

**When
Moving
Hurts**



**Assess
Understand
Take Action**

GLOBAL YEAR AGAINST MUSCULOSKELETAL PAIN

OCTOBER 2009 – OCTOBER 2010

Exercise in Management of Musculoskeletal Pain

Introduction

Exercise is frequently used in rehabilitation as an integral component of pain management. The exercise type and dosage to best manage pain are not clear and may vary according to the specific pain condition and patient tolerance.

Exercise-Induced Hypoalgesia in Young, Healthy Adults

- Hypoalgesia is not localized to the exercising body part; the greatest decrease in pain occurs in the exercising limb compared with the contralateral limb and distant resting muscles.
- Hypoalgesia following a single exercise session tends to be of short duration.
- Aerobic exercise must be performed at moderate-to-high intensity and for a long duration to produce hypoalgesia.
- Isometric contractions of both high and low intensity produce hypoalgesia; low-intensity contractions must be held for a longer duration for hypoalgesia to occur.
- Fatigue is not required to produce hypoalgesia.

Benefits of Exercise in Musculoskeletal Pain

- Exercise is beneficial for the majority of musculoskeletal pain conditions, including chronic neck disorders, osteoarthritis, rheumatoid arthritis, fibromyalgia, myofascial pain, and chronic low back pain.
- The optimal exercise type and dosage are not known for most pain conditions.
- Lower-intensity exercise programs are frequently recommended based on patient tolerance, but recent research also shows benefits with higher-intensity exercise.
- Acute changes in pain, either increases or decreases, at the initiation of an exercise program do not necessarily predict the long-term response. For example, individuals may experience a slight increase in pain at the start of an exercise program, followed by decreases in pain with increasing exercise frequency.
- The long-term application of exercise in pain management is not well understood, including exercise progression and how to address compliance issues.
- A supervised exercise program is recommended.
- Compliance is improved by combining exercise with motivational programs or cognitive-behavioral therapy.

Opioid Mechanisms

- Exercise increases plasma β -endorphin levels, indicating involvement of the peripheral nervous system.
- Very little research has assessed both changes in plasma β -endorphin levels and pain perception; most of the research that has been conducted used aerobic exercise in young active males and found no correlations between β -endorphin levels and pain levels.
- Animal research shows a cross-tolerance between endogenous activation of the opioid system (through long-term voluntary exercise) and exogenous opioid administration.

Non-Opioid Mechanisms

- Exercise can influence all aspects of the biopsychosocial model, affecting how an individual reports pain.
- Exercise activates large afferent fibers, and thus the mechanisms by which it relieves pain may involve the gate control theory and spinal inhibition.
- Additional theories include the relationship between activation of the motor cortex and descending inhibition.

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