension (both systolic and diastolic) and emotional well-being	15 days	Significant differences were found in most of the dependent measures: Blood pressure (systolic [ <i>t</i> = 10.13] and diastolic [ <i>t</i> = 8.09]) readings, pulse rate ( <i>t</i> = 6.47), and respiration rate ( <i>t</i> = 5.02), as well as psychometric measures of stress ( <i>t</i> = 8.12), anger ( <i>t</i> = 4.76) and fear ( <i>t</i> = 3.57) were all statistically significant. However, psychological depression was not significant	Yoga nidra practice can significantly reduce both physiological and psychological responses to stress. It is particularly effective in controlling hypertension
8	Monika et al. (2012) [35]	150 Females with menstrual irregularities referred from the Department of Obstetrics and Gynecology CSMMU, UP, Lucknow Randomized into two equal groups of 75 each	Random controlled trial	Subjects in the experimental group took prescribed medications and practiced nidra yoga for 35–40 min a day for five days a week, while the control group took medications but did not practice yoga nidra	5 days/week for 6 months	The two groups were compared using a one-way ANOVA test. Results were significant at <i>P</i> < 0.05	Yoga nidra was effective in improving symptoms of menstrual irregularities (small but relevant improvement), especially in pathological amenorrhea ( <i>q</i> -static < 1.2). Yoga nidra practice can be of benefit for improving autonomic dysfunction, heart rate, postural hypertension, sustained handgrip test, expiration-inspiration ratio, 30:15 beat ratio, Valsalva ratio, and cardiac output

Table 1 (continued)

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
9	Rani et al. (2013) [22]	<i>N</i> =50 undergraduate first-year nursing students, M. M. College of Nursing, Mullana, Ambala	Uncontrolled before and after design	Instruction based 19-day course of nidra yoga, with stress levels assessed on day one and day 20 <sup>th</sup> , data were collected by using a modified stress assessment scale	19 days, with each session lasting 48 min	Self-reported stress of student nurses (measured via a modified stress assessment scale) showed a significant ( <i>P</i> < 0.05) reduction in a before-after comparison (28.2 before; 17.8 after)	Yoga nidra is an effective practice for reducing stresses associated with demanding professions such as nursing
10	Amita et al. (2009) [38]	<i>N</i> =41 middle-aged diabetic patients	Controlled before and after design	20 subjects were on hypoglycemic drugs and yoga nidra, while a control group of 21 individuals was on only hypoglycemic drugs The trial aimed to find the effect of yoga nidra on blood glucose levels in diabetics, and the effect of yoga nidra on symptoms of diabetes (complication reduction)	Patients practiced yoga nidra for 30 min daily for 90 days	Blood glucose levels were significantly reduced ( <i>p</i> ≤ 0.004) in before-after comparisons	Yoga nidra has pronounced beneficial effects on a medical condition that is generally resistant to change through conventional medical therapies After three months of therapy and yoga nidra there was an average decline of 21.3 mg/dl fasting glucose level in the experimental group, and significant reductions in symptoms such as headaches, palpitation, insomnia, sweating, anxiety, and emotional distress

**Table 1** (continued)

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
11	Datta et al. (2017) [13]	2 Patients suffering from insomnia, one on medication and the other without medication	Case Reports and Series	Yoga nidra was prescribed to evaluate its role in the management of insomnia. I patient 60 years old was without any sleep-related medications, while another 78-year-old patient was taking sleep medicine Sleep diary parameters were analyzed using the Friedman test and the Wilcoxon Signed Ranks test	6 months	Not provided	Yoga nidra significantly improved the symptoms of insomnia (sleep initiation, sleep duration, sleep quality) and decreased the sleep-related symptoms of emotional distress
12	Markil et al. (2012) [36]	<i>N</i> = 20; <i>M</i> = 5; <i>F</i> = 15 Age range = 18–47 years	Randomized crossover study	Participants were divided into two groups randomly. One practiced hatha yoga followed by 30 min of nidra yoga, while the second group practiced only nidra yoga. The intervention aimed to check HRV (heart rate variance) after stress or without stress	A single session of hatha yoga followed by 30 min of yoga nidra, or 30 min yoga nidra alone	Both the groups demonstrated favorable changes in HRV indices. ( <i>p</i> < 0.001)	The trial demonstrated the beneficial effect of yoga nidra on HRV (stability of the autonomic nervous system) whether performed alone or after a session of hatha yoga (or other physical activity). Yoga nidra practice tended to favorably shift the autonomic balance to the parasympathetic branch

Table 1 (continued)

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
13	Gulia and Sreedharan (2021) [39]	Post-menopausal subject	Longitudinal Case Study During COVID-19 Lockdown	Use of yoga nidra practice and exercise module. The study used 24 h actigraphy and a sleep diary	24 weeks of yoga nidra practice and exercise module (Baseline = 4 weeks)	A big boost in mood upon immediate awakening, and throughout the day. The mood shifted to a more upbeat tone. SOL reduced after four weeks, but overall sleep time improved only after 16 weeks of dual treatment. The BMI was reduced from 30.3 to 28.4 from a starting point of 30.3. Morning rising routines remained unchanged, but neither pain nor headache were noted	Yoga nidra is simple to practice at home, making it a viable non-pharmacological technique for enhancing the well-being of the elderly
14	Datta et al. (2021) [40]	41 Participants with chronic insomnia	Randomized parallel-design study	Intervention of CBTi ( <i>n</i> = 20) or yoga nidra ( <i>n</i> = 21). Outcome measures include both subjective (use of sleep diary) and objective measures (PSG & measurement of cortisol)	The study was conducted between 2012–2016	Salivary cortisol reduced statistically significantly after yoga nidra ( <i>p</i> = 0.041)	Yoga nidra practice resulted in improvements in Stage N3 sleep, overall wake duration, and subjective sleep quality. After supervised practice sessions, yoga nidra practice can be utilized to treat persistent insomnia



**Table 1** (continued)

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
15	Rani et al. (2011) [43]	150 Patients (75 practiced yoga nidra, while 75 were in the control group) were recruited from the Department of Obstetrics and Gynecology, C.S.M. Medical University (KGMU), Lucknow, Uttar Pradesh, India	Randomized controlled trial	To assess the effectiveness of yoga nidra therapy on the emotional well-being of women suffering from menstrual irregularities and related distress A psychometric test “Psychological general well-being” was used for all the subjects to assess the condition	6 months	Significant improvements in psychological problems related to menstrual abnormalities Decreases in anxiety ( $P < 0.003$ ) and depression ( $P < 0.01$ ) was found Improvements in Postnatal general well-being health ( $P < 0.02$ ) and Vitality ( $P < 0.01$ ) were also found	Statistically significant improvements were demonstrated in psychological well-being following the practice of yoga nidra
16	Rani et al. (2011) [44]	150 Patients (75 practiced yoga nidra, while 75 were in the control group) were recruited from the Department of Obstetrics and Gynecology, C.S.M. Medical University (Firstwhile KGMU), Lucknow, Uttar Pradesh, India	Randomized controlled trial	Yoga nidra therapy in patients with menstrual disorders with somatoform symptoms	6 months	Significant improvements were found in pain symptoms ( $P < 0.006$ ) Gastrointestinal symptoms ( $P < 0.04$ ) Cardiovascular symptoms ( $P < 0.02$ ) Urogenital symptoms ( $P < 0.005$ )	Yoga nidra was found to be an effective addition to the medical treatment of somatoform symptoms in women living with menstrual irregularities over an extended period
17	Rani et al. (2013) [27]	Females of reproductive age group (18–45 years) 65 cases, 61 controls from KG Medical University, Lucknow suffering from menstrual problems	Randomized controlled trial	Individuals were randomly assigned to two groups: conventional medical treatment plus yoga nidra or conventional medical treatment only	6 months	Significant improvement in hormonal levels TSH+ ( $P < 0.02$ ) FSH, ( $P < 0.01$ ) LH, ( $P < 0.001$ ) Prolactin, ( $P < 0.03$ )	The study demonstrated the efficacy of yoga nidra on hormone profiles in patients with menstrual irregularities Yoga nidra practice was helpful in patients with hormone imbalances such as dysmenorrhea, oligomenorrhea, menorrhagia, metrorrhagia and hypomenorrhea

Table 1 (continued)

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
18	Rani et al. (2016) [45]	100 Women with menstrual problem, residents of Lucknow. (50 received medications only, while 50 prescribed yoga nidra as adjuvant therapy along with medications)	Randomized controlled trial	The trial was intended to assess the beneficial effect of yoga nidra on the emotional well-being and hormonal balance of women with menstrual irregularities	6 months	Significant improvements were found in scores related to anxiety ( $P < 0.01$ ), depression ( $P < 0.02$ ), positive well-being ( $P < 0.01$ ), and general health ( $P < 0.04$ )	Yoga nidra can be a successful therapy to overcome the psychiatric morbidity associated with menstrual irregularities. Therefore, yogic relaxation training (yoga nidra) could be prescribed as an adjunct to conventional drug therapy for menstrual dysfunction Yoga nidra was highly useful in reclaiming the hormonal balance
19	Rajpoot and Singh (2014) [46]	40 Emotionally abused adolescents (M = 20; F = 20) Age range = 13–19 years) were selected from various schools and coaching centers of city Chandausi (U.P.)	Uncontrolled before and after design	Role of yoga nidra in improving mental health The emotional Abuse Test developed by Pushp Lata Rajpoot (2011) was used along with Mental Health Battery by Singh & Gupta (1983)	2 months	NA	Significant improvements in responses to emotional abuse were shown in before and after comparisons of scores on the Emotional Abuse Test and Mental Health Battery

**Table 1** (continued)

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
20	Kisan et al. (2014) [47]	60 Subjects (Age range = 15–60 years) suffering from migraine were divided into two equal groups (experimental and control group)	Randomized controlled trial	Effectiveness of relaxation techniques (yoga and yoga nidra) in migraines The control group was provided with conventional care, while the experimental group was prescribed yoga nidra along with conventional care A headache diary and lab autonomic nervous system assessment were the primary instruments used	6 weeks	Significant improvement in headache frequency and intensity was demonstrated ( $P < 0.001$ )	Headache frequency and intensity were reduced more in yoga nidra with conventional care than the conventional care group alone. Furthermore, Yoga nidra therapy enhanced the vagal tone and decreased the sympathetic drive, hence improving the cardiac autonomic balance. Thus, yoga nidra therapy can be effectively incorporated as adjuvant therapy in migraine patients
21	Kumar (2013) [48]	110 Subjects who had been evaluated for guilt and regression () were selected from Dev Sanskriti University. 80 were included in the experiment group and 30 in the control group	Controlled before and after design	The trial intended to demonstrate the effectiveness of yoga nidra in reducing guilt and regression Both groups practiced yoga, however, the experiment group practiced yoga nidra additionally	6 months	Results were significant at $P < 0.01$	Yoga nidra positively decreases the level of regression and guilt in males
22	Jensen et al. (2012) [49]	10 participants, 7 living with disruptive behavior (DB) disorder and being medically treated for it, while 3 were healthy subjects (control group) Age range = 10–15 years	Controlled before and after design	Effect of yoga nidra in improving disruptive behavior in youth and breathing pattern (regularity, change of dominance of thoracic to abdomen) Respiratory Inductive Plethysmography (RIP) was used to assess the pattern of breathing	13 week	NA	Result showed more stable breathing during yoga nidra compared with pre- or post-recording periods. Also seen were reductions in thoracic dominance during the practice and reduced anxiety, hyperactivity, emotional lability, and inattentiveness in the experimental group after yoga nidra

Table 1 (continued)

Serial no.	References	Study population	Study design	Type of intervention; target condition	Duration	Results ( <i>p</i> value)	Study findings/significance
23	Anderson et al. (2017) [50]	<i>N</i> = 9; registered nurses working at inpatient urban psychiatric clinic Age range = 24–49 years	Uncontrolled before and after design	A study of the effect of yoga nidra in reducing stress-related to psychiatric nursing practice A Likert scale was used to assess stress levels pre and post-intervention One and a half hours of six yoga nidra training sessions were provided to the participants	4 week	NA	One self-report measure showed significant benefits from yoga nidra. Muscle tension and perceived stress level were greatly reduced

## Appendix I: Glossary

**Asana**—refers to bodily postures. The Sanskrit word *asana* has two literal translations: “a steady, comfortable seat or simply a seat” and “pose or posture”, i.e., either the place where a yoga practitioner sits or how the practitioner sits for meditation. In yoga, the maintenance of correct body posture is considered foundational not only to bodily health, but also for psychological preparedness for meditation. Additionally, the asana postures are thought to assist in the opening of subtle energy centers (chakras) and energy channels (nadis). These functions act in turn to facilitate the intake and flow of prana energy.

**Ashtanga yoga**—Patanjali’s Classical yoga system.

**Chidakasha**—internally visualized as being centered just behind the forehead

**Gudākeśa**—epithet of Arjuna. The lord of Gudaka or sleep; Conqueror of sleep or the thick-haired one.

**Pancha Maya Kosha**—refers to Annamayakosha (the Physical body; *anna* = food; *maya* = appearance; *kosha* = sheath); Pranamayakosha (refers to the Energy body; *prana* = the vital energy or life force; *pranayama* = breathing practices); Manamayakosha (the Mental-Emotional body; *manas* = mind, refers to mental faculties that is expressed as mind, emotions, and feelings); Vijnanamayakosha (the Wisdom body; *vijnana* = knowing); and Anandamayakosha (the Bliss body; *ananda* = bliss; refers to the unbounded experience of reality and the most central part of our being, which is a limitless, blissful state of love, joy, and peace).

**Prana**—In Sanskrit, the term prana has various interpretations in English, including “movement,” “to breathe or physical breath,” “basic life force,” “energy,” and “vital principle.” Prana (or *Prana vayu*) is the foundation and essence of all life; the energy and vitality that permeates everything that exists (animate and inanimate) in the entire Universe. Since its earliest development, the yogic conceptualization of the body recognized the energetic contribution of its five main capabilities or faculties. These were the mind, breath (prana), speech, hearing, and sight. However, of the five, prana, or the breath, was considered to be the most important. This was because of its role in regulating the energy dynamics of the subtle or nonphysical body. Energy channels, known as *Nadis*, conduct prana through the body and, in so doing, nourish its physical, mental, and spiritual needs. In the yogic tradition, mastery of breathing, and thus of prana, is thought to be the ultimate basis of health and wellness. According to the Upanishads, the prana originates from Atman. As Prashna Upanishad (2.13) states, “All that exists in the three worlds rests in the control of prana. As a mother protects her children, O Prana, protect us and give us splendor and wisdom.” Prana is thus a term which could be translated into most western languages as “basic

life energy”, although, as noted above, this phrase does not quite capture its multiple meanings. From the many ancient sources on which yoga is based, *prana* refers to expressions of energy including “physical breath”, “consciousness”, and “original creative power”. As such, it contributes not only to health and wellness, but is thought to be the foundation of all life and indeed of the creation of the universe itself.

**Pranayama**—breathwork. i.e., breathing techniques which are used to control *prana* (vital life force energy)

**Pratyāhāra**—Withdrawal of senses from the world. In Sanskrit, *prati* meaning “against” or “withdraw”; *ahara* meaning “food” or referring to anything that we take in from the outside.

**Psyche**—Psyche is the totality of the human mind or a person's or group's deepest thoughts, feelings, or beliefs of a person or group, both conscious and unconscious.

**Sankalpa**—*san* = “a connection with the highest truth”; *kalpa* = “vow.” i.e., affirming or resolving to do something or achieve something spiritual.

**Shavasana**—(= Savasana) Corpse Pose.

**Turiya**—Turiya refers to “the Fourth dimension of consciousness”, because it occupies the fourth place in the order of exposition of Brahman (the highest Universal Principle, the supreme existence, or absolute/ultimate reality in the universe). There are three lower states of consciousness. These are *jagrat* or *jagrata* (waking consciousness), *swapna* or *svapna* (dream consciousness), and *shushupti* (deep sleep consciousness). The purpose of both yoga and meditation is to achieve the highest state of consciousness, or *turiya*, where oneness is felt with the supreme spirit (Atman or the Supreme Self). It is in the *turiya* state that those who have achieved it experience the fundamental unity of the cosmos. A prerequisite for entering this state is the achievement of inner silence, one that requires both the withdrawal of the senses from the ordinary world and an overcoming of mental blocks.

**Upanishads**—(In Sanskrit, *upa* means near, *ni* means down, and *shad* means to sit; i.e., the act of sitting at an guru's feet to study his teaching). They are Hindu philosophical works that laid the groundwork for later Hindu thought. They are the most recent section of Hinduism's oldest scriptures, and they cover meditation, philosophy, awareness, and ontological knowledge; other Vedic sections cover mantras, benedictions, rites, ceremonies, and sacrifices. Vyasa, the sage credited with writing the Upanishads.

**Yoga nidra**—Yoga nidra (*yoga* = union or one-pointed awareness; *nidra* = sleep) or yogic sleep refers to a state of consciousness that occurs just before actually going to sleep. In the early stages of training, this is usually achieved by meditation that is guided externally, i.e., by a teacher or master of the practice. Popularized by Swami Satyananda Saraswati, yoga nidra is described as a ‘systematic method of inducing complete physical, mental, and emotional

relaxation, and in this state, the relaxation is achieved by turning inwards, away from outer experiences.’ Despite appearing to be asleep, the practitioner of yoga nidra is actually functioning at a deeper level of awareness. Because of this maintenance of awareness, the practice is often referred to as “psychic sleep” or “deep relaxation with inner awareness.” Yoga nidra has its roots in tantra, and despite being a powerful meditation technique, it is one of the easiest to learn and to continue to use. The full methodology of the technique, described elsewhere in this paper, results in a sense of wholeness, and does not require hours of sitting on the floor waiting to experience an altered state of consciousness. Yoga nidra is increasingly being recognized as a useful practice for the holistic treatment of both physical and mental illnesses.

## Appendix II: The Methodology of Yoga Nidra

The method of reaching the mental state associated with yoga nidra relaxation is comprised of multiple phases of sequential physical and mental activities, are described below.

### Bodily Relaxation

To begin, the practitioner should lie down on the floor or a yoga mat with his or her legs slightly apart and their knees comfortable. Thoughts should be aimed toward “letting go” and allowing the body to relax entirely. Hands should be held apart from the body, palms facing up, toward the ceiling.

### Maintaining “Relaxed Awareness”

In contrast to sleep, yoga nidra maintains a level of mental alertness. As a result, practitioners should stay alert and move their concentration via different regions of their body. A guide is available during the early stages of practice to teach the practitioner on how to rotate the mind to certain regions of the body. Without much concentration or effort, attention is directed to various body parts, and a mental attitude of “relaxed awareness” is maintained. Listening to the instructions should not be done with great intensity, because it will interfere with the relaxation process. This listening process is similar to allowing the instruction to float through your mind in the same way that you would listen to a piece of soothing music. When you reach this state of relaxed awareness, the guide will give you several specific instructions for relaxing your body.

## Relaxed Posture and Palms Facing Upward

The practitioner is instructed to lie down with their legs slightly apart, knees slightly bent, hands to the side and their palms facing upward, and eyes closed.

## Producing and Releasing Tension in the Hands and Legs

Then, he or she is instructed to take a breathe in and to tense the muscles of their right leg. At the same time, the practitioner is asked to stretch out the toes of the right foot only. Then, the practitioner is asked to make a fist with their right hand and to place their thumb in the center of their palm and then close their forefingers around the thumb. The practitioner is then asked to make a fist as tense as possible. After the tension is maintained in the right fist, leg, and toes for a few moments the practitioner is guided to let go, to let their breath out, and to relax. Following this, the instruction is given to breathe in and once again to tense the right leg and toes and to create a tense fist with their right hand. The practitioner is then asked to let go and relax.

The entire process is now repeated with the left leg and left hand. Practitioners are asked to tense the muscles of the left leg and to make a fist with their left hand, while simultaneously taking in a deep breath. Practitioners then breathe out and let go, relaxing their left palm and muscles of their left leg.

## Producing and Releasing Tension from the Whole Body

Practitioners are now guided to extend the relaxation process to the whole body. Both feet and legs are brought together. The same process of breathing in and creating tension in both the right and left legs and hands is repeated. While maintaining tension in both of their legs and fists, practitioners are asked to simultaneously pull in their stomachs “to the ground”, and to hold this state of tension for a few moments. Then, they are asked to breathe out and to let go of the tension.

The tension and release process is repeated with the legs and fists. This time, however, the practitioners are instructed to lift their backs off the floor and to produce muscle tension in their faces. Practitioners breathe in while holding the tension in the muscles of their back and faces, and continuously hold their backs off the floor. After a few moments, the practitioners are asked to let go, release the tension, and rest their backs on the floor again. Practitioners are guided to let go of the breath through their mouth.

Practitioners then do an additional round of producing tension in their legs and fists, and releasing their breath through their mouth, and relaxing their whole body.

## Making a Sankalpa, a Positive Intention

Practitioners are asked to spread their legs apart half a meter, to keep their head straight, and their eyes closed. They are then asked to make a Sankalpa. A Sankalpa is a wish or an intention that is both positive and achievable, as well as one that can be accomplished in the present. It may also refer to an attitude or a state of mind that will help to guide future actions. Among the examples of a Sankalpa are “I am healthy”, “I am happy”, “I am calm”, “I am strong”, and “I am successful”. The Sankalpa is then to be repeated three times. The practitioner is then asked to take a deep breath in and then to breathe out, relaxing the whole body and allowing it to touch the floor.

## Rotating Attention to Different Parts of the Body

Practitioners are then asked to direct their attention without concentration to different parts of the body and to relax that body part. As the guide speaks the practitioner is asked to relax and release tension from the body part being named.

Practitioners are instructed to direct attention to the right-hand thumb, index finger, middle finger, ring finger, little finger, right palm, back of the palm, wrist, forearm, right shoulder, right sides of the chest, groin, thigh, right knee, right calf muscle, shin, ankle, heel, the bottom of their feet, top of their feet, the right big toe, second, third, fourth, and little toe. After that, attention is to be shifted to the left side, including the left palm, left thumb, index finger, middle finger, ring finger, little finger, back of the palm, palm, wrist forearm, upper arm, left shoulder, collar bone, and left side of their chest. Next, attention is to be directed to the left side of the body, but focused on the internal organs, i.e., the left side of the spleen, pancreas, stomach, colon, abdomen, and the thorax region on the left side. The left side of the waist, left groin, left hip, thigh, left knee, shin, calf muscle, ankle, heel, bottom of the left foot, top of the foot, the left big toe, the second, third, fourth, and fifth toes are the next main places of attention. Next, the right side of the body becomes the focus of attention, with the same body parts receiving attention in the same sequence. Attention is then to be directed to the back, the lower back, shoulder blade, back of the neck, and then to the front of the neck, the chin, jaw, lower lip, upper lip, tongue, right cheek, left cheek, the inside of the cheeks, palate, right eye, right nostril, left eye, left nostril, left ear, right ear, eyebrows, both eyes together, the forehead, the top of one’s head, and the whole body.

## Breathing and Perceptual Exercises

Throughout these exercises, practitioners are asked to breathe slowly, yet deeply, allowing their bodies to drift into a state of deep relaxation. Simultaneously, they are asked to not fall asleep in the process.

The emphasis is now shifted to the active control of breathing. Practitioners are guided to concentrate on their abdomen and to synchronize their abdominal movement with their breath. Simultaneously practitioners are asked to start counting backward from 24 to 0, focusing on every breath and making sure not to miss anyone (the guide waits for 3 min to let the counting complete).

Following the breathing exercise, practitioners are asked to shift their focus to thinking about their bodily weight. They are asked to feel their body weight on the mat and to feel the heaviness of their body. They are asked to imagine that if their body weight is 100 kg, to feel the full heaviness of 100 kg. Furthermore, they are asked to imagine that their legs are heavy, their arms are heavy, their head is heavy, and to feel the heaviness. Then, they are asked to assume that their body weight is 0 kg, and that they are weightless, that their body is just like a cotton swab, and that they are so light that they can fly like a piece of cotton. They are instructed to actually feel light, as though their legs, limbs, and head are all light, and that their entire body is incredibly light.

### Transitioning Back into Normal Awareness

Practitioners are then guided to visualize a green garden and flowers in the garden, or other relaxing images such as a fountain, a clean beach, a blue ocean, or a dense forest. Then, they are asked to think about their Sankalpa, to again mentally repeat their wish three times, and to know that it is done. Then, they are asked to take a deep breath, and then to slowly and gradually breathe out. Following this, they are to gently shake their right leg and then to gently shake their left leg. Then, they rotate their right hand and then the left hand, followed by rotating their head and neck from side to side. Practitioners are then asked to again take another deep breath in and to feel their whole body. If they feel like yawning or moving, they may do so, and then may slowly get up and sit down with their eyes closed. They are also permitted to turn to their right side or left side and to sit up with their eyes closed. Finally, they are told that they may slowly and gradually open their eyes.

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### Declarations

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Research Involving Human Participants and/or Animals** This work does not contain any studies with human participants or animals performed by any of the authors.

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