

Exercise and Movement-based Therapies in Geriatric Pain Management



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KEYWORDS

• Exercise • Tai chi • Movement therapy • Endurance • Strength • Pain

KEY POINTS

- Pain is frequently seen as a barrier to initiating and sustaining exercise, but exercise is still recommended by expert panels as an important part of a comprehensive pain management program.
- Most research on exercise in older adults with pain problems has focused on resistance and aerobic exercise, and both seem to be effective in enhancing function.
- Exercise must be done at an appropriate frequency, intensity, and duration in order to achieve optimal effects, but individual differences make routine prescription difficult and a tailored approach is likely to enhance adherence.

INTRODUCTION

Although pain is often identified as a reason to limit movement,¹ exercise is widely recognized as an effective method of managing pain in older adults.²⁻⁵ Several organizations and panels have provided consensus documents, guidelines, and suggestions for exercise prescription in older adults,^{2,5,6} some organized around a particular type of exercise (eg, resistance or aerobics) and others setting parameters for individuals with a specific diagnosis.

Despite its clinically established role in pain control, the mechanisms by which exercise modulates pain are not well understood. Recent review articles indicate that in healthy people there is evidence of exercise-induced analgesia through release of endogenous opioids.⁷ However, this is not well studied in adults with pain problems, and there is some evidence that the mechanism may differ in individuals with chronic pain.^{7,8}

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A review article by Beckwee and colleagues⁹ describes 5 potential pain reduction mechanisms applicable to patients with osteoarthritis (OA), with considerable overlap between categories. A neuromuscular impact on pain is related to decreased joint loading through improved motor control, increased joint stability, and increased energy absorption capacity of muscles.⁹ The impact of exercise on periarticular structures may reduce pain through improved flexibility, enhanced density and quality of the connective tissues, and a potential impact on bony mass.⁹ The speculated intra-articular benefits of exercise include improved cartilage structure, reduced inflammation (related to decreased compressive forces), and improved joint nutrition.⁹ General fitness benefits that may decrease pain include a reduction in comorbidities; weight loss leading to decreased joint loading; and improved aerobic fitness, which enhances well-being.⁹ In addition, the psychosocial impact of exercise is speculated to decrease pain through reduction in depressive symptoms, improved affect attributed to generally enhanced well-being, a placebo effect, and improved self-efficacy.⁹ The investigators surmise that a combination of benefits from each category is responsible for the pain-reducing effects of physical exercise.

This article reviews available literature regarding the efficacy of movement-based therapies for pain management in adults aged 60 years and older. Studies were selected from a search of the PubMed and CINAHL (Cumulative Index to Nursing and Allied Health Literature) online databases. **Box 1** shows the search strings used and the characteristics of each search. In addition to these searches, a manual search of the reference lists included in pertinent systematic reviews was conducted. Studies included in this review enrolled adults aged 60 years and older with a pain-related disorder, use at least 1 pain-related outcome measure, were published after 1995, and incorporated a movement-based therapy as a main intervention. To focus on the impact of exercise on older adults, studies enrolling both younger and older subjects were only included if the data were analyzed and reported separately for the older group. Case reports were excluded. Thirty-four studies met inclusion criteria. Exercise programs included in this review were delivered in a variety of venues, including community centers (such as senior centers), physical therapy clinics, and the home environment. Combinations of these venues were also seen, with some programs beginning in community settings but transitioning to increasing levels of independence for long-term continuation of exercise.

This article is organized by exercise type, and each section includes a summary of the literature and interpretation of the evidence. Although the primary focus is exercise for pain management among older adults, functional outcomes were also assessed in most of the studies reviewed. **Box 2** shows the commonly used outcome measures

Box 1		
Search characteristics		
Database	PubMed	CINAHL
Search String	((((("Exercise"[Majr]) OR "Exercise Therapy"[Majr]) OR "Exercise Movement Techniques"[Majr])) AND (("Pain"[Majr]) OR "Pain Management"[Majr])) AND ((("Aged"[Mesh]) OR "Aged, 80 and over"[Mesh])	(MM "Exercise+") OR (MM "Therapeutic Exercise+") OR (MM "Dance Therapy") OR (MM "Tai Chi") OR (MM "Yoga") AND (MM "Pain+") AND (MH "Aged+
Number of Results	537	107 PubMed results were excluded as duplicates

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