

Chapter 46

Yoga for the Treatment of Pain in the Rehabilitation Patient

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Introduction

The word “yoga” (loosely translated from Sanskrit to English as “union”) refers to a system of physical, meditative, and spiritual practices designed to help people experience a sense of wholeness within themselves and within the universe. In modern usage, this word has been misappropriated to refer to a set of athletic movements and postures. However, the meditative and spiritual aspects of yoga are essential to pain management strategies, and as such, throughout this chapter the term “yoga” is meant to emphasize non-physical aspects of its practice.

When most people are in pain, the natural reaction is to want to separate from it, or to extinguish it physically. Yoga encourages exactly the opposite: pain control with yoga requires reinhabiting and befriending the body, acknowledging that pain is present, and reintegrating with it in a loving way, by unraveling existing patterns of mind and body. This chapter helps to outline some of the theory, practice, and techniques behind this approach, and how this is possible through yoga. This can be applied to all patients in the acute, sub-acute, and chronic rehabilitation care continuum.

How Can Yoga Help in Pain Management?

Yoga is not meant to erase pain, but rather to change the way it is experienced, reducing the suffering caused by pain. It imparts a sense of comfort within one’s own skin, allowing a better sense of integration and control over pain and one’s life.

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Even when pain is present, it does not have to rule a person's life. This is accomplished by the following: (a) reducing **suffering**, (b) reducing **stress**, (c) allowing for a conscious **reinterpretation** of pain, and (d) **befriending the body**.

Yoga Reduces Suffering

Pain and suffering are distinct entities that are often, but not necessarily, linked. *Pain* is the physical component of an injury, and *suffering* is the emotional component. The emotions invoked by chronic pain contribute greatly to the amount of suffering experienced. Emotional pain is experienced in same parts of the brain as physical pain [1], so when the emotional pain is continuously activated, the physical pain is likely perpetuated as well. For example, increased anger is associated with worsening chronic back pain [2]. Yoga helps people to deliberately reinterpret the thoughts and emotions caused by pain, thus reducing suffering, and often, reducing the experience of pain itself through this means. When practiced regularly, it can allow a person to consciously relax while experiencing pain, thereby helping the brain to uncouple the physical pain from the mental suffering.

Yoga Reduces Stress

Pain and stress (mental or emotional discord) both activate the sympathetic nervous system. As a result, constant stress causes muscles to tense, breathing to become erratic, and mood to deteriorate. It also contributes to weight gain and systemic inflammation. Muscular tension, dysthymia, weight gain, and inflammation all independently contribute to the experience of pain, and therefore, control over stress is a key component of pain management.

Yoga excels at reducing stress and the physiologic responses to stress, increasing parasympathetic tone [3, 4]. The mechanism by which parasympathetic tone is increased and stress is decreased in yoga is unclear, but some mechanisms that have been postulated, which include inhibition of the posterior hypothalamus, decrease in endogenous glucocorticoid production, increase in positive affect, and increase in self-compassion [5]. When parasympathetic tone is increased, muscles can relax, hyper-vigilance is reduced, blood flow is redistributed, and inflammation is reduced. This is the state that yoga can help people induce at will.

Yoga Allows for a Conscious Reinterpretation of Pain

In acute injury, interpreting pain as a threat is appropriate, and taking the body through the sympathetic response (complete with neurologic, immunologic, and endocrine responders) is adaptive, in order to remove the self from a harmful

situation. When the pain is chronic, however, it no longer represents a threat to reality. Thereby, the brain has difficulty in learning to experience pain without invoking the panic response. In a way, chronic pain is a pain that can no longer be trusted to serve a protective function; the body's cumulative response to enduring pain is to "overprotect" the system by maintaining this sympathetic response. Because of what the brain has learned through experience, the pain threshold decreases, and non-threatening situations can be misinterpreted as threatening.

Yoga helps people to understand and to make choices about how to respond to, and how to conceptualize continued pain (i.e., Is the pain dangerous? Is the pain "everywhere", or is it more localized? Is it constant, or does it actually change over time?) In bringing some of the connections to conscious awareness, the body and mind can begin to alter their relationship to pain perception. In this way, components of a yoga practice can actually decrease the brain's sensitivity to incoming pain signals from the body [6–8].

Yoga Encourages a New Relationship with the Body

People who experience chronic pain often come to view their pain and their body as enemies, even as separate entities altogether. Yoga teaches people to love again and integrate the body into the sense of self. It can help to transform emotions that worsen pain, can teach people to listen to their bodies, and can help to tease out the actual extent of the physical pain. This will lead to remapping pathways that were previously devoted to learned suffering, and to awaken joy in everyday experiences. These experiences teach people how to consciously have an influential role in the way pain is experienced; they teach people to remind themselves that pain is just a small part of who they are, even when it feels all-consuming. Yoga helps people learn how to live a fulfilling life with pain and despite it.

The Practice of Yoga in the Chronic Pain Patient

Movement/Asana

A painful limb causes disuse, and disuse causes dysfunction. Yoga encourages gentle movement, which can help to loosen muscles/fascia and to develop strength in order to support problem areas.

There are two main types of movement in yoga, called vinyasa and asana. *Vinyasa* refers to the act of linking breath with movement and helps to create a state of moving meditation. It also helps to increase awareness of how the breath, mind, and body affect each other. *Asana* refers to poses that are held for longer periods of time. These focus on creating stretch and strength, while using good alignment to allow proper flow of energy through the body.

When practiced correctly, yoga is individualized and therefore very safe. Patients will likely have to modify physical poses depending on personal limitations, which should be instructed on an individual basis. In a rehabilitation setting, clearance by a medical provider in advance of postural adjustment is important to rule out the potential for creating further structural damage. Furthermore, no movements should be made without first asking the body what it needs and what it can tolerate. This helps people to learn and to listen to their bodies.

Patients should be encouraged to learn the difference between harmful sensations and helpful sensations (e.g., a stretch or a working muscle). Learning to tolerate intense sensations, such as a working muscle, in a controlled environment with even, calm breathing can help to provide the tools for handling pain in other situations. This can also help patients to recognize worsening pain or acute pain episodes earlier, and to make adjustments accordingly.

Breathwork/Pranayama

In yoga, the word *prana* refers to both the breath and the body's energy. The practice of *pranayama* ("drawing out the breath") consists largely of breathing work. Meditative and deliberate breathing is often the anchor in a yoga practice; it provides a way to connect to what is happening in the body and to help to alter the activation of the parasympathetic and sympathetic nervous systems.

The rate, depth, and character of breathing change in response to stress and autonomic nervous system input. However, because breathing can be both unconsciously and consciously regulated, it is possible to deliberately induce the parasympathetic response through breath work [9, 10]. Some evidence suggests that a person can invoke specific emotional states by voluntarily engaging in corresponding types of breathing [11]. Furthermore, *pranayama*, or breath work, can allow people to selectively attend to the experience of breathing over the experience of pain.

Meditation

In classical theory, the *asana* (physical) and *pranayama* (breath work) components of yoga are simply a means to prepare the body for meditation. Meditation refers to the act of focusing on one point, first with great effort, and eventually, effortlessly. It can help the brain to unlearn maladaptive habits of the mind and to replace them with healthier ones. Meditation has been shown to induce relaxation and to increase pain tolerance [7, 8, 12]. For a nice review of how meditation may modulate pain perception, please refer to Nakata's article: "Meditation reduces pain-related neural activity in the anterior cingulate cortex, insula, secondary somatosensory cortex, and thalamus" [6].

Meditating allows a person the space and tools required to be able to become aware of his or her automatic/negative thoughts, which include fear, criticism, anger, and despair, and to consciously direct them towards helpful ones, which include gratitude, joy, and love.

It is important to advise patients that the goal of meditation is not to empty the mind completely. Rather, it is to build attention and compassion, and to learn to befriend and to guide the mind in adaptive ways. When patients find the mind wandering, which may happen many times a second, they should be advised to simply notice this and to gently bring it back. Each and every time this happens, the brain is being trained. There is no way to be “bad at” meditation.

Conclusion

Yoga helps people learn to respond to pain differently, and learn to live fulfilling, joyful lives, even in the presence of pain. It can empower people to gain power over the feeling of pain and to give them tools to combat it consciously. It helps people to tune into the ability to feel joy and peace for no reason at all. A yoga practice builds the capacity to foster and to nurture happiness that is distinct from life events. In the yogic philosophy, wisdom, joy, and love are the core elements of the natural human condition, and a yoga practice allows people to reconnect to this. People are perfect and whole, even when pain is present.

Reminders and Quick Tips: When Recommending Yoga to a Patient for the First Time, It Is Worth Emphasizing the Following

- The effects of yoga, while perhaps providing immediate relief, are cumulative and are most noticed after months or years of regular practice.
- There is no need to know what is causing the pain for yoga to help.
- In a group class, avoid looking in the mirror while doing poses, or looking at others in the room. It doesn't matter what you look like as yoga is about learning to sense what is happening from within.
- Most yoga classes offered in studios focus heavily on movement. Some classes are much safer than others. It is critical to tell instructors ahead of time about any medical conditions or physical limitations so that modifications can be suggested for some movements.
- In general, for a beginner with chronic pain, use the following as a rough guide for class titles:

Words to look for	Words to avoid
Restorative	Bikram
Gentle	Hot yoga
Therapeutic	Ashtanga
Viniyoga	Vinyasa flow

Words to look for	Words to avoid
Meditative	Power yoga
Yin yoga	Forrest yoga
Ishta yoga	
Yoga nidra	

Beginning Practices

While it is optimal to begin a yoga practice under the guidance of a professional, there are some simple techniques described here, which can have powerful effects when practiced regularly. Try reading them to patients, or photocopying them and giving them to patients to take home. Before beginning any of these practices, help your patient find a relatively comfortable position. This can be sitting in a chair, against a wall, or on a cushion, but it is important to maintain a neutral spine position as much as possible, using cushions or blankets as needed for support. The techniques can also be practiced lying on the back or with a rolled blanket or pillow under the knees for support. It is reasonable to try all of the techniques, then pick one or two that resonate most strongly, working up to practicing for 20 min, twice a day, every day.

A Simple Vinyasa, Linking Breath and Movement

Inhale while lifting the arms up; exhale while lowering the arms down. This can be a big or a small movement, using one or both arms. The important part is to move in *one direction for the entire duration of the inhale*, and *another direction for the entire exhale*. If the arms have limited mobility, any body part and/or movement can be selected, such as lifting and lowering the chin, bending and straightening the knee, rotating the palms up and down, and separating the hands, then bringing them together. Inhale, moving in one direction; exhale, moving in the other direction, concentrating on linking breath with movement.

Cat/Cow

This movement helps to gently mobilize the spine and to loosen the muscles used in breathing fully. From sitting, standing, or balancing on the hands and knees, inhale and bring your chest forward, arching the back, looking up slightly, and opening the chest muscles, like a cow, then exhale and round your back, moving your chin towards your chest, and tucking your tail bone, like a cat. Repeat this movement with each breath. *Make the length of the movement match the duration of the breath.* This is a good practice to do before starting any of the other techniques.

Mindfulness/Breath Awareness

Close your eyes and tune into your breath. Don't try to change anything, just notice what is happening. Notice the quality of the breath ... is it shallow or deep? Where do you feel it the most? Is it in your nostrils, your lips, your belly, or your chest? See if you can feel your ribs moving, or the way your clothing feels on your skin as you breathe. Notice the length of the breath to see if your inhalation and exhalation match, or if one is longer. *Any time your mind wanders, just bring it back to the breath*, noticing that the breath is a reflection of the mind and vice versa. See if you can *become curious about each breath* as it occurs. Don't worry if the mind wanders; every time you notice it and bring it back, you are training the mind to be with the present, while learning to notice thoughts/emotions without getting carried away by them.

Lengthen the Exhale

This breathing pattern increases parasympathetic tone and is very calming. Close your eyes, and tune into the natural rhythm of the breath. Next time you inhale, count the length of the inhale. On you exhale next, see if you can lengthen the exhale. For example, if you breathe in for a count of 4, see if you can breathe out for a count of 6. Continue breathing in this way, making the exhalation longer than the inhalation. If you become short of breath or anxious during this practice, just take a few breaths without counting, until you are ready to begin again. A slow, steady exhale can help you to calm your nervous system.

Nadi Shodana (Alternate Nostril Breathing to Balance Brain Activity)

Close your eyes. Notice the flow of breath from your nostrils, which will most likely be more dominant on one side over the other. This practice will aim to even out the flow of air through the nostrils. On an inhalation, imagine breath flowing only through the right nostril, pause, and then imagine exhaling only through the left nostril. Pause again, then inhale through the left nostril, pause, and then exhale through the right nostril. Pause. Repeat this pattern, until it feels as if air is flowing equally between both nostrils. If imagining this is difficult, you can use your right hand to open and to close each nostril as you breathe, using your thumb and ring finger to alternate the flow of breath, resting the index and middle fingers on the forehead. When the breath feels as though it is flowing evenly through both sides, lower the hands and rest in this state of balance for several minutes, or as long as you'd like.

Sat Yam (Purification of Emotional Expression)

This technique may help to connect emotions to breathing and helps to tune into a natural state of compassion and joy. In turn, this can release pent up emotions. Close your eyes. Bring your attention to your heart; not the organ, but the spiritual heart, in the center of your chest. Try to visualize or to imagine a small glow in the center of your chest. As you inhale, imagine that glow expanding outward in all directions. As you exhale, allow the glow to draw back into your heart. At first, the light may expand a bit, just to fill your body, then contract back to the center of the heart. As you continue practicing, when you inhale, allow the light to expand further and further. First, fill the space around you, then the room, then the whole building, and then maybe even the whole universe. On each exhalation, be sure to allow the light to contract back to the center of your chest. *Inhale, let the light expand; exhale, the light contract.* Eventually, your breath may become slowed and much more subtle. At this point, rest in this state of balance for several minutes, or as long as you'd like.

Yoga Nidra

This term loosely translates to “yogic sleep”, and can be used for deep relaxation, to help you to fall asleep, or to release deep unconscious patterns in the body and mind. This is a wonderful practice designed to be practiced lying on the back, with the aid of an audio guide. Many free versions can be found online and in the links in the section “Recommended Reading”.

Body Gratitude/Loving Kindness Meditations

This type of meditation can be particularly helpful in redefining strong emotions that surround chronic pain. For more information, please see Sharon Salzberg's link the section “Recommended Reading”.

References

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Recommended Reading

An excellent, in depth review on the subject of yoga for chronic pain: Vallath, Nandini. Perspectives on yoga inputs in the management of chronic pain. *Indian J Palliat Care.* 2010; 16(1): 1–7.
<http://yogaforpainrelief.com/>: book on yoga for pain relief, as well information on further resources and free guided audio practices, such as the ones described in this chapter.
<http://www.sharonsalzberg.com/>: information about loving kindness meditation, and links to recordings.
<http://www.freemindfulness.org/download>: information and free audio recordings of mindfulness meditations.
<http://marc.ucla.edu/body.cfm?id=22>: information and free audio recordings of mindfulness meditations.
<http://www.yoganidranetwork.org/>: a source of free yoga nidra recordings online.
<http://itsbetterwithyoga.com/>: information about how to safely begin a yoga practice.
<https://www.irest.us/>: information and research around learning and practicing a modified form of yoga nidra.