

Mind-Body Practices for Neuro-recovery

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Quick Facts

- Mind-body practices such as yoga, breathing techniques, mindfulness, and meditation can play an important role in neurorecovery in conjunction with other interventions
- Yoga has benefits for all populations including improved flexibility, balance, strength, memory and attention, and decreased stress levels. Yoga has also benefits for specific neurological populations.
- Breathing exercises, whether on their own or during practices like yoga, can help with a variety of health-related conditions that may or may not be related to your neurological condition
- Mindfulness and meditation are accessible ways to relax as well as have the potential to positively change your brain by improving attention, emotional wellbeing, and awareness of the body

Mind-body practices and exercises involve the connections between the brain, mind, and body. They have been used in the treatment and prevention of certain health conditions as well as the promotion of overall health and well-being (Neils-Strunjas et al., 2024). Mind-body practices include things such as yoga, breathing techniques, mindfulness and meditation, which will be addressed in this article, as well as other techniques such as progressive relaxation, guided imagery, tai chi, and energy healing (Erwin Wells et al., 2011). Mind-body practices can play an important role in neurorecovery as it relates to neuroplasticity, the brain's ability to adapt and make new connections after an injury. As with participation with your home exercises and functional activities, repetition and consistency with mind-body practices are key to experiencing meaningful improvements in your recovery.



Yoga

Yoga is a practice that involves physical poses, stretching, meditation and breathing techniques. For the general population, yoga has many benefits including improving flexibility, balance, strength, cognition, and breath control. The connection that yoga makes between the brain and body is especially crucial for neurological populations, such as for stroke survivors. Yoga can help to improve the communication between the brain and the mind, which can be crucial for the neuroplastic changes that therapists and clients strive for in neurorehabilitation.

Neurological conditions can become exacerbated by stress and thus individuals with these conditions may benefit from mind-body techniques that address stress. Research has found that practicing yoga is associated with lower stress levels as well as positively impacts the gray matter in areas of the brain associated with memory and learning, indicating further potential benefits for individuals with cognitive decline or dementia (Kwon, 2024).

Yoga also reminds us to breathe when we exercise. When it's difficult to move your body, you may not be breathing deeply enough to get the required oxygen to benefit your muscles as they try to recover. More details on breathing techniques below!

Yoga can and should be tailored to meet various needs. For example, exercises can often be seated or standing. If physical movements are challenging with adaptations, you can still reap the benefits from the focused attention required for the movement patterns. Similarly, if your

impairments are more cognitive than physical, you can use the practice for improving areas such as attention, sequencing, and problem solving.

Benefits of Yoga for Specific Populations

- ❖ **Multiple Sclerosis (MS):** One study found significant improvements in quality of life, walking speed, fatigue, and depression values in individuals with MS after a yoga intervention (Kahraman et al., 2018).
- ❖ **Parkinson's Disease (PD):** Studies have shown that yoga can have the potential following benefits for individuals with PD: improvement in psychological symptoms related to anxiety and depression, improved quality of life, reduced motor symptoms, improved flexibility and balance, decreased muscle rigidity, increased range of motion and muscle strength, improved balance, and decreased falls (Nourollahimoghadam et al., 2021).
- ❖ **Individuals with Aphasia:** One study suggested that yoga has the potential to positively improve quality of life, social integration, resilience and coping, and cognition for people with aphasia (Dietz et al., 2020).
- ❖ **Neuropathy:** Studies have found that yoga may benefit individuals with neuropathy through improvements in numbness and weakness in lower extremities after a stretch or compression injury of the gluteal nerves, improvements in chronic pain from diabetic neuropathy, and increased sensory and motor function in subjects with diabetic peripheral neuropathy (Nourollahimoghadam et al., 2021).
- ❖ **Migraine and tension headaches:** Studies have found beneficial impacts of yoga in reducing the frequency, duration, and intensity of headaches (Nourollahimoghadam et al., 2021).
- ❖ **Epilepsy:** Studies have found evidence to suggest yoga's benefits for seizures in individuals with different types of epilepsy. For example, one study found a reduction in seizure frequency 3 and 6 months after participation in a yoga intervention (Panjwani et al., 1996).

Precautions

Before starting any new exercise program, please consult your healthcare providers. Common precautions and potential contraindications for yoga practice may include, but are not limited to: glaucoma, musculoskeletal injuries, pregnancy, and high blood pressure. Although not common, yoga may also result in musculoskeletal injuries including back, shoulder, or neck pain, osteoarthritis, joint injuries and dislocations, fractures, disc herniation, and tendon deformities (Nourollahimoghadam et al., 2021).

Breathing

We all breathe everyday automatically, but we also have the ability to control our breath to improve our health. For example, by slowing and consciously breathing we can trigger the parasympathetic nervous system (also known as the ‘rest and digest’ part of our nervous system) which can help with relaxation and decreasing feelings of anxiety, and may also positively impact things like heart rate, blood pressure, and blood glucose levels (Merschel, 2023).

Breathing exercises can help with a variety of health-related conditions, including improving respiratory muscle strength and exercise capacity, as well as for relieving stress and anxiety that may be related to your neurological condition. If you develop any uncomfortable symptoms, such as lightheadedness, stop the exercise and return to your normal breathing. As with yoga, check-in with your healthcare providers before exploring the techniques below, especially if you have any medical conditions related to your heart or lungs.

❖ Diaphragmatic Breathing (also known as ‘belly breathing’)

- This technique can be helpful for those who are feeling stressed or anxious.
- How to do it
 - Place one hand on your chest and one on your stomach, or both hands on your stomach. The hand(s) on your stomach should move the most during this exercise.
 - Inhale fully through the nose, letting your stomach expand out, and exhale slowly through your mouth or nose. Breathing out of the nose can help to control how fast you exhale.

❖ Box Breathing

- This technique can be helpful for those who are trying to stay focused and alert, such as working on home exercises or functional activities that may be challenging for you.
- How to do it
 - Inhale through the nose for 4 seconds. Hold your breath for another 4 seconds, exhale for 4 seconds, and then pause for 4 seconds before starting again.
- Check out the [Breath Ball](#) app for free visuals on this technique

❖ 4-7-8 Breathing

- This technique can be helpful for those who are feeling stressed or anxious. Exhaling longer than the inhale activates the vagus nerve which helps to relax your nervous system (Merschel, 2023).
- How to do it

- Inhale through your nose for 4 seconds, hold for 7 seconds, and exhale through your mouth for 8 seconds.
- Check out the Breath Ball app for free visuals on this technique
- ❖ Pursed-lip breathing
 - This technique can be helpful for those who have trouble holding their breath or those who are feeling short of breath to help slow down your breathing rate.
 - How to do it
 - Inhale through the nose
 - Exhale through your mouth through pursed lips, as if you're blowing out birthday candles, 2 to 4x longer than your inhale.

Mindfulness and Meditation

Yoga itself incorporates meditation and mindfulness techniques, but you can also practice these areas without the physical components. These techniques can be beneficial additions to your current rehabilitation to promote a holistic approach to your care.

Mindfulness

Mindfulness involves focusing one's attention on the present moment. Mindfulness can help improve cognitive control related to goals and behaviors, and increase awareness of one's body and emotional state in a given moment (*Mindfulness and Stroke Rehabilitation: How It Helps Recovery*, 2021; Rousseau, 2023). Repeated and consistent practice with mindfulness can lead to neuroplastic changes that can impact mood and progress related to neurorecovery.

Meditation

Whereas mindfulness can be applied while completing a variety of tasks, meditation involves getting into a relaxed and still state of mind. There are various types of meditation practices including *guided meditation* which uses imagery or visualization, as well as *mindfulness meditation* which involves being aware of the present moment through following the flow of your breath, or your thought patterns, without judgement. Meditation can be a tool for improving mindfulness, which in turn can help promote neuroplasticity and recovery in conjunction with other therapeutic techniques.

Research into the benefits of meditation on stroke recovery specifically have shown reductions in depression, fatigue, and stress, as well as improvements in sleep (Rusch et al., 2018; Kwon, 2024). Studies have also demonstrated connections between meditation and increased gray matter in the areas of the brain responsible for attention, emotional regulation and mental flexibility (Luders et al., 2009).

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Resources

- ❖ [Breath Ball](#) (App) for the following techniques: 4-7-8 & box breathing
- ❖ [Calm](#) (application for meditation and sleep)
- ❖ Free guided meditations:
<https://learnrelaxationtechniques.com/free-guided-meditation-resources/>
- ❖ Free yoga videos to get started - be sure to check-in with your providers to ensure the postures and sequences are appropriate for you!
 - [Gentle Chair Yoga Workout After Stroke - 10 Min](#)
 - [Chair Yoga for Stroke Survivors](#) & [Adaptive Yoga Gentle Chair Sequence - FULL CLASS - for older adults & stroke survivors](#) (hosted by a stroke survivor)
 - [Adaptive Yoga LIVE](#)
- ❖ [Class Types | Yoga For the People](#) - offers in-person chair yoga classes in Bellevue, PA