The critical role of physical activity and weight management in knee and hip osteoarthritis: A narrative review

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Abstract

Physical activity and weight management are critical components of an effective knee and hip osteoarthritis (OA) management plan; yet most people with OA remain insufficiently active and/or overweight. Clinicians and their care teams play an important role in educating patients with OA about physical activity and weight management, eliciting patient motivation to engage in these strategies, and referring patients to appropriate self-management interventions. The purpose of this review is to educate clinicians about the current public health and clinical OA guidelines for physical activity and weight management and highlight a variety of evidence-based self-management interventions available in community and clinical settings and online.
Osteoarthritis (OA), the most common form of arthritis, is a highly prevalent, disabling, and costly chronic disease. Most often occurring in the knees, hips, hands, feet, and spine, OA is a complex condition of the whole joint that can result in pain, stiffness, swelling, and impairments in both physical and mental health. Globally, more than 302 million people have OA, including 1 in 8 adults in Canada and 1 in 7 adults in the United States (US). OA prevalence rates are rising, likely due to increased population trends in aging, obesity, physical inactivity, and joint injury.

OA has a considerable impact on individuals’ quality of life; approximately 44% of US adults with arthritis, most of whom have OA, report limitations in their ability to perform usual activities due to arthritis symptoms. Underrepresented populations (e.g., Black, Hispanic, and rural adults) are more negatively impacted by arthritis, experiencing greater pain, limitations in daily activities, disability, functional limitations, work loss, and reduced quality of life. Furthermore, patients with OA often experience comorbid conditions that significantly impact disease progression and treatment. One-third of adults with OA have 5 or more other chronic conditions, the most common of which are cardiovascular disease, diabetes, hypertension, and obesity. The presence of OA significantly limits optimal treatment of these other conditions, in no small part because OA-related pain and disability contribute to reduced physical activity.

A variety of evidence-based guidelines for the clinical management of OA have been developed by national and international organizations. Given that there is no cure for OA, these bodies promote the use of self-management and behavioral strategies—physical activity, weight loss, and education—concurrent with clinical interventions (e.g., topical and oral nonsteroidal anti-inflammatory drugs [NSAIDs], intraarticular injections, walking aids) to help manage symptoms and improve quality of life. Joint replacement surgery may be recommended when pain and functional disability significantly impede quality of life. The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC), along with the National Public Health Agenda for OA, similarly promote physical activity and weight management among first-line interventions for preventing and managing OA.

When combined, physical activity and weight loss can help patients achieve meaningful improvements in pain, function, and quality of life. Clinicians and their care teams play an important role in educating patients about physical activity and weight management and referring patients to interventions that support these behaviors. The purpose of this review is to inform clinicians about the current public health and clinical guidelines for OA self-management and the many evidence-based physical activity and weight management interventions available in community and clinical settings and online.

PHYSICAL ACTIVITY

Physical activity is a broad category of bodily movements that result in energy expenditure, whereas exercise is a type of physical activity intentionally initiated for a specific result (e.g., enjoyment, weight loss, health benefits). While exercise is an excellent way to achieve physical activity goals, the emphasis for adults with OA should be on overall physical activity; therefore, we will use this broader term going forward.

Benefits of physical activity
A substantial amount of research has evaluated the benefits of physical activity on OA outcomes—primarily focused on the knee, followed by hip, with less research on other joints. Two notable reviews published recently describe the benefits of physical activity for knee and hip OA.

A systematic umbrella review conducted to advise the US Department of Health and Human Services’ updated Physical Activity Guidelines for Americans in special populations confirmed that among adults with knee and/or hip OA, physical activity reduces pain and improves physical function and quality of life. Evidence suggests that improvements in pain from physical activity are comparable to the effects of analgesics (effect sizes 0.46 and 0.41 respectively). Additional benefits include reduced falls risk and increased ability to live independently and participate in activities of daily living. Contrary to common misconceptions, recreational running and walking are not associated with OA progression.

Not only is physical activity beneficial for OA symptoms, it also aids in the management and prevention of the chronic conditions that commonly co-occur with OA. Other benefits of physical activity include improved performance of occupational and recreational activities, body weight management, and sleep.

While these benefits have been validated in reputable trials and meta-analyses, there is current discourse about the true benefits of physical activity on OA outcomes arising from questions about the scientific design of the existing studies. For example, the benefits observed in physical activity interventions may be partly due to the “attention” provided in a formal program or a regression to the mean effect rather than exclusively from the physical activity itself. In addition, much remains to be learned about how physical activity improves OA outcomes, with possible mechanisms including psychological or social factors. At present, physical activity continues to be recommended as a low-harm, beneficial first-line intervention for people with OA and is especially important for co-managing OA and comorbid conditions, as well as overall health and wellness.

Types and dose of physical activity

There is not concordance on the exact type, frequency, intensity, and duration of activity needed to yield the most benefit for patients with OA.

**Type:** Improvements in pain, physical function, and quality of life result from various forms of physical activity including aerobic and strengthening activities (both land- and aquatic-based), balance and flexibility exercises, and tai chi.

Aerobic activity enhances cardiorespiratory fitness. In OA, weightbearing aerobic activity provides the added benefit of mechanical stress, which helps build muscle and maintain cartilage. Walking is the most common type of aerobic activity among adults and is the most researched form of exercise in OA. Walking is a safe, effective, and low-impact option for adults with OA. Stationary or outdoor cycling and aquatic exercise (e.g., swimming laps or water aerobics) are also beneficial low-impact forms of aerobic activity for OA. Aquatic exercise may be slightly less effective than land-based exercise in reducing pain and functional impairments over the long-term but is an alternative when land-based weightbearing activities are not well-tolerated or when patients prefer water exercise.

The benefits of strength training for adults with OA include reduced pain along with improved cartilage integrity, muscular shock absorption, mental health, physical function, self-efficacy, and joint stability. Customized muscle strengthening programs can be designed by a physical therapist or
exercise professional and may include use of body weight, bands, free weights, or machines. Other types of physical activity that provide benefits for OA outcomes include yoga, tai chi, performance exercises, stretching and flexibility exercises, and daily activities (Table 1).

**Table 1. Types of Physical Activity Beneficial for Knee or Hip OA**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Aerobic exercise</strong></td>
<td>Low-impact activities such as walking, cycling, and swimming, enhance cardiorespiratory fitness, build strength, and can improve OA pain, function, and quality of life.</td>
</tr>
<tr>
<td><strong>Strengthening exercises</strong></td>
<td>Strengthening exercises with body weight, elastic bands, or weights can reduce OA pain and improve physical and mental health.</td>
</tr>
<tr>
<td><strong>Yoga</strong></td>
<td>With its strengthening and stress-reduction characteristics, yoga may improve pain, stiffness, and function in adults with knee OA.</td>
</tr>
<tr>
<td><strong>Tai chi</strong></td>
<td>In chronic conditions, including OA, tai chi reduces pain and improves function, balance, flexibility, and aerobic capacity. Tai chi also has beneficial effects on mood and self-efficacy.</td>
</tr>
<tr>
<td><strong>Performance exercises</strong></td>
<td>Performance exercises such as proprioceptive, sensorimotor, balance, and neuromuscular exercises can improve strength, function, balance, and body control.</td>
</tr>
<tr>
<td><strong>Stretching and flexibility exercises</strong></td>
<td>Stretching improves physical function, while flexibility exercises improve physical function, pain, range of motion, and stiffness.</td>
</tr>
<tr>
<td><strong>Daily activities</strong></td>
<td>In measures of energy expenditures, walking around the house or light household chores such as dusting or washing dishes qualify as light intensity activity, and heavier chores like changing the bed or carrying groceries/laundry qualify as moderate intensity activity. Even light intensity activity can help prevent functional limitations in adults with OA.</td>
</tr>
</tbody>
</table>

**Dose:** Meeting the Physical Activity Guidelines for Americans recommendation of 150 minutes/week of moderate intensity activity (i.e., 3.0-5.9 METs or brisk walking, raking leaves) and an additional 2 days/week of strengthening exercises can result in significant benefits for adults with knee and hip OA. However, as little as 45 minutes/week of moderate intensity activity can improve function for adults with knee or hip OA.

With the widespread availability of consumer-grade wearable monitors, including fitness trackers, step counting is another popular and relatively accurate way to measure physical activity, both among patients and researchers. Measuring steps allows for the inclusion of a wide range of daily activities (e.g., chores, grocery shopping) and may motivate adults to reduce sedentary behaviors, which are associated with increased risk of cardiovascular disease and all-cause mortality. White et al. found that 6,000 steps per day was the threshold for determining whether patients with knee OA would or would not develop functional limitations.

**Physical activity recommendations**

The major international guidelines for the clinical management of knee and hip OA all recommend physical activity and/or exercise—in a variety of forms—as the first-line intervention irrespective of joint involvement or comorbidities, but the guidelines do not provide specific exercise recommendations. In the US, public health leaders, clinicians, and researchers alike rely on the Physical Activity Guidelines for Americans, which include considerations for populations with specific chronic diseases. These Guidelines suggest that the evidence for therapeutic benefits of physical activity among individuals with OA is strong and that most people with OA can follow the recommendations for the general population. Specifically, for adults with OA, the Guidelines advise:
- 150 minutes per week of moderate-intensity activity;
- Walking ≤ 10,000 steps/day does not appear to cause OA progression;
- Activities should be low-impact and not painful;
- Joint-friendly activities: swimming, walking, tai chi, and strengthening exercises;
- Activities should be customized by type and amount to individuals’ abilities and pain levels.\(^{20}\)

The Canadian Society for Exercise Physiology’s “Canadian 24-Hour Movement Guidelines for Adults” recommend: 150 minutes/week of moderate-to-vigorous physical activity plus 2 days of strengthening exercises (for adults >65, balance exercises are also recommended). Uniquely, these guidelines encourage a reduction in sedentary time, limiting sitting to a cumulative 8 hours per day and breaking up long periods of sitting.\(^{42}\)

While these public health guidelines provide advice on type and dose of physical activity for adults with OA, they also emphasize the importance of “moving more,”\(^{20}\) “reducing sedentary behavior,”\(^{42}\) and “some physical activity is better than none.”\(^{24}\) Given that fewer than 10% of adults with knee OA meet the recommended 150 minutes of moderate intensity physical activity per week,\(^{17}\) it is important for clinicians and patients to know that any increase in physical activity (even if below the Guidelines) or reduction in overall sedentary time and even low intensity activities (i.e., <3 METs or light gardening, slow-paced walk), can benefit people with OA.\(^{17}\)

**Patient barriers to and facilitators of physical activity**

Barriers to physical activity among adults with OA vary and may include fear of further joint damage or injury; pain and functional impairment; lack of knowledge, motivation, or time; and difficulty accessing or paying for services, programs, or equipment.\(^{30,43}\) Generally, patients with OA are more likely to be physically active if recommended by a healthcare provider.\(^{44}\) To help patients establish a safe and appropriate physical activity plan, clinicians should engage in shared decision-making with patients, addressing any barriers and identifying patients’ strengths and interests. Activity supervised by an exercise professional, whether in a group or individual setting, not only results in optimal functional and symptom improvements\(^{1,26}\) but also supports maintenance over the long-term.\(^{26}\) Other tools to support adherence to a physical activity plan include digital resources such as fitness trackers,\(^{40}\) mobile applications, or online programs; family or peer support; goal setting; education; and community programming.\(^{30}\)
Table 2. Summary of Physical Activity for Knee or Hip OA

- The benefits of physical activity for people with knee or hip OA include reduced pain and stiffness, increased mobility and physical function, and improvements in mental health, quality of life, and comorbid conditions.
- A prescription for physical activity should be personalized to a patient’s physical abilities; affected joint/s; pain; comorbidities; preferences and goals; and access to facilities, programs, and equipment.
- Proven recommendations for a physical activity prescription for OA include:
  - 150 minutes/week of moderate aerobic activity plus 2 days strengthening exercises
    - As little as 45 minutes/week may be beneficial
  - 6,000-10,000 steps/day
- Types of physical activity that benefit people with OA include: walking, cycling, water aerobics or swimming, strength training, stretching, tai chi, yoga, gardening, household chores.
- Patients should be counseled to move more and reduce sedentary time.
- Supervised physical activity sessions, community-based PA programs, wearable activity monitors, goal setting, and peer support are techniques to increase adherence to and maintenance of a physical activity routine.

WEIGHT MANAGEMENT

Adults with obesity are almost twice as likely to report having arthritis than adults of under/healthy weights (32.0% and 17.6%, respectively). Obesity is one of the most significant and modifiable risk factors for the development and progression of OA due to ensuing systemic inflammation and increased mechanical joint loading. Together, these inflammatory processes and altered joint mechanics degrade the structural integrity of the joint and contribute to increased pain and decreased function. Adults with OA and obesity have more difficulty with daily activities such as walking and getting up from a seated position. As body mass index (BMI) increases, there is a progressive decline in mobility and function. Compared to adults with normal weight, adults with OA and obesity are less physically active, likely due to pain, functional limitations, and fear of movement, and are more likely to undergo total joint replacement.

To address obesity globally, the WHO describes 3 primary strategies: weight loss, weight maintenance, and prevention of weight gain. In the context of OA, the umbrella term “weight management” encompasses these same 3 strategies, as relevant for each patient’s current weight status, with the goal of achieving and maintaining a healthy weight (and avoiding weight gain).

Benefits of weight management

For patients with OA who have overweight or obesity, weight loss helps improve pain, stiffness, and function. Messier and colleagues established that every one pound of weight lost results in a 4-lb (1.81 kg) reduction in knee joint load. Additionally, a 10% weight loss results in improved pain, function, and quality of life while reducing joint loads and inflammation compared to no weight loss or <10% loss. This 10% weight reduction is consistent with the general weight loss recommendation among obesity experts for improving health outcomes. Messier et al identified a dose-response in OA wherein the
greater the weight loss, the larger the effect size for improvements in pain, function, and quality of life.\textsuperscript{52} In addition to symptom relief, weight loss also contributes to reduced fear of movement and increased physical ability, independence, and participation in daily and social activities among adults with OA.\textsuperscript{48} Similar to physical activity, weight loss can also improve comorbid conditions common in adults with OA.\textsuperscript{8}

For adults with obesity, the risk of developing symptomatic knee OA is 60%.\textsuperscript{49} Therefore, achieving and maintaining a healthy weight plays a role in primary prevention (intervening before OA occurs\textsuperscript{53}) and secondary prevention (intervening during early OA\textsuperscript{51}).\textsuperscript{47} In the Framingham Study, a weight loss of 5.1 kg (11.2 lbs) reduced women’s risk of developing knee OA by 50% over 10 years.\textsuperscript{54} Furthermore, prevention of weight gain is an effective approach to address joint pain, regardless of gender and BMI status, even when the patient is at a healthy weight.\textsuperscript{46}

### Approaches to weight management

Weight management, like OA management in general, is not a one-size-fits-all approach. The severity of obesity and OA should factor into shared decision-making between a clinician and patient. Some available options for assisting patients with weight management include behavioral modifications, medications, and bariatric surgery.\textsuperscript{48} Behavioral modifications such as diet and exercise—or combinations thereof—are effective and should be employed first and alongside other medical interventions for weight and OA symptom management.\textsuperscript{15,49,55,56}

**Diet:** The most common diet-related interventions in weight loss studies for patients with OA are energy restricted diets, meal replacements, nutrition classes, and visits with a dietitian, or a combination thereof.\textsuperscript{49,57} In Bennell et al’s randomized control trial, a ketogenic low-calorie diet combined with a telehealth exercise program helped patients achieve a 10% weight loss over 12 months.\textsuperscript{58} Additionally, evidence from a recent umbrella review suggests that the Mediterranean diet could be beneficial for patients with OA because of its anti-inflammatory properties and positive weight loss results.\textsuperscript{59}

The Intensive Diet and Exercise for Arthritis (IDEA) trial was a seminal study investigating the roles and interplay of diet and exercise in managing weight and OA symptoms. In this study, there were 3 groups: an exercise-only intervention, a diet-only intervention, and a diet plus exercise intervention. The diet intervention consisted of calorie restriction (<1100 kcal for women and <1200 kcal for men with specific macronutrient calorie distribution) supported by meal replacements and both individual and group nutrition counseling. The diet-only group lost 9.5% of their body weight over 18 months.\textsuperscript{15} A precision medicine evaluation also found that the diet-only intervention was most beneficial for subsets of participants needing to reduce systemic inflammation and/or knee compressive force.\textsuperscript{60}

**Exercise:** Exercise (i.e., an intentional form of physical activity) not only can help relieve OA symptoms but can also contribute to weight reduction\textsuperscript{47,48} while preserving muscle mass.\textsuperscript{49} The American College of Sports Medicine suggests that any increase in physical activity can result in weight loss in the general population. However, 150-250 minutes/week of moderate intensity physical activity helps prevent weight gain but only provides modest weight loss; moderate-intensity physical activity in amounts 225-420 minutes/week can result in more significant weight loss.\textsuperscript{61}

In the Arthritis, Diet and Physical Activity Promotion trial (ADAPT), participants in an exercise-only group experienced a 3.7% weight loss after an 18-month exercise intervention, which included 60 minutes of
combined aerobic exercise (50-75% of heart rate reserve) plus strength training 3 days per week. This intervention was similar to that in the IDEA trial, which resulted in a 2% weight loss for the exercise-only group. A systematic review of exercise interventions for people with obesity and musculoskeletal pain recommended an exercise prescription of moderate-intensity (progressing to vigorous) exercise 30-60 minutes, 3 times per week, as an effective approach for managing weight and obesity-related musculoskeletal pain. They also suggested that while treadmill exercise resulted in the greatest body weight and fat reduction, other aerobic modalities, including weightbearing and partial weightbearing (e.g., stationary bike) exercise can produce satisfactory weight and symptom management results.

**Combination of diet and exercise:** The combined diet plus exercise group in the IDEA trial lost 11.4% of their body weight, more than either the diet or exercise groups alone. Using similar dietary and exercise interventions, the pragmatic Weight-Loss and Exercise for Communities with Arthritis in North Carolina (WE-CAN) trial showed an 8% body weight reduction in the diet plus exercise group. Bennell et al. also saw the greatest body weight reduction in their diet plus exercise group compared to diet alone. The more substantial benefits for weight loss from the combination of diet and exercise in these clinical trials, is corroborated in general obesity and nutrition research.

When combined, physical activity and weight loss are also more effective for improving OA outcomes than either intervention alone, resulting not only in greater weight loss but also in greater pain reduction, improvements in function, and reduction in joint loading and inflammatory markers.

**Weight management recommendations**

Weight management is a cornerstone in most of the major international guidelines for the clinical management of knee and hip OA, yet terminology and strength of the recommendations vary. Most of the international OA management guidelines recommend a combined approach of diet and exercise for weight loss but stop short of describing a specific strategy or intervention. None of the international guidelines mention weight loss medications, and only one suggests that bariatric surgery should be considered as a weight management option, specifically for people with BMI >40 kg/m².

The American College of Rheumatology (ACR) guidelines strongly recommend ≥5% weight loss for adults who have overweight or obesity, also noting a dose-response relationship wherein “clinically important benefits continue to increase with weight loss of 5-10%, 10-20%, and >20% of body weight.” The ACR guidelines also encourage weight loss be combined with physical activity for better outcomes. The addition of physical activity to a weight loss regimen (either concurrently or subsequently) helps preserve or increase muscle mass and improve physical function.

The CDC guidance similarly advises that even a “modest” amount of weight loss (e.g., 5% of body weight or 10-12 lbs/4.5-5.4 kg) can help improve arthritis outcomes, achievable through healthy eating, physical activity, optimal sleep, and stress reduction.

**Patient barriers to and facilitators of weight loss**

While weight loss is effective for improving OA outcomes, it is a difficult behavior change to initiate and maintain long-term. Maintenance of weight loss is a known challenge for most people. One meta-analysis of 29 long-term weight loss studies showed that within 2 years, more than half the weight initially lost was regained, and within 5 years, more than 80% of weight lost was regained. Adults with OA face unique challenges; for example, pain or obesity may affect their ability or desire to participate in
physical activity for weight loss and other health benefits. Behavior change techniques and education can help adults with OA engage in and sustain weight management activities. Examples of supports to encourage weight management include:

- **Provider counseling** is a key component of successful weight loss. According to the CDC, adults with arthritis and overweight or obesity who receive provider counseling about weight management are four times more likely to try to lose weight; yet, fewer than half receive such counseling.

- **Self-management education** equips patients with skills such as goal setting, problem solving, disease education, self-efficacy, and pain coping strategies.

- **Pain management** such as topical or oral NSAIDs (if appropriate), thermal treatments, bracing or taping can reduce pain during and after physical activity.

- **Cognitive behavioral therapy** improves the success of weight loss and maintenance of weight loss.

- **Peer support** encompasses both practical and emotional types of assistance.

- **Registered dietitians** can recommend a safe and effective weight management plan that is unique to each patient’s needs and health.

<table>
<thead>
<tr>
<th>Table 3. Summary of Weight Management for Knee or Hip OA</th>
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<tr>
<td>• Every one pound of weight lost equals a 4-lb (1.81 kg) reduction of pressure on the knee joints.</td>
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<td>• For adults who have overweight or obesity, weight loss improves pain, physical function, mobility, quality of life, and other comorbid conditions.</td>
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<tr>
<td>• A prescription for weight management should be personalized to the severity of a patient’s obesity and OA symptoms.</td>
</tr>
<tr>
<td>• Strategies for weight loss may be used concurrently and include medications, bariatric surgery, and behavioral modifications such as diet and exercise.</td>
</tr>
<tr>
<td>• Weight management guidelines for OA recommend:</td>
</tr>
<tr>
<td>o Weight loss ≥5% body weight for adults with overweight or obesity.</td>
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<tr>
<td>o A combination of diet and exercise for the greatest impact on weight loss and symptom management in adults with knee and hip OA.</td>
</tr>
<tr>
<td>• Even a small amount of weight loss can improve OA-related outcomes.</td>
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**COMMUNITY INTERVENTIONS TO SUPPORT PHYSICAL ACTIVITY AND WEIGHT MANAGEMENT**

To support both clinicians and patients in their efforts to optimize OA outcomes through the self-management practices of physical activity and weight management, community and healthcare organizations offer evidence-based interventions specifically designed for patients with arthritis. These programs can improve pain, stiffness, function, mood, quality of life, body weight, physical activity level, and self-efficacy and can positively impact other chronic conditions. Whether delivered in community-based or healthcare settings, or increasingly, online, these Arthritis Appropriate, Evidence-Based Interventions (AAEBIs) and Osteoarthritis Management Programs (OAMPs) are beneficial throughout the OA care continuum and in concurrence with clinical care.

**Arthritis Appropriate, Evidence-Based Interventions (AAEBIs)**
AAEBIs are community-based programs that improve arthritis symptoms.4 AAEBIs may be available through senior centers, health departments, employers, faith organizations or other local settings as well as through national organizations and are delivered in a variety of formats including in-person, virtual, phone, self-directed or hybrid. To receive recognition as an AAEBI, programs are reviewed through a rigorous process overseen by the OAAA to ensure that they are supported scientifically, address OA-related symptoms, and can reasonably be carried out by a community organization. The current list of recognized AAEBIs includes physical activity programs, which are designed to help increase physical activity safely and comfortably, and self-management education programs, which teach adults how to cope with arthritis-related symptoms and how to adopt healthy behaviors to lead active and fulfilling lives (Table 4). Some of the programs71,72 address weight management specifically. While AAEBIs generally remain underutilized,4,73,74 rates of participation in self-management classes among adults with arthritis rose from 11.4% in 2014 to 16.2% in 2019.74

Table 4. Current List of Recognized Arthritis Appropriate, Evidence-Based Interventions (AAEBIs)*

<table>
<thead>
<tr>
<th>Physical Activity Programs</th>
</tr>
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<tbody>
<tr>
<td>• AEA Arthritis Foundation Exercise Program75</td>
</tr>
<tr>
<td>• Active Living Everyday76</td>
</tr>
<tr>
<td>• Arthritis Foundation Aquatic Program77</td>
</tr>
<tr>
<td>• Camine Con Gusto78</td>
</tr>
<tr>
<td>• Enhance®Fitness79</td>
</tr>
<tr>
<td>• Fit &amp; Strong!71</td>
</tr>
<tr>
<td>• Fit &amp; Strong! Plus71</td>
</tr>
<tr>
<td>• Good Life with Arthritis in Denmark (GLA:D®)80</td>
</tr>
<tr>
<td>• My Knee Exercise Program81</td>
</tr>
<tr>
<td>• Otago Exercise Program92</td>
</tr>
<tr>
<td>• Stay Active and Independent for Life83</td>
</tr>
<tr>
<td>• Tai Chi for Arthritis84</td>
</tr>
<tr>
<td>• Tai Ji Quan: Moving for Better Balance885</td>
</tr>
<tr>
<td>• Walk With Ease- Self-Directed &amp; Group86</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-Management Education Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Better Choices, Better Health®87</td>
</tr>
<tr>
<td>• Chronic Disease Self-Management Program72</td>
</tr>
<tr>
<td>• Chronic Pain Self-Management Program58</td>
</tr>
<tr>
<td>• Enhance®Wellness89</td>
</tr>
<tr>
<td>• Program to Encourage Active Rewarding Lives (PEARLS)90</td>
</tr>
<tr>
<td>• Tomando Control de su Salud91</td>
</tr>
<tr>
<td>• Toolkit for Active Living with Chronic Pain92</td>
</tr>
<tr>
<td>• Toolkit for Active Living with Chronic Conditions92</td>
</tr>
<tr>
<td>• Workplace Chronic Disease Self-Management Program93</td>
</tr>
</tbody>
</table>

*Current list following the 2023 program evaluation process; updated annually. More information is available at https://oaaction.unc.edu/aaebi/

Osteoarthritis Management Programs (OAMPs)

OAMPs are recognized internationally as models of care based in healthcare settings that provide coordinated, evidence-based, non-surgical management of OA.69,94 The core components of OAMPs include OA education, exercise, and/or weight loss but may also offer adjunctive treatments such as physical therapy and psychosocial support.69 Examples of OAMPs include Better Living with OA95 (digital version: Joint Academy96) and Osteoarthritis Chronic Care Program.97 In addition to these highly-researched programs, many health systems around the world have their own version of OAMPs or musculoskeletal care programs.69,94 Osteoarthritis Research Society International (OARSI) has done extensive work through their Joint Effort Initiative (https://oarsi.org/discussion-group-joint-effort-initiative) to establish standards for implementing and evaluating OAMPs.69,98,99
Referrals to Community Interventions

Given the low rates of physical activity and participation in evidence-based programs among adults with arthritis, a disconnect exists between the guidelines and behaviors of both adults with OA and referring clinicians. Research shows that patients are more likely to engage in physical activity, weight management, or disease management education if a healthcare provider recommends these interventions. To improve adherence to the recommendations for physical activity and weight management among adults with OA, there is a need to increase provider referrals to and patient participation in community interventions such as AAEBIs and OAMPs. Shared decision-making between providers and patients can help determine which programs are appropriate based on program availability, delivery format, cost, location and patient preferences and abilities. The OAAA has developed several resources to support clinicians and patients in these conversations (Table 5).

CONCLUSION

Physical activity and weight management are the most effective strategies for managing OA symptoms and related health outcomes. While separately modestly effective, the combination of physical activity with weight loss yields the greatest improvements in OA symptoms, especially for adults with obesity. A variety of evidence-based interventions exist in community and clinical settings to support adults to be physically active and manage their weight, yet these programs are underutilized. Clinicians and their support staff can engage patients in OA self-management practices by educating about the benefits of these behaviors, addressing fears and pain, explaining the physical activity and weight management recommendations, encouraging realistic self-management goals, and referring to community-based interventions. To address the public health burden of OA, it is critical to increase patient engagement with AAEBIs, OAMPs, and self-directed OA management programs and resources.

ACKNOWLEDGEMENTS

The OAAA is a national public health coalition in the US committed to increasing awareness about OA, promoting evidence-based interventions for OA, and providing resources for public and professional education in support of OA prevention and management. More information and resources for clinicians and patients are available on the OAAA website (www.oaaction.unc.edu).

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**Walk With Ease Portal**
www.walkwitharthritis.org

An online platform that allows clinicians and organizations to offer Self-Directed Walk with Ease to their constituents with robust data management/reporting and low administrative burden

*AAEBI= Arthritis Appropriate, Evidence-Based Interventions

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**References**


35. Wieland LS, Moonaz S, Shipper AG, Cogo E, Bingham lli C. Yoga for osteoarthritis of the hip or knee. *Cochrane Database of Systematic Reviews*. 2021(9).


62. Clark JE. Diet, exercise or diet with exercise: comparing the effectiveness of treatment options for weight-loss and changes in fitness for adults (18-65 years old) who are overweight, or obese; systematic review and meta-analysis. *J Diabetes Metab Disord.* 2015;14:31.


Figure 1. Public health approach to the non-surgical management of osteoarthritis


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*Figure 1. Public health approach to the non-surgical management of osteoarthritis*
Table 1. Types of Physical Activity Beneficial for Knee or Hip OA

- **Aerobic exercise**: Low-impact activities such as walking, cycling, and swimming, enhance cardiorespiratory fitness, build strength, and can improve OA pain, function, and quality of life.
- **Strengthening exercises**: Strengthening exercises with body weight, elastic bands, or weights can reduce OA pain and improve physical and mental health.
- **Yoga**: With its strengthening and stress-reduction characteristics, yoga may improve pain, stiffness, and function in adults with knee OA.\(^1,34,35\)
- **Tai chi**: In chronic conditions, including OA, tai chi reduces pain and improves function, balance, flexibility, and aerobic capacity.\(^26\) Tai chi also has beneficial effects on mood and self-efficacy.\(^1\)
- **Performance exercises**: Performance exercises such as proprioceptive, sensorimotor, balance, and neuromuscular exercises can improve strength, function, balance, and body control.\(^1,36\)
- **Stretching and flexibility exercises**: Stretching improves physical function, while flexibility exercises improve physical function, pain, range of motion, and stiffness.\(^33\)
- **Daily activities**: In measures of energy expenditures, walking around the house or light household chores such as dusting or washing dishes qualify as light intensity activity, and heavier chores like changing the bed or carrying groceries/laundry qualify as moderate intensity activity.\(^17,37\) Even light intensity activity can help prevent functional limitations in adults with OA.\(^17\)
Table 2. Summary of Physical Activity for Knee or Hip OA

- The benefits of physical activity for people with knee or hip OA include reduced pain and stiffness, increased mobility and physical function, and improvements in mental health, quality of life, and comorbid conditions.
- A prescription for physical activity should be personalized to a patient’s physical abilities; affected joint/s; pain; comorbidities; preferences and goals; and access to facilities, programs, and equipment.
- Proven recommendations for a physical activity prescription for OA include:
  - 150 minutes/week of moderate aerobic activity plus 2 days strengthening exercises
    - As little as 45 minutes/week may be beneficial
  - 6,000-10,000 steps/day
- Types of physical activity that benefit people with OA include: walking, cycling, water aerobics or swimming, strength training, stretching, tai chi, yoga, gardening, household chores.
- Patients should be counseled to move more and reduce sedentary time.
- Supervised physical activity sessions, community-based PA programs, wearable activity monitors, goal setting, and peer support are techniques to increase adherence to and maintenance of a physical activity routine.
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<th>Table 3. Summary of Weight Management for Knee or Hip OA</th>
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<td>• Every one pound of weight lost equals a 4-lb (1.81 kg) reduction of pressure on the knee joints.</td>
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<tr>
<td>• For adults who have overweight or obesity, weight loss improves pain, physical function, mobility, quality of life, and other comorbid conditions.</td>
</tr>
<tr>
<td>• A prescription for weight management should be personalized to the severity of a patient’s obesity and OA symptoms.</td>
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<tr>
<td>• Strategies for weight loss may be used concurrently and include medications, bariatric surgery, and behavioral modifications such as diet and exercise.</td>
</tr>
<tr>
<td>• Weight management guidelines for OA recommend:</td>
</tr>
<tr>
<td>o Weight loss ≥5% body weight for adults with overweight or obesity.</td>
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<tr>
<td>o A combination of diet and exercise for the greatest impact on weight loss and symptom management in adults with knee and hip OA.</td>
</tr>
<tr>
<td>• Even a small amount of weight loss can improve OA-related outcomes.</td>
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### Table 4. Current List of Recognized Arthritis Appropriate, Evidence-Based Interventions (AAEBIs)*

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<th>Self-Management Education Programs</th>
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<tbody>
<tr>
<td>• AEA Arthritis Foundation Exercise Program 75</td>
<td>• Better Choices, Better Health 87</td>
</tr>
<tr>
<td>• Active Living Everyday 76</td>
<td>• Chronic Disease Self-Management Program 72</td>
</tr>
<tr>
<td>• Arthritis Foundation Aquatic Program 77</td>
<td>• Chronic Pain Self-Management Program 88</td>
</tr>
<tr>
<td>• Camine Con Gusto 78</td>
<td>• Enhance®Wellness 89</td>
</tr>
<tr>
<td>• Enhance®Fitness 79</td>
<td>• Program to Encourage Active Rewarding Lives (PEARLS) 90</td>
</tr>
<tr>
<td>• Fit &amp; Strong! 71</td>
<td>• Tomando Control de su Salud 91</td>
</tr>
<tr>
<td>• Fit &amp; Strong! Plus 71</td>
<td>• Toolkit for Active Living with Chronic Pain 92</td>
</tr>
<tr>
<td>• Good Life with Arthritis in Denmark (GLA:D®) 80</td>
<td>• Toolkit for Active Living with Chronic Conditions 92</td>
</tr>
<tr>
<td>• My Knee Exercise Program 81</td>
<td>• Workplace Chronic Disease Self-Management Program 93</td>
</tr>
<tr>
<td>• Otago Exercise Program 82</td>
<td>• Walk With Ease- Self-Directed &amp; Group 96</td>
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| • Stay Active and Independent for Life 83 | **Note:**
| • Tai Chi for Arthritis 84 | *Current list following the 2023 program evaluation process; updated annually. More information is available at [https://oaaction.unc.edu/aaebi/](https://oaaction.unc.edu/aaebi/)* |
| • Tai Ji Quan: Moving for Better Balance 85 | |
| • Walk With Ease- Self-Directed & Group 86 | **End of Note**

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