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The Use of Yoga Following Stroke

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Abstract

The use of yoga for people following stroke has been studied and shown beneficial. A case example is provided to connect the basic principles of yoga to the physical limitation of a person experiencing the chronic effects of stroke.

Keywords: Stroke; Yoga

Introduction

In 2016, the World Health Organization [1] stated, "Worldwide, cerebrovascular accidents (stroke) are the second leading cause of death and the third leading cause of disability." Stroke commonly results in a hemiplegia or hemiparesis with loss of normal motor and sensory function. Motor control and muscle activation are impacted, as is general body awareness of the effected side of the body. Although the brain is responsible to activate and modulate movement, it does require the sensory feedback from movement to judge success or failure and modify the movement accordingly. Control of movement accuracy is reliant on sensory feedback. The disability noted by the World Health Organization is related both to the direct effect of the stroke, but also to the loss of motor-sensory feedback.

Yoga has been studied for use with people who have suffered a stroke and are struggling with the associated long-term disability. Bastille & Gill Body [2] reported improvements in balance test scores, walking speed, and perceived quality of life after eight weeks of yoga-based training. Schmid et al. [3,4] reported a significant improvement in balance and a significant reduction in fear of falling after eight weeks of yoga-based training. They also noted decreased pain, improve hip range of motion, improved arm strength and increased walking speed.

Although there are many forms of yoga, all forms include aspects of muscle lengthening, coordinated muscle contraction, controlled transitions in and out of poses, and a mind-body connection. If we consider the common effects of stroke, we see opportunities for the direct use of yoga in managing those effects. Consider the following scenario: Walter, a man of 70 years age, suffered a stroke approximately 18 months ago. He underwent physical rehabilitation for a total of 12 weeks following his stroke. He continues to have trouble with his left arm and leg. He is able to walk but only for a short distance as the energy expenditure to move the left side of his body is great. He is having episodes that are more frequent where he loses his balance. He is right handed, thus relies on the right hand to compensate for his less-functional left arm during all self-care and mobility tasks. He fears he will have a significant fall.

Walter's post-stroke experience is very common. Some of his functional deficits include poor balance and limited walking. If we look more closely, we likely see:

A. a loss of normal muscle activation in the left arm and the left leg

B. muscle atrophy from limited use over the past 18 months

C. loss of muscle length either from tone changes or non-normal movement

D. poor coordination of the right and left sides of the body

E. inaccurate sensory signals from the non-normal movement being sent to the brain

F. excessive energy expenditure to do an activity that previously was not taxing

The yoga practitioner should choose poses that are safe and address the physical limitations experienced by the person with stroke. Consider Walter's physical deficits. He lacks body awareness of his left side and has poor integration/coordination of his body as a whole. The Bridge Pose, where the person is lying down and the body is supported by the floor may be an appropriate place to begin. Walter's knees are bent and he works to keep his left knee from falling to the side (focused muscle

activation to maintain a posture). He controls the position while lifting his hips from the floor (coordination of muscles on the right and left to produce a controlled lift) and pressing both arms into the floor (activate the right arm and use the floor as a feedback tool for body position). His body works as a whole to create and sustain the pose.

Another potential pose to consider is the Extended High Kneeling Pose. In this pose, the person begins sitting on his heels then transitions to kneeling with the hips and spine extended and both arms raised overhead with the palms of the hands together. Although this will be very challenging for Walter, his body and brain will benefit is many ways: he will be working to activate the right and left sides of his body in unison to safely rise from sitting to kneeling; he will feel weight through his left leg getting feedback from the floor as he works to extend his hips; his spine will work toward appropriate postural extension; and his left arm will be engage in unison with the right arm with the connection of the palms to give him sensory feedback.

The Bridge and the Extended High Kneeling Pose are only a two of the many poses that could and should be considered. Walter, or any person with physical effects from a stroke, will struggle with precision in any yoga pose. Working toward precision will result in better motor control, flexibility, ease of movement, and mind-body awareness. Yoga principles can be applied during formal rehabilitation in any phase of recovery from stroke. However, for those people who have limited access to, or coverage for, rehabilitation, a perceptive yoga practitioner who conscientiously chooses, assists, and modifies poses can make a dramatic impact on the lives of people with stroke.

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