



PEDIATRICS

Ligament Laxity and Its Effect on Sports Injuries in Children

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Ligamentous laxity is a condition in which the elasticity of the ligaments provides for increased joint range of motion throughout the body. The condition is almost certainly hereditary since questioning almost always elicits a confirming response from one of the parents of an affected child. The condition has also been called Familial Ligamentous Laxity.

Benign ligamentous laxity is a term which is used to differentiate the more common subtle type of laxity from the potentially more severe types, such as those seen with Ehlers-Danlos syndrome, Marfan's syndrome or rheumatoid arthritis, osteogenesis imperfecta, lupus, polio, Down's syndrome, Morquio syndrome, cleidocranial dysostosis or myotonia congenita. In addition, hypermobility has been associated with chronic fatigue syndrome and fibromyalgia.

In the chiropractic office, benign ligamentous laxity is encountered frequently. The affected patient demonstrates increased joint range of motion which of-

ten requires spinal adjusting techniques to be modified to accommodate for this extra flexibility. In the pediatric patient, such increased joint flexibility can lead to a greater incidence of injury.

A baby with this condition may demonstrate cavitation of the spinal joints when lifted and held under the arms, often to the parent's consternation. Parents will often ask if there is a problem with their baby. They should be reassured that it is a condition of normality that has been inherited from one or both of the parents. Other traits demonstrated by patients with this condition include joint flexibility, especially of the extremities and easy cavitation of joints, i.e., these patients will frequently be able to self-adjust their spine and easily crack their knuckles.

Although under normal circumstances this condition is benign, ligamentous laxity does predispose to an increased incidence of joint injury, particularly during adolescence, and there is evidence that it predisposes to early onset of degenerative joint disease. Patients with

this condition also may have abnormal proprioception leading to more frequent joint injury. They may also develop fatigue from overuse of muscles that must work harder to compensate for the joint and ligament weakness.

How to evaluate ligament laxity

Evaluation of the degree of ligamentous laxity can be assessed by using the Beighton score in which joint hypermobility is evaluated by the ability to successfully perform a series of joint maneuvers that rate joint flexibility on a 9-point scale. These maneuvers include:

- Bending the little finger backward to a 90-degree angle
- Bending the thumb to the forearm
- Hyperextending the elbow 10 degrees beyond neutral
- Hyperextending the knee 10 degrees beyond vertical
- Bending forward with knees straight and placing hands flat on the floor

A diagnosis of benign hypermobility syndrome is made if one scores at least 4 out of 9 points and also experiencing joint pain for more than three months.

Injuries in boys vs. girls

Ligament laxity has been shown to predispose to a higher incidence of joint injury in affected patients. This is particularly true where sports participation is involved. The National Collegiate Athletic Association (NCAA) keeps one of the most comprehensive databases of sporting injuries statistics. Research in the field of high school and collegiate sports indicates that boys suffer more

sports injuries, particularly from football, while girls are more prone to knee and ankle sprains and back injuries from soccer, basketball and volleyball. It has been suggested that girls playing soccer have ACL injuries at a rate 5 times higher than boys. Girls are also prone to concussion from sports injuries. Girls playing basketball suffer from concussions at 3 times the rate of boys and from soccer at 1.5 times the rate of boys. It has been suggested that because girls have smaller heads and weaker neck muscles, brain injury is more common.

Girls with existing ligamentous laxity are especially prone to injury as they enter puberty and throughout adolescence. The increased level of estrogen that occurs at this time, increasing ligament elasticity and adding body fat rather than muscle, is a likely contributing factor. The reduced injury levels in boys competing in the same sports at this time is likely due to the increase in adolescent testosterone which is responsible for them building muscles that better support the joints.

Reducing joint injuries

What can be done to reduce joint injuries in females playing high school and college sports? Researchers studying this question have suggested that the problem lies with training methods and the lack of emphasis on conditioning in female sports. Because of their inability to build muscle at the same rate as boys, girls need to do more conditioning in their training routines. The problem here may lie with the coaching. Since success in coaching is results driven,

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