

# Collaborative Chiropractic Care

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No disclosures

# Learning Objectives

- Recognize the need to refer patients for chiropractic co-management of acute and chronic musculoskeletal pain/function patterns and then seek out suitable chiropractic referral relationships
- Appreciate a working dynamic model of spinal joint dysfunction
- Understand the theoretical mechanism of action...how chiropractic manipulation activates spinal segmental stabilization
- Better understand the complexity of manual chiropractic manipulation

# Spinal Joint Dysfunction: A Contemporary Model

Old terminology of the mysterious problem:

- Malposition
- Misalignment
- Subluxation (biomechanical vs. anatomical)
- Nerve impingement
- Bone out of place
- Etc.

# Other terms used by DCs, MDs, DOs and PTs:

- Functional spinal lesion
- Joint complex dysfunction
- Joint dysfunction with hypomobility
- Fixation
- Somatic dysfunction
- Loss of joint play

# Is it strictly static and structural?

Or could it involve:

- Kinesiopathology?
- Neuropathology?
- Myopathology?
- Connective tissue pathology?
- Vascular abnormalities?
- Inflammatory response?
- Histopathology?
- Biochemical abnormalities?

Whatever it is and whatever you call it,  
it responds to manipulation/adjustment  
type procedures.

# A Working Dynamic Model of Joint Dysfunction

Panjabi offers a unique model of joint dysfunction with disturbed kinematics (motion), loss of spatial and temporal integrity of received receptor signals, and corrupted motor programs.

Panjabi MM. A hypothesis of chronic back pain: ligament subfailure injuries lead to muscle control dysfunction.

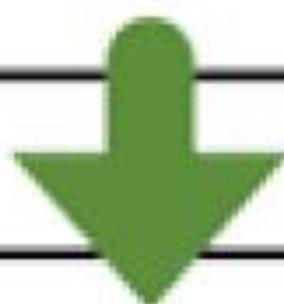
*Eur Spine J*, 2006;15(5):668-76.

This dynamic explanation offers distinctive insights into the mechanism and progression of the lesion that chiropractors diagnose and treat

## A WORKING DYNAMIC MODEL OF SUBLUXATION

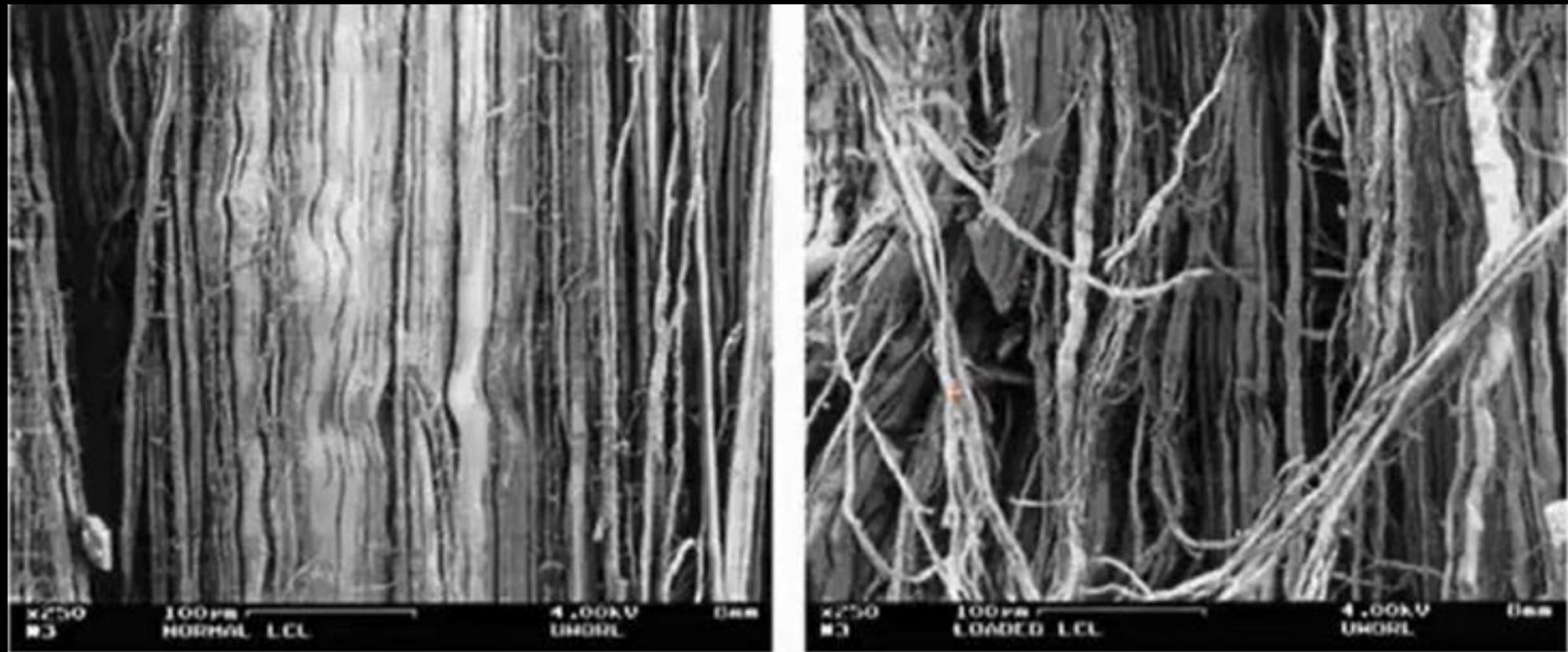
Trauma/microtrauma cause subfailure  
injury in ligaments, joint capsules  
and discs.





This damages collagen fibers and mechanoreceptors (MRs) in injured passive restraints.





Scanning electron micrograph of normal (left) and damaged (right) mature ligament. In the subfailure stretched tissue (right), collagen fiber damage was distributed the length of the tissue.



The result is partial deafferentation,  
disturbed kinesthesia, loss of  
spatial and temporal integrity.





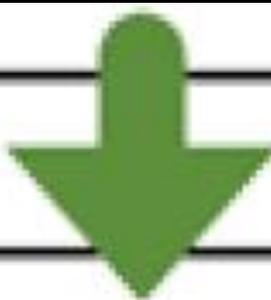
The neuromuscular control unit  
has difficulty interpreting the  
corrupted MRs signals.





Muscle response pattern is corrupted, disturbing coactivation, recruitment of spinal muscles, range of motion, and kinematics.





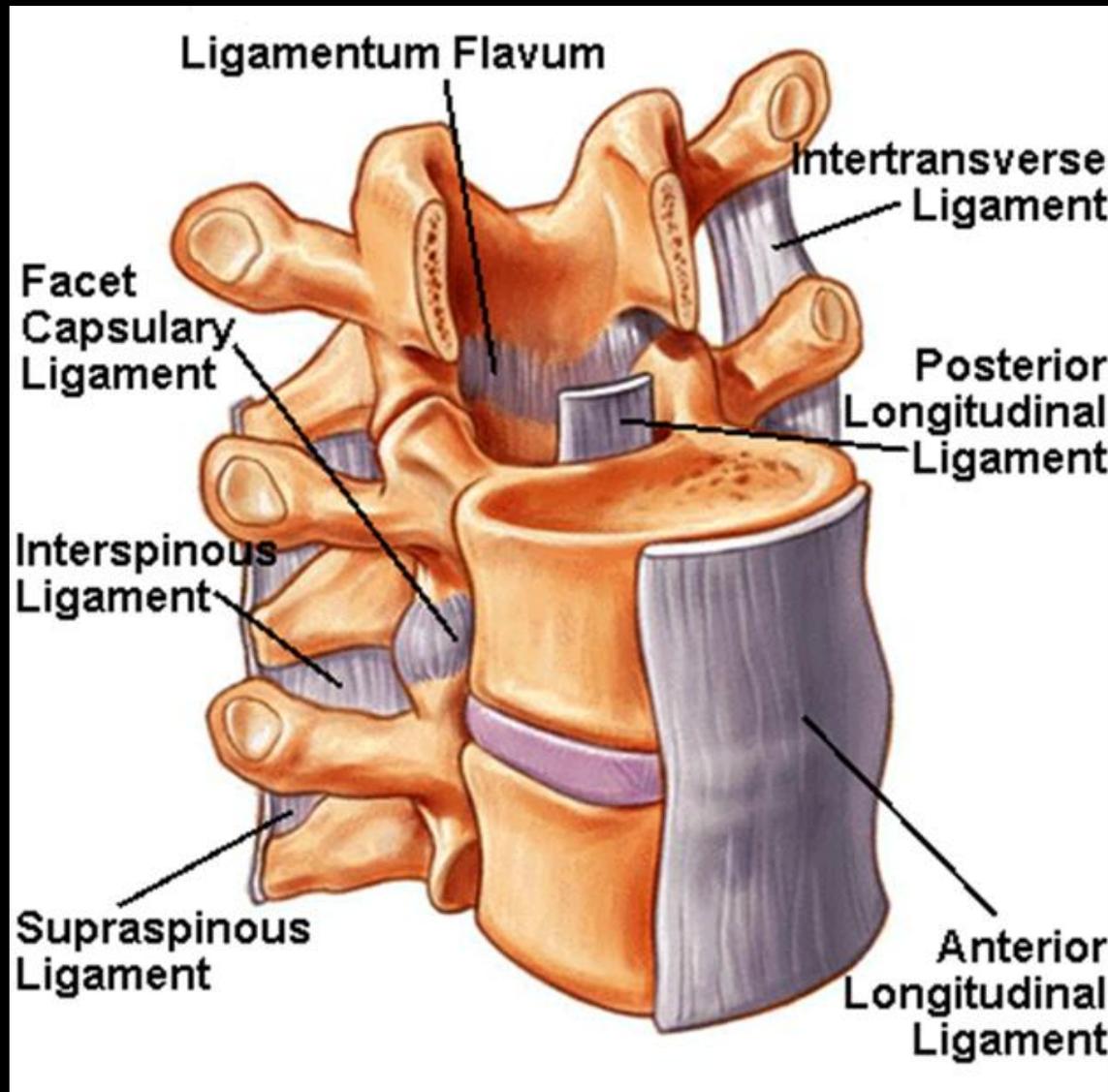
Disturbed motor control results in abnormal loads, stresses and strains leading to further subfailure injury of spinal ligaments and MRs.





Subsequent subfailure injury produces inflammation of spinal tissues abundant in nociceptors. This may result in chronic pain, recurrences, and reduced functional capacity.

# Vertebral Intersegmental Motion Unit



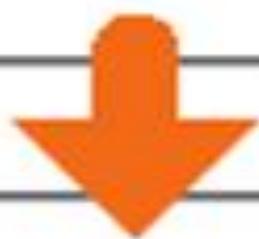
# How Does It Work?

What is the proposed mechanism of action of the chiropractic adjustment (manipulation)?

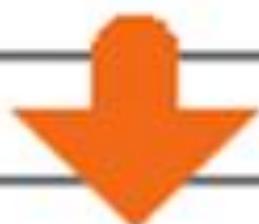
Tissue injury and pain results in reflex inhibition and progressive atrophy of the segmental multifidus.

Seaman D, Winterstein J. Dysafferentation: a novel term to describe the neuropathophysiological effects of joint complex dysfunction. *JMPT*, 1998;21(4):267-80.

Hodges P, et al. Rapid atrophy of the lumbar multifidus follows experimental disc or nerve root injury. *Spine*, 2006;31(25):2926-33.



The HVLA manipulative thrust rapidly stretches ligaments, joint capsules and intervertebral discs, stimulating stretch receptors and initiating a ligamentomuscular reflex, which activates the segmental multifidus to stabilize and protect passive ligamentous restraints from injury.





The segmental multifidus that has been reflexively inhibited and atrophying is stimulated to contract.



# Multifidi





This may reverse the reflex inhibition, progressive atrophy, and delayed muscle response in the segmental multifidus, and restore contractility and improve dynamic joint function.

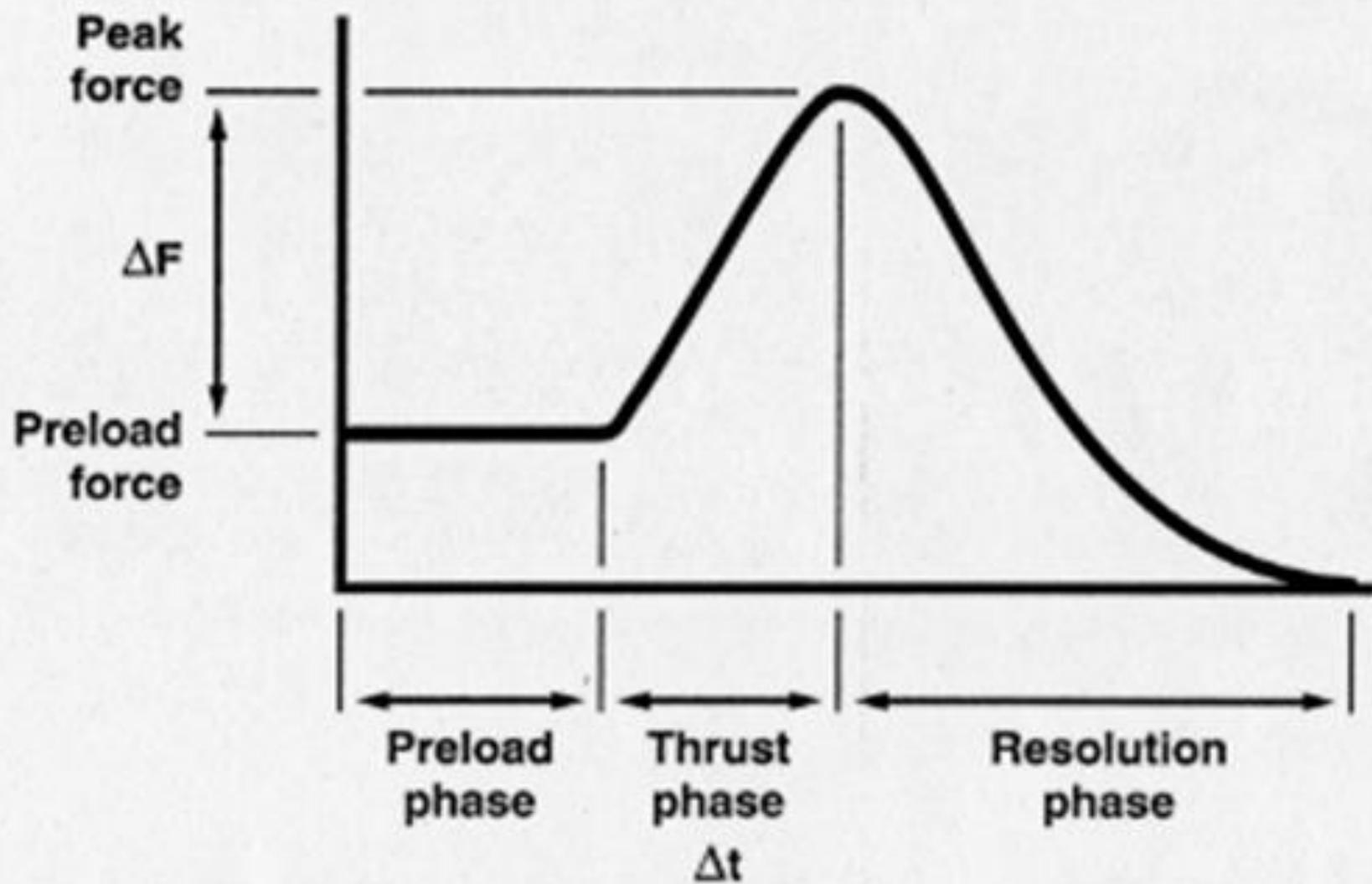
MacDonald D, Moseley GL, Hodges PW. Why do some patients keep hurting their back? Evidence of ongoing back muscle dysfunction during remission from recurrent back pain. *Pain*, 2009;142:183-8.

Therefore, spinal manipulation provides precise high-velocity, yet non-injurious stretch of ligaments that appear to stimulate mechano-receptors to reflexively activate the segmental stabilizing multifidus to unload rapidly stretched ligaments and joint capsules.\*

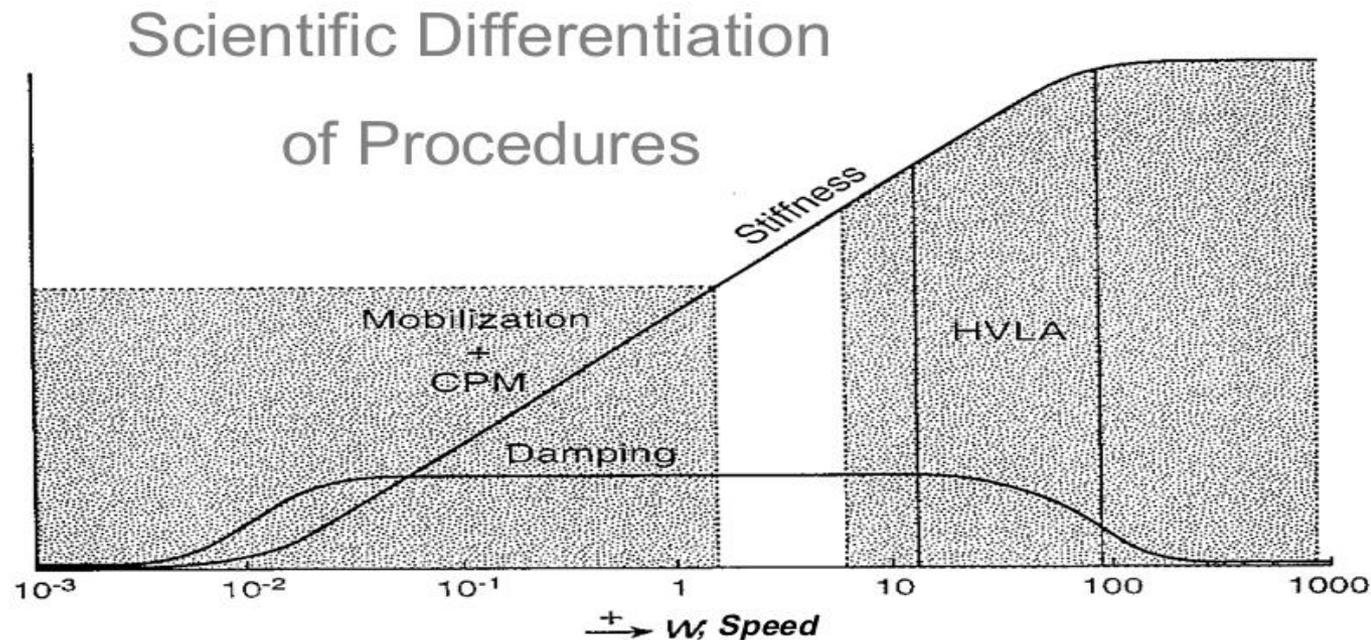
\* Le B, Davidson B, Solomonow D, et al. Neuromuscular control of lumbar instability following static work of various loads. *Muscle Nerve*, 2009;39(1):71-82.

Paraphysiological Joint Space





# Tissues response to force of treatment is related to their relative stiffness/viscoelastic properties



Multiple choice survey questions here

# Thank You!

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