

## INTERSPINOUS LIGAMENTOUS STRAIN

Interspinous ligaments are thin membranous ligaments that connect adjoining vertebral spinous processes. They extend from the root to the apex of each process, joining the ligamenta flava ventrally and the supraspinal ligament dorsally. An interspinous ligament is narrow and elongated in the thoracic region, and broader, thicker and quadrilateral in the lumbar region. It is only minimally developed in the cervical region.

Strain (excessive shearing force or traction stretching) of an interspinous ligament is reported to cause localized and referred pain patterns. These referred pain patterns occur without the signs or symptoms of trigger point formation referred pain, extrafusal muscle strain, visceral referred pain or nerve root irritation.

Commonly, *interspinous ligamentous strain* arises from acts of lifting, twisting, catching a falling heavy object, or falling in an awkward manner and landing with a twisted posture.

Some controversy revolves around whether the interspinous ligament is provided with sensory nerves capable of producing the sensation of pain on stimulation (R. Cailliet, *Low Back Pain Syndrome*). However, the work of Kellgren and Lewis (described in *Pain*) was able to demonstrate and graphically represent referred pain patterns produced by interspinous ligament stretch. They did this by mechanically stretching each ligament and recording the reported referred pain patterns. Injecting saline solution under the various interspinous ligaments caused the mechanical stretch. Refer to Interspinous Ligamentous Referred Pain Patterns for

graphic illustration of the stereotypical referred pain patterns that may result from specific *interspinous ligamentous strain*.

The patient typically reports a central locus of pain along the vertebral column. This pain is accompanied by a stereotypic referred pain pattern in a more distal area. The centralized pain along the vertebral column is usually constant but the referred pain pattern is affected by changes in ligamentous stretch. There is a significant increase of referred pain intensity if the ligament is mechanically stretched (often used diagnostically by a round key ring applied over the ligament site), and there is a significant decrease in the intensity of pain when the stretch is decreased. There will be palpation tenderness over the involved interspinous ligament, but not in the areas exhibiting the referred pain.

### Treatment

Ultrasound may prove useful in desensitizing sensitive interspinous ligamentous tissue as well as being a way of providing phonophoresis of non-steroidal anti-inflammatories into associated inflamed tissues. Supporting the trunk and forcing the involved vertebral joints out of flexion ranges and into the extension ranges may help relieve pressure on the involved interspinous ligaments and thereby reduce associated referred pain.