Digi4 MSK

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EDUCATIONAL MATERIAL
OF DIGI4MSK – VOLUME 1

1. Introduction to self-management in musculoskeletal pain

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Synopsis

Digi4MSK is an Erasmus+ project that develops learning resources to improve how professionals communicate about musculoskeletal health and implement evidence-based self-management. This resource synthesizes high-quality research into concise, actionable guidance for everyday practice. Each volume offers structured summaries, tools, and examples to support shared decision-making, health literacy–sensitive communication, and safe, person-centred care across musculoskeletal conditions.

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The first four volumes include: the requirements for the implementation of self-management, general principles of self-management, excluding serious pathology in musculoskeletal pain, and assessment of a patient´s readiness in terms of motivation and health literacy.

Volume 1 — Introduction to self-management in musculoskeletal pain

This volume provides a general, evidence-based introduction to self-management in musculoskeletal pain. It clarifies definitions, core principles, the role of the healthcare professional, and outlines guideline-aligned recommendations. Practical sections address common barriers and facilitators of self-management, problem-solving skills, and health literacy as a cornerstone of safe, person-centred care.

Keywords: self-management, clinical guidelines, health literacy, person-centred care, barriers & facilitators.

Index

1. Introduction to self-management in musculoskeletal pain

1.1 Objectives

The overall objective of this chapter is to present the concept of self-management for musculoskeletal pain and outline essential elements needed to achieve a favourable outcome. The module is divided into several sub-sections, each with well-defined learning outcomes that collectively aims to support readers in:

- *Understanding the concept of self-management in the context of musculoskeletal pain.*
- *Recognizing the importance of empowering patients to take an active role in managing their pain.*
- *Identifying the core components of self-management, education (literacy, beliefs, skills), including exercise, and lifestyle modifications.*
- *Recognizing the importance of tailoring self-management interventions according to health literacy and patient´s motivation.*

1.2 Introduction: Framing the challenge of musculoskeletal pain management

Painful musculoskeletal conditions, including neck- and back pain as well as shoulder-, hip-, and knee pain, represent a widespread global health challenge (Barlow et al., 2002; Ferreira et al., 2023; Gill et al., 2023; Wu et al., 2024). With little prospect of this burden being reduced in the foreseeable future, there is a pressing need to explore how these conditions can be managed more effectively (Ferreira et al., 2023; Gill et al., 2023; Wu et al., 2024). These painful conditions not only affect physical functioning but also rank among the leading causes of disability which can have detrimental effects on quality of life (Cohen et al., 2021; Ferreira et al., 2023; Gill et al., 2023; Kawai et al., 2017; Lynch et al., 2008; Wu et al., 2024). Furthermore, the burden of musculoskeletal pain is often compounded by its coexistence with other chronic health conditions, collectively referred to as multimorbidity (Chowdhury et al., 2023; Skou et al., 2022).

Multimorbidity affects approximately one-third of the adult population and represents one of the most pressing challenges for modern healthcare systems (Chowdhury et al., 2023; Pearson-Stuttard et al., 2019; Skou et al., 2022). Managing multimorbidity remains a clinical challenge, as clinicians must treat one condition while simultaneously considering its interaction with other conditions, thereby adding complexity to care (Kawai et al., 2017; Skou et al., 2022). Beyond the clinical challenges, multimorbidity also carries substantial societal and economic consequences, including increased healthcare utilization, work absenteeism, and a greater strain on healthcare systems (Kawai et al., 2017; Skou et al., 2022). Despite advances in medical care, traditional provider-driven healthcare models often fail to meet the multifaceted needs of patients with musculoskeletal pain, particularly when multimorbidity is present. The passive role traditionally assigned to patients in many healthcare systems further underscores the need for a more sustainable, patient-centred approach (Buchbinder et al., 2018; Kamper et al., 2020; Lin et al., 2020; Skou et al., 2022).

Taken together, these points highlight the need to increase focus on enabling people with musculoskeletal conditions, including those in pain, to better manage their own condition. In other words, optimizing self-management should be a priority. This topic will be outlined in the following sections.

1.3 The need for personalized MSK health management

What is MSK Health?

Musculoskeletal (MSK) health is a fundamental component of overall well-being, underpinning mobility, physical function, and quality of life. Ranging from acute injuries to chronic conditions, MSK disorders affect millions of people worldwide and place a substantial burden across populations. Delivering personalized care in MSK health management is essential to address the diverse needs of individuals, improve outcomes, and enhance quality of life.

Why Personalized Care is Critical

Effectively managing MSK conditions requires more than standardized treatment plans. Personalized care acknowledges the complex interplay of biological, psychological, and social factors that shape health outcomes.

MSK disorders present differently in each patient, influenced by age, genetics, physical health, lifestyle and lived experience. Personalization ensures that interventions are tailored to a patient's specific symptoms, abilities, goals and preferences, leading to improved adherence and health outcomes. Individualized care also fosters patient empowerment and self-efficacy, enhancing motivation and engagement in their own health journey. For example, a sedentary office worker with low back pain may benefit from targeted exercises and strategies to increase movement during work hours, enabling them to manage prolonged desk time. In contrast, a young athlete with the same condition may require a sport-specific rehabilitation plan focused on performance-related movements. These cases highlight the importance of context in shaping effective treatment and achieving the intended outcomes.

Biopsychosocial factors and how they vary from person to person

Understanding the full scope of the **biopsychosocial model** – an integrative model that considers biological, psychological, and social factors in understanding health, illness, and patient care - is essential to personalizing care and recognizing the wide range of factors that may contribute to a patient's reported symptoms. **Biological factors** such as age, weight, gender, and comorbidities (e.g. diabetes, cardiovascular disease) can influence disease progression and treatment responses. Physical limitations or fitness levels further determine the feasibility and acceptance of specific exercises or therapies. **Psychological factors,** including beliefs about pain, motivation to engage in care, and mental health status also affect adherence to treatment. Identifying cognitive barriers, such as kinesiophobia and fear-avoidance behaviour, is important, as they can exacerbate disability and impede recovery, regardless of physical or social barriers. Finally, **social factors** such as access to healthcare, family or community support, and work-life balance also shape a patient's ability to follow through with treatment plans. Cultural norms and socioeconomic status are likely to determine how patients perceive and prioritize MSK health. It is important to emphasize that complex interventions are designed to address biological, psychological, and social factors. Their effectiveness, however, depends on the degree of individual flexibility within these domains. For example, while some biological factors such as genetics cannot be changed, muscle fitness can be improved within certain limits. Similarly, psychological traits like coping skills and social factors such as supportive relationships can be developed or strengthened. The extent of this flexibility varies between individuals and strongly influences the overall success of an intervention.

Overview of the diverse needs of patients, including their health status, beliefs, and lifestyle factors. A **personalized approach** to MSK health management must take into account the wide spectrum of patient needs, where patients can have symptoms ranging from mild, temporary symptoms to severe, chronic conditions requiring multidisciplinary care:

- **Addressing beliefs and attitudes** including misconceptions about pain, fear of movement or avoidance behaviours as well as maladaptive coping strategies such as overreliance on medications, is essential as these can hinder recovery. Healthcare professionals should address these factors through education, emphasizing the benefits of movement and self-management, as this is essential to support progress.

- **Understanding lifestyle and activity levels** further shape care pathways. For example, highly active patient, such as athletes, may require performance-oriented rehabilitation, whereas sedentary patients may benefit from incremental activity planning, load management and gradual progression. The **age and presence of comorbidities** of patients is also an important consideration. Younger patients often prioritize rapid recovery to resume work or sports, while older patients may prioritize maintaining independence and managing multiple chronic conditions.

Finally, **supervision needs** must be considered. Patients requiring high levels of support may benefit from frequent in-person consultations whereas those with lower supervision needs patients may be managed more effectively through robust self-management plans, including clear instructions, visual aids, and follow-up. Personalized MSK health management ensures that care aligns with each patient's unique biological, psychological, and social circumstances. This individualized approach can empower patients to take an active role in their health and achieve meaningful, lasting improvements in their MSK condition.

1.3.1 What is self-management?

The literature provides numerous examples showing that people living with MSK pain can benefit from increasing their ability to manage their condition, also commonly referred to as self-management strategies (Palsson et al., 2024). These strategies encompass a variety of approaches, including education delivered through written materials (e.g., booklets, leaflets, brochures, books, webpages, and apps), and verbal methods (e.g., videos, teleconsultations,

and face-to-face sessions) (Palsson et al., 2024). Although the content of self-management interventions varies across studies, common elements include patient education incorporating pain coping strategies, exercise, diet, medication and other treatment modalities, all of which are consistent with clinical practice guidelines (Lin et al., 2020; Palsson et al., 2024). Given this diversity, it is perhaps unsurprising that there seems to be no clear consensus on the definition of self-management.

Existing definitions converge on the idea that self-management represents a set of skills that enable individuals with musculoskeletal pain need to take an active role in managing their condition to improve function (Barlow et al., 2002; Jonkman et al., 2016). However, some definitions emphasize patient independence during implementation of self-management, while others assume a higher degree of healthcare supervision. A recent review of self-management in painful musculoskeletal disorders of the extremities defined self-management intervention as those in which the majority of actions are undertaken by the patient, without supervision from a healthcare professional (Christensen et al., 2025). While such definition may be useful as a search parameter in literature reviews, it does not provide clear guidance clinical implementation. In light of this, it is necessary to examine practice recommendations. Until there is consensus on the definition is reached, the Digi4MSK project has adopted two working categories: self-management with high- and low supervision, respectively.

High-supervision is defined as a plan characterized by close monitoring and coaching (e.g., frequent reviews; clinician-led goal setting; direct feedback on pacing, load management, and flare-up plans), with readily available professional support to troubleshoot barriers. Success is evidenced by progressive transfer of decisions (what to try, when to progress/back-off) from clinician to patient. Similarly, **Low-supervision** is defined as a plan with infrequent, scheduled reviews (e.g., milestone-based), patient-driven data capture (symptom/function logs), and self-adjustment protocols (e.g., pre-agreed rules for pacing and load). The clinician role is primarily facilitator/coach, ensuring safety, alignment with guidelines, and problem reframing when needed.

1.3.2 Self-management recommendations in clinical guidelines

The aim of a self-management strategy for those with musculoskeletal pain is to enhance their knowledge, skills, and confidence in managing their condition, thereby improving their quality of life (Babatunde et al., 2017; Lin et al., 2020; Lorig & Holman, 2003; Palsson et al., 2024). Although, as previously noted, there is currently no consensus on the definition of self-management, common elements can be identified across clinical recommendations (Babatunde et al., 2017; Lin et al., 2020; Lorig & Holman, 2003; Palsson et al., 2024). Two systematic reviews of guidelines on musculoskeletal pain management (Babatunde et al., 2017; Lin et al., 2020), emphasized the critical role of patient education, as part of self-management. Babatunde et al. (2017) highlighted that guideline recommendations described self-management advice and education as important for enhancing patients' understanding of musculoskeletal pain, addressing concerns about its severity, supporting functional recovery, and reducing dependence on healthcare professionals by empowering patients to take an active role.

While the literature clearly supports self-management strategies, it remains unclear how these should be implemented. For example, Babatunde et al. (2017) recommend including self-management techniques but did not specify what these should entail or how they should be implemented. To effectively integrate self-management into musculoskeletal pain care, a deeper understanding of its key principles is therefore required.

1.3.3 Principles of self-management and the role of the healthcare professional

While it is not possible to cover all aspects of self-management strategies described in the literature, some key principles can be highlighted. It has been suggested that care for musculoskeletal pain conditions provided by health care professionals should be patient-centred, tailored, and incorporate shared decision making (Lin et al., 2020; Palsson et al., 2024). But how can these principles be translated into practice when implementing self-management strategies? Lorig and Holman (2003) proposed that self-management is essentially problem-based and identified five core self-management skills that should be incorporated into pain management:

1. **Problem-solving**: This involves clearly defining a problem, ideally as perceived by the individual with pain (e.g., an uncomfortable position or movement), reframing unhelpful thoughts, identifying daily habits (diet, sedentary lifestyle), experimenting with and generating possible solutions, implementing them, and evaluating the results. While some individuals can accomplish this independently or with minimal outside interference, others may need support from family or friends, or guidance from a healthcare professional during the process. When successful, developing this skill can empower individuals to address day-to-day challenges (e.g., flare-ups) and adapt strategies as needed. Clinicians can support problem-solving by guiding patients through real-life examples, encouraging iterative learning, and building their confidence in managing challenges independently. *Example*: A patient with low back pain, aggravated from prolonged sitting at work (> 30 minutes), collaborates with their clinician to identify the problem, brainstorm solutions (e.g., experimenting with different postures, standing up regularly, or mobility exercises). After a week, the patient reports less stiffness and greater symptom control.
2. **Decision Making**: This skill refers to interpreting available information, how to use it and recognizing its implications. In an ideal situation, sufficient and appropriate knowledge would be available to enable effective decision-making; however, individuals often need to make choices based on the information at hand and adapt as they learn more about their condition. For example, this could include recognizing when an exercise or a specific activity is the cause of an exacerbation of symptoms, learning to distinguish between protective adaptations to injury (e.g., a limp after an ankle sprain) and maladaptive ones, or deciding when to seek a healthcare professional versus managing independently. Likewise, this may include choosing lifestyle adjustments that are relevant or realistic for the condition. This way, patients learn to adapt and adjust activity levels and lifestyle, for example reducing load or pacing activities, ensuring sufficient sleep, and optimizing diet. Clinicians can foster decision making through practical, scenario-based training that builds patient confidence in **everyday** decisions related to the condition. *Example*: A patient develops sharp shoulder pain at end-range after doing overhead weightlifting. The clinician evaluates the context: no swelling, no functional loss, and brief pain. Based on this, temporarily reducing load and modifying movement is recommended, rather than stopping exercise altogether. The patient learns to differentiate between acceptable discomfort and warning signs.

3. **Resource utilization**: This involves teaching patients how to find and use available resources, including community services, healthcare professionals, and digital tools. It encourages active seeking of support and information when needed, and from multiple sources when relevant. Clinicians can support this by recommending trustworthy and accessible resources such as online information and tools, demonstrating their use, and encouraging patients to explore and adopt them. *Example*: A patient with chronic neck pain feels overwhelmed by conflicting online advice. The clinician recommends two evidence-based resources: an NHS guide on persistent pain and a trusted self-management app with short educational videos. The patient is shown how to use these resources and is encouraged to apply one strategy this week. Of course, you can find more resources in the Digi4MSK materials.
4. **Forming of a patient-provider partnership**: Effective communication and collaboration between patients and healthcare professionals is important. In ongoing painful conditions, the clinician's role as a supportive partner is central to implementing a self-management strategy. Tailored advice and support, communication training, and ensuring that patients feel heard and respected during consultations can increase motivation and rehabilitation outcomes. *Example*: A patient feels discouraged after following a treatment plan but experiencing no improvement. Instead of prescribing new instructions, the clinician acknowledges the patient's effort, validates their frustration and collaboratively adapts the plan to current needs and preferences, reinforcing flexibility and partnership.
5. **Taking action**: This skill involves creating and carrying out specific, realistic short-term plans. These should be behaviour-focused and designed to build confidence through achievable goals. A critical component of this process is self-tailoring, where patients apply learned skills to their unique circumstances. Action planning exercises, guided by feedback from healthcare professionals, help patients set achievable goals focusing on graded restoration of function, and successfully accomplish them, reinforcing their sense of self-efficacy. For some, this also may require structured lifestyle modifications, e.g., improving sleep quality and reducing stress. As an example, the patient could be asked to make an action plan for a specific, simple, and achievable task that can then be implemented and evaluated afterwards. *Example*: A patient with widespread pain and low motivation wants to improve physical activity. Together with the clinician, he creates a one-week action plan: walk for 5 minutes after breakfast, five days a week. The patient tracks progress using a calendar and reflects on energy and pain. The simplicity and specificity of the task increase adherence and chances of success.

Although described separately, these skills are interdependent and complementary. For instance, problem solving may require the use of resources to identify solutions, while decision making or taking action depend on available information. Mastering one skill often strengthens others. As suggested, a self-management strategy should be patient centred and tailored to individual needs. The level of support required varies: some patients may initially need close support and supervision, which can be tapered as they develop stronger self-management skills. Thus, self-management strategies could be categorized as high- and low-supervision approaches with the aim of reducing reliance on healthcare professionals over time. Taken together, self-management differs from traditional biomedical models, which primarily emphasize diagnosis and cure with the patient in a passive role. Instead, self-management shifts the focus to empowering patients to actively manage their condition on a day-to-day basis, independently of healthcare providers (Lorig & Holman, 2003; Palsson et al., 2024).

1.3.4 Why is self-management important?

In line with the literature, self-management strategies should be integrated into the care of musculoskeletal conditions (Babatunde et al., 2017; Lin et al., 2020; Lorig & Holman, 2003; Palsson et al., 2024). A key benefit of implementing self-management strategies, as outlined above, is the gradual reduction of dependency on healthcare professionals, which for some patients, may lead to complete independence. The literature indicates that, in the majority of studies, self-management strategies, either as standalone interventions or in combination with other treatment approaches, yield similar or better outcomes in terms of pain, disability, and/or quality of life when compared to control conditions such as usual care, wait-list control, supervised exercises, group-based exercises, telerehabilitation, management by physiotherapists, general practitioners or orthopaedic treatment (Palsson et al., 2024). Considering these findings, it is not surprising that such strategies are often cost-effective (Boyers et al., 2013; Hernon et al., 2017). However, contrasting results and heterogeneity among studies make direct comparisons challenging (Hernon et al., 2017). Taken together, the potential to reduce dependency on healthcare professionals while achieving similar or better outcomes compared to traditional approaches, and thereby lessening the burden on the healthcare system, makes an increased focus on implementing self-management strategies a compelling reason to prioritize their integration into clinical practice.

1.3.5 Health literacy – The key to self-management

The concept of **health literacy** refers to the knowledge and skills that determine an individual's ability to understand, appraise and apply health information (Nutbeam & Kickbusch, 1998). A core principle of Digi4MSK and its educational courses is that an adequate level of health literacy is essential for the successful implementation of self-management in patients with musculoskeletal pain. This principle aligns with research indicating that adequate health literacy is a prerequisite for healthy behaviours (Visscher et al., 2018) such as those included in proper self-management of chronic diseases (Olesen et al., 2017). Given the persistent nature of many musculoskeletal pain conditions, it is not surprising that low health literacy has been associated with poorer physical function in individuals with musculoskeletal pain (Lacey et al., 2018). Chapters 4 and 5 are dedicated to the assessment and improvement of (musculoskeletal) health literacy, recognizing it as a prerequisite for the low-supervision self-management of musculoskeletal pain.

1.3.6 Developing problem-solving skills

Based on the above, collaborating with healthcare professionals, identifying and using credible, tailored information, can support patients in developing coping and problem-solving skills, and thereby empowering them to manage their condition more independently. Scholz et al.(Scholz et al., 2024) and Moman et al.(Moman et al., 2019) found that digital self-management interventions provide critical essential skills for handling pain episodes and building psychological resilience. Programs focusing that focus on building enhancing self-efficacy and reducing fear-avoidance behaviours through education and mobile health tools are particularly effective (Nicholl et al., 2017). Three examples of skills development are described below:

1. **Identifying and challenging unhelpful thoughts:** The patients learn to reframe identify and challenge unhelpful thoughts about pain e.g., replacing unhelpful thoughts, for example: "*This back pain during movement means I'm damaging my back*" with a more accurate, constructive interpretations, such as "*This flare-up is uncomfortable, but it does not doesn't mean serious harm.*"
2. **Pacing daily activities:** The patients acquire the skill ability to balance activity and rest (of pacing daily activities). This skill helps maintain function prevents e.g., learning to balance activity and rest, avoiding both overexertion and prolonged inactivity, thus maintaining function and preventing "boom- and- bust" activity cycles.

3. **Seeking and applying trustworthy health information:** The patients develop the ability to locate, evaluate, and apply trustworthy health information e.g., using reliable websites or apps – such as the Digi4MSK tool "*activity*" for guidance to learn about appropriate exercises or and lifestyle strategies, instead rather than of relying on unverified sources from e.g., social networks or just passive treatments.

1.4 The Role of the Healthcare Professional

Traditionally, healthcare professionals have been trained to focus on identifying problems that can be "fixed", such as weak muscles or poor posture, hereby assisting patients in reducing disability. However, this prescriptive approach is of limited value in the context of self-management. Instead, professionals should employ tools that facilitate **behavioural change** (Linton et al., 2024).

While acute episodes of pain often resolves within days or weeks (de Campos et al., 2023), pain that has persisted for 3-6 months appear to follow a more stable trajectory (Artus et al., 2010; Glette et al., 2020). Consequently, management strategies should shift as well, with greater emphasis on strategies that will empower patients to manage their pain and/or disabilities so they can continue engaging in work and other daily activities. To fulfil this role, healthcare professionals must go beyond simply knowing the recommendations and conveying them to the patients. The focus should be on providing opportunities for patients to practice, fail, and adapt strategies until they become their own (Kent et al., 2023).

Key competencies for healthcare professionals, include the ability to understand and apply relevant communication skills, and to create a coherent and meaningful explanation for the patient, i.e., helping the patient understand *why they hurt*, and then structure therapy (support) around this narrative. Developing meaningful narratives is not as straightforward as once believed. Many attempts have been made to explain pain to patients using generic narratives based on established principles from basic science (e.g., central sensitization) or clinical best practice (Djurtoft et al., 2024; Martinez-Calderon et al., 2023), however, such approaches have not yielded long-term improvements at group-level for people with chronic musculoskeletal pain (Bülow et al., 2021). Emerging evidence instead suggests that individualized narratives, grounded in the patient's own story, are more effective (Kent et al., 2023). Listening carefully, understanding, and critically appraising the patients' story in a way

that is perceived as supportive, meaningful and respectful is therefore an essential professional skill. During the interview process, the professional must strive to understand the patient's perspective, e.g., why they believe they are still in pain, what they think caused it, how they or others might manage it, and what they fear will happen if the situation remains unchanged (Kragting et al., 2024).

Clear goals is another essential element within self-management. Together, the patient and the healthcare professional should establish which problem(s) the patient can and wants to solve, determine ways to reach set goals, provide a prognosis or timeline, and – importantly – describe how the patient can measure whether these goals have been achieved (Kent et al., 2023). Pain reduction or complete pain relief are common patient goals. However, professionals must continually evaluate whether such goals are realistic and attainable. One helpful framework for setting appropriate goals is SMART (Specific, Measurable, Achievable, Relevant, and Time-Bound) (Gregersen et al., 2024). Defining attainable goals can be challenging. Firstly, the lived experience of pain can be tainted by the contrasts in life quality before and now (i.e., it can be very difficult to embrace the separation between pain intensity and life quality because they feel unrepeatable). This contrasts to our contemporary understanding of chronic musculoskeletal pain conditions: we have no cure, but for many it is possible to live a normal life despite (recurrent episodes of) pain. Secondly, even if patients accept these limitations, they may be unwilling to give up long-term goals such as pain freedom, or they may lose hope and envision a future dominated by disability, despair and stigmatization. This does not mean that professionals should dismiss frustrations by simply telling patients to "to live with their pain". Instead, they must listen emphatically, acknowledge frustrations, and help patients reconceptualize what their pain means (Linton et al., 2024). Healthcare professionals can use psychologically informed techniques such as psychoeducation, values determination and problem framing to facilitate this process (Vase et al., 2025).

To summarize, healthcare professionals should have in-depth knowledge about risk factors, prognosis, treatment options, and their effectiveness as well as an ability to apply this knowledge to the patient's unique story, thereby providing individualized, meaningful, and constructive guidance.

1.4.1 Barriers and facilitators of self-management

Table 1 (barriers) and table 2 (facilitators) provide examples of factors that may either support or hinder the collaboration between the professional and the patient in implementing self-management. Awareness of potential barriers and facilitators, and recognizing their signs, can be helpful in daily practice.

Table 1: Barriers to implementing self-management.

Barriers	**Examples**	
	Within the professional	**Within the patient**
Knowledge gaps	Inability to understand the differences between acute and chronic pain, and how the latter affects the individual.	Belief that all pain has a single cause, and that the right treatment can cure all pain. Unaware of the influence of contextual and lifestyle factors, and their role in successful management.
Skill gaps	Being unable to establish (or unaware of the importance of) a therapeutic alliance. Unable to support the patient (e.g., provide motivation, hope or comfort). Being unable to rule out pathology or injuries.	Inability to explain how they experience pain or what they feel, e.g., unable to separate what pain does to the person vs what they believe is causing it. Inability to adhere to a plan or commit to a specific goal.
Uncertainty	Unable to begin management until a cause of pain has been established. Unable to create management strategies based on probability and evidence-based treatment.	Feeling uncertain about the intentions of the professional (e.g., "am I worth your time?" or "do you really know what my problem is?").
Lack of experience	No experience with long-term follow-up and management of chronic MSK pain conditions.	No or unsuccessful experiences with self-management. Mistrust in, or unfamiliarity with, eHealth solutions.
Inability to manage pain flare-ups	Unaware of self-management strategies or therapeutic interventions that can support the patient during flare ups.	Worries about pain related to the inability to control flare-ups (e.g., avoiding movement or work for fear the pain will become uncontrollable).
Resource depletion	Not having enough time to listen to and build rapport with the patient. Conducting interviews at the end of day where attention may have dropped.	Feeling exhausted and unable to make changes in their life (e.g., due to poor sleep, financial instability, grief, or worry).

Table 2: Facilitators to implementing self-management.

Facilitators	Examples	
	Within the professional	**Within the patient**
Experience	Feeling competent to stop or reduce unnecessary assessments (e.g., scans), harmful or not-recommended treatments (e.g., surgery or opioid-based medicine for low back pain) or ineffective treatments (i.e., treatments that may work for some but have proven ineffective for this patient). Having enough experience with chronic pain to know that flare-ups are temporary and being able to support the patient and help them not lose hope.	Having experience with pain (e.g., understanding the fluctuating nature or that pain may change for no apparent reason, but usually returns to "baseline"). Knowing the difference between managing acute flare-ups and implementing behavioural changes to minimize the impact of pain on daily life.
Physical activity	Being able to support the patient in choosing any physical activity they can do regularly without provoking flare-up pain. Knowing that physical activity is important, and that while not everyone will feel immediate pain relief from physical activity, it remains beneficial.	Engaging in regular physical activity. Understanding that physical activity does not always have to "feel good" to be beneficial Knowing when to "back-off" or how to manage pain during or after physical activity.
Work	Understanding the importance of work, as a "multi-tool" that supports social interactions, financial stability, personal gains and more. Incorporating work considerations into self-management strategies into work-situations (as well as other everyday situations). Implement work from the initial stages of management.	Being able to work despite pain. Having workplace flexibility that allows for self-management (e.g., rest during the day). Being able to explain what pain does to them, how they manage it, and why / when / how others (managers, co-workers) can best show their support.
Sleep	Knowing strategies for improving or optimizing sleep. Being able to assess the influence of poor sleep versus improved sleep on the patient's ability to engage in self-management.	Being aware of any role that sleep may have on their function and/or pain. Being able to sleep adequately. Having strategies for improving or optimizing sleep, if it helps them reach their goals.

Facilitators	Examples	
	Within the professional	**Within the patient**
Behavioural change strategies	Being able to identify strategies the patient has previously used successfully to change behaviours. Being able to identify unsuccessful strategies or failed attempts to change behaviours. Being able to discuss values and problem framing with the patient.	Being aware of both successful and unsuccessful attempts at behaviours change. Understanding the potential of behaviours change as a means of managing the impact of pain on specific aspects of life.
Trust	Showing trust in the patient's competence to manage pain (e.g., allowing the patient to experiment with activities to establish a baseline and limitations, while providing enough support to make them feel comfortable.	Feeling trust in the professional (i.e., therapeutic alliance). Feeling comfortable addressing problems in the management plans, sharing unsuccessful attempts to meet the agreed goals, and disclosing personal factors (e.g., worries).
Guidelines	Knowing and adhering to guidelines. Being able to identify non-guideline-based treatments ("low value care") and discuss them constructively with the patient and other healthcare providers. Knowing that some treatments are recommended by guidelines because they are generally helpful, while other treatments are inferior to "no treatment".	Understanding and/or accepting that short-term pain relief is unlikely to cure chronic pain (though it can be part of a broader plan). Understanding that self-management is essential to contemporary management of chronic pain, and that self-management skills can be learned and improved over time.

1.5 Summary of key messages

- Self-management can be defined as a set of patient-centred skills and strategies that enable individuals with musculoskeletal pain to take an active role in managing their condition, including coping, lifestyle, and health care decisions, with varying levels of healthcare supervision, aimed at improving function, independence, and quality of life
- Self-management strategies must be targeted to, and based on, individual stories, experiences and resources.
- Successful implementation relies on a good therapeutic alliance, a clear definition of the problem(s) the strategy is intended to address, and the setting of attainable goals.
- Barriers and facilitators can be identified within both the professional and the patient, and ideally, both should be considered throughout the treatment period.

References

Artus, M., van der Windt, D. A., Jordan, K. P., & Hay, E. M. (2010). Low back pain symptoms show a similar pattern of improvement following a wide range of primary care treatments: a systematic review of randomized clinical trials. *Rheumatology (Oxford)*, *49*(12), 2346-2356. https://doi.org/10.1093/rheumatology/keq245

Babatunde, O. O., Jordan, J. L., Van der Windt, D. A., Hill, J. C., Foster, N. E., & Protheroe, J. (2017). Effective treatment options for musculoskeletal pain in primary care: A systematic overview of current evidence. *PLoS One*, *12*(6), e0178621. https://doi.org/10.1371/journal.pone.0178621

Barlow, J., Wright, C., Sheasby, J., Turner, A., & Hainsworth, J. (2002). Self-management approaches for people with chronic conditions: a review. *Patient Educ Couns*, *48*(2), 177-187. https://doi.org/10.1016/s0738-3991(02)00032-0

Boyers, D., McNamee, P., Clarke, A., Jones, D., Martin, D., Schofield, P., & Smith, B. H. (2013). Cost-effectiveness of self-management methods for the treatment of chronic pain in an aging adult population: a systematic review of the literature. *Clin J Pain*, *29*(4), 366-375. https://doi.org/10.1097/AJP.0b013e318250f539

Buchbinder, R., van Tulder, M., Oberg, B., Costa, L. M., Woolf, A., Schoene, M., Croft, P., & Lancet Low Back Pain Series Working, G. (2018). Low back pain: a call for action. *Lancet*, *391*(10137), 2384-2388. https://doi.org/10.1016/S0140-6736(18)30488-4

Bülow, K., Lindberg, K., Vaegter, H. B., & Juhl, C. B. (2021). Effectiveness of Pain Neurophysiology Education on Musculoskeletal Pain: A Systematic Review and Meta-Analysis. *Pain Med*, *22*(4), 891-904. https://doi.org/10.1093/pm/pnaa484

Chowdhury, S. R., Chandra Das, D., Sunna, T. C., Beyene, J., & Hossain, A. (2023). Global and regional prevalence of multimorbidity in the adult population in community settings: a systematic review and meta-analysis. *EClinicalMedicine*, *57*, 101860. https://doi.org/10.1016/j.eclinm.2023.101860

Christensen, S. W. M., Travers, M., Ingemann-Molden, S., & Palsson, T. (2025). The effectiveness of self-management strategies on pain, disaibility and health-related quality of life for patients with pain from the extremities - A systematic review. *(In process)*. https://www.crd.york.ac.uk/PROSPERO/view/CRD42024569340

Cohen, S. P., Vase, L., & Hooten, W. M. (2021). Chronic pain: an update on burden, best practices, and new advances. *Lancet*, *397*(10289), 2082-2097. https://doi.org/10.1016/S0140-6736(21)00393-7

de Campos, T. F., da Silva, T. M., Maher, C. G., Pocovi, N. C., & Hancock, M. J. (2023). Prognosis of a new episode of low-back pain in a community inception cohort. *Eur J Pain*, *27*(5), 602-610. https://doi.org/10.1002/ejp.2083

Djurtoft, C., Bruun, M. K., Riel, H., Hoegh, M. S., Darlow, B., & Rathleff, M. S. (2024). How do we explain painful non-traumatic knee conditions to adolescents? A multiple-method study to develop credible explanations. *Eur J Pain*, *28*(4), 659-672. https://doi.org/10.1002/ejp.2210

Ferreira, M. L., de Luca, K., Haile, L. M., Steinmetz, J. D., Culbreth, G. T., Cross, M., Kopec, J. A., Ferreira, P. H., Blyth, F. M., Buchbinder, R., Hartvigsen, J., Wu, A.-M., Safiri, S., Woolf, A. D., Collins, G. S., Ong, K. L., Vollset, S. E., Smith, A. E., Cruz, J. A.,…March, L. M. (2023). Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *The Lancet Rheumatology*, *5*(6), e316-e329. https://doi.org/10.1016/S2665-9913(23)00098-X

Gill, T. K., Mittinty, M. M., March, L. M., Steinmetz, J. D., Culbreth, G. T., Cross, M., Kopec, J. A., Woolf, A. D., Haile, L. M., Hagins, H., Ong, K. L., Kopansky-Giles, D. R., Dreinhoefer, K. E., Betteridge, N., Abbasian, M., Abbasifard, M., Abedi, k., Adesina, M. A., Aithala, J. P.,…Brooks, P. M. (2023). Global, regional, and national burden of other musculoskeletal disorders, 1990–2020, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *The Lancet Rheumatology*, *5*(11), e670-e682. https://doi.org/10.1016/S2665-9913(23)00232-1

Glette, M., Stiles, T. C., Borchgrevink, P. C., & Landmark, T. (2020). The Natural Course of Chronic Pain in a General Population: Stability and Change in an Eight-Wave Longitudinal Study Over Four Years (the HUNT Pain Study). *J Pain*, *21*(5-6), 689-699. https://doi.org/10.1016/j.jpain.2019.10.008

Gregersen, M. H. M., Nielsen, K. R., Lynge, N. H., Heiberg, B. D., Hartvigsen, J., Kawchuk, G., & Kongsted, A. (2024). Goal setting in people with low back pain attending an education and exercise program (GLA:D Back) and the impact of demographic factors. *BMC Musculoskelet Disord*, *25*(1), 339. https://doi.org/10.1186/s12891-024-07450-w

Hernon, M. J., Hall, A. M., O'Mahony, J. F., Normand, C., & Hurley, D. A. (2017). Systematic Review of Costs and Effects of Self-Management Interventions for Chronic Musculoskeletal Pain: Spotlight on Analytic Perspective and Outcomes Assessment. *Phys Ther*, *97*(10), 998-1019. https://doi.org/10.1093/ptj/pzx073

Jonkman, N. H., Schuurmans, M. J., Jaarsma, T., Shortridge-Baggett, L. M., Hoes, A. W., & Trappenburg, J. C. (2016). Self-management interventions: Proposal and validation of a new operational definition. *J Clin Epidemiol*, *80*, 34-42. https://doi.org/10.1016/j.jclinepi.2016.08.001

Kamper, S. J., Logan, G., Copsey, B., Thompson, J., Machado, G. C., Abdel-Shaheed, C., Williams, C. M., Maher, C. G., & Hall, A. M. (2020). What is usual care for low back pain? A systematic review of health care provided to patients with low back pain in family practice and emergency departments. *Pain*, *161*(4), 694-702. https://doi.org/10.1097/j.pain.0000000000001751

Kawai, K., Kawai, A. T., Wollan, P., & Yawn, B. P. (2017). Adverse impacts of chronic pain on health-related quality of life, work productivity, depression and anxiety in a community-based study. *Fam Pract*, *34*(6), 656-661. https://doi.org/10.1093/fampra/cmx034

Kent, P., Haines, T., O'Sullivan, P., Smith, A., Campbell, A., Schutze, R., Attwell, S., Caneiro, J. P., Laird, R., O'Sullivan, K., McGregor, A., Hartvigsen, J., Lee, D. A., Vickery, A., & Hancock, M. (2023). Cognitive functional therapy with or without movement sensor biofeedback versus usual care for chronic, disabling low back pain (RESTORE): a randomised, controlled, three-arm, parallel group, phase 3, clinical trial. *Lancet*, *401*(10391), 1866-1877. https://doi.org/10.1016/s0140-6736(23)00441-5

Kragting, M., Pool-Goudzwaard, A. L., Coppieters, M. W., O'Sullivan, P. B., & Voogt, L. (2024). Illness perceptions in people with chronic and disabling non-specific neck pain seeking primary healthcare: a qualitative study. *BMC Musculoskelet Disord*, *25*(1), 179. https://doi.org/10.1186/s12891-024-07302-7

Lacey, R. J., Campbell, P., Lewis, M., & Protheroe, J. (2018). The Impact of Inadequate Health Literacy in a Population with Musculoskeletal Pain. *Health Lit Res Pract*, *2*(4), e215-e220. https://doi.org/10.3928/24748307-20181101-01

Lin, I., Wiles, L., Waller, R., Goucke, R., Nagree, Y., Gibberd, M., Straker, L., Maher, C. G., & O'Sullivan, P. P. B. (2020). What does best practice care for musculoskeletal pain look like? Eleven consistent recommendations from high-quality clinical practice guidelines: systematic review. *Br J Sports Med*, *54*(2), 79-86. https://doi.org/10.1136/bjsports-2018-099878

Linton, S. J., O'Sullivan, P. B., Zetterberg, H. E., & Vlaeyen, J. W. S. (2024). The "future" pain clinician: Competencies needed to provide psychologically informed care. *Scand J Pain*, *24*(1). https://doi.org/10.1515/sjpain-2024-0017

Lorig, K. R., & Holman, H. (2003). Self-management education: history, definition, outcomes, and mechanisms. *Ann Behav Med*, *26*(1), 1-7. https://doi.org/10.1207/S15324796ABM2601_01

Lynch, M. E., Campbell, F., Clark, A. J., Dunbar, M. J., Goldstein, D., Peng, P., Stinson, J., & Tupper, H. (2008). A systematic review of the effect of waiting for treatment for chronic pain. *Pain*, *136*(1-2), 97-116. https://doi.org/10.1016/j.pain.2007.06.018

Martinez-Calderon, J., Ho, E. K., Ferreira, P. H., Garcia-Muñoz, C., Villar-Alises, O., & Matias-Soto, J. (2023). A Call for Improving Research on Pain Neuroscience Education and Chronic Pain: An Overview of Systematic Reviews. *J Orthop Sports Phys Ther*, *53*(6), 353–368. https://doi.org/10.2519/jospt.2023.11833

Moman, R. N., Dvorkin, J., Pollard, E. M., Wanderman, R., Murad, M. H., Warner, D. O., & Hooten, W. M. (2019). A Systematic Review and Meta-analysis of Unguided Electronic and Mobile Health Technologies for Chronic Pain-Is It Time to Start Prescribing Electronic Health Applications? *Pain Med*, *20*(11), 2238-2255. https://doi.org/10.1093/pm/pnz164

Nicholl, B. I., Sandal, L. F., Stochkendahl, M. J., McCallum, M., Suresh, N., Vasseljen, O., Hartvigsen, J., Mork, P. J., Kjaer, P., Søgaard, K., & Mair, F. S. (2017). Digital Support Interventions for the Self-Management of Low Back Pain: A Systematic Review. *J Med Internet Res*, *19*(5), e179. https://doi.org/10.2196/jmir.7290

Nutbeam, D., & Kickbusch, I. (1998). Health promotion glossary. *Health promotion international*, *13*(4), 349-364.

Olesen, K., AL, F. R., Joensen, L., Ridderstrale, M., Kayser, L., Maindal, H. T., Osborne, R. H., Skinner, T., & Willaing, I. (2017). Higher health literacy is associated with better glycemic control in adults with type 1 diabetes: a cohort study among 1399 Danes. *BMJ Open Diabetes Res Care*, *5*(1), e000437. https://doi.org/10.1136/bmjdrc-2017-000437

Palsson, T. S., Christensen, S. W. M., Bellosta-López, P., & Doménech-García, V. (2024). *Synthesis of current evidence on self-management for musculoskeletal painful disorders*. Digi4MSK. https://digi4msk.eu/wp-content/uploads/2024/10/Digi4MSK-D3.1_Synthesis-of-current-evidence-on-self-management-for-musculoskeletal-painful-disorders.pdf

Pearson-Stuttard, J., Ezzati, M., & Gregg, E. W. (2019). Multimorbidity-a defining challenge for health systems. *Lancet Public Health*, *4*(12), e599-e600. https://doi.org/10.1016/S2468-2667(19)30222-1

Scholz, C., Schmigalle, P., Plessen, C. Y., Liegl, G., Vajkoczy, P., Prasser, F., Rose, M., & Obbarius, A. (2024). The effect of self-management techniques on relevant outcomes in chronic low back pain: A systematic review and meta-analysis. *Eur J Pain*, *28*(4), 532-550. https://doi.org/10.1002/ejp.2221

Skou, S. T., Mair, F. S., Fortin, M., Guthrie, B., Nunes, B. P., Miranda, J. J., Boyd, C. M., Pati, S., Mtenga, S., & Smith, S. M. (2022). Multimorbidity. *Nat Rev Dis Primers*, *8*(1), 48. https://doi.org/10.1038/s41572-022-00376-4

Vase, L., Wager, T. D., & Eccleston, C. (2025). Opportunities for chronic pain self-management: core psychological principles and neurobiological underpinnings. *Lancet*, *405*(10491), 1781-1790. https://doi.org/10.1016/s0140-6736(25)00404-0

Visscher, B. B., Steunenberg, B., Heijmans, M., Hofstede, J. M., Deville, W., van der Heide, I., & Rademakers, J. (2018). Evidence on the effectiveness of health literacy interventions in the EU: a systematic review. *BMC Public Health*, *18*(1), 1414. https://doi.org/10.1186/s12889-018-6331-7

Wu, A.-M., Cross, M., Elliott, J. M., Culbreth, G. T., Haile, L. M., Steinmetz, J. D., Hagins, H., Kopec, J. A., Brooks, P. M., Woolf, A. D., Kopansky-Giles, D. R., Walton, D. M., Treleaven, J. M., Dreinhoefer, K. E., Betteridge, N., Abbasifard, M., Abbasi-Kangevari, Z., Addo, I. Y., Adesina, M. A.,…March, L. M. (2024). Global, regional, and national burden of neck pain, 1990–2020, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *The Lancet Rheumatology*, *6*(3), e142-e155. https://doi.org/10.1016/S2665-9913(23)00321-1

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