OOTA 2026 • PRE-CONFERENCE COURSE

The Fascial System as a Gateway

A Systems-Based Introduction to Structure, Regulation, and Function

Bonnie Boenig, MEd, OT/L, C/NDT
Wavecrest Pediatric Therapy
Clinician • Educator • Mentor

OOTA

55 Years of OOTA
1971 → 2026
PIVOT POINTS
AMPLIFY. ADAPT. ADVANCE.

OOTA
2026 ANNUAL CONFERENCE

PIVOT POINTS • PEOPLE • PRACTICE • POSSIBILITIES

PRE-CONFERENCE COURSE

The Fascial System as a Gateway

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WAVECREST
PEDIATRIC THERAPY

Connecting Systems. Supporting Participation.

The Perspective Behind Today's Presentation



Bonnie Boenig, MEd, OT/L, C/NDT

Owner
Wavecrest Pediatric Therapy

Founder
Wavecrest Institute

Clinician • Educator • Lifelong Learner

40+ Years of Pediatric Practice

Helping children with complex neurological and developmental challenges participate more fully across home, school, and community.

Systems-Based Clinical Reasoning

Integrating neurodevelopmental treatment, sensory processing, biomechanics, manual therapies, and whole-child systems thinking to understand the "why" behind functional challenges.

Teaching Beyond the Clinic

Mentoring therapists through conferences, professional education, and the development of the Wavecrest Institute, translating clinical reasoning into everyday practice.

Clinical Pearl | **Knowledge teaches techniques.** Clinical reasoning transforms participation.

Presentation Objectives



01

Understand

Describe fascial composition, layers, gliding, innervation, and mechanical behavior.

02

Connect

Consider how fascial tissue behavior may influence movement, sensation, and occupational performance.

03

Apply

Use introductory observation and hands-on exploration to develop and test clinical hypotheses.

04

Refine

Reassess change and determine whether it translates into meaningful participation.

A WAVECREST CLINICAL PERSPECTIVE

It’s never just one system.

Understanding relationships changes the questions we ask—and the possibilities we explore.





Understanding Fascia

The connective tissue relationships that influence movement and mechanical function.

Thinking Across Systems

Considering how fascial findings interact with the broader person and their environment.

Connecting to Function

Translating clinical observations into meaningful occupational performance across home, work, school, community, and recreation.

What changes in function, participation, and quality of life when we address what is limiting movement and engagement?

THE CLINICAL REASONING LOOP

Six Questions

Use fascial findings to generate hypotheses—not assumptions.

01 **What does the person need or want to do?**

02 **What am I seeing or feeling?**

03 **Why might fascia be relevant?**

04 **What am I trying to change?**

05 **What changed?**

06 **Did it change function?**

A change in tissue behavior matters when it creates a meaningful opportunity for participation.

A WAVECREST CLINICAL PERSPECTIVE

WHY SHOULD AN OT CARE ABOUT FASCIA?

Because occupation depends on movement, sensation, adaptability, effort—and the tissues that permit structures to move with and relative to one another.

1



OBSERVE THE TASK

Occupation

2



QUESTION THE CONSTRAINT

Clinical hypothesis

3



REASSESS PARTICIPATION

Functional outcome

Start with function

Then ask whether fascia could be one contributor.

ROM	Strength	Tone	Pain
Motor control	Posture	Sensation	Motor planning
Joint mobility	Attention	Endurance	Environment

FASCIAL MOBILITY

The goal is not to replace familiar explanations. It is to widen the hypothesis.



What Is Fascia?

More Than a Wrapping.

A continuous, three-dimensional connective tissue network that surrounds, connects, and organizes every structure in the body.

CONNECTS
Forms a continuous system from head to toe.

RESPONDS
Adapts to mechanical, chemical, and neurological input.

COMMUNICATES
Rich in sensory receptors and influences motor and autonomic function.

Fascia Is Living Connective Tissue

Dynamic. Responsive. Remarkable.

Fascia is not just a passive structure — it's a dynamic, living network of cells, fibers, and fluid that constantly adapts, communicates, and responds to the demands placed on it.



Structure + Composition + Cellular Activity

= Function



Collagen & Elastin Fibers

Provide strength, structure and elasticity.

- Collagen = tensile strength and stability
- Elastin = recoil and flexibility
- Their arrangement allows fascia to transmit, absorb and distribute forces.



Ground Substance

Maintains hydration, lubrication and cellular space.

- Water, glycosaminoglycans (GAGs), proteoglycans
- Allows tissues to glide and slide
- Supports nutrient exchange and waste removal



Fibroblasts

The builders and communicators.

- Produce and remodel collagen, elastin and matrix
- Sense mechanical and chemical signals
- Coordinate repair and adaptation

Fascia Has Unique Properties

Designed to Move, Adapt, and Transmit.

The structure and composition of fascia give it remarkable mechanical and sensory properties that influence movement, posture, and regulation.



Tissue properties influence movement—not function in isolation.



Elasticity

Returns to its original shape after being stretched.

- Allows recoil and resilience
- Important for dynamic movement



Viscoelasticity

Time-dependent response to load

- Creep under sustained load
- Stress relaxation at fixed length



Glide

Fascial layers slide and move in relation to one another.

- Reduces friction
- Supports efficient, coordinated movement



Tensile Strength

Resists stretch and helps distribute mechanical forces.

- Maintains structural integrity
- Transmits and dissipates forces throughout the body

Fascia Connects the Whole Body

A Continuous, Three-Dimensional Network.

Fascia forms an interconnected web from head to toe, linking all systems and structures.





Links Across Regions

- Continuous connections from skin to bone, throughout the entire body.
- Changes in one area can influence distant areas.



Integrates Multiple Systems

- Connects and coordinates muscular, skeletal, nervous, vascular, lymphatic, respiratory, and visceral systems.
- Supports coordinated, efficient function.



Surrounds and Supports Organs

- Forms fascial membranes, ligaments, and matrices that stabilize and allow mobility.
- Helps transmit forces and coordinate movement with respiration, digestion, and autonomic function.



Provides a Structural and Functional Continuum

- Transmits and dissipates forces throughout the body.
- Allows for both stability and mobility across all postures and activities.

Fascia, Movement, and Upper-Extremity Function

The upper extremity is part of an interconnected system.
Changes in one region influence movement, stability, and function throughout the chain.

1 POSTURE & CORE

- Provides the foundation for scapular and upper-extremity function
- Influences alignment, stability, and motor control

2 SCAPULAR & THORACIC MOBILITY

- Creates a stable yet mobile base
- Transfers force through fascial connections
- Supports efficient upper-extremity movement

3 UPPER-EXTREMITY FUNCTION

- Relies on coordinated movement, stability, and tissue mobility throughout the chain
- Enables participation in functional and meaningful activities





NECK & THORACIC REGION

- Fascial continuity influences scapular position and mobility
- Affects upper-extremity alignment and movement

SCAPULA & SHOULDER

- Supported by a dynamic fascial network
- Requires both stability and mobility for functional use

ELBOW, FOREARM, HAND

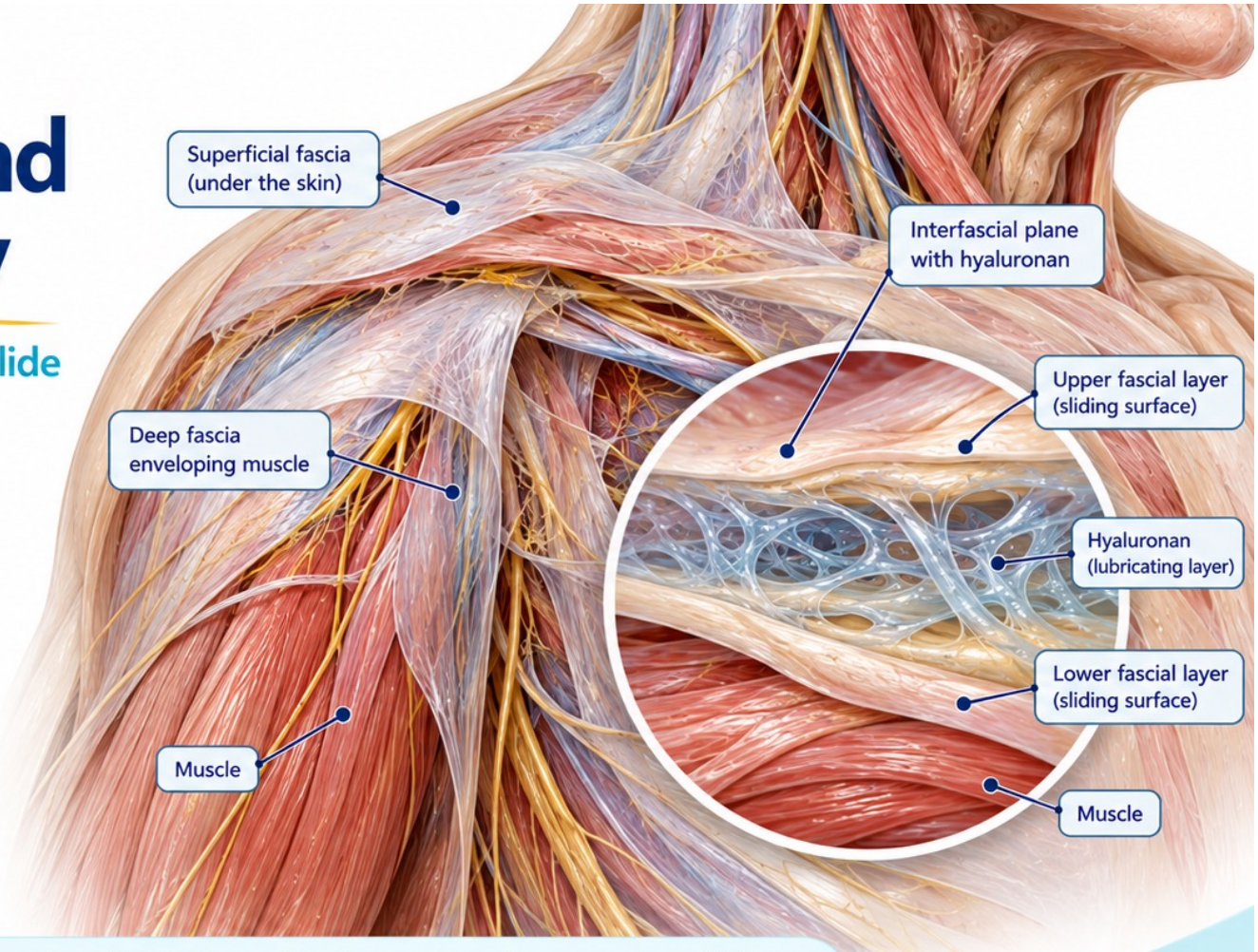
- Movement and function rely on proximal stability and tissue mobility
- Local tissue restrictions can influence distal movement and coordination

A WAVECREST CLINICAL PERSPECTIVE

Fascial Glide and Tissue Mobility

Movement Depends on Healthy Glide

- Fascial layers glide over one another to allow efficient movement, force transmission, and tissue adaptation.
- Hyaluronan (hyaluronic acid) creates a hydrated, lubricating environment between fascial layers.
- Healthy glide supports circulation, nervous system input, and the ability of tissues to lengthen and shorten.
- Restriction, dehydration, or altered mechanical loading can reduce glide, increase friction, and impact movement, pain perception, and function.



Clinical Pearl | When fascial glide is restricted, movement becomes less efficient and the entire system compensates.

FASCIAL SYSTEM • CLINICAL FOUNDATIONS

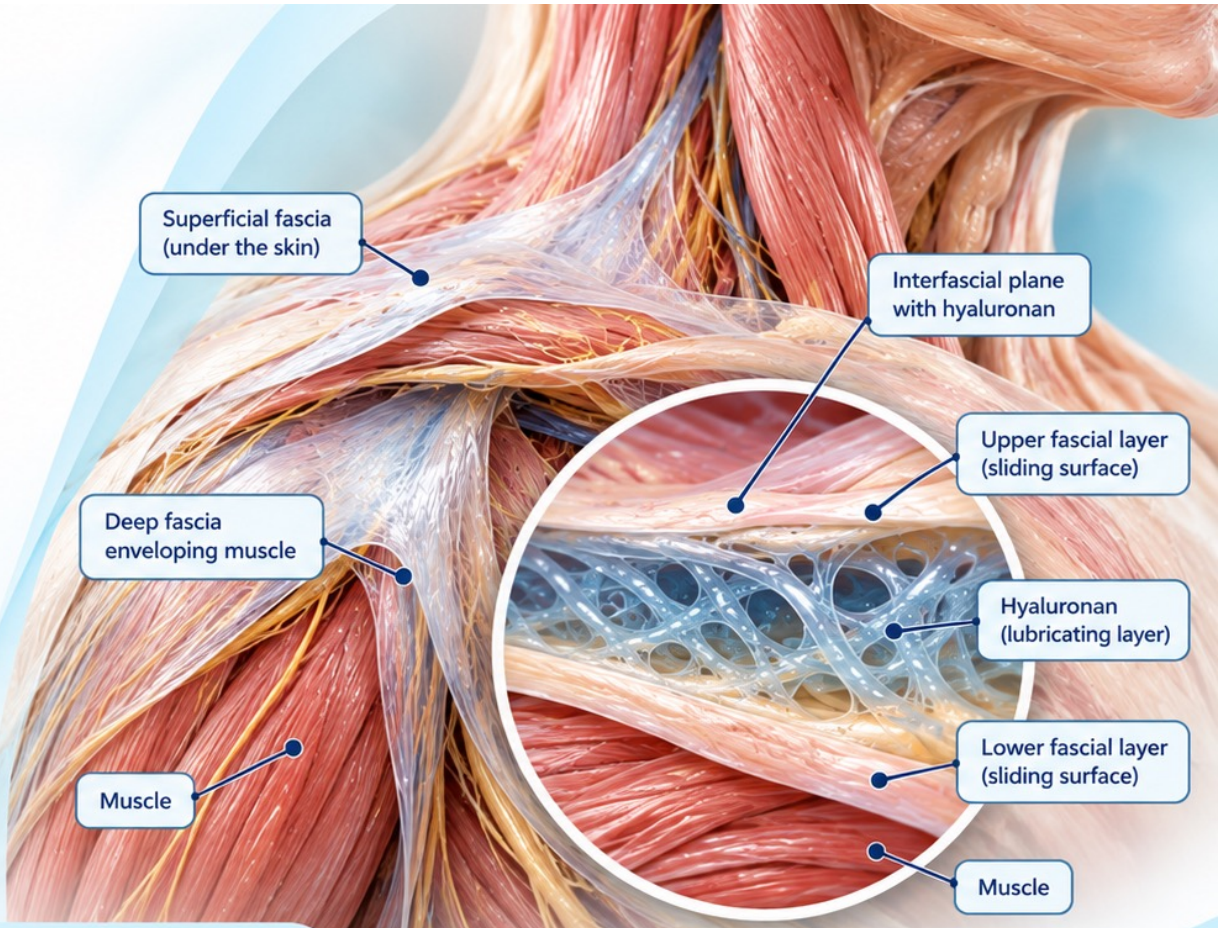
Why hyaluronan matters to glide

A hydrated interface between fascial layers

Hyaluronan is a component of the extracellular matrix associated with lubrication and tissue sliding.

Changes in its concentration and organization may influence relative movement between tissue layers.

Palpation cannot establish hyaluronan status or distinguish densification from fibrosis.

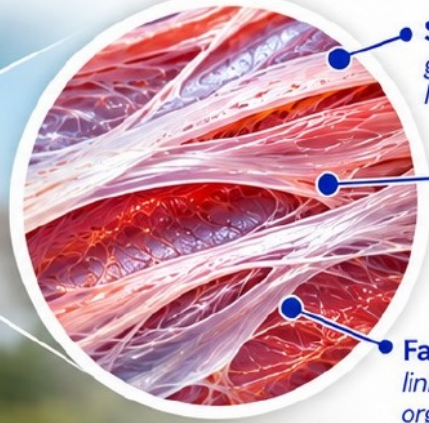


CLINICAL PEARL
Explore glide, then reassess movement and occupation.

Fascia Glides, Transmits Force, and Contributes to Movement

Mobility at Multiple Levels Supports Efficient, Functional Movement





- **Superficial fascia** *glides between layers*
- **Deep fascia** *transmits force and contributes to movement*
- **Fascial connections** *link muscles, organs, and systems*



Three-Dimensional Continuity

- Fascia forms a continuous, three-dimensional network throughout the body.
- Movement in one area influences neighboring and distant regions.



Responds to Loading and Movement

- Fascia adapts to the forces of gravity, movement, and daily activity.
- Gliding, elasticity, and viscoelastic properties allow both stability and mobility.



Implications for Function

- Fascial mobility supports alignment, balance, and efficient movement patterns.
- Restrictions in tissue glide can contribute to altered movement strategies, compensations, and increased effort.



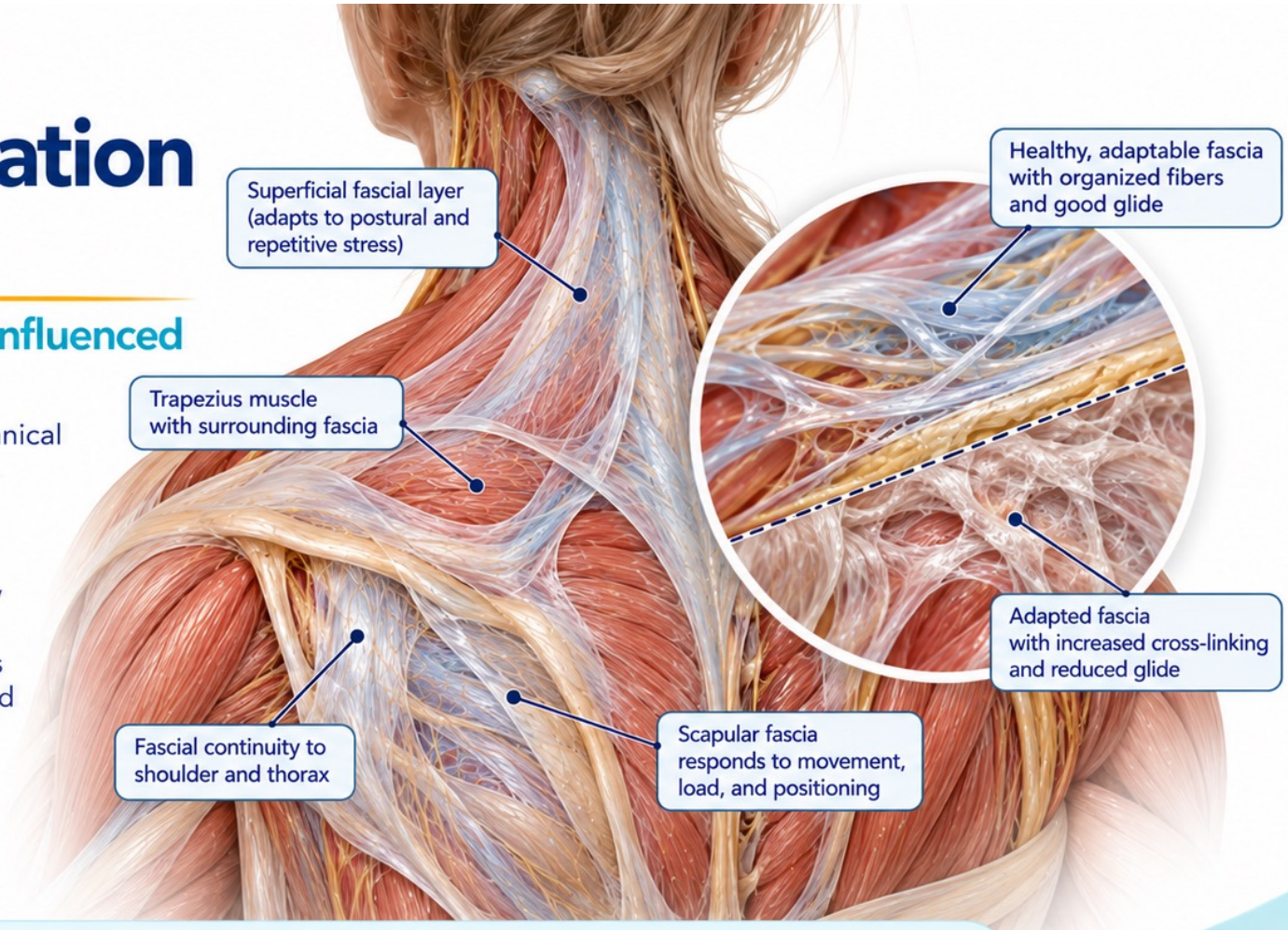
Clinical Pearl: | When tissue glide is limited, consider how movement strategies and functional demands may be affected.

A WAVECREST CLINICAL PERSPECTIVE

Tissue Adaptation of Fascia

Responsive, Dynamic, and Influenced by Experience

- Fascia continuously adapts to mechanical forces, posture, movement patterns, injury, inflammation, and stress.
- Prolonged or repetitive loading can increase cross-linking, thicken tissue, and reduce glide.
- Lack of movement or altered postures can lead to densification and decreased tissue elasticity.
- Adaptation is reversible. Appropriate movement, manual input, hydration, and variability of movement can improve tissue quality and function.



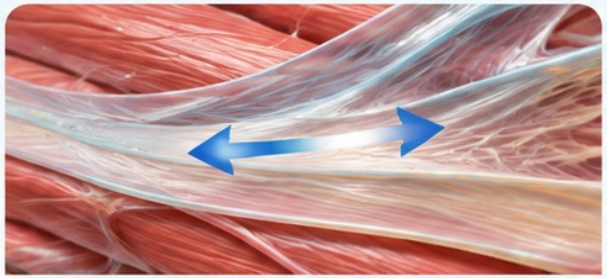
Clinical Pearl | Fascia adapts to what we repeatedly ask of it—both for better and for worse. **Change the input and the tissue can change.**

FASCIAL SYSTEM • CLINICAL FOUNDATIONS

What do clinicians mean by “restriction”?

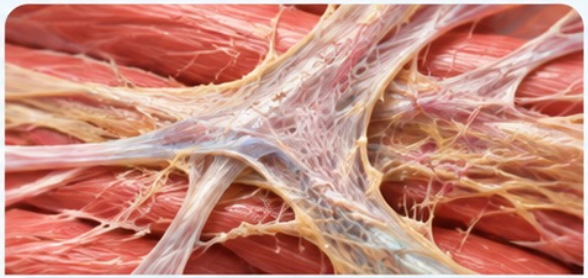
These words are related—but not interchangeable.

DIFFERENT OBSERVATIONS • DIFFERENT MECHANISMS



Reduced relative glide

Layers move less freely relative to one another.



Altered tissue organization

Changes may include increased density, scarring, or fibrosis.

Palpation alone cannot identify a histological mechanism.

CLINICAL TRANSLATION

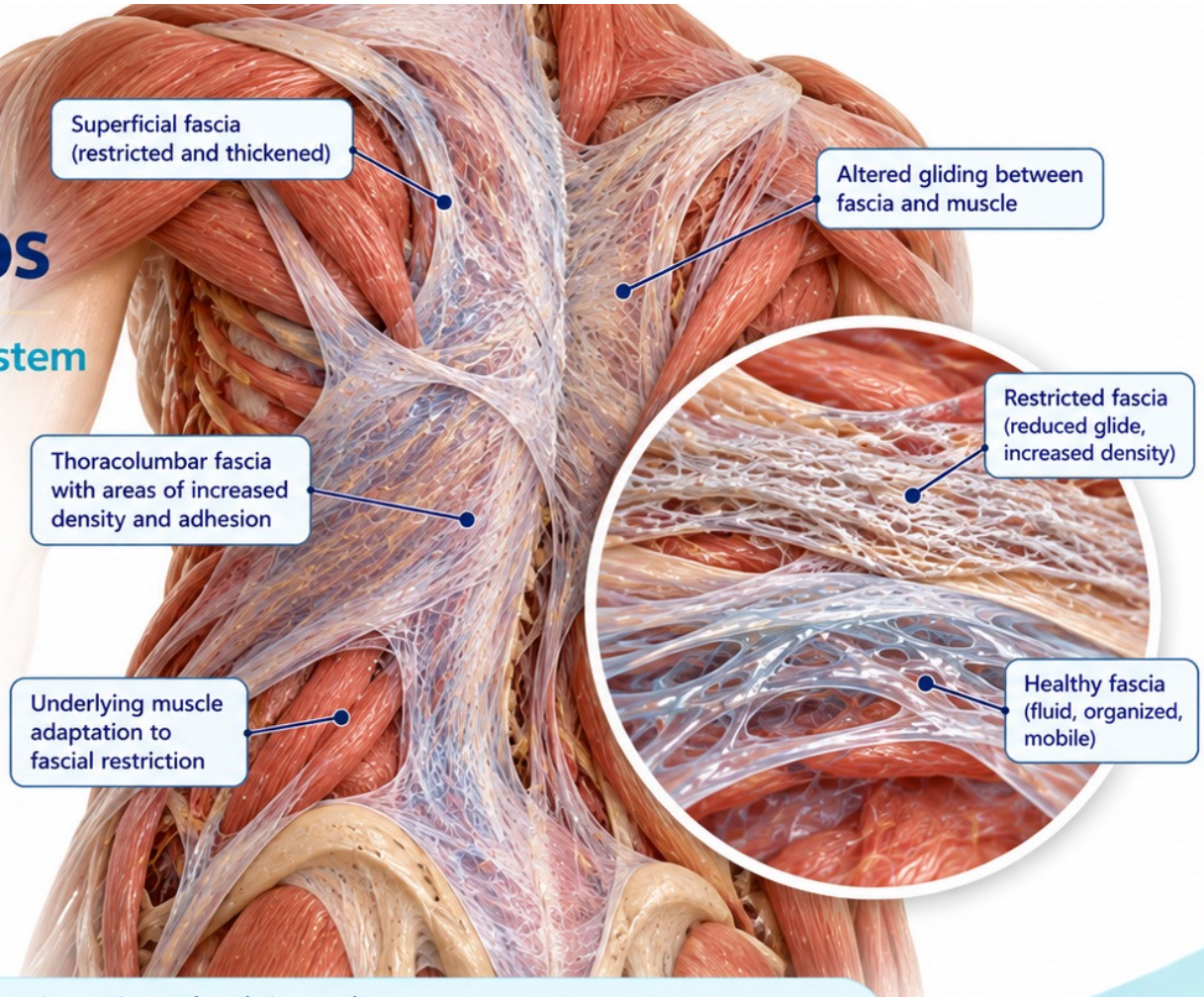
Reduced glide, stiffness, scar, densification and fibrosis are not synonyms.

A WAVECREST CLINICAL PERSPECTIVE

How Fascial Restriction Develops

Altered Glide Changes the Whole System

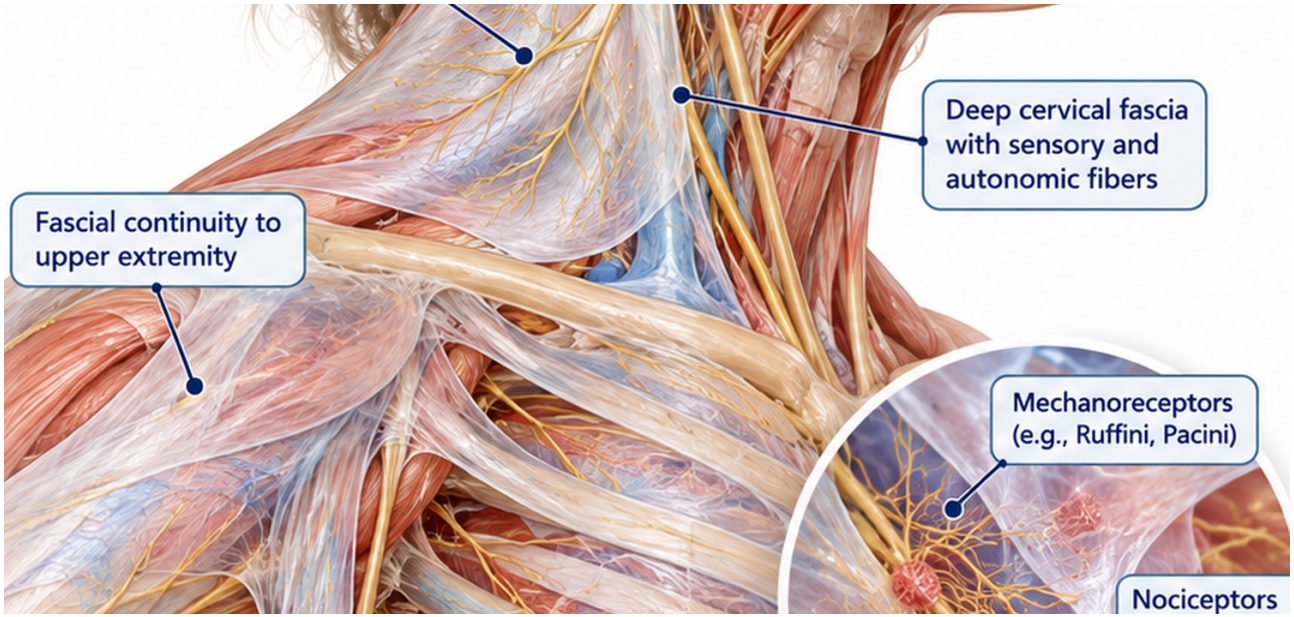
- Injury, inflammation, surgery, immobilization, postural patterns, or repeated stress can alter the quality of the fascial matrix.
- Changes in hydration, collagen organization, and cross-linking reduce tissue glide and create areas of increased density and adhesion.
- Restriction does not occur in isolation—it influences adjacent tissues, force transmission, and neural input throughout the kinetic chain.
- Even localized restriction can contribute to changes in movement, alignment, respiratory mobility, and regulation.



Clinical Pearl | Fascial restriction is not just a local tissue change—it influences movement, regulation, and participation **across the whole body.**

Fascia is innervated

This is one of the strongest reasons it matters to OT.



CLINICAL TRANSLATION

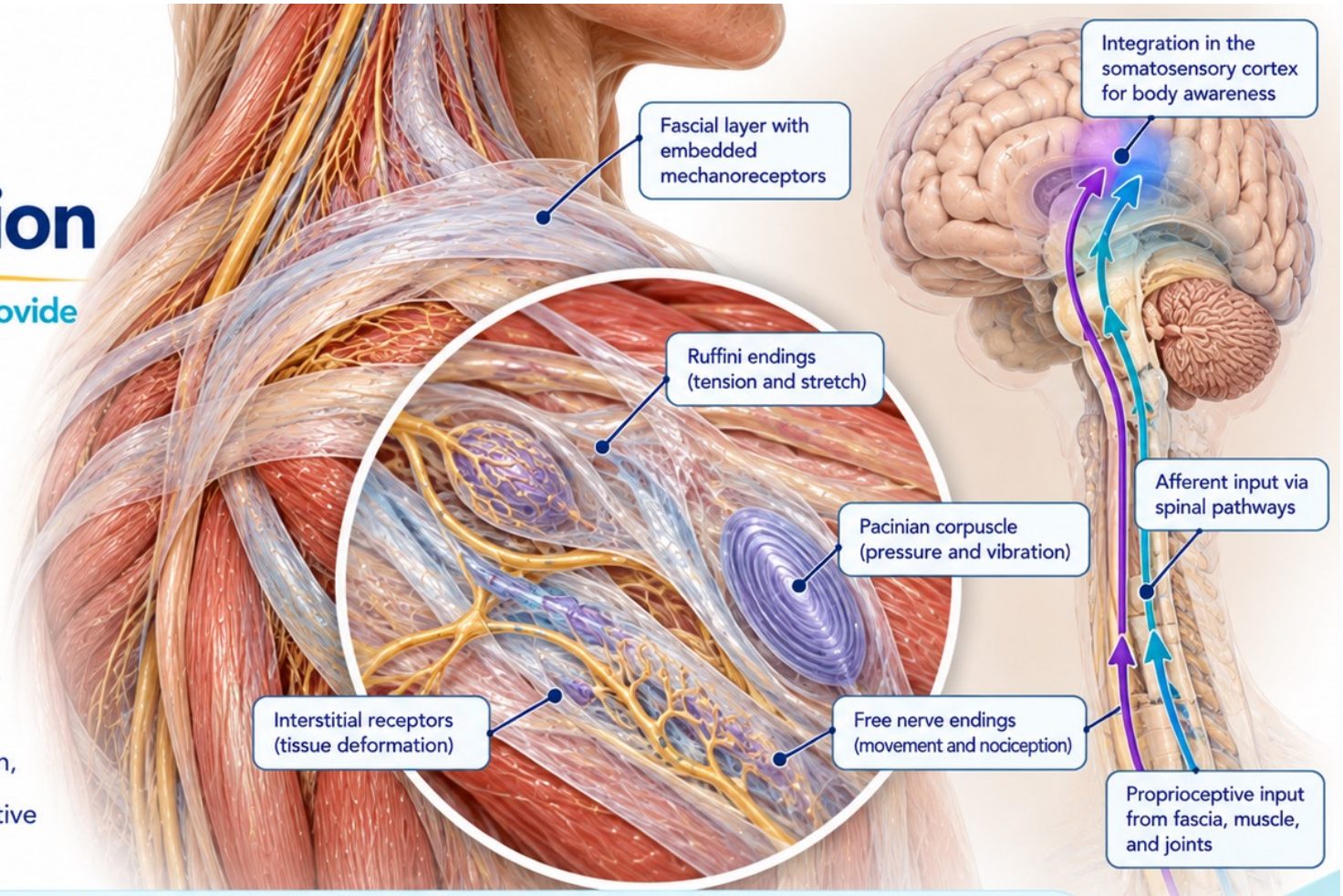
Sensory signaling informs clinical hypotheses; function remains the endpoint.

A WAVECREST CLINICAL PERSPECTIVE

Fascia and Proprioception

Fascial Mechanoreceptors Provide Continuous Information

- Fascia contains numerous mechanoreceptors that detect stretch, pressure, shear, and movement.
- These receptors provide continuous input about the position and motion of body segments.
- Fascial information integrates with muscle, joint, and cutaneous input to support body awareness, postural control, and motor planning.
- Changes in tissue quality, hydration, or mobility can influence the accuracy and clarity of proprioceptive information.



Clinical Pearl

Fascial mechanoreceptors give the nervous system a constant sense of where we are and how we are moving. When the mechanical environment changes, the sensory information can change too.

A WAVECREST CLINICAL PERSPECTIVE

Fascia + Nociception

Pain is not simply “tight fascia.”

TISSUE CAN BE A SENSORY SOURCE

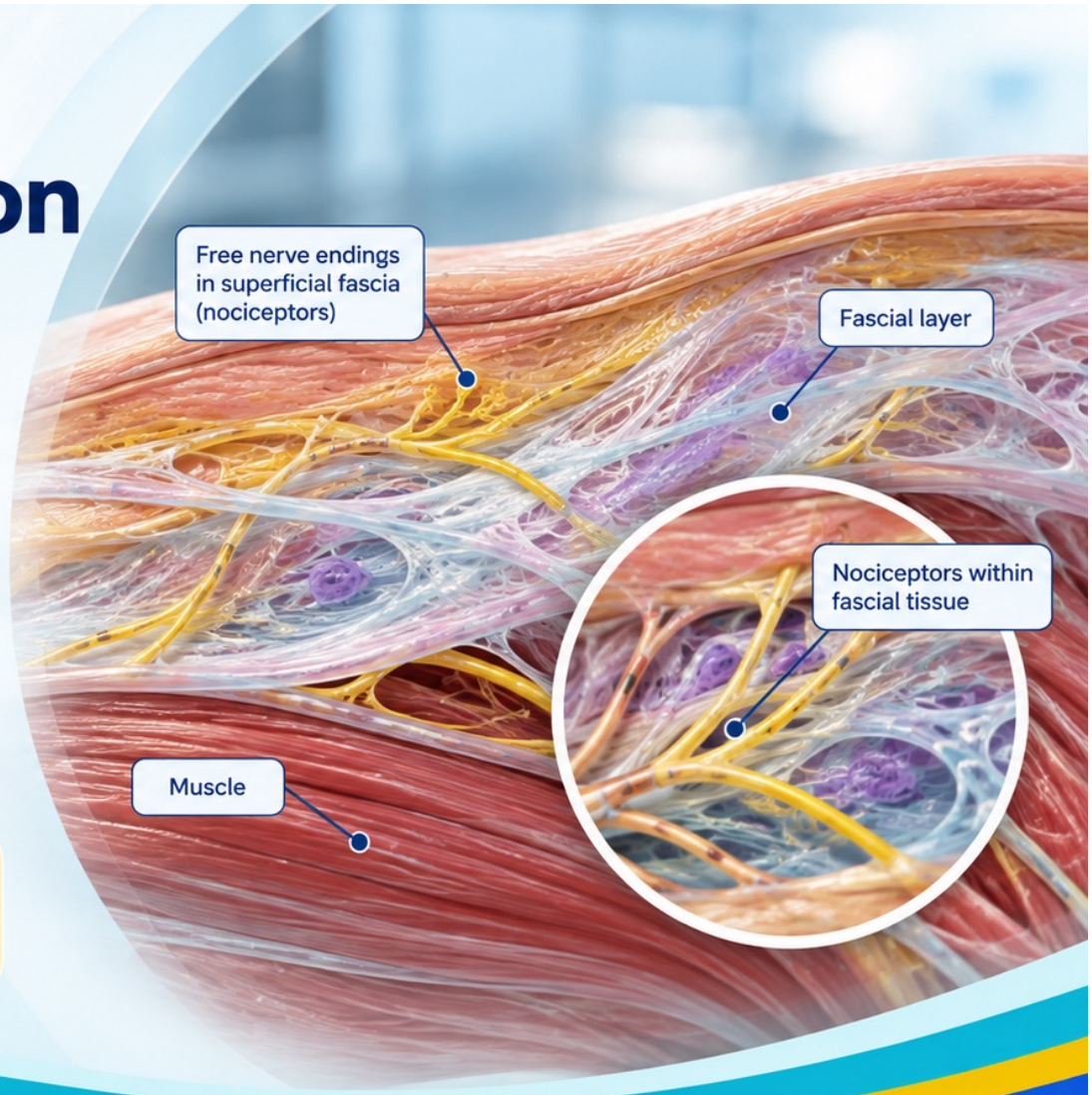
Innervated fascial tissues can contribute to nociceptive input.

PAIN IS MULTIDIMENSIONAL

Peripheral input is interpreted within nervous-system, cognitive, emotional, and contextual processes.

CLINICAL PEARL

Treat the person and the function—not a palpated “knot” as the entire explanation for pain.



A WAVECREST CLINICAL PERSPECTIVE

Fascia + Interoception

Sensing and interpreting internal bodily state

WHAT IS INTEROCEPTION?

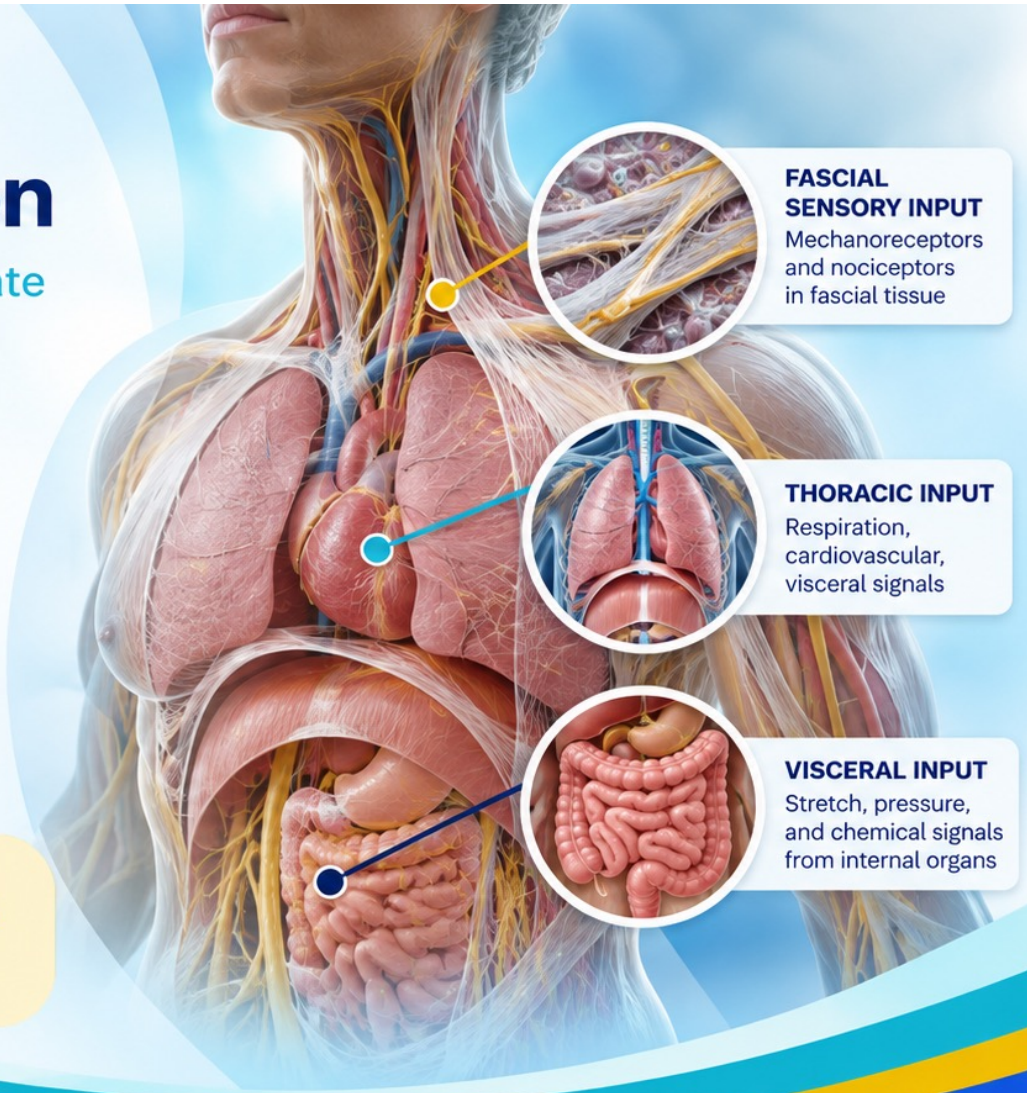
The nervous system senses and interprets signals related to internal bodily state.

WHERE FASCIA MAY FIT

Fascial sensory input may contribute to sensations such as tension, effort, discomfort, and movement.

CLINICAL PEARL

Explore the child's or adult's body-state experience and occupational context before assigning a tissue explanation.



Lab 1

From Understanding Fascia to *Feeling* Tissue Movement

What are we actually assessing when we place our hands on tissue?



What Are We Feeling *Beneath Our Hands?*

Our hands encounter multiple layers of tissue, not an isolated fascial structure.



Skin
Epidermis and dermis

Subcutaneous tissue
Fat, blood vessels, nerves, and lymphatics

Superficial fascia
Loose connective tissue with greater mobility

Deep fascia
Denser connective tissue surrounding and linking muscles

Muscle
Contractile tissue

1. DEPTH

Which tissues are beneath our hands at different depths?

2. MOBILITY

Which layers may move relative to one another?

3. INTERPRETATION

Can we distinguish the contribution of individual layers through palpation alone?

Clinical Pearl:

Palpation provides valuable information about tissue quality and mobility, but we are always feeling a combination of tissues—not a single structure.

Lab 1

Listening Through *Our Hands*

Exploring Fascial Mobility and Tissue Response

Clinical Pearl: Our hands provide valuable information, but what we feel is one piece of the clinical picture.

1 EXPLORE
Feel Superficial Tissue Movement



- Place your fingertips lightly on the forearm (dorsal and/or volar surface).
- Gently move the skin and superficial tissue over underlying structures.
- Notice the direction, amount, and quality of movement.

2 COMPARE
Observe the Effect of Movement



- Maintain your contact as your partner gently moves their wrist and fingers (flexion, extension, finger flexion/extension).
- Notice changes in tissue glide, tension, and the direction of movement.
- Observe how movement in one area influences nearby tissues.

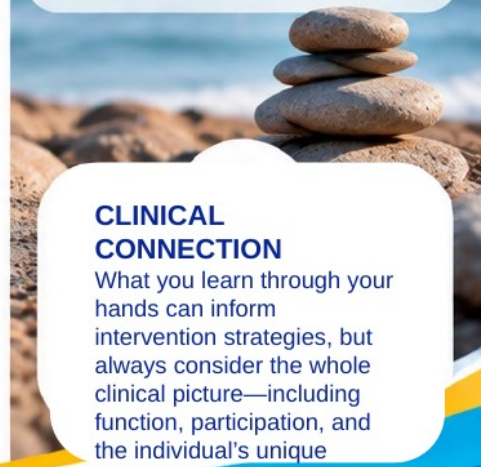
3 INTERPRET
What Can We Conclude?



- What do you feel and observe?
- How does the tissue respond to movement?
- What might contribute to restricted or altered mobility?
- What additional information would you need to determine functional impact?

PRACTICE GUIDELINES

- Use light, comfortable pressure.
- Work with a partner.
- Communicate continuously.
- Stay within a pain-free range.
- Compare both sides if appropriate.
- Notice, don't force.



CLINICAL CONNECTION

What you learn through your hands can inform intervention strategies, but always consider the whole clinical picture—including function, participation, and the individual's unique context.

From Palpation to *Clinical Reasoning*

What we feel is information. What we conclude is a hypothesis. What changes in function is the test.

1 FEEL
Gather Information



- Notice tissue quality, temperature, tension, and movement.
- Observe superficial tissue excursion over underlying structures.
- Attend to what changes with active movement.
- Stay within a comfortable, pain-free range.

What do you feel and observe?

2 HYPOTHESIZE
Make Meaning



- Consider which tissue layers may be contributing to the response.
- Think about regional and global fascial connections.
- Integrate what you know about movement patterns and function.
- Keep your conclusion open—this is a hypothesis, not a diagnosis.

What might be contributing to what you are feeling and observing?

3 REASSESS
Link to Function



- Does the tissue respond differently after movement or intervention?
- What changes do you observe in movement quality or ease?
- How might this influence functional tasks or participation?
- What additional information do you need?

What changed, and what might this mean for function and participation?

Key Takeaway:

Palpation provides valuable information about tissue quality and mobility, but it does not identify a single tissue as the cause of a functional limitation. Our conclusions are always a hypothesis that must be tested through movement and function.

CLINICAL CONNECTION

The value of palpation is not in finding a diagnosis, but in gathering information that supports your clinical reasoning, guides intervention, and helps you determine what changes in the individual's unique context.

A WAVECREST CLINICAL PERSPECTIVE

Oobleck: a Metaphor for Therapist Force

The Same Material Responds Differently to How We Interact

- Oobleck (cornstarch and water) is a non-Newtonian fluid. It can behave more like a solid with rapid, firm force and more like a liquid with slow, light contact.
- This demonstration is a metaphor for therapist force, not a model of fascial biomechanics.
- It highlights our tendency to push and invites us to experiment with a more responsive, adaptive approach.

FAST / FIRM
The material resists.



- Rapid, firm force
- Material feels solid and resists
- Can create splatter and resistance

SLOW / LIGHT / WAIT
The material yields differently.



- Slow, light contact
- Material flows and yields
- Encourages exploration and awareness

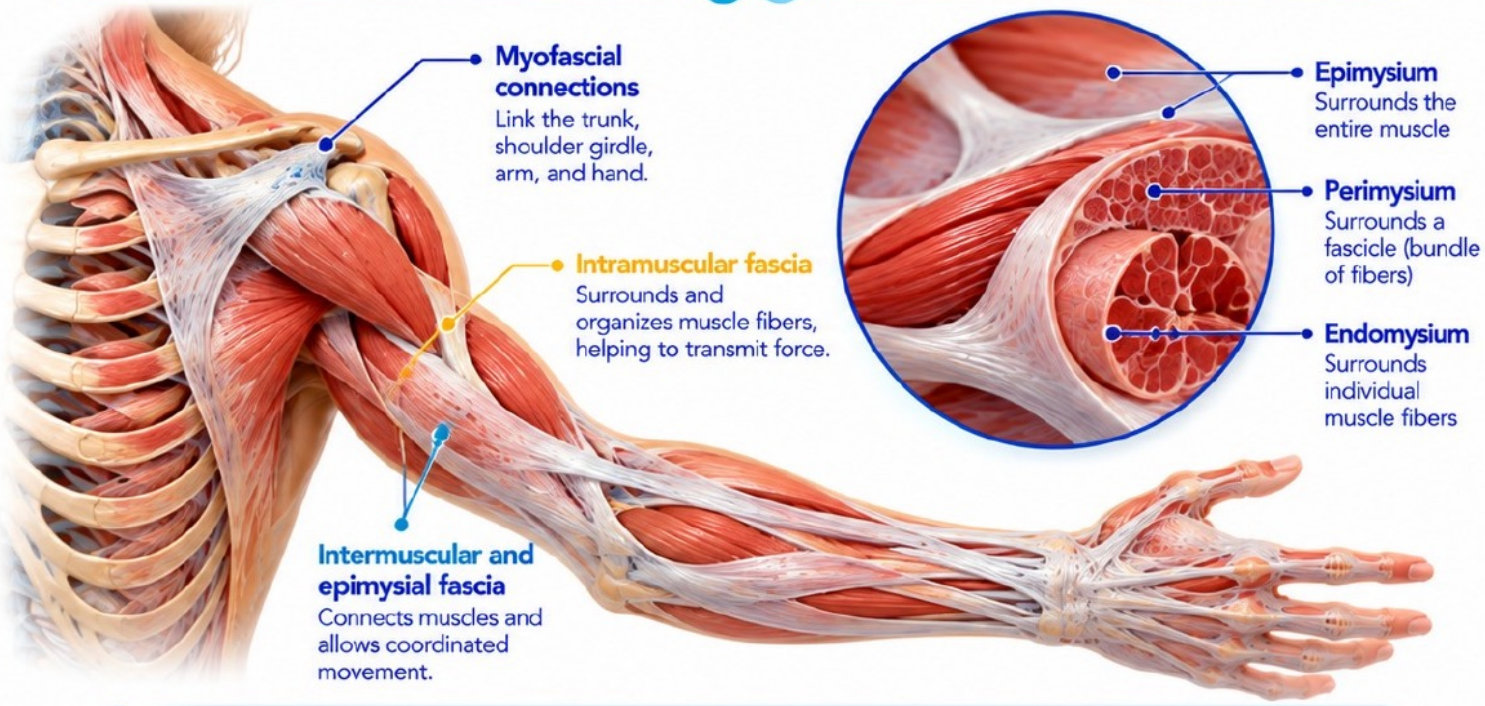


Clinical Pearl

This is a metaphor for therapist force, not a model of fascial tissue behavior.
Notice your own tendency to push and explore what happens when you slow down, lighten your contact, and wait.

Fascia and *Force Transmission*

Muscle generates active force. Connective tissues within and surrounding muscles help transmit, distribute, and coordinate that force.



Key Points

1. **Connective tissues distribute force beyond the muscle.**
   Connective tissues transmit force within muscles and can contribute to force transfer between adjacent structures.
2. **Tissue mobility influences movement quality.**
   The ability of fascial layers to glide, slide, and recoil supports efficient, coordinated movement.
3. **Changes at one region can influence the entire chain.**
   Altered mobility, tone, or load in a single area can affect movement patterns proximally and distally.

Clinical Takeaway:

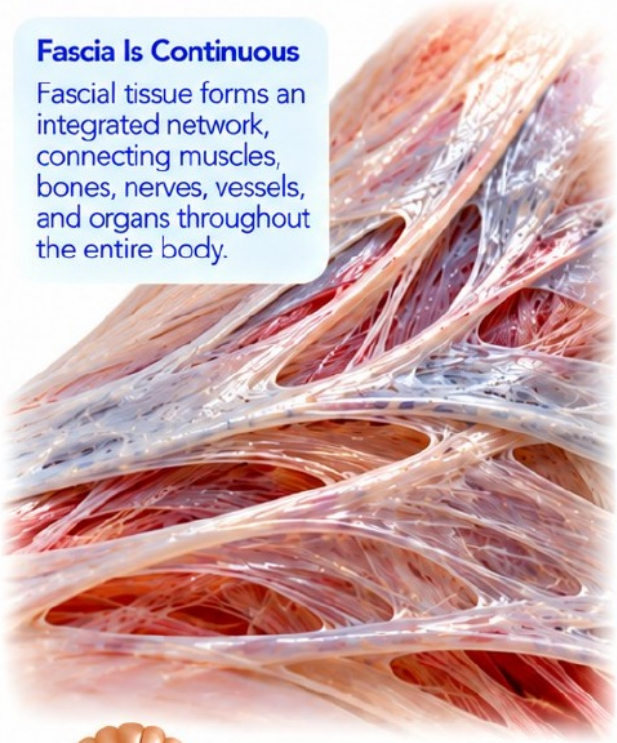
Fascia is not a passive wrapping. It is an active, dynamic system
Fascia is more than a passive wrapping. Its mechanical properties contribute to force transmission and the movement options available during functional activity.

Myofascial Continuity — *Connecting Regions Across the Body*

Fascia forms an integrated, three-dimensional network that connects and influences movement throughout the body.

Fascia Is Continuous

Fascial tissue forms an integrated network, connecting muscles, bones, nerves, vessels, and organs throughout the entire body.



Examples of Myofascial Continuity





Superficial Back Line
Illustrates continuity from the plantar fascia to the calf, hamstrings, sacrum, spine, and head.



Superficial Front Line
Illustrates continuity from the feet, through the legs, pelvis, abdomen, chest, neck, and head.

Implications for Movement and Function

Movement Coordination
Fascial continuity contributes to coordinated movement across multiple body regions.

Posture and Alignment
Tension and mobility in one region can influence alignment and movement strategies elsewhere in the body.

Force Transmission
Connective tissues can transmit forces within and between anatomical regions, but the extent and functional significance of long-distance transmission vary.

Sensory and Interoceptive Input
Fascia contains sensory receptors that provide continuous information about the body and its environment.

Whole-Body Perspective
Assessing and supporting fascial mobility can inform movement, regulation, and participation in daily life.

Clinical Pearl: Fascial continuity encourages us to look beyond the site of limitation. A distant tissue relationship may be relevant, but its contribution must be investigated through movement assessment and functional reassessment.

Myofascial Continuity — *What Has Research Established?*

Research supports anatomical connections and demonstrates that forces can be transmitted through fascial tissues, while the extent and functional significance vary.

1 Anatomical Continuity

Supported by anatomical investigation

- Anatomical studies (dissection, imaging, histology) demonstrate connective tissue continuities between muscles, fascia, and related structures across regions.
- These continuities provide a structural basis for potential relationships across the body.
- Support varies among proposed myofascial lines (strong for some lines, partial for others).

Key Reference

Wilke, J., Krause, F., Vogt, L., & Banzer, W. (2016). What is evidence-based about myofascial chains: A systematic review. *Archives of Physical Medicine and Rehabilitation*, 97(3), 454–461. https://doi.org/10.1016/j.apmr.2015.07.023

2 Mechanical Force Transmission

Supported by biomechanical research

- Fascia can transmit and distribute forces within and between anatomical regions.
- Evidence supports short- to regional-distance force transmission through interconnected fascial tissues.
- The extent, direction, and magnitude of force transmission vary depending on tissue type, loading conditions, and individual factors.

Key Reference

Krause, F., Wilke, J., Vogt, L., & Banzer, W. (2016). Intermuscular force transmission along myofascial chains: A systematic review. *Journal of Anatomy*, 228(6), 910–918. https://doi.org/10.1111/joa.12464

Clinical Pearl: Anatomical continuity and force transmission provide a foundation for clinical reasoning, but they do not prove that one region is causing a limitation elsewhere. The relevance must be determined through individual assessment and functional reassessment.

FASCIAL SYSTEM • CLINICAL FOUNDATIONS

From Evidence to Clinical Reasoning

Translate anatomical knowledge into questions you can test during occupational performance.

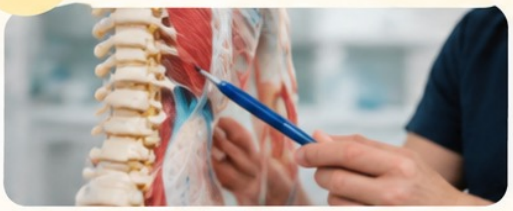
1 OBSERVE



Describe movement, tissue behavior, effort, sensation and task demands without assuming cause.

What do I actually see?

2 HYPOTHESIZE



Propose a plausible relationship between available mobility and functional performance.

What could be contributing?

3 REASSESS



Change one variable, repeat the meaningful task and consider competing explanations.

Did participation change?

CLINICAL PEARL
A fascial connection is a hypothesis—not a diagnosis.

Anatomy Trains — *A Map for Exploring Myofascial Relationships*

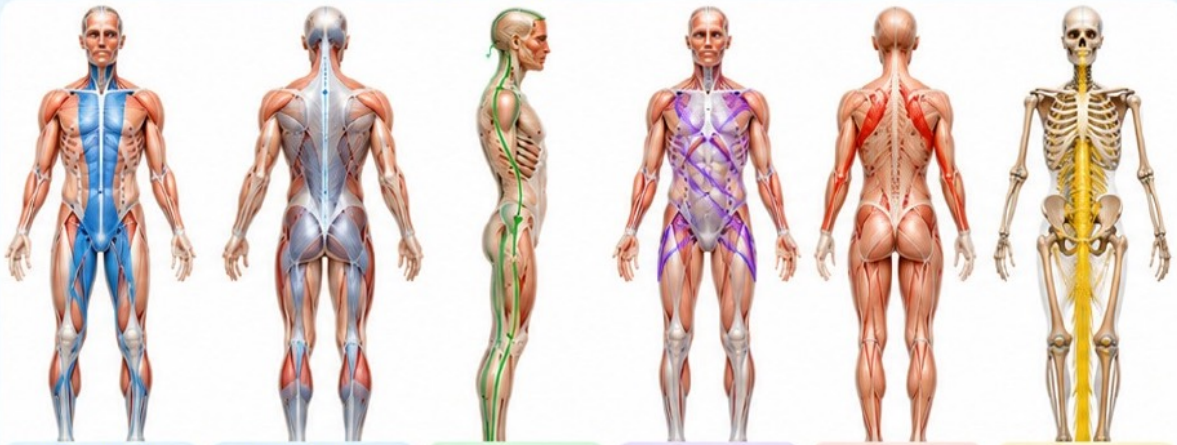
Myofascial lines describe anatomical continuities that connect regions across the body and provide a framework for clinical reasoning.

About Anatomy Trains

Anatomy Trains, developed by Thomas W. Myers, illustrates **myofascial** continuities that connect muscles, fascia, and other structures across the body.

These lines provide a useful model for visualizing how tissue in one region may influence alignment, movement strategies, and available range of motion in another region.

Major Myofascial Lines



Superficial Front Line
From the feet, through the legs, pelvis, abdomen, chest, neck, to the head.

Superficial Back Line
From the plantar fascia, through the calf, hamstrings, sacrum, spine, neck, to the head.

Lateral Line
From the foot, up the lateral leg, hip, trunk, ribs, shoulder, neck, to the head.

Spiral Line
Connects opposite sides of the body from the feet, through the trunk, to the shoulder and neck.

Arm Lines
Front and back functional lines that connect the upper extremity to the trunk.

Deep Front Line
From the feet, through the deep core, pelvic floor, diaphragm, and cervical fascia, to the skull.

Key Points for Clinical Use

1. **Anatomical Continuity**
   These lines show physical connections through fascia and related structures.
2. **Clinical Hypotheses**
   Fascial lines give us relationships to consider—not proof that one region is causing a limitation elsewhere.
3. **Individual Variation**
   Fascial organization, tension, and glide can vary between individuals and change over time with growth, injury, and activity.
4. **Use as a Guide**
   These models help inform observation, assessment, and clinical reasoning within the context of the whole person.

Clinical Pearl:

Anatomy Trains provides a useful map for exploring myofascial relationships. A connection between regions suggests a possible contributing factor, but its relevance must be determined through movement assessment, clinical reasoning, and functional reassessment.

Fascia, Movement, and *Upper-Extremity Function*

The upper extremity functions as an integrated system—connected by fascial continuity.

1 PROXIMAL STABILITY
Ribs, thorax, scapula, and spine provide a stable yet mobile base for upper-extremity function.

2 FASCIAL CONTINUITY
Myofascial connections link the trunk, shoulder girdle, arm, and hand, allowing force transmission and coordinated movement.

3 DYNAMIC INTERACTION
Movement at one region influences tension, alignment, and mobility throughout the entire chain.



Proximal Changes Influence Distal Function



Thoracic expansion and rib mobility
Influences scapular position and shoulder mechanics.



Scapular alignment and mobility
Influences humeral position, arm movement, and muscle activation.



Hand function
Depends on a stable, mobile, and well-coordinated proximal base for optimal movement, control, and endurance.



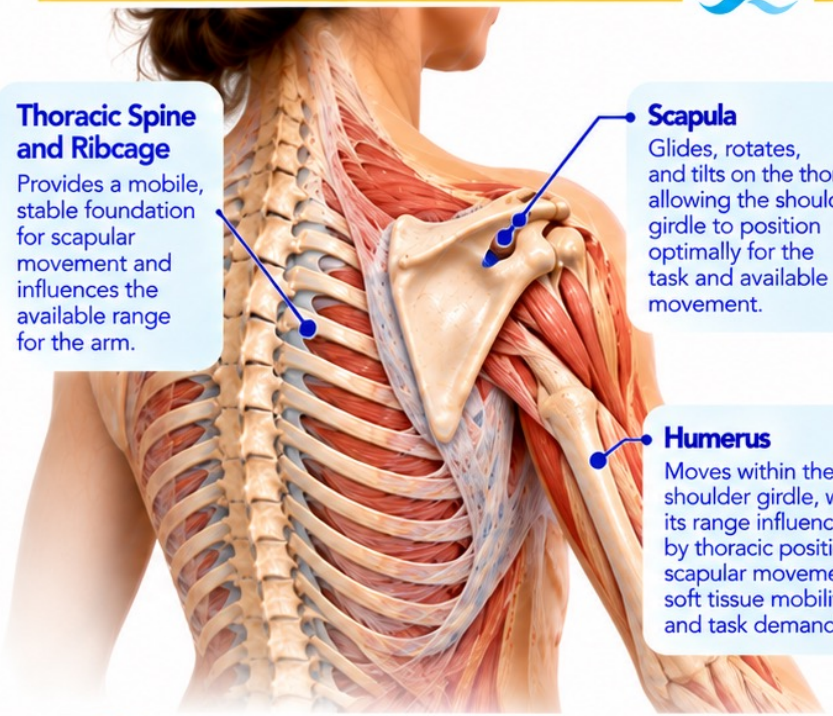
Clinical Takeaway:

We don't improve hand function by working at the hand alone. Optimal upper-extremity function depends on the integrated mobility, stability, and coordination of the entire system.

Addressing fascial mobility and coordination across the chain helps create the conditions for more efficient, functional movement.

The Thorax–Scapula Connection — *Creating Options for Reach*

Thoracic mobility, scapular movement, and humeral motion work together to create efficient, functional reach.



Thoracic Spine and Ribcage
Provides a mobile, stable foundation for scapular movement and influences the available range for the arm.

Scapula
Glides, rotates, and tilts on the thorax, allowing the shoulder girdle to position optimally for the task and available movement.

Humerus
Moves within the shoulder girdle, with its range influenced by thoracic position, scapular movement, soft tissue mobility, and task demands.

Components of an Efficient Reach

1 Thoracic Extension and Rotation
Allows the ribcage to lift and rotate, creating a stable yet mobile base.



2 Scapular Upward Rotation and Posterior Tilt
Positions the glenoid for optimal arm movement and maintains scapular stability on the thorax.



3 Humeral Flexion and External Rotation
Occurs within a stable and mobile shoulder girdle, allowing the arm to move efficiently toward the target.



Functional Example: Reaching Overhead



1. Prepare
Thorax extends and rotates.

2. Position
Scapula upwardly rotates and posteriorly tilts.

3. Reach
Humerus flexes and externally rotates within a stable, mobile shoulder girdle.

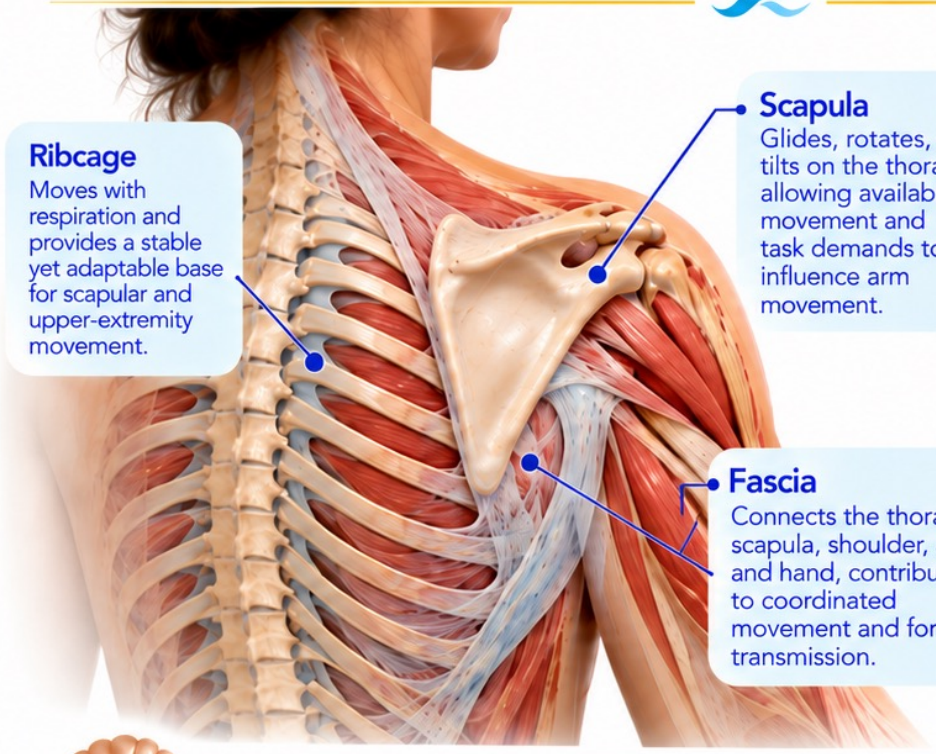


Clinical Pearl:

Efficient reach requires coordinated movement of the thorax, scapula, and humerus. Limited reach does not automatically mean shoulder weakness or a fascial restriction—it may reflect multiple interacting factors, and our job is to determine which are relevant for that individual.

Thorax, Ribcage, and Scapula — *The Foundation for Upper-Extremity Function*

Upper-extremity function is influenced by the integrated mobility, stability, and coordination of the thorax, ribcage, and scapula.



Ribcage
Moves with respiration and provides a stable yet adaptable base for scapular and upper-extremity movement.

Scapula
Glides, rotates, and tilts on the thorax, allowing available movement and task demands to influence arm movement.

Fascia
Connects the thorax, scapula, shoulder, arm, and hand, contributing to coordinated movement and force transmission.

Integrated Movement

1 Thoracic Mobility and Breathing
Ribcage movement with breathing influences scapular position and shoulder mechanics.

2 Scapular Alignment and Mobility
Dependent on thoracic position, fascial connections, and coordinated muscle activation.

3 Proximal Stability for Distal Function
A stable yet mobile base allows efficient, graded movement and control in the arm, hand, and fingers.

Examples in Functional Activities



Reaching
Requires coordinated thoracic, scapular, and ribcage movement for available movement and task demands.



Writing
Relies on proximal stability and scapular mobility for refined hand function and endurance.



Bilateral Play
Involves dynamic stability, weight shifting, and coordinated movement across the entire chain.

Clinical Pearl: Upper-extremity function is influenced by the integrated mobility, stability, and coordination of the thorax, ribcage, and scapula—supported by fascial continuity and efficient muscle activation.

HANDS-ON EXPERIENCE

Start with the occupation

Choose the least-easy movement and keep it as your outcome.

HAIR CARE

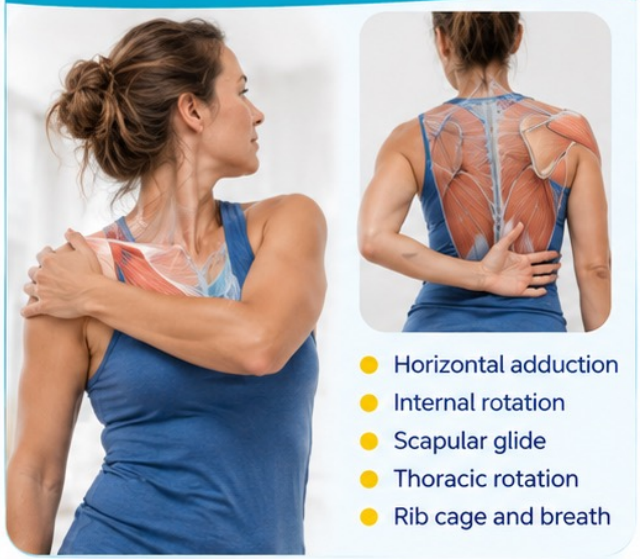
Hand to top/back of head



- Shoulder flexion and external rotation
- Scapular upward rotation
- Thoracic extension
- Head/neck alignment

DRESSING / BATHING

Reach across body / behind back



- Horizontal adduction
- Internal rotation
- Scapular glide
- Thoracic rotation
- Rib cage and breath

REACH

Overhead to imaginary shelf



- Shoulder flexion
- Scapular upward rotation
- Thoracic extension
- Rib cage expansion
- Head/neck alignment
- Breath integration

Observe:

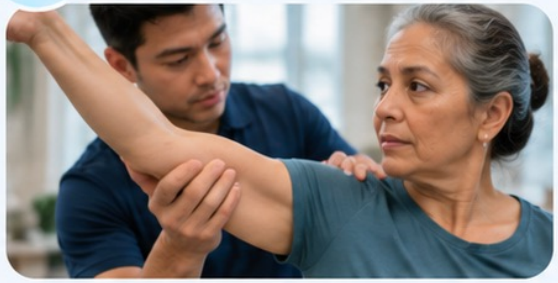
- Shoulder elevation
- Scapular motion
- Thoracic compensation
- Head position
- Breath holding
- Overall alignment
- Movement quality
- Effort

SECTION 4

Fascia + Muscle

Why “weakness” may not be the whole story.

1 MUSCLE EXCURSION



Can the muscle and surrounding tissues lengthen/shorten and slide sufficiently for the task?

2 FORCE TRANSMISSION



Is generated force being distributed through a mechanically efficient relationship?

3 SELECTIVE CONTROL



Does the person have enough available movement to differentiate one segment from another?

CLINICAL QUESTION

Is the muscle weak—or is something limiting how effectively the system can use it?

A WAVECREST CLINICAL PERSPECTIVE

The compensation may be the solution the system found.

A fascial restriction can be a limitation, a consequence of repeated strategy—or part of a strategy that is currently helping the person function.



HANDS-ON EXPERIENCE

Fascial Continuity & the Shoulder Girdle

If I alter available mobility across the chest/shoulder girdle, does functional reach change?

FASCIAL FOCUS

- Continuity
- Chest/axilla/ scapula
- Glide
- Force relationships



FASCIAL LEARNING → CLINICAL HYPOTHESIS → REASSESS FUNCTION

HANDS-ON EXPERIENCE

Start with the occupation

Choose the least-easy movement and keep it as your outcome.

1 HAIR CARE



hand to top/back of head

2 DRESSING / BATHING



across body / behind back

3 REACH



overhead to imaginary shelf

OBSERVE:

- shoulder elevation
- scapular motion
- thoracic compensation
- head position
- breath holding
- effort

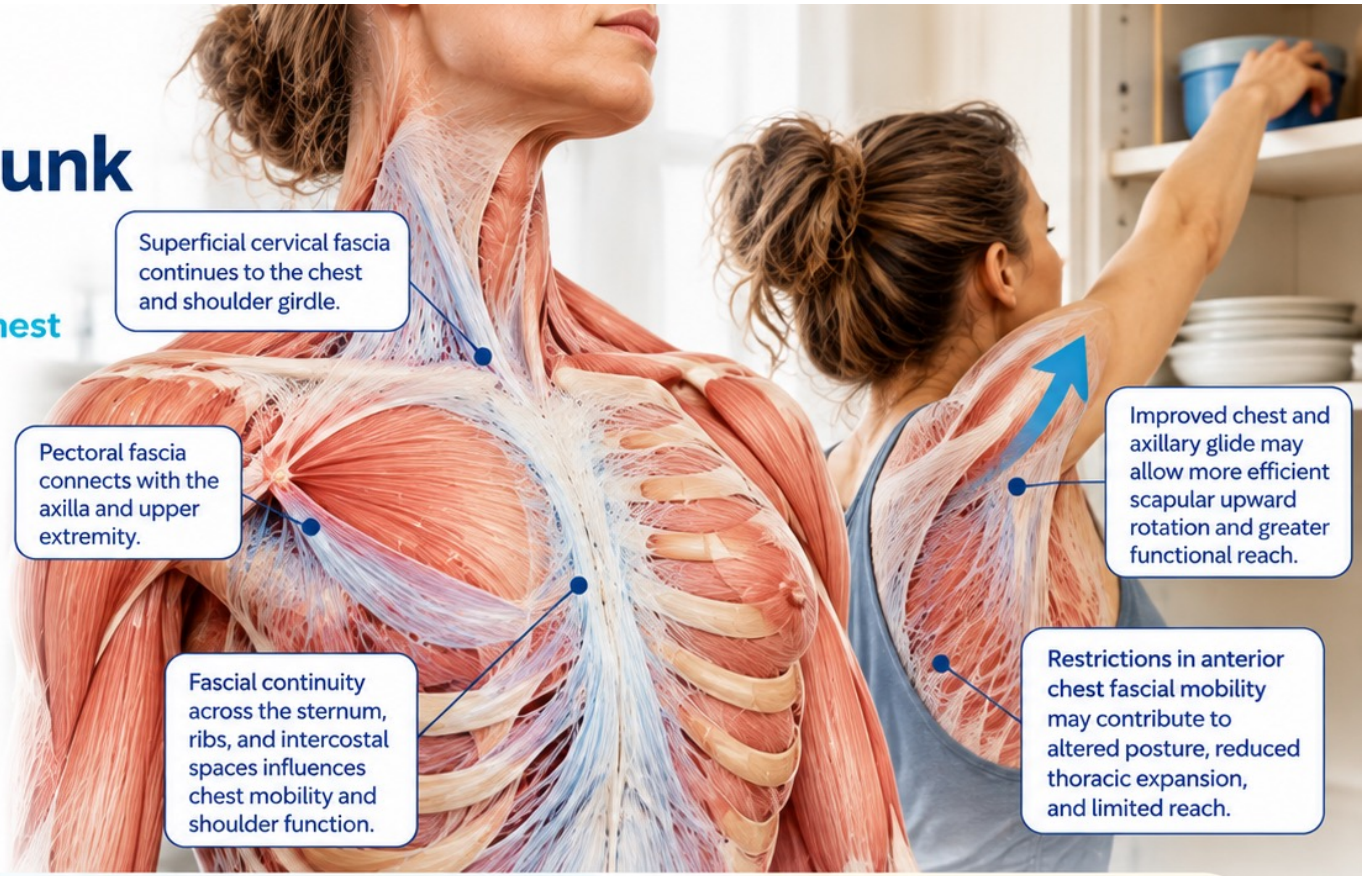
HANDS-ON EXPERIENCE

Anterior Upper Trunk Fascial Mobility

Does changing mobility across the chest influence functional reach?

FASCIAL FOCUS:

- Fascial continuity across the chest, sternum, ribs, and axilla.
- Relationship to the shoulder girdle, neck, and upper extremity.
- How restrictions or decreased glide may influence breathing, posture, and reach.
- Consider the individual's task demands (e.g., reaching, lifting, pushing, dressing).



FASCIAL LEARNING
Explore tissue relationships and movement potential.

CLINICAL HYPOTHESIS
Consider how anterior upper trunk mobility may relate to functional reach and other tasks.

REASSESS FUNCTION
Observe if reach changes and what else influences the outcome.

HANDS-ON EXPERIENCE

Contact → Barrier → Wait → Follow

Then immediately reassess the occupation.

1 CONTACT



Broad contact

Explore directional glide.

2 BARRIER



Meet first barrier

Find the first point of resistance.

3 WAIT



Wait / follow

Allow the tissue to respond—no force.

4 FOLLOW



Allow and follow

As ease emerges, support the movement.

KEY POINTS

- Broad contact
- Explore directional glide
- Meet first barrier
- Wait / follow—not force

REASSESS SAME MOVEMENT

Then immediately reassess the occupation.

SAFETY NOTE

Anterior chest: over clothing, away from breast tissue, clear boundaries, active consent.

HANDS-ON EXPERIENCE • CASE

Clinical sequence: mobility → activation → use

A change in mobility matters when it supports active movement and meaningful participation.



1 MOBILITY



2 ACTIVATION



3 FUNCTIONAL USE

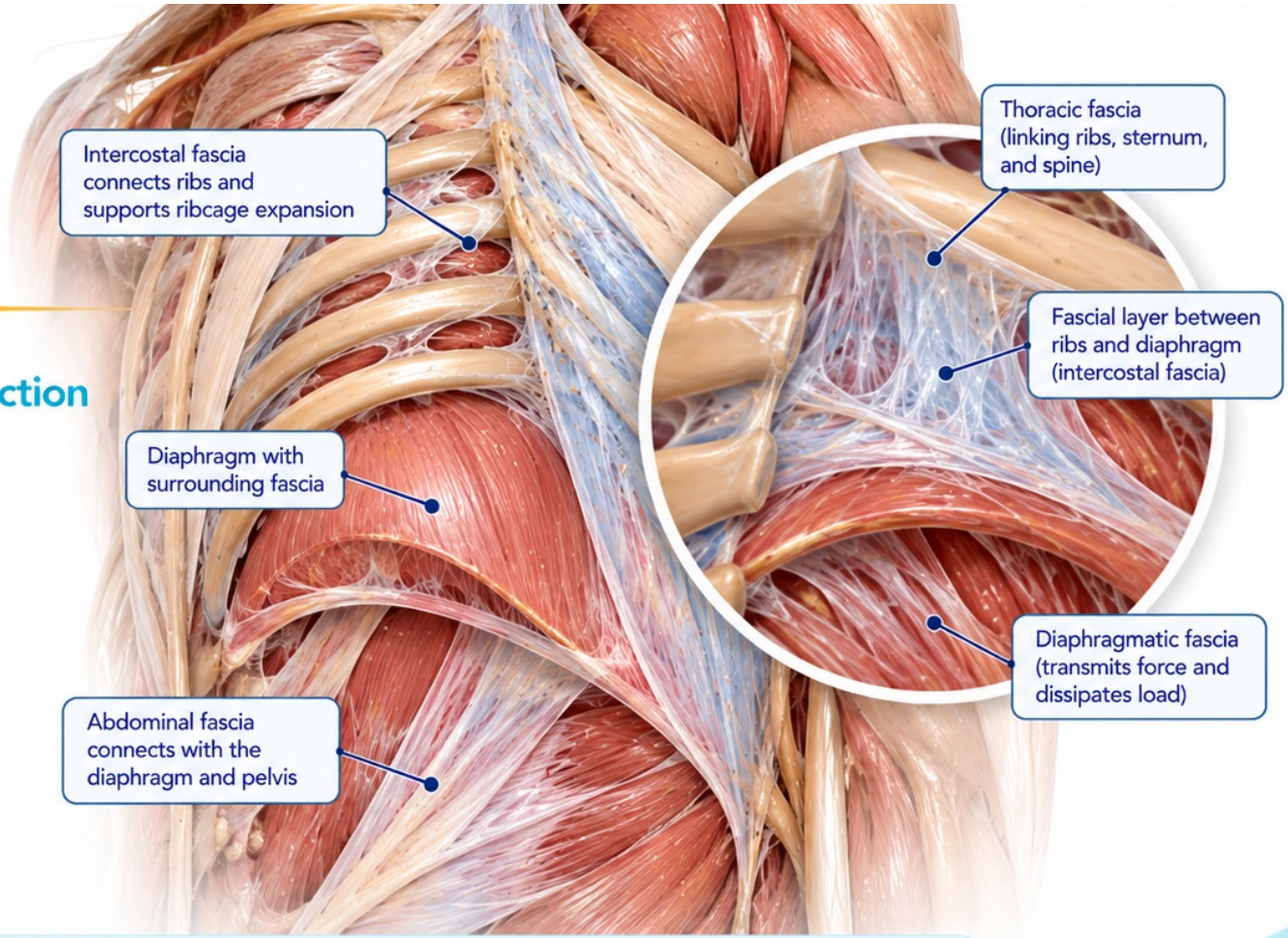
CLINICAL PEARL Manual input is a starting point. Reassess what the person can do with the change.

A WAVECREST CLINICAL PERSPECTIVE

Fascia and Respiration

Fascial Continuity Supports Breathing and Whole-Body Function

- The thoracic cage, diaphragm, and abdominal wall are interconnected through continuous fascial layers.
- Fascial mobility allows the ribcage, diaphragm, and abdomen to move coordinately during inhalation and exhalation.
- Restriction, altered ribcage mechanics, or decreased tissue glide can limit respiratory efficiency and impact posture, regulation, and endurance.
- Respiration is influenced by multiple systems, including fascial, neurologic, cardiovascular, and gastrointestinal factors.





Clinical Pearl

Efficient breathing depends on fascial mobility and coordinated movement across the ribcage, diaphragm, and abdomen—supporting **not only respiration but also posture, regulation, and participation.**

SECTION 5

Thoracic tissues must move relative to one another

Respiration is an elegant example of slide, glide and force transfer.

RIBS
Elevate, depress, and rotate



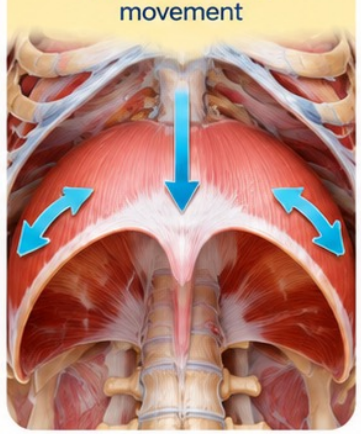
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INTERCOSTAL TISSUES
Transmit force and allow glide



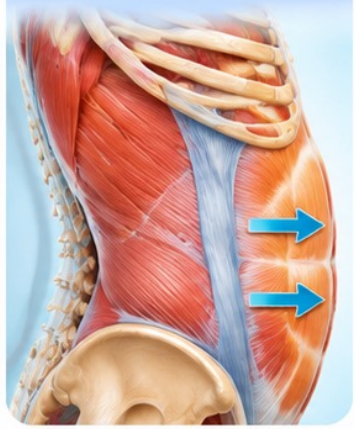
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DIAPHRAGM
Generates pressure and coordinates movement



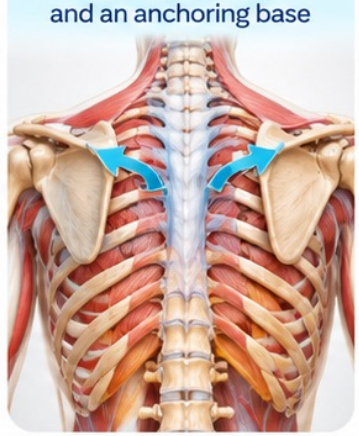
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ABDOMINAL WALL
Provides expansion and recoil



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SPINE / SHOULDER
Provides mobility and an anchoring base



If one region has less available excursion, the system may recruit another strategy.

SECTION 5

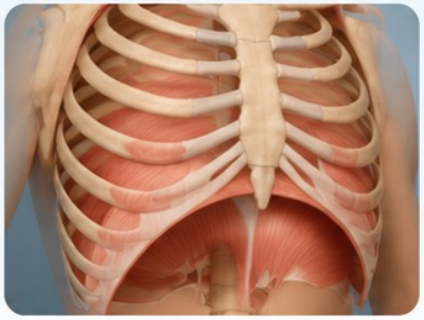
Posture ↔ respiration

Neither is merely a background variable.

1 POSTURAL ORGANIZATION CAN CHANGE BREATHING OPTIONS

Thoracic position, rib orientation and trunk support alter the mechanical context for respiration.

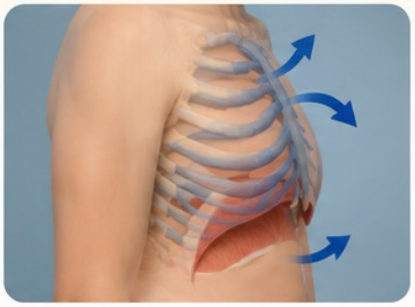




2 RESPIRATORY DEMAND CAN CHANGE POSTURAL STRATEGY

Accessory muscle recruitment and fixation may help meet respiratory demand—even when it limits other movement.







CLINICAL PEARL

Before changing a compensation, ask what it is accomplishing.

A WAVECREST CLINICAL PERSPECTIVE

Clinical Case | Assessment

Observe the relationship between thoracic shape, postural strategy, and movement options







Clinical question | What is the child's current strategy accomplishing—and what options are limited?

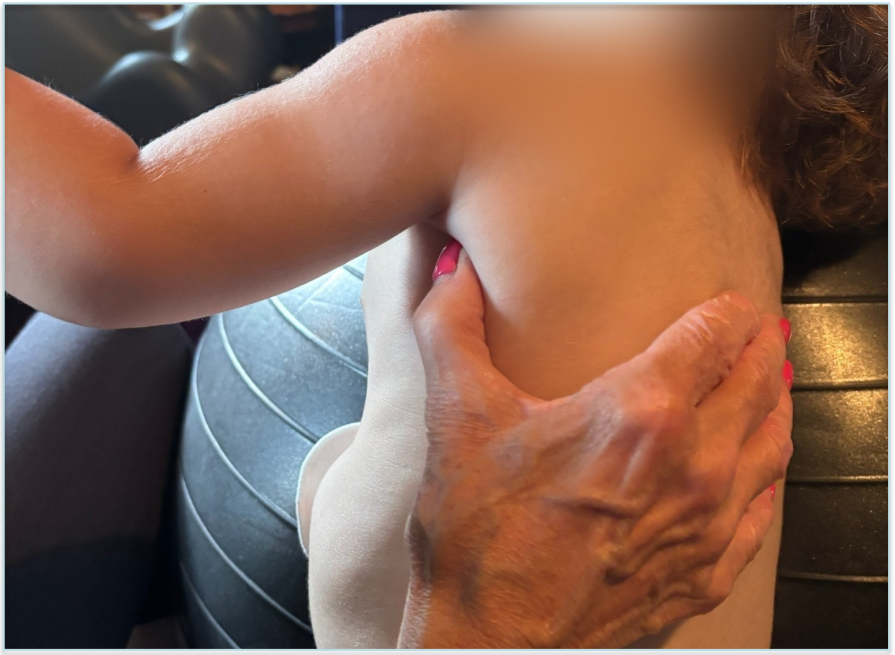
A WAVECREST CLINICAL PERSPECTIVE

Clinical Case | Intervention

Manual contact at the cervical–shoulder and thoracic regions: observe, hypothesize, reassess



CERVICAL / SHOULDER REGION



LATERAL / POSTERIOR THORAX

Clinical Pearl | The meaningful test is whether breathing, available movement, or participation changes.

LAB 3

Fascia, Rib Cage & Respiration

Can changing available thoracic mobility alter breathing,
trunk movement, effort or state—
and does that matter to function?

FASCIAL FOCUS:

rib excursion • thoracic glide • respiratory-postural interaction

FASCIAL LEARNING → CLINICAL HYPOTHESIS → REASSESS FUNCTION

LAB 3 • HANDS-ON EXPERIENCE

Hands receive information before they add input

Do not make the breath happen. Observe, follow, and reassess.

01 **SELF-OBSERVE**

Notice ordinary breathing.
No forced deep breaths.

02 **ESTABLISH BASELINE**

Where is movement perceived?
Ease 0–10? Comfortable trunk rotation?

03 **BROAD CONTACT**

Place hands over clothing at the lateral / posterolateral ribs.

04 **FOLLOW MOVEMENT**

Notice natural expansion and recoil: direction, asymmetry, and timing.

05 **MEET FIRST BARRIER**

Sustain comfortable contact while breathing continues.

06 **REASSESS FUNCTION**

Check breathing, trunk movement, posture, effort, state, and reach/turn.

LAB 3

Hands receive information before they add input

1. **Do not make the breath happen.**
   Self-observe ordinary breathing—no forced deep breaths.
2. **Find your baseline.**
   Where is movement perceived? Ease 0–10? Comfortable trunk rotation?
3. **Place broad, supportive hands.**
   Broad hands to lateral / posterolateral ribs over clothing.
4. **Follow natural expansion and recoil.**
   Notice direction, asymmetry, and timing.
5. **Meet a comfortable first barrier.**
   Sustain contact while breathing continues.
6. **Reassess.**
   Breathing, trunk movement, posture, effort, state, and a functional reach/turn.



Hand Placement Tips

- Use broad, relaxed hands.
- Feel for movement beneath your hands.
- Follow the child's natural breathing pattern.
- Notice direction, asymmetry, and timing.
- Allow time to observe before adding input.

Clinical Pearl: Hands are most effective when they first receive information, allowing the body to show where movement is available and where support is needed.

WHICH CHANGE MATTERS?

More excursion? Easier breathing? Less shoulder fixation? Better trunk rotation?
Different state? Better access to the task? Or no meaningful change?



More rib excursion or easier breathing?



Less shoulder fixation or better trunk rotation?



Better access to the task?



Different state? Or no meaningful change?

Clinical Pearl: The meaningful change is the one that supports breathing, available movement, postural organization, and the child's ability to engage in functional activities and participation.

SECTION 6 • SENSATION & REGULATION

From fascia to regulation—carefully

Mechanical input can change sensory input. The downstream response is individual.



TOUCH / TISSUE DEFORMATION → AFFERENT INPUT → NERVOUS SYSTEM RESPONSE → MUSCLE / BREATH / POSTURE → FUNCTION

Do not reduce this to "MFR activates the parasympathetic system."
Observe the person's actual response.

SECTION 6

Regulation is not relaxation

The useful state is the one that supports the occupation.

TOO LITTLE ACCESS



- fatigue
- collapse
- low engagement
- reduced postural options

TASK-MATCHED STATE



- available attention
- adaptable posture
- usable sensory information
- sufficient energy

TOO MUCH DEMAND



- guarding
- breath holding
- fixation
- overwhelm
- inefficient effort

The goal is not “calm.” The goal is access.

SECTION 7 • INTERVENTION

Fascial strategies are broader than one manual technique

What are you trying to influence?

	**TISSUE MOBILITY**	manual fascial input • active mobility • positioning • graded loading
	**GLIDE / EXCURSION**	movement variability • scar mobility • active range • task-specific motion
	**FORCE RELATIONSHIPS**	alignment • weight bearing • graded activation • movement transitions
	**SENSORY INFORMATION**	touch • proprioceptive loading • active exploration • environment
	**RESPIRATORY OPTIONS**	position • thoracic mobility • movement • awareness • team collaboration

Clinical Pearl: Different strategies can influence the fascial system and its functions. Choose and combine approaches based on the goal and the individual.

DON'T COLLECT TECHNIQUES.

Build the ability to choose a fascial strategy because it tests a clinical hypothesis.







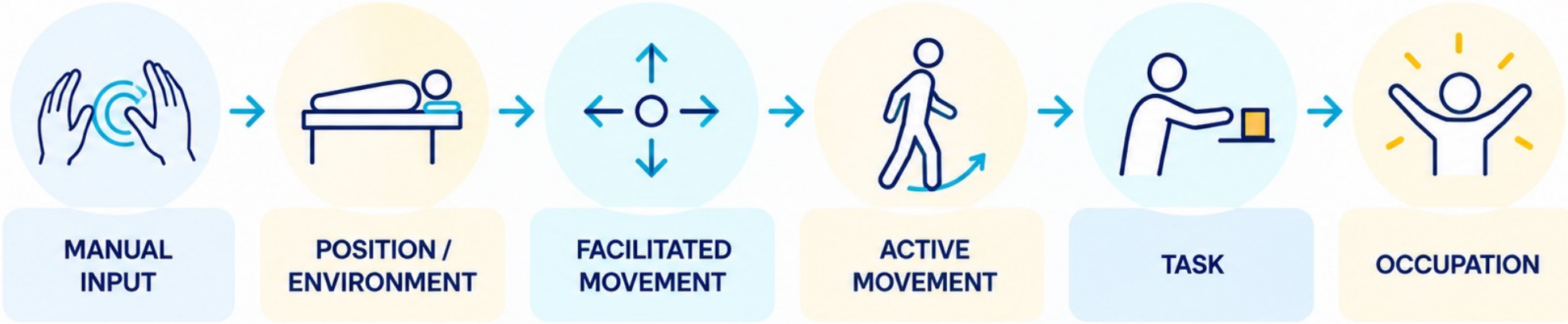


Clinical Pearl: Build the ability to choose a fascial strategy because it tests a clinical hypothesis.

SECTION 7

Manual input is one point on a continuum

Passive change must become active learning.





Enough manual input to test the hypothesis—then use the change.

SECTION 7

What about visceral, craniosacral and somato-emotional approaches?

Acknowledge clinical traditions without overstating mechanisms.

VISCERAL



Visceral connective tissues are anatomically real. Evidence for specific manual mechanisms and outcomes is a separate question.

CRANIOSACRAL



Light-contact, listening and non-forceful principles may influence clinical handling; proposed craniosacral mechanisms remain contested.

SOMATO-EMOTIONAL



Pain, stress, fear and prior experiences can alter guarding, breathing and touch tolerance. Do not assign emotional meaning to a tissue response.

Be curious. Ask. Observe. Do not decide what the body "means" for the person.

SECTION 7 • EVIDENCE

What does current intervention evidence actually support?

Promising in selected outcomes; heterogeneous across populations and methods.

RANGE OF MOTION



Recent meta-analysis in athletes found a moderate pooled effect on ROM; this does not generalize automatically to every population or technique.

PAIN / FUNCTION



Some reviews report improvements in pain and disability in musculoskeletal conditions, but study quality, methods and diagnoses vary.

MECHANISM



Observed clinical change does not prove that tissue was mechanically "released"; neural, sensory, mechanical and contextual effects may interact.

Evidence is promising in selected outcomes—
but it is heterogeneous across populations and methods.

França et al., 2024; Guo et al., 2023; Gao & Gao, 2026 review.

SECTION 8 • JOHNNY

Putting it together

11 years old • fifth grade

Sensitive.
Notices and feels deeply.

Respectful. Well-liked.
Positive relationships with peers and adults.

Enjoys sports.
Active and motivated.

Difficulty with emotional regulation.
Big feelings can be challenging.

Motor planning challenges.
Benefits from support and repetition.

Low tone.
May impact endurance, posture and coordination.



CLINICAL PEARL

He wants to do well.

Don't solve the case yet. Let the hypothesis change as new information appears.

SECTION 8

School OT concern:
written work, organization, attention to task

Letter formation and sizing errors

Inconsistent letter formation and spacing.

Overwhelm under some written/visual demands

Difficulty when tasks are visually complex or lengthy.

Requires assistance between classes gathering materials

Needs support with organization and transitions.

Substantial adult cueing for editing

Needs frequent prompts to notice and correct errors.

Requires prompts to continue and finish tasks

Benefits from external structure and ongoing cues.

Where would you start?

SECTION 8

Now look at the body

What do you see before you explain it?



What do you see?

- Posture and alignment
- Movement patterns
- Muscle balance and asymmetries

Impact on functional goals

- How might what you see impact participation?
- What activities or tasks could be affected?
- What functional goals are most important to address?

CLINICAL PEARL

Describe what you see before assigning meaning.
Be curious and objective about posture, alignment, movement patterns and muscle balance. Use these observations to generate hypotheses and guide your assessment.

What catches your eye? • **What would you want to assess?**

SECTION 8

Add the functional information

Handwriting is still important. It is no longer the entire problem.



Shoe tying
Sequencing, fine motor skills and bilateral coordination.



Dressing
Balance, range of motion, motor planning and independence.



Morning routine
Organization, sequencing, timing and self-regulation.



Utensil use
Grasp, fine motor control, postural stability and endurance.



Endurance
Sustained participation in school, play and daily tasks.



Timing
Completing tasks within expected time frames.



Coordination
Bilateral skills, balance and body awareness for functional activities.



Now ask: where might fascial mobility influence access to these tasks?

SECTION 8

Fascial findings become another piece of the system

Not the diagnosis. Not the whole explanation.

CHEST / PROXIMAL RESTRICTION

- Clinically perceived reduced mobility
- May influence breathing, posture and upper body function

POSTURAL ASYMMETRY

- Obvious functional scoliosis / trunk asymmetry
- May influence weight bearing, movement patterns and endurance

SELECTIVE MOTOR CONTROL

- Difficulty differentiating and organizing movement
- May contribute to inefficient movement strategies

COORDINATION / SPEED

- Motor execution affected across tasks
- May impact timing, fluidity and functional participation



Could fascia be contributing? Yes, as a hypothesis to test— not as a conclusion.

SECTION 8

“Bobby, TAKE A DEEP BREATH.”

He could not reliably organize the voluntary motor response.



Attempts were shallow.

Limited expansion and breath volume.



Uncoordinated.

Difficulty timing and integrating the breath with movement.



Unable to organize belly breath.

Difficulty recruiting and coordinating diaphragmatic breathing.

SECTION 8

A “deep breath” is a motor task

What has to be available?



Comprehension

Understanding the instruction and intent



Body-state awareness

Recognizing internal cues and feeling the breath



Motor planning

Organizing and sequencing the motor response



Selective control

Inhibiting unnecessary movements and recruiting the right muscles



Thoracic mobility

Adequate ribcage, spine and chest wall movement



Respiratory mechanics

Diaphragm activation, rib expansion and airflow



Postural organization

Stable base and alignment to support breathing



Practice / familiarity

Experience and repetition to make the task more efficient



We do not know WHY from this observation. We know what else deserves assessment.

SECTION 8

A testable fascial hypothesis

Specific enough to reassess.

Could increasing available mobility through the chest, shoulder girdle and proximal system...



POSTURAL ORGANIZATION

- Support a more aligned trunk and shoulder girdle?
- Improve stability for functional tasks?
- Influence efficient breathing patterns?



RESPIRATORY OPTIONS

- Increase ribcage and thoracic mobility?
- Improve diaphragm excursion and breath volume?
- Support more coordinated breath with movement?



UPPER-EXTREMITY MOVEMENT

- Improve shoulder girdle mobility and positioning?
- Increase reach, grading and coordination?
- Support participation in functional and school tasks?



...give Bobby additional options that can then be tested in occupation?

SECTION 8

Before / one month later

Describe first. Attribute cautiously.

Assessment – Pre Treatment



What do you see?

- Posture and alignment
- Movement patterns
- Muscle balance and asymmetries

Impact on functional goals:

- How might what you see impact participation?
- What activities or tasks could be affected?
- What functional goals are most important to address?

Posture – Post One Month



What do you see?

- Improved alignment and symmetry
- More upright posture
- Better muscle balance and trunk control

Impact on functional goals:

- How might these changes support participation?
- What activities or tasks may be easier now?
- What progress can we build on next?

WHAT CHANGED? • WHAT CAN'T THESE IMAGES TELL US?

SECTION 8

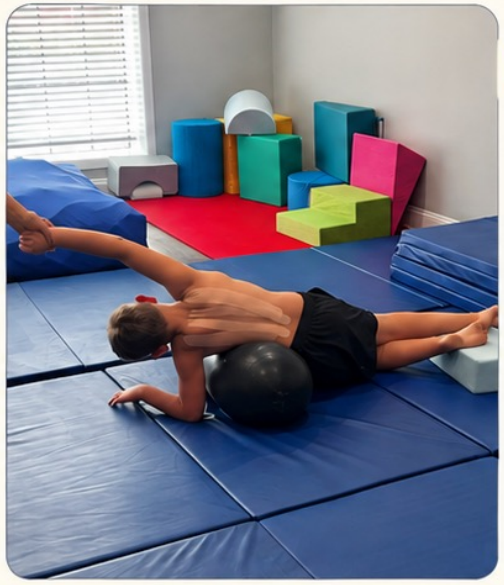
Fascial elongation to create available mobility

Gentle, sustained input can help tissues glide and lengthen, creating options for active, functional movement.



1 Supported elongation with rotation

- Facilitates tissue glide and lengthening through the trunk, shoulder girdle and upper extremity.
- Encourages rotational mobility and reach in a supported position.
- Provides a foundation for improved alignment and movement options.



2 Supported elongation with reach and extension

- Facilitates fascial length and organization across the trunk and shoulder girdle.
- Supports improved alignment and postural control.
- Builds movement options that can be used in active tasks and functional play.

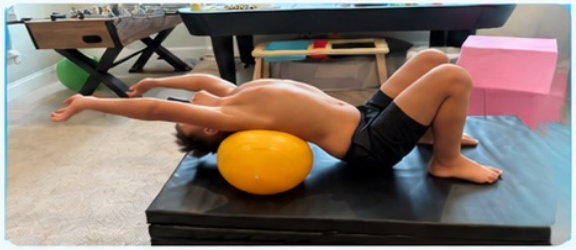
CLINICAL PEARL:

Creating mobility is only the beginning. The nervous system needs opportunities to explore, organize and strengthen new movement options through active, purposeful tasks.

SECTION 8

Strengthening to use newly available movement

Targeted strengthening helps Bobby build postural control, motor planning and coordination.



1 Thoracic extension and reach

Builds trunk strength, ribcage mobility and shoulder girdle control.



2 Trunk activation with resistance

Builds core stability, shoulder girdle strength and postural control.

Clinical goals

- Explore and use newly available movement following fascial intervention.
- Develop strength, postural control, motor planning and coordination.
- Build movement options that can support school activities, self-care and recreation.



3 Scapular and trunk strengthening

Improves shoulder girdle stability, postural alignment and coordination.



4 Rotational strength and coordination

Builds trunk strength, bilateral coordination and dynamic postural control.

Key takeaways

- Progress from supported to more independent movement.
- Use varied positions and resistance to challenge the system.
- Integrate mobility with strength and control for functional carryover.

CLINICAL PEARL:
Creating mobility is only the beginning. The nervous system needs opportunities to explore, organize and strengthen new movement options through active, purposoful tasks.

SECTION 8

Examples of exercises to build mobility, strength and coordination

Following fascial work, targeted movement helps make new options available.



1 Tall kneel / half kneel

Builds postural control and trunk stability



2 Trunk rotation / reach

Improves core activation, coordination and balance



3 Opposite arm/leg reach

Builds strength, balance and cross-body coordination



4 Plank hold

Supports shoulder girdle, core strength and stability

These exercises help translate increased mobility into functional skills.

SECTION 8

Different evidence answers different questions

Keep observation, mechanism and outcome separate.



PHOTO

Observable alignment / posture



PALPATION

Clinical perception / hypothesis about the mechanism



MEASURE

Quantified change (e.g., ROM, strength, balance, endurance)



CHILD / FAMILY REPORT

Experience, perception and participation



OCCUPATIONAL PERFORMANCE

Functional outcome in daily activities, school, self-care and play



A visible postural change does not prove the mechanism—and it is not, by itself, the occupational outcome.

SECTION 9 • SYNTHESIS

What should you leave recognizing?

The introductory fascial lens.



A visible postural change means the fascia is responding — **and it's time to use it!**

Fascia Has Structure

- Layers, matrix, cells
- Continuity

Fascia Has Mechanics

- Glide, stiffness, force transmission
- Adaptation

Fascia Has Sensory Capacity

- Innervation, nociception
- Proprioceptive contribution

Fascia Interacts with Function

- Movement, posture, respiration
- Effort and sensory-motor access

Fascial Findings Require Testing

- Palpation → hypothesis → intervention
- Reassessment

Occupation Decides Relevance

- A tissue change matters when it creates useful functional options.

A visible postural change does not prove the mechanism—
and it is not, by itself, the occupational outcome.

SECTION 9

Return to the Six Questions

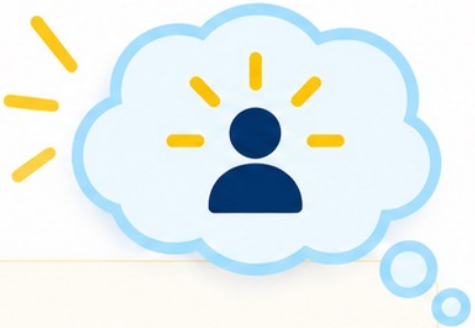
Now they are fascia-informed.



SECTION 9

Think of one person you provide therapy to

What will you look at differently on Monday?



1. What functional problem are you trying to understand?
2. What fascial region or tissue relationship might deserve assessment?
3. What would you observe or palpate without assuming the answer?
4. What small change could you test?
5. What functional movement would you reassess immediately?

FASCIA ISN'T THE ANSWER.

But understanding the fascial system may change the questions you ask, what your hands notice, and the options you create.


LOOK WIDER.
FEEL MORE PRECISELY.
TEST THE HYPOTHESIS.
CREATE OPTIONS.
RETURN TO OCCUPATION.

Selected evidence informing this course

Full reference handout recommended.

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Evidence for anatomical continuity does not by itself establish treatment effectiveness.

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Evidence for anatomical continuity does not by itself establish treatment effectiveness.