

## Yoga: Safe for All?



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In this issue of *Mayo Clinic Proceedings*, Lee et al<sup>1</sup> report a retrospective chart review of soft tissue and bony injuries attributed to the practice of yoga. This study identifies various medically documented yoga injuries, with the spine being the most common cited location of injury. Spinal flexion and extension seem to be particularly high-risk positions. Although soft tissue injuries were more common, bony injuries, including osteoporotic compression fractures, were also noted, and these types of injuries pose an increased risk of morbidity.

Yoga has become increasingly popular over the past 4 decades. The reason for this popularity may be related to numerous studies that cite the positive benefits of yoga for medical conditions such as hypertension, carpal tunnel syndrome, arthritis, and mental health disorders.<sup>2</sup> The present issue of the *Proceedings* contains a systematic review and meta-analysis by Wu et al<sup>3</sup> demonstrating that yoga practiced regularly each week can substantially reduce both systolic and diastolic blood pressure and that such reductions are augmented when yoga is combined with breathing exercises and meditation. Yoga can also improve one's overall fitness by increasing flexibility, balance, proprioception, and muscle strength. It has also traditionally been viewed as a gentle and safe form of exercise by the lay public, and many physicians recommend yoga to their patients as a low-risk form of exercise. But like any other type of physical activity, yoga carries a risk of injury. Exercise is indeed a medicine with a myriad of health benefits, but like any medication, it must be prescribed appropriately. Physicians who recommend yoga to their patients should carefully consider the risks and benefits of yoga and counsel patients appropriately.

Over the past few decades, there has emerged a growing body of literature documenting the risks of yoga. As participation in yoga is increasing, yoga injuries also appear to be on the rise, particularly in the

elderly. Common yoga injuries include repetitive strain injuries and overstretching of the neck, shoulders, spine, legs, and knees.<sup>4</sup> Yoga can also cause musculoskeletal pain.<sup>5</sup>

In a large national survey of Australian yoga participants, about 80% indicated that they had never been injured during yoga.<sup>6</sup> The remaining 20% mainly reported minor injuries. Although most yoga injuries tend to be minor and patients recover well, there are some who sustain more significant injuries and may not achieve full recovery.<sup>7</sup> Tendon tears of the Achilles, supraspinatus, and peroneus brevis have been reported from yoga participation.<sup>8</sup> Fibrocartilaginous injuries have also been reported, including medial meniscus tears, hip labrum tears, shoulder labrum tears, and lumbar disk annular tears with disk extrusion.<sup>9</sup> The present study highlights the additional risk of bony injuries, including compression fractures of the spine. Prompt and appropriate recognition and treatment of these more significant musculoskeletal injuries can prevent the development of chronic disability and pain in yoga participants.

Many patients rely on their yoga practice for stress reduction, so it is important to be mindful that being injured can have a significant detrimental effect on their mood and overall health and well being. In patients for whom conservative treatment of a yoga injury is appropriate, it is helpful to refer them to rehabilitation practitioners who have familiarity with yoga poses and postures. The goal of conservative treatment is to ameliorate the symptoms and get the patient back to activity as quickly and safely as possible while minimizing the risk of reinjury. Repetitive strain is a causal factor in many of these injuries. An understanding of the biomechanics of the poses that led to injury, and appropriate modification of these poses, may help to improve symptoms and also protect against reinjury. Just as it is important to have appropriate technique when performing resistance training

exercise, it is equally important to ensure proper yoga form and technique, especially in individuals who may be at risk of injury due to a musculoskeletal injury or condition. Rehabilitation providers who are also certified as yoga teachers are a particularly good resource vis-à-vis modification of poses.

Higher risk yoga poses appear to include headstand, shoulder stand, lotus and half lotus (seated cross-legged position), forward bend, backward bend, and handstand.<sup>5</sup> Beginners in particular should consider avoiding advanced postures such as headstand or lotus position. Particular attention must be paid to the spine, as this is where the highest number of injuries occur. As highlighted in the present study, patients with osteoporosis may be at a higher risk of injury with poses that emphasize end range spinal flexion. Patients with facet disease or spondylolisthesis are at risk with end range spinal extension. Anecdotally, lumbar disc injuries also seem to be more common in hypermobile yoga participants, particularly those who tend to go to the extremes of end range lumbar flexion.

A large number of yoga injuries are due to repetitive strain and therefore, to a large extent, may be preventable. It is sometimes difficult to determine whether yoga was the cause of injury, as in the context of overuse, signs and symptoms may appear gradually. Adverse events often occur in yoga teachers who presumably practice more intensely and more often than do nonteachers.<sup>7</sup> Yoga teacher trainees also appear to be at higher risk, as during training, the duration, intensity, and frequency of yoga practice typically increases.

Many yoga teachers and therapists regard yoga as generally safe and associate adverse events with excessive effort by participants, inadequate teacher training, and unknown medical preconditions.<sup>10</sup> In a 200-hour yoga teacher training, typically 6 to 10 hours will be spent on injuries and injury prevention, and this may not provide the depth of knowledge required to keep higher-risk students safe. Patients should be advised not to push themselves too far. They should

also be encouraged to disclose any medical conditions or injuries and to find a teacher with advanced training or additional training in injury prevention.

Many patients seek medical advice before embarking on a new exercise regimen. Physicians should assess for any potential patient risk factors such as age, medical comorbidities (ie, osteoporosis/osteopenia), and underlying musculoskeletal conditions that could be exacerbated by participation in yoga. It is also important that physicians encourage patients to be open and honest with yoga teachers about their limitations. Many yoga instructors can fine-tune or modify poses for individuals even in a group setting. Beginners or high-risk patients would also benefit from smaller class sizes with more individual attention or 1-on-1 yoga until they build a solid foundation.

There are more than 20 major types of yoga, and certain styles of yoga may be preferable in high-risk patients. Patients should be encouraged to research the different types of yoga and find a style that will be safe and work best for their goals. For instance, in a patient with osteoporosis/osteopenia, a style of yoga that emphasizes repeated forward flexion or forward bends may not be the best option.

Yoga has been shown to have significant health benefits for many patients, including the potential for a substantive antihypertensive effect as underscored by Wu et al<sup>3</sup> in the present issue of the *Proceedings*. Most patients should be able to safely participate in yoga and thus benefit from the potentially salutary effects of this ancient practice. Physicians are uniquely positioned to aid not only in the diagnosis of but also in the prevention of yoga injuries. Those who recommend yoga for the treatment of medical conditions should discuss the risks, benefits, and precautions with their patients. Rather than a one-size-fits-all approach, an individualized exercise prescription in consideration of patients' demographic characteristics and their unique medical history is clearly advisable.

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