



## Physical Activity for Pain Prevention

Pain, especially chronic pain, remains an important medical and socioeconomic problem affecting populations from childhood to the elderly and is responsible for a significant proportion of healthcare resource utilization worldwide [9,15,16,19]. Chronic musculoskeletal pain conditions such as low back and neck pain are the most prevalent and the most costly in terms of daily and work related disability [4,15].

The literature provides robust evidence that, in general populations, physical activity and exercises have broad economic as well as health benefits due to their impact on the musculoskeletal, cardiovascular and central nervous system [7,22]. Conversely, insufficient physical activity is detrimental to health and has been identified as a risk factor for noncommunicable diseases (including chronic pain) [20] and the fourth leading risk factor for global mortality [8,14]. Although physical inactivity was initially considered to be a characteristic of older populations, it is common in all ages [10].

Physical activity has been defined by the World Health Organization (WHO) as “any bodily movement produced by skeletal muscles that requires energy expenditure” [26]. Exercise is defined as “planned, structured, and repetitive bodily movements that are performed to improve or maintain one or more components of physical fitness” [26]. Multiple guidelines advocate physical activity and exercise as effective treatment interventions to reduce pain and fatigue, and improve patients’ function in a wide variety of chronic pain conditions including chronic neck pain, osteoarthritis, headache, fibromyalgia, and chronic low back pain [13]. Regular physical activity and exercise may help in the prevention of pain. One recent systematic review found moderate-quality evidence supporting the effectiveness of an exercise program for reducing the risk of a new episode of neck pain [5]. There is also evidence that exercise (combined with education) reduces the risk of an episode of low back pain [25]. Indeed, patients with acute or sub-acute pain might be an important target group for intervention aiming to prevent a large individual and economic impact.

For healthcare providers, recommending physical activity is known to reduce pain intensity and disability as well as provide a range of other benefits including improvements in strength, flexibility, and endurance, a decrease in cardiovascular and metabolic syndrome risk, improved bone health, and improved cognition and mood [18]. Physical activities and exercises may also be considered as a valuable mental health promotion strategy in reducing the risk of developing mental health disorders, which are frequently associated to chronic pain [2,6,21].

Thus, when prescribing physical activity health care providers should [3,7,24]:

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- Consider not only biomedical aspects, but also psychological and social aspects.
- Make it individualized, enjoyable, and related to the patient’s goals.
- Provide supervision according to specific needs to improve adherence to physical activity / exercise.
- Personalise patient education to include information about the impact of physical activity / exercise on the body, the benefits, including addressing misconceptions about physical activity / exercise and pain.
- Recognise and address barriers to compliance with physical activity / exercise that include individual barriers (pain intensity, movement-related fear and avoidance, low levels of health literacy, depression) as well as environmental barriers (lack of access to a place to exercise, lack of time to exercise, and lack of support for exercise).
- Prime patients and move them along the stages of behavioral change to ensure therapy adherence and success can be achieved.

Box 1. Summary of exercise and physical activity recommendations for pain.	
Prevention of persistent pain [5,11,25]	Exercises are effective (combined with education) in secondary prevention of low back and neck pain
Benefits of exercise and physical activity [12]	<p><b>Improve:</b></p> <ul style="list-style-type: none"> <li>• level of functioning in daily and work-related activities</li> <li>• mental health</li> <li>• physical fitness</li> <li>• health-related quality of life</li> <li>• strength</li> <li>• flexibility<sup>↑</sup><sub>↓</sub><sub>SEP</sub></li> <li>• endurance</li> </ul>
Facilitators and barriers to exercise [18]	<p><b>Facilitators:</b></p> <ul style="list-style-type: none"> <li>• Capacity of organization</li> <li>• Engagement of health care providers</li> <li>• Communication</li> <li>• Previous experience of being physically active</li> </ul> <p><b>Barriers:</b></p> <ul style="list-style-type: none"> <li>• Lack of access to a place to exercise</li> <li>• Lack of time to exercise</li> <li>• Lack of communication</li> <li>• Lack of support for exercise</li> <li>• Lack of sufficient supervision</li> </ul>
Strategies to engage in a physical activity or exercise program [1,17,23]	<p><b>Adopt biopsychosocial model of health</b></p> <p><b>Exercise</b></p> <p>Individual exercise prescription Group exercise sessions Performance enhanced by video-taping exercises</p>

	<p><b>Address maladaptive beliefs:</b> Understand the fears and maladaptive beliefs, educate on impact of exercise, address barriers to exercise</p> <p><b>Offer support regarding education, encouragement, advice and prescription</b></p>
Exercise characteristics	<p><b>Level of supervision:</b></p> <ul style="list-style-type: none"> <li>• One-on-one supervision,</li> <li>• Group supervision</li> <li>• Home exercise program</li> </ul> <p><b>WHO recommendation</b> Children and youth aged 5–17: Should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily.</p> <p><b>Adults aged 18–64:</b> Should accumulate at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous intensity activity.</p> <p>Aerobic activity should be performed in bouts of at least 10 minutes duration.</p> <p>Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.</p> <p><b>Adults of the 65 years and above:</b> Should accumulate at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.</p> <p>Aerobic activity should be performed in bouts of at least 10 minutes duration.</p> <p>Muscle-strengthening activities, involving major muscle groups, should be done on 2 or more days a week.</p> <p>When older adults cannot do the recommended amounts of physical activity due to health conditions, they should be as physically active as their abilities and conditions allow.</p> <p>*More details on WHO website: <a href="https://www.who.int/dietphysicalactivity/pa/en/">https://www.who.int/dietphysicalactivity/pa/en/</a></p>

WHO – World Health Organization

Healthcare providers should use each patient consultation as an opportunity to discuss the physical and mental health benefits of physical activity. When necessary, and where available, patients should engage with appropriately-trained healthcare practitioners who can assist with the development of progressive and sustained program of physical activity.

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