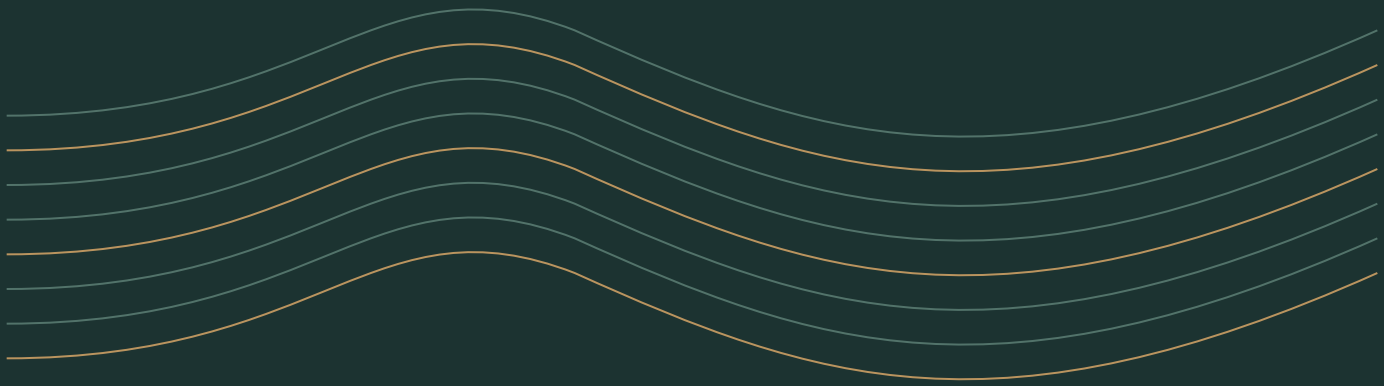
Why pain keeps coming back

An illustrated guide to recurring pain, what symptoms and scans can tell you, and how to track progress in everyday life.



Find your question

What are you trying to figure out?

How do I know if my exercises are worth doing?

Why does my back pain keep coming back even when I do my exercises?

Why do I feel better after treatment, then hurt again?

What do the findings on my MRI mean?

Why do my hamstrings still feel tight after stretching?

Is the pain or tingling down my leg sciatica?

Why does my heel hurt on the first few steps?

What if my symptoms are new or changing?

Full contents · Movement and flare log · Appointment worksheet

Something you can say at your next appointment

“I can drive about 25 minutes before my back starts bothering me. Treatment helps that day, but the same drive is still hard. Can we use that drive to tell whether the plan is working?”

When symptoms need medical attention

This guide is for learning about recurring musculoskeletal symptoms. If the pattern changes suddenly or you feel seriously unwell, the priority changes with it.

Seek emergency care for possible spinal nerve compression

With back or leg symptoms, new numbness around the genitals, anus, or inner thighs, new trouble passing urine, loss of bladder sensation, or new loss of bladder or bowel control warrant emergency assessment. Serious spinal nerve compression can be hard to rule out from symptoms alone. [2,3]

Call emergency services for possible heart attack or another chest emergency

New or unexplained chest pressure or pain, especially with shortness of breath, sweating, faintness, nausea, or pain spreading to an arm, the jaw, or the back, warrants emergency help. In the U.S., call 911. [118]

Get prompt medical assessment for other significant changes

Seek prompt assessment for new or worsening weakness, trouble walking, hand clumsiness with neck symptoms, severe pain after trauma, or severe back pain with fever or a relevant history such as cancer. The combination, timing, and clinical context matter. Rapid or severe neurological changes warrant emergency assessment. [1,2,3,119]

When a symptom feels new, unfamiliar, or much more severe than your usual pattern, describe the change to a healthcare professional. A movement experiment can wait.

Contents

Question index · When symptoms need medical attention

FOUNDATIONS

Why does my pain change from day to day? 6

Can pain come from somewhere other than where I feel it? 7

What do the findings on my MRI mean? 8

Why does my neck tighten up again? 9

Why do my hamstrings still feel tight after stretching? 10

Why is lifting a suitcase hard when I can lift more at the gym? 11

ANATOMY

How do breathing and the pelvic floor support my core? 12

Why does sitting hurt my back when walking feels fine? 13

Is the pain or tingling down my leg sciatica? 14

Does how I sit cause my neck pain? 15

Why does my shoulder hurt when I reach overhead? 16

Why does my heel hurt on the first few steps? 17

Why does my Achilles hurt again when I return to running? 18

Can I get stronger and move better with knee arthritis? 19

Why does my hip hurt on stairs or when I lie on my side? 20

Why does my ankle still give way after a sprain? 21

Could squeezing make my pelvic floor symptoms worse? 22

Can my ribs, fascia, or organs affect how I move? 23

Contents, continued

METHOD

How can I tell if physical therapy is helping? 24

Why do I feel better after treatment, then hurt again? 25

How do I know if my exercises are worth doing? 26

What can I learn when my back pain flares up again? 27

Why is it harder to concentrate when I’m in pain? 28

What should I ask if I still don’t understand my pain? 29

LONGEVITY

How do I get back to the things pain made me give up? 30

How do I build strength and balance for everyday life? 31

TOOLS & SOURCES

Track a movement or a flare 32

Get ready for your next appointment 33

Journal references 34

About the author 45

Why does my pain change from day to day?

Pain, tissue, and the nervous system

You wake up sore after a fairly ordinary day. On another day you carry groceries, go for a walk, and barely notice the same area. If pain were a direct measure of damage, those two days would be hard to explain.

Why a sore day can feel different after poor sleep

Pain is an experience shaped by what is happening in and around your body. *Nociception* is how your nerves pick up and pass along signals about possible harm. Pain is what you feel. A sprain can hurt because injured tissues are sending strong signals. Poor sleep or a highly sensitive nervous system can make a familiar movement feel more threatening. Both experiences are real. [4,5,6,7,92]

Why the same movement can feel more painful

Your nervous system can become more or less sensitive over time. Clinicians sometimes use the word *nociplastic* for pain that involves changes in how your body processes pain signals. An injury, a nerve problem, and changes in sensitivity can all play a part. One painful day gives you only part of the picture. [5,7,8]

What needs checking, and what can you do today?

What needs protection or medical attention right now? A fresh injury, new weakness, or a major change in symptoms can change what is safe. **What can I comfortably do today?** When a clinician has established that activity is appropriate, the answer can change even while you still feel some symptoms. [1,9,10]

Is this your usual pattern?

“Does it hurt more than usual, or does it feel different?” Write down the difference in plain language. “My back felt more sore this morning” gives a different history from “my foot started catching on the stairs.”

Track what you could do as well as how much it hurt

A pain rating tells you how much something hurts. Add what you could do, what changed, and how long it lasted.

Can pain come from somewhere other than where I feel it?

Local pain, referral, and shared work

Suppose the outside of your hip hurts going downstairs. The hip deserves attention. So does the task. What happens when you hold the rail, use a shorter step, or lead with the other leg?

Pain where you feel it, referred pain, and nerve pain

Local symptoms arise in or around a painful region. **Referred pain** is felt away from the structure contributing to it. **Radicular pain** involves signals from a spinal nerve root or nearby cluster of nerve cells. *Radiculopathy* describes impaired nerve function, such as weakness, sensation changes, or altered reflexes. The patterns can overlap. [8,11,12]

What if the sore spot is doing extra work?

Sometimes what feels like the problem is actually your body's response to the problem. If the outside of your hip hurts going downstairs, think about what happens when you use the rail. The rail can change how much work the leg has to do. A clinician can use that clue to decide what to check next. [13,14,15]

If moving your ankle helps a squat, does it help on stairs?

If changing the ankle helps a squat, we have learned something about that squat. We still need to know whether the change repeats, whether the hip itself needs care, and whether stairs feel any different on a regular day. You can check whether the ankle matters even if you're unsure where the pain started.

Ask how another area could affect the movement that hurts

"How could that area be affecting my pain?" If the connection is hard to picture, ask what changes when you repeat the movement that hurts.

Test the movement that brings on your pain

Several parts of your body help you move. An exam can help narrow down which ones matter for the movement that hurts.

What do the findings on my MRI mean?

Disc findings, arthritis, and imaging decisions

“Degenerative changes” can sound like a forecast. A scan describes structures at the time it was taken. The history and exam help determine which findings are likely to matter today.

What do scans show in people without symptoms?

In a review of people without back pain, an estimated 37% of 20-year-olds and 96% of 80-year-olds had signs of lumbar disc degeneration. Estimated disc bulges rose from 30% to 84% across those ages. [16] The review counted how often findings appeared in people without symptoms. Other studies document similar findings in symptom-free backs, necks, and knees. [17,19,20,21] Some disc findings also occur more often in adults with back pain than in people without it. [18]

When can the image change the plan?

A clinician may need imaging when there are signs of a serious condition, new or worsening problems with nerve function, such as weakness, or when an imaging result would alter a procedure or another management decision. Trials of immediate routine imaging for low back pain without signs of serious disease found no better clinical outcomes than usual care without immediate imaging. [1,2,9,22]

Does the finding match your symptoms?

Location. Does the side and level make sense for my symptoms? **Function.** Does the finding fit the strength, sensation, or movement changes seen in the exam? **Decision.** Would this result change what I do next? Ask these questions with the full report and your history available. [11,12,22]

Compare the MRI with what happens on a walk

Two people can both have an L4-L5 bulge. One gets back soreness after gardening and walks normally. The other develops new foot weakness. Those histories call for different decisions even when a line in the reports sounds similar. The second person needs prompt assessment.

What to ask about your scan

“Which of these findings might explain my pain? What would make you think differently?”

Why does my neck tighten up again?

Guarding, adaptation, and actual stiffness

Have you ever noticed that your shoulders are practically at your ears when you finish a difficult email? A muscle can feel tight after working for a long time in a narrow range. That feeling can also arise with stiffness, soreness, or sensitivity. The sensation itself leaves several possibilities open.

Why muscles may work harder when you hurt

Pain can change how people share work across muscles and joints. Some people use more trunk muscle activity and move stiffly. Other people show different or even opposite movement patterns. A short-term adjustment can help you finish a task. Repeated over a whole workday, that adjustment can become tiring or leave you with fewer comfortable options. [23,24,25]

Does tightness limit how far you can move?

A clinician can compare what you feel with what they observe. Does motion stop early? Does it look different when your body is supported? Does a small amount of movement ease the feeling? Can you move that far with nothing in your hands, but struggle when you pick something up? These questions help separate the experience of tightness, available motion, and the ability to control that motion. [23,24,26]

What happens if your eyes lead the turn?

When you turn to check traffic, your shoulder might rise and your trunk might turn along with your head. A clinician might compare a supported and unsupported turn, check whether the neck moves comfortably in isolation, then revisit the actual task. Shoulders rising can be an ordinary strategy. Whether it matters depends on what the comparison changes and whether it fits the symptom history. [13,25,27]

What kind of tightness are you feeling?

“Is my neck stiff, or does it just feel tight when I turn?” The answer helps decide what to check next.

Does turning your neck take less effort?

How hard does the movement look and feel? A few easier degrees can matter more than a bigger range that takes all your effort.

Why do my hamstrings still feel tight after stretching?

Range, stretch tolerance, and PNF

Picture the two small hinges in your index finger. You can feel a pull on the whole finger while the joint you intended to move barely bends. The same thing can be harder to see around a hip or shoulder.

Why you might reach farther right after stretching

Stretching can improve range. Right after a stretch, you may move farther because the stretch feels easier to tolerate. Depending on the program and how it is measured, stiffness can change too. Resistance training through a suitable range can also improve mobility. Choose based on the outcome you want and what carries over. [26,28,29,30]

How PNF uses resistance and feedback

Proprioception is your sense of where your body is and how it moves. *Proprioceptive neuromuscular facilitation*, or PNF, uses tools such as resistance, timing, and feedback to practice movement. Studies of PNF stretching describe changes in range of motion. Trials of PNF for chronic low back pain suggest possible benefits, with limitations in the evidence. [31,116]

What if moving your ankle changes the pull in your thigh?

During an exam, I might hold your thigh and knee still and change the angle of your ankle. If the familiar pull changes, I'd check whether a sensitive nerve might be contributing. I'd compare that response with where you feel symptoms and what I find when I check strength and sensation. [8,12,32,33]

What would make stretching worth your time?

If the goal is tying your shoes, check how you tie your shoes later in the day. Record how much easier it is and how long the difference lasts. If you enjoy the stretch for short-term comfort, that is also a valid goal.

Check whether stretching helps you tie your shoes

Choose the result you want before choosing the stretch. Test the result during the activity you actually care about.

Why is lifting a suitcase hard when I can lift more at the gym?

Capacity, coordination, and adaptability

Someone can deadlift a respectable weight and still feel awkward lifting a suitcase into a car. The suitcase sits off to one side, starts at an odd height, and may need to clear a bumper. The strength is real. The task asks for something extra.

Check motion, strength, control, and adaptability

Motion. Can you move far enough? **Strength and stamina.** Can you make and sustain the effort? **Control.** Can you direct that effort where and when you need it? **Adaptability.** Can you still do it when you're tired or the ground is uneven? [15,24,34,35]

A stronger muscle can leave the task unchanged

In one study, stronger hips changed how people squatted on one leg. Their running form stayed about the same. In another, people with a specific pattern of knee osteoarthritis reported better symptoms and function after hip strengthening even though the measured knee loading outcome did not decrease. Those are useful reminders to check the outcome you actually wanted. [15,36]

Can you still lift the bag without a cue?

A cue can help you find a movement at first. Once you can do it, practice under ordinary conditions and check whether you still have it later. Some studies suggest it can help to focus on where you want the bag to land. How well a cue fits depends on the person and task. [34,37]

Why do my hands go numb when the bike already fits?

Imagine your hands still go numb 40 minutes into a ride after a good bike fit. I'd ask what happens around minute 40. Does it come on during climbs, on flat roads, or after staying in one hand position? That detail helps me decide what to check.

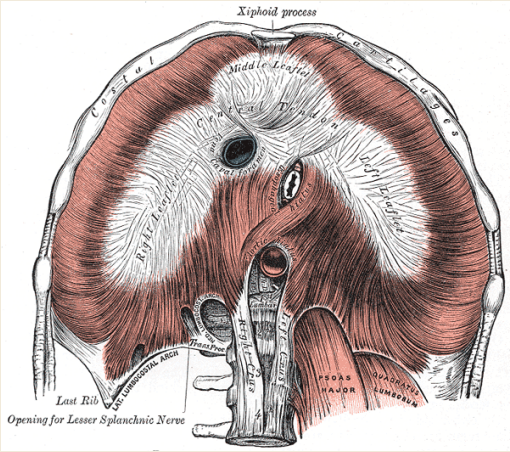
Can you repeat the movement without a reminder?

"Can I do this without being reminded how?"

How do breathing and the pelvic floor support my core?

Diaphragm, pelvic floor, abdominal wall, and pressure

Think of the moment before a sneeze. Your trunk adjusts on its own. Breathing, pressure, and muscle activity are already working together.



The diaphragm from below

The diaphragm is the broad, dome-shaped muscle below your lungs. This view looks up at it from inside the abdomen. The pelvic floor sits farther down. Both can adjust as you breathe and move. [38,40,41]

Gray's Anatomy, 1918, fig. 391

How breathing changes pressure inside your abdomen

The diaphragm is a dome-shaped muscle below the lungs. It usually moves down as you inhale. The abdominal wall and pelvic floor muscles also adjust with breathing and exertion. *Intra-abdominal pressure* is pressure inside the abdomen. In lab studies, it helped stiffen the lower spine during testing. [38,39,40,41,42]

Can you get out of a chair without bracing first?

If you can hold a plank but brace before getting out of a chair, show me the chair. I might compare your usual stand with a stand as you breathe out. Does it take less effort? That's how I check whether a cue is worth using. The research describes how breathing and trunk muscles work together. [38,40,43,44]

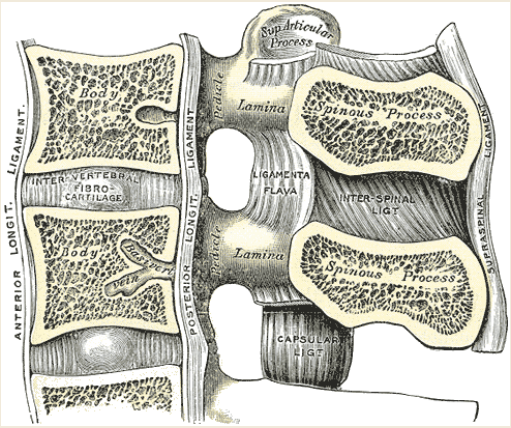
Check if you can breathe comfortably during the task

A cue can help you learn. What matters is whether you can breathe and move comfortably in the activity you came in for, with less attention on the cue over time.

Why does sitting hurt my back when walking feels fine?

Discs, joints, muscles, and load

A long drive, the first bend in the morning, and a deadlift can all bring on back symptoms. They create different demands. Start with which activity is difficult and how it behaves before applying one explanation to all three.



Two bones in the lower back

Look for “intervertebral fibro-cartilage” between the two bones on the left. That’s the disc. The bony parts and ligaments toward the back of the spine are on the right. [11,45]

Gray’s Anatomy, 1918, fig. 301

What’s in your lower back?

Discs sit between the bones of your spine. Small joints called *facet joints* connect the bones at the back. Nerves leave through openings between the bones. The story of how your pain began and an exam can help narrow things down, though the exact source often stays unclear. [9,11,45]

Compare what happens while you sit, stand, or walk

Someone who tolerates a short walk and struggles to sit through a meeting has a different starting point from someone who sits comfortably and has trouble loading a dishwasher. You might change how you’re supported, how long you go, or how fast or far you move. Exercise helps many people with persistent low back pain on average, with substantial room for individual variation. One option is to practice how you control the movement. [9,10,46,47]

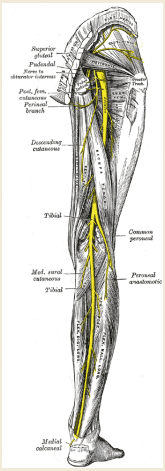
Time how long you can drive before you need to shift

“I can drive about 25 minutes before I need to shift” gives you a way to see whether care is changing the part of life that matters.

Is the pain or tingling down my leg sciatica?

Nerve roots, sciatic nerve, and symptoms below the knee

Where do your symptoms start and travel? Mention any numbness, tingling, weakness, or change in how you walk.



Nerves down the back of the leg

Follow the yellow path down the back of the thigh. The tibial branch continues toward the inner ankle. Tingling in the sole can have several causes. An exam can help decide where to look. [11,12,49]

Gray’s Anatomy, 1918, fig. 832

How the sciatic nerve runs from your back into your leg

Nerves from the lower spine join to form the sciatic nerve. It runs through the buttock and down the back of the thigh, where it splits into the tibial and common fibular nerves. The tibial nerve passes behind the inner ankle. Its branches carry feeling from parts of the sole. [11,12,48,49]

How leg position can change tingling

A clinician may change the position of your hip, knee, or ankle to see how symptoms respond. Strength, sensation, and reflexes help fill in the picture. See How can I tell if physical therapy is helping? for a foot-tingling case that took an unexpected turn. [12,32,33,50]

When weakness, numbness, or bladder changes need care

New or worsening weakness, spreading numbness, or changes in walking deserve prompt assessment. Back or leg symptoms with new numbness around the genitals or anus, new trouble passing urine, or new loss of bladder or bowel control warrant emergency assessment. [2]

Does how I sit cause my neck pain?

Neck, upper back, and desk work

If you can hold the posture you were taught for two minutes and spend the next six hours in video calls, you already know that posture advice needs a plan for time and effort.

How your eyes, neck, and upper back help you turn

The upper neck contributes to rotation. The rest of the neck and upper back also participate when you look around, depending on the task. Your eyes can lead the turn, or you can move your chair and trunk to share the effort. An easy eyes-first turn can be a low-demand way to explore a movement you already tolerate. A change tells you about that version of the task.[13,27,121]

What posture studies can tell us

Some studies find that adults whose heads sit farther forward report more neck pain. That link alone leaves the cause of your pain open. Reviews of spinal posture and physical exposure in low back pain also find mixed evidence on causality. Work-break research suggests possible comfort benefits from some break strategies, with limitations. Strength and endurance exercise can help certain neck and shoulder complaints.[27,51,52,53,54]

What a bump at the base of your neck can tell you

A bump at the base of the neck can come from the shape of the spine or the tissues around it. It can also be part of your normal shape. A photo cannot tell you which applies or whether the contour explains symptoms. A new, rapidly changing, or unexplained lump warrants a medical assessment. For familiar desk-related discomfort, useful outcomes might be turning comfortably in traffic, tolerating a meeting, or having fewer interruptions.[27]

What could make desk work easier?

Pick a familiar task and vary one thing. Bring the screen closer, support your forearms, or change when you take a short movement break. See whether the usual discomfort starts later. If it does, you have a way to get through part of the day more comfortably and a question to bring to your assessment.

A good desk setup gives you options

Set up for the work you do, then give yourself a way to vary it.

Why does my shoulder hurt when I reach overhead?

Ball-and-socket joint, shoulder blade, and rotator cuff

“Overhead hurts” might mean shampooing, reaching the top shelf, or lifting a carry-on. The arm travels differently in each case. So does the weight and the time you need to hold it there.

The rotator cuff, bursa, and shoulder blade

The head of the upper arm sits in a shallow socket on the shoulder blade. The *rotator cuff* is a group of four muscles and their tendons that contribute to rotation and help manage the joint as the arm moves. The shoulder blade moves on the rib cage, and the collarbone links the shoulder girdle to the trunk. An overhead reach uses that whole arrangement. [120]

Why the exact reach matters

A test that brings on your shoulder pain gives one clue. A clinician also considers how the pain started, how far you can move, how strong you are, and which reach gives you trouble. They may check nerve function if your symptoms point that way. [55,56]

What exercise studies found about shoulder pain

A large trial in people with rotator cuff disorders found similar shoulder outcomes over 12 months for a progressive exercise program and a best-practice advice session that included a home program. A prospective study of tears that go all the way through a tendon and developed without a sudden injury found many participants were managed without surgery over the study period. Sudden loss of function after trauma deserves separate assessment. [57,58]

Compare an unloaded reach with lifting something

If taking a cup down is easy and putting a large bowl away is hard, record the height and load. Compare a slightly lower shelf or a two-hand hold while you work with your clinician on the capacity the original task requires. Recheck the bowl later.

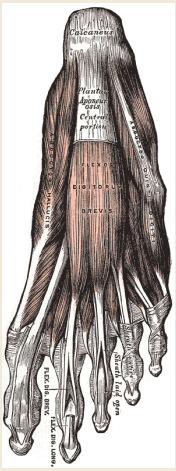
Does reaching, holding, or repeating it hurt most?

“Does it hurt most when you reach, when you hold something up, or when you do it over and over?”

Why does my heel hurt on the first few steps?

Heel pain, plantar fascia, and the foot as a lever

Pain under the heel on the first steps after rest is common in plantar fasciitis. Tell your clinician where it hurts and whether it changes as you walk. [61,62]



The underside of the foot

Look for “plantar aponeurosis” just below the heel bone. That’s the plantar fascia. It can tighten and help raise the arch as your big toe bends up during push-off. [59,60]

Gray’s Anatomy, 1918, fig. 443

Where the plantar fascia attaches to the heel

The plantar fascia is a thick band along the sole. As your big toe bends up, the band can tighten and help raise the arch. This is called the *windlass* mechanism. Foot muscles help support the arch too. [59,60]

What can help plantar heel pain?

Options include changing how much time you spend on your feet, stretching the plantar fascia, taping, and strengthening. [61,62,64] In one trial, people assigned to high-load heel raises reported better foot pain and function at three months than people assigned to plantar fascia stretching. The groups had similar outcomes at later follow-ups. [63]

Track your first steps and your usual walk

Track first-step discomfort and the walk you can tolerate. New inability to bear weight after an injury, marked swelling, or unexplained numbness calls for a different assessment.

Why does my Achilles hurt again when I return to running?

Achilles tendon and the calf

Your Achilles tendon connects the calf muscles to the heel bone. It passes force from the calf into the foot and helps store and return energy when you walk, run, or jump. That makes a hill, a long walk, and a set of jumps quite different exposures.

Where on the tendon does it hurt?

Pain in the middle portion of the tendon and pain where it attaches to the heel are commonly assessed separately. The 2024 clinical guideline cited here focuses on *midportion* Achilles tendinopathy. Its recommendations should be applied with the location, history, and diagnosis in mind. If you feel a sudden pop and can't push off your foot, get checked promptly for a possible tear. [65,66]

Why the Achilles can feel better at rest and hurt on a run

A few quieter days may reduce irritation. To return to a demanding task, the calf and tendon generally need to practice tolerating load again. Evidence supports progressive tendon loading for midportion tendinopathy. One study found benefits from both slow, heavy calf exercises and exercises focused on slowly lowering the heel. Another found that selected patients could continue some sports during rehab under a pain-monitoring model. These studies involved defined patient groups and supervised plans. [65,67,68,69]

Check your Achilles during activity, later, and next morning

During. How did the activity feel, and did you change how you moved? **Later.** Was there a change in your usual walking or stairs? **Next morning.** Was stiffness noticeably different from your recent baseline? Discuss the pattern with your clinician. Distance, hills, speed, and jumping can each change the dose.

Build up distance and hills one at a time

A return to neighborhood walking might begin with a tolerable flat route. Longer routes and hills give you separate variables to adjust. The outcome you care about could be climbing the hill to your house without budgeting the rest of the day around it.

Ask when to add distance, hills, or speed

"What am I working back toward, and how will I know when I'm ready to do more?"

Can I get stronger and move better with knee arthritis?

Knee, hip, and decisions about surgery

“Bone on bone” is a description people often remember long after the appointment. A better discussion also covers what is difficult now, which activities you value, and which options fit the severity and your goals.

What your knee has to do when you sit down

Cartilage covers joint surfaces. Menisci help distribute load in the knee. The quadriceps helps you control the descent into a chair. Hip and ankle motion influence how you manage the task. Imaging changes can occur without pain, and joint changes can be clinically important when the story and exam fit. [14,20,70]

What exercise can improve when you have knee arthritis

Exercise has evidence for improving symptoms and function in knee osteoarthritis. Treatments can address strength, balance, walking tolerance, and ways to complete a task. The time it takes and size of the gain vary. Walking farther or using the stairs with more confidence are meaningful outcomes even if the joint appearance on a scan stays the same. [36,70,71]

When a surgical opinion helps

A trial of patients eligible for knee replacement found greater average improvement with surgery plus nonsurgical care than with nonsurgical care alone, with more serious complications in the surgery group. A separate trial in middle-aged people with degenerative meniscal tears found similar results at two years for people who did exercises and people who had keyhole surgery to remove part of the torn meniscus. The diagnosis and the decision being made matter. [72,73]

Questions to ask before deciding about knee surgery

“How much could this help me do what I want? What are the risks, and what would recovery look like? How long should I give my other options?” Your clinician can help interpret those questions in light of the specific diagnosis.

Tell your clinician which activities you want back

Walking the dog, climbing the stairs at home, and recovering from an operation have real costs and benefits. Put them into the conversation.

Why does my hip hurt on stairs or when I lie on my side?

Groin, lateral hip, and the work of one leg

Putting on a sock, lying on one side, and pushing off on a hill can all hurt around the hip. They ask for different combinations of motion, compression, and force. Tell your clinician which task is hardest and where you feel it.

The hip joint and the tendons on its outside

The ball at the top of the thigh bone fits into a socket in the pelvis. The greater trochanter is the bony bump on the outside of the hip. The gluteus medius and minimus are muscles on the outside of the pelvis. Their tendons attach near that prominence and help manage the pelvis and hip when you stand on one leg. The lumbar spine can also refer symptoms around the hip. [11,13,105]

Does it hurt in the groin or on the outside?

One person has groin discomfort and gradually finds socks, low chairs, and getting into a car harder. Another primarily feels the outside of the hip when lying on it and after a long uphill walk. Both stories are worth examining. An exam may consider the joint, surrounding tendons, and the back, along with which task is limited. [70,105,106]

How exercise and activity changes can help outer hip pain

In one trial of people with pain from the tendons on the outside of the hip, more people reported overall improvement after exercise and advice on adjusting activity. This held up at eight weeks and a year, compared with either a steroid shot or waiting to see how it went. The trial was about a particular diagnosis. The important details include which loads aggravated symptoms and what activity was built back over time. [105]

Describe which movements bring on your hip pain

“It starts on the outside when I lie on that side. Stairs are harder after a long walk. I can still put on my shoes.” A description that distinguishes these tasks can make a short appointment more productive.

When hip pain after a fall needs assessment

After a fall, sudden severe hip pain or difficulty bearing weight needs prompt medical assessment.

Why does my ankle still give way after a sprain?

Ankle sprains, motion, and balance

An ankle can stop hurting before you trust it on gravel. You may avoid dropping your knee forward on stairs, or use the handrail more than you remember using it before. These details matter even if your ankle feels fine during a short walk.

What moves at the ankle?

The shin bones form a joint around the talus, a bone above the heel. *Dorsiflexion* is movement that brings the top of the foot toward the shin. When your foot stays planted, it allows your shin to travel forward. Nearby foot joints help you adapt to the ground. Muscles and ligaments contribute to stability and control. [14,59,107]

Range and confidence can recover at different speeds

Guidelines for sprains on the outside of the ankle describe exercises for movement, strength, and balance. What to start with depends on how the ankle is healing and what you can do. A history of repeated giving way matters. The questions for a hiker, a basketball player, and someone who feels unsteady walking to the mailbox may be quite different. [107]

Can ankle motion change a squat or a step?

People with limited ankle motion can use different movement patterns during a squat. If a supported squat or a change in heel height makes your task easier, you have a reason to examine it further. There are several possible explanations for the difference, including altered balance and demand. Check whether improving what you found actually helps walking, stairs, or the sport you care about. [13,14]

Practice for the ground that makes your ankle feel unsteady

If the sidewalk feels fine but gravel is hard, write that down. Ask what range, strength, and balance demands you need to practice before you return to the most unpredictable part of the route.

Compare how steady you feel on the same uneven route

“I can now walk the uneven stretch with fewer pauses and without feeling the ankle give way.”

Could squeezing make my pelvic floor symptoms worse?

Pressure, pelvic symptoms, and the tailbone

It makes sense to want a simple exercise for leakage or pelvic discomfort. First it helps to know when the symptoms happen and whether the difficulty is generating support, relaxing, coordinating with breathing, or something else.

How the pelvic floor helps with support, breathing, and bladder control

The pelvic floor is a group of muscles and connective tissue at the base of the pelvis. It helps support the organs in your pelvis and control when you pee or have a bowel movement. These muscles also work with the rest of your body as you breathe and move. A pelvic health evaluation can consider symptoms such as leakage, pain, and difficulty emptying alongside other possible medical explanations. [40,41,42,108,109]

When pelvic floor muscles need to relax

Pelvic floor muscle training has evidence for urinary incontinence in studied groups of women. Difficulty relaxing the pelvic floor can also contribute to some urinary, bowel, or sexual symptoms. A similar-sounding complaint can call for different care. An evaluation matters before assuming a home strengthening routine is the answer. [108,109]

Where the tailbone fits

The coccyx sits at the bottom of the spine. It has attachments to parts of the pelvic floor and surrounding soft tissue. Pain on a firm seat, rising from sitting, or after a fall may warrant looking at it specifically. Studies of treatment for persistent coccyx pain vary in quality. In one study, an internal hands-on treatment helped a little. Assessment and treatment should be guided by the history, comfort, and informed consent. [110,111,112]

When new bladder symptoms need medical attention

New trouble passing urine, loss of awareness of bladder filling, or new incontinence together with back or leg symptoms or numbness around the genitals or anus can signal a spinal emergency. New urinary symptoms on their own also deserve medical evaluation. [2,3,108]

Tell your clinician when your pelvic symptoms start

“This happens when I cough,” “it is hard to start,” and “I feel pain sitting” give three different places to begin.

Can my ribs, fascia, or organs affect how I move?

Ribs, fascia, and claims about organ mobility

You can draw a line from almost any part of the body to another. The harder question is whether the connection changes what you should do about your symptoms.

Ribs have a breathing and movement role

The ribs move as you breathe and connect with the upper back. The diaphragm attaches in part along the lower ribs. If breathing or trunk rotation changes a familiar movement, that can give a clinician another variable to compare. A single change leaves room for effects from position, effort, and sensitivity. [13,27,38,39,74]

What the connective tissue in your back does

Fascia refers to connective tissue that surrounds and links structures. The *thoracolumbar fascia* is a layered sheet of that tissue in your back. An ultrasound study found differences in movement between fascial layers in groups with and without chronic low back pain. That study showed a difference between groups. It leaves open what caused the difference and whether changing it would help. [113]

What about hands-on techniques aimed at organs?

Abdominal contents move with breathing and changes in position. Manual approaches sometimes claim to identify and treat restricted organ movement. Reviews found little solid evidence that these exams can reliably spot a problem or that the treatments help. A change after hands-on work leaves multiple possible explanations. New chest or abdominal symptoms need an appropriate medical assessment. [76,114,115]

Ask how the finding changes the movement that hurts

“What makes you think this is part of the problem? What could we check to see if it matters?”

Ask what evidence supports the specific claim

The more specific the claim, the more specific the evidence it needs.

How can I tell if physical therapy is helping?

Test, treat, retest, and revise

A useful evaluation starts with something you recognize. “Show me what happens when you reach behind you for the seat belt.” You can compare that movement after one change and decide what deserves a second look.

How to test whether a change helps

Test. Pick a familiar, tolerable movement and describe what happens. **Change one thing.** The change could be a different position, a cue, a short exercise, or hands-on care when appropriate. **Retest.** Use the same direction, setup, and effort. **Decide what’s next.** Keep what helped, try something else, or pause to check a new concern. The number of checks depends on how consistently you can repeat the movement and how it feels.

What does feeling better in the room tell you?

If it feels better during the visit, you know it can feel different. Warming up, trying again, or expecting a change may all play a part. If the first try was unusually painful, the next one may feel closer to normal. [75,76,77] One study compared pain and movement changes during a low back pain visit with what happened by the next visit. [74] To learn whether the seat belt reach improves in everyday life, check the reach in your own car.

Compare how far, how long, or how easily you move

Pick something you care about and can safely repeat. Can you reach farther, do it longer, or use less effort? Try it the same way each time and check if the difference matters in your day. [78,79,80]

What changed the tingling in both feet?

One person felt tingling along the inside of both feet when they started straightening a knee in sitting. Later, lying down, the tingling eased when I combined a gentle neck movement with a side-to-side leg movement. I’d changed two things. The next question was what would happen if I tried each one separately.

Did the change last after the appointment?

“What changed, and when?” The answer tells you whether you have a starting point, a way to manage the task, or evidence that something is carrying over.

Why do I feel better after treatment, then hurt again?

Manual therapy, exercise, and carryover

There is real value in feeling better after an appointment. The next question is what the window of relief allows you to do. If a back that felt better at 10 a.m. still limits the same 25-minute drive, you have learned something about the window and the task.

What hands-on treatment can do for back pain

Manual therapy includes sustained pressure, slower mobilization, and manipulation. For chronic low back pain, spinal manipulation has effects generally similar to other recommended therapies. Reviews in acute low back pain report modest short-term effects. Risks vary. Feeling looser can have several explanations, including changes in how you move or how sensitive the area feels. [10,76,81,82]

Use a period of relief to practice a movement you need

A comfortable window may make it easier to walk, practice a lift, or explore a range you usually avoid. Practice can then target what the real activity demands. The test is whether useful changes carry into the rest of your day and gradually last longer. Exercise, education, and where appropriate approaches that also address beliefs, confidence, and daily activity have trial or review support in persistent low back pain. [46,47,83,84]

Track what changes today, this week, and over several weeks

Today. What feels easier right now? **Between visits.** What did you actually do more comfortably? **Over weeks.** What can you do again and again? How hard is it, and do you still need help? Where appropriate, we can adjust the plan when those answers are different. [74,78,79]

When the same relief keeps wearing off

Ask what the treatment is meant to help you do. If the relief keeps wearing off just as quickly, ask what you could change. You may value occasional comfort care. You may want a plan that changes how much your body can handle.

Ask how you'll know when you need fewer visits

"What would tell us that I need this less often?"

How do I know if my exercises are worth doing?

Choosing the right dose and practicing without cues

An exercise can be good and still be a poor fit for your current goal. A sheet of eight exercises can make it hard to tell which one is helping, which is hard to fit into your day, and which you would benefit from adjusting.

Name the activity each exercise should help

Is it meant to build force, improve control, increase comfortable range, or help you approach an activity you have been avoiding? How much should you do, how often, and what response should you expect? Those answers help you decide what to report back. Exercise can help your body get used to doing more over time. The plan also has to fit what you can keep doing. [46,47,69,85]

Make the exercise more like the task you want back

Difficulty can come from weight, depth, speed, duration, repeat efforts, less support, or a less predictable environment. Try changing one thing at a time so you can tell what made a difference. The right progression for someone getting up from a chair may be a lower seat. For someone returning to tennis, changing direction or repeating efforts may matter more. [34,35,86]

Can you do it without the cue?

Start with as much instruction as you need. Gradually reduce the cues and try the movement in a setting that resembles your actual goal. Motor learning is the process of gaining a skill you can use later. Check whether you can still do it later, without someone talking you through it. [34,37,86]

Ask when to do more, ease off, or get checked

“What should make me stop? How can I tell I’m doing too much? What can I do on a busy week?” The answers depend on the diagnosis and the stage of recovery. If you are unsure about new symptoms, ask before progressing.

Name what you’re practicing and how you’ll tell it helped

“I'm practicing this because I want to do ___, and we'll know it's helping when ___.”

What can I learn when my back pain flares up again?

Recurrence, pace, and recovery

A flare can make the work you did last month feel wasted. Think back to what changed. Did you do more than usual, take a longer break before getting back to it, or sleep less? Did the pain feel different this time?

Back pain can return after you've recovered

People can recover from a back pain episode and experience another one. In the WalkBack study, adults who had recently recovered from low back pain were less likely to have it return after a walking program and advice tailored to them. The trial tracked how long it took before another episode limited activity. [89] Reviews and cohort studies also document recurrence. [87,88] Another trial of a different exercise and education program found no reduction in recurrence. [90]

Did you do more than your back was used to?

A person who has rested for a week and then spends Saturday cleaning the garage may simply have more demand than they have practiced recently. When activity is appropriate, a smaller version of the usual activity may be a useful starting point. Evidence for graded approaches varies by comparison and population. Poor sleep and pain can influence each other, and neither is a complete explanation for a specific flare. [46,91,92,93]

Write down what you can do and who to call during a flare

Write down your usual early signs, activities you generally tolerate, and who to contact if the pattern changes. Agree on what would make it appropriate to step back up. If a flare brings significant new symptoms, the plan may start with an assessment. [1,2,9]

How long did recovery take?

Record how long it took to return to your ordinary activities. A flare that resolves by the next morning and a flare that keeps you from walking for two weeks both count as flares. The difference tells you something about recovery.

Three facts to bring to an appointment

What was different beforehand? What could you still do during the flare? When were you back to your usual activities?

Why is it harder to concentrate when I’m in pain?

Attention, sleep, and the workday

You read the same paragraph for the third time. Your neck keeps drawing your attention away. Or you are halfway through a conversation and realize you have been deciding where you can sit. Pain can add work to a day that already asks a lot of you.

How pain pulls your attention away from work

Studies show that pain can pull your attention away from what you’re doing. Ongoing pain has also been linked to changes in some thinking skills. The effects vary. Sleep, mood, medications, and other health conditions can contribute. These studies support taking the interruption seriously. They cannot predict anyone's productivity or how much it will change after treatment. [92,93,94,95]

Measure what matters at your desk

Instead of writing “my posture is bad,” write “after 35 minutes I stop following the conversation because I keep shifting.” Try a tolerable variation such as using arm support or taking one break before the usual threshold. See what you can sustain and how often symptoms pull you away from the work. [27,52,53,54]

When being told your spine is fragile changes how you move

If a clinician has told you your spine is fragile, a chair or a long meeting may start to feel riskier than it used to. Research describes the lasting influence of the words clinicians use. Ask what is safe for your diagnosis, what is worth changing, and what signs would call for a different decision. [96,97,98]

Can you finish a call without pain pulling your attention away?

If you can finish a client call and remember what was said, that is a meaningful outcome. It belongs alongside pain ratings, sleep and movement tolerance. Write it down at a specific time so you can tell when it changes.

Tell your clinician what pain interrupts at work

“I'd like to finish the last half hour of work without having to plan around my neck.”

What should I ask if I still don’t understand my pain?

Second opinions, informed consent, and the next visit

You might leave an appointment knowing the name of the structure and still have no idea what to do tomorrow. A good explanation connects the diagnosis or working theory to an action you can take.

Ask for the working explanation in plain language

“What do you think might be causing this? Is there anything else we should check?” A clinician can be clear about uncertainty and still recommend a useful next step. How clinicians talk about a back problem can affect beliefs and behavior well after the appointment. [45,96]

Ask when you’ll check progress and change the plan

“What should I keep track of? When should we check again? What would make us change the plan?” A course of care can include relief, evaluation, skill practice, and building capacity. Each one deserves a clear purpose. Patient-selected activities and a working partnership help keep the plan centered on what matters to you. [78,79,103,104]

What to bring to a second opinion

Bring the imaging report if you have it, a medication list, dates, a record of what you tried, and a short description of what you can and cannot do. Ask how urgency, expected benefit, risks, and the time involved affect your options. A new injury, weakness that’s getting worse, and pain that’s been steady for months can each call for a different next step. [1,2,3,22,72]

What to say if you felt brushed off

“After 15 minutes of cooking, I have to sit down. Can we work on helping me stand long enough to make dinner?” Bring a written example if it is easier.

Agree on what to try and when to check back

Know what you’ll try, how you’ll tell if it helps, and who to call if your symptoms change.

How do I get back to the things pain made me give up?

Recover, build, and preserve

Think of an ordinary day ten years from now. You can get down on the floor and stand back up. You can carry groceries from the car. You can walk far enough on vacation that you're the one who asks to keep going. Those are skills you can work toward and practice.

Start with the activity you miss most

Start with the activity that’s hardest right now. Find ways to make important tasks tolerable. If you have a diagnosis that needs protection or medical care, factor that in. Keep the target concrete enough to revisit at the next appointment.

Build enough strength and stamina for harder days

Once an activity is manageable, give yourself more room. If the stairs at home are the hardest thing you do all week, a modest extra demand can be useful practice when appropriate. Strength, endurance, and balance can be trained. In a trial of sedentary older adults at risk for disability, a regular activity program reduced the risk of losing the ability to walk a set distance. Reviews of exercise programs in community-dwelling older adults support approaches that reduce falls. [99,100,101,102,117]

Practice the activities you want to keep doing

Choose activities you want to keep doing and build them into ordinary life. If you care about hiking, practice walking, uneven ground, hills, and carrying what you take on the hike. If getting up from the floor matters, practice a version you can safely do. The appropriate starting point will differ, especially if you are prone to falls or have another health concern. [100,101,102]

Do you need less preparation to get through your day?

Maybe you used to stretch for ten minutes before you could bend to put on your socks. If you can now put them on comfortably right after getting up, that’s progress you can feel in your day. For someone else, progress meant driving three hours without stopping or being able to pick up their granddaughter. Choose an activity that would tell you things are getting easier. [79,103,104]

Track how much time or effort the task takes

How much time or effort does the activity take now? Check it on an ordinary day and compare it with how it used to go.

How do I build strength and balance for everyday life?

Strength, balance, endurance, and everyday freedom

A flight of stairs can feel different when you’re carrying a bag or coming home tired. Building capacity gives you more room to handle those ordinary changes.

Check what you can do when you’re tired

Strength helps you produce force. Endurance helps you repeat an effort. Balance and coordination help you direct that effort when the surface, speed, or direction changes. Fatigue can change what a person can do and how hard the task feels. The effect is specific to the task and context. [34,35,99,102]

Practice for the activities you want to keep

A plan can include strength exercises you can manage, an activity you enjoy that builds stamina, and balance practice if you need it. Older adults at risk of losing the ability to get around or of falling can benefit from structured activity or exercise programs suited to the individual. Ask for help setting a safe starting point if you are unsteady, deconditioned, or managing other medical conditions. [100,101,102]

Practice getting down to the floor and back up

If you want to keep taking trips, write down the components. Can you walk the terminal, carry a bag, wait in a long line, and handle the next day? Try to identify which component sets the limit first. That is often a more useful training question than “Am I fit enough to travel?”

Can you do the same task with more ease to spare?

Every few weeks, revisit the same task. Record how much you can do, how much effort it takes, and how it feels the next day.

Pick one ability you want to keep for the next decade

Pick one ability you want to keep for the next decade. Describe what having that ability would let you say yes to.

Track a movement or a flare

Pick something you already do and can do safely. Write down how it went. Use the same setup next time so you can compare. If you notice worrying new symptoms, stop and seek advice.

ACTIVITY I WANT BACK

HOW WILL I KNOW I'M GETTING BETTER?

When	What I did and how much	What changed	Later or next morning
Tuesday noon	Sat through a 35-min call with forearms supported	Neck started to bother me at minute 30 instead of 20	Usual evening stiffness. Finished the call without standing up.

IF I HAD A FLARE

What was different beforehand? What could I still do? When did I get back to my usual activities?

Look for a pattern over several days. Use it to choose a goal you can measure, such as how long you can walk before you need a break. [78,79,80]

Get ready for your next appointment

Write in your own words. Describe a recent day you remember well. If you have results or reports, bring the original copies when possible.

The activity I want back

After ___ minutes, ___ steps, or ___ repetitions, I usually notice ___.

Where it happens and what it feels like

Where does it start and travel? Any weakness, numbness, swelling, or changes in walking?

What I already tried

How long did I try it? What helped and for how long? What changed in everyday life?

What has changed recently

Include new symptoms, injuries, changes in usual activity, and any relevant medical history.

The question I want answered today

What do you think is going on? What would make us change the plan?

BEFORE YOU LEAVE

Agree on the next step, the activity you will track, and when to revisit the plan. Ask whom to contact if symptoms change. [78,79,103,104]

Schedule a free evaluation · Call (559) 549-6282

Journal references

01 Red flags to screen for malignancy and fracture in patients with low back pain: systematic review
Downie et al. · BMJ · 2013 · Systematic review
Back to the guide · Page 3 · 6 · 8 · 27 · 29

02 Cauda equina, conus medullaris and syndromes mimicking sciatic pain: WFNS spine committee recommendations
Vaishya et al. · World Neurosurg X · 2024 · Clinical recommendations
Back to the guide · Page 3 · 8 · 14 · 22 · 27 · 29

03 What is the diagnostic accuracy of red flags related to cauda equina syndrome (CES), when compared to Magnetic Resonance Imaging (MRI)? A systematic review
Dionne et al. · Musculoskelet Sci Pract · 2019 · Systematic review
Back to the guide · Page 3 · 22 · 29

04 The revised International Association for the Study of Pain definition of pain: concepts, challenges, and compromises
Raja et al. · Pain · 2020 · Consensus and commentary
Back to the guide · Page 6

05 Central sensitization: Implications for the diagnosis and treatment of pain
Woolf · Pain · 2011 · Mechanisms review
Back to the guide · Page 6

06 Chronic pain as a symptom or a disease: the IASP Classification of Chronic Pain for the International Classification of Diseases (ICD-11)
Treede et al. · Pain · 2019 · Classification
Back to the guide · Page 6

07 Chronic nociplastic pain affecting the musculoskeletal system: clinical criteria and grading system
Kosek et al. · Pain · 2021 · Clinical criteria
Back to the guide · Page 6

08 Neuropathic pain: an updated grading system for research and clinical practice
Finnerup et al. · Pain · 2016 · Clinical criteria
Back to the guide · Page 6 · 7 · 10

09 What low back pain is and why we need to pay attention
Hartvigsen et al. · Lancet · 2018 · Clinical review
Back to the guide · Page 6 · 8 · 13 · 27

10 Interventions for the Management of Acute and Chronic Low Back Pain: Revision 2021
George et al. · J Orthop Sports Phys Ther · 2021 · Clinical practice guideline
Back to the guide · Page 6 · 13 · 25

11 On the definitions and physiology of back pain, referred pain, and radicular pain
Bogduk · Pain · 2009 · Anatomy and terminology
Back to the guide · Page 7 · 8 · 13 · 14 · 20

12 Accuracy of clinical neurological examination in diagnosing lumbo-sacral radiculopathy: a systematic literature review
Tawa et al. · BMC Musculoskelet Disord · 2017 · Systematic review
Back to the guide · Page 7 · 8 · 10 · 14

Journal references, continued

13 A regional interdependence model of musculoskeletal dysfunction: research, mechanisms, and clinical implications
Sueki et al. · J Man Manip Ther · 2013 · Clinical model
Back to the guide · Page 7 · 9 · 15 · 20 · 21 · 23

14 Altered knee and ankle kinematics during squatting in those with limited weight-bearing-lunge ankle-dorsiflexion range of motion
Dill et al. · J Athl Train · 2014 · Biomechanical study
Back to the guide · Page 7 · 19 · 21

15 The effect of a hip-strengthening program on mechanics during running and during a single-leg squat
Willy and Davis · J Orthop Sports Phys Ther · 2011 · Intervention study
Back to the guide · Page 7 · 11

16 Systematic literature review of imaging features of spinal degeneration in asymptomatic populations
Brinjikji et al. · AJNR Am J Neuroradiol · 2015 · Systematic review
Back to the guide · Page 8

17 Magnetic resonance imaging of the lumbar spine in people without back pain
Jensen et al. · N Engl J Med · 1994 · Cross-sectional study
Back to the guide · Page 8

18 MRI Findings of Disc Degeneration are More Prevalent in Adults with Low Back Pain than in Asymptomatic Controls: A Systematic Review and Meta-Analysis
Brinjikji et al. · AJNR Am J Neuroradiol · 2015 · Systematic review and meta-analysis
Back to the guide · Page 8

19 Abnormal findings on magnetic resonance images of the cervical spines in 1211 asymptomatic subjects
Nakashima et al. · Spine · 2015 · Cross-sectional study
Back to the guide · Page 8

20 Prevalence of knee osteoarthritis features on magnetic resonance imaging in asymptomatic uninjured adults: a systematic review and meta-analysis
Culvenor et al. · Br J Sports Med · 2019 · Systematic review and meta-analysis
Back to the guide · Page 8 · 19

21 Abnormal magnetic-resonance scans of the lumbar spine in asymptomatic subjects. A prospective investigation
Boden et al. · J Bone Joint Surg Am · 1990 · Prospective study
Back to the guide · Page 8

22 Imaging strategies for low-back pain: systematic review and meta-analysis
Chou et al. · Lancet · 2009 · Systematic review and meta-analysis
Back to the guide · Page 8 · 29

23 Moving differently in pain: a new theory to explain the adaptation to pain
Hodges and Tucker · Pain · 2011 · Proposed model
Back to the guide · Page 9

Journal references, continued

24 Motor Control Changes in Low Back Pain: Divergence in Presentations and Mechanisms
van Dieën et al. · J Orthop Sports Phys Ther · 2019 · Clinical review
Back to the guide · Page 9 · 11

25 Pain and motor control: From the laboratory to rehabilitation
Hodges · J Electromyogr Kinesiol · 2011 · Mechanisms review
Back to the guide · Page 9

26 Increasing muscle extensibility: a matter of increasing length or modifying sensation?
Weppler and Magnusson · Phys Ther · 2010 · Mechanisms review
Back to the guide · Page 9 · 10

27 Neck Pain: Revision 2017
Blanpied et al. · J Orthop Sports Phys Ther · 2017 · Clinical practice guideline
Back to the guide · Page 9 · 15 · 23 · 28

28 Acute effects of muscle stretching on physical performance, range of motion, and injury incidence in healthy active individuals: a systematic review
Behm et al. · Appl Physiol Nutr Metab · 2016 · Systematic review
Back to the guide · Page 10

29 Can chronic stretching change the muscle-tendon mechanical properties? A review
Freitas et al. · Scand J Med Sci Sports · 2018 · Review
Back to the guide · Page 10

30 Strength Training versus Stretching for Improving Range of Motion: A Systematic Review and Meta-Analysis
Afonso et al. · Healthcare (Basel) · 2021 · Systematic review and meta-analysis
Back to the guide · Page 10

31 Proprioceptive Neuromuscular Facilitation (PNF): Its Mechanisms and Effects on Range of Motion and Muscular Function
Hindle et al. · J Hum Kinet · 2012 · Mechanisms review
Back to the guide · Page 10

32 The Effectiveness of Neural Mobilization for Neuromusculoskeletal Conditions: A Systematic Review and Meta-analysis
Basson et al. · J Orthop Sports Phys Ther · 2017 · Systematic review and meta-analysis
Back to the guide · Page 10 · 14

33 Do 'sliders' slide and 'tensioners' tension? An analysis of neurodynamic techniques and considerations regarding their application
Coppieters and Butler · Man Ther · 2008 · Biomechanical study
Back to the guide · Page 10 · 14

34 Motor Learning
Krakauer et al. · Compr Physiol · 2019 · Mechanisms review
Back to the guide · Page 11 · 26 · 31

35 Translating Fatigue to Human Performance
Enoka and Duchateau · Med Sci Sports Exerc · 2016 · Mechanisms review
Back to the guide · Page 11 · 26 · 31

Journal references, continued

36 Hip strengthening reduces symptoms but not knee load in people with medial knee osteoarthritis and varus malalignment: a randomised controlled trial
Bennell et al. · Osteoarthritis Cartilage · 2010 · Randomized trial
Back to the guide · Page 11 · 19

37 Optimizing performance through intrinsic motivation and attention for learning: The OPTIMAL theory of motor learning
Wulf and Lewthwaite · Psychon Bull Rev · 2016 · Theory and review
Back to the guide · Page 11 · 26

38 Changes in intra-abdominal pressure during postural and respiratory activation of the human diaphragm
Hodges and Gandevia · J Appl Physiol · 2000 · Physiology study
Back to the guide · Page 12 · 23

39 Intra-abdominal pressure increases stiffness of the lumbar spine
Hodges et al. · J Biomech · 2005 · Physiology study
Back to the guide · Page 12 · 23

40 Postural and respiratory functions of the pelvic floor muscles
Hodges et al. · Neurourol Urodyn · 2007 · Physiology study
Back to the guide · Page 12 · 22

41 Phase-locked parallel movement of diaphragm and pelvic floor during breathing and coughing-a dynamic MRI investigation in healthy females
Talasz et al. · Int Urogynecol J · 2011 · Dynamic MRI study
Back to the guide · Page 12 · 22

42 Co-activation of the abdominal and pelvic floor muscles during voluntary exercises
Sapsford et al. · Neurourol Urodyn · 2001 · Physiology study
Back to the guide · Page 12 · 22

43 Postural function of the diaphragm in persons with and without chronic low back pain
Kolář et al. · J Orthop Sports Phys Ther · 2012 · Case-control study
Back to the guide · Page 12

44 Inefficient muscular stabilization of the lumbar spine associated with low back pain. A motor control evaluation of transversus abdominis
Hodges and Richardson · Spine · 1996 · Case-control study
Back to the guide · Page 12

45 Clinical classification in low back pain: best-evidence diagnostic rules based on systematic reviews
Petersen et al. · BMC Musculoskelet Disord · 2017 · Evidence synthesis
Back to the guide · Page 13 · 29

46 Exercise therapy for chronic low back pain
Hayden et al. · Cochrane Database Syst Rev · 2021 · Systematic review
Back to the guide · Page 13 · 25 · 26 · 27

47 Motor control exercise for chronic non-specific low-back pain
Saragiotto et al. · Cochrane Database Syst Rev · 2016 · Systematic review
Back to the guide · Page 13 · 25 · 26

Journal references, continued

48 Diagnosis and treatment of sciatica
Koes et al. · BMJ · 2007 · Clinical review
Back to the guide · Page 14

49 Anatomy of the tibial nerve in relation to the tarsal tunnel: A cadaveric study
Mattos et al. · Foot Ankle Surg · 2022 · Cadaver study
Back to the guide · Page 14

50 Neural mobilization: a systematic review of randomized controlled trials with an analysis of therapeutic efficacy
Ellis and Hing · J Man Manip Ther · 2008 · Systematic review
Back to the guide · Page 14

51 The Relationship Between Forward Head Posture and Neck Pain: a Systematic Review and Meta-Analysis
Mahmoud et al. · Curr Rev Musculoskelet Med · 2019 · Systematic review and meta-analysis
Back to the guide · Page 15

52 No consensus on causality of spine postures or physical exposure and low back pain: A systematic review of systematic reviews
Swain et al. · J Biomech · 2020 · Review of systematic reviews
Back to the guide · Page 15 · 28

53 The effects of breaks on low back pain, discomfort, and work productivity in office workers: A systematic review of randomized and non-randomized controlled trials
Waongenngarm et al. · Appl Ergon · 2018 · Systematic review
Back to the guide · Page 15 · 28

54 A randomized controlled intervention trial to relieve and prevent neck/shoulder pain
Andersen et al. · Med Sci Sports Exerc · 2008 · Randomized trial
Back to the guide · Page 15 · 28

55 Physical tests for shoulder impingements and local lesions of bursa, tendon or labrum that may accompany impingement
Hanchard et al. · Cochrane Database Syst Rev · 2013 · Systematic review
Back to the guide · Page 16

56 Which physical examination tests provide clinicians with the most value when examining the shoulder? Update of a systematic review with meta-analysis of individual tests
Hegedus et al. · Br J Sports Med · 2012 · Systematic review and meta-analysis
Back to the guide · Page 16

57 Progressive exercise compared with best practice advice, with or without corticosteroid injection, for the treatment of patients with rotator cuff disorders (GRASP): a multicentre, pragmatic, 2 × 2 factorial, randomised controlled trial
Hopewell et al. · Lancet · 2021 · Randomized trial
Back to the guide · Page 16

58 Effectiveness of physical therapy in treating atraumatic full-thickness rotator cuff tears: a multicenter prospective cohort study
Kuhn et al. · J Shoulder Elbow Surg · 2013 · Prospective cohort
Back to the guide · Page 16

Journal references, continued

59 The mechanics of the foot. II. The plantar aponeurosis and the arch
Hicks · J Anat · 1954 · Anatomy and biomechanics
Back to the guide · Page 17 · 21

60 The foot core system: a new paradigm for understanding intrinsic foot muscle function
McKeon et al. · Br J Sports Med · 2015 · Clinical model
Back to the guide · Page 17

61 Heel Pain - Plantar Fasciitis: Revision 2023
Koc et al. · J Orthop Sports Phys Ther · 2023 · Clinical practice guideline
Back to the guide · Page 17

62 Management of plantar heel pain: a best practice guide informed by a systematic review, expert clinical reasoning and patient values
Morrissey et al. · Br J Sports Med · 2021 · Best-practice guide
Back to the guide · Page 17

63 High-load strength training improves outcome in patients with plantar fasciitis: A randomized controlled trial with 12-month follow-up
Rathleff et al. · Scand J Med Sci Sports · 2015 · Randomized trial
Back to the guide · Page 17

64 Tissue-specific plantar fascia-stretching exercise enhances outcomes in patients with chronic heel pain. A prospective, randomized study
DiGiovanni et al. · J Bone Joint Surg Am · 2003 · Randomized trial
Back to the guide · Page 17

65 Achilles Pain, Stiffness, and Muscle Power Deficits: Midportion Achilles Tendinopathy Revision - 2024
Chimenti et al. · J Orthop Sports Phys Ther · 2024 · Clinical practice guideline
Back to the guide · Page 18

66 The clinical diagnosis of subcutaneous tear of the Achilles tendon. A prospective study in 174 patients
Maffulli · Am J Sports Med · 1998 · Prospective diagnostic study
Back to the guide · Page 18

67 Heavy Slow Resistance Versus Eccentric Training as Treatment for Achilles Tendinopathy: A Randomized Controlled Trial
Beyer et al. · Am J Sports Med · 2015 · Randomized trial
Back to the guide · Page 18

68 Continued sports activity, using a pain-monitoring model, during rehabilitation in patients with Achilles tendinopathy: a randomized controlled study
Silbernagel et al. · Am J Sports Med · 2007 · Randomized trial
Back to the guide · Page 18

69 Achilles and patellar tendinopathy loading programmes : a systematic review comparing clinical outcomes and identifying potential mechanisms for effectiveness
Malliaras et al. · Sports Med · 2013 · Systematic review
Back to the guide · Page 18 · 26

Journal references, continued

70 2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee
Kolasinski et al. · Arthritis Rheumatol · 2020 · Clinical practice guideline
Back to the guide · Page 19 · 20

71 Exercise for osteoarthritis of the knee: a Cochrane systematic review
Fransen et al. · Cochrane Database Syst Rev · 2015 · Systematic review
Back to the guide · Page 19

72 A Randomized, Controlled Trial of Total Knee Replacement
Skou et al. · N Engl J Med · 2015 · Randomized trial
Back to the guide · Page 19 · 29

73 Exercise therapy versus arthroscopic partial meniscectomy for degenerative meniscal tear in middle aged patients: randomised controlled trial with two year follow-up
Kise et al. · BMJ · 2016 · Randomized trial
Back to the guide · Page 19

74 Do within-session changes in pain intensity and range of motion predict between-session changes in patients with low back pain?
Hahne et al. · Aust J Physiother · 2004 · Prospective study
Back to the guide · Page 23 · 24 · 25

75 Regression to the mean: what it is and how to deal with it
Barnett et al. · Int J Epidemiol · 2005 · Methods article
Back to the guide · Page 24

76 The mechanisms of manual therapy in the treatment of musculoskeletal pain: a comprehensive model
Bialosky et al. · Man Ther · 2009 · Proposed model
Back to the guide · Page 23 · 24 · 25

77 New insights into placebo analgesia
Benedetti et al. · Curr Opin Anaesthesiol · 2003 · Mechanisms review
Back to the guide · Page 24

78 Measurement Properties of the Patient-Specific Functional Scale and Its Current Uses: An Updated Systematic Review of 57 Studies Using COSMIN Guidelines
Pathak et al. · J Orthop Sports Phys Ther · 2022 · Systematic review
Back to the guide · Page 24 · 25 · 29 · 32 · 33

79 The patient-specific functional scale: psychometrics, clinimetrics, and application as a clinical outcome measure
Horn et al. · J Orthop Sports Phys Ther · 2012 · Clinical measurement review
Back to the guide · Page 24 · 25 · 29 · 30 · 32 · 33

80 Interpreting change scores for pain and functional status in low back pain: towards international consensus regarding minimal important change
Ostelo et al. · Spine · 2008 · Consensus on outcome measures
Back to the guide · Page 24 · 32

Journal references, continued

81 Benefits and harms of spinal manipulative therapy for the treatment of chronic low back pain: systematic review and meta-analysis of randomised controlled trials
Rubinstein et al. · BMJ · 2019 · Systematic review and meta-analysis
Back to the guide · Page 25

82 Association of Spinal Manipulative Therapy With Clinical Benefit and Harm for Acute Low Back Pain: Systematic Review and Meta-analysis
Paige et al. · JAMA · 2017 · Systematic review and meta-analysis
Back to the guide · Page 25

83 Cognitive functional therapy with or without movement sensor biofeedback versus usual care for chronic, disabling low back pain (RESTORE): a randomised, controlled, three-arm, parallel group, phase 3, clinical trial
Kent et al. · Lancet · 2023 · Randomized trial
Back to the guide · Page 25

84 Multidisciplinary biopsychosocial rehabilitation for chronic low back pain: Cochrane systematic review and meta-analysis
Kamper et al. · BMJ · 2015 · Systematic review and meta-analysis
Back to the guide · Page 25

85 Mechanotherapy: how physical therapists' prescription of exercise promotes tissue repair
Khan and Scott · Br J Sports Med · 2009 · Clinical review
Back to the guide · Page 26

86 New Conceptualizations of Practice: Common Principles in Three Paradigms Suggest New Concepts for Training
Schmidt and Bjork · Psychol Sci · 1992 · Motor-learning review
Back to the guide · Page 26

87 Risk of Recurrence of Low Back Pain: A Systematic Review
da Silva et al. · J Orthop Sports Phys Ther · 2017 · Systematic review
Back to the guide · Page 27

88 Recurrence of low back pain is common: a prospective inception cohort study
da Silva et al. · J Physiother · 2019 · Prospective cohort
Back to the guide · Page 27

89 Effectiveness and cost-effectiveness of an individualised, progressive walking and education intervention for the prevention of low back pain recurrence in Australia (WalkBack): a randomised controlled trial
Pocovi et al. · Lancet · 2024 · Randomized trial
Back to the guide · Page 27

90 An individualised self-management exercise and education program did not prevent recurrence of low back pain but may reduce care seeking: a randomised trial
de Campos et al. · J Physiother · 2020 · Randomized trial
Back to the guide · Page 27

91 Graded activity and graded exposure for persistent nonspecific low back pain: a systematic review
Macedo et al. · Phys Ther · 2010 · Systematic review
Back to the guide · Page 27

Journal references, continued

92 The association of sleep and pain: an update and a path forward
Finan et al. · J Pain · 2013 · Review
Back to the guide · Page 6 · 27 · 28

93 Sleep deficiency and chronic pain: potential underlying mechanisms and clinical implications
Haack et al. · Neuropsychopharmacology · 2020 · Review
Back to the guide · Page 27 · 28

94 Pain demands attention: a cognitive-affective model of the interruptive function of pain
Eccleston and Crombez · Psychol Bull · 1999 · Proposed model
Back to the guide · Page 28

95 The effect of pain on cognitive function: a review of clinical and preclinical research
Moriarty et al. · Prog Neurobiol · 2011 · Review
Back to the guide · Page 28

96 The enduring impact of what clinicians say to people with low back pain
Darlow et al. · Ann Fam Med · 2013 · Qualitative study
Back to the guide · Page 28 · 29

97 Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art
Vlaeyen and Linton · Pain · 2000 · Clinical review
Back to the guide · Page 28

98 The role of fear avoidance beliefs as a prognostic factor for outcome in patients with nonspecific low back pain: a systematic review
Wertli et al. · Spine J · 2014 · Systematic review
Back to the guide · Page 28

99 Sarcopenia: revised European consensus on definition and diagnosis
Cruz-Jentoft et al. · Age Ageing · 2019 · Consensus
Back to the guide · Page 30 · 31

100 Effect of structured physical activity on prevention of major mobility disability in older adults: the LIFE study randomized clinical trial
Pahor et al. · JAMA · 2014 · Randomized trial
Back to the guide · Page 30 · 31

101 Exercise for preventing falls in older people living in the community: an abridged Cochrane systematic review
Sherrington et al. · Br J Sports Med · 2020 · Systematic review
Back to the guide · Page 30 · 31

102 Resistance Training for Older Adults: Position Statement From the National Strength and Conditioning Association
Fragala et al. · J Strength Cond Res · 2019 · Position statement
Back to the guide · Page 30 · 31

103 The influence of the therapist-patient relationship on treatment outcome in physical rehabilitation: a systematic review
Hall et al. · Phys Ther · 2010 · Systematic review
Back to the guide · Page 29 · 30 · 33

Journal references, continued

104 The therapeutic alliance between clinicians and patients predicts outcome in chronic low back pain
Ferreira et al. · Phys Ther · 2013 · Secondary analysis
Back to the guide · Page 29 · 30 · 33

105 Education plus exercise versus corticosteroid injection use versus a wait and see approach on global outcome and pain from gluteal tendinopathy: prospective, single blinded, randomised clinical trial
Mellor et al. · BMJ · 2018 · Randomized trial
Back to the guide · Page 20

106 Hip Pain and Mobility Deficits-Hip Osteoarthritis: Revision 2025
Koc et al. · J Orthop Sports Phys Ther · 2025 · Clinical practice guideline
Back to the guide · Page 20

107 Ankle Stability and Movement Coordination Impairments: Lateral Ankle Ligament Sprains Revision 2021
Martin et al. · J Orthop Sports Phys Ther · 2021 · Clinical practice guideline
Back to the guide · Page 21

108 Recognition and management of nonrelaxing pelvic floor dysfunction
Faubion et al. · Mayo Clin Proc · 2012 · Clinical review
Back to the guide · Page 22

109 Pelvic floor muscle training versus no treatment, or inactive control treatments, for urinary incontinence in women
Dumoulin et al. · Cochrane Database Syst Rev · 2018 · Systematic review
Back to the guide · Page 22

110 Coccydynia: an overview of the anatomy, etiology, and treatment of coccyx pain
Lirette et al. · Ochsner J · 2014 · Anatomy and clinical review
Back to the guide · Page 22

111 Coccydynia-The Efficacy of Available Treatment Options: A Systematic Review
Andersen et al. · Global Spine J · 2022 · Systematic review
Back to the guide · Page 22

112 The treatment of chronic coccydynia with intrarectal manipulation: a randomized controlled study
Maigne et al. · Spine · 2006 · Randomized trial
Back to the guide · Page 22

113 Reduced thoracolumbar fascia shear strain in human chronic low back pain
Langevin et al. · BMC Musculoskelet Disord · 2011 · Cross-sectional study
Back to the guide · Page 23

114 Reliability of diagnosis and clinical efficacy of visceral osteopathy: a systematic review
Guillaud et al. · BMC Complement Altern Med · 2018 · Systematic review
Back to the guide · Page 23

115 Effectiveness of visceral fascial therapy targeting visceral dysfunctions outcome: systematic review of randomized controlled trials
da Silva et al. · BMC Complement Med Ther · 2023 · Systematic review
Back to the guide · Page 23

Journal references, continued

116 Efficacy and safety of proprioceptive neuromuscular facilitation for chronic low back pain: A meta-analysis of randomized controlled trials
Li et al. · Turk J Phys Med Rehabil · 2022 · Systematic review and meta-analysis
Back to the guide · Page 10

117 Resistance training is medicine: effects of strength training on health
Westcott · Curr Sports Med Rep · 2012 · Clinical review
Back to the guide · Page 30

118 2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines
Gulati et al. · Circulation · 2021 · Clinical practice guideline
Back to the guide · Page 3

119 A Clinical Practice Guideline for the Management of Patients With Degenerative Cervical Myelopathy: Recommendations for Patients With Mild, Moderate, and Severe Disease and Nonmyelopathic Patients With Evidence of Cord Compression
Fehlings et al. · Global Spine J · 2017 · Clinical practice guideline
Back to the guide · Page 3

120 Tendons, ligaments, and capsule of the rotator cuff. Gross and microscopic anatomy
Clark and Harryman · J Bone Joint Surg Am · 1992 · Anatomy study
Back to the guide · Page 16

121 In vivo three-dimensional kinematics of the cervical spine during maximal axial rotation
Salem et al. · Man Ther · 2013 · Biomechanical study
Back to the guide · Page 15

David Quenzer

Doctor of Physical Therapy

David Quenzer is a physical therapist and the founder of Rethink Longevity in Fresno and Clovis, California. He completed a residency in proprioceptive neuromuscular facilitation at Kaiser Vallejo.

Schedule a free evaluation · Call (559) 549-6282 · Directions on Google Maps