What Effects Does Competitive Gymnastics Have On The Spine?

My Inquiry Process

Leah Varney

Up until age 10, I was a gymnast working my way towards competition level. In January of this year, I began to have lower back pain that my chiropractor and physical therapist initially believed could have been the result of an injury from gymnastics. This possibility spurred the question “What effect does competitive gymnastics have on the spine?” With this question in mind, I talked to my chiropractor for ideas and searched through the Franklin Pierce databases for information on this topic. I obtained a print book in addition to a number of primary and review articles that discuss the risks and benefits of gymnastics on the spine, and read through them to find the best information to answer my question. As I went through this process, I also researched background information on spinal mechanics, injuries, and deformities to gain a better understanding of the articles that I had found. Finally, I analyzed and synthesized all of the information that I gathered to determine how competitive gymnastics effects the spine.

Background

• Because gymnastics is a year-round sport and training can be modified to accommodate injuries, these athletes often never experience periods of full rest, leading to a high risk of injury.

• The compressive forces in takeoff, rebound, and landing in events such as floor and vault, and the traction forces in events like uneven bars and rings often well exceed the body weight of the athlete themselves.¹

• At upper levels, gymnastic competition is regulated by a rulebook known as the Code of Points, which outlines the scoring system for each level of competition.²

• In recent years, emphasis has been placed on high-speed skills that demand an increased level of spinal strength and stability. ²

• The effects of this stress can range from asymptomatic structural changes to traumatic career-ending injury.

Findings

• Studies have shown that back pain from any cause is at an epidemic level amongst gymnasts, affecting 25%-85% of all individuals studied.³

• Research has revealed that back pain afflicts 18%-70% of adolescent gymnasts, although the underlying causes differed from those of adults.³

• The most common spinal injuries seen in gymnasts are spondylolysis and spondylolisthesis. These injuries are more prevalent in upper level gymnasts, and seem to be associated with greater practice time and higher skill level.¹,²,³,⁴

• Gymnastics participation has been shown to have the benefits of promoting proper spinal posture and increase bone mineral density, which may be beneficial in the prevention of osteoporosis in athletes as they age.⁵,⁶

Future Research

Nearly all studies conducted have the limitations of small study populations and short study duration, and therefore may not have produced accurate data. In future studies, researchers should follow larger groups of both male and female gymnasts from diverse ethnicities, backgrounds, and training centers from the start of their competitive careers to the end, with their spinal health closely monitored in order to minimize chance results. More research should also be conducted to determine the specific causes, frequency, and predispositions of back pathologies associated with gymnastics. If certain maneuvers consistently lead to injury, the sport should consider removing them from the Code of Points.

Sources Used


