Digi4 MSK

IMPLEMENTATION OF SELF-MANAGEMENT STRATEGIES IN PATIENTS WITH MUSCULOSKELETAL PAIN

Book of good practices for healthcare professionals

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Transparency statement: Generative AI tools were used to assist with drafting, editing, and adapting original raw material created by the DIGI4MSK consortium. All AI-generated outputs were reviewed, verified, and refined by the authors.

doi: https://doi.org/10.54391/123456789/1870

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About the book

Musculoskeletal (MSK) pain represents one of the most prevalent and disabling health conditions worldwide. It often persists beyond the resolution of any tissue injury, becoming a complex and multifaceted experience shaped by biological, psychological, and social factors. For healthcare professionals working with these patients, clinical expertise alone is not enough—the real challenge lies in helping people **understand their pain, make sense of it, and take an active, confident role in managing it**.

This book aims to serve as a **quick reference guide** for healthcare professionals and musculoskeletal specialists seeking practical tools and synthetic theoretical grounding on key topics related to the **implementation of self-management strategies in musculoskeletal pain care**. The language throughout this book is deliberately clear, respectful, and person-centred. Patients are viewed as active partners, not passive recipients.

Specifically, the guide provides concise, clinically relevant frameworks on:

- The **general principles of self-management** in musculoskeletal pain, emphasizing how to enable patients to adopt and sustain behaviours that improve function and quality of life.
- **How to assess and enhance patient motivation for self-management and behaviour change**, using models from health psychology and pain science.
- **How to identify and address low musculoskeletal health and pain literacy**, ensuring that information is not only provided but actually understood, appraised, and applied in the patient's daily life.

To complement these conceptual sections, the book also includes **26 clinical vignettes** that illustrate common challenges encountered in musculoskeletal practice. These short, realistic cases show how to handle barriers such as fear of movement, avoidance behaviours, unrealistic expectations, misunderstandings about imaging results, difficulties in work participation, or struggles with goal setting and adherence. Each vignette integrates communication techniques (e.g., motivational interviewing, teach-back, empathy-based dialogue) and clinical reasoning to demonstrate how theory translates into practice.

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How to use this book

This book is designed as a practical guide to support clinicians, educators, and students in promoting self-management and health literacy among people with musculoskeletal (MSK) pain. It combines clinical reasoning with communication skills, behaviour-change principles, and real-world examples to bridge the gap between evidence and everyday practice.

Rather than providing exhaustive theoretical explanations, each section focuses on what to do, what to say, and how to apply it in clinical encounters. The goal is to make person-centred, psychologically informed practice both accessible and actionable.

The book is structured as a set of **modular quick-reference chapters**, each focusing on a core element of self-management support (core skills, health literacy, clinician patient interaction, values goals and skills, toolkits and resources):

1. Introduction to self-management
2. Assessing and addressing the lack of motivation for change
3. Assessing and addressing low health literacy in patients with musculoskeletal pain
4. Clinical vignettes

You can read and apply the content of this book by dipping in and out, as each vignette stands alone and can be read independently. Additionally, start where it matters most: choose a case that resembles your patients' or the challenges you face most often.

In practice, (before or during consultations), you can use the sample phrases to simplify explanations and reinforce reassurance, confirm understanding with a short teach-back question, etc. You will find examples throughout the book in italics and/or quotation marks. For digital or written patient education: Adapt scripts, summaries, and visual aids into leaflets, online materials, or app content (with acknowledgement to Digi4MSK).

Finally, this book, aimed at healthcare professionals, is related to another book prepared for patients and the general public. The book for the general population, also based on vignettes in which patients and their relatives can see how to improve specific skills related to their literacy in pain and musculoskeletal health, can be used by healthcare professionals as a resource to recommend to patients.

"Practical Guide for People with Pain" | **doi:** https://doi.org/10.54391/123456789/1871

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1. Introduction to self-management

This chapter introduces the concept of self-management in the context of musculoskeletal pain. It explains how empowering patients to take an active role in managing their symptoms can improve both clinical outcomes and overall well-being. The chapter outlines the fundamental principles of self-management, including patient education, behaviour change, exercise, and lifestyle modification, while emphasizing the importance of collaboration between healthcare professionals and patients. It also highlights how self-management strategies must be adapted to individuals' levels of health literacy and motivation to ensure meaningful engagement and long-term success.

1.1. Why is self-management necessary?

Patients often present with long-lasting low back pain, knee osteoarthritis, shoulder tendinopathy, or chronic neck pain. Many also carry multimorbidity profiles such as type 2 diabetes, cardiovascular disease, obesity, or depression. These conditions rarely occur in isolation—they interact and amplify each other, creating complex daily challenges. For example:

- Chronic low back pain + obesity + sleep disturbance: Pain limits mobility, obesity and poor sleep increase sensitivity to pain.
- Knee osteoarthritis + diabetes + hypertension: Joint stiffness reduces activity, inactivity worsens glucose control, cardiovascular risk rises.
- Neck pain + anxiety + sedentary work: Fear of movement leads to more avoidance, reinforcing muscle tension and psychological distress.

However, traditional biomedical care models, where the professional "fixes" the patient with passive treatments, are insufficient in these contexts. When pain persists beyond 3–6 months, the trajectory usually shifts towards a long-term condition rather than a curable episode.

1. **Conditions are chronic and recurrent.**

   Musculoskeletal pain syndromes and multimorbidity are **not usually curable with a single treatment**. Flare-ups are expected, and patients need skills to cope, adapt, and function despite them.

2. **Healthcare systems cannot carry the full burden.**

   With one-third of adults worldwide affected by multimorbidity, constant reliance on professionals for every flare-up is unsustainable—both economically and practically.

3. **Patient empowerment improves outcomes.**

   Evidence shows that when patients are equipped with **self-management strategies** (problem-solving, pacing, decision-making, lifestyle changes), they achieve outcomes **similar or superior** to supervised care in terms of pain reduction, function, and quality of life.

4. **It reduces dependency and builds resilience.**

   Self-management gradually shifts responsibility from the clinic to the patient's daily life. This does not mean abandonment: clinicians act as coaches, ensuring patients feel supported while developing independence.

5. **Multimorbidity demands integrated action.**

   A patient with osteoarthritis and diabetes cannot manage one without considering the other. Self-management strategies—like physical activity, diet, stress regulation, and coping skills—cut across conditions, helping the patient address **the whole health picture** rather than isolated symptoms.

Therefore, self-management is necessary because musculoskeletal pain and multimorbidity often coexist, are long-term, complex, and deeply connected to lifestyle. Patients must become active agents in their care to reduce suffering and maintain function.

Clinical example

Rosa, 62, with knee osteoarthritis, type 2 diabetes, and obesity: If Rosa relies only on pain medication and periodic doctor visits, her pain may temporarily ease, but inactivity may increase her weight, glucose control, and cardiovascular health. Teaching Rosa **simple, sustainable self-management skills**—such daily 10-minute walks, pacing household activities, and using a diary to monitor flare-ups—empowers her to influence all her conditions at once. This integration is why self-management is not optional but **necessary**.

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Introduction to self-management

1.2. Core Skills of self-management in musculoskeletal pain

1.2.1 Problem-Solving

Persistent musculoskeletal pain is rarely straightforward: patients face fluctuating symptoms, unpredictable flare-ups, and barriers in daily life. Problem-solving means equipping patients to **identify challenges, generate options, test strategies, and learn from results**. Rather than relying solely on a clinician to dictate solutions, patients gradually become more confident in adapting their own responses.

Why this matters:

- Pain is influenced by biological, psychological, and social factors. No single "fix" works every time.
- Patients who cannot problem-solve may become stuck in avoidance (e.g., stop all activity after a flare) or frustration ("nothing works").
- Teaching problem-solving fosters **adaptability and resilience**—critical for living with long-term conditions.

Steps to strengthen this skill in clinic:

1. **Define the problem clearly.**

   Many patients frame issues vaguely ("My back is always bad"). Help them narrow it down: "When I sit for more than 30 minutes at work, my pain worsens."

2. **Brainstorm multiple solutions.**

   Encourage generating more than one option. This way, adapting to patient preferences and context is easier and also, the patient perceives there is plan A and plan B in case A does not work. For example, for sitting-related pain: try standing every 25 minutes, training posture variability, changing posture, or adding stretching breaks.

3. **Choose one to test.**

   Guide the patient to pick a realistic, feasible option. Emphasize experimentation.

4. **Review outcomes.**

   At the next visit, ask: "What worked? What did not? What could we adjust?" Frame setbacks as **information, not failure.**

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Practical tip for clinicians: Use the **"What, When, What if?" method in session:**

- What exactly happens?
- When does it occur most?
- What if you try [option A]—how could you test it this week?

This structured dialogue helps patients think in steps rather than in global, hopeless terms. Over time, they internalize the method and begin applying it automatically.

1.2.2 Decision-Making

Decision-making in self-management is about enabling patients to **weigh options, interpret body signals, and make informed choices** about their daily health behaviours. For people with persistent MSK pain, decisions often involve balancing activity versus rest, deciding whether pain is a safe signal or a warning, and knowing when professional input is necessary.

Why this matters:

- Without this skill, patients may either overprotect ("any pain = damage") or ignore danger signs (*"I'll push through severe swelling"*).
- Clear decision-making reduces unnecessary health visits while ensuring safety.
- It supports autonomy—patients feel capable of steering their own care.

Steps to strengthen this skill in clinic:

1. **Clarify "acceptable" vs "concerning" symptoms.**

   Teach rules of thumb: mild soreness after new exercise is normal; swelling, loss of function, or red-flag symptoms require review.

2. **Introduce decision aids.**

   Use simple visuals like traffic-light systems:

   - **Green:** continue activity (mild, improving symptoms).
   - **Yellow:** adjust but do not stop (flare-up, tolerable pain).
   - **Red:** stop and seek care (severe, sudden, or progressive symptoms).

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3. **Practice scenario-based reasoning.**

   Role-play situations in clinic: "If your knee hurts after 20 minutes of walking, what options do you have?"

4. **Reinforce reflection.**

   Encourage patients to ask themselves: "What did I base this choice on?"—it helps them become aware of their reasoning process.

Clinical example:

- **Case**: Maria, 56, knee osteoarthritis. She often stops activity after minor discomfort, fearing damage.
- **Process**: Clinician introduces the traffic-light tool. Together, they practice labelling scenarios: "Mild stiffness after walking? That is green. Mild swelling that settles in 24h? Yellow. Sudden locking? Red."
- **Outcome**: Within weeks, Maria walks more consistently, reduces unnecessary rest, and calls her doctor only when truly needed.

Practical tip for clinicians:

Incorporate **teach-back**: "Can you explain how you would decide whether today's pain is a green, yellow, or red situation?" This ensures comprehension and embeds confidence.

1.2.3 Resource utilization

Resource utilization is the skill of **knowing when and how to seek additional support**—whether from people, services, or tools—and using those supports effectively. For patients with persistent musculoskeletal pain, external resources can be the bridge between what is possible in the clinic and what is needed in everyday life. This skill pertains to the "Access" health literacy domain.

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Why this matters:

- Persistent pain often requires **more than a single professional's input**.
- Patients who fail to use external resources may either become overly dependent on the clinician or, conversely, get lost in unreliable sources.
- Guiding patients to the **right resource at the right time** builds independence, safety, and confidence.

How to strengthen this skill in clinic

1. **Identify opportunities for external support.**

Ask: "Is there a part of your plan that would benefit from another set of eyes, hands, or tools?"

2. **Introduce resources at the right readiness point.**

   Overloading patients with options too early leads to disengagement. Link resources to concrete needs or milestones.

3. **Facilitate the connection.**

   Do not just "recommend"—explain the purpose, role, and expected benefit. Where possible, provide a written note, referral, or demonstration. Adapt to the format preferred by the patient.

Clinical examples

1. **Signing up to a gym with structured communication**

- **Case**: Jonas, 55, chronic low back pain, motivated to increase strength.
- **Clinician action**: Instead of just suggesting "go to the gym," the clinician writes a short summary note for the gym instructor: "Jonas benefits from exercises targeting core strength and gradual load progression. Avoid heavy deadlifts in first 6 weeks. Monitor tolerance to rowing machine."
- **Outcome**: Jonas feels safer, the gym coach has clear guidance, and the patient uses the resource effectively instead of quitting after the first flare.

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2. **Expanding pain knowledge with digital resources**

- **Case**: Laura, 42, recurrent neck pain, initially overwhelmed. Early on, simple reassurance and pacing advice are enough.
- **Clinician action**: After 3 visits, Laura shows curiosity: "Why does stress make my neck worse?" The clinician recognizes readiness for deeper knowledge and shares a curated web resource with short videos explaining pain and the stress–tension link.
- **Outcome**: Laura engages at her own pace, avoids misinformation on social media, and starts applying relaxation strategies.

3. **Referral to a dietitian in hip osteoarthritis with obesity**

- **Case**: Rosa, 62, hip OA, BMI 33, on medication but limited mobility.
- **Clinician action**: Explains, in plain words: "Losing even 5 kg can reduce load on your hip and reduce inflammation. A dietitian can guide you with sensible, gradual changes that also improve your blood sugar. Shall I connect you?"
- **Outcome**: Rosa agrees, sees progress with joint pain and diabetes control, and views dietitian visits as part of her pain plan, not just "weight loss."

4. **Community-based support for pacing and activity**

- **Case**: Ahmed, 68, chronic widespread pain and social isolation.
- **Clinician action**: Refers Ahmed to a local community walking group, framing it as both a pacing strategy and social support. Provides a note to the group leader: "Encourage Ahmed to start with shorter routes and gradually increase."
- **Outcome**: Ahmed not only increases activity but also feels less isolated, improving mood and adherence.

Practical tip for clinicians

Always frame external resources **with three key messages:**

- **What it is** ("a dietitian helps balance your food and reduce joint strain"),
- **Why it matters now** ("your hip pain and blood sugar both benefit"),
- **How to use it** ("I'll write a note / here's a trusted link / you can try this one activity this week").

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Resource utilization as an extension of the consultation

When we teach a patient a new exercise, reframe their beliefs, or co-create an action plan, the benefit often **fades quickly** if it is not reinforced outside the clinic. Patients go home, face barriers, or forget details. That is where proper use of external resources becomes crucial.

- **Think of the consultation as planting the seed.**

  External resources—whether a gym coach, a dietitian, a trusted website, or a community group—are the soil, water, and sunlight that allow the seed to grow.

- **Without resources, change stays fragile.**

  Patients may try once, struggle, and stop. With resources, every day between visits becomes an opportunity to practice, adapt, and reinforce the new skills.

- **Resources extend the clinician's voice.**

  A written note to the gym coach or a referral to a dietitian means your advice echoes into environments where you are not physically present. The consultation continues through the hands of others, the screen of an app, or the structure of a community group.

- **Resources turn a single session into an ongoing program.**

  Instead of a 30-minute isolated appointment, the patient experiences a continuous pathway of care—with check-ins, feedback, and reinforcement integrated into daily routines.

Clinical example

Case: Marco, 50, chronic low back pain, sees his physiotherapist once every 2 weeks.

- **Without resources**: Marco does the prescribed exercise twice, forgets technique, flares up, and stops until the next session. The consultation's effect is limited to a few days.
- **With resources**: The physiotherapist films Marco doing the exercise, shares a link to a short video from a trusted app, and writes a note for Marco's gym coach. Now, every day Marco is reminded, guided, and supported. At the next visit, progress builds on progress.
- **Result**: The single consultation is not just a one-off event—it becomes the **starting point of a sustained change process**.

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Take-home message

Proper resource utilization = **multiplying the impact of your consultation**.

It ensures that what begins in the clinic **lives on in the patient's real world**, turning advice into action, action into habit, and habit into long-term health improvement.

1.2.4 Patient–healthcare professional partnership

The patient–healthcare professional partnership is the **foundation of effective self-management**. Without a trusting, collaborative relationship, even the best education and action plans risk being ignored or abandoned. Partnership means that the patient's perspective is heard, validated, and integrated, while the clinician provides expertise, guidance, and scaffolding. Together, they co-create a plan that is meaningful, realistic, and flexible.

Why this matters:

- Persistent pain undermines trust. Many patients have felt dismissed ("it's all in your head") or over-medicalized ("you need surgery") before. Restoring trust is as important as prescribing exercises.
- Compliance ≠ partnership. Following orders passively is not true engagement. Partnership requires patients to actively shape the process.
- Partnership fuels motivation. Patients are more likely to follow through with plans they co-authored and that reflect their own goals and context.

Practical strategies for clinicians

1. **Active listening & validation**
   - Begin by asking: *"What worries you most about your pain?"* or *"What do you hope to achieve?"*
   - Reflect back: "I hear that flare-ups make you feel hopeless. Let's work together on ways to manage them."
   - Validation does not mean agreeing with misconceptions; it means acknowledging feelings before reframing them.

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2. **Shared agenda / Goal setting**
   - Write down 2–3 priorities at the start of the consultation.
   - Ensure at least one comes directly from the patient (e.g., “climb stairs without resting”).
   - This increases the sense of shared ownership.
3. **Transparent explanations & narratives**
   - Avoid generic lectures about pain (“it’s all nerves”).
   - Instead, link explanations to the patient’s story: “Your hip hurts more after long sitting because joints get stiff without movement. That’s something we can change.”
   - This builds a personalized, coherent story that patients can retell to themselves and others.
4. **Collaborative planning**
   - Offer two or three realistic options and let the patient choose: “We can start with short walks, gentle stretching, or both. Which feels more doable for you this week?”
   - Flexibility signals respect and increases adherence.
5. **Follow-up & feedback**
   - Treat every follow-up as a feedback loop, not a performance review. Ask: “What worked for you?” “What was hard?”
   - Celebrate small wins: “You managed three walks this week—that’s progress.”
   - Normalize setbacks: “It’s common to miss a few days. Let’s adapt the plan so it fits better.”
6. **Language of partnership**
   - Replace prescriptive commands (“You must…”) with collaborative phrasing:
     - *“Shall we try…”*
     - *“Which option feels most realistic right now?”*
     - *“How could this fit into your week?”*

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Clinical example

Case: Elena, 52, with fibromyalgia, exhausted after years of unsuccessful treatments.

- **First meeting**: She says, “Doctors just tell me to exercise, but it never works.”
- **Partnership approach**: The clinician listens, validates frustration, and invites her to set the agenda. Elena chooses fatigue management as a priority.
- **Plan creation**: Together they design a pacing schedule for daily activities and agree on journaling fatigue levels.
- **Follow-up**: Elena reports she could only log 3 days. Instead of framing this as failure, the clinician says, “That’s a great start. What made those three days possible? How can we build on that?”
- **Outcome**: Elena feels ownership, not pressure, and engages more deeply in later sessions.

Pitfalls to avoid

- **Rushing to solutions**: Patients often need to feel heard before they can absorb advice.
- **Dismissing beliefs too quickly**: Correct gently but start from understanding the patient’s perspective.
- **Rigid planning**: Overly prescriptive instructions undermine ownership.
- **Overloading information**: Too much at once creates overwhelm; partnership requires pacing information delivery too.

Partnership as extension of the consultation

A strong partnership ensures that the consultation does not end when the patient leaves the room. When patients feel they are **co-authors of the plan**, they are more likely to practice skills, test strategies, and bring back meaningful feedback. In other words, partnership turns the consultation into an **ongoing dialogue** that continues between visits.

Key message: Patient–provider partnership is not about compliance but about **collaboration**, **respect, and co-design**. When patients feel heard and supported, self-management becomes possible, sustainable, and meaningful.

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1.2.5 Taking action

Action-taking is about turning intentions into **specific, achievable, and reviewable steps**. It is the practical test of all other skills: without action, knowledge and discussion remain abstract.

Why this matters:

- Many patients know what they should do (move more, pace, relax), but fail to translate it into daily life.
- Success in small actions builds **self-efficacy**—the belief that "I can influence my condition."
- Without structured action plans, patients may set vague or unrealistic goals, leading to frustration.

Steps to strengthen this skill in clinic:

1. **Set SMART goals.**

   Specific, Measurable, Achievable, Relevant, Time-bound.

2. **Anchor to routines.**

   Tie new behaviours to existing habits (e.g., "do calf stretches after brushing teeth").

3. **Keep it small.**

   Aim for 1–2-minute tasks initially. Success is more important than intensity.

4. **Write it down.**

   Patients record the plan (calendar, phone note, paper log).

5. **Review and adjust.**

   Ask: "What worked? What was hard? How shall we tweak it?"

Clinical example

- **Case**: Mark, 70, chronic back pain, low motivation.
- **Process**: Clinician and Mark set a one-week plan: "Walk 5 minutes after breakfast, 4 days this week." Mark notes progress on a calendar.
- **Outcome**: He succeeds 3/4 times, reports more energy. Clinician celebrates success and agrees to increase to 7 minutes the next week.

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Practical tip for clinicians

End every consultation with **"one next step"** the patient commits to. Keep it small, specific, and reviewable.

Together, these five skills provide a **practical framework** for MSK self-management: patients learn to define problems, make safe decisions, use resources, collaborate effectively, and take meaningful action.

1.3. Facilitators for self–management

1.3.1 Experience

Experience is a strong facilitator for self-management, both for professionals and for patients. On the professional side, experience builds confidence to avoid unnecessary tests and treatments and instead focuses on strategies that have long-term benefit. A seasoned clinician knows when an MRI is not indicated, when to taper ineffective medications, and when to shift attention from short-term symptom relief to long-term behaviour change. Just as importantly, experience provides the ability to reassure patients that flare-ups are normal and manageable. Professionals who have seen hundreds of cases of persistent pain can confidently say: "This is not unusual—flare-ups happen, but we can plan for them." This credibility helps patients trust the process.

For patients, lived experience of pain can also become a resource rather than only a burden. People who have gone through flare-ups and noticed that pain eventually returns to baseline may gain perspective: pain can be intense and frustrating, but it does not always mean harm. Clinicians can strengthen this facilitator by helping patients reflect on their past experiences and draw lessons from them. For instance, a patient may recall that resting completely after a flare left them stiffer, while light activity helped recovery. Highlighting these moments helps patients recognize that they already have useful skills and resilience, reinforcing self-efficacy.

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Experience in practice

Professional side	Patient side	How to boost in clinic
Recognizes when scans or opioids are unnecessary.	Has experienced flare-ups settling without treatment.	Ask: "Can you recall a time when pain increased but then eased again?" Use this to normalize fluctuations.
Knows difference between acute management and long-term behaviour change.	Realizes that activity sometimes improves symptoms.	Encourage reflection: "What helped you most during the last flare?"
Uses past cases to reassure and guide patients.	Begins to see patterns in pain behaviour.	Link their story to strategies: "Last time you kept walking gently, and it helped—shall we build on that?"

Clinical example:

Jens, 50, with chronic low back pain, came to the clinic worried after a sudden flare. His physiotherapist explained: "I've seen many patients like you—flare-ups are common and don't mean new damage." Together they reviewed Jens' past experiences, noting that light walking had previously reduced stiffness. By highlighting his own successful strategies, the clinician transformed Jens' experience from a source of fear into a tool for resilience.

1.3.2 Physical activity & Work participation

Physical activity and engagement in meaningful work or roles are among the most powerful facilitators of self-management. For professionals, having confidence in the value of activity allows them to reframe movement as safe and therapeutic, even when pain is present. An experienced clinician can identify opportunities to integrate activity into daily routines and support patients in maintaining or adapting their work roles. For instance, instead of advising a warehouse worker with low back pain to "avoid lifting," the clinician may coach them on pacing, task rotation, and safe lifting strategies. Likewise, helping patients stay engaged in work—even in a modified capacity—provides structure, social connection, and confidence that they remain capable. These approaches turn daily activity into part of the treatment rather than something to fear.

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For patients, physical activity and work participation offer real-life evidence of capacity. Successfully completing meaningful tasks—whether walking to the bus, gardening, or handling part of a work shift—can shift the narrative from "I'm disabled by pain" to "I can still do things despite pain." This builds self-efficacy and encourages further experimentation. Even small, consistent activities can provide confidence that pain is not always a barrier. Clinicians can reinforce this facilitator by linking activity to patient goals and embedding strategies into their context. For example, a sedentary office worker might be guided to stand up for two minutes every 30 minutes, while an athlete with knee pain may receive a sport-specific adaptation plan. These personalized strategies make activity meaningful and sustainable.

Physical activity & Work participation in practice

Professional side	Patient side	How to boost in clinic
Frames movement as safe and therapeutic.	Experiences less pain or stiffness after activity.	Demonstrate pacing strategies in-session; reassure that movement can be safe.
Supports modified participation in work roles.	Values being able to keep working or performing daily tasks.	Ask: "What task at work or home is most important to you?" Then adapt it together.
Integrates exercise into daily routines.	Gains confidence from completing meaningful activities.	Set activity goals linked to daily life (stairs, walking, gardening).

Clinical example:

Luis, 45, with chronic back pain, feared returning to his warehouse job. His physiotherapist reframed lifting as manageable with pacing and safe technique, and they practiced task rotation. Luis reported back that he could complete his shifts without panic, realizing he was still capable of working. This success strengthened his confidence in managing pain day-to-day.

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1.3.3 Sleep

Sleep is a fundamental pillar of self-management because disrupted sleep can both increase pain sensitivity and reduce coping ability. Scientific evidence shows that poor sleep quality is associated with greater pain intensity, higher disability, and worse psychological wellbeing in people with musculoskeletal pain. Experimental studies demonstrate that even a single night of sleep deprivation can lower pain thresholds, while chronic insomnia amplifies central sensitization. For professionals, acknowledging this link helps shift sleep from a "secondary complaint" to a core treatment target. Evidence supports cognitive behavioural therapy for insomnia (CBT-I) as the gold-standard intervention, showing consistent improvements in sleep efficiency and reductions in pain sensitivity. Clinicians may not always deliver full CBT-I, but they can integrate core elements: stimulus control (using the bed only for sleep), sleep restriction (limiting time in bed to consolidate sleep), and relaxation training. Even small improvements in sleep quality can meaningfully support daytime self-management.

For patients, improving sleep often provides the first noticeable success in self-management, reinforcing their motivation. Better sleep reduces morning stiffness, boosts energy for activity, and improves mood regulation, all of which feed into a positive cycle of coping. Patients can be coached to experiment with practical, evidence-based strategies: setting a consistent wake time, avoiding screens in the hour before bed, reducing caffeine intake after midday, and creating a brief wind-down ritual (stretching, breathing, or mindfulness). Emerging evidence also supports mindfulness-based interventions and brief digital CBT-I programs, which can be delivered through apps or online platforms. Clinicians should frame these strategies not as optional lifestyle tips but as active treatment components: "By improving your sleep, you can reduce pain sensitivity and increase your body's ability to recover." This framing enhances patient buy-in, and positions sleep improvement as central to managing pain.

Sleep in practice

Professional side	Patient side	How to boost in clinic
Recognizes that poor sleep increases pain sensitivity.	Notices that after a good night, pain feels more manageable.	Educate: "Research shows that improving sleep can reduce pain intensity."
Uses CBT-I principles: stimulus control, sleep restriction, relaxation training.	Struggles with insomnia or frequent awakenings.	Teach stimulus control: get out of bed if unable to sleep after 20 min; restrict bed use to sleep only.

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Professional side	Patient side	How to boost in clinic
Frames sleep hygiene as treatment, not "advice."	Worries about pain disturbing sleep and feels helpless.	Build a sleep hygiene plan: consistent wake time, limit caffeine after midday, reduce evening screen time.
Connects patients to evidence-based digital or group CBT-I programs.	Gains confidence when better sleep leads to less stiffness and more energy.	Refer to validated digital CBT-I app or mindfulness program as adjunct to treatment.

Clinical example:

Rosa, 62, with hip osteoarthritis, reported nightly awakenings due to pain and fatigue during the day. Her clinician explained the link between poor sleep and pain sensitivity and introduced CBT-I strategies: fixed wake-up time, removing her phone from the bedroom, and practicing progressive muscle relaxation before bed. Rosa also downloaded a digital CBT-I program recommended by the clinic. After 6 weeks, she reported sleeping longer, feeling less exhausted, and noticing her morning hip stiffness was reduced, which boosted her confidence to continue walking daily.

1.3.4 Behaviour–change strategies

Patients with persistent musculoskeletal pain do often not change behaviours by a simple explanation. Behaviour-change science is central to self-management because knowing what to do is rarely enough—patients must be supported to translate knowledge into sustained daily habits. On the professional side, clinicians often underestimate how difficult change can be, especially when pain, fatigue, or fear are present. Evidence from health psychology and pain management highlights that interventions work best when they target motivation, self-efficacy, and habit formation. Techniques such as goal setting, action planning, feedback, and self-monitoring have consistently been shown to improve adherence in musculoskeletal rehabilitation. For example, randomized trials show that SMART goals (Specific, Measurable, Achievable, Relevant, Time-bound) increase patient engagement compared to vague advice like "exercise more." Similarly, embedding new behaviours into existing routines (habit stacking) and using motivational interviewing to resolve ambivalence are strongly supported in behaviour science literature.

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For patients, effective behaviour-change strategies transform self-management from a burden into an achievable process. Patients with musculoskeletal pain often struggle with pacing, avoidance, or inconsistent engagement—leading to the "boom-and-bust" cycle. Evidence shows that supporting self-regulation (e.g., tracking progress, anticipating barriers, and planning coping strategies) reduces disability and improves outcomes in persistent low back pain and osteoarthritis. Even digital interventions that integrate behaviour-change principles (goal reminders, progress feedback, self-monitoring tools) have been shown to improve adherence and reduce pain-related disability. Clinicians can boost this facilitator by co-creating small, achievable steps with patients, reinforcing successes, and reframing setbacks as opportunities for learning. Importantly, behaviour-change strategies also help align treatment with what matters to the patient, increasing both adherence and satisfaction.

Behaviour-change strategies in practice

Professional side	Patient side	How to boost in clinic
Knows behaviour change requires more than giving advice.	Understands recommendations but struggles to follow through.	Use SMART goal setting: "Walk 10 minutes after lunch, 3 days this week."
Applies motivational interviewing to explore ambivalence.	Feels conflicted: wants to exercise but fears worsening pain.	Ask open-ended questions: "What matters most to you about being active?"
Encourages self-monitoring and feedback.	Loses motivation when progress is slow or inconsistent.	Provide a logbook or app to track activity and review in follow-ups.
Embeds new actions into daily life (habit stacking).	Forgets or feels overwhelmed by new routines.	Tie behaviour to existing habits: "Do stretches after brushing your teeth."
Frames setbacks as part of the process, not failure.	Stops when flare-ups occur, believing the plan has failed.	Reframe: "This flare is data, not defeat—let's adjust the plan together."

Clinical example:

Daniel, 47, with chronic low back pain, had repeatedly failed to stick with exercise because flare-ups discouraged him. His physiotherapist used motivational interviewing to explore Daniel's goals and discovered his main priority was being able to play football with his son. Together, they set a SMART goal: walk 5 minutes after dinner, four times a week. Daniel tracked his walks in a simple logbook, which they reviewed at the next visit. When he missed two sessions due to pain, the physiotherapist reframed it as useful feedback and adjusted the plan. Within six weeks, Daniel was walking 20 minutes most evenings and reported feeling more in control, crediting the structure and small successes for keeping him motivated.

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1.3.5 Trust

Trust can affect effective self-management and therapeutic alliance. On the professional side, trust means having confidence in the patient's ability to learn, experiment, and manage their condition. Trust also requires professionals to tolerate uncertainty, to share decision-making rather than dictate, and to create a safe environment where patients feel supported to try, fail, and adjust strategies. For example, a physiotherapist might say: "I believe you can handle this exercise safely—let's test it together and see how your body responds." This not only transfers responsibility but also signals respect for the patient's capacity.

For patients, trust works in two directions: trusting their clinician and trusting themselves. Evidence shows that when patients feel their clinician listens, validates their concerns, and involves them in decisions, they are more likely to disclose difficulties, persist with treatment, and sustain behavioural changes. Equally important is **self-trust**—the confidence to attempt strategies, to share when things do not work, and to believe that setbacks are not failures but part of the process. A patient who trusts their clinician is more willing to report honestly: "I did not manage the walking plan this week because I felt too tired." This openness allows the plan to be adapted, maintaining engagement rather than leading to dropout. Building trust therefore creates a feedback loop where both clinician and patient feel secure in the shared process of managing persistent pain.

Trust in practice

Professional side	Patient side	How to boost in clinic (evidence-based)
Shows belief in the patient's competence to manage pain.	Feels safe to share worries or failures.	Explicitly say: "It's normal to struggle at times—let's work through it together."
Uses shared decision-making and collaborative goal setting.	Trusts the clinician enough to try new strategies.	Involve patient in choosing between 2–3 treatment options.

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Professional side	Patient side	How to boost in clinic (evidence-based)
Provides reassurance during experiments with activity.	Develops self-trust by experiencing success in small steps.	Allow safe testing in clinic, then encourage repetition at home.
Frames setbacks as opportunities to adapt, not as failures.	Sees flare-ups as manageable instead of catastrophic.	Normalize: "Flares don't mean harm—they're chances to practice coping."

Clinical example:

Anna, 38, with fibromyalgia, felt ashamed when she failed to follow her activity plan. Instead of criticizing, her physiotherapist said: "Thank you for telling me. This is not a failure—it's information we can use." Together, they adjusted the plan to shorter activity bouts. Anna reported feeling relieved and supported, saying: "I trust that we're figuring this out together." Over time, she became more willing to experiment, demonstrating growing trust both in her clinician and in her own abilities.

1.4. Barriers to self–management

1.4.1 Knowledge gaps

Knowledge gaps are one of the most common barriers to effective self-management in musculoskeletal pain. On the professional side, they often appear as over-reliance on traditional biomedical strategies: repeated imaging, prescribing opioids, or offering passive treatments when symptoms persist. These approaches may feel safe for the clinician, but they inadvertently reinforce the patient's expectation that a "hidden structural cause" must be found and fixed. More importantly, they delay the shift toward self-management and functional recovery. An experienced clinician, by contrast, knows when to stop unnecessary investigations and instead redirect focus to strategies that empower the patient in daily life.

On the patient's side, knowledge gaps show up in misconceptions about pain and its meaning. Patients frequently believe that pain always equals damage, that rest is safer than movement, or that nothing can improve until a medical procedure is done. These misunderstandings limit engagement with self-management and increase avoidance behaviours. Linking to health

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literacy domains, the barriers appear in the understand domain (not grasping that persistent pain ≠ ongoing harm), the appraise domain (difficulty identifying reliable vs. misleading advice), and the beliefs domain (deep-rooted conviction that activity is dangerous). In practice, these gaps can be addressed with simple explanations, guided demonstration of safe movement, and reinforcement through trustworthy resources.

Knowledge gaps in practice

Professional side	Patient side	How to address in clinic
Orders imaging without clear indication; prescribes passive modalities for long-term pain.	Says: "I'm afraid to bend because I'll slip a disc."	Demonstrate safe bending in session; explain that flare-ups do not equal new damage.
Feels safer "doing something" (scans, prescriptions) than focusing on behaviour change.	Believes only medication or surgery can solve the problem.	Reframe: "Your MRI showed changes common for your age, but these don't explain the ups and downs of your pain. What we do day to day makes the difference."
Reluctant to stop low-value care for fear of disappointing the patient.	Struggles to identify reliable vs. misleading information online.	Provide one curated resource (leaflet, app, or website) and teach the patient how to use it.

Clinical example:

Luis, 48, a warehouse worker with chronic low back pain, insists bending will "slip a disc." Instead of ordering another scan, his clinician demonstrates a safe forward bend, lets Ahmed try, and explains why flare-ups do not equal harm. With a leaflet to reinforce the message, Ahmed returns saying he now bends cautiously at work—a small but important breakthrough in self-management.

1.4.2 Skill gaps

Skill gaps occur when either the clinician or the patient lacks the practical ability to implement self-management strategies. On the professional side, the barrier often appears as a gap

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between theory and practice. A clinician may know that pacing, shared decision-making, and motivational interviewing are effective, but without practice or confidence they fall back on a prescriptive style: telling patients what to do rather than guiding them on how to do it. This can make self-management advice feel abstract, generic, or disconnected from the patient's daily life. For example, recommending "do more exercise" without showing how to adjust activity on flare-up days leaves the patient underprepared and likely to abandon the plan.

On the patient's side, skill gaps extend beyond knowledge into the execution of behaviours. Many patients struggle with activity regulation—doing too much on good days and avoiding everything on bad days (boom-and-bust cycle). Others lack pacing and planning skills, such as breaking tasks into smaller parts or alternating activity with recovery. Some patients cannot adapt exercises to their current state, leading to frustration or fear. These gaps are not simply about misunderstanding (health literacy) but about lacking practice, rehearsal, and feedback. Without guided practice, patients often stop prematurely, convinced the strategy "doesn't work for them." In the clinic, skill gaps can be turned into opportunities by rehearsing tasks together, co-creating flare-up plans, and celebrating small wins.

Skill gaps in practice

Professional side	Patient side	How to address in clinic
Falls back on "telling" rather than coaching; gives vague advice like "exercise more."	Starts strong but stops after the first flare-up (boom-and-bust cycle).	Practice pacing in session: "Let's stop before pain spikes—try 10 reps instead of 20."
Avoids motivational interviewing; prescribes one-size-fits-all exercise programs.	Says: "I know exercise is good, but when it hurts, I quit."	Role-play flare-ups: "If pain rises slightly, scale back, don't stop. Let's write this down as your flare plan."
Does not demonstrate or rehearse tasks; expects patients to figure it out alone.	Can't adapt activities (e.g., rests completely instead of modifying).	Do guided rehearsal: perform exercise together, adjust load, and write one SMART home goal.

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Clinical example:

Maria, 56, with knee osteoarthritis, says she starts walking programs but quits after her first flare-up. Her physiotherapist practices pacing in-session: Maria walks for 5 minutes, then stops before pain intensifies. They write a plan: walk 5 minutes daily this week, even if pain increases slightly. At follow-up, Maria reports she managed 5 of 7 days without "crashing." This success begins to rebuild her confidence that she can manage activity safely.

1.4.3 Uncertainty

Uncertainty is a powerful barrier to self-management, both for clinicians and for patients. On the professional side, uncertainty often arises when persistent musculoskeletal pain does not fit neatly into a clear diagnostic label. Many clinicians feel pressure to provide definite answers and may resort to ordering unnecessary tests, over-referring, or prescribing passive treatments to reduce their own discomfort. While these actions can temporarily reassure both clinician and patient, they reinforce the belief that the real "cause" has not yet been found and that the solution lies outside the patient's control. For example, a general practitioner may request an MRI for non-specific low back pain simply to feel that "nothing has been missed," even though guidelines do not recommend it.

Professional side	Patient side	How to address in clinic
Orders tests or imaging "just in case."	Says: "If nobody knows what's wrong, maybe it's something serious."	Reframe: "Persistent pain often varies without clear cause. That's normal. What matters is how you respond."
Provides vague or inconsistent explanations.	Avoids activity because of fear that uncertainty = danger.	Co-create a flare plan: green (safe), yellow (modify), red (seek help).
Feels uncomfortable saying "I don't know" or "we can't be certain."	Feels helpless when pain spikes unexpectedly.	Normalize unpredictability: highlight past examples when flares settled without harm.

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Clinical example:

Jon, 45, with chronic back pain, tells his physiotherapist: "I'm scared because the pain comes and goes for no reason. Maybe something is being missed." Instead of ordering more imaging, the clinician explains that pain variation is common in persistent back problems. Together they write a "traffic-light plan": green = normal activity, yellow = modify or pace, red = seek care if new warning signs appear. Two weeks later, Jon reports he used the plan during a flare-up and managed it without panic. His confidence grows, and uncertainty becomes less threatening.

1.4.4 Inability to manage flare-ups

Flare-ups are a normal part of persistent musculoskeletal pain, yet both clinicians and patients often treat them as failures. On the professional side, some clinicians avoid discussing flare-ups in detail, fearing they will frighten patients or expose uncertainty. As a result, patients are left unprepared, and when symptoms worsen, they interpret it as damage or treatment failure. For example, a physiotherapist may prescribe strengthening for shoulder pain but never explain what to do if pain spikes—leading the patient to stop altogether. Addressing flare-ups directly, normalizing their occurrence, and providing coping strategies transforms them from threats into opportunities for learning.

For patients, the inability to manage flare-ups stems from fear, uncertainty, and lack of clear strategies. Many interpret a flare as harm ("I've injured myself again") and respond with avoidance or immobilization. Others may push through aggressively, worsening symptoms and confirming their fears. Without a framework, every flare feels like starting over. Clinicians can break this cycle by co-creating simple action plans, teaching patients how to distinguish safe from unsafe symptoms, and rehearsing adaptations in-session. This helps patients continue progress rather than abandoning their efforts when pain fluctuates.

Inability to manage flare-ups in practice

Professional side	Patient side	How to address in clinic
Avoids discussing flares to keep focus "positive."	Sees every flare as new damage.	Normalize: "Flares are expected—they don't mean harm. Let's plan how to handle them."

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Professional side	Patient side	How to address in clinic
Provides no clear instructions for adapting exercises.	Stops all activity when pain increases.	Create a flare-up action plan (e.g., "reduce, adapt, resume").
Relies only on short-term fixes (rest, meds).	Pushes through aggressively, then crashes.	Rehearse pacing strategies in-session to prevent boom-and-bust.

Clinical example:

Emma, 42, with chronic back pain, stopped all exercise after a flare. Her physiotherapist explained that flares are normal and co-created a "traffic light" plan: green = continue, yellow = adapt, red = seek help if new alarming symptoms appear. At follow-up, Emma reported using the plan during a flare—she reduced intensity but kept active, avoiding the usual setback.

1.4.5 Resource depletion

Resource depletion refers to a lack of time, energy, or support to engage in self-management. On the professional side, this often means clinicians feel rushed, with limited time to coach behavioural strategies or insufficient access to multidisciplinary resources (e.g., dietitians, psychologists, community programs). In such contexts, they may default to prescriptions or passive treatments because they appear faster. For example, a GP under time pressure may prescribe medication rather than invest in pacing or goal-setting discussions. This makes self-management harder to implement in everyday practice.

For patients, resource depletion shows up in daily life as fatigue, competing priorities, or limited financial and social support. Some patients say: "I want to exercise, but after work and family duties, I'm exhausted." Others lack access to safe environments for activity, can't afford a gym, or don't have someone to encourage them. Without adequate resources, even simple strategies may feel unattainable. Clinicians can help by scaling goals to the smallest sustainable steps, embedding them into existing routines, and connecting patients to affordable or community-based resources. In this way, limited resources do not have to mean no progress.

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Resource depletion in practice

Professional side	Patient side	How to address in clinic
Limited time in consultations.	Reports exhaustion from daily responsibilities.	Integrate micro-strategies: "2 minutes of strengthing after brushing teeth, performed in one single series."
Few referral options or lack of team support.	Lacks financial means for gym or private therapy.	Suggest community-based or free resources (e.g., local walking group).
Defaults to medication as a "quick fix."	Says: "I have no energy left for exercise."	Reframe: "Let's find something that saves energy—short, regular breaks may reduce fatigue overall."

Clinical example:

Luis, 58, with knee osteoarthritis, said he was too tired after factory shifts to attend exercise classes. His physiotherapist suggested short "movement snacks" at work (2 minutes of stretching during breaks) instead of long sessions. He was also referred to a community walking group near his home. This made the plan realistic within his energy and time limits, turning resource scarcity into a sustainable strategy.

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2. Quick screening and addressing low health literacy in patients with musculoskeletal pain

Health literacy has received several definitions. For example, it has been defined as "the personal and social skills which determine the ability of individuals to gain access to, understand, and use information to promote and maintain good health" (Nutbeam D, 2000).

2.1. Why is it important to spot low musculoskeletal health literacy in patients?

Low health literacy is considered a barrier to self-management and improved health outcomes in several chronic diseases. However, the research investigating the impact of Health Literacy on health outcomes in people with chronic pain is scarce, and often, offers heterogeneous results. On the other hand, more research has been conducted in other chronic diseases showing for example associations between low health literacy and poorer health outcomes in cardiovascular diseases, chronic obstructive pulmonary disease and diabetes. Additionally, low health literacy and poorer symptom control has been observed in individuals with diabetes and hypertension, although not in individuals with arthritis and asthma. However, those individuals with asthma and low health literacy also show lower quality of life. Therefore, low health literacy associations with poorer health-related outcomes depend on the disease and specific health-related variable.

In chronic musculoskeletal pain, approximately half of individuals might present low health literacy, which in turn is also associated with older age, lower education, low socioeconomic status and comorbidities. Additionally, guidelines for chronic pain management encourage education and self-management as first-line treatments. However, clinicians tend to overestimate the patient´s ability to understand health-related information.

Evidence-based reasons to identify low health literacy in musculoskeletal pain:

1. **Health literacy may predict some clinical outcomes**
   - Patients with low health literacy report higher pain intensity, worse physical function, and lower quality of life in musculoskeletal disorders (e.g., low back pain, osteoarthritis).

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2. **Low health literacy is linked to higher disability**
   - Studies show that individuals with chronic MSK pain and low health literacy have greater functional limitations and mobility restrictions, worsening daily activity participation.
3. **Poor adherence to self-management**
   - Patients with limited health literacy struggle to understand, recall, and apply exercise and lifestyle recommendations, leading to poor adherence to self-management strategies.
4. **Greater use of passive or low-value care**
   - Low health literacy is associated with higher reliance on medications, injections, imaging, or surgeries, even when guidelines recommend against them.
5. **Difficulty appraising health information**
   - Patients with low health literacy are more vulnerable to misinformation (e.g., miracle cures, unverified online advice) and less able to critically evaluate treatment options.
6. **Increased healthcare utilization and costs**
   - Low health literacy correlates with more frequent healthcare visits, unnecessary investigations, and longer hospital stays, increasing burden on health systems.
7. **Poorer communication and shared decision-making**
   - Patients with low health literacy often have difficulties in understanding medical terminology, asking questions, or expressing preferences, reducing their participation in shared decisions.
8. **Stronger maladaptive pain beliefs**
   - Research links low health literacy with catastrophizing, fear-avoidance beliefs, and biomedical pain narratives (e.g., “pain always means damage”), which hinder recovery.
9. **Barriers to digital health tools**
   - Low health literacy often overlaps with low digital literacy, limiting the effective use of apps, telehealth, and online self-management programs that are increasingly part of MSK care.
10. **Equity and vulnerable populations**
    - Low health literacy is more prevalent in groups already at higher risk (older adults, lower socioeconomic status, multimorbidity), making its identification essential to prevent widening health inequities in MSK pain management.

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2.2. Health literacy domains in musculoskeletal health

Health literacy domains are the core skill areas that describe what a person needs to be able to do in order to understand, engage with, and act on health information and the healthcare system effectively. These domains help structure the way we assess and improve a person’s ability to manage their health.

2.2.1 Access

Definition

Access refers to the ability of patients to **seek, find, and make appropriate use of health information and healthcare resources.** In musculoskeletal (MSK) pain, this means more than internet searching: it involves navigating healthcare systems (e.g., chiropractic care, dietetics, psychology, weight management programs), engaging with community resources (e.g., exercise or mindfulness groups), and making effective use of digital platforms (apps, telehealth, online patient education). Access is therefore a practical bridge between knowing that support exists and actually benefiting from it.

Why it matters:

- **Clinical outcomes:** Patients with poor access literacy often delay evidence-based care, worsening prognosis and disability. For example, those with knee osteoarthritis who never access exercise or weight-loss programs typically report poorer function compared to those who do.
- **Healthcare efficiency:** Without guidance on where to go, patients frequently overuse emergency services or undergo unnecessary imaging, opioids, or surgeries instead of guideline-recommended conservative care.
- **Equity:** Populations with lower socioeconomic status, older age, or multimorbidity are at higher risk of digital exclusion and resource inaccessibility, which widens disparities in MSK outcomes.
- **Whole-person care:** Persistent pain is often linked to obesity, diabetes, anxiety, or depression. Effective access allows patients to connect with interdisciplinary and community-based services that address these multiple factors simultaneously.

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How to assess it:

Ask open-ended questions to identify strengths and gaps in access literacy:

- *"If you wanted advice about your pain, where would you start?"*
- *"Do you know how to reach dietetics or psychology if you wanted to?"*
- *"What websites, apps, or social media do you usually use for health information?"*
- *"Do you feel you have the time, internet, or confidence to use online programs if we recommend them?"*

Warning signs for low access include relying only on Google/Facebook, believing only doctors can "open doors," not knowing about available programs, or avoiding digital tools due to low confidence.

How to improve it (evidence-based methods)

1. **Map clear referral pathways:** Provide step-by-step instructions for how to access physiotherapy or chiropractic care, pain programs, dietitians, or obesity services.
2. **Promote interdisciplinary resources:** Encourage use of weight management programs (OA), mindfulness/stress management groups (fibromyalgia, stress-related flares), and social physical activity groups for inactive patients.
3. **Support digital navigation:** Recommend validated apps (exercise, CBT-I for sleep, mindfulness) and practice using them in-session.
4. **Address barriers:** If digital or financial access is limited, use paper-based materials, short phone reviews, or free community groups.
5. **Normalize multidisciplinary care:** Frame referrals not as "extra help" but as guideline-based best practice for persistent MSK pain.

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Access in Practice

Professional side (barriers/ facilitators)	Patient side (typical situations)	How to facilitate in clinic (strategies & examples)
Assumes patients know how to find reliable resources.	Relies on Google/Facebook groups or waits passively for GP to "open the door."	Ask where they usually look; provide 2–3 vetted resources. Practice opening a trusted website/app together in-session.
Focuses narrowly on physiotherapy, misses broader resources.	Has knee/hip OA with obesity; unaware of weight-management services or other disciplines such as chiropractic care	Refer to obesity/weight management program; explain link between modest weight loss, reduced joint load, and inflammation.
Does not consider psychosocial programs.	Reports stress, anxiety, or poor sleep worsening pain.	Suggest mindfulness or stress-management groups (in person or online). Explain how stress amplifies pain sensitivity and sleep problems.
Does not address inactivity in sedentary patients.	Sedentary lifestyle, "never been sporty," fears activity.	Recommend community walking or outdoor activity group; emphasize social support, pacing, and gradual adaptation.
Overlooks digital literacy gaps.	Says: "I'm too old for apps" or lacks confidence online.	Start with paper-based plan or phone call follow-ups; gradually introduce a simple app (e.g., exercise or CBT-I) in-session.
Overestimates patient ability to navigate system.	Feels lost in referral pathways; gives up if access is not straightforward.	Write down the referral pathway step-by-step; provide a printed "care map" with contacts and next steps.
Treats multidisciplinary referrals as "extra."	Believes needing more than physiotherapy means they are failing.	Normalize: explain that combining physiotherapy, dietetics, psychology, and community groups is standard, guideline-based care for persistent MSK pain.

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Clinical example:

Rosa, 62, with knee osteoarthritis and obesity, said: "I just take my pills; I don't know how to get into anything else." She relied only on Facebook for advice and had never heard of weight-loss or activity programs. Her clinician explained how modest weight reduction could reduce pain, referred her to a dietitian, and encouraged her to join a local walking group. They also practiced opening a recommended exercise app together. At follow-up, Rosa reported attending her first dietetics appointment and joining the walking group, which boosted both her confidence and her activity levels.

2.2.2 Understand

Definition

Understand refers to a patient's ability to comprehend and make sense of health information provided verbally, in writing, or visually. In musculoskeletal pain, it is the extent to which patients can grasp what their condition means, why certain treatments are recommended, and how lifestyle and self-management influence their symptoms. It is not just about hearing or reading the information but about truly internalizing it in a way that reduces fear and guides effective action.

Why it matters:

- Patients with poor understanding frequently misinterpret biomedical terms (e.g., "degeneration," "tear") as catastrophic diagnoses, fuelling fear-avoidance and inactivity.
- Misunderstanding recommendations can lead to non-adherence, such as abandoning exercise when soreness is misinterpreted as new injury.
- Adequate understanding fosters self-efficacy and confidence to use coping strategies, pacing, and problem-solving.
- Evidence shows that better understanding is associated with lower disability, fewer maladaptive beliefs, and better long-term outcomes in persistent MSK pain.

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Quick screening and addressing low health literacy in patients with musculoskeletal pain

How to assess it:

Clinicians can check the patient's level of understanding using short, open-ended prompts:

- *"Can you tell me in your own words what you think is happening in your back/knee/neck?"*
- *"Why do you think we are focusing on exercise instead of scans or rest?"*
- *"How would you explain your pain to a family member?"*
- *"What do you think will happen if you follow this plan? And if you don't?"*

Answers that are vague, inconsistent, or biomedical-only (e.g., "my back is crumbling") indicate low understanding.

How to improve Understanding

1. **Plain language:** Replace technical jargon with simple terms.
2. **Teach-back:** Ask the patient to restate explanations in their own words to confirm comprehension.
3. **Analogies & metaphors:** Use familiar comparisons that reduce threat (e.g., wrinkles, batteries, alarms).
4. **Chunk & check:** Deliver information in small segments and confirm before continuing.
5. **Multi-modal teaching:** Reinforce with diagrams, models, and in-session demonstrations.
6. **Normalize learning:** Encourage questions and admit complexity: "Pain science is complicated, but let's make it simple together."

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Commonly misunderstood concepts in MSK pain–and how to explain them simply

Concept	How to explain it simply
Sensitization	*"Sometimes the nerves keep sending pain signals even after the original injury has healed. It's a bit like the alarm system staying switched on even when there's no longer any danger — and scans or tests often don't show any new damage because the tissues are fine"*
Inflammation	*"Inflammation is your body's natural repair response, like a swollen ankle after a sprain. But in long-lasting pain, inflammation can be much more subtle and may not cause visible swelling. It can stay slightly active in the background, making the area more sensitive even if nothing looks inflamed from the outside*
Chronic vs. acute pain	*"Acute pain is like an alarm signalling injury. Chronic pain is when the alarm keeps ringing even after the fire is out—it means your system has become more sensitive, not that you are still injured"*
Sleep deprivation	*"When you don't sleep well, the body's pain 'volume knob' gets stuck on high. Good sleep helps reset the system, making pain easier to handle."*
Physical activity and pain	*"When we stop moving, muscle weaken and joints stiffen, which actually increases pain. Gentle activity, even when there is persistent moderate or low pain, is like oil for a rusty hinge"*
Pain medication	*"Medicines can lower the volume of pain for a while, but they don't fix the cause. Think of them as a dimmer switch, not a repair. We need to combine them with strategies that build strength and resilience."*
Imaging findings	*"Scans are very useful in certain situations, but they're often used too much. Many findings on MRI or X-ray — like disc bulges or 'wear and tear' — are normal age-related changes, not signs of ongoing injury. They don't always explain why someone is in pain or how much it hurts."*
Neuropathic, nociceptive, nociplastic pain	*"Sometimes pain comes mainly from injured tissue (nociceptive), sometimes from damaged nerves (neuropathic), and sometimes from a sensitive nervous system without new injury (nociplastic). Many people have a mix—and that helps us choose the best strategy."*
Genetics and pain	*"Genes can make some people more sensitive to pain, like how some burn in the sun faster. But pain is not simply inherited—sleep, stress, movement, and lifestyle have a bigger impact on whether pain becomes long-lasting."*
Posture and 'alignment'	*"There's no perfect posture. It's more about moving often and changing positions than holding one 'correct' one."*

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Book of good practices for healthcare professionals

Quick screening and addressing low health literacy in patients with musculoskeletal pain

Concept	How to explain it simply
Core stability / weak muscles	*"Having strong muscles helps, but holding your stomach tight all the time can actually increase pain. What matters is moving with confidence, not bracing constantly."*
Herniated or slipped disc	*"Discs don't slip out of place. They can bulge, but the body usually adapts and heals over time without surgery."*
'Wear and tear'	*"Your joints aren't like car tires that just wear down. They can adapt and get stronger with movement. Exercise helps nourish and protect them."*
Scar tissue / adhesions	*"Having arthritis doesn't mean you'll end up disabled. Many people stay active and independent with the right combination of treatments. Medicines like methotrexate can help control inflammation, but lifestyle factors — staying active, managing weight, sleeping well, and building strength — are equally important for keeping symptoms under control."*
Arthritis prognosis	*"Having arthritis doesn't mean you'll end up disabled. Many people with arthritis live active lives. Exercise and weight management are key to keeping symptoms under control."*
Clicking or popping joints	*"Joint noises are usually harmless, like gas bubbles popping or tendons moving. They don't mean damage is happening."*
Exercise and pain	*"It's safe to move even if there's some discomfort. The goal is steady, manageable activity—not pushing into extreme pain and not avoiding it altogether."*
Aging and pain	*"Getting older doesn't have to mean living with pain. Changes happen, but staying active, sleeping well, and managing stress keep many older adults pain-free."*

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Clinical example:

A 55-year-old patient with knee osteoarthritis says: "My doctor told me my knee is degenerating—it's bone on bone. I think it's beyond repair."

- Assessment: Clinician asks: *"What do you understand is happening inside your knee?"*
- Patient reply: *"It's crumbling away."*
- Improvement: Clinician reframes: *"What we see are age-related changes—like wrinkles inside the joint. They don't mean your knee is broken. Movement and strength are the tools that keep it working."* A diagram is shown, and the patient is asked to explain it back, ensuring comprehension.

2.2.3 Appraise

Definition

"Appraise" in health literacy means the ability of patients to critically evaluate health information, advice, and treatment options. It requires assessing whether information is reliable, relevant, evidence-based, and appropriate for their context. In musculoskeletal (MSK) pain, appraisal is about separating credible guidance (e.g., exercise, weight management, guideline-based medication) from misleading or low-value options (e.g., "bone-on-bone" scare tactics, miracle supplements, unnecessary imaging, or premature surgery).

Why it matters:

- **Risk of misinformation:** Low appraisal skills expose patients to misleading or harmful messages from the internet, social media, or commercial advertising. This is particularly relevant in MSK pain, where supplements, posture devices, or injections are aggressively marketed.
- **Over-treatment and under-treatment:** Patients unable to appraise options may accept unnecessary MRIs, injections, or early surgery while rejecting beneficial conservative strategies.
- **Shared decision-making:** For shared decisions to work, patients must weigh risks, benefits, and uncertainties. Poor appraisal skills create dependency, confusion, or misplaced confidence in low-value care.

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- **Self-efficacy:** The ability to critically appraise empowers patients to become partners in care. Evidence shows that patients with higher appraisal literacy have better adherence to guideline-based care, less catastrophizing, and improved functional outcomes.

How to assess it:

Clinicians can explore appraisal literacy with focused questions such as:

- *"How do you usually decide if health information you read or hear is trustworthy?"*
- *"When you hear two different recommendations, how do you choose what to follow?"*
- *"What do you think about when deciding between injections, exercise, or surgery?"*
- *"What does this MRI finding mean to you? How important do you think it is?"*

Red flags include:

- Treating all MRI findings as equally important.
- Accepting supplements or devices uncritically because "they are natural" or "everyone recommends them online."
- Believing that surgery is always the only solution.
- Rejecting guideline-based advice (activity, weight management) because it feels "too simple" compared to high-tech options.

How to improve it (evidence-based methods)

- **Communication skills (clinician side):**
  1. **Balanced framing:** Explain benefits and risks, but also uncertainties (e.g., injections may reduce pain short-term but do not alter progression).
  2. **Use comparative risk:** E.g., "Surgery at this stage has more risks and no better results than exercise for most patients with your condition."
  3. **Reframe MRI results:** Use analogies like "wrinkles on the inside" to explain age-related findings.
  4. **Encourage questioning:** Say explicitly: "It's good to question treatments—let's look at the evidence together."

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- **Tools and systems (patient side):**

Introduce structured frameworks to help patients judge credibility:

1. **HONcode principles** (e.g., does the website list authors? cite sources? disclose conflicts of interest?).
2. **DISCERN tool** (used for written information about treatment choices). Items patients can use include:
   - Is the information balanced and unbiased?
   - Are risks as well as benefits described?
   - Are sources of evidence referenced?
   - Who is providing this advice?
   - What evidence is it based on?
   - Are alternatives and risks explained?
   - Is it consistent with what my healthcare team recommends?

Common MSK appraisal scenarios (good vs. bad examples)

Scenario	Common misunderstanding (low appraisal)	How to facilitate good appraisal
Back pain – lifting	*Believes: "I should avoid lifting forever, or I'll damage my spine."*	*Reframe: explain that lifting is safe when graded and done sensibly. Show in clinic how to lift with pacing.*
Knee OA – only injections offered	*Accepts injections as "the only option," not aware they give short-term relief and don't alter disease course.*	*Explain evidence: injections may help temporarily, but exercise and weight management improve long-term outcomes. Offer access to both.*
Posture devices/ shirts	*Believes a posture-correction shirt "fixes" pain by aligning the spine.*	*Teach that posture variety and movement matter more than rigid alignment. Suggest pacing strategies instead.*
Supplements for joints/inflammation	*Buys expensive glucosamine, turmeric, or collagen thinking they are proven cures.*	*Explain limited/low-quality evidence; contrast with proven benefit of exercise and weight loss. Teach how to check if claims are evidence-based.*

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Scenario	Common misunderstanding (low appraisal)	How to facilitate good appraisal
Lumbar radiculopathy – early surgery	*Offered surgery within weeks despite no neurological deficits. Patient thinks faster is better.*	*Discuss evidence: most radiculopathies improve with time + activity. Surgery is for cases with neurological loss or refractory pain.*
Spinal MRI	*Treats every finding (disc bulge, spondylosis) as equally catastrophic.*	*Explain natural history: most findings are common and often unrelated to pain. Use analogy: "wrinkles on the inside." Focus on relevant red flags.*

Appraise in Practice

Professional side	Patient side	How to facilitate in clinic
Overestimates patient ability to weigh pros/cons.	Accepts injections or surgery uncritically.	Provide balanced pros/cons; normalize uncertainty; use decision aids.
Provides MRI findings without context.	Believes all scan results equal damage.	Use analogies ("wrinkles") + link to clinical presentation.
Avoids discussing supplements/ devices.	Spends money on ineffective or unproven options.	Acknowledge interest; explain evidence (low/uncertain); redirect to proven strategies.
Misses psychosocial drivers of decision-making.	Chooses low-value care because it "feels stronger."	Use motivational interviewing to explore values/goals; align plan accordingly.
Doesn't provide appraisal tools.	Relies on social media or advertising.	Teach HONcode/DISCERN basics; give patient a checklist for evaluating info.

Clinical example:

Mark, 52, with chronic low back pain, brought an MRI report showing three disc bulges. He said: "This means my back is broken. I also saw an ad for a posture shirt—maybe that's my only option." His clinician explained that disc bulges are common age-related

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findings, like wrinkles, and not all are painful. Together, they reviewed the advertisement using DISCERN-style questions: Who wrote it? Are risks and alternatives explained? Finding none, Mark realized it was marketing rather than evidence. The clinician then demonstrated safe lifting and offered a referral to an exercise program. At follow-up, Mark reported he no longer feared bending and had stopped pursuing posture devices.

2.2.4 Apply

Definition

Apply refers to a patient's ability to **translate understanding and appraisal into consistent actio**n—to carry out exercises, pacing, sleep routines, weight-management steps, stress-regulation practices, and flare plans in real life. In musculoskeletal (MSK) care, Apply is where knowledge becomes **healthy behaviour**. It is powered by practical skills (planning, self-monitoring, adapting) and by behavioural drivers (motivation, capability, opportunity).

Why it matters:

- Outcomes in persistent MSK pain depend less on what patients know and more on what they do repeatedly. Exercise, gradual activity exposure, sleep improvement, weight management for OA, and stress regulation all require **behavioural persistence**.
- Drop-off typically occurs at the "last mile": many patients understand and even agree with the plan based on healthy behaviours but **fail to implement** it amid pain variability, fatigue, competing priorities, or fear of flares.
- Applying behavioural science (e.g., COM-B model, behaviour change techniques—BCTs, motivational interviewing, implementation intentions) allows non-psychologist clinicians to **engineer adherence**: increasing capability, creating opportunities, and strengthening motivation so healthy actions become the default.

How to assess it (quick questions in consultation):

- **Action clarity:** *"What exactly will you do this week, on which days, at what time, and where?"*
- **Confidence:** *"On a 0–10 scale, how confident are you you'll do this?"* (If <7, the plan is too big; shrink it.)
- **Barrier spotting:** *"What might get in the way?" / "When pain spikes or you're tired, what's your backup plan?"*

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- **Cues & support:** *"What reminder or routine will prompt you?" / "Who could support you?"*
- **Self-monitoring:** *"How will you track it, and how will we review it together?"*
- **Adaptation:** *"If this feels too hard or too easy, how will you adjust the dose?"*

How to improve it: Behavior Change Techniques you can deliver in clinic

1. **Clarify behaviours**: Behaviours should be **specific, observable, and measurable.** "Exercise more" is too vague, while "walk 10 minutes after lunch on Monday, Wednesday, and Friday" is concrete and trackable. Behavioural science calls this action planning. In MSK care, specificity avoids confusion and allows both patient and clinician to track adherence.
2. **Link to values**: Behaviours stick when tied to personal **values, roles, or identities**. According to Self-Determination Theory, intrinsic motivation is key. A patient with hip OA may commit to weight loss more readily if framed as "being able to play football with my son" than "reducing BMI." Linking behaviours to values creates emotional engagement that sustains adherence.
3. **Break into small steps**: Patients are more likely to succeed when they experience early mastery. **Graded exposure** (from psychology) and **pacing** (from rehabilitation science) reduce fear and prevent boom–bust cycles. For example, a patient afraid of bending after a disc herniation might start by reaching to mid-shin, then lifting a 2 kg box from a chair, then progressing to floor lifts. Success builds self-efficacy and dismantles catastrophic beliefs.
4. **Use cues and prompts**: Behaviour is strongly context-driven. Linking actions to **environmental triggers** ("habit stacking") makes them more automatic. For example, doing stretches while the coffee brews, or setting a phone alarm for an evening walk. For patients managing multiple conditions, cues reduce reliance on memory and improve follow-through.
5. **Track progress: Self-monitoring** through apps, diaries, or calendars creates accountability and allows timely adjustments. In MSK care, logs can track walking minutes, exercise reps, flare-ups, or sleep. But tracking is only useful if reviewed by the clinician. Reviewing logs during consultations shows patients their effort matters and strengthens motivation.
6. **Reinforce effort**: Reinforcement increases the likelihood of repeating a behaviour. Crucially, reinforce **effort and consistency**, not just outcomes. Praise persistence even if pain does not decrease immediately. Example: "You kept walking despite two flare-ups—that shows resilience." This supports resilience and avoids demoralization when progress is non-linear.

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7. **Plan for setbacks**: Setbacks are inevitable. **Implementation intentions** ("if–then" rules) help patients prepare. Example: "If it rains, I'll do sit-to-stands indoors." Or "If pain >6/10, I'll reduce activity volume by 50% but keep moving." Anticipating obstacles reduces distress and prevents all-or-nothing thinking.

8. **Strengthen self-efficacy**: Self-efficacy—confidence in one's ability—is the strongest predictor of adherence. Clinicians can build it by providing mastery experiences (practice in clinic), modelling progress, and reframing symptoms. For instance, rehearsing safe lifting in-session lets patients see they are capable, challenging beliefs like "my back is fragile."

9. **Build social support**: Accountability and encouragement increase adherence. Referring patients to group programs (walking groups, mindfulness classes) embeds behaviours in a supportive environment. Social connection also helps reframe pain as manageable rather than isolating.

10. **Foster intrinsic motivation**: The goal is to make behaviours part of identity: "I'm someone who manages pain actively." Clinicians can encourage this by asking patients to reflect on benefits: "What differences have you noticed since pacing?" Patients often report better sleep or less stiffness. Reflection reinforces meaning and sustains behaviours long after supervision ends.

Apply in practice

Professional side (what you do)	Patient side (what they face)	How to facilitate in clinic (concrete moves)	Illustrative clinical example
Translate goals into specific behaviours (Behavior Change Techniques: action planning, SMART goals)	Knows "exercise helps" but doesn't start; overwhelmed by vague advice.	Co-create a **SMART micro-goal**: "Walk 10 min after lunch Mon/ Wed/Fri this week." Write it into the record and **hand it** to the patient. Tie to personal values.	*Ahmed, 52, with chronic LBP, agreed to "walk 10 min after dinner Tue/Thu/Sat" instead of the vague "walk more." He completed 2/3 walks the first week—his first success in months.*

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Professional side (what you do)	Patient side (what they face)	How to facilitate in clinic (concrete moves)	Illustrative clinical example
Rehearse in-session (capability building, graded exposure)	Unsure how to do the movement; fears injury.	Demo → patient repeats → adjust to success point. Confirm **last successful version** as home start. Provide reassurance with mastery experience.	*Maria, 56, with knee OA, practiced sit-to-stands in clinic. She realized pain stayed stable. She was prescribed 2 × 5 reps at home daily, starting at her successful level.*
Install cues & adapt environment (opportunity shaping)	Forgets due to work/ family schedule. Relies on memory.	Introduce **habit cues**: phone alarms, resistance band near kettle, calendar invites, social buddy. Pair with routines (e.g., stretches while breaks).	*Luis, 44, with shoulder pain, set a phone alarm for 9pm shoulder mobility. After 2 weeks, he reported 80% adherence because the cue became routine.*
Add if–then plans and flare rules (anticipation, coping scripts)	Stops activity completely when pain bumps up; equates flare = damage.	Pre-write rule: "**If pain increase, reduce dose by 50% for 48h, keep moving, resume ladder step.**" Normalize flares with traffic-light plan.	*Emma, 42, with fibromyalgia, used her flare script: halved walking time for 2 days, then resumed. She avoided her usual 2-week "shutdown."*
Self-monitor & review progress (feedback loops)	Doesn't notice small wins → feels demotivated.	Provide a **tracker** (calendar, graph, app). Review in clinic: highlight progress ("6 walks this week, up from 2"). Praise effort and persistence.	*Sam, 49, tracked walking on a fridge calendar. At follow-up, his physio highlighted steady increases, which Diego hadn't realized. This boosted his motivation.*

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Professional side (what you do)	Patient side (what they face)	How to facilitate in clinic (concrete moves)	Illustrative clinical example
Use motivational interviewing to resolve ambivalence (motivation)	"I want to walk but I'm scared it'll worsen." Feels conflicted.	Use MI micro-skills (OARS): elicit values, reflect change talk, roll with resistance, affirm strengths. Agree on a **minimum viable start**.	*Anna, 38, with fibromyalgia, said "exercise always backfires." Through MI, she linked walking to "more energy for kids." She agreed to start with 2 min daily.*
Problem-solve barriers systematically (COM-B analysis)	Shift work, childcare, fatigue, lack of equipment.	Identify barrier → brainstorm options → pick one tweak. Test for 1 week. Example: break into 2 × 5 min bouts instead of 1 × 10 min.	*Carlos, 60, with LBP and shift work, said mornings were impossible. Together they planned 5-min mobility after his night shift shower—a sustainable tweak.*
Normalize relapse & pre-plan re-entry (relapse prevention)	Misses days→ feels guilty, failed. Avoids restarting.	Reframe relapse as expected. Pre-write script: "**Two misses? Restart at last easy dose; text me 'BACK ON**.'"	*Sofia, 39, with neck pain, missed 5 days and felt she "failed." Her physio reminded her of the re-entry plan. She restarted at her last easy level, avoiding dropout.*
Layer behavioural reinforcement (social & digital supports)	Motivation fades after first enthusiasm.	Add **digital nudges** (texts, app reminders, graphs) + social supports (buddy check-ins, group activity). Encourage celebrating small wins.	*Rosa, 62, with hip OA, joined a local walking group. Peer encouragement kept her engaged long after initial enthusiasm waned.*

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Professional side (what you do)	Patient side (what they face)	How to facilitate in clinic (concrete moves)	Illustrative clinical example
Address beliefs & myths directly (critical appraisal + apply)	Exposed to misinformation (posture shirts, supplements, early surgery).	Teach quick filters (HONcode, DISCERN). Role-play appraisal: "This supplement has no references, sells product→low credibility."	*Mark, 52, brought an ad for a posture shirt. His physio guided him through DISCERN questions. Mark concluded it was marketing, not medicine.*

Clinical example:

Diego, 49, warehouse worker with persistent low back pain, fears lifting and has stopped exercising. He wants to "get fit" but keeps quitting after flares.

1. **Assess Apply:** He has no specific plan, confidence 4/10, no cues, no flare rule.
2. **Plan using BCTs (Behavior Change Techniques)**:
   - **Action plan**: Tue/Thu/Sat—5-min hip-hinge drill + 8-min walk after dinner.
   - **Graded exposure ladder**: dowel hinge → 2-kg box from chair → 5-kg from knee height.
   - **If–then**: "If pain >5/10 or fatigue high, then half the reps and keep walking."
   - **Cues**: phone alarms; box by hallway; wife as walking buddy.
   - **Self-monitor**: tick-sheet on fridge; review next visit.
3. **Rehearse** in clinic: find pain-tolerable hinge; agree starting load; confirm confidence ≥7/10.
4. **Review at 2 weeks**: 6/6 walks done, box lifts at step 2; one flare managed with half-dose rule; confidence now 8/10. Increase walking to 12 min and trial step-3 lifts.
5. **Result**: Diego reports less fear, smoother workdays, and pride in "keeping going even when it twinged."

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Practical templates you can copy/paste into notes or handouts

- **One-line action plan:**

  "This week I will [behaviour] for [duration] on [days] at [time/place]."

- **If–then coping plan (implementation intention):**

  "If [barrier/flare], then I will [specific adaptation] and resume plan within 48h."

- **Minimum viable behaviour:**

  "On low-energy days I will do just 2 minutes—still a win."

- **Re-entry rule:**

  "After two missed sessions, restart at the last easy dose and text 'BACK ON' to your buddy/clinician."

Key takeaways for clinicians

- Treat Apply as a **behavioural engineering task**: design capability (rehearsal), opportunity (cues, environment, support), and motivation (motivational interviewing, feedback, identity: "I'm someone who moves daily").
- Small, specific, and reviewable beats big, vague, and inspirational.
- Flares and misses are **features**, not bugs—plan for them, learn from them, and keep the loop going.

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2.3. Health educational principles for improving musculoskeletal health literacy

2.3.1 Clarity and personalization

The Digi4MSK framework highlights that **adequate health literacy is a prerequisite for effective self-management.** Patients with low literacy often misinterpret terms like "degeneration" or "instability," creating fear and avoidance. Evidence shows that using **plain language, metaphors, and visuals** reduces catastrophizing and improves recall (Lorig & Holman, 2003; Nutbeam, 2008). But clarity alone is not enough: advice must be **personalized to the patient's context**. Telling an office worker to "move more" may feel abstract, while suggesting "stand up every 30 minutes" makes it actionable. In osteoarthritis, reframing weight loss as "reducing load on your knee with every step" connects the message directly to their pain experience.

2.3.2 Active involvement and dialogue

Both Digi4MSK and broader health education research emphasize that patients must be **active participants** in their learning. Passive listening leads to poor recall; active involvement (teach-back, role-playing, in-session rehearsal) increases retention and confidence. In evidence-based frameworks like **interactive health literacy**, the patient and clinician co-construct meaning. For example, teaching pacing is more effective if the patient practices activity planning in clinic and then explains it back in their own words. This enhances **self-efficacy**, a consistent predictor of adherence in MSK pain.

2.3.3 Repetition, reinforcement, and feedback

Systematic reviews in MSK pain (Babatunde 2017; Lin 2020) confirm that **ongoing education, not one-off advice**, improves long-term outcomes. The Digi4MSK materials also emphasize repetition through digital follow-up and community reinforcement. Repetition consolidates learning, while feedback reinforces behaviour. A patient logging their walks and reviewing progress with a clinician experiences positive reinforcement, which strengthens persistence even before pain improvements appear. This principle mirrors behaviour-change science (operant conditioning) and patient education theory (active feedback loops).

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2.3.4 Shared decision–making and motivation

Health education is most effective when embedded in **shared decision-making**. According to WHO patient engagement guidelines, explaining risks, benefits, and uncertainties openly leads to better satisfaction and adherence. The Digi4MSK project also stresses tailoring interventions to patient motivation levels. Techniques from **motivational interviewing (MI)**—open questions, affirmations, reflective listening—help uncover intrinsic motivation. For instance, instead of prescribing exercise as "doctor's orders," asking "what matters most to you?" and linking activity to that value (e.g., playing with grandchildren) makes behaviour change meaningful and self-sustaining.

2.3.5 Normalizing fluctuations and building resilience

Persistent pain is characterized by variability. Evidence shows that **educational reassurance about flare-ups** reduces catastrophizing and supports adherence to self-management. Digi4MSK recommends integrating flare-up strategies (e.g., traffic-light plans, if–then rules) into education. This aligns with behaviour-change techniques for **relapse prevention**: teaching patients that setbacks are expected and planning re-entry pathways. For example, a patient with low back pain who learns to halve walking time during flares but keep moving avoids the "stop everything" cycle. Normalization builds resilience and protects long-term engagement.

These principles are supported both by the **Digi4MSK project** (emphasizing literacy domains, patient empowerment, and digital/community resources) and by the broader literature on health literacy and behaviour change. Applied consistently, they help patients not only understand their condition but also access the right resources, critically appraise options, apply behaviours in daily life, and sustain beliefs that support long-term musculoskeletal health.

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3. Assessing and addressing the lack of motivation for change

Musculoskeletal pain often becomes a long-term condition where recovery depends less on a "quick fix" and more on supporting people to live well with pain. This involves adopting and sustaining **healthier behaviours in a broad sense**: not only regular physical activity, but also finding ways of moving that are enjoyable, engaging in valued and meaningful activities, strengthening social connections, pacing daily life, improving sleep routines, and integrating stress-regulation practices. These activities are crucial for building resilience and quality of life in persistent pain. Yet they require energy, persistence, and adaptation, which can be difficult when pain fluctuates or progress feels slow. **Motivation for change is therefore a central determinant of outcome**.

3.1. Why is it important to spot low motivation for change in pain patients?

Importantly, low motivation does not mean patients lack knowledge. Many people with MSK pain understand that movement or lifestyle change could help, but do not feel ready, willing, or able to make the effort—or cannot see how to fit it into their lives. In behavioural science terms, there is a gap between **knowing** and **doing**. If clinicians prescribe exercise or lifestyle plans without addressing motivational readiness, they risk setting patients up for frustration or disengagement.

Research consistently shows that motivation predicts adherence to self-management more strongly than pain severity or imaging findings. For instance, patients with low back pain who feel motivated to stay active tend to recover better than those who remain ambivalent, even when given identical physiotherapy. Conversely, in osteoarthritis, patients who struggle with lifestyle changes such as weight management may drift toward repeated injections or surgery if their motivation is not supported.

Motivation is not static. The widely used **Transtheoretical Model** (Prochaska & DiClemente, 1982) describes stages such as pre-contemplation, contemplation, preparation, action, and maintenance. This framework remains useful, but newer perspectives emphasize that motivation is **fluid and context-dependent.** Patients may feel highly motivated one day and hopeless the next, or motivated for one behaviour (e.g., walking) but resistant to another (e.g., dietary

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change). Pain flares, mood, family support, and even the time of day can shift motivational states. Therefore, clinicians should view motivation as a **dynamic process**, not a fixed trait, and adapt their approach flexibly across encounters.

In summary, spotting low motivation is essential because behaviour change is the cornerstone of musculoskeletal pain management. By identifying motivational barriers early—and acknowledging that motivation fluctuates and interacts with biological and social factors—clinicians can adjust their strategies. This might mean focusing first on enjoyable, meaningful activities rather than formal "exercise," exploring patient values with motivational interviewing, or supporting access to new therapies that reduce barriers. Doing so increases the likelihood that healthier behaviours are not only attempted but sustained over the long term.

3.2. Matching intervention to facilitate motivation for change

3.2.1 Stages of Motivation for Change in Musculoskeletal Pain

Background concepts:

- **Transtheoretical Model** (Prochaska & DiClemente, 1982): Suggests people move through stages when changing health behaviour—from not even considering it, to thinking about it, to preparing, acting, maintaining, and sometimes relapsing. Useful for identifying where a patient is in readiness to change.
- **The Behaviour Change Wheel / COM-B model** (Michie, 2011): Explains that behaviour (B) happens when people have Capability (skills, knowledge, confidence), Opportunity (environment, resources, social support), and Motivation (desire, intention, habits). If one element is missing, behaviour change stalls. The wheel then proposes "intervention functions" (education, training, enablement, persuasion, etc.) tailored to which COM-B element is weak.
- **Fordyce's behavioural principles** (1976): Applied behavioural psychology to chronic pain. He showed that "pain behaviours" (e.g., groaning, resting, avoiding activity, seeking repeated medical reassurance) are often unintentionally reinforced by attention and sympathy, while "wellness behaviours" (activity, problem-solving, persistence) often go unnoticed. Clinicians can reduce reinforcement of pain behaviours and actively reward wellness behaviours to shift long-term patterns.

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Assessing and addressing the lack of motivation for change

Why focus on motivation?

Helping people with musculoskeletal pain requires much more than identifying a painful structure or prescribing an exercise sheet. Long-term recovery often depends on whether patients are willing and able to make changes to their everyday lives. These changes are broad: some involve **enjoyable forms of movement** like swimming or dancing, others mean reconnecting with **valued social activities** such as meeting friends for a walk, while still others focus on **sleep regulation, pacing daily tasks, or exploring stress-management practices**. For many people, pain creates a narrowing of life; motivation is what determines whether they can begin to widen that circle again.

Motivation, however, is not a fixed personality trait. It fluctuates depending on mood, social support, life stressors, and even the time of day. A patient who is ready to walk in the morning may feel defeated by evening. One who is eager to try relaxation may strongly resist changes in diet. This dynamic nature of motivation means that clinicians need to learn to "read" where a patient currently stands, not to label them permanently.

Three frameworks are particularly helpful in guiding this process. The **Transtheoretical Model of Change** maps the different stages people typically move through when changing health behaviours. Susan Michie's **Behaviour Change Wheel (COM-B model)** explains that behaviour only occurs when there is sufficient **Capability** (knowledge and skills), **Opportunity** (a supportive environment), and **Motivation** (desire and intention). Finally, **Wilbert Fordyce's behavioural principles** remind us that in chronic pain, "pain behaviours" such as avoiding activity or repeatedly seeking reassurance can be unintentionally reinforced by attention, while "wellness behaviours" like persistence, pacing, or creative problem-solving often go unnoticed. By redirecting reinforcement, clinicians can shape a more adaptive pattern of living. With these perspectives in mind, let us walk through the stages of motivation and examine how they appear in musculoskeletal practice, how to identify them in consultations, and how to help patients move toward healthier engagement.

3.2.2 Pre-contemplation: "I don't see the point."

Patients in pre-contemplation are not considering change at all. They often believe their condition is purely biomedical and that only medical interventions can help. They may say things like *"My MRI shows degeneration—what difference would exercise make?"* or *"I just need another injection."* Some are discouraged after years of unsuccessful attempts, while others may never have been offered self-management as a serious option.

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Clinical example:

Leonard, a 55-year-old office worker with long-standing knee osteoarthritis, comes to clinic requesting another injection. He explains that he tried "the exercises" years ago, but they only made him worse. He has stopped going on weekend walks with his wife and spends most evenings in front of the television. He has the conviction that movement damages his knees further and sees no reason to try again.

How to work with him:

The COM-B lens shows us that his **motivation** is minimal, and his **capability** is underdeveloped, since he does not know how to exercise safely without flaring. The **opportunity** is limited: his social environment reinforces rest rather than activity. From a Fordycean perspective, his pain behaviours are heavily reinforced by repeated medical attention and by his wife taking over household tasks whenever he complains.

At this stage, the goal is not to hand him a set of exercises. It is to gently plant the seed that self-management could be possible. This can be done by offering clear explanations that challenge misconceptions, for example: *"These changes in your knee are like wrinkles on the inside—they don't mean it is broken." It also helps to explore his values: "What would you like to be able to do if your knee felt better?"* When he replies, "I'd like to play football with my grandson," the clinician connects this value to the role of safe movement, creating a first crack in his resistance. Importantly, the clinician avoids reinforcing avoidance behaviours (e.g., ordering another scan) and instead praises small daily capabilities such as the fact that he still walks upstairs at work.

3.2.3 Contemplation: "I know I should, but…"

Patients in contemplation recognize that change may be needed but remain ambivalent. They can list both the benefits and the barriers, yet fear of worsening pain or memories of failed attempts keep them stuck.

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Clinical example:

Rachel, 42, has had persistent back pain for several years. She tells her physiotherapist: *"I know I should move more, but every time I try, I flare up and then I'm worse for days."* She alternates between short bursts of enthusiasm and long periods of inactivity, often spending whole weekends in bed after a flare.

How to work with her:

Her motivation is conflicted: she wants the benefits of activity but is terrified of pain spikes. Her capability is fragile, since she lacks pacing and graded exposure skills. Her avoidance behaviours are unintentionally reinforced when friends or even clinicians tell her she was "wise to stop."

The strategy here is not to push her into full programs but to work with her ambivalence. The clinician may create a simple pros-and-cons list with her, giving equal weight to both sides. They might then suggest a low-threat experiment, such as a five-minute walk at a gentle pace, framed not as "exercise" but as a test to see how her body responds. When she succeeds, the clinician reinforces the effort regardless of outcome: *"You showed great courage trying this. Even if it caused a bit of discomfort, it didn't cause harm."* By reframing flares as normal sensitivity rather than evidence of damage, the clinician helps reduce fear and build readiness for the next stage.

3.2.4 Preparation: "I'm getting ready."

Patients in preparation are planning to change and may already have taken small steps. They may have bought trainers, looked up a local exercise group, or downloaded a sleep app. Their motivation is higher, but fear of failure or lack of knowledge can hold them back.

Clinical example:

Daniel, 60, has hip osteoarthritis. He proudly tells his physiotherapist: *"I've bought new walking shoes and I'm thinking of joining the community walking group, but I'm not sure I'll be able to keep up with them."*

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How to work with him:

He has the motivation but not yet the full **capability** - he doesn't know how to pace himself, and his confidence is fragile. His **opportunity** is growing (he has identified a group) but still needs facilitation. The clinician can support him by co-creating a specific action plan: *"Let's start with you walking for eight minutes after breakfast on Tuesday, Thursday, and Saturday."* They can rehearse the first step in the clinic, asking him to walk at a gentle pace and showing him how to monitor his symptoms. Using an if–then coping plan, the clinician helps him prepare for setbacks: "If your hip gets sore, then cut the time in half and see how it feels." Fordyce's principles are applied by reinforcing "wellness talk" (planning, investing in shoes) rather than fear statements. This converts good intentions into a realistic first step.

3.2.5 Action: "I've started, but it's fragile."

In the action stage, patients are actively engaging in new behaviours but have done so for less than six months. Motivation is higher, but routines are fragile and can easily be derailed by pain flares, stress, or lack of support.

Clinical example:

Kathie, 38, with fibromyalgia, has begun yoga classes twice per week and is tracking her sleep with an app. She says: *"I do feel a bit better, but if my pain spikes, I'll probably quit because I don't think I could cope."*

How to work with her:

She has already demonstrated strong motivation, but her confidence is precarious. The clinician's role is to protect this fragile new routine. This involves normalizing setbacks: *"It's normal for symptoms to fluctuate even when you are on the right track."* They provide coping scripts such as: "If pain rises, reduce the intensity or shorten the session, but don't stop completely." Reviewing her progress logs allows the clinician to highlight benefits beyond pain, such as improved sleep or energy. Using Fordyce's perspective, the clinician avoids reinforcing total rest after a flare and instead praises her adaptive persistence: "You adjusted your routine and kept going—that shows real self-management."

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3.2.6 Maintenance: "It's part of my life, but I still wobble."

In maintenance, patients have sustained new behaviours for more than six months. Habits are more stable, but motivation may wane under stress or when novelty fades. The risk here is relapse.

Clinical example:

Anthony, 47, has been walking daily and practicing mindfulness for eight months. He tells his physiotherapist: "It's part of my life now, but when work gets busy, I tend to drop everything."

How to work with him:

His capability and motivation are strong, but his opportunity collapses during stressful periods. The clinician helps by reinforcing identity: *"You're someone who manages your pain actively."* They develop relapse-prevention plans, such as scheduling micro-breaks at work or using a *"minimum viable routine"* (e.g., a 5-minute walk) when under pressure. By shifting reinforcement from pain improvement to natural rewards—better independence, social connection, mood—the clinician helps maintain resilience.

3.2.7 Relapse / Recycling: "I slipped back."

Relapse is common and should be seen as part of the change process, not failure. Patients often cycle between stages depending on context, mood, and life events.

Clinical example:

Jenny, 50, had been exercising regularly for five months but stopped after a stressful period at work. She sighs: "I'm back to square one."

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How to work with her:

Rather than framing this as failure, the clinician reassures her: *"You've done this before, so we know you can do it again."* They help her restart at the last successful level, perhaps two ten-minute walks per week, instead of demanding the previous full routine. Using the COM-B model, the clinician reassesses which element collapsed—was its opportunity (time, support) or motivation (stress, discouragement)? Fordyce's lens reminds us not to reinforce guilt-driven talk, but to reward re-entry efforts. The goal is to normalize relapse and quickly recycle her back into preparation or action.

In summary

Motivation in musculoskeletal pain is fluid. Patients may move forward, slip back, or hover between stages. The clinician's task is not to push everyone into action but to **recognize the stage**, understand why they are stuck, and apply the right supports. By combining the **stages of change, COM-B model**, and **Fordyce's reinforcement principles**, clinicians can provide care that is psychologically informed, realistic, and compassionate. Most importantly, they can help patients transform moments of ambivalence or relapse into opportunities for growth and renewed engagement.

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4. Clinical vignettes

The following clinical vignettes illustrate how to apply best practices in musculoskeletal health literacy and self-management support across common real-world scenarios. Each vignette presents a typical clinical challenge, highlights key communication strategies, and demonstrates how to integrate evidence-based self-management principles into routine care.

The cases are organized into four practical subsections to facilitate quick reference during consultations: 4.1) Movement and activity, 4.2 Clinician-Patient interaction, 4.3 Values, goal setting and skills and 4.4) Work and Pain.

These vignettes serve as practical, action-oriented tools to support effective consultations and consistent integration of health literacy principles into everyday clinical practice.

4.1. Movement and activity

In this part you will find scenarios focused on supporting safe movement, addressing fear of activity, and guiding patients toward meaningful functional goals.

4.1.1 Feeling uncertain about exercising and increasing physical activity

Alicia, a 52-year-old office worker, has had persistent low back pain for four months. She spends most of her day sitting and has stopped recreational walking because she worries that movement might aggravate her spine. She has not exercised regularly in decades and is confused by conflicting advice she has seen online. Her apprehension about exercise and limited understanding of pain mechanisms have led her to avoid activity, causing deconditioning and lower confidence.

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Integrated management plan

- **Build rapport and explore beliefs**—Start by asking Alicia about her concerns and prior experiences with exercise ("What makes you feel hesitant to start moving?"). Use reflective listening and open questions from motivational interviewing to understand her beliefs that pain equals harm. Gently reframe these beliefs by explaining that musculoskeletal pain often persists due to a sensitised nervous system rather than ongoing damage and that safe movement can help desensitise the system and improve quality of life.
- **Provide plain language education**—Explain that regular physical activity is a core part of managing back pain. Stress that remaining in bed or avoiding activity can slow recovery and increase disability, whereas staying active facilitates return to work and daily functions. Use simple metaphors like comparing the body to an alarm system that has become too sensitive. Avoid medical jargon, and confirm comprehension by asking Alicia to repeat key points in her own words (teach back). Offer trustworthy written or digital resources (e.g., NHS patient leaflets) so she can access information after the session.
- **Collaborative goal setting and graded activity**—Identify meaningful activities that Alicia would like to resume, such as walking her dog or gardening. Set specific and achievable goals (e.g., walking for 10 minutes daily, then increasing by 2 minutes each week). Emphasise that light to moderate multicomponent exercise 2–3 times per week can improve pain, sleep and mood, and that pacing activities helps avoid the "boom bust" cycle. Provide an activity diary or smartphone app to track progress and reinforce self-management.
- **Teach pacing and problem solving strategies**—Introduce activity pacing: stopping an activity based on predetermined time rather than waiting for pain, scheduling breaks, and gradually increasing duration. Encourage Alicia to think ahead about potential obstacles (e.g., busy workdays or bad weather) and brainstorm practical solutions, such as indoor walking routes or short movement breaks during work. Reinforce that flare-ups are normal and do not signal injury; suggest reducing intensity briefly and then returning to the plan.
- **Incorporate psychologically-informed practice**—Use elements of cognitive behavioural therapy within physical therapy sessions. Teach Alicia relaxation techniques (e.g., diaphragmatic breathing) and cognitive strategies for challenging negative thoughts. Practice graded exposure by gradually introducing movements she fears (e.g., bending to pick up light objects), reinforcing success and correcting unhelpful movement patterns.
- **Support digital engagement cautiously**—Assess Alicia's comfort with technology. If appropriate, recommend a simple app or wearable to monitor steps and send reminders. Offer guidance on how to use the technology and ensure she knows it is a tool—not an obligation—to support her progress.

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Clinical vignettes: Movement and activity

- **Follow up and reinforce self efficacy**—Schedule regular follow ups to review goals, celebrate successes, and adjust the program. Encourage Alicia to recognise the link between her efforts and improvements in function. Over time, transition her exercise programme from structured sessions into routine daily activities to support long term adherence.

This integrated approach addresses Alicia's uncertainty about physical activity by aligning self-management strategies with her beliefs, supporting her in understanding and applying health information, and using cognitive and behavioural strategies to build confidence and resilience.

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4.1.2 Feeling unsuccessful in doing physical activity

Carlos, a 60-year-old bus driver with knee osteoarthritis and long standing low back pain, has been advised multiple times to “exercise more.” He has attempted walking programmes and joined a gym but stopped within a few weeks because his pain flared or he felt overwhelmed. Each time he stopped he felt he had “failed” and now believes that he is not the kind of person who can stick to an exercise plan. He reports frustration and a sense of hopelessness about being physically active. Carlos’s health literacy is adequate for day to day matters, but he struggles to interpret bodily sensations during exercise and cannot distinguish between expected post exercise soreness and harmful pain.

Integrated management plan

- **Explore past experiences and beliefs**—Begin by inviting Carlos to describe his previous attempts at exercise (“Tell me about what happened when you tried to walk regularly”). Use open questions and reflective listening to understand the specific challenges he faced (e.g., abrupt increases in intensity, lack of guidance, pain flare-ups). Normalise the difficulty of behaviour change and reassure him that setbacks are common. Identify self defeating beliefs (“I always quit”) and reframe them (“You were determined enough to start; now we’ll adjust the plan to make it sustainable”).
- **Use graded, personalised activity planning**—Help Carlos design an exercise programme that starts well below the thresholds that previously triggered flares. For example, if walking 30 minutes caused a pain flare, negotiate starting with 5 minute walks three times per day and increase by 10 % per week. Incorporate strengthening and flexibility exercises appropriate for knee osteoarthritis, using simple equipment such as resistance bands. Emphasise that light to moderate exercise improves pain and function when done consistently and that discomfort during early sessions does not mean damage. Provide written or digital instructions with clear, easy to follow language and visuals.

- **Pacing and self monitoring**—Teach Carlos pacing techniques: scheduling regular rests, alternating activities that load different body parts, and stopping an activity based on predetermined time rather than waiting for pain. Encourage him to keep a simple activity log noting duration, perceived exertion and pain before and after activity. Reviewing these logs together helps him see progress objectively and identify patterns, reinforcing his sense of mastery.
- **Address understanding and appraisal**—Explain the difference between normal exercise induced soreness (typically diffuse, short lived) and warning signs that warrant modification (e.g., sharp, escalating joint pain). Use analogies and simple diagrams to describe how muscles adapt to stress and become stronger over time. Clarify that temporary increases in discomfort are part of the adaptation process and not a sign of "failure." Encourage Carlos to evaluate information sources critically; advise him to rely on guidance from healthcare professionals and reputable organisations rather than anecdotal online stories.
- **Enhance self efficacy through goal setting and reinforcement**—Collaboratively set short term goals that are realistic and personally meaningful (e.g., walking around the block without stopping, climbing stairs without knee pain). Celebrate small achievements during follow up visits to counteract his narrative of failure. Gradually introduce variety (cycling, swimming) to maintain interest and reduce joint stress. Encourage social support—perhaps walking with a family member or joining a community class—to increase accountability and enjoyment.
- **Incorporate cognitive and behavioural strategies**—Use brief cognitive behavioural techniques to help Carlos recognise and challenge automatic thoughts that undermine his efforts ("This pain means it's harming my knee"). Teach relaxation exercises (e.g., controlled breathing) to manage anxiety when pain increases. Discuss coping strategies for setbacks, such as temporarily reducing activity rather than stopping altogether and using heat or gentle movements to ease flare-ups.
- **Follow up and adaptability**—Schedule regular reviews to adjust the programme based on Carlos's feedback and progress. Reinforce that lapses are learning opportunities rather than failures. As his confidence grows, gradually increase exercise intensity and encourage him to integrate physical activity into daily routines (e.g., parking further from work, taking the stairs). Over time, shift the focus from structured sessions to maintaining an active lifestyle that he can self manage.

This integrated approach addresses Carlos's feeling of being unsuccessful by creating achievable steps, enhancing his understanding of pain and adaptation, and building confidence through supportive feedback and psychologically informed practice.

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Clinical vignettes: Movement and activity

4.1.3 Being uncertain about pain

Lisa, a 45-year-old warehouse supervisor, developed persistent mid back pain after lifting heavy boxes eight months ago. Her MRI report mentions "degenerative disc changes," which she interprets as spine "wear and tear." Whenever she feels a twinge, she stops what she is doing and rests for days, fearing she might "damage something." She is anxious about moving and has begun to avoid household chores. She is unsure how to judge whether the pain she feels is signalling harm or part of the healing process.

Integrated management plan

- **Clarify the meaning of pain and imaging findings**—Start by asking Lisa what she believes is causing her pain and what her MRI results mean to her. Validate her concerns and explain that many imaging findings such as disc degeneration are normal age related changes and are poorly correlated with pain severity. Use simple language and analogies (e.g., "Wrinkles on the inside") to illustrate that structural changes on scans are common in pain free individuals. Emphasise that pain is an alarm system influenced by the nervous system, emotions and context, and that it often signals protective sensitivity rather than harm.
- **Teach "hurt versus harm" and red flag recognition**—Discuss the concept that musculoskeletal pain can feel intense without indicating injury. Provide a "traffic light" framework:
  - **Green**: muscle soreness or dull ache that eases with movement and does not worsen function; safe to continue activity.
  - **Yellow**: pain that increases during or after activity but settles within 24–48 hours; reduce intensity or duration next time, but confirm it is safe to continue activity.

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- **Red:** pain accompanied by neurological changes (e.g., numbness, weakness), unrelenting night pain, fever or unexplained weight loss; advise prompt medical review. This empowers Lisa to appraise her symptoms and decide when self-management is appropriate versus when to seek professional assessment.

- **Rebuild confidence through graded exposure**—Identify movements Lisa avoids (e.g., bending, twisting). Design a graded exposure plan that starts with low load, pain free ranges (e.g., supported trunk rotations) and progressively increases range and load. Encourage her to notice and record her pain levels and function after each session. As she successfully performs feared movements without harm, her confidence will grow and fear will decrease. Emphasise that temporary increases in discomfort are expected but do not mean she is injuring herself.

- **Promote active coping and relaxation**—Teach Lisa relaxation and breathing techniques to reduce sympathetic arousal during pain episodes. Encourage mindfulness or body scan exercises to help her observe sensations without catastrophising. Explain how stress and anxiety can amplify pain perception and that calming techniques can modulate the pain experience.

- **Address beliefs and provide trustworthy information**—Challenge catastrophic thoughts ("My back is crumbling") using evidence based explanations. Provide patient friendly resources that explain the natural history of back pain and the limits of imaging. Encourage Lisa to discuss her questions with her physiotherapist or general practitioner rather than relying on anecdotal online stories.

- **Monitor and support self-management**—Use follow up appointments to review Lisa´s symptom diary, adjust her activity plan and reinforce her ability to judge pain appropriately. Encourage her to gradually resume normal activities and work duties, using the traffic light framework to guide decision making. If she encounters a red flag symptom, instruct her on when and where to seek prompt medical evaluation.

This tailored approach addresses Lisa´s uncertainty by demystifying pain signals, equipping her with a framework to appraise symptoms and promoting safe, graded exposure to movement. It combines education, behavioural practice and cognitive reframing to improve her confidence and function.

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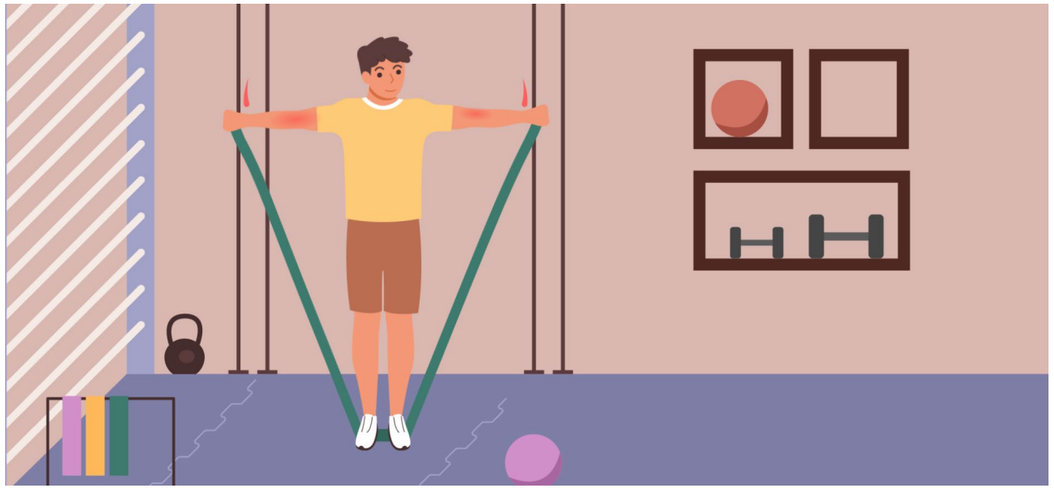
4.1.4 Not trusting the therapist

Jordi, a 38-year-old construction worker, developed right shoulder pain after a fall. He has consulted three different practitioners over the past six months: an orthopaedic surgeon who recommended surgery, a chiropractor who prescribed exercises with minimal explanation, and a physiotherapist who sold him a package of 20 sessions upfront. Jordi's pain persists, and he now questions the motives behind healthcare recommendations. He presents to a new physiotherapist with guarded body language and pointed questions: "How do I know you're not just going to sell me something? Why should I believe what you say about my pain?" He is unsure whether his shoulder pain is harmless or a sign of serious injury and distrusts clinical advice because of previous experiences.



Integrated management plan

- **Acknowledge past experiences and validate mistrust**—Begin by openly inviting Jordi to share his previous healthcare encounters. Use reflective listening to acknowledge his frustration ("It sounds like you've felt pressured into treatments that didn't help, and that's understandably made you sceptical"). Avoid defending other clinicians; instead, validate his right to question recommendations. Recognise that therapeutic alliance is often compromised by conflicting opinions, financial pressures and opaque communication.

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- **Adopt a transparent, partnership based approach**—Explain your role, qualifications and the evidence based nature of your recommendations. Outline the assessment process before starting, including what tests will and will not be done. Share decision making power by presenting Jordi with options (e.g., active rehabilitation, watch and wait, referral for imaging) and discussing the pros and cons of each. Use decision aids (graphs, handouts) to visualise likely outcomes and support Jordi's appraisal. Offer to provide written summaries or copies of your clinical notes to reinforce transparency.
- **Build credibility through evidence and logic**—Discuss the natural history of shoulder pain and the limited correlation between imaging findings and symptoms. Explain that many structural "abnormalities" identified on scans are present in pain free individuals, and that evidence supports conservative management initially. Share this information verbally and, if Jordi consents, walk him through guidelines from reputable sources (e.g., national orthopaedic societies) so that he can appraise information himself. Invite Jordi to verify what you tell him via trusted resources or by seeking a second opinion.
- **Use motivational interviewing to explore beliefs**—Ask Jordi open questions about his understanding of pain and expectations of treatment. For example: "What do you think is causing your shoulder pain?" or "What would make you feel confident in the plan we create?" Explore underlying fears (e.g., fear of being manipulated for financial gain, fear that movement will worsen his injury). Reflect these back to him and collaboratively identify how to address them, such as by agreeing to a limited number of sessions with predefined goals and re evaluation points.
- **Address cognitive and emotional factors**—Educate Jordi on the nocebo effect—the way negative expectations can amplify pain—and the role of stress and vigilance in maintaining symptoms. Use cognitive behavioural techniques to help him identify unhelpful thoughts ("They just want my money") and reframe them ("I will evaluate recommendations based on evidence and my own progress"). Introduce relaxation methods to reduce hypervigilance and sympathetic arousal, which can lower pain sensitivity.
- **Design a flexible, self directed rehabilitation plan**—Collaboratively set functional goals (e.g., return to overhead work or sport). Emphasise active self-management strategies: graded strengthening and mobility exercises for the shoulder, ergonomic adjustments at work, and activity pacing. Provide detailed instructions and videos so Jordi can perform exercises independently. Agree on specific milestones and a time limited trial of therapy (e.g., "Let's see how six sessions over three weeks affect your function; we will reassess then and decide together whether to continue").

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- **Encourage appraisal and second opinions**—Reinforce Jordi's right to question, seek clarification and obtain second opinions. Provide him with a list of questions to ask any provider (e.g., "What is the evidence for this treatment?" "What are the alternatives?"). Educate him on how to recognise red flags (e.g., sudden loss of strength, spreading numbness) that warrant urgent medical evaluation versus variations of pain intensity that are common and non threatening.
- **Maintain consistent communication and boundaries**—Schedule regular check ins (in person or via telehealth) to discuss Jordi's progress. Encourage him to communicate any doubts or changes in symptoms promptly. If you recommend any passive modality (e.g., manual therapy), explain its purpose clearly, place it within a broader active programme and set clear expectations about frequency and duration to prevent perceptions of unnecessary dependency.
- **Leverage multidisciplinary support**—If Jordi's mistrust relates to financial or system level issues, connect him with patient advocacy services or health literacy programmes that can help him navigate the healthcare system. If you suspect unresolved trauma or severe anxiety contributing to mistrust, consider liaising with or referring to a psychologist experienced in chronic pain.

By explicitly validating Jordi's scepticism, transparently sharing information, and co creating a structured, time bound plan, the clinician demonstrates respect for autonomy and cultivates trust. Integrating motivational interviewing and cognitive behavioural strategies helps Jordi reinterpret his pain and previous experiences, while active self-management reinforces his control over recovery. This level of sophistication goes beyond common sense reassurance and addresses the deeper relational and cognitive barriers that make these cases challenging for clinicians.

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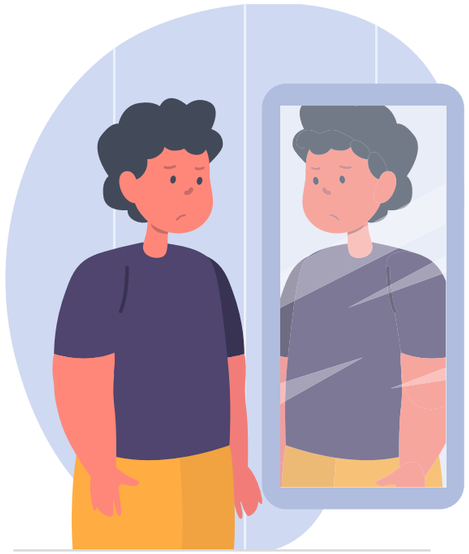
4.1.5 Understanding the importance of physical activity, but not knowing how to start

Sara is a 55-year-old IT project manager with mild hypertension and elevated cholesterol. She recognises the importance of being active but hasn't exercised regularly in decades and feels intimidated by gyms. Busy with work and caregiving, she is not sure how to begin and worries about injury.



Integrated management plan

- **Assess readiness and health status**—Begin with a brief health screen (e.g., PAR Q+ "Physical Activity Readiness Questionnaire") to ensure Sara can safely engage in general physical activities. Review her medical history and discuss any movement limitations. Clarify that the goal is to discover activities she enjoys rather than prescribe a rigid programme.
- **Elicit past and present interests**—Use motivational interviewing to explore Sara's hobbies and what she enjoyed doing as a child or young adult—dancing at social events, cycling with friends, gardening, hiking. Ask open questions such as, "What kinds of movement made you feel good in the past?" and "Are there activities you've always wanted to try but haven't?"

- **Introduce the concept of "movement snacks"**—Explain that physical activity does not have to be structured exercise; it can be accumulated through brief, enjoyable bouts of movement. Examples include playing with grandchildren, walking the dog, doing a short dance to a favourite song, gardening, or taking stairs instead of elevators.
- **Create an activity "menu" for experiential sampling**—Collaboratively brainstorm a list of activities that align with Sara's interests and logistical realities. Possibilities could include:
  - Joining a beginner salsa or line dancing class for social interaction.
  - Taking nature walks or gentle hikes on weekends with family or friends.
  - Exploring local cultural sites on foot ("urban explorations").
  - Trying aqua aerobics or recreational swimming if she enjoys being in water.
  - Participating in community gardening or volunteering for park clean ups.
  - Commuting by bicycle for short errands or walking to nearby meetings.
  - Using interactive video games (e.g., dance or fitness games) at home for fun.
- **Plan short, low commitment trials**—Encourage Sara to sample two or three activities over the next month. For each, set a low threshold for commitment (e.g., attend one dance class, go for a 20 minute walk in a park, try a beginner's yoga session online). Ask her to note how she feels during and after each activity—energy levels, enjoyment, social connection—rather than focusing on calories or heart rate.
- **Reflect and refine**—At follow up sessions, discuss Sara's experiences with each activity. Use reflective questioning: "What did you enjoy most?" "Did anything surprise you?" "Which activities felt like a chore, and which felt like play?" Based on her feedback, eliminate activities she did not enjoy and expand on those that sparked joy or curiosity.
- **Cultivate habit formation through enjoyment and social connection**—Once Sara identifies one or two preferred activities, help her integrate them into her weekly routine by linking them to existing habits or social commitments (e.g., Saturday morning dance class with a friend, weekday evening walks with a neighbour). Highlight that intrinsic enjoyment and social support are powerful drivers of adherence. Encourage her to invite family members or colleagues to join, creating an accountability and support network.
- **Enhance health literacy around activity variety**—Educate Sara about the benefits of diverse movement patterns: aerobic activities for cardiovascular health, weight bearing activities for bone strength, and stretching or balance tasks for fall prevention. Use simple language to explain that variety reduces the risk of overuse injury and keeps activity interesting. Provide tips on recognising signs of overexertion and how to adjust intensity based on how her body feels.
- **Support with resources and community connections**—Provide information on local community centres, adult recreation leagues, dance studios and walking groups. If digital engagement is comfortable, recommend apps that gamify daily movement or connect people with similar interests (e.g., social walking apps, geocaching). If digital literacy is limited, accompany her through sign up processes or suggest in person sign up at community centres.
- **Address psychological barriers and self perception**—Use cognitive behavioural strategies to challenge beliefs that physical activity must be strenuous or occur in a gym. Reframe "exercise" as "moving in ways that make you feel alive." Discuss any embarrassment or body image concerns and normalise these feelings. If Sara feels self conscious in group settings, suggest starting with home based activities or small groups.
- **Follow up and evolve**—Schedule follow ups every few weeks to celebrate successes, troubleshoot barriers (bad weather, schedule changes) and introduce new activity options when interest wanes. As Sara's confidence and enjoyment grow, gently suggest adding short bouts of strength focused activities (e.g., carrying groceries, using resistance bands) within the context of her chosen activities.

By focusing on exploration and enjoyment, this approach empowers Sara to develop a sustainable movement habit rooted in positive experiences rather than obligation. The therapist acts as a coach and facilitator, guiding her through sampling, reflection and habit formation, and ensuring she understands how to stay safe and recognise activities that resonate with her lifestyle and preferences.

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4.1.6 Exercising with comorbidities: how to start and manage barriers

María is a 63-year-old, retired teacher with type 2 diabetes, hypertension, obesity (BMI 33) and bilateral knee osteoarthritis. She also experiences mild diabetic peripheral neuropathy causing intermittent numbness in her feet. Her general practitioner has advised that regular activity could improve glycaemic control and reduce cardiovascular risk. María is willing but unsure how to begin: her knees hurt after prolonged standing, she worries about hypoglycaemia during exercise due to insulin use, and she feels fatigued and anxious about walking alone. She has tried home workout videos but became discouraged when she could not keep up with the instructor.

Integrated management plan

- **Comprehensive assessment and collaboration**—Given the coexistence of multiple chronic diseases, confirm medical stability before exercise initiation. If you are not a medical doctor, liaise with the GP or endocrinologist to ensure blood pressure and glucose are well controlled and to adjust insulin or antihypertensive dosing as needed. Within physiotherapy or exercise-therapy scope, perform a thorough functional evaluation including range of

motion, lower-limb strength, balance, gait and exercise tolerance. Document habitual activity, fatigue patterns, sleep, and prior exercise experience to identify physical and behavioural starting points. This assessment clarifies risks (e.g. neuropathic injury, cardiovascular stress) and determines the safest intensity for progression.

- **Tailored education on safety and self monitoring** –Teach practical, evidence-based safety steps. Instruct María to check capillary glucose before and after exercise initially, carry 15 g of fast-acting carbohydrate, and recognise symptoms of hypoglycaemia. Discuss proper footwear and daily foot inspection due to neuropathy risk. Clarify that moderate physical activity can improve joint pain and mobility in knee osteoarthritis by enhancing neuromuscular control and anti-inflammatory mediators. Reassure that transient discomfort during activity does not equate to harm. Provide written instructions outlining actions for abnormal glucose readings or pain flare-ups.

- **Identify and address psychological or skills-related barriers using motivational interviewing**—Explore María's specific worries ("I'm afraid my sugar will drop," "My knees hurt when I walk," "I get tired quickly"). Validate her concerns and collaboratively brainstorm solutions. For hypoglycaemia fears, plan exercise around meals or insulin timing under her doctor's guidance. For knee pain, choose low impact activities (water aerobics, stationary cycling, seated Tai Chi) that unload the joints while providing aerobic benefits. For fatigue and fear of exercising alone, schedule activity during her "energy peaks" and explore group or partner options. Encourage participation in community programmes tailored for older adults with chronic conditions (e.g., diabetes walking groups, arthritis exercise classes), which provide social support and professional oversight. Use cognitive behavioural techniques to reframe negative predictions ("I will get too tired") into action plans ("I can rest when I need and still benefit").

- **Design a progressive low impact, flexible activity plan** –Start with joint-friendly activities that allow rest breaks and minimise knee stress. Suitable options include aquatic sessions for buoyant resistance, recumbent cycling for aerobic conditioning without weight bearing, Nordic walking to distribute load through the upper body, and seated or resistance-band exercises to strengthen quadriceps and gluteal support. Begin with short bouts—about 10 minutes twice daily—and emphasise that accumulated movement improves health outcomes. Use pacing: pause if pain exceeds a tolerable level, resume when it settles, and progress duration or intensity gradually (5–10 % weekly) while monitoring knee symptoms and glucose levels. Complement aerobic training with simple strength, balance, and flexibility work, such as sit-to-stand, supported single-leg stance, or gentle calf and hamstring stretches. Encourage integrating these movements into daily routines (heel raises while brushing teeth, mini squats during chores) so exercise feels manageable and sustainable.

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- **Incorporate strength, balance and flexibility**—Because comorbidities increase fall risk and joint degeneration, integrate exercises targeting lower limb strength (sit to stand, wall squats), balance (single leg stance with support) and flexibility (gentle hamstring and calf stretches). These elements can be woven into daily tasks—practising heel raises while brushing teeth or doing mini squats during television commercials—so María does not perceive them as separate workouts.

- **Enhance health literacy and digital support**—Provide concise written guidelines on safe exercise for people with diabetes, hypertension and osteoarthritis, emphasising the rationale behind each recommendation. If María uses a smartphone, introduce user friendly apps that track blood glucose and physical activity together or provide video demonstrations of low impact exercises. If digital literacy is low, offer printed pictures or schedule in person demonstrations to ensure understanding.

- **Plan for ongoing support and adaptation**—Schedule regular follow ups (initially every 1–2 weeks) to review symptoms, glucose logs and adherence. Collaborate with María's physician to adjust medication if her blood glucose improves. As her fitness increases, introduce new challenges (e.g., light resistance band circuit, gentle interval training) while respecting her comorbidities. Encourage María to set long term functional goals, such as being able to walk with her grandchildren or travel comfortably.

This approach recognises the complex interplay of comorbidities and barriers. By integrating medical guidance, personalised activity choices, safety education and psychologically informed practice, it enables patients like María to initiate and sustain physical activity while managing their health conditions.

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4.1.7 Adapting exercise to unpredictable routines such as shift work or parenting

Tom is a 40-year-old emergency department nurse with rotating shifts and two young children. He understands the importance of physical activity but struggles to maintain a routine due to changing work hours, sleep disruption and family responsibilities. Past attempts to follow structured programmes failed when his schedule changed, leaving him frustrated and guilty.

Integrated management plan

- **Schedule and fatigue assessment**—Begin by mapping Tom's typical shift patterns, sleep cycles and family commitments. Discuss energy fluctuations related to night versus day shifts and identify windows of opportunity for short bouts of activity. Acknowledge the impact of circadian disruption on motivation and recovery.
- **Activity menu and habit integration**—Use motivational interviewing to explore Tom's preferences and barriers. Develop a "menu" of flexible, enjoyable activities—5 minute bodyweight circuits, 10 minute brisk walks with the kids, or active play during playground visits—that can be slotted into unpredictable days. Emphasise that cumulative movement counts and encourage habit stacking (e.g., squats after brushing teeth, stretches during TV breaks).

- **Micro session progression and pacing**—Start with very short sessions (e.g., two 5 minute bouts daily) that he can accomplish regardless of shift length. Encourage him to log activities, noting time of day, energy level and mood. Gradually increase total weekly activity by 5–10 % as his body adapts, adapting intensity based on fatigue and sleep quality. Include mobility and core exercises to counteract occupational strains.
- **Health literacy support and digital tools**—Provide clear information on how fragmented activity benefits cardiovascular and mental health. Demonstrate simple exercises Tom can perform safely without equipment, and if digital literacy allows, recommend apps offering on demand short workouts or "movement reminders" tailored to variable schedules. Suggest tools for tracking cumulative activity to reinforce progress.
- **Family and work environment strategies**—Encourage incorporating family into movement—playing tag with children, walking to school, or cycling together on days off. At work, identify opportunities for movement: taking stairs, performing quick stretches during break, or initiating a "stretch circle" with colleagues. Building a supportive environment reduces the perception of activity as a solitary chore.
- **Psychologically informed practice and self efficacy**—Address feelings of guilt and all or nothing thinking through cognitive behavioural strategies. Reframe missed sessions as opportunities to adjust rather than failures. Set flexible, process focused goals (e.g., "I will include movement on four days this week") and celebrate small wins. Schedule follow ups to revisit barriers, adapt the menu of activities and reinforce Tom's confidence in managing his health despite unpredictable routines.

This concise, collaborative approach acknowledges the challenges of shift work and parenting while offering actionable strategies to integrate activity seamlessly into Tom's life.

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4.1.8 Navigating fear of movement

Lucía is a 47-year-old accountant with an eight-month history of nonspecific low back pain. After feeling a sharp "twinge" while lifting a box, she became terrified of bending, believing she would "slip a disc." She now moves rigidly, avoids lifting anything heavier than a kettle and wears a lumbar support belt almost constantly. Her MRI showed "mild degenerative changes," which she interprets as serious damage. Pain persists despite rest...

Integrated management plan

- **Assessment and identification of maladaptive beliefs**—Conduct a physical and functional assessment and use measures like the Fear Avoidance Beliefs Questionnaire and Tampa Scale of Kinesiophobia to quantify fear levels. Explore Lucia's beliefs about her back, the MRI findings and the specific activities she avoids. Clarify how catastrophic interpretations (e.g., "My spine will collapse if I bend") contribute to her avoidance.
- **Pain education (Health literacy:** understanding and beliefs)—Explain pain mechanisms in accessible terms. Emphasise that many spinal changes seen on imaging are normal and that pain often reflects a sensitive nervous system rather than structural damage. Use metaphors

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and visuals (“wrinkles on the inside”) to demystify findings. Teach that hurt does not equal harm and that gradual movement can desensitise the system. Confirm understanding through teach back.

- Collaborative fear hierarchy and detailed graded exposure—Co create a hierarchy of feared activities, ranking them from least to most threatening. Begin with simple, low fear tasks like reaching forward while seated and progress to more challenging movements like lifting a light object from the floor. Provide detailed guidance for each step:
  - **Preparation**: Teach neutral spine alignment and hip hinge mechanics to reduce perceived risk. Practise these movements without load until she feels confident.
  - **Controlled exposure**: Use a stepwise approach—first practising the movement unloaded, then adding minimal load (e.g., a soft ball), and finally increasing weight as confidence grows.
  - **Contextual variety**: Vary the environment (e.g., standing, sitting, picking objects at different heights) to generalise confidence beyond the clinic.
  - **Reflection**: After each exposure, ask Lucia to rate her fear before and after and to note what happened versus what she anticipated. This reinforces discrepancy between expectation and reality and reduces catastrophic predictions.
- **Cognitive behavioural strategies to challenge catastrophic thoughts**—Help Lucia identify automatic negative thoughts (“If I lift, I will end up in a wheelchair”) and examine their accuracy. Encourage her to reframe these into balanced statements (“My back is strong; gradual movement makes it healthier”). Use thought records to document predictions and actual outcomes for activities. Integrate relaxation techniques like diaphragmatic breathing or progressive muscle relaxation to reduce heightened arousal during exposure sessions.
- **Pacing and graded activity scheduling**—Develop an activity plan that includes incremental daily goals for walking, household tasks and leisure. Teach Lucia to monitor exertion using perceived exertion scales and to stop based on pre agreed time rather than pain flares. Use a journal or digital app for tracking. Increase duration or intensity gradually, ensuring each advancement feels manageable.
- **Health literacy: appraise and apply**—Empower Lucia to critically evaluate health information. Discuss how alarmist language (“slipped disc”) and restrictive advice can perpetuate fear. Provide her with curated, evidence based resources on back pain and movement. Teach her to ask, “Who wrote this? Is it evidence based? Does it align with what I’ve learned about hurt versus harm?” Encourage her to apply this critical lens when confronted with conflicting messages online.

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- **Digital and community support**—If Lucia is comfortable with technology, recommend apps that guide stepwise exposure exercises or offer calming practices. Alternatively, suggest community based classes such as gentle yoga or Pilates where instructors emphasise body awareness and safe movement. The group setting can normalise movement and provide social support, further reducing fear.
- **Follow up and relapse prevention**—Schedule regular follow ups to review progress, adjust the fear hierarchy and reinforce gains. Teach Lucia how to handle flare-ups without reverting to avoidance: use pacing, relaxation and cognitive reframing. Encourage continued practice of her exposure exercises to maintain confidence and prevent relapse into fear driven avoidance patterns.

By assessing beliefs and fear, the clinician can adapt and personalize a movement exposure strategy that helps Lucía to reduce worry and restore function.

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4.1.9 Using pacing strategies to avoid boom–bust cycles

Javier is a 50-year-old warehouse manager with chronic widespread musculoskeletal pain consistent with fibromyalgia. He alternates between days of high activity—cleaning the garage, gardening, doing errands—and days when he is bedridden with fatigue and pain. When he feels "good," he pushes himself to catch up on tasks, but this often leads to severe flare-ups lasting several days. Javier feels guilty about resting and worries that doing less will make him lazy. He asks how to manage his activity without constantly riding this roller coaster.

Integrated management plan

- **Identify baseline and boom–bust patterns**—Begin with a detailed assessment of Javier's daily activities, pain fluctuations, sleep patterns and mood. Ask him to complete a one week activity and symptom diary capturing what he does, for how long, his perceived energy and pain levels. This helps him see the link between overdoing it on "good" days and subsequent crashes. Highlight that boom–bust patterns are common in chronic pain and fatigue conditions and perpetuate symptom severity.
- **Health literacy**: understanding and beliefs—Educate Javier about the physiology of pain and fatigue. Explain that exceeding his physical and neurological "energy envelope" may provoke central sensitisation, leading to flare-ups. Use simple terms to describe how pacing

maintains a steady output within his current capacity, allowing his body to recover gradually and build tolerance. Challenge beliefs equating rest with laziness; emphasise that strategic rest is an active self-management skill, not a sign of weakness.

- **Establish a safe baseline and quota system**—Work with Javier to calculate his baseline—the amount of activity he can do on both good and bad days without exacerbating symptoms. This may mean reducing activities temporarily to find a sustainable starting point (e.g., 10 minutes of gardening or 20 minutes of walking, followed by rest). Adopt a quota based, time contingent approach rather than pain contingent behaviour. For example, agree that he will stop after 20 minutes of household tasks, even if he feels good, and rest for 10 minutes before starting another 20 minute block.
- **Implement pacing strategies**—Introduce core pacing principles:
  - **Break tasks into smaller chunks**—Divide large jobs (e.g., cleaning the garage) into manageable pieces spread across several days.
  - **Alternate activities**—Switch between heavier and lighter tasks (e.g., after vacuuming, sit to pay bills) to avoid sustained strain on the same muscle groups.
  - **Schedule regular rests**—Use timers to remind him to rest before pain or fatigue spikes. During rests, practise relaxation techniques or gentle stretching.
  - **Use the 10% rule**—Once the baseline is well tolerated for a week, increase activity duration by no more than 10 % to gradually build endurance without triggering flares.
- **Tools for monitoring and reinforcement**—Provide a pacing diary template or digital app where Javier can log activities, symptom severity and rest periods. Visual feedback helps him appreciate progress and adherence. Some apps allow users to set timed reminders for breaks and track cumulative activity. Review the logs regularly to adjust quotas and celebrate successes. If literacy or digital skills are limited, use colour coded paper charts or simple checklists.
- **Psychologically-informed practice**—Address guilt and perfectionism using cognitive behavioural strategies. Help Javier reframe rest as an investment in productivity ("Taking breaks helps me achieve more overall") rather than wasted time. Explore values and priorities: which activities bring him joy or meaning? Encourage him to allocate energy towards these rather than non essential tasks. Teach problem solving for obstacles (e.g., delegating tasks, asking for help) and relaxation techniques to manage frustration when he must stop despite feeling capable of more.

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- **Health literacy: apply and digital domains**—Show Javier how to apply pacing principles in different contexts—work, home, social activities. Provide clear, step by step instructions and check his understanding. If he uses wearable technology (smartwatch, fitness tracker), discuss how to interpret step counts or energy expenditure without fixating on numbers. Emphasise that data should inform pacing decisions rather than drive overexertion.
- **Gradual functional progression**—Once Javier consistently adheres to his pacing plan and experiences fewer flare-ups, collaborate on gradually increasing his activity envelope. Introduce gentle strengthening exercises or low impact aerobic activities (e.g., swimming, cycling) to improve stamina. Reinforce that progression is slow and that occasional flare-ups are learning opportunities to recalibrate quotas.
- **Regular review and adaptation**—Schedule periodic follow up appointments to evaluate Javier's pacing efficacy. Use his logs to identify patterns (e.g., specific activities that still trigger flares) and adjust quotas. Revisit beliefs and emotional responses to pacing as his functional capacity evolves. Encourage him to share pacing strategies with family or coworkers so they understand his limits and can provide support.

By combining education on the boom–bust cycle, structured pacing techniques, psychologically-informed practice and continuous monitoring, this plan empowers Javier to manage his energy more effectively. It cultivates sustainable activity patterns that stabilise symptoms and gradually expand his functional capacity.

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4.1.10 Integrating movement into sedentary jobs or long commutes

Elena is a 35-year-old marketing executive who spends eight to nine hours at her desk and 90 minutes commuting daily. She reports neck stiffness, occasional low back pain and lethargy. Her schedule leaves little time for structured exercise during the week. On weekends she hikes, but the contrast between intense weekend activity and weekday inactivity leaves her sore and fatigued. She asks how to integrate more movement into her daily routine.

Integrated management plan

- **Evaluate sitting habits and variability**—Rather than focusing on a "correct posture," assess Elena's ability to vary her positions throughout the day. Discuss her chair settings, desk height and monitor placement with the goal of enabling movement: adjusting seat height to alternate between hip angles, using a footrest intermittently, and ensuring she can shift between forward leaning, reclined and upright positions comfortably. Encourage exploration of a range of postures that suit different tasks (e.g., leaning back when reading, sitting forward when typing) and frequent movement breaks.

- **Health literacy: understanding and beliefs**—Explain that prolonged static sitting contributes to musculoskeletal discomfort and metabolic risks, and that incorporating movement—"exercise snacks"—during work hours can improve circulation, reduce stiffness and boost concentration. Address common beliefs that productivity requires uninterrupted sitting; share evidence that short, purposeful breaks enhance cognitive performance and well being. Reinforce that the aim is to embed movement into existing routines rather than adding a separate workout.
- **Workstation modifications to facilitate variability**—Collaborate with Elena to adjust her workspace so it encourages frequent posture changes rather than prescribing a single "ideal" position. This could involve adding a sit–stand desk converter to alternate between sitting and standing, ensuring her chair and desk are easily adjustable to accommodate different postures, and keeping often used items just out of reach to prompt occasional standing or reaching. If using dynamic seating aids (e.g., wobble cushion, foot roller), emphasise short periods of use to introduce micro movements without creating a new "static" posture. The focus is on enabling transitions and comfort throughout the day.
- **Micro breaks and movement snacks**—Design a flexible schedule of short movement breaks. Suggest setting digital reminders every 30–45 minutes. During each break, Elena can perform a few simple movements: shoulder rolls, spinal rotations, seated marches, or a brisk walk to the kitchen or mailbox. Encourage stretching in different planes—lateral bends, thoracic extensions—to counteract sustained positions. Emphasise that even 1–2 minutes of movement contributes to overall health.
- **Active commuting and commute breaks**—Explore ways to incorporate movement into her commute. If using public transport, Elena could get off a stop early and walk the remaining distance or stand rather than sit. For car commutes, recommend parking farther from the building and taking stairs instead of elevators. On longer drives, suggest brief rest stops for 2–3 minutes of walking and stretching to alleviate stiffness and maintain alertness.
- **Desk based exercises and isometric routines**—Provide discreet exercises Elena can integrate into her workday: glute squeezes, seated pelvic tilts, shoulder blade squeezes or alternating heel raises. Teach thoracic extension using a rolled towel at the mid back. Encourage isometric holds, such as pressing palms together, to activate upper body muscles. These exercises require minimal interruption and can be done while reading emails or during conference calls.
- **Digital tools and activity tracking**—Recommend apps or software extensions that prompt movement breaks and track cumulative standing or steps. If she uses a smartwatch or fitness tracker, help set realistic goals (e.g., standing for 5 minutes every half hour, reaching 4,000–5,000 steps during work hours). Some programmes gamify activity, fostering friendly competition with colleagues or family.
- **Modulating weekend activity and recovery**—Advise Elena to pace her weekend hiking to minimise soreness. Gradually build up weekday activity—short walks after work, yoga stretches before bedtime—to reduce the contrast between weekend exertion and weekday sedentariness. Emphasise adequate rest, hydration and gentle stretching post hike to aid recovery.
- **Fostering a movement friendly culture**—Encourage Elena to share her movement strategies with coworkers and supervisors. Propose walking meetings, standing huddles or team stretch breaks. Normalising micro breaks requires organisational support; when managers model these behaviours, employees are more likely to adopt them. Highlight that such practices can enhance team focus and reduce musculoskeletal complaints.
- **Explore with her the possibility of working remotely for one or two days**. If she manages to negotiate one or two days of remote work per week, she could use the time saved on commuting to do some of the recommended physical activities.
- **Review and adjust**—Schedule follow ups to evaluate Elena's symptoms and activity integration. Adjust movement frequency and types based on her feedback. Celebrate improvements, such as reduced stiffness or increased energy. If specific discomfort persists despite these changes, explore targeted strengthening or refer to occupational health specialists for further evaluation.

By combining education in modern ergonomics with the implementation of specific measures, Elena can explore and incorporate new comfortable ways of working, as well as integrate healthy habits of movement and physical activity into her daily routine.

4.1.11 Using AI to promote movement and physical activity

Marco is a 52-year-old engineer with chronic knee osteoarthritis. During your initial assessment, you determine that he is comfortable using technology, has never followed a structured exercise programme and seeks ideas to become more active. He has downloaded a conversational AI app that offers exercise suggestions but does not know how to ask it for safe, tailored advice.

Integrated management plan

- **Assess digital literacy and clarify goals**—Confirm that Marco can navigate the AI interface and understands its basic functions. Discuss his goals: improving knee function, increasing general fitness and staying motivated. Note any comorbidities or movement restrictions that the AI should account for (e.g., avoid high impact activity due to osteoarthritis). Emphasise that AI should support—not replace—professional guidance.
- **Teach effective AI prompting for exercise plans**—Show Marco how to craft detailed prompts that produce safer, more relevant suggestions. Key elements include:
  - **Context**: Describe his age, health status (e.g., "I am a 52-year-old with knee osteoarthritis and no prior exercise experience") and any equipment available (e.g., "I have resistance bands and a yoga mat").

- **Goals**: State desired outcomes (e.g., "I want to start with low impact exercises to improve strength and flexibility").
- **Constraints**: Mention time limits and frequency (e.g., "I can commit to 15 minute sessions, three times a week").
- **Safety considerations**: Request modifications for joint protection (e.g., "Please avoid high impact or deep squats and suggest modifications for knee pain").
- **Format**: Ask for clear, step by step instructions and cautions (e.g., "List exercises with simple descriptions and tell me what to feel and when to stop").

- **You might model a prompt like**: *"Create a beginner exercise routine for a 52-year-old man with knee osteoarthritis. I have no prior exercise experience, can work out at home with resistance bands and a yoga mat, and want to improve leg strength and general mobility. Provide three low impact exercises I can do in a 15 minute session, three days per week, with instructions and safety tips for protecting my knees."*
- **Evaluate and refine AI generated plans**—Encourage Marco to share the AI's suggestions with you before starting. Together, review each exercise for appropriateness. Check that they align with his physical capabilities (e.g., ensuring recommended lunge depth is shallow, substituting high impact movements with step ups). Modify any unsafe or impractical elements. Explain to Marco why certain exercises are or are not appropriate so he can adjust future prompts.
- **Provide your own beginner activity ideas to feed into AI**—Offer a curated set of low impact, beginner friendly activities that the AI can elaborate on. Examples include:
  - **Chair assisted squats**—Standing from a chair and slowly sitting back down to build quadriceps strength.
  - **Seated knee extensions**—Straightening and bending the knee while seated to improve range of motion.
  - **Stationary marching or step touches**—Gentle cardio without joint pounding.
  - **Wall push ups**—Upper body strengthening with minimal load on knees.
- **Suggest Marco include these when prompting the AI**: "Use chair assisted squats and seated knee extensions as part of my routine." This ensures the AI's output stays within safe boundaries.
- **Encourage gradual progression and monitor feedback**—Advise Marco to start with the AI assisted routine two to three times per week and to listen to his body. Teach him to monitor pain levels, fatigue and enjoyment. Encourage journaling of sessions and review them in follow ups. As he gains confidence, prompts can request slightly more challenging variations ("Add resistance band exercises to progress my leg strength") under your supervision.

By assessing Marco's digital literacy and showing him different examples of how to use generative AI, he can increase access to resources and guides to promote physical activity.

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4.1.12 Avoiding lifting weights: Evidence behind back pain recommendation

Miguel, a 45-year-old warehouse worker, has had intermittent low back pain for the past year. After seeing diagrams at work suggesting that “lifting with a straight back” is the only safe way to lift, he began avoiding any lifting or bending tasks. If he needs to pick up a heavy item, he asks colleagues for help or lifts awkwardly using only his arms. He also stopped going to the gym for fear of “damaging” his spine. Miguel believes that flexing his back is dangerous and thinks weight training will worsen his pain. When asked about his physical activity, he reports only gentle walking and stretching. He wonders if he should ever lift weights again.

Integrated management plan

- **Assess beliefs and baseline capacity**—Conduct a functional assessment of Miguel’s strength, flexibility and lifting mechanics. Use the Fear Avoidance Beliefs Questionnaire to quantify his fear of lifting. Explore his beliefs: “What do you think happens when you bend your back?” or “Where did you hear that lifting weights is harmful?” Identify misconceptions and the sources of his fear (e.g., workplace posters, prior advice).
- **Provide pain education based on updated evidence**—Explain that current research challenges the long held belief that a neutral spine is always required during lifting. A 2022

review noted that most clinicians advocate squat lifting, yet training on squat lifting does not prevent low back pain, and lifting with greater lumbar flexion (a "stoop" lift) is not a risk factor for low back pain onset, persistence or recurrence[1]. Discuss that even when people try to keep a "straight back," studies show 50–80 % of maximal spinal flexion occurs, making complete avoidance of flexion impossible. A systematic review found no difference in lumbar positioning during lifting between people with and without back pain and concluded that increased spinal flexion is not linked to disc herniation or back pain persistence. Emphasise that the spine is strong and adaptable and that gradual loading makes tissues more resilient.

- **Reframe lifting technique and load management**—Introduce the "calm tissue down, build tissue up, improve work capacity" framework: during painful episodes, modify tasks to reduce load (calm tissue down). As symptoms settle, progressively build tissue tolerance through graded resistance training and varied lifting techniques. Explain that no single technique suits everyone; stoop, squat and semi-squat lifts are equally safe, and each has advantages. For example, stop lifting can be more metabolically efficient and less demanding for the cardiopulmonary system[1]. Choose the technique that feels most comfortable for Miguel and suits the task.
- **Develop a graded strength training programme**—Begin with light, controlled resistance exercises (body weight squats to a chair, hip hinges with dowel) to teach hip dominant movement and build confidence. Progress to resistance band or light dumbbell deadlifts, focusing on smooth, pain free motion. Increase load by 5–10 % per week, ensuring Miguel can maintain form and control. Incorporate exercises that require lumbar flexion, such as Jefferson curls or kettlebell deadlifts, once he tolerates basic movements, to expose him gradually to flexion under load. Emphasise that muscle soreness is normal when starting a new programme and usually resolves within 48–72 hours.
- **Use graded exposure for bending and lifting tasks**—List Miguel's feared movements (e.g., picking up a toolbox, loading the car). Rank them from least to most threatening. Start practicing lower fear tasks with a physiotherapist's supervision, gradually adding weight or complexity. Encourage Miguel to note his fears before the activity and record what actually happens afterwards. Highlight discrepancies to reduce catastrophising. Over time, advance to heavier lifts similar to his work duties, always monitoring symptoms and adjusting volume.
- **Address health literacy: understanding and appraise**—Provide Miguel with accessible, evidence based resources debunking common myths about spinal flexion and lifting (e.g., professional association fact sheets or infographics summarising that lifting with flexion is not harmful). Teach him to critically evaluate online information by checking authorship, publication date and alignment with current guidelines. Encourage him to share these resources with co workers and supervisors to challenge outdated manual handling posters.

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Clinical vignettes: Movement and activity

- **Incorporate psychologically informed practice**—Use motivational interviewing to strengthen Miguel's intrinsic motivation for returning to strength training (e.g., "Being able to lift confidently will help you perform your job and protect your independence"). Employ cognitive restructuring to replace thoughts like "My back is weak" with "My back becomes stronger as I gradually train." Teach relaxation techniques to manage anxiety during lifting tasks.
- **Modify workplace ergonomics and communication**—Collaborate with Miguel and his occupational health team to update lifting guidelines at work to reflect modern evidence. Suggest posters that promote varying lifting techniques, using leg and back muscles together, and emphasising task specific strategies rather than strict "straight back" rules. Encourage micro breaks and movement variability during his shifts to reduce cumulative load.
- **Monitor progress and adjust**—Schedule follow ups every 2–3 weeks to reassess strength, pain and confidence. Use outcome measures such as the Oswestry Disability Index to track functional improvement. Adjust the programme based on his response—if he experiences flare-ups, reduce load temporarily and focus on technique; if progress is steady, introduce more complex lifts or functional tasks. Encourage self monitoring with a training diary so Miguel can see his progress and recognise that occasional discomfort does not mean damage.

By summarizing the current evidence regarding the relationship between lifting, injury risk, pain and fear, the therapist can reassure Miguel and help him explore different lifting strategies.

1. Washmuth NB, et al. Int J Sports Phys Ther. 2022. https://doi.org/10.26603/001c.30023

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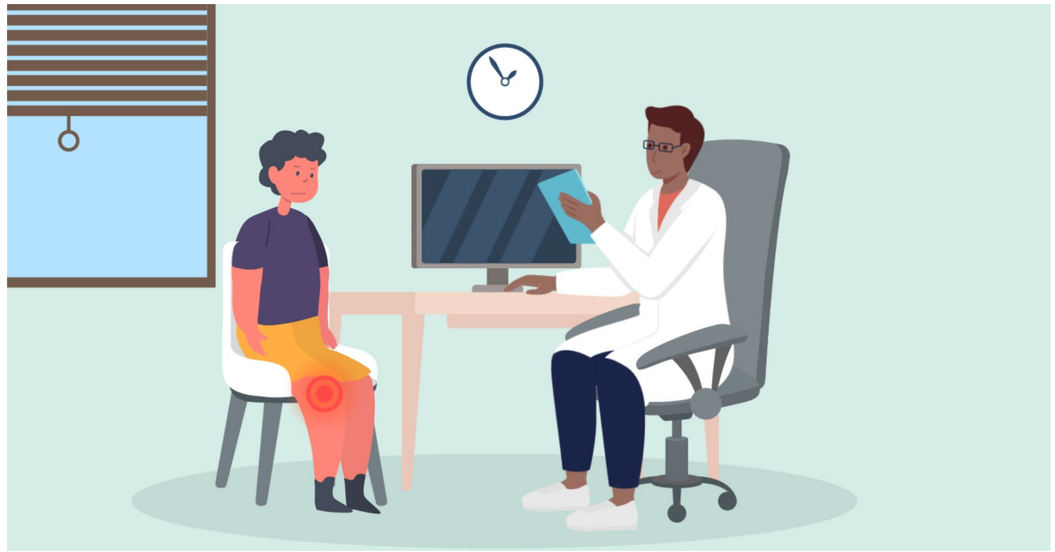
4.2. Clinician–patient interaction

In this part you will find examples illustrating how to manage challenging conversations, conflicting information, expectations, and second opinions.

4.2.1 Helping patients prepare a consultation with the clinician and managing second opinions

Laura, a 62-year-old teacher, has had persistent knee and hip pain for three years. Her GP diagnosed "degenerative joint disease" and recommended weight loss and analgesics. Subsequent clinicians offered conflicting advice—one suggesting knee replacement, another advising injections, and another saying she was "too young" for surgery. Feeling confused, Laura turned to an AI chatbot that listed multiple possible conditions and advertised supplements. After further online searching, she read alarming claims about injections "destroying cartilage," which increased her anxiety. She now has an appointment with an experienced musculoskeletal physiotherapist and wants to prepare effectively, ask informed questions, and know when a second opinion is appropriate.



Integrated management plan

- **Start by acknowledging Laura's frustration and validating her desire for clarity**. Explore her beliefs about her diagnosis and previous consultations: what did she understand from each clinician? What did the AI suggest, and how did it influence her emotions? This conversation identifies misconceptions and emotional barriers, allowing you to tailor education and support.
- **Preparation for the upcoming consultation.** Guide Laura to create a structured pre-visit plan summarising her history, prior treatments, and goals. Encourage her to use a question prompt list (QPL)—a validated method that increases patient engagement and information retention. Help her prioritise 4–5 key questions, such as: "What is the most likely cause of my pain?", "How do imaging results relate to symptoms?" or "What are the benefits and risks of each treatment?". Encourage her to bring this list and note responses, facilitating shared decision-making.
- **Address her use of AI tools**. Clarify that AI can provide general information but cannot replace personalised assessment. Teach her to craft specific prompts that yield more relevant suggestions, such as "Provide low impact exercises suitable for a 62-year-old woman with knee pain and limited mobility." Emphasise that she should always review AI generated recommendations with a clinician before acting on them. Discourage reliance on AI for diagnosis or purchasing unverified supplements. Explain that AI models may not account for her comorbidities or individual history and that their outputs can be biased by commercial interests.
- **Guide Laura in searching for credible information about her condition**. Introduce her to the six quality criteria for evaluating online health information: authorship, reliability, usefulness, accessibility, readability and privacy[1]. Show her how to check whether articles are written by qualified professionals, whether the information is supported by citations, and whether the site has a transparent privacy policy. Recommend reputable sources—professional associations, government websites—and caution against blogs or forums that lack evidence or promote products. Teach her to cross reference information across multiple trusted sites and to discuss what she finds with her healthcare provider.
- **Second opinions and shared understanding**. Normalise the process of seeking second opinions, especially when surgery is proposed. Help Laura determine whether additional consultation is warranted by reviewing what remains unclear from current advice. If she seeks one, suggest requesting copies of relevant imaging and test results, re-using her QPL, and comparing recommendations to identify consensus or justified differences.

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Clinical vignettes: Clinician–patient interaction

- **Use motivational interviewing techniques to explore Laura's readiness to engage in self-management**. Reflect her statements ("It seems you want to avoid surgery if possible") and ask open questions ("What activities do you miss doing most?"). Align your plan with her values—perhaps staying active with grandchildren or continuing to teach without pain. Collaboratively develop a goal oriented treatment plan that includes graded exercise, weight management strategies, and pain coping skills, ensuring she understands the rationale and expected timelines.
- **Implement health literacy strategies focused on access, appraisal and application**. Provide printed or digital materials written in plain language, explaining osteoarthritis and treatment options, including the pros and cons of surgery, injections and exercise therapy. Demonstrate exercises during sessions and ask her to perform them back to confirm understanding (teach back). Suggest she keeps an exercise and symptom diary to track what works and identify triggers; this fosters self monitoring and informs discussions at follow ups. Empower her to appraise new information by asking, "Does this align with the plan we've made?" or "Is this advice from a credible source?"
- **Finally, address the emotional impact of conflicting advice and information overload**. Acknowledge that uncertainty can heighten anxiety and amplify pain perception. Use cognitive behavioural techniques to help her reframe thoughts such as "My joint is crumbling" into "My joint is adapting; strengthening will help." Encourage stress management strategies—breathing exercises, mindful walking—which can improve coping and facilitate adherence to her programme.

By guiding Laura to prepare effectively for consultations, prompting both AI and clinicians with targeted questions, critically appraising online information, and navigating second opinions thoughtfully, clinicians can support her in making informed decisions. This integrated approach blends self-management, health literacy enhancement and psychologically informed practice, empowering patients to engage confidently with healthcare providers and digital tools.

1 Daraz L, et al. J Patient Exp. 2024. https://doi.org/10.1177/23743735241259440

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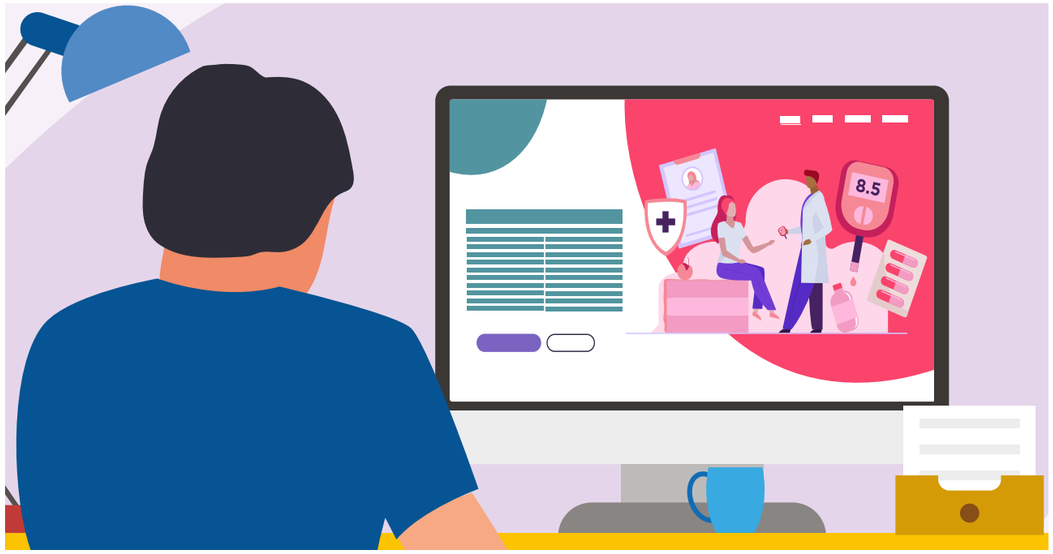
4.2.2 Identifying correct vs. incorrect advice online

Susana is a 40-year-old graphic designer with intermittent wrist and elbow pain attributed to computer use. After receiving a preliminary diagnosis of tendinopathy from her physiotherapist, she searched the internet for treatments. She found conflicting advice: one blog insisted on complete rest and wrist braces, another promoted expensive supplements to "heal tendons in weeks," while a social media influencer recommended aggressive loading exercises. Susana purchased supplements and avoided typing for two weeks; her pain worsened. She is now sceptical of her physiotherapist's recommendation to gradually resume activity. She wants to know how to tell which online advice is trustworthy and whether she should continue any of the treatments she found online.



Integrated management plan

- **Explore Susana's sources and beliefs**. Begin by asking Susana to list the websites, social media accounts and AI tools she has used. Inquire why she trusted certain sources ("The influencer had many followers") and what outcomes she experienced. This helps identify misconceptions and emotional drivers, such as fear of missing out or frustration with slow recovery.

- **Introduce health literacy principles for evaluating information**. Explain that not all online health information is reliable and that careful evaluation is essential. Share practical criteria from reputable guidelines: trustworthy websites clearly state who runs them (ideally government agencies, medical schools or professional/non profit organisations), their purpose, and how they are funded. They disclose when information was written or updated and provide references to research. Caution her about sites funded by advertisements or businesses that may promote products. Teach her to avoid sites with dramatic claims, miracle cures or sensational language. Encourage her to look for an editorial board or review process and to verify that the content is balanced and evidence based.
- **Discuss the importance of cross checking and consulting a clinician**. Emphasise that finding similar information on multiple reputable sites increases credibility. Encourage Susana to bring any advice she is considering to her physiotherapist for discussion before acting on it. Reinforce that personal anecdotes on social media or unmoderated forums may not be applicable to her condition and could lead to harm.
- **Demonstrate how to appraise specific examples**. Review one of the sites Susana used. Together, check the "About Us" section: Who authors the content? Is the purpose educational or commercial? Does the site cite peer reviewed sources? Assess whether the recommendations align with current evidence for tendinopathy management. Use this exercise to build her critical thinking and show her how to apply the criteria to future searches.
- **Align self-management strategies with credible advice**. Explain that graded loading exercises and gradual return to typing are evidence based for tendinopathy, whereas complete rest can lead to further weakness. Provide clear, step by step home exercises with instructions on intensity and progression. Encourage Susana to keep a symptom and activity diary to track how her pain responds to specific activities and interventions. This self monitoring allows her to see the effects of credible strategies versus unverified ones and fosters a sense of control.
- **Address beliefs and emotions through psychologically informed practice**. Use motivational interviewing to explore Susana's fears ("I'm worried that exercise will worsen it") and ambivalence about evidence based recommendations. Reflect her feelings ("You're frustrated because you tried rest and supplements, but they didn't help") and guide her towards self efficacy by highlighting the strength of tendons and the role of progressive loading in recovery. Encourage her to reframe thoughts like "Internet advice was wrong; I wasted time" into "I've learned how to identify better sources and will make informed choices moving forward."

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- **Enhance digital literacy and safe use of AI**. If Susana uses AI chatbots, teach her to provide context in prompts ("I have work related wrist pain; suggest gradual exercises approved by healthcare professionals") and to view AI outputs as general suggestions, not prescriptions. Remind her to ignore AI recommendations that conflict with clinical advice and to consult her physiotherapist before adopting new exercises or supplements. Encourage her to verify whether the AI tool discloses its information sources and has a privacy policy.
- **Provide curated resources and decision aids**. Recommend reliable websites with patient friendly information (e.g., national health service pages, professional associations) and explain how to find them. Offer a simple worksheet summarising the evaluation criteria, which she can refer to when browsing. Introduce question prompt lists so she can formulate questions for her clinician about any online information[1]. Questions might include, "How does this exercise or supplement work?" "What evidence supports it?" and "Are there any risks for me?" Evidence shows that such prompt lists empower patients to ask more questions and enhance the quality of information they receive[1].
- **Plan for follow up and ongoing support**. Schedule a follow up appointment to review Susana's progress, answer her questions and reassess her self-management plan. Encourage her to bring any new online advice she encounters to these sessions for appraisal. Reinforce successes—reduced pain during work, improved confidence in distinguishing credible sources—and adjust her exercise programme as needed.

By teaching Susana how to appraise digital information, aligning self-management with evidence based guidance, and using motivational interviewing to address fears, clinicians can help patients navigate the vast landscape of online health advice. This approach enhances digital and information literacy, reduces the risk of adopting harmful practices and empowers patients to engage confidently in their musculoskeletal care.

1 Tracy M, et al. Health Expect. 2022. https://doi.org/10.1111/hex.13509

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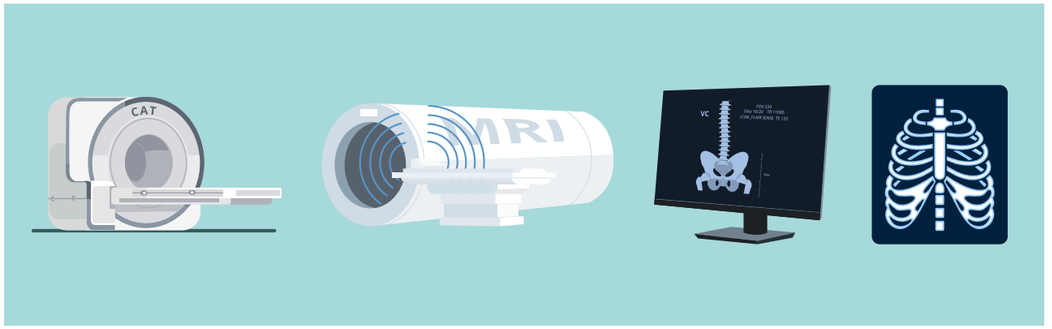
4.2.3 Understanding scan results

Beatriz is a 57-year-old office worker with episodic low back pain. After lifting a heavy box at work, she experienced a flare-up and her general practitioner ordered an MRI “to be safe.” The report noted “moderate disc degeneration at L4 L5, mild disc bulge, and facet joint osteoarthritis.” Alarmed by terms like “degeneration” and “bulge,” Beatriz searched online and read that such findings could lead to paralysis if untreated. She interpreted the scan as proof of permanent damage, began avoiding bending or lifting, and requested a surgical consultation. Her physiotherapist knows that degenerative changes on MRI are common in pain free adults and often incidental[1]. Beatriz does not complain of any pain or other symptom in her legs. Beatriz asks for help understanding her scan results and whether they explain her pain.



Integrated management plan

- **Conduct a general physical examination without emphasis on the neurological assessment** (she does not show any sign or symptom justifying a thorough neurological assessment). Thereafter, share findings with Beatriz, emphasising that everything seems normal (movement, no neurological signs, etc). This reassures her that serious nerve or spinal pathology is unlikely and builds confidence in your assessment.
- **Assess Beatriz’s baseline, beliefs and emotional responses**. After presenting the normal examination results, invite Beatriz to describe what she thinks the MRI terms mean and how the report made her feel. Ask open questions: “When you read ‘disc degeneration,’ what went through your mind?” “What worries you most about these findings?” This step

uncovers misconceptions (e.g., equating degeneration with irreversible harm) and emotions such as fear or anxiety, providing a foundation for tailored education.

- **Educate about the prevalence and significance of imaging findings**. Once you have addressed her concerns, provide context about imaging. While recent studies show relatively higher prevalence of MRI findings in individuals with pain, and that these findings tend to have an accumulative effect on pain to some extent[2], explain that disc degeneration and bulges are very common, even in people without back pain. A systematic review found that one third of asymptomatic 21-year-olds had disc degeneration, increasing to over 90 % in individuals older than 50[1]. Numerous studies show no consistent association between MRI findings (Modic changes, disc degeneration, herniation) and low back pain[1]. Imaging evidence of degenerative spine disease often reflects normal aging and must be interpreted alongside clinical findings[1]. Use analogies ("wrinkles on the inside") and visuals to demystify terms. Emphasise that the MRI shows structure, not pain, and that pain arises from multiple factors including inflammation and nervous system sensitivity.
- **Bridge health literacy gaps (understanding and beliefs)**. Translate technical language into plain words. Explain that "mild disc bulge" means slight protrusion without nerve compression and that "facet joint osteoarthritis" is similar to joint wear in knees or fingers. Use teach back: ask Beatriz to explain these concepts back to you, clarifying any remaining misunderstandings. Encourage her to ask questions whenever she encounters unfamiliar medical terminology.
- **Reinforce self-management and active rehabilitation**. Explain that avoiding movement can worsen pain and stiffness. Develop a graded exercise programme focusing on mobility and strength. Begin with gentle, pain free movements (pelvic tilts, knee to chest stretches) and progress to hip hinges, controlled spinal flexion and extension, and body weight squats. Emphasise that gradual exposure to spinal flexion is safe and builds resilience. Include pacing strategies and an activity diary to track progress and flare-ups.
- **Employ psychologically informed practice**. Address catastrophic thoughts ("My spine is crumbling") using cognitive behavioural strategies. Replace them with balanced statements ("These changes are common and often incidental"). Teach diaphragmatic breathing, mindfulness or progressive muscle relaxation to reduce anxiety and muscle tension. Encourage Beatriz to visualise herself moving confidently and to focus on sensations without judgement.
- **Guide digital information appraisal**. Educate Beatriz on evaluating online health information: verify who runs the site and its purpose; check funding sources; ensure the content is balanced, evidence based and up to date; and look for references. Warn her about sensational claims and miracle cures. Encourage her to discuss any online advice with her clinician before acting on it.
- **Plan follow up and reinforce understanding**. Schedule regular reviews to monitor symptoms, revisit her understanding of the MRI findings and adjust her exercise programme. If she seeks a surgical opinion, help her compare the surgeon's interpretation of the MRI with yours and discuss all options. Continue reinforcing that imaging is only one piece of the puzzle; clinical assessment and functional goals guide treatment decisions.

By performing a detailed physical and neurological exam, discussing its normal results, exploring the patient's beliefs, and then providing evidence based context for imaging findings, clinicians can reduce fear, build trust and empower patients like Beatriz to interpret scans accurately. This structured approach integrates health literacy enhancement, self-management support and psychologically informed practice to promote informed, active participation in musculoskeletal health.

1. Brinjikji W, et al. Am J Neuroradiol. 2015. https://doi.org/10.3174/ajnr.A4173
2. Dragsbæk L, et al. Eur J Pain. 2025. https://doi.org/10.1002/ejp.70076

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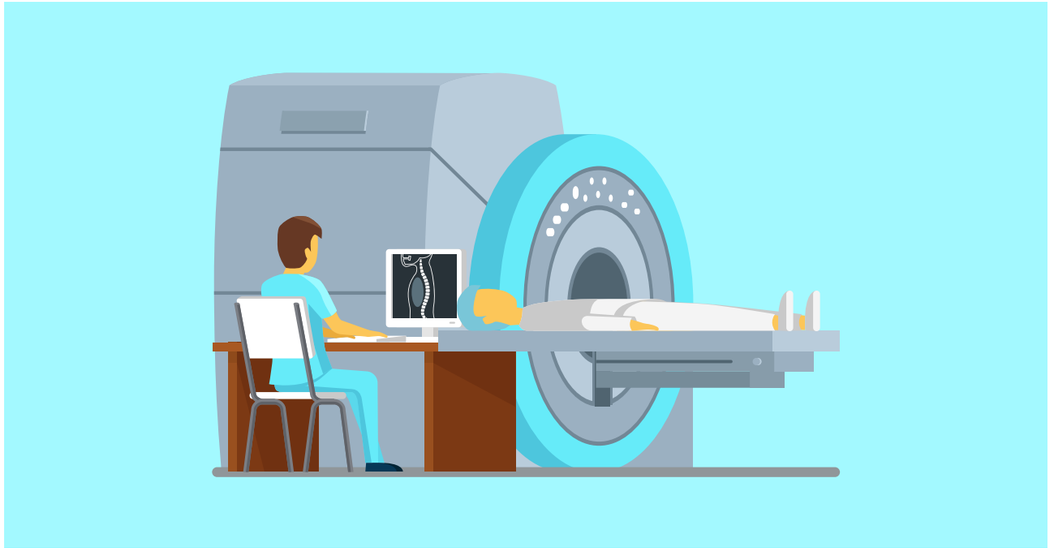
4.2.4 Explaining diagnostic labels

Antonio is a 49-year-old mechanic who developed low back pain after lifting a heavy toolbox. His doctor ordered an MRI and told him he had “disc degeneration and a bulging disc.” Another practitioner later described his problem as “lumbar arthritis.” These terms frightened Antonio; he imagined his spine crumbling and began avoiding bending, lifting and playing with his children. He also insisted on further scans and considered surgery. When he consulted a physiotherapist, they explained that he actually had non-specific low back pain and sprain-like symptoms. Antonio felt confused: Is his back degenerating? Is it sprained? He wants clarity about what these labels mean, whether he needs more tests, and how he should manage his pain.



Integrated management plan

- **Perform an assessment and rule out serious pathology**. Begin by taking a detailed history and conducting a physical examination to confirm that Antonio’s pain is mechanical and not associated with neurological deficits or red flags. Evaluate lumbar range of motion, palpate for tenderness, perform straight leg raise and slump tests, assess myotomal strength (L2–S1), reflexes (patellar and Achilles) and dermatomal sensation to rule out radiculopathy

or serious pathology. Explain findings to Antonio, emphasising that his neurological exam is normal and there is no sign of nerve damage or structural instability. This establishes clinical credibility and reassures him that conservative care is appropriate.

- **Explore Antonio's understanding and emotions about his diagnosis**. Ask open questions: "What do you think 'disc degeneration' means?" "How did you feel when you heard you have 'lumbar arthritis'?" This reveals misconceptions and fears (e.g., thinking his spine is crumbling) and allows you to empathise with his emotional response.
- **Provide evidence based context about diagnostic labels**. Explain that terms like "disc bulge," "degeneration" and "arthritis" often describe age related changes seen on imaging and are very common in people without back pain. A systematic review of MRI studies showed disc degeneration in one third of asymptomatic 21-year-olds and over 90 % of people older than 50[1]. Many imaging findings—disc degeneration, Modic changes, facet joint arthrosis—have no consistent association with pain. Describe these changes as the spine's version of grey hair or wrinkles—normal and not inherently dangerous. This helps Antonio understand that his MRI findings do not dictate his prognosis.
- **Choose reassuring, functional language and avoid pathologising labels**. Discuss the evidence that diagnostic labels can influence patient perceptions and treatment intentions. A randomized experiment found that labels like "disc bulge," "degeneration" and "arthritis" increased perceived need for imaging, surgery and second opinions, and lowered recovery expectations compared with labels such as "lumbar sprain," "episode of back pain" or "non-specific low back pain"[2]. Tell Antonio that non-specific back pain means there is no dangerous underlying pathology, and that the pain is typically related to muscles, joints and nerves that respond well to movement and strengthening. Use plain language like "back strain" or "episode of back pain" and focus on function: what he can do to regain strength and flexibility.
- **Address health literacy domains (understanding and appraisal)**. Teach Antonio how to evaluate health information: look for sources run by professional organisations or government agencies; check whether information is current and evidence based; beware of sensational language or miracle cures; and recognise when labels are being used to sell treatments or justify unnecessary imaging. Encourage him to bring any confusing terms or online advice to his appointments for clarification. Provide him with easy to read handouts explaining common spinal MRI terms and their prevalence in asymptomatic populations.
- **Use psychologically-informed practice**. Use cognitive behavioural techniques to challenge thoughts like "My spine is degenerating" and replace them with realistic statements, such as "My MRI shows normal age related changes that don't dictate my pain or limit my recovery." Use motivational interviewing to explore his values (e.g., playing with his children) and connect them to the goal of gradually resuming activity. Teach relaxation techniques and pacing to manage flare-ups, emphasising that occasional discomfort does not signify damage.
- **Develop a graded rehabilitation plan**. Design a personalised exercise programme that gradually loads his back. Begin with gentle mobility and core strengthening exercises, then progress to hip hinges, body weight squats and, eventually, loaded lifts similar to his occupational tasks. Emphasise that the spine adapts and becomes stronger when loaded progressively. Encourage him to track his activities and symptoms to observe improvements and build confidence.
- **Plan for follow up and collaborative decision making**. Schedule regular follow ups to review his progress, address new questions, and adjust his programme. If he still feels uncertain, discuss whether a second opinion would help him feel more confident. Encourage him to bring his question prompt list to each consultation and to ask specific questions about any terminology he encounters. Reinforce that he has the right to understand his diagnosis and the rationale behind each recommendation.

By ruling out serious pathology, exploring the patient's beliefs, contextualising imaging terms with evidence and choosing language that emphasises resilience rather than fragility, clinicians can prevent diagnostic labels from causing fear and avoidance. Coupling clear communication with graded rehabilitation and critical appraisal skills empowers patients like Antonio to engage actively in their recovery and make informed choices about their musculoskeletal health.

1. Brinjikji W, et al. Am J Neuroradiol. 2015. https://doi.org/10.3174/ajnr.A4173
2. O'Keeffe M, et al. Eur J Pain. 2022. https://doi.org/10.1002/ejp.1981.

4.2.5 Navigating dependency on passive therapies

Isabel is a 55-year-old yoga instructor who developed chronic neck and upper back pain after a car accident two years ago. She initially received physiotherapy combining gentle exercises with manual therapy and soft tissue massage. The hands on treatments provided temporary relief, and she now schedules weekly appointments for massage and manipulation. When her insurer reduced coverage, she began paying out of pocket, saying, "If I miss my weekly treatment, my pain flares." She spends little time on home exercises because she believes the therapist's manual therapy is what keeps her functioning. Isabel has heard mixed messages: one clinician told her she needs ongoing maintenance care; another emphasised exercise. She fears that reducing manual therapy will worsen her pain, yet she is frustrated by the cost and dependence on appointments. She asks her new physiotherapist if she can continue manual therapy indefinitely.

Integrated management plan

- **Comprehensive assessment and shared understanding**. Reassess Isabel's neck and upper back function (range of motion, strength, endurance, posture and ergonomics during yoga instruction) and screen for red flags or neurological deficits. Explore her beliefs and

expectations: “What do you think the manual therapy does for you?” “What makes you nervous about reducing it?” This clarifies her perceptions of dependency and allows you to tailor the conversation.

- **Validate experience and use storytelling to present evidence**. Acknowledge that hands on therapy has provided relief. Share relatable stories or analogies—for example, manual therapy is like a jump start that helps her feel better temporarily, while active movement is the fuel that keeps her going. Explain that clinical guidelines indicate manual therapy offers short term benefit and should be paired with an active approach such as exercise[1], rather than serving as the sole intervention. Framing evidence through narrative makes it less technical and more meaningful.
- **Use motivational interviewing to explore ambivalence**. Employ open ended questions (“What are the pros and cons of continuing manual therapy as you do now?”), reflective listening and affirmations to help Isabel articulate her own reasons for change. Highlight discrepancies between her desire for independence and her reliance on weekly sessions. Ask her to rate her confidence in reducing reliance on passive therapy and discuss strategies to increase it. This collaborative approach fosters intrinsic motivation.
- **Co create a phased plan to reduce passive therapy.** Negotiate a schedule that gradually spaces out manual therapy visits while increasing active engagement. For example, agree to bi weekly sessions initially, with the understanding that as she practices her exercises and monitors her symptoms, sessions may be spaced further apart. Set clear milestones—such as consistent exercise adherence and stable pain levels—that will guide the next reduction. This plan acknowledges her attachment to manual therapy while encouraging self-management.
- **Develop a personalised, enjoyable exercise programme**. Design a step by step home routine that aligns with her yoga background. Start with gentle range of motion and deep neck flexor exercises; progress to thoracic mobilisation and scapular stabilisation; then integrate resistance band and body weight strengthening. Teach her to weave these exercises into daily routines and yoga practice. Suggest using a journal or app to record exercises and sensations, reinforcing positive experiences. Explain that gradually building strength and endurance decreases reliance on passive care.
- **Enhance health literacy and appraisal skills with mechanistic education**. Recognise that Isabel is intellectually curious and wants to understand how manual therapy works. Use simple language to explain that manual therapy can activate descending pain inhibition pathways in the brain and spinal cord, modulating pain signals. It may stimulate the release of endorphins (natural pain relieving chemicals) and improve blood flow to tight muscles, contributing to short term relief. However, these effects are temporary; without strengthening and mobility work, tissues do not adapt to handle daily loads. Teach her to evaluate information about manual therapy by asking: “Does this source explain mechanisms accurately?” “Does it emphasise combining manual therapy with active rehabilitation?” Provide her with trustworthy resources that discuss both neurophysiological and biomechanical effects and stress the importance of self-management. Encourage her to bring any new information or questions to appointments so you can explore them together.

By combining empathetic dialogue, motivational interviewing, graded reduction of passive treatments, a personalised exercise programme and tailored mechanistic education, clinicians can respectfully guide patients like Isabel away from passive dependency. This approach honours her experience, feeds her curiosity and empowers her to take an active role in her musculoskeletal health.

1 Luna EG, et al. Am J Lifestyle Med. 2017. https://doi.org/10.1177/1559827617697273

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4.2.6 Dealing with too early recommendations of surgery in an acute lumbar radiculopathy without negative neurological signs

Ramon, a 48-year-old warehouse supervisor, developed sudden low back pain radiating into his right leg after lifting a heavy box three weeks ago. He describes sharp, shooting pain down the posterior thigh and calf with occasional tingling in the foot, but he reports no weakness, numbness, or change in bladder or bowel function. His GP diagnosed acute lumbar radiculopathy and referred him to an orthopaedic surgeon. At the surgical consultation, the doctor recommended immediate surgery, warning that a "slipped disc" could worsen if not fixed. Ramon is frightened; he worries that waiting might cause permanent damage, yet he has no obvious neurological deficits. Seeking a second opinion, he consults a physiotherapist, asking whether it is safe to postpone surgery and what he can do in the meantime.

Integrated management plan

- **Comprehensive assessment and exclusion of red flags**. Begin with a detailed history and examination. Assess the onset and progression of symptoms, aggravating and relieving factors, and functional limitations. Perform a physical assessment including lumbar range

of motion and neurodynamic tests (straight leg raise, slump test) to confirm radicular irritation. Conduct a neurological examination: test key myotomes (L2–S1), deep tendon reflexes (patellar L3–L4, Achilles S1–S2), and dermatomal sensation. Screen for red flags such as progressive weakness, saddle anaesthesia, loss of bowel/bladder control, fever or unexplained weight loss. Share results with Ramon, explaining that normal strength, reflexes and sensation mean his nerves are functioning well and there is no sign of serious pathology requiring urgent surgery.

- **Establish rapport and explore beliefs**. Ask Ramon how he interpreted the surgeon's recommendation: "What concerns you most about waiting?" "What do you think might happen if you don't have surgery immediately?" Validate his fears and clarify misunderstandings. Explain that "slipped disc" is an informal term; in his case, the disc herniation is causing nerve irritation but not nerve damage. This exploration helps tailor reassurance and empowers him to express doubts.
- **Reassure by explaining the natural history and safety of conservative care**. Clearly communicate that the majority of people with lumbar radiculopathy due to disc herniation improve without surgery; approximately 90 % recover within three months with conservative management. Evidence suggests that surgery is usually considered only after at least 4–8 weeks of unsuccessful conservative treatment or when there are significant neurological deficits. Emphasize that, because his neurological exam is normal, it is reasonable and safe to wait. Use analogies (e.g., "like a bruise healing, disc material often shrinks over time, reducing pressure on the nerve") and patient stories to illustrate recovery without surgery. Reassurance should be continuous throughout visits rather than delivered only once; revisit it each time he expresses concern.
- **Identify and teach symptom relieving positions (neural resting positions)**. Work with Ramon to find positions that reduce nerve tension and alleviate his leg symptoms. These might include side lying with the painful leg on top and a pillow between the knees, gentle lumbar side bending toward the non painful side, or reclining in a semi supine position with hips and knees supported. Encourage him to use these "neural resting positions" during acute flares and to alternate them throughout the day. Explain that temporary relief in these positions indicates that the nerve is irritable but not damaged, reinforcing the message that his condition is manageable.
- **Design a graded self-management plan**. Encourage Ramon to stay as active as possible and avoid prolonged bed rest. Provide simple exercises that do not provoke his pain: gentle pelvic tilts, abdominal bracing, and hip dominant movements like glute bridges. As symptoms allow, progress to walking or stationary cycling. Teach him to monitor his pain and stop before it escalates, gradually increasing activity duration each day. Suggest he keeps a daily log of activities and symptoms to observe improvements and identify aggravating patterns. Provide guidance on appropriate analgesia and advise him to consult his GP regarding non steroidal anti inflammatory drugs or other medications.
- **Health literacy and communication strategies: focusing on reassurance and decision making**. Instead of repeating technical explanations of disc anatomy, focus on helping Ramon understand why waiting is safe. Use plain language to explain that his nerves are healthy and that pain does not necessarily mean harm. Teach him how to identify new red flags (progressive weakness, loss of bowel/bladder control), and reassure him that if these occur, surgery would be reconsidered promptly. Provide patient friendly information on lumbar radiculopathy and conservative management from reputable sources. Encourage Ramon to ask questions, express preferences and make decisions collaboratively. For example, you might say, "Let's set a review point in four weeks. If your pain is steadily improving, we'll continue; if not, we can discuss other options."
- **Employ motivational interviewing to enhance engagement**. Use reflective listening and open questions to elicit Ramon's motivations (e.g., returning to work, playing with his children) and to explore ambivalence about delaying surgery. Help him weigh the benefits of avoiding unnecessary surgery against the fear of persistent pain. Collaboratively set goals (e.g., reduce leg pain from 8/10 to 5/10 within two weeks, increase walking tolerance from 5 to 15 minutes). Celebrate incremental improvements to reinforce confidence.
- **Plan follow up and contingency**. Schedule follow up appointments at two week intervals to review symptoms, adjust exercises and reinforce reassurance. Monitor functional gains using simple outcome measures (e.g., Oswestry Disability Index, pain scales). If his pain is not improving after 6–8 weeks or if neurological signs develop, discuss referral back to his GP or a spine specialist for further evaluation. Prepare Ramon to ask targeted questions at any surgical consultation: "What are the risks and benefits of surgery versus continued conservative care?" "What is the expected recovery time?" "How will you determine that surgery is necessary?"

By conducting a thorough assessment, openly addressing the patient's fears, teaching symptom relieving positions and graded activity, and repeatedly reassuring him about the safety of delaying surgery when no neurological deficits exist, clinicians can help patients like Ramon make informed, confident decisions. Emphasising collaborative decision making and health literacy support fosters trust and encourages adherence to conservative management, reserving surgery for cases where it is truly indicated.

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4.2.7 Combining new obesity treatments with lifestyle changes: semaglutide being offered to a patient with obesity and hip OA

Luis is a 60-year-old office worker with long standing obesity (BMI 34), hypertension and newly diagnosed knee and hip osteoarthritis. His left knee pain limits stair climbing and walking more than 200 metres. He was referred to an orthopaedic surgeon who offered a corticosteroid injection for the knee, saying, "That's all we can do until you're ready for a knee replacement." No other therapies were discussed. Luis later saw an endocrinologist who prescribed semaglutide (Ozempic®) to help him lose weight, noting that weight loss could reduce stress on his joints and ease hip pain. Luis is keen to try semaglutide but is not sure how it works and worries about side effects. He also feels uneasy that exercise and self-management were not mentioned initially. He wonders how to integrate these recommendations and whether other options exist before resorting to injections alone.

Integrated management plan

- **Clarify goals and assess baseline**. Evaluate Luis's functional status (distance walked, stair climbing, ability to squat), pain levels and expectations. Explore his understanding of the proposed treatments and his concerns: "What do you expect from the injection?" "How do you feel about starting semaglutide?" This helps tailor education and ensures patient centred decision making.

- **Explain the multimodal nature of osteoarthritis management**. Discuss the three pillars of OA care: education and self-management, exercise/physical activity and weight management. Intra articular corticosteroid injections can provide short term pain relief but do not change disease progression and should be adjuncts rather than sole treatments. Explain potential benefits and risks and clarify that injections do not replace active therapies. Emphasise that initial conservative strategies should include exercise, weight management and health education; injections are generally considered when other measures have not provided adequate relief or as a bridge to enable exercise.
- **Educate about semaglutide's mechanisms and evidence**. Validate the endocrinologist's recommendation: semaglutide, a GLP 1 receptor agonist, supports substantial weight loss and may directly reduce osteoarthritis pain. Explain how semaglutide increases satiety and slows gastric emptying, leading to weight loss that reduces mechanical load. Also highlight emerging research suggesting GLP 1 analogues have pleintropic (multiple impact on genes), anti inflammatory effects that could benefit OA patients. They decrease low grade systemic inflammation and may act locally in joints. These mechanisms address obesity as a driver of chronic pain beyond mechanical loading[1].
- **Position semaglutide within a stepwise management approach**. Clarify that pharmacological weight loss agents are appropriate when diet, exercise and behavioural interventions have been attempted but have not achieved sufficient weight reduction or symptom relief. Encourage Luis to continue lifestyle modifications concurrently with semaglutide: healthy eating, regular physical activity and behavioural counselling.
- **Develop a comprehensive exercise and self-management programme**. Co design an evidence based programme addressing both knee and hip OA:
  - **Aerobic activity**: Encourage low impact activities (brisk walking, cycling, swimming) for 20–30 minutes 3–5 times per week. This improves cardiovascular health, aids weight control and reduces joint pain.
  - **Strength training**: Prescribe exercises targeting quadriceps, hip abductors and gluteal muscles (e.g., sit to stand, step ups, resistance band hip abductions, mini squats). Begin with low resistance and increase gradually.
  - **Symptom relief strategies**: Show Luis how to find comfortable resting positions (e.g., side lying with a pillow between his knees) and use pacing to avoid flare-ups. Teach him how to modify daily activities (break tasks into shorter chunks, use supportive footwear, adjust workstations).

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  - **Provide a structured home exercise plan and encourage journaling of activities and symptoms to track progress and identify triggers**. Offer to review his diary at follow ups to adjust the programme.
- **Address health literacy domains and promote critical appraisal**. Use plain language to explain medical terms and mechanisms. Teach Luis to evaluate information sources: look for government or professional organisation websites, check whether recommendations are evidence based and up to date, and be wary of miracle cure claims. Encourage him to bring questions or information he finds to appointments for discussion. Provide patient friendly materials on OA management and the role of weight loss medications.
- **Employ motivational interviewing and shared decision making**. Explore Luis's ambivalence about injections and weight loss drugs. Ask open questions about his priorities and readiness to change: "What benefits do you hope to see from weight loss?" Reflect his statements to show understanding, and help him connect his values (staying active with grandchildren, avoiding surgery) to behaviour change. Set SMART goals (e.g., 5% weight loss in three months, walking 30 minutes most days, performing strength exercises twice a week). Celebrate small achievements to build confidence.
- **Coordinate care among healthcare providers**. Communicate with the orthopaedic surgeon and endocrinologist to ensure alignment. Inform them of the exercise and self-management plan. Ask the endocrinologist to monitor semaglutide's efficacy and safety, and the surgeon to advise on timing and indications for injections. Consider involving a dietitian for nutrition guidance and a psychologist if emotional or behavioural support is needed. You can also schedule follow-ups every 4-6 weeks to review pain levels, functional improvements, weight changes and adherence to exercise. Adjust the exercise programme plan based on response.

By integrating evidence that semaglutide not only promotes weight loss but may exert direct anti inflammatory and analgesic effects, clinicians can present pharmacological weight management as part of a comprehensive care plan rather than a stand alone solution. Coupled with education, graded exercise and shared decision making, this approach empowers patients like Luis to understand and apply multifaceted osteoarthritis treatments, improving pain, function and overall health.

1 Bliddal H, et al. N Engl J Med. 2024. https://doi.org/10.1056/NEJMoa2403664

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4.3. Values, goal setting, and skills

In this part you will find cases demonstrating how to explore patient values, set collaborative goals, and build self-management skills using simple, structured methods.

4.3.1 Managing flare-ups without panic

Maria is a 45-year-old woman with fibromyalgia who has persistent baseline pain and intermittent flare-ups that spike her pain and fatigue. She is motivated to learn self-management (she is in the Action stage of change) but has medium health literacy—she can follow basic health information but struggles with complex explanations and finds online resources confusing. When flare-ups occur, Maria panics and worries something serious is wrong, often resorting to bed rest and urgent clinic visits. This has led to disrupted routines and lost confidence. She asks her MSK clinician for practical guidance to manage flare-ups without panic so she can stay functional and calm.

Integrated management plan

- **Reframe flare-ups with education and reassurance**. Begin by normalising flare-ups as temporary symptom increases rather than markers of harm. Explain in plain language that pain comes from a sensitised nervous system rather than damage and that flare-ups do not mean she is “back to square one”. Use simple analogies, such as an over sensitive alarm or stormy weather, to clarify that spikes in pain are to be expected and will pass. Ask Maria

to repeat key points in her own words to ensure understanding (teach back). By reframing flare-ups as manageable events rather than catastrophic setbacks, you reduce fear and empower her to respond constructively.

- **Teach pacing and balance**. Explain that doing too much on good days and too little on bad ones causes the "boom–bust" cycle. Encourage Maria to spread activity throughout the day, take breaks before fatigue or pain spikes and avoid full days in bed even when she feels low. Work with her to set a comfortable baseline—perhaps a manageable walking duration or number of chores—and suggest small increases such as adding two minutes of walking, once she has tolerated the previous level for a few days. Use an analogy like "breaking in new shoes": short bouts gradually become longer without causing blisters. Effective pacing helps maintain function and reduces the intensity of future flares.
- **Identify early warning signs**. Help Maria learn to spot subtle increases in symptoms before they become full flares. Ask her to keep a simple diary of daily pain and fatigue levels along with activities and stressors. Teach her to act when she notices a moderate increase in pain or fatigue, by reducing the intensity or duration of tasks. Guide her to consider internal (fatigue, mood) and external (workload, sleep) factors that may precipitate flares. For example, if poor sleep and high stress coincide with a slight pain increase, she should plan a lighter activity day and include extra breaks. A "traffic light" framework can help: green days mean she can follow her usual plan, yellow days require caution and pacing adjustments, and red days call for rest and gentle self care. Recognising and responding early builds confidence and prevents small flare-ups from spiralling.
- **Optimise sleep and stress management**. Poor sleep and high stress amplify pain and fatigue. Work with Maria to implement some CBT principles for insomnia: ask her to use the bed only for sleep, avoiding spending time awake, limiting the amount of sleep time, and some relaxation before sleep. You can also give some advice regarding sleep hygiene such as establishing consistent bedtimes, limiting caffeine and screens before bed, and creating a calm sleeping environment. Additionally, suggest gentle stretching or a warm bath as part of her evening routine. For stress reduction, teach simple relaxation techniques—slow deep breathing or short mindfulness meditations. Encourage her to schedule small enjoyable activities (like listening to music or short walks) as "stress buffers." Emphasise that these practices are not "optional extras" but integral to pain control because they reduce nervous system arousal. Regularly practicing relaxation lowers pain perception and improves recovery.
- **Develop a personalised flare-up action plan**. Co create a written plan so Maria knows exactly what to do during a flare-up. Key elements include:

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- **Temporary activity adjustment**: On flare days, reduce her usual activity by about one third for a day or two (e.g. cut a 20 minute walk to 12–15 minutes) instead of stopping altogether. Keep gentle movement (stretching, short walks) to avoid stiffness and maintain circulation. Once symptoms settle, gradually return to the prior level.
- **Symptom relief strategies**: Encourage safe self care such as heat packs on painful areas, gentle stretching or fibromyalgia-friendly yoga. Use prescribed or over the counter analgesics appropriately for comfort. Incorporate relaxation techniques as part of flare management to calm tension and worry.
- **Cognitive reframing**: Include a coping statement, such as "This increase in pain is uncomfortable but temporary; I have a plan to manage it." Prompt her to remind herself of previous successful flares managed without harm.
- **Red flag guidance**: Define when to seek professional help—for example, if pain remains significantly elevated for more than a week despite following the plan or if she experiences new or alarming symptoms. Clear thresholds reassure her that most flares can be managed independently while offering a safety net.

- **Communicate clearly and confirm understanding**. Use plain language, avoid jargon and break information into small segments. Employ metaphors and visual aids: for instance, drawing an activity ladder to illustrate gradual progression or a battery to represent energy reserves. After explaining, ask Maria to demonstrate or repeat the instructions using her own words or actions (teach-back) to ensure comprehension.
- **Provide regular follow up and reinforcement**. Early on, schedule weekly or bi weekly check-ins to review her progress, adjust the plan and answer questions. During follow-ups, review her symptom and activity logs and celebrate successes, no matter how small (e.g. she noticed and managed a flare earlier than before or took a short walk every day). If she struggled with a particular step, problem solve together, perhaps breaking it into even smaller tasks or finding a more enjoyable alternative. As her skills and confidence grow, gradually space follow-ups to monthly, maintaining a clear communication channel for queries. Continued support and positive reinforcement increase self efficacy, promoting long-term adherence and independence. Over time, Maria will learn to manage flare-ups with less anxiety and fewer clinic visits—seeing them as manageable events rather than crises.

By following this structured yet flexible plan, clinicians can help patients like Maria manage fibromyalgia flare-ups calmly and independently, fostering resilience and self confidence in their daily lives.

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4.3.2 Dealing with discouragement from others: "You're still in pain?"

Rachel is a 42-year-old woman with persistent low back and widespread musculoskeletal pain for over two years. While she has made progress with pacing, gentle exercise, and flare management, she feels demoralised when friends, colleagues, and even family respond with disbelief. Comments such as "You're still in pain?" or "Shouldn't you be better by now?" make her feel ashamed and misunderstood. These interactions increase her stress and aggravate her symptoms. She asks her clinician for advice on how to communicate more effectively with people around her when they do not understand her condition.

Integrated management plan

- **Validation and reframing**. The first step is to validate Rachel's experience. Acknowledge that social invalidation is a common challenge for people with chronic pain and emphasise that the discouraging comments usually reflect lack of knowledge rather than lack of care. Reassure her that her symptoms are genuine and that feeling upset in such situations is a normal reaction. Reframing these comments as ignorance rather than personal criticism reduces the risk of self-doubt.
- **Health-literacy support for understanding and appraisal**. Equip Rachel with simple and accurate explanations of chronic pain that she can share with others. For example: "Chronic pain does not always mean injury. My nervous system has become extra sensitive, so pain signals continue even when tissues are not being damaged." Role-play these explanations

in clinic so that she can practice delivering them in plain language. This enhances her ability to appraise which explanations are most effective and apply them in her daily interactions.

- **Assertive communication skills**. Teach Rachel specific communication strategies to manage discouraging remarks. Introduce the structure "acknowledge, explain, redirect." For instance: "I know it may seem surprising that my pain has lasted. Chronic pain often persists because the nervous system remains sensitised. I am working on strategies that keep me active." Encourage the use of "I statements" such as "I feel unsupported when my pain is questioned" to express needs clearly and respectfully. Keep responses short and consistent to avoid draining explanations.
- **Preparation for predictable scenarios**. Identify contexts in which discouragement is likely to occur, such as family gatherings or workplace conversations. Draft a few ready-to-use responses together. Examples include "Yes, pain is still part of my life, but I am learning to manage it better" for family settings, or "It is ongoing, but I have strategies that help me stay active at work" for colleagues. Having rehearsed responses reduces anxiety and prevents Rachel from being caught off guard.
- **Mobilising allies**. Encourage Rachel to identify at least one supportive person in her network who can act as an ally. Sharing her management plan or educational materials with this person allows them to validate her in conversations, reducing her need to defend herself constantly. Knowing she has someone who understands can reduce emotional strain.
- **Psychologically informed practice**. Explore the emotional impact of invalidating comments with reflective listening. Use cognitive reframing to help her interpret remarks differently: "These comments show others do not understand chronic pain, not that my recovery is failing." Teach coping strategies such as mindful breathing to manage in-the-moment stress responses. Reinforce self-efficacy by highlighting her existing progress with pacing, exercise, and flare management.
- **Follow-up and reinforcement**. Arrange follow-up sessions to review real examples of how Rachel handled discouraging comments. Provide feedback, refine responses, and celebrate small successes such as remaining calm during a challenging family discussion. This process builds confidence over time and reduces the impact of social invalidation on her well-being.

By validating the emotional impact of discouraging comments, equipping patients with simple explanations, and rehearsing assertive communication, clinicians can transform social invalidation into opportunities for education and self-advocacy. These strategies reduce stress, protect self-confidence, and help patients like Rachel sustain engagement in their self-management.

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4.3.3 Maintaining progress after discharge from therapy

Martin is a 50-year-old accountant with a history of recurrent neck and shoulder pain. He completed a structured course of osteopathy focusing on postural control, strength training, and pacing strategies. At discharge, he had made significant progress, reporting reduced pain and better function. However, he admits feeling uncertain about how to maintain progress without the regular structure of supervised sessions. He worries that he will either stop exercising completely or limit himself to the same routine of "rehab" exercises, which he finds monotonous. Martin asks how to transition from a clinical programme into long-term, enjoyable activities that keep him motivated and prevent relapse.

Integrated management plan

- **Consolidate self-management confidence**. Begin by reviewing the progress Martin has achieved during therapy and highlighting the skills he already possesses, such as pacing, recognising early warning signs, and adapting exercises. Emphasise that these are transferable skills he can use outside the clinic. Validation of his progress reinforces self-efficacy and reduces the fear of losing gains once follow-up ends.
- **Shift from "patient" to "person" identity**. Explain that he no longer needs to frame physical activity only as rehabilitation. Reframe his perspective so that exercise and movement are understood as part of normal life and wellbeing. Use an analogy such as "Your rehab was like learning to drive with an instructor; now you are ready to drive on your own, choosing the roads that interest you." This reduces dependency on clinical structures and empowers him to take ownership of his activity choices.

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- **Identify meaningful and enjoyable activities**. Work with Martin to list activities he values or has enjoyed in the past, such as cycling with friends, swimming, dancing, or gardening. Help him evaluate which are realistic and safe, considering his current fitness and preferences. Encourage variety, as enjoyable activities are more likely to be sustained long-term than repetitive rehabilitation drills. Suggest starting with two to three activities that align with his interests and daily schedule.
- **Goal setting and planning for integration**. Set specific and realistic goals that focus on participation rather than symptom elimination. For example: "Swim twice weekly for 20 minutes" or "Join a weekly community cycling group." Encourage him to integrate physical activity into his daily life, such as walking meetings at work or active commuting. Planning for when, where, and with whom he will engage in these activities increases adherence.
- **Introduce progression strategies**. Teach Martin how to progress gradually by adjusting frequency, intensity, and duration. For example, add 5–10 minutes to a walk every two weeks or increase cycling intensity slowly. Emphasise self-monitoring through a diary or fitness app to track improvements. This structured progression prevents both stagnation and over-exertion.
- **Relapse prevention and flare management**. Discuss the likelihood of symptom fluctuations after discharge and normalise this as part of the process. Revisit flare-up strategies developed in therapy: short-term reduction of activity load, use of pacing, and returning to baseline exercises if needed. Provide written guidelines so that if pain flares, Martin knows how to respond without panic or abandoning activity. This prevents the cycle of avoidance and loss of fitness.
- **Enhance health literacy in appraisal and application**. Provide simple guidance on how to critically appraise future health information, such as fitness trends or online programmes, to decide what is trustworthy and suitable. Encourage Martin to apply the principles he has learned—gradual progression, monitoring, pacing—rather than adopting "all-or-nothing" regimens promoted online. Invite him to bring new ideas to a follow-up check-in for discussion.
- **Facilitate community and social support**. Encourage Martin to connect with social groups that involve physical activity, such as local sports clubs, walking groups, or yoga classes. Social participation increases enjoyment, provides accountability, and reinforces the identity shift from being a patient to being an active individual.
- **Plan for follow-up and reinforcement**. Offer a review appointment after 8–12 weeks to check progress, problem-solve barriers, and adjust goals. At this point, focus on celebrating activities that have become routine and discussing how to maintain motivation. Consider booster sessions or digital check-ins for accountability if Martin requests additional support.

By shifting identity from patient to active person, integrating enjoyable activities, and preparing relapse-prevention strategies, clinicians can help patients like Martin carry progress beyond the clinic. This transition from structured rehabilitation to meaningful participation supports long-term adherence, resilience, and quality of life.

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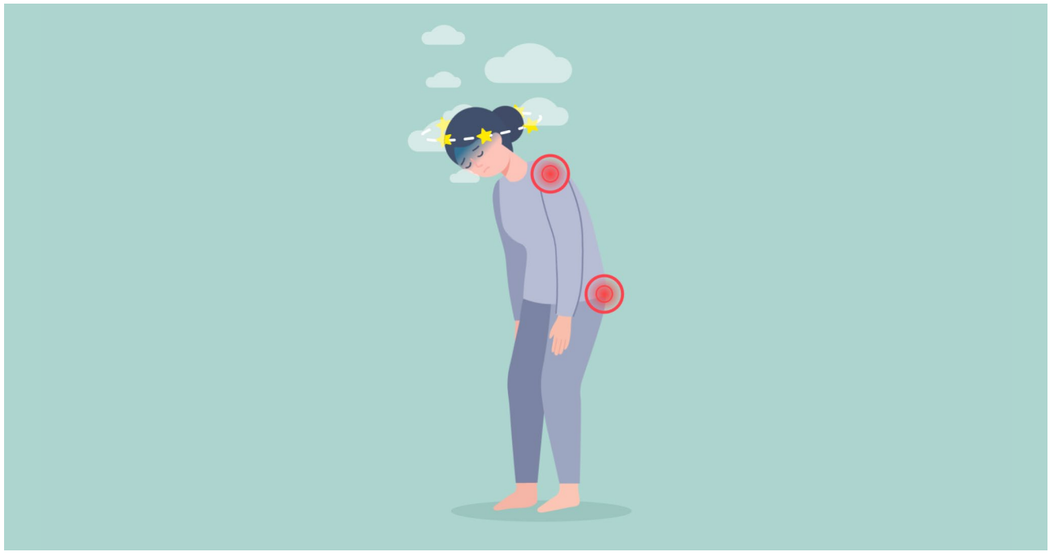
4.3.4 Managing emotional responses to chronic pain such as frustration or anxiety

Sofia is a 38-year-old teacher with chronic widespread musculoskeletal pain for over three years. Although she has benefited from chiropractic care and now maintains a regular walking routine, she continues to struggle with episodes of frustration, anxiety, and sadness. She often feels discouraged when pain limits her social life or interferes with her ability to keep up with work. During consultations, Sofia admits that these emotional responses sometimes make her avoid activity, which worsens her symptoms. She asks her physiotherapist how to better cope with these feelings without relying solely on medication or waiting for specialist psychological therapy.



Integrated management plan

- **Acknowledge and validate emotions**. Begin by validating Sofia's emotional experience. Make it clear that frustration, anxiety, and sadness are common and understandable responses to living with persistent pain. Normalisation reduces shame and communicates that she is not alone in these struggles.
- **Grounded therapeutic presence**. Instead of lecturing about pain science when Sofia is distressed, the clinician focuses on being a safe, steady, and grounded presence. This means

listening without rushing to "fix" emotions, avoiding showing frustration at her distress, and maintaining a calm, mindful manner. By modelling emotional steadiness, the clinician demonstrates that difficult feelings can be tolerated and managed, creating a therapeutic space where Sofia feels safe to express herself.

- **Psychologically-informed practice**. Introduce simple, practical CBT-informed tools. Teach Sofia to notice unhelpful thoughts such as "I'll never get better" and explore alternatives like "Progress is slow, but I am improving in stamina." Encourage behavioural activation: even on low-mood days, plan small, rewarding activities to reduce withdrawal.
- **Relaxation and stress-regulation techniques**. Teach skills that can be practised in sessions and at home, such as diaphragmatic breathing, progressive muscle relaxation, or brief mindfulness practices. Demonstrate one technique in the clinic and ask Sofia to practice daily for five minutes. These tools reduce arousal, help regulate emotions, and give her a sense of control.
- **Motivational interviewing to address avoidance**. When Sofia avoids activities due to frustration or sadness, explore ambivalence using motivational interviewing. For instance, ask, "What do you think you might gain if you went for a short walk, even on a difficult day?" and then reflect back her response. Highlight her values, such as maintaining independence and teaching effectively, and link small activity goals to these values. For example, "You've said being able to keep up with your students is important to you. How do you see regular movement helping with that?" This approach aligns emotional regulation with life meaning and supports adherence.
- **Health literacy: applying and appraising coping strategies**. Provide written action plans or "coping cards" summarising steps to take when emotions feel overwhelming. Example: pause, breathe, identify the thought, reframe, and engage in a valued activity. Encourage Sofia to keep a short diary noting which strategies she tried and how effective they felt. Review at follow-ups, reinforcing what worked and adjusting as needed.
- **Acceptance and commitment principles**. Encourage a shift in focus from eliminating all pain or distress to living well despite them. Explore values-based goals: for instance, attending her daughter's school event because it reflects her value of family connection, even if discomfort is present. This nurtures resilience and helps her reclaim important parts of life.
- **Facilitating social support**. Encourage Sofia to share her emotional struggles with a trusted friend or family member, and to connect with peer groups or supportive communities. Social understanding helps reduce the emotional burden of chronic pain and reinforces the strategies she is practising.

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- **Follow-up and reinforcement.** Schedule regular follow-ups to reinforce use of these strategies, celebrate progress, and problem-solve barriers. Highlight successes such as reframing a negative thought or using breathing to calm herself before a stressful situation. If emotional distress escalates significantly, arrange referral to a psychologist or mental health provider while continuing her use of chiropractic care as a supportive anchor.

By modelling a grounded therapeutic presence and introducing evidence-based psychological tools such as CBT strategies, relaxation, motivational interviewing, and acceptance principles, clinicians can address emotional distress without stepping outside their scope. This empowers patients like Sofia to regulate their frustration, anxiety, and sadness, supporting sustained activity and overall wellbeing.

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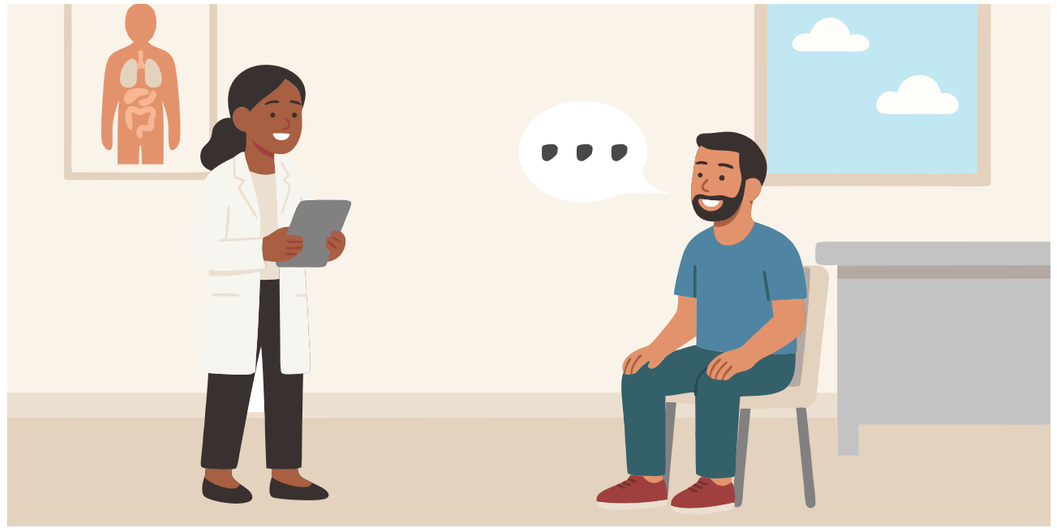
4.4. Work and pain

In this last group of vignettes you will find examples of how to address return-to-work decision-making, workplace communication, and strategies for navigating persistent pain in occupational settings.

4.4.1 Returning to work safely

Jorge is a 45-year-old textile factory worker with a six-month history of right shoulder pain, diagnosed as rotator cuff tendinopathy. His work requires repetitive overhead movements such as hanging garments on high racks, along with other physically demanding tasks. After a period of physiotherapy, he has regained much of his strength and mobility, but he still experiences mild to moderate pain with overhead activities. Jorge has been medically cleared for a partial return to work, but he is fearful. He worries that using his arm before the pain has completely resolved will cause reinjury and permanent damage. This fear has led him to avoid many daily activities, and he is anxious that he will not be able to keep up with his workload or may disappoint his colleagues. He asks his physiotherapist whether it is safe to return to work with some pain still present and how to manage the risks.



Integrated management plan

- **Validate concerns and provide reassurance**. Acknowledge Jorge's fears as common and understandable for workers with musculoskeletal injuries. Reassure him that his progress shows his shoulder is structurally safe and that some discomfort during recovery is normal. Emphasise the distinction between "hurt" and "harm," explaining that pain does not necessarily indicate tissue damage.
- **Evidence from occupational science**: importance of work participation. Summarise findings from occupational science and vocational rehabilitation that early or partial return to work is generally beneficial, even with some pain or incomplete recovery. Remaining connected to work helps maintain function, prevents deconditioning, and reduces the risk of long-term disability. Research indicates that waiting for complete pain resolution before returning is unnecessary and may even be counterproductive.
- **Plan for partial return and workplace adaptation**. Work collaboratively with Jorge and his employer to implement a graded return-to-work programme. Begin with reduced hours or lighter duties that limit sustained overhead tasks, such as working at waist level or using assistive equipment. Adjustments should be temporary and reassessed regularly. This approach balances activity with protection and reinforces that he can perform meaningful work safely while recovering further.
- **Graded exposure and task-specific rehabilitation**. In physiotherapy, design exercises that gradually replicate his work demands. Start with lighter loads and lower reaches, then progressively increase the weight, repetitions, and height of tasks. Each successful step demonstrates that his shoulder can tolerate more load. This graded exposure reduces fear, improves confidence, and conditions the shoulder for the real demands of the textile factory.
- **Psychologically informed practice**. Use motivational interviewing to explore ambivalence ("What benefits do you see in going back part-time, even if the shoulder is not perfect yet?"). Identify and reframe unhelpful thoughts such as "Pain means damage" into more adaptive perspectives like "Mild pain is part of rebuilding strength." Reinforce successes with positive feedback, highlighting progress in both strength and function. Introduce simple stress management techniques, such as paced breathing, to help him manage anxiety before physically demanding tasks.
- **Health literacy: understanding and appraising work participation**. Provide clear, plain-language explanations of why partial return is safe and effective. Use analogies such as "Your tendon is like a muscle that gets stronger when gradually challenged, not when completely rested." Employ teach-back to confirm Jorge can explain back the plan and rationale in his own words. Encourage him to critically appraise new advice he may hear from peers or online by asking: Is the source trustworthy? Does it match what we know from evidence?
- **Collaboration and follow-up**. Coordinate with the workplace supervisor or occupational health representative to monitor Jorge's workload and progress. Arrange regular follow-up appointments to review symptoms, adjust rehabilitation exercises, and fine-tune work adaptations. If setbacks occur, reassure Jorge that they are part of the process and adjust the plan rather than halting work participation.

By validating concerns, grounding recommendations in occupational science, and integrating graded rehabilitation with workplace collaboration, clinicians can help workers like Jorge return safely and confidently to meaningful employment. Supporting partial return to work, even with some discomfort, not only reduces fear of reinjury but also strengthens identity, function, and long-term recovery.

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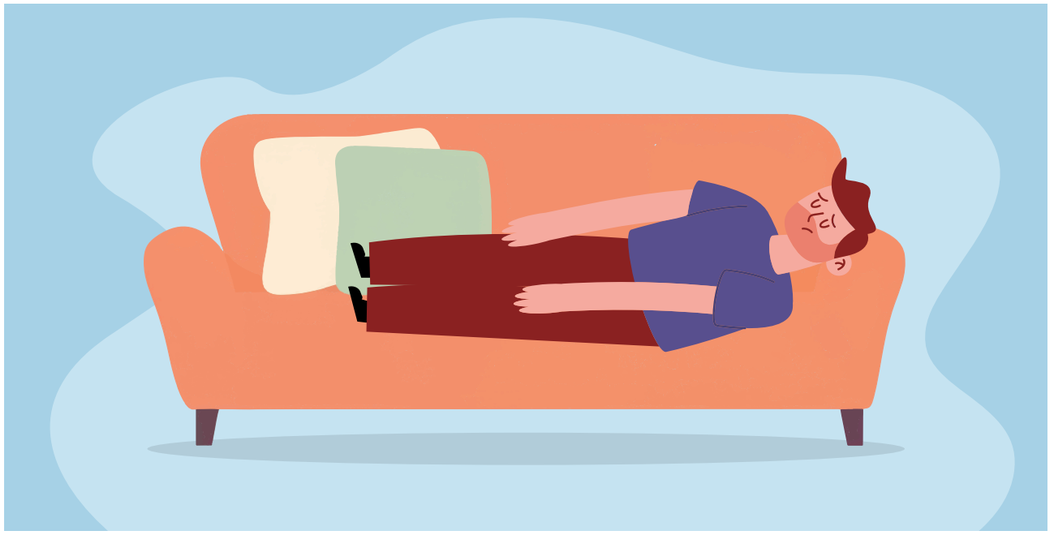
4.4.2 Confusing occupational activity with exercise: a slaughterhouse worker in pain

Hans is a 44-year-old slaughterhouse worker who has been employed in meat processing for 20 years. His job involves repetitive upper-limb movements, cutting, lifting, and working in cold environments, with minimal rest periods. He presents with persistent neck and shoulder pain that worsens at the end of his shifts. Hans has good general fitness and muscular strength but feels frustrated that, despite being "active all day," he continues to experience pain. When the physiotherapist suggests a tailored exercise programme, he responds sceptically: "Why would I need more exercise? I lift heavy carcasses all day—isn't that enough?" He associates exercise only with physical exertion and cannot see how it could reduce pain. His concern is practical as well: he feels fatigued after work and worries that additional training will worsen his soreness or take away from family time.



Integrated management plan

- **Acknowledge experience and validate perspective**. The clinician starts by recognising Hans's hard physical work and fatigue. Validation ("You already do very demanding work; it makes sense you feel tired and unsure about doing more") helps reduce defensiveness. This approach builds trust and positions the clinician as an ally rather than an instructor.

- **Clarify the distinction between occupational load and therapeutic movement**. Explain that while his job is physically demanding, it involves repetitive, high-strain and unilateral tasks that overload certain tissues and leave others underused. Occupational physical load is often monotonous and lacks the variability, control, and recovery that the body needs to adapt and heal. Use accessible analogies: "Your work keeps you strong in some muscles but overworks others—like driving a car that only turns one way." This reframes therapeutic exercise not as "more work," but as rebalancing the body to improve endurance and recovery.
- **Health-literacy support: reframing beliefs about exercise and pain**. Provide clear, plain-language education about how exercise can reduce pain through mechanisms other than strength alone—such as improving circulation, coordination, and pain modulation in the nervous system. Emphasise that "exercise for pain relief" is different from "exercise for performance." Invite Hans to reflect: "You already know your body can work hard; these exercises are to help it recover better so the next day's work feels easier." Use teach-back to ensure he can explain the difference in his own words.
- **Design low-dose, restorative exercises**. Introduce a time-efficient programme that complements, rather than competes with, his work demands. Focus on mobility, motor control, and gentle strength balance—for example: scapular and thoracic mobility drills, low-load rotator cuff and posterior chain work, and brief stretching or breathing sessions during breaks. Present this as active recovery rather than additional training. Start with very short, manageable doses (5–10 minutes a day), showing that even small efforts can have tangible effects on comfort and endurance.
- **Use motivational interviewing to address ambivalence**. Explore Hans´s hesitation with open questions: "What do you think might happen if your shoulder pain stays the same for another six months?" or "What would make it easier for you to try this plan for a week?" Reflect his answers and reinforce his values—staying strong for work, keeping income, and enjoying family time. Frame the exercises as tools that serve these priorities rather than optional extras. This value-based framing helps internalise motivation.
- **Apply graded exposure and pacing principles**. If Hans avoids certain movements due to pain or fatigue, integrate graded exposure within the physiotherapy sessions. For instance, controlled overhead movements or resisted abduction may be introduced gradually to demonstrate safety. Encourage pacing strategies at work—alternating hands when possible, taking micro-breaks, and performing brief mobility resets between repetitive tasks. Explain that variation and recovery, not just strength, determine long-term resilience.

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- **Leverage occupational collaboration and ergonomic strategies**. Where feasible, engage the workplace health representative to review workstation ergonomics or workflow variability. Small changes, such as adjustable cutting heights, rest scheduling, or rotation of repetitive tasks, can reduce tissue strain and make the therapeutic message consistent across contexts. These adjustments demonstrate that the goal is sustainable work participation, not temporary pain suppression.
- **Follow-up and reinforce progress**. Schedule follow-ups every two to four weeks to review symptoms, adherence, and barriers. Use tangible metrics—fewer end-of-shift pain spikes, better sleep, or reduced medication use—to highlight progress. Reinforce successes with positive feedback ("You've managed to fit in the exercises even after long shifts—that shows commitment"). Adjust the programme as needed, adding variety or brief resistance work to keep it engaging.

By distinguishing occupational strain from therapeutic movement, acknowledging fatigue, and reframing exercise as recovery rather than extra labour, clinicians can help physically active workers like Hans see value in structured self-management. Combining motivational interviewing, graded exposure, and ergonomic collaboration empowers them to move beyond scepticism, build resilience, and sustain their capacity for demanding physical work.

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4.4.3 Misunderstanding ergonomics: what it does, and does not, offer for pain

Manuel, a 40-year-old customer service representative, has developed diffuse neck and low back discomfort over the past year. He sits almost continuously at his desk, believing that sitting "properly" is vital to protect his spine. After seeing social media ads, he purchased an expensive "ergonomic" chair, a rigid posture correction shirt and a wearable sensor that vibrates when he slouches. He also wears a lumbar support belt whenever he lifts groceries, convinced that bending his back is dangerous. Despite these gadgets he feels stiff and worried; he avoids stooping to pick up his toddler and spends long periods in one position, fearing movement will worsen his pain. His anxiety has led him to search for more devices rather than engage in general physical activity.

Evidence informed rationale

- **No single "correct" posture or lifting form prevents pain**. Beliefs that spinal pain is caused by "incorrect" posture are widespread, yet research shows no strong evidence that avoiding "incorrect" posture in sitting position prevents low back pain or that any specific spinal curvature is associated with pain. People with back pain actually bend less and activate trunk muscles more during movement, and higher fear and low self efficacy are linked with guarded movement[1].
- **Prolonged static sitting overloads tissues**; variation is key. Remaining seated continuously can cause muscle fatigue and overload the musculoskeletal system. Ergonomics focuses

on adapting the environment and work organisation to allow position changes, thereby reducing discomfort and enhancing wellbeing.

- **Multi component ergonomic interventions help**; gadgets alone do not. Alternating between sitting and standing every 30 minutes can decrease fatigue and back discomfort while maintaining productivity. Short-supervised exercise plus ergonomic guidance also reduced pain and discomfort. In contrast, wearable posture monitors and corrective shirts lack scientific evidence[2].

Integrated management plan

- **Self-management implementation**
  - **Assessment and goals**. Explore Manuel's beliefs about posture and lifting and evaluate his workstation, sitting patterns, physical activity levels and psychosocial factors. Identify meaningful goals (e.g., comfortably playing with his child, confidence in lifting).
  - **Dispel myths and build confidence**. Explain that spines are robust and there is no single "correct" posture. Emphasise that natural variability exists and comfort matters more than rigidity. Clarify that bending or stooping is not inherently harmful; moving the spine through its range nourishes tissues and builds resilience.
  - **Encourage movement variety**. Adjust the workstation to allow switching between sitting and standing. Suggest micro breaks—standing, walking or stretching every 30–45 minutes—and changing chair recline to avoid prolonged static loading.
  - **Promote physical activity**. Develop a graded activity plan including aerobic exercise (walking, cycling, swimming) and spine mobility drills. Highlight that combined exercise and ergonomic guidance reduce pain. Introduce bending and lifting tasks in varied postures to reduce fear.
  - **Pragmatic lifting strategies**. Teach planning lifts (clearing space, keeping the load close), using hips and legs, and experimenting with stoop, squat and semi squat techniques. Emphasise that there is no evidence that keeping the back straight prevents pain. For heavy loads, suggest mechanical aids or team lifting and discourage reliance on belts.
  - **Reduce dependence on gadgets**. Discuss limited evidence for posture correcting shirts and sensors and encourage Manuel to focus on internal awareness and movement variety.

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- **Health education strategies per health-literacy domain**
  - **Understand**. Use plain language to explain that posture myths persist despite lack of evidence. Clarify that comfort, variation and confidence in movement are more important than holding one "perfect" position.
  - **Access**. Provide trustworthy resources—such as occupational health agency guidelines on workstation setup and activity breaks—and discourage reliance on marketing claims.
  - **Appraise**. Teach Manuel to evaluate claims for posture devices critically. Highlight that most wearables and corrective shirts are prototypes and lack long term evidence.
  - **Apply**. Demonstrate adjusting chair height, monitor distance and seat back support; practise micro breaks and varied sitting positions. Use teach back ("Show me how you would set up your desk") to ensure understanding. Encourage application of comfortable lifting techniques rather than rigid rules.
- **Psychologically informed practice**
  - **Develop self efficacy and resilience**. Help Manuel set realistic expectations and recognise improvements (increased play time with his child, reduced reliance on gadgets). Teach strategies for managing flare-ups—temporary pain increases do not mean harm—and adjusting activities rather than resorting to rest.
  - **Engage workplace support**. Liaise with his employer to implement ergonomic modifications (sit stand desk, adjustable equipment) and scheduled movement breaks. Organisational support for such interventions has been shown to reduce symptoms and improve psychosocial conditions.

This vignette underscores that ergonomics is about adapting environments to individuals and promoting movement variety, not enforcing rigid posture rules. Educating patients on the robustness of the spine, encouraging frequent position changes and physical activity, and addressing fear of movement are central to reducing pain and enhancing function.

1 Slater D, et al. J Orthop Sports Phys Ther. 2019. https://doi.org/10.2519/jospt.2019.0610

2 Soares C, et al. Rev Bras Med Trab. 2023. https://doi.org/10.47626/1679-4435-2023-770

ERASMUS-EDU-2022-PI-ALL-INNO: Project n.101111708.

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