



Introduction to Balanced Ligamentous Tension

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ADAPTED FROM KIM WOLF DO 2024



Objectives

1. Describe the structural and functional properties of ligaments and how they contribute to articular balance.
2. Explain the concept of reciprocal ligamentous tension and how somatic dysfunction can disrupt it.
3. Define and Grade Sprains and Strains
4. Define Balanced Ligamentous Tension (BLT) and differentiate it from other techniques involving connective tissue.
5. Identify the proposed mechanisms of action for BLT, including neurological and inherent forces.
6. Demonstrate the steps of a basic BLT technique, including disengagement, exaggeration, and balance.
7. List clinical indications and contraindications for the application of BLT.
8. Become familiar with non-physiologic ribs (discussed in the Anatomy review lecture)

Let's define and review connective tissue again...

body wide network, a continuous web throughout the body

- Made of cells suspended in an **extracellular matrix**.
- Matrix includes **collagen, elastin, proteoglycans, and fluid**.
- Includes **fascia, tendons, ligaments, cartilage, bone, fat, blood**.

Connective Tissue. The illustration shows the dense, adipose, areolar, compact bone, and blood tissues. Illustration by E Gregory

From: [Anatomy_Connective Tissue](#)

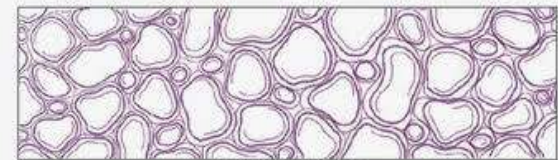
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Connective Tissue



Dense connective tissue



Adipose tissue



Areolar tissue



Compact bone



Blood

What is the Function of Connective Tissue?

Supports, stabilizes, and integrates musculoskeletal, nervous, lymphatic, visceral, and vascular systems

Mediates motion and mechanical stress across body regions and layers

Provides proprioceptive feedback to the central nervous system

Protects and defends against mechanical injury and infection

Initiates repair and remodeling following tissue strain or trauma

Facilitates metabolic and fluid exchange, including lymphatic and interstitial flow

Fascia vs. Tendons & Ligaments – What's the Difference?

Fascia: more elastic, dynamic, multi-directional; supports **glide and continuity**.

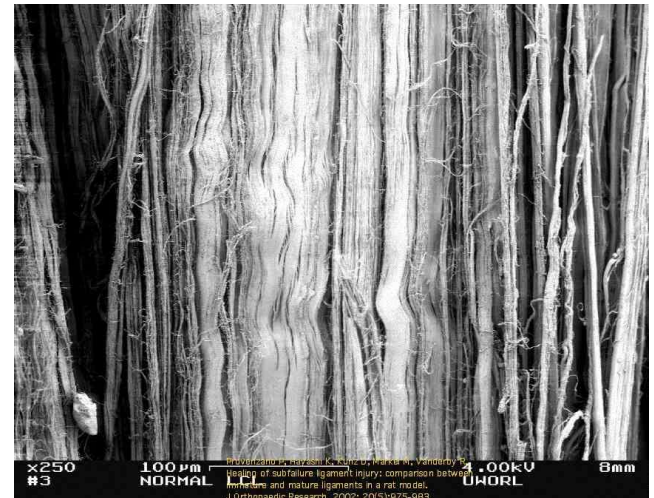
Tendons: connect **muscle to bone**; high tensile strength.

Ligaments: connect **bone to bone**; stabilize joints.
prevent over extension

Tendons & ligaments: **higher collagen density, lower vascularity, more organized alignment.**

FOM 3 p.811

<http://silver.neep.wisc.edu/~lakes/slideTissue.dir/LigFig4A.jpg>



Ligaments are “crimped”

-not as parallel and straight
as the fiber arrangement
of tendons

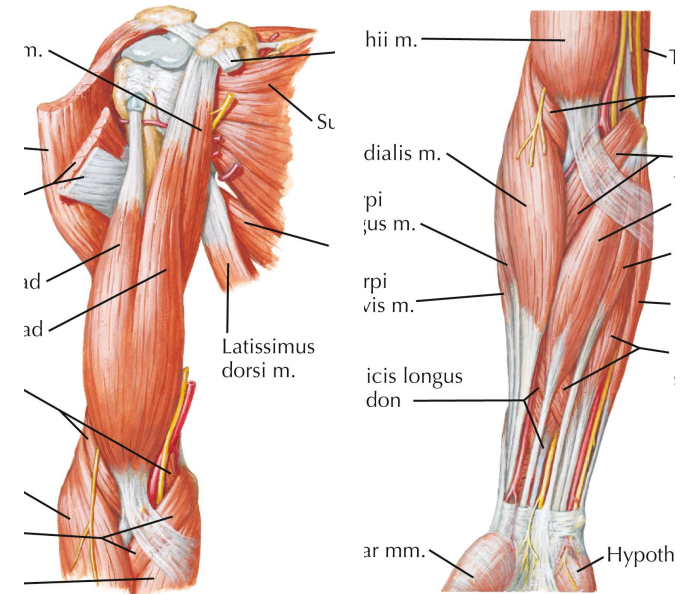
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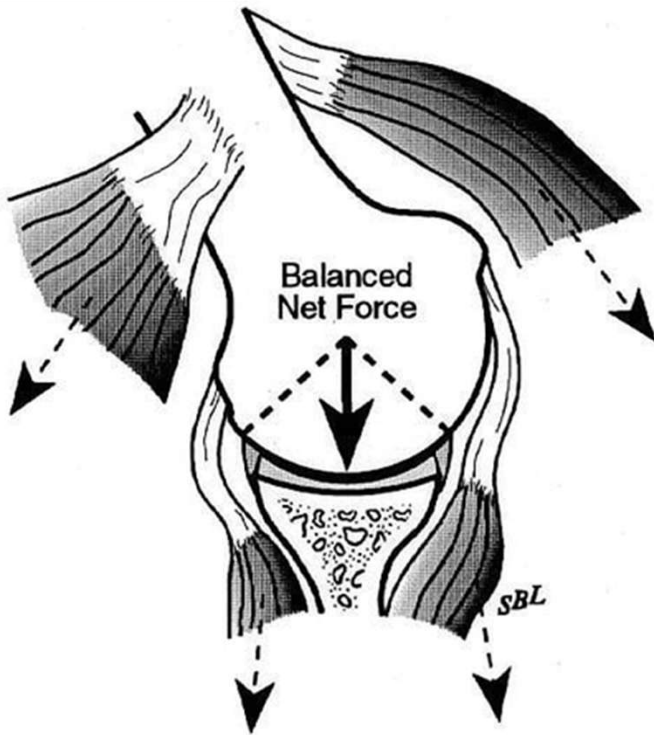
Netter's Integrated Musculoskeletal System.

Ward, Peter J.,

PhD. Published December 31, 2021. Pages 37-52. © 2022.

Fig. 3.5

Ligaments: The Body's Intrinsic Balancers



Matsen Fig. 3-09

University of Washington Orthopaedics and Sports Medicine. (2005, February 10). *Glenohumeral Balance*. Retrieved June 26, 2025

[Intention Designs](#)

joint positioning and mvmt
reciprocal ligamentous tension - internal sense of stability and coordination

Sprains vs. Strains

stretch reflex and springing can't compensate

Sprains

- Are injuries involving the stretching or tearing of a **ligament or a joint capsule**
 - tissue that connects bone to bone
- Ligaments restrain excess motion as well as guide joint motion

Strains

- Are injuries that involve the stretching or tearing of a musculo-tendinous structure
 - muscle and tendon structure
- Tendons attach to bones and transmit muscle forces

disrupt normal joint mechanics and proprioception

Sprains and strains are categorized according to severity:

- A Grade I (mild) sprain or strain involves some stretching or minor tearing of a ligament or muscle.
- A Grade II (moderate) sprain or strain is a ligament or muscle that is partially torn but still intact.
- A Grade III (severe) sprain or strain means that the ligament or muscle is completely torn, resulting in joint instability.

Somatic Dysfunction – Disrupting Reciprocal Tension

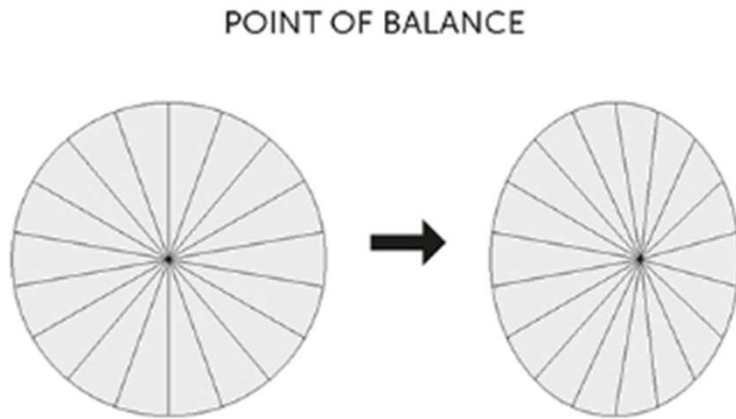


Figure 1.1 Diagrams of a balanced and displaced joint fulcrum.

joint moves beyond normal physiologic range - motion becomes strained/weakened and opposing ligament becomes dominant - over time locks the joint
goal of blt to bring joint back to neutral point to reset and reorganize proprioceptive stability



Figure 1.2 Balance scales with Sutherland's students Howard and Rebecca Lippincott DO.

Used with permission of Michael Burruano DO.

Page 44-45 Turner S. *Balanced Ligamentous Tension in Osteopathic Practice*. Handspring Publishing; 2021.

Balanced Ligamentous Tension (BLT) ***(and Ligamentous Articular Strain)***

gentle positioning to engage body's
own healing forces

Ligamentous Articular Strain (LAS):

Somatic dysfunction resulting in abnormal ligamentous tension or strain.

— ECOP, 2018

Balanced Ligamentous Tension (BLT):

The precise physiologic point in which proprioceptive information provided by the ligaments allows the body to equalize the stresses exerted on an articulation in all directions.

— ECOP, 2018

BLT Treatment Method:

A method involving the minimization of peri-articular tissue load and the placement of the affected ligaments in a position of equal tension in all appropriate planes so that the body's inherent forces can resolve the somatic dysfunction.

— ECOP, 2018



Figure 1.3 BLT of finger joint on a live model.

“All joints in the body are balanced ligamentous articular mechanisms. Ligaments provide proprioceptive input to guide muscle response and motion.”

— *Foundations & Glossary of Osteopathic Terminology*

BLT england

LAS is in texas - 3 steps Disengage (compress/decompress the joint, "push in the clutch to free the injured part, Exaggerate (move toward the original injury position and follow least resistance to the strain pattern, Balance (hold at the balance point wait for tissue release and self-correction)

How to Perform BLT

from work of sutherland
about partnering with body and trusting body's intelligence to restore
balance

Diagnose with Motion Testing

Gently test all planes (flexion, extension, torsion, sidebending, shearing).

Find the **position of ease**—the earliest point of resistance.

Balance the Joint

Move into the balanced point in all directions.

“Exaggerate the lesion” just enough to find the neutral, where strain is minimal.

Engage the Ligaments

Add subtle approximation (compression) or distraction (traction)

Stop when the ligaments feel like they “come alive.”

Wait for Inherent Forces

Hold. Allow the tissue to shift, reorient, or quiet.

May feel warmth, stillness, expansion, or patient breath response.

Confirm the Release (End Point)

Look for palpable release or alignment change.

Retest motion for improved range or decreased resistance.



Figure 1.4 Handhold for BLT of a finger joint on skeleton.

Short vs. Long levers

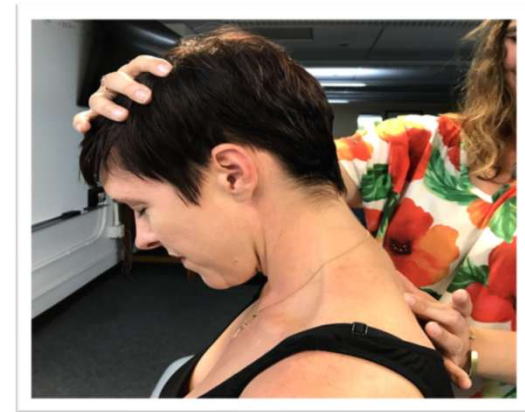
Short Lever:

Localized joint contact → precise articular balancing
(e.g., a single vertebra, radial head)

Long Lever:

Uses larger body regions to influence joint mechanics
(e.g., limb or torso positioning affects deeper joint balance)

BLT often favors short-lever techniques for specificity, but both can access balanced tension.



BLT: Indications and Contraindications

Indications

BLT and LAS treatment methods are used to treat somatic dysfunctions that include ligamentous articular strains.

Contraindications

- I. Relative
 - A. Caution should be exercised in patients with:
 - i. Fractures
 - ii. Open wounds
 - iii. Soft tissue or bony infections
 - iv. Abscesses
 - v. Deep venous thrombosis (threat of embolism)
 - vi. Anticoagulation, disseminated or focal neoplasm
 - vii. Recent post-operative conditions over the site of proposed treatment (wound dehiscence)
 - viii. Aortic aneurysm



Figure 2.7 C3 on C4 handhold.

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How is BLT different from MFR?

Target Tissue

MFR: Fascia

BLT: Ligaments & periarticular structures

Mechanism

shift in fascial nature

MFR: Tissue remodeling via hydration & elasticity

BLT: Neural reset via proprioceptive balance

Force Application

MFR: Direct or indirect force into fascial barrier or ease

BLT: Precise positioning to balance ligamentous tension

Guiding Resolution

MFR: Active stretch into barrier or ease

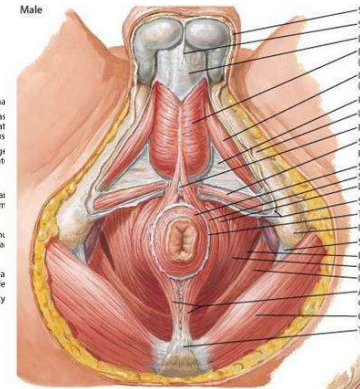
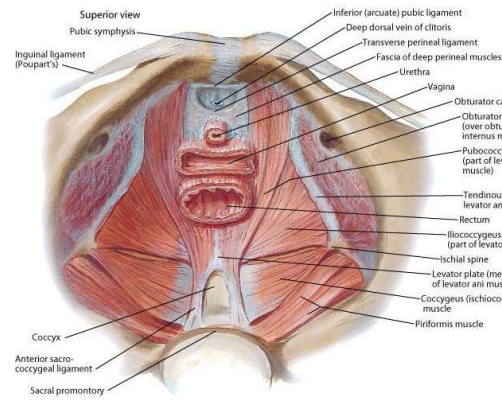
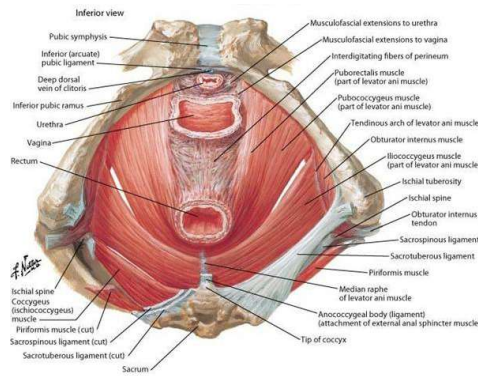
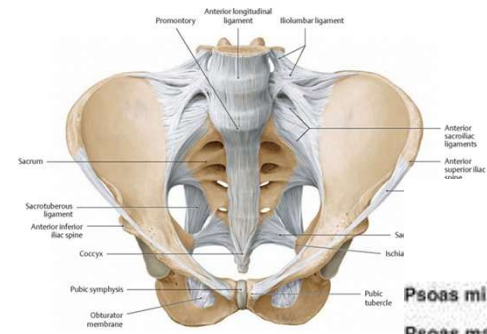
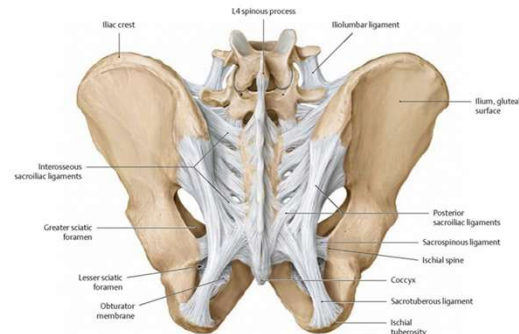
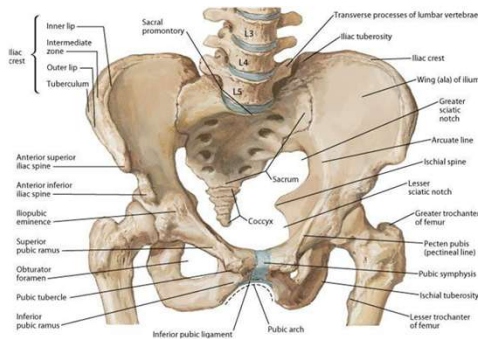
BLT: Positioning into balanced tension + waiting for intrinsic tissue response
(breath, PRM, recoil)

body's inherent forces to do the work



RIBS

The Secret Sauce to BLT (& MFR) *Knowing the anatomy!*



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