

Beyond Traditional Physical Therapy: Exploring New Paths in Metabolic Care

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KINECIO Physical Therapy

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“

Every step,
every stretch,
every breath
adds up.

Small movements
create big
possibilities.

BIOGRAPHIES AND DISCLOSURES

Pamela Tucker

- Education
 - B.S. Duke University 2013
 - Doctor of Physical Therapy 2017 Franklin Pierce University
 - Pediatric Certified Specialist 2026
- Professional experience
 - Children's Health Dallas TX
 - Upstate Medical University, Syracuse NY
 - UPMC, Pittsburgh PA
 - Children's Institute of Pittsburgh, PA
 - Bethany Children's Health Center, OK
- Specialties: pediatric, aquatic, concussion, vestibular, and robotic-assisted mobility interventions
- Disclosures: Ultragenyx speaker and steering committee member

Brian Weber

- Education
 - University of Iowa: Doctor of Physical Therapy
 - Winona State University: B.S. Biology (Summa Cum Laude)

Fellow Function Manual Therapy (FFMT), Institute of Physical Arts

Fellow of Applied Functional Science (FAFS), Gray Institute

Nike Golf Performance Specialist (NG 360 GPS), Gray Institute

Certification in Pediatric Osteopathy

Certified Integrated Dry Needling (CIDN)

Fellow of the American Academy of Orthopedic Manual Physical Therapists (FAAOMPT),

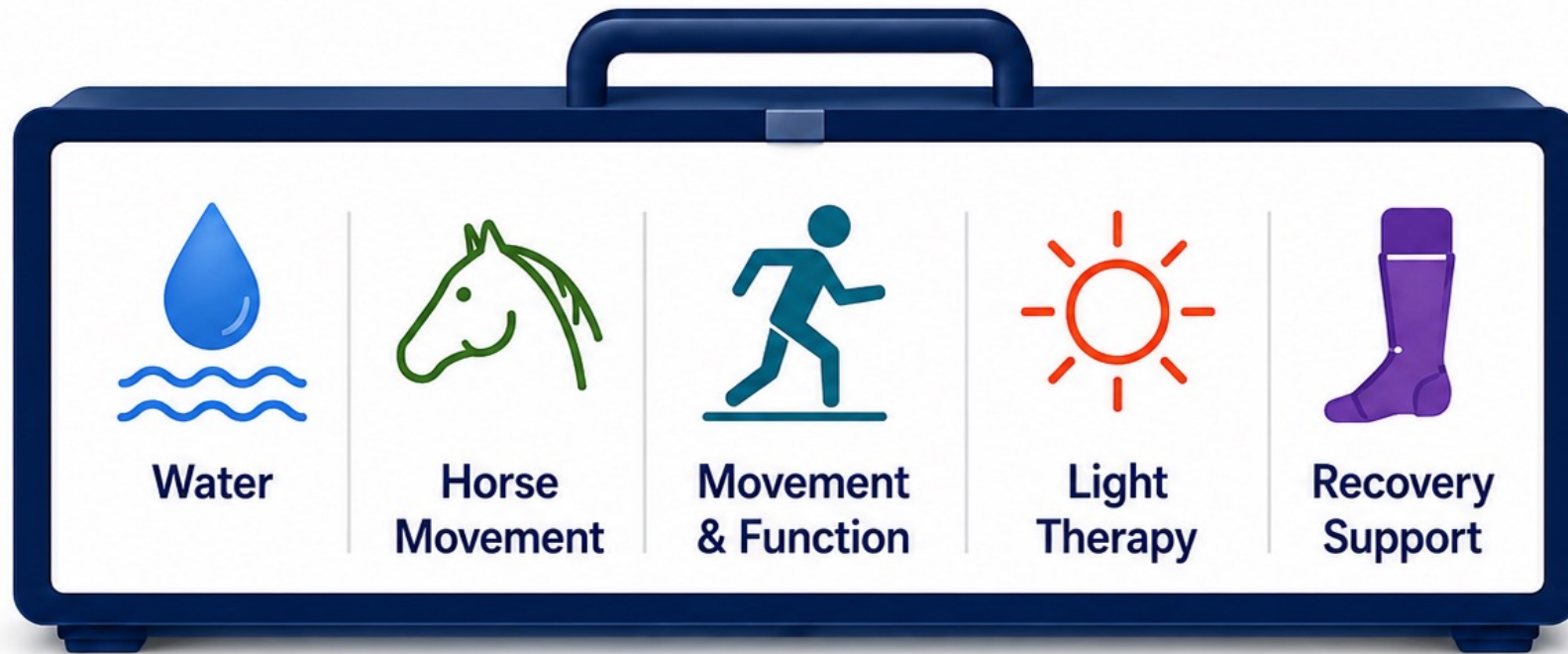
Associate Faculty – Institute of Physical Art (2011-2020)

Adjunct Faculty, Concordia University, St. Paul (2013-2018)

The Most Important Idea Today

Different Bodies Need Different Tools

Helpful ≠ Helpful for Everyone



*The goal is not finding the perfect therapy.
The goal is finding the right fit.*

EXPLORING THE TOOLBOX

Aquatic
therapy

Hippotherapy

Galileo

FES

Red light
therapy

Tool-assisted
soft tissue
mobilization

Trigger point
dry needling



Our Goals

To empower you with knowledge, tools, and support so you can move better, feel better, and *live fully*.



Build Confidence

Understand your body and what helps it thrive.



Improve Function

Enhance strength, mobility, and endurance in meaningful ways.



Increase Energy

Support your body's natural energy and recovery.



Prevent Setbacks

Make informed choices that reduce risk and support long-term well-being.



Support Your Goals

Provide a clear, practical path to help you live the life you want.



We're here to guide you, support you, and celebrate your progress—every step of the way.



What This Talk Is (And Is Not)



This Talk IS



education



practical ideas



thoughtful decision making



honest science



information to help you
make choices



This Talk Is NOT



miracle cures



medical advice for everyone



pressure to buy things



promises



one-size-fits-all solutions

Strong Foundations First

Before adding more therapies, start with what makes the **biggest impact**.



1. ENERGY MANAGEMENT

Use energy wisely.



Pace activity and rest



Prioritize recovery



Stay within your energy envelope



2. NUTRITION / FUELING

Fuel your body well.



Hydrate consistently



Eat balanced, nourishing foods



Support energy production and repair



3. FUNCTIONAL THERAPY

Make your body and movements more efficient.



Improve movement quality



Build strength and coordination that carry over to daily life



Breathe better.
Move better. Waste less.



Foundations create resilience. Resilience creates possibilities.



Why Movement Matters

Movement supports more than just physical health. It shapes how you live.



Strength

Helps maintain muscle and supports physical function.



Confidence

Progress builds self-belief and independence.



Comfort

Can help reduce pain, stiffness, and improve how you feel.



Endurance

Supports the body's ability to handle daily demands.



Participation in Daily Life

Helps you stay engaged in the activities that matter most.



Movement is not just about today.
It's about building the life you want for tomorrow.



More Isn't Always Better

The goal is finding the *right dose* for your body and your life.



Too Little



May lead to deconditioning,
more fatigue,
and less function.



Just Right



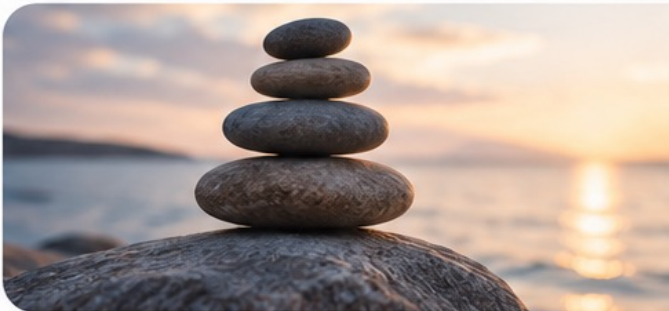
Supports energy,
strength, better symptoms,
and quality of life.



Too Much



May increase fatigue,
cause setbacks,
and slow progress.



The best program often leaves energy in the tank.

Consistency, smart choices,
and the right amount lead to better outcomes.

MOVEMENT SPECIALISTS



WHAT'S THE DIFFERENCE?

BOTH PT AND OT HELP PEOPLE WITH METABOLIC DISORDERS STAY AS ACTIVE, INDEPENDENT, AND HEALTHY AS POSSIBLE.

Physical Therapy

- Focuses on movement, strength, balance, endurance, and mobility
- Helps with walking, stairs, transfers, exercise, and participation in play and recreation



<https://www.sumaryhealthcaresystem.org/blog-articles/differences-between-physical-therapy-and-occupational-therapy>

Occupational Therapy

- Focuses on daily activities and independence
- Helps with dressing, self care, mealtime skills, school and handwriting, adaptive equipment and supports, and sensory integration

Top 5 **certified physical therapy** specializations in the **USA**



Neurology:

Manages neurological disorders like stroke & spinal injuries.



Pediatrics:

Cares for infants, children, & adolescents with developmental or orthopedic issues.



Geriatrics:

Helps older adults with age-related mobility & balance problems.



Orthopaedics:

Treats injuries & disorders of muscles, bones, ligaments, and joints.



Sports:

Focuses on prevention and rehab of sports-related injuries.

01.

02.

03.

04.

05.



AQUATIC PHYSICAL THERAPY

Why Aquatic Therapy Gets Attention

Why families and clinicians consider it:



fatigue



weakness



pain



movement intolerance



reduced endurance



fear of falling



KEY FRAMING:

“Sometimes water makes movement feel possible again.”



IMPORTANT TO KNOW:

Aquatic Physical Therapy does not equal swimming lessons.



Why Water Changes Movement



Buoyancy

- unloads body weight
- movement feels easier



Hydrostatic pressure

- gentle compression effect
- circulation support



Resistance

- movement strengthening without weights



Temperature

- can help or hurt



Simple physiology:

“Water changes the rules of movement.”



Less stress
on joints



Supports
circulation



Builds strength
without impact

Why This Is Interesting in Mitochondrial Disease



Biologic rationale:

People with mitochondrial disease often have limited energy production. Water changes the environment, which can lower the energy cost of movement and reduce stress on the body.



Key phrase:

“Water may lower effort, but energy limits still matter.”

Potential benefits:



Lower movement cost

Less energy needed to move.



Reduced joint loading

Less impact and stress on joints.



Safer mobility practice

Practice skills with greater safety.



Endurance building

Gradually build activity tolerance.



Confidence

Success in movement builds belief and motivation.

What the Evidence Supports Best

Evidence hierarchy:



Better Evidence

- ✓ neurologic rehab
- ✓ chronic pain
- ✓ mobility limitations
- ✓ arthritis
- ✓ pediatric rehab



Moderate/Indirect Evidence

- △ mitochondrial disease
- △ fatigue management
- △ endurance



Important honesty:

Limited mitochondrial-specific trials



Evidence is growing.

Clinical experience and individual response matter.



When Aquatic Therapy May Be Helpful

Potential indications:

- ✓ weakness/deconditioning
- ✓ pain with land movement
- ✓ gait training
- ✓ balance deficits
- ✓ fear of falling
- ✓ low exercise tolerance



Clinical pearl:

“Sometimes pool therapy works when land PT fails.”



Risks, Contraindications, and Precautions

Important section.

Potential problems:



overheating



post-exertional fatigue



seizures



autonomic dysfunction



sensory overload



infection concerns



transfer difficulty



Precautions for safe practice:



Monitor temperature and hydration.



Respect individual energy limits.



Plan rest breaks and energy budgets.



Start low and progress gradually.



Communicate and observe closely.



Adjust based on daily condition.

What a Good First Program May Look Like

Practical recommendations:



Start short (10–20 min)

Begin with short sessions.
Build gradually.



Rest breaks

Planned breaks prevent crashes
and support quality.



Cooler water if heat sensitive

Pool temperature can make
a big difference.



One variable at a time

Change one thing at a time to
understand the response.



Recovery tracking

Track symptoms, fatigue, sleep,
and function.



Clinical recommendation:

Leave energy in the tank.



Too Much Can Backfire

Signs of overdoing it:



Wiped out afterward



24–48 hour crash



Pain flare



Poor sleep



Increased weakness



Concept:

Good tired vs bad tired



“The best aquatic session often feels easier than people expect.”



Hype vs Reality



Hype

“Water fixes everything”



Reality

- ✓ useful tool
- ✓ often better tolerated
- ✓ still requires pacing
- ✓ individualized response



Aquatic therapy is not a cure.
It's a tool when used wisely.



Final Takeaway



“Water can make movement easier. It does not remove energy limits.”



Aquatic rehabilitation systematic reviews

Consistent benefits for pain, function, and quality of life across multiple conditions.



Pediatric rehab evidence

Supports motor development, strength, and participation in children with neurologic and musculoskeletal conditions.



Neurologic rehab literature

Improved mobility, balance, gait, and independence in stroke, MS, and other neurologic populations.



Mitochondrial exercise literature

Emphasizes pacing, individualized exercise, and symptom monitoring; aquatic therapy often better tolerated.



Fatigue management

Research supports energy conservation, pacing strategies, and symptom-triggered adjustments.



PT guidelines

Professional guidelines support aquatic therapy as an option for specific populations and goals.



Key Point

Aquatic therapy is not for everyone, but for the right person at the right time, it can open the door to movement, confidence, and progress.



HIPPOTHERAPY

What Is Hippotherapy?



Hippotherapy ≠
Horseback Riding Lessons



A licensed therapist uses
horse movement as treatment.

Goals may include:



balance



posture



trunk strength



movement control



confidence



Why Horse Movement Is Unique

The horse creates movement that the body responds to.

May challenge:



balance



posture



core control



coordination

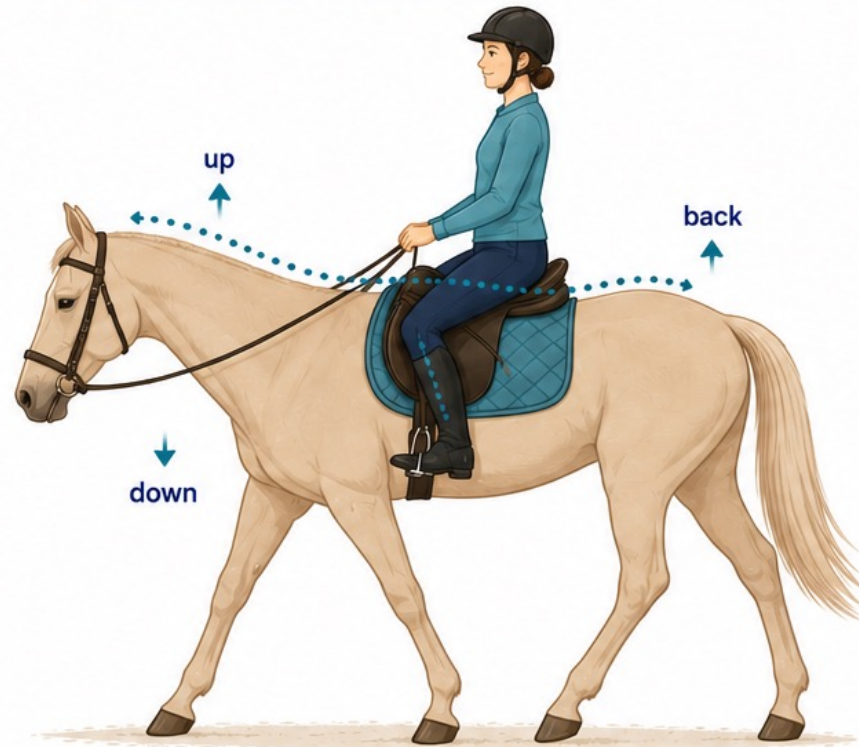
HORSE MOVEMENT

The horse's back moves in a 3-dimensional pattern.



RIDER RESPONSE

The rider's pelvis follows and adapts.



This movement input is different from walking or exercise on the ground.

→ It provides valuable information to the brain and muscles.

Why This Is Interesting for Mitochondrial Disease

Possible reasons families consider it:

-  ✓ low-motivation movement
-  ✓ balance challenges
-  ✓ weakness
-  ✓ confidence building
-  ✓ engagement



Important Reminder

Enjoyable movement still uses energy.



Finding the right balance is key.
Start small. Adjust as needed.

What the Evidence Supports Best



Better Evidence

Stronger research and clinical support for these areas.



cerebral palsy



pediatric neurologic rehab



balance



posture



trunk control



Limited Evidence

Limited or preliminary research. More studies needed.



adult neurologic rehab



mitochondrial disease



Evidence is growing.
Quality varies. Individual results vary.



When Might Hippotherapy Be Reasonable?



May be reasonable for:



balance goals



trunk weakness



posture



movement confidence



motivation challenges



A trained therapist tailors the activity to your goals and needs.



Less Ideal When:



severe fatigue



poor temperature tolerance



difficult transfers



Safety and energy come first.
Adjust or pause as needed.



Work with a therapist who understands your condition and energy needs.

Risks, Contraindications, and Safety

Think carefully about:



seizures



autonomic instability



heat sensitivity



fatigue crashes



orthopedic safety



sensory overload



SAFETY CHECKLIST

- ☒ Medical history reviewed
- ☒ Therapist trained in hippotherapy
- ☒ Individual goals and needs considered
- ☒ Environment is safe and appropriate
- ☒ Proper support and equipment are used
- ☒ Monitor during and after sessions



Safety comes first.

When in doubt, consult your healthcare team.

Hype vs Reality

Let's look at this with a balanced perspective.



HYPE

- ✗ “Transforms everything”
- ✗ “Works for everyone”



Big claims. Simple promises.
Often used in marketing.

VS



REALITY

- ✓ meaningful for some people
- ✓ motivating
- ✓ may support movement goals
- ✓ highly individualized



Evidence-informed. Person-centered.
Based on goals, needs, and safety.



The goal is not the horse. The goal is you.

Final Takeaway

Movement + Motivation Matter

Hippotherapy may help some people:



move more



engage more



build confidence



But pacing still matters.

Listen to the body.
Respect energy. Adjust as needed.



Hope guides us. Realism protects us.

Focus on what is meaningful. Celebrate progress.



Hope + Realism





GALILEO

GALILEO VIBRATION PLATFORM



Provides gentle side-alternating vibrations while standing or sitting.

May support muscle activation, balance, circulation, and bone health when appropriate.

May stimulate blood flow and metabolic activity to aid recovery

Galileo Therapy: <https://www.galileo-training.com>

Evidence supports use in select neurologic populations.

CONSIDERATIONS: GALILEO

Potential Benefits

- ✓ May improve muscle strength and power
- ✓ May improve balance and postural control
- ✓ May increase participation in weight-bearing activities
- ✓ May support bone health and circulation
- ✓ Can provide exercise for individuals who have difficulty participating in traditional strengthening programs

Things to Consider

⚠ Research in **mitochondrial and metabolic disorders** is still limited.

⚠ Benefits appear greatest when Galileo is **combined with conventional physical therapy**, not used alone.

⚠ May not be appropriate for everyone, including individuals with:

Recent fractures

Active blood clots

Recent surgery

Kidney or gallstones

Certain implanted medical devices

Significant orthopedic instability



STATE OF THE EVIDENCE: GALILEO

What Does the Evidence Show?

A **pilot randomized crossover trial** in individuals with mitochondrial disease found that side-alternating vibration training was **well tolerated** and improved **muscle power** compared to standing alone.

Larger studies are still needed before it can be considered a standard treatment.

Studies in other pediatric neuromuscular disorders (including Duchenne muscular dystrophy and spinal muscular atrophy) demonstrated that whole-body vibration can be performed safely under supervision and may improve strength, balance, and function.

Results vary between studies.

Overall, current evidence suggests Galileo is a **promising adjunct to rehabilitation**, but it should be individualized and incorporated into a comprehensive therapy program rather than used as a stand-alone intervention.



FUNCTIONAL ELECTRICAL STIMULATION (FES)



FES IN PHYSICAL THERAPY

Electrical stimulation (E-Stim) uses small electrical impulses to activate nerves or muscles. A therapist places sticky pads (electrodes) on the skin to deliver gentle stimulation.

Different types of electrical stimulation include:

⚡ **Neuromuscular Electrical Stimulation (NMES)** – Helps muscles contract to improve strength.

🚶 **Functional Electrical Stimulation (FES)** – Helps muscles work during activities like walking or reaching.

💡 **Transcutaneous Electrical Nerve Stimulation (TENS)** – Helps reduce pain.

🦴 **Transcutaneous Spinal Stimulation (TSS)** – Stimulates nerves in the spinal cord to improve movement and function (used in specialized settings).

What might it help with?

Improving muscle strength

Reducing muscle weakness after illness or injury

Improving walking and mobility

Managing pain

Supporting participation in therapy

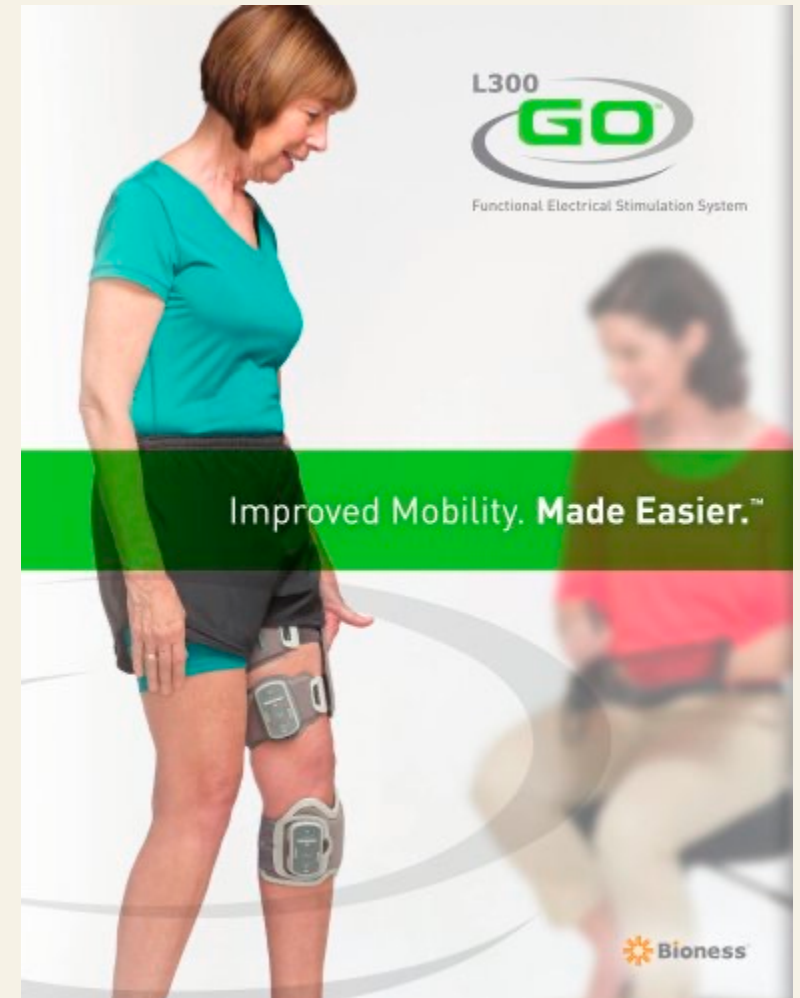


TYPES OF STIMULATION

Therapy	How it Works	May Help With
NMES	Stimulates muscles while resting or exercising	Muscle strength, preventing muscle loss
FES	Stimulates muscles during movement	Walking, cycling, grasping objects, functional activities
TENS	Stimulates sensory nerves	Temporary pain relief
TSS	Stimulates the spinal cord through the skin	Standing, stepping, trunk control, movement recovery (research is ongoing)

BIONESS L300 GO

- A wearable device that uses gentle electrical stimulation to help lift the foot while walking.
- May improve walking safety, efficiency, and confidence for some people with foot drop.
- Programming is individualized by your therapist.
- Not appropriate for chronic, stable peripheral neurological concerns



BIONESS L300 GO: [HTTPS://WWW.BIONESSMOBILITY.COM/L300/](https://www.bionessmobility.com/L300/)

FDA INFORMATION



RED LIGHT THERAPY

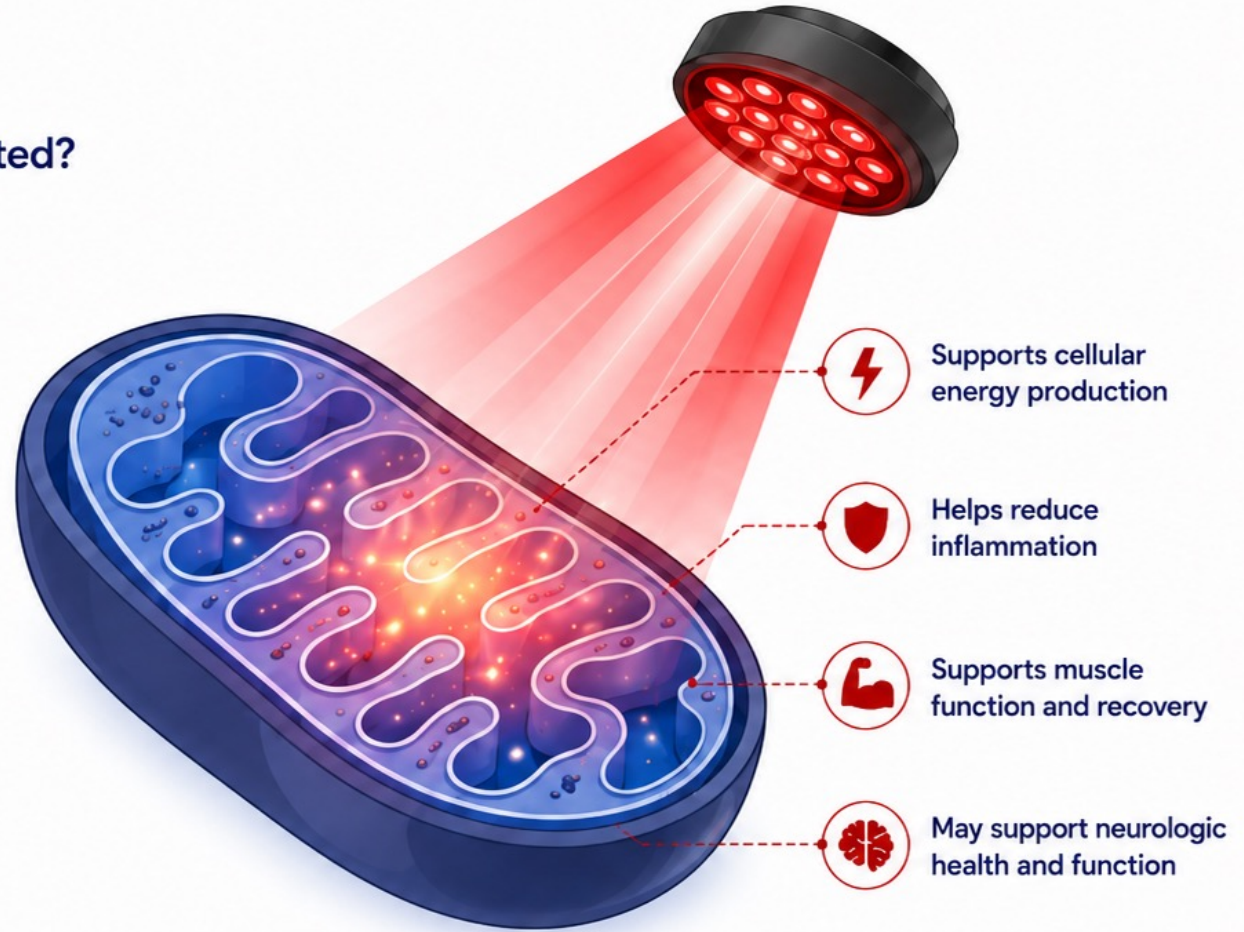
Why So Much Interest in Red Light Therapy?



Why are patients with mitochondrial conditions interested?

Common goals:

- fatigue
- recovery
- muscle endurance
- pain
- exercise tolerance
- neurologic support



“

“If mitochondria are energy makers, could light help them work better?”

What Is Red Light Therapy?



Photobiomodulation (PBM)

The use of specific wavelengths of red and near infrared light to support cells and tissues.

Also called:

- Red light therapy
- Low-level light therapy (LLLT)
- Near infrared therapy

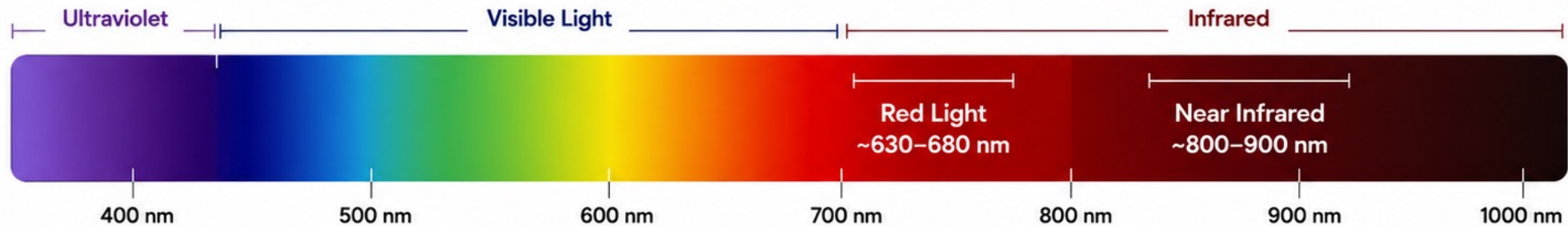


Important Wavelengths

● **Red Light:** ~630–680 nm

● **Near Infrared:** ~800–900 nm

The Light Spectrum

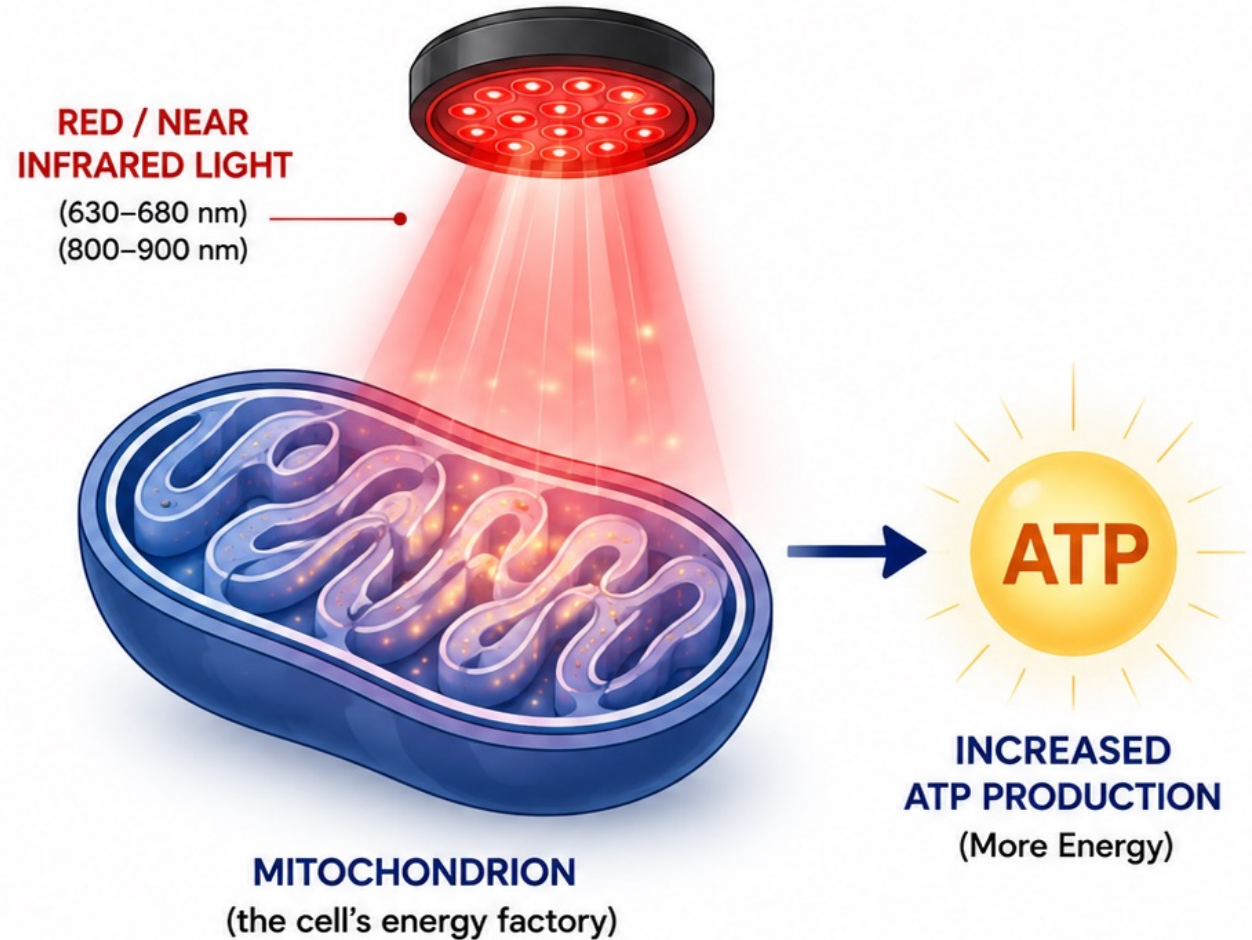


These wavelengths are absorbed by cells—especially in the mitochondria—to help support energy production, reduce inflammation, and promote healing.

The Mitochondrial Science

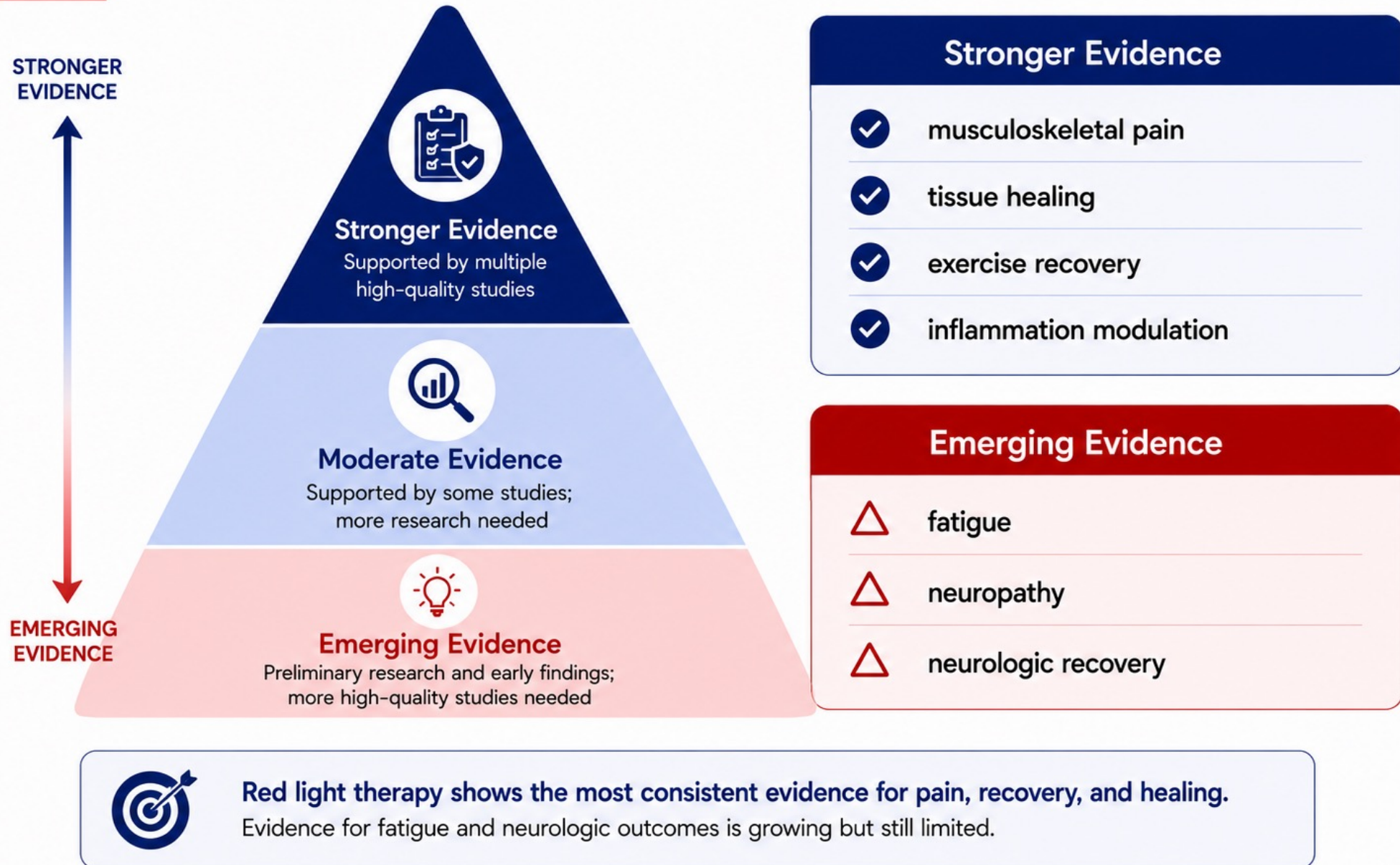
Scientists think PBM may affect:

- ✓ ATP production
- ✓ nitric oxide signaling
- ✓ blood flow
- ✓ inflammation
- ✓ oxidative stress



By absorbing specific wavelengths of red and near infrared light, mitochondria may **function more efficiently** and **produce more energy**.

What the Evidence Supports Best



Why This Is Interesting for Mitochondrial Disease



Biologically plausible ≠ clinically proven

Possible reasons for interest:



exercise intolerance



fatigue



muscle recovery



pain



neurologic symptoms



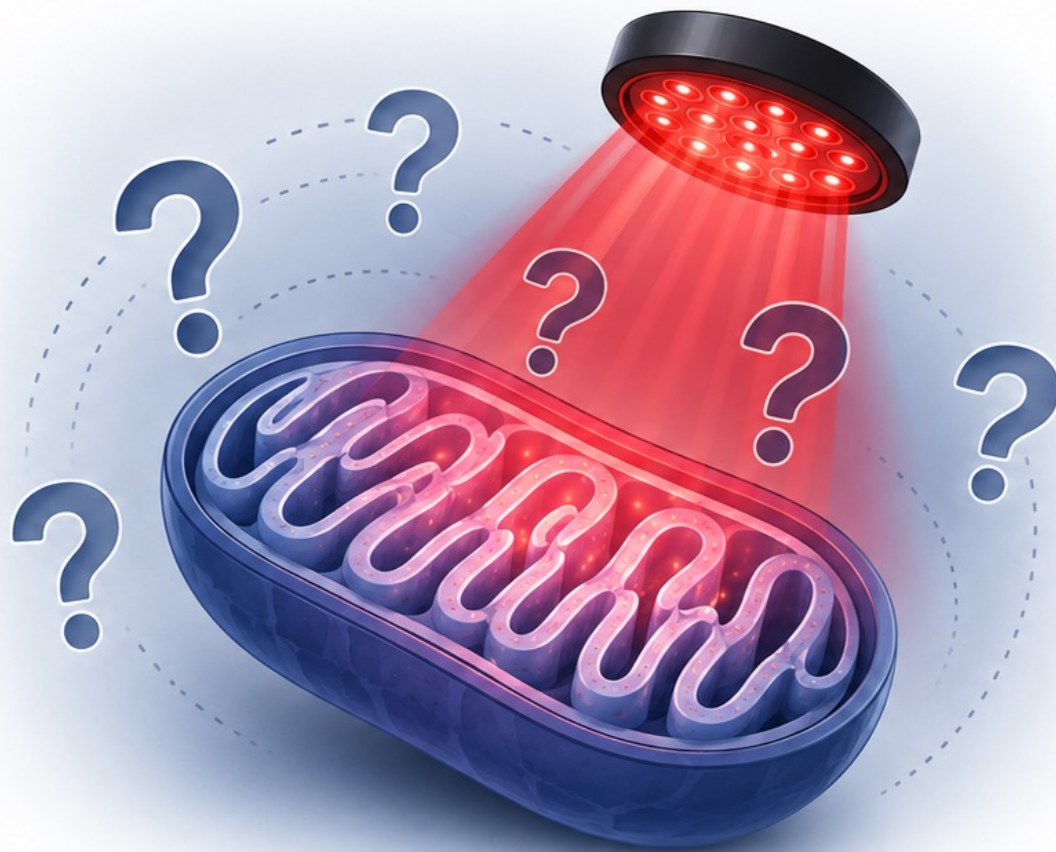
More research is needed.

Approach with informed curiosity, not unrealistic expectations.

What We Still **Do Not Know**

Still unclear:

- ? ideal dose
- ? ideal treatment schedule
- ? best wavelength
- ? who responds best
- ? long-term outcomes



Research is ongoing.

More high-quality studies are needed to answer these important questions.

Hype vs Reality

HYPE

MARKETING

Bold Claims.
Big Promises.



- ✗ "Fixes mitochondria"
- ✗ "Medical miracle"
- ✗ "Works for everyone"

VS

REALITY

EVIDENCE

Data First.
Measured Results.



- ✓ interesting science
- ✓ promising in some areas
- ✓ individualized response
- ✓ limited mitochondrial evidence



Stay informed. Stay realistic.

Use red light therapy as one part of a thoughtful, comprehensive care plan.

When Might Red Light Therapy Be Reasonable?

GREEN = More Reasonable Evidence



Potential Clinical Uses

May be reasonable for:

- ✓ musculoskeletal pain
- ✓ exercise recovery
- ✓ muscle soreness
- ✓ localized tissue healing
- ✓ neuropathic discomfort (limited evidence)



These uses have more supporting evidence in studies.



YELLOW = Emerging Evidence



Experimental / Individualized

May be considered on an individual basis for:

- △ fatigue
- △ endurance
- △ exercise tolerance



Promising areas, but research is still limited.



Clinical judgment matters.

Consider your symptoms, goals, and response. Work with a knowledgeable provider to determine if red light therapy fits your overall care plan.

Contraindications + Precautions



Use caution with:



eye exposure



active cancer at treatment site



photosensitivity disorders



seizure disorders



autonomic instability



heat sensitivity



Always consult with a knowledgeable healthcare provider.

This is not an exhaustive list. Individual conditions vary.

Too Much Can Backfire

More is NOT always better

Possible reactions:



headache



overstimulation



fatigue flare



poor sleep



symptom worsening



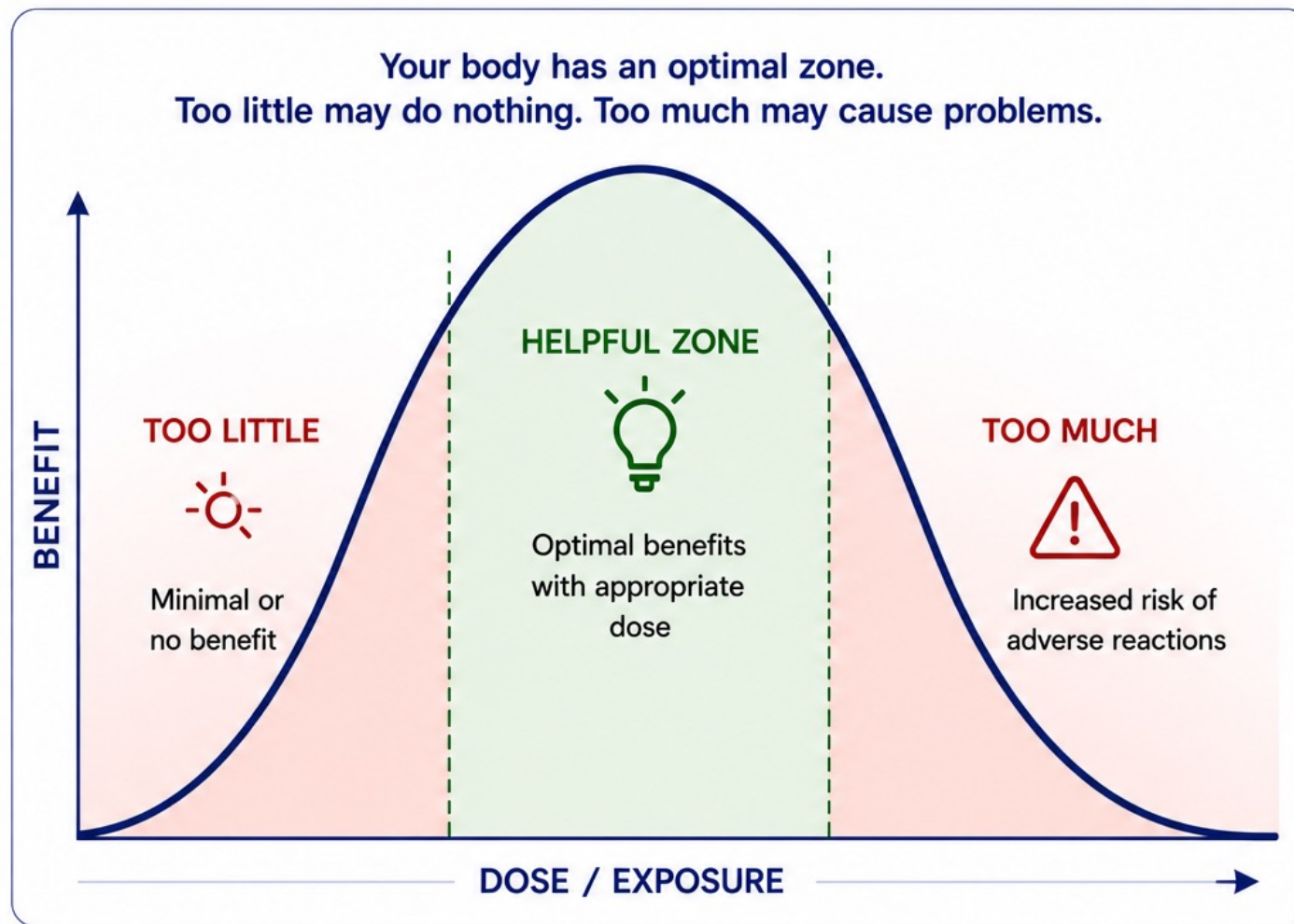
Key Concept:

Biphasic Dose Response



Start low. Go slow. Monitor response.

Find your optimal dose and adjust as needed.



What to Look For **When Buying**



Look for transparency



wavelength listed



irradiance data



treatment distance guidance



eye safety guidance



return policy



independent testing



Best-Supported Wavelengths



660 nm
(red)



810–850 nm
(near infrared)



High-quality devices provide clear specifications and safety information so you can make an informed decision.

What to Avoid When Buying



Red Flags



“Cures mitochondria”



“Medical grade” without evidence



no wavelength listed



vague science words



affiliate-heavy marketing



impossible claims



Be skeptical of marketing.

Look for transparency, real data, and realistic expectations.

How to Trial It Safely



Start Small.



Key Principle:

Start low. Go slow. Listen closely.



Find your optimal dose over time.



Your body is the best guide.



Progress comes from consistency, not intensity.

Final Takeaway



Interesting tool.



Not magic.



Biologically plausible.



Promising in some areas.

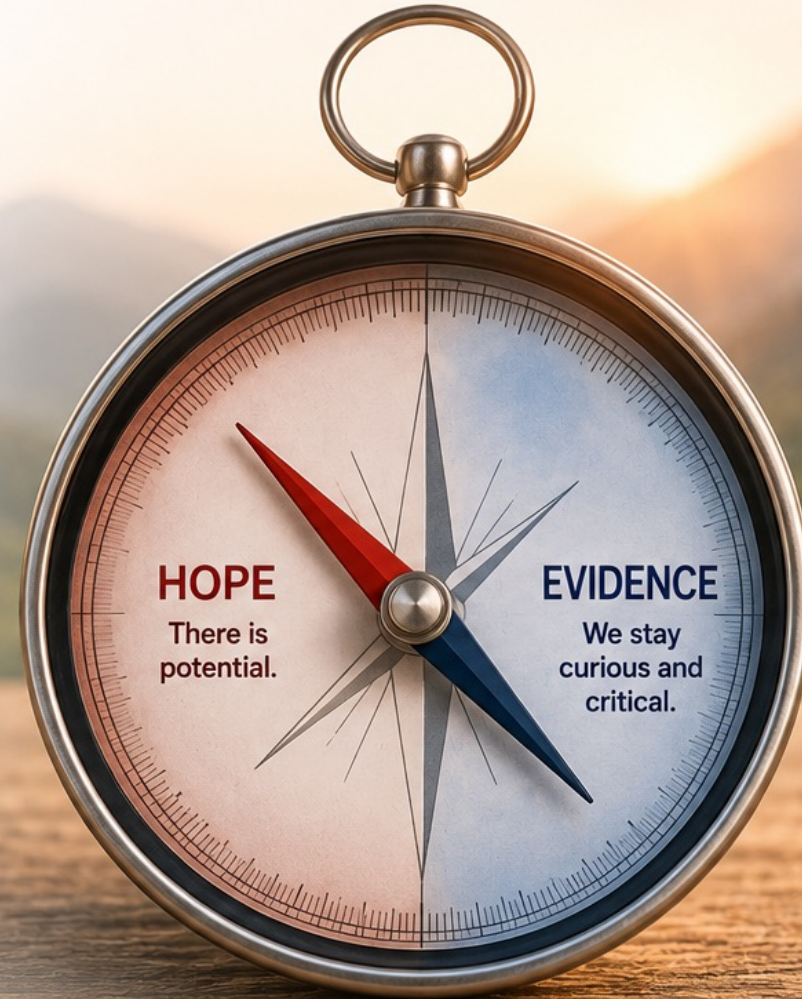


Still limited
mitochondrial-specific
evidence.



Use it thoughtfully.

Focus on what helps your body work better, not just what looks impressive.





COMPRESSION BOOTS

COMPRESSION RECOVERY SYSTEMS

Helping the body recover and feel better, faster.



ENHANCED CIRCULATION

Dynamic compression helps improve blood flow and lymphatic drainage.



REDUCED SWELLING & SORENESS

May help reduce inflammation and muscle soreness after activity or exertion.



FASTER RECOVERY

Supports the body's natural recovery process so you can feel better, sooner.



RELAXATION & WELL-BEING

Can promote relaxation and a sense of rejuvenation for both body and mind.



When used consistently, compression recovery systems can be a powerful tool to support your body's ability to heal and perform.





How Compression Is Thought to Work

Compression may help:

- ✓ circulation
- ✓ fluid movement
- ✓ soreness
- ✓ heaviness
- ✓ swelling

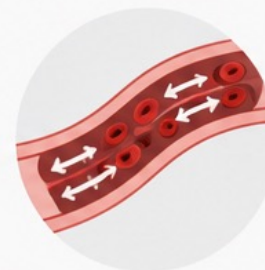


Compression therapy uses gentle, sequential pressure to support your body's natural processes and promote recovery.



1. Gentle Squeeze

Sequential compression applies gentle pressure to the legs.



2. Improved Circulation & Fluid Movement

This may help move blood and lymph more efficiently and reduce fluid buildup.



3. Support for Recovery

Better circulation and reduced swelling may help your body recover, feel lighter, and perform better.

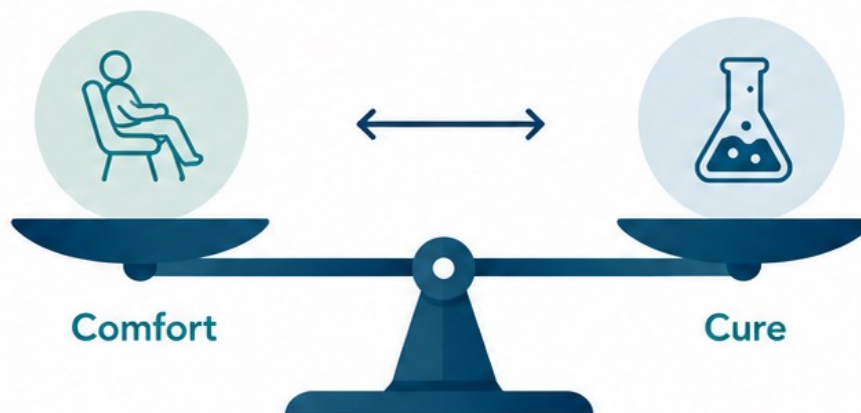
Why This Is Interesting in Mitochondrial Disease

Possible reasons people explore compression:

- ✓ heavy or tired legs
- ✓ soreness after activity
- ✓ recovery support
- ✓ autonomic symptoms
- ✓ comfort



Everyone's body responds differently. Compression may offer supportive benefits, especially when energy and recovery can be unpredictable.



Important Reminder

Recovery support $\neq$ energy production.
Compression is not a treatment or cure.

Risks, Contraindications, and Safety



SAFETY FIRST

Compression is not appropriate for everyone.

Always check before you use.

Use caution with:



blood clot history (DVT)



severe vascular disease



skin breakdown



uncontrolled heart failure



severe discomfort

SAFETY CHECKLIST



Review your health history



Know your conditions



Watch for skin changes



Start slowly



Stop if you feel pain, numbness, or discomfort



Consult your healthcare provider if unsure

When Might Compression Be Reasonable?



May be reasonable for:



sore or heavy legs



recovery after activity



swelling



prolonged sitting



comfort



Less Ideal For:



sensory sensitivity



pain with touch



severe skin sensitivity



Everyone is different.

Listen to your body and choose what feels right for you.



What the Evidence Supports Best

Research supports compression for some outcomes more than others.



**BETTER
EVIDENCE**



Athletic recovery



Soreness reduction



Swelling management



Venous circulation support



**LIMITED
EVIDENCE**



Mitochondrial disease



Chronic fatigue



Exercise intolerance



More research is needed.

Compression may help with symptoms and comfort as part of your overall strategy.



Hype vs Reality

Let's look at the claims vs. what evidence actually shows.



HYPE



"Boosts recovery dramatically"



"Removes toxins"



"Essential for healing"



**BOLD CLAIMS.
BIG PROMISES.**

*But not always backed
by strong evidence.*

VS.



REALITY



may improve comfort



may reduce soreness



may help recovery feel easier



individualized response



**EVIDENCE FIRST.
INDIVIDUAL ALWAYS.**

*Compression is a tool,
not a miracle.*

Final Takeaway

Comfort Tool. Not Magic.

Compression may help:

- ✓ comfort
- ✓ recovery
- ✓ heaviness



But pacing still matters.

Listen to your body. Rest when needed.
Progress is not always linear.



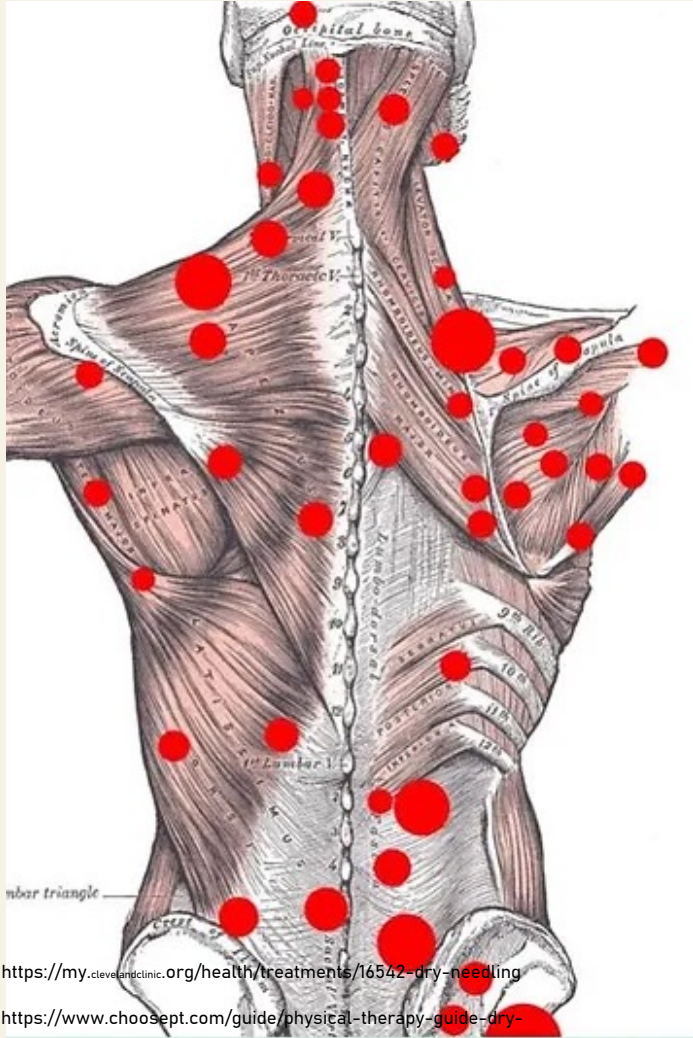
Use what helps. Skip what doesn't. You know your body best.





TRIGGER POINT DRY NEEDLING

TRIGGER POINT DRY NEEDLING



Uses a thin sterile needle to treat tight, painful muscle 'trigger points'.



May help reduce pain, improve movement, and decrease muscle tension.



Different from acupuncture: Western medicine foundation, depth, goal, and time



Should be performed by trained providers after discussing risks/benefits.

Fascial Dry Needling Mechanism

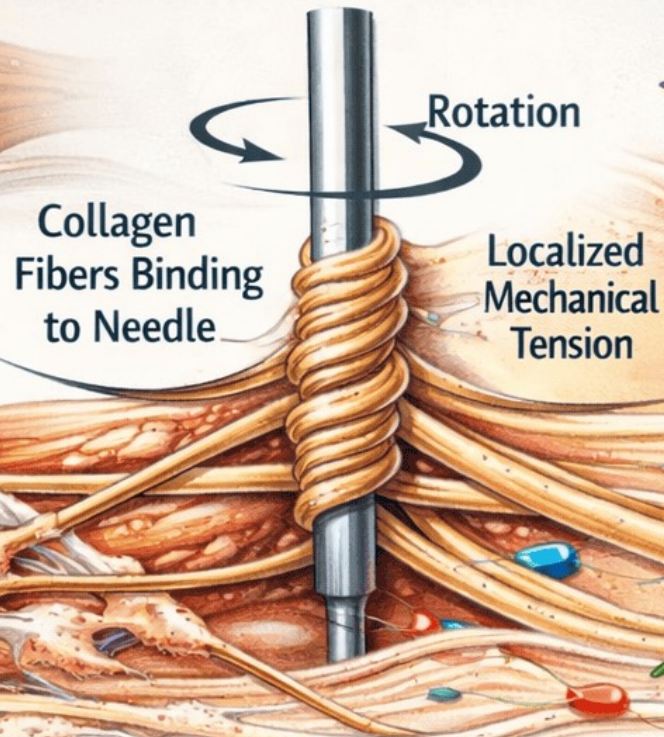
Traditional Trigger Point Approach



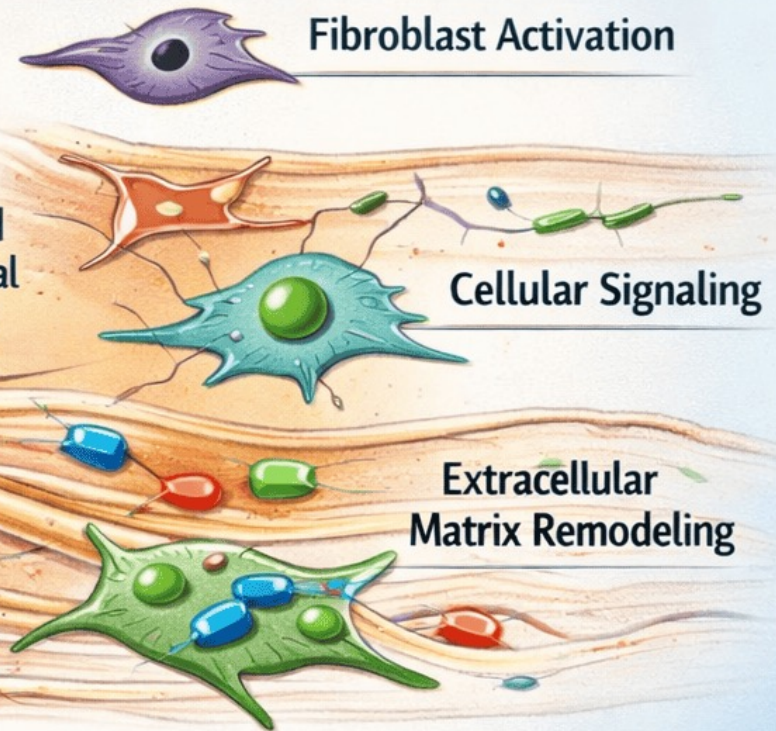
Fascial Dry Needling



Needle Insertion & Rotation ("Winding")



Mechanotransduction Response



→ Mechanical Stimulus → Cellular Response →

TOOL- ASSISTED SOFT TISSUE MOBILIZATION



HOW THE GRASTON® TECHNIQUE WORKS

Understanding Instrument-Assisted Soft Tissue Mobilization and Recovery

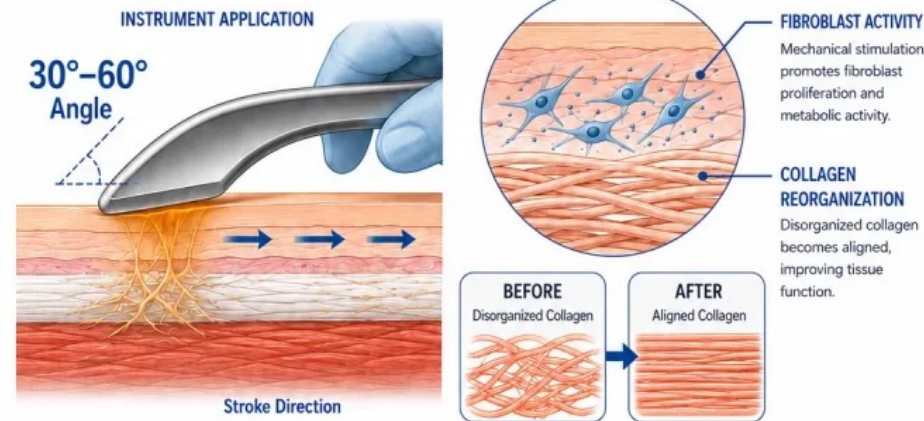
1. UNDERSTANDING SOFT TISSUE RESTRICTIONS

Adhesions and scar tissue can restrict normal movement and contribute to pain and stiffness.



2. THE GRASTON® TREATMENT PROCESS

A stainless-steel instrument helps detect and treat soft tissue restrictions.



3. WHAT TO EXPECT DURING TREATMENT



SOFT TISSUE MOBILIZATION



GRASTON TECHNIQUE®

What is it?

A therapist uses smooth stainless-steel instruments to gently glide over the skin.

The instruments help identify areas of tightness or scar tissue and may improve soft tissue mobility.

Potential Benefits

May reduce muscle tightness and stiffness

May improve flexibility and range of motion

Can help decrease pain in some people

May improve movement and comfort during daily activities

Often combined with stretching, strengthening, and exercise for best results



CUPPING

Cupping uses special cups placed on the skin to create gentle suction. The suction lifts the skin and underlying tissues instead of applying pressure from above.

Physical therapists may use cupping as part of a treatment plan to improve soft tissue mobility and comfort.

Potential Benefits

- ✓ May decrease muscle tightness and stiffness
- ✓ May improve flexibility and range of motion
- ✓ May temporarily reduce pain and soreness
- ✓ May improve blood flow to treated tissues
- ✓ Can make stretching and movement exercises more comfortable



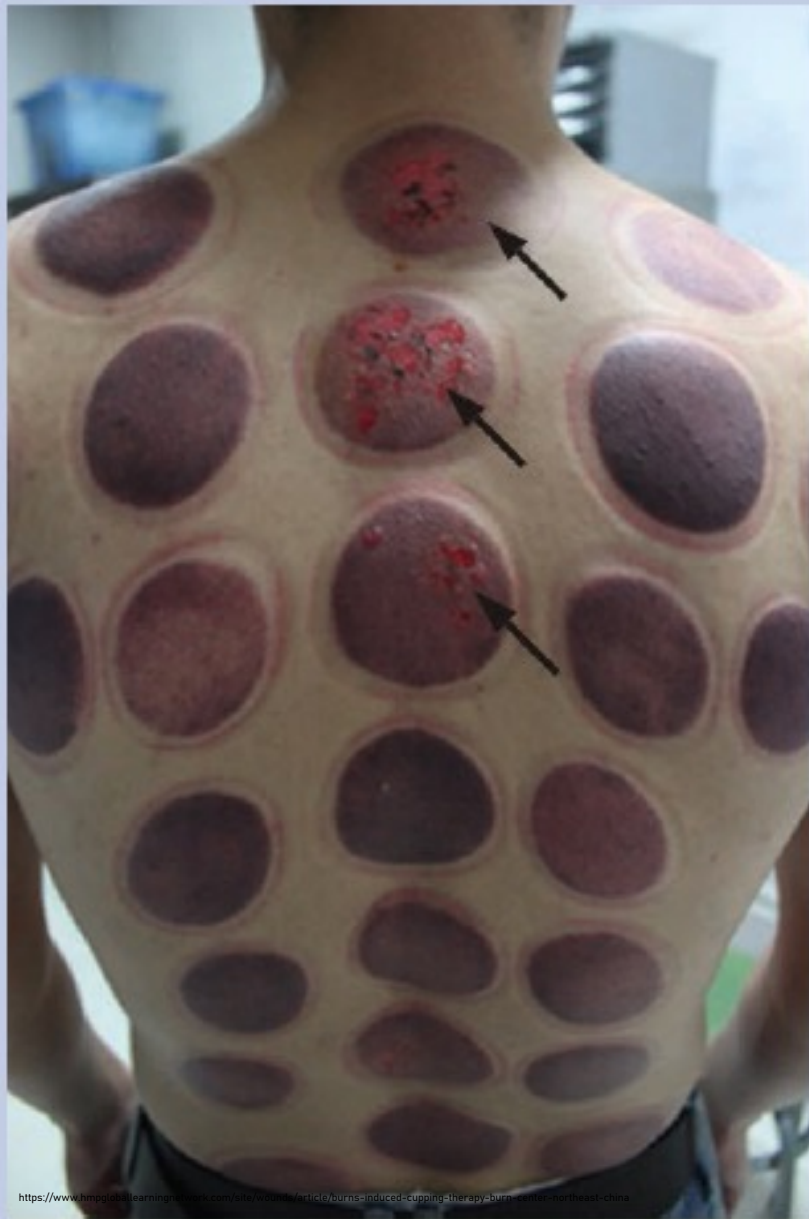


Figure 3. Burns induced by cupping therapy on the back of a 28-year-old man (see arrows). Dressings were changed every day and the wounds healed in 7 days without scarring.

CUPPING CONSIDERATIONS

Things to Consider for People with Metabolic Disorders

- ⚠ Research specifically in mitochondrial and metabolic disorders is very limited.
- ⚠ Cupping should be considered a **complementary therapy** and is most effective when combined with exercise, stretching, and functional rehabilitation.
- ⚠ Extra caution may be needed for individuals with:
 - Fragile skin or connective tissue
 - Bleeding disorders or blood-thinning medications
 - Significant sensory loss (difficulty feeling pain or temperature)
 - Open wounds, active skin infections, or recent surgical incisions
 - Severe osteoporosis or fragile bones



STATE OF THE EVIDENCE

Things to Consider for People with Metabolic Disorders

Not everyone is an appropriate candidate.

Treatment may cause temporary redness, soreness, or mild bruising.

Extra caution may be needed for people with:

- Fragile skin or connective tissue

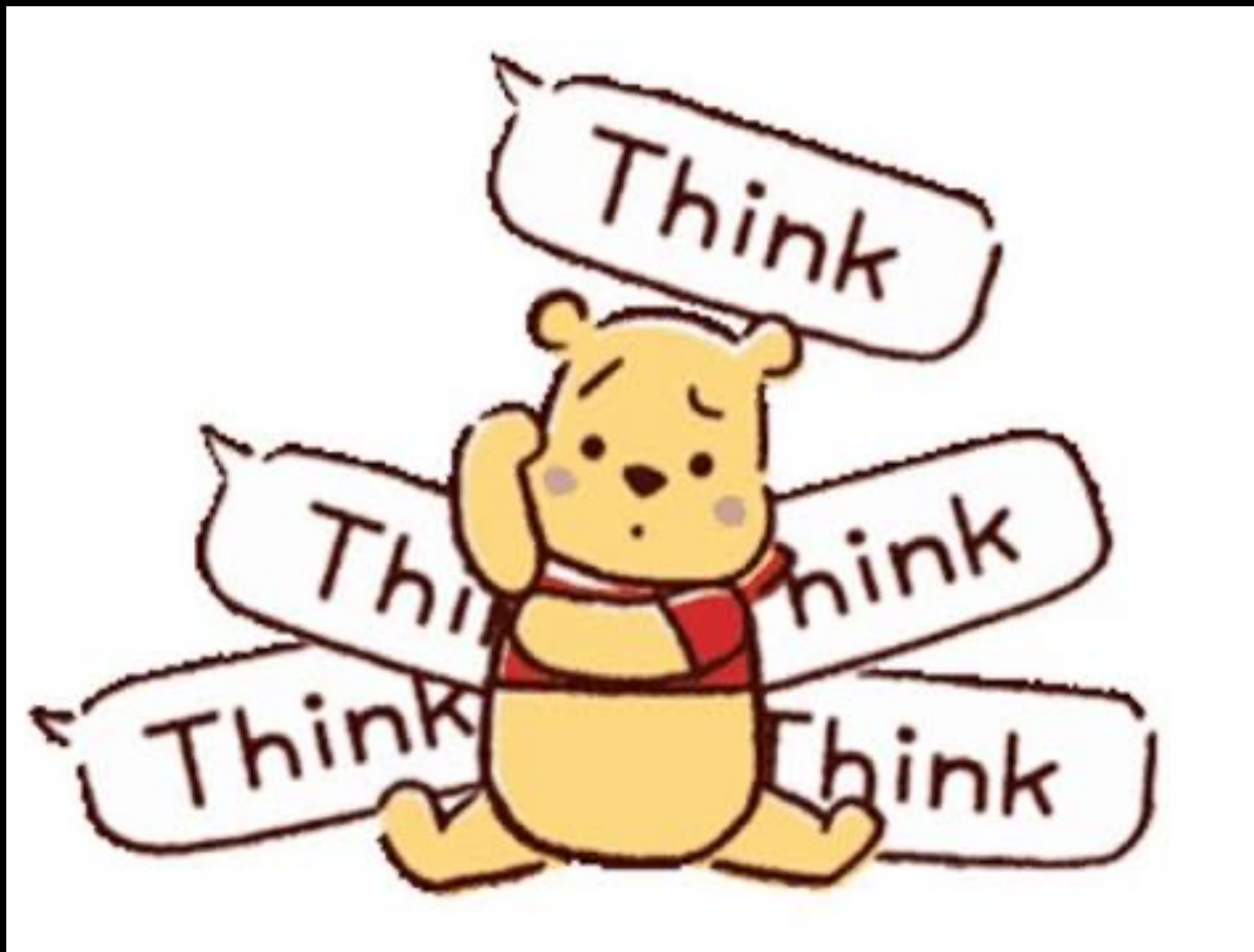
- Bleeding disorders or blood-thinning medications

- Osteoporosis or fragile bones

- Significant sensory loss

Bottom Line

Soft tissue mobilization may help improve comfort and movement for some individuals, but it should be individualized and performed by a trained clinician as part of a comprehensive therapy program.



FINAL
THOUGHTS

WRAP UP & KEY TAKEAWAYS

Today we explored complementary therapies that have varying degrees of research support but may help you bridge the gap between symptoms and solutions.

“

The goal is not just to manage symptoms, but to support function, build resilience, and improve quality of life.

”



KEY REMINDERS



These therapies are tools, not one-size-fits-all solutions.



Individual needs, goals, and the right combination matter most.



Consistency, patience, and the right plan lead to results.



Always work with qualified professionals who can guide and personalize your care.



WHERE WE GO FROM HERE



Ask questions.
Get informed.



Build a plan
that fits you.



Take action.
Track progress.



THE BOTTOM LINE

These evidence-informed therapies can help improve function, reduce symptoms, and enhance quality of life. Small steps, supported by the right tools and guidance, can lead to meaningful, lasting change.

*Thank you for being here
and for your commitment
to getting better.*



QUESTIONS?



AQUATIC THERAPY

REFERENCE GUIDE

Aquatic therapy uses the unique properties of water to support movement, reduce pain, improve strength and endurance, and enhance overall function. It is safe, adaptable, and effective across a wide range of conditions.



WHAT IT IS

- Therapeutic exercise performed in water
- Uses water's properties (buoyancy, resistance, hydrostatic pressure, temperature)
- Delivered in pools for rehab, conditioning, and wellness



HOW IT WORKS

- Buoyancy reduces joint loading
- Water resistance builds strength
- Hydrostatic pressure reduces swelling and supports circulation
- Warm water relaxes muscles and reduces pain



POTENTIAL BENEFITS

- Pain reduction
- Improved strength and endurance
- Increased range of motion and flexibility
- Better balance and coordination
- Enhanced mood and sleep
- Faster recovery



CAUTIONS + PRECAUTIONS

- Open wounds or active infections
- Uncontrolled seizures
- Severe cardiac or respiratory instability
- Contagious conditions
- Deep water not recommended without supervision

Consult your healthcare provider when in doubt.



TOO MUCH CAN BACKFIRE

- Overexertion
- Fatigue
- Muscle soreness
- Pool temperature too cold or too hot
- Dehydration
- Poor technique or positioning

*Start low.
Progress gradually.
Listen to your body.*

AT A GLANCE



Low-impact and joint-friendly



Supports strength, endurance, and flexibility



Improves cardiovascular fitness and respiration



Enhances balance, mobility, and functional independence



Supports physical and mental well-being

COMMON USES



Pain management (back, neck, joints, fibromyalgia)



Arthritis and joint conditions



Post-surgical rehabilitation



Sports performance and conditioning



Neurological conditions



Cardiovascular health and endurance



Fall prevention and balance training



WHAT TO LOOK FOR WHEN CHOOSING A PROGRAM OR FACILITY

- ✓ Qualified and experienced staff
- ✓ Warm, clean, well-maintained pool
- ✓ Appropriate water temperature (typically 88–94°F)
- ✓ Small group or individualized programs
- ✓ Accessibility (ramps, lifts, shallow entry)
- ✓ Clear safety protocols



WHAT TO AVOID

- ✗ Programs with no medical screening
- ✗ Unsanitary or poorly maintained pools
- ✗ Unsupervised deep water programs
- ✗ Overly intense programs too soon
- ✗ Promises of quick fixes or “miracle” results



HOW TO START SAFELY

1. Get medical clearance if needed
2. Start with an assessment
3. Begin with low intensity
4. Focus on form and posture
5. Progress gradually
6. Stay hydrated and rest as needed



BOTTOM LINE

Aquatic therapy is a versatile, evidence-supported tool for recovery, performance, and lifelong health.



Move better.
Feel better.



Restore function.
Build confidence.



Support your body
inside and out.



Water is a
powerful ally.

Use it thoughtfully. Focus on what helps your body work **better**, not just what looks impressive.

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HIPPOTHERAPY

REFERENCE GUIDE

Hippotherapy (equine-assisted therapy) uses the movement of the horse to help improve physical, cognitive, sensory, and emotional function. It is a safe, evidence-informed intervention provided by trained professionals in a structured environment.



WHAT IT IS

- A therapeutic intervention that uses the movement of a horse as treatment.
- Provided by licensed therapists, physical therapists, occupational therapists, or speech-language pathologists with specialized training.
- Conducted in a safe, controlled environment.
- The participant may be mounted (riding) or unmounted (grooming, leading, ground activities).



HOW IT WORKS

- The horse's rhythmic, repetitive movement mimics human pelvic movement.
- This movement provides a motor input to the brain and body.
- Improves balance, postural control, coordination, and muscle function.
- Multi-sensory experience (vestibular, proprioceptive, tactile, visual, auditory) supports learning and neuroplasticity.
- Encourages motivation, engagement, and active participation.



POTENTIAL BENEFITS

- Improved balance and posture
- Increased strength and muscle tone
- Enhanced coordination and motor planning
- Improved gait and walking ability
- Better attention, memory, and executive function
- Improved speech and language (in some cases)
- Reduced anxiety and stress
- Greater confidence and self-esteem
- Improved social skills and emotional regulation



CAUTIONS + PRECAUTIONS

- Medically unstable individuals
- Severe osteoporosis
- Atlantoaxial instability
- Uncontrolled seizures
- Recent fractures or surgery (consult provider)
- Severe hip dislocation
- Pregnant individuals (consult provider)

Consult your healthcare provider when in doubt.



TOO MUCH CAN BACKFIRE

- Muscle soreness
- Fatigue
- Overstimulation
- Poor posture or positioning
- Anxiety if pushed beyond comfort level

*Start slow.
Progress gradually.
Listen to your body.*

AT A GLANCE



Rhythmic, three-dimensional movement of the horse translates to the rider's body



Improves balance, posture, strength, and coordination



Supports motor learning, sensory processing, and neuroplasticity



Builds confidence, motivation, and emotional well-being



Engaging, fun, and effective for people of all ages

COMMON USES



Cerebral palsy and neurological conditions



Developmental delays and autism



Balance and coordination disorders



Orthopedic conditions and injuries



Sensory processing challenges



Emotional and behavioral support



Pain management and fibromyalgia



Pediatric and adult rehabilitation



WHAT TO LOOK FOR WHEN CHOOSING A PROGRAM

- | | |
|--|---|
| ✓ PATH Intl. accredited center | ✓ Individualized treatment plans |
| ✓ Licensed and credentialed therapists | ✓ Clear safety protocols and emergency procedures |
| ✓ Well-trained, suitable horses | ✓ Positive reviews and references |
| ✓ Safe facilities and equipment | ✓ Strong communication and collaboration |



WHAT TO AVOID

- ✗ Untrained staff or uncertified programs
- ✗ Overly large groups without individual attention
- ✗ Pressure to start riding before ready
- ✗ Unsafe facilities or poor horse care
- ✗ Promises of "cures" or unrealistic outcomes
- ✗ Lack of clear safety protocols



HOW TO GET STARTED SAFELY

1. Get medical clearance if needed
2. Choose a PATH Intl. accredited center
3. Work with a certified therapist
4. Ensure trained horses and safe environment
5. Start with an assessment and goals
6. Begin with short sessions
7. Monitor response and progress
8. Communicate any concerns

PATH Intl. = Professional Association of Therapeutic Horsemanship International



BOTTOM LINE

Hippotherapy is a powerful, evidence-supported tool for whole-person growth and function.



Movement that heals.



Neuroplasticity in action.



Confidence through connection.



For all ages. Many abilities.



Partnering with horses. Empowering people.

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Use it thoughtfully. Focus on what helps your body work **better**, not just what looks impressive.



RED LIGHT THERAPY

REFERENCE GUIDE

Red and near infrared light therapy (photobiomodulation) uses specific wavelengths of light to support cellular energy, reduce inflammation, and promote tissue repair.



WHAT IT IS

- Uses red (620–680 nm) and near infrared (810–850 nm) light.
- Penetrates the skin and tissues.
- Absorbed by cellular chromophores, especially cytochrome c oxidase in mitochondria.



HOW IT WORKS

- Boosts mitochondrial ATP production
- Reduces oxidative stress and inflammation
- Supports circulation and tissue repair
- Modulates pain signaling



POTENTIAL BENEFITS

- Improved energy and stamina
- Reduced pain and inflammation
- Faster recovery
- Improved sleep and mood
- Skin and tissue healing
- Neurological support



CAUTIONS + PRECAUTIONS

- Eye exposure
- Active cancer at treatment site
- Photosensitivity disorders
- Seizure disorders
- Autonomic instability
- Heat sensitivity

Consult your healthcare provider when in doubt.



TOO MUCH CAN BACKFIRE

- More is NOT always better
- Possible reactions:
 - Headache
 - Overstimulation
 - Fatigue flare
 - Poor sleep
 - Symptom worsening

*Biphasic Dose Response:
Too little → Helpful zone
→ Too much*



WHAT TO LOOK FOR WHEN BUYING

- ✓ Wavelength listed
- ✓ Irradiance (mW/cm²) data
- ✓ Treatment distance guidance
- ✓ Eye safety guidance
- ✓ Return policy
- ✓ Independent testing



WHAT TO AVOID WHEN BUYING

- ✗ "Cures mitochondria"
- ✗ "Medical grade" without evidence
- ✗ No wavelength listed
- ✗ Vague science words
- ✗ Affiliate-heavy marketing
- ✗ Impossible claims

AT A GLANCE



Non-invasive and generally safe



Supports mitochondrial function and ATP production



Well-tolerated when used appropriately



More is NOT always better

BEST-SUPPORTED WAVELENGTHS



660 nm

RED LIGHT

Supports skin, circulation, inflammation, and healing



810–850 nm

NEAR INFRARED

Penetrates deeper to support muscles, joints, and mitochondria

COMMON USES



Fatigue and low energy



Pain and inflammation



Recovery and performance



Sleep and mood



Skin health and wound healing



Neurological support



HOW TO TRIAL IT SAFELY

1. One body area first
2. Low frequency
3. Track symptoms
4. Watch recovery
5. Stop if worse



FINAL TAKEAWAY



Interesting tool.



Not magic.



Biologically plausible.



Promising in some areas.



Still limited mitochondrial-specific evidence.

Use it thoughtfully. Focus on what helps your body work **better**, not just what looks impressive.

References: Hamblin MR. Photobiomodulation. Photomed Laser Surg. 2017.
Salehpour F et al. Photobiomodulation therapy in musculoskeletal pain. Lasers Med Sci. 2018.



COMPRESSION THERAPY

REFERENCE GUIDE

Compression therapy uses targeted pressure to promote circulation, reduce swelling, support recovery, and improve overall performance and well-being. It is safe, non-invasive, and effective for many populations.



WHAT IT IS

- Uses pneumatic (air) pressure to gently compress limbs
- Devices include sleeves, boots, or garments
- Pressure is delivered in sequences to enhance blood and lymph flow



HOW IT WORKS

- Sequential compression mimics natural muscle pump
- Improves venous return and lymphatic flow
- Reduces fluid buildup and inflammation
- Enhances circulation and oxygen delivery



POTENTIAL BENEFITS

- Reduced muscle soreness and fatigue
- Decreased swelling and inflammation
- Faster recovery time
- Improved circulation and lymphatic flow
- Enhanced performance
- Relaxation and stress relief



CAUTIONS + PRECAUTIONS

- Blood clots (DVT) or history of DVT
- Severe heart failure
- Uncontrolled infections
- Severe peripheral arterial disease
- Active cancer (consult provider)
- Pregnancy (consult provider)

Consult your healthcare provider when in doubt.



TOO MUCH CAN BACKFIRE

- Excessive pressure
- Too long or too often
- Numbness or tingling
- Bruising or discomfort
- Restricted circulation

Use the lowest effective pressure for the appropriate time. Listen to your body.

AT A GLANCE



Promotes circulation and lymphatic drainage



Reduces swelling and muscle soreness



Speeds recovery and reduces recovery time



Enhances performance and supports training



Supports overall wellness and relaxation

COMMON USES



Muscle recovery and soreness



Athletic performance and recovery



Post-surgical recovery



Travel (reduce swelling and DVT risk)



Poor circulation and leg swelling



Lymphedema and lymphatic support



Chronic venous insufficiency



Stress relief and relaxation



WHAT TO LOOK FOR WHEN BUYING

- ✓ Evidence-based technology
- ✓ Adjustable pressure settings
- ✓ Multiple chamber (sequential) system
- ✓ Multiple size options
- ✓ Ease of use and portability
- ✓ Good warranty and customer support
- ✓ Safety certifications (FDA registered facility, CE mark, etc.)
- ✓ Clear instructions and protocols



WHAT TO AVOID

- ✗ One-size-fits-all pressure settings
- ✗ Overly aggressive or high pressure
- ✗ Too long or too frequent sessions
- ✗ Cheap devices with poor quality
- ✗ Unrealistic promises or "miracle" claims



HOW TO USE SAFELY

1. Read and follow user instructions
2. Start with low pressure and shorter sessions
3. Stay hydrated
4. Avoid use with certain medical conditions (see cautions)
5. Monitor how your body responds
6. Consult your healthcare provider if you have concerns



BOTTOM LINE

Compression therapy is a proven, effective tool to support recovery, performance, and overall health.



Improve circulation.
Reduce swelling.



Recover faster.
Feel better.



Perform better.
Live better.



Support your body
every day.



Safe, effective,
and non-invasive.

Use it thoughtfully. Focus on what helps your body work **better**, not just what looks impressive.

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HIPPOTHERAPY

RESEARCH REFERENCES

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ABOUT THE EVIDENCE

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Clinical outcomes can vary based on individual needs, diagnosis, dosage (frequency and duration), and the expertise of the therapy team. Always consult a qualified healthcare provider to determine if hippotherapy is appropriate.



For more information and research updates, visit: www.americanhippotherapyassociation.org

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May 2024



RED LIGHT THERAPY

RESEARCH REFERENCES

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COMPRESSION THERAPY

RESEARCH REFERENCES

Peer-reviewed studies on compression therapy (pneumatic compression and compression garments) and its effects on circulation, recovery, performance, swelling, and health outcomes.



ABOUT THE EVIDENCE

Compression therapy has been scientifically studied in a wide range of populations including athletes, clinical patients, and healthy adults.

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