

Cochrane for Clinicians

Putting Evidence into Practice

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This series is coordinated by Corey D. Fogleman, MD, Assistant Medical Editor.

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Exercise for Osteoarthritis of the Knee

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Clinical Question

Does land-based exercise reduce joint pain or improve physical function and quality of life in patients with knee osteoarthritis?

Evidence-Based Answer

Land-based exercise programs reduce knee pain and improve quality of life and physical function following treatment in patients with knee osteoarthritis. (Strength of Recommendation: A, based on consistent, good-quality patient-oriented evidence.)

Practice Pointers

Osteoarthritis of the knee is a degenerative disease of the joint involving the articular cartilage and underlying bone. Osteoarthritis is the most common form of arthritis, affecting nearly 27 million persons in the United States.¹ As the population ages and the prevalence of obesity increases, the prevalence of knee osteoarthritis and its impact on pain and physical function are expected to increase as well.¹ Although no cure exists, exercise is a nonpharmacologic therapy commonly recommended for patients with osteoarthritis.^{2,3}

This updated systematic review includes 54 studies of patients with mild to moderate symptomatic knee osteoarthritis. Land-based exercise therapy consisted of nonaquatic muscle strengthening, functional training, or aerobic conditioning programs, ranging from individually delivered programs to class-based or home programs. Exercise moderately reduced pain (44 studies with 3,537 patients; standardized mean difference [SMD] = -0.49; 95% confidence interval [CI], -0.39 to -0.59); moderately improved physical function (44 studies with 3,913 patients; SMD = -0.52; 95% CI, -0.39 to -0.64); and slightly improved quality of life (13 studies with 1,073 patients; SMD = 0.28;

95% CI, 0.15 to 0.40) immediately after treatment. Improvement was sustained two to six months posttreatment for pain (12 studies with 1,468 patients) and physical function (10 studies with 1,279 patients).

Subgroup analyses of exercise programs (quadriceps strengthening, lower limb strengthening, combination strengthening, walking programs, and other programs) found improvements in pain and physical function, with no differences among the various programs. Similarly, there were no statistically significant differences in pain or physical function among the three exercise delivery modes (individual, class-based, and home programs) or in the number of treatment contact occasions (fewer than 12 occasions vs. 12 occasions or more).

Only four of the randomized controlled trials reported blinding patients to treatment allocation; participants in all trials self-reported pain, physical function, and quality of life. Despite the lack of blinding and risk of performance and detection bias, these factors were not thought to affect the quality of evidence or findings. Eight studies reported adverse effects related to increased knee or low back pain among patients in the exercise group. However, none of these were considered serious.

The benefit of land-based exercise for osteoarthritis pain described in this review is comparable to that of previously reported estimates of nonsteroidal anti-inflammatory drugs for knee pain.⁴ Because exercise programs varied markedly among studies, a range of land-based exercise programs can be recommended in clinical practice. Current guidelines by the American College of Rheumatology strongly recommend that all patients with symptomatic knee osteoarthritis be enrolled in an exercise program that matches their ability to participate in the required activities, with no preference for aquatic vs. land-based programs.³

SOURCE: Fransen M, McConnell S, Harmer AR, Van der Esch M, Sivic M, Bennell KL. Exercise for osteoarthritis of the knee. *Cochrane Database Syst Rev*. 2015;(1):CD004376.

The practice recommendations in this activity are available at <http://summaries.cochrane.org/CD004376>.

REFERENCES

- Centers for Disease Control and Prevention. Osteoarthritis. <http://www.cdc.gov/arthritis/basics/osteoarthritis.htm>. Accessed April 24, 2015.
- Sinusas K. Osteoarthritis: diagnosis and treatment [published correction appears in *Am Fam Physician*. 2012;86(10):893]. *Am Fam Physician*. 2012;85(1):49-56.
- Hochberg MC, Altman RD, April KT, et al. American College of Rheumatology 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip, and knee. *Arthritis Care Res (Hoboken)*. 2012;64(4):465-474.
- Zhang W, Nuki G, Moskowitz RW, et al. OARSI recommendations for the management of hip and knee osteoarthritis: part III: changes in evidence following systematic cumulative update of research published through January 2009. *Osteoarthritis Cartilage*. 2010;18(4):476-499.

Interventions Aimed at Increasing Childhood Vaccination Rates

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Clinical Question

Are interventions to inform and educate about childhood vaccinations effective?

Evidence-Based Answer

Community discussions, community meetings, and information campaigns may increase immunization uptake in areas with only moderate vaccine use. There is no clear evidence to guide face-to-face educational interventions, and the impact of face-to-face interventions is uncertain in areas where immunization use is already relatively high.

Practice Pointers

A recent decision analysis suggested that in the United States, routine administration of the nine immunizations recommended in the 2009 childhood immunization schedule prevents approximately 42,000 early deaths and 20 million cases of disease.¹ However, vaccine coverage of the general population is less than optimal because of missed opportunities and misconceptions by parents and clinicians.² A previous systematic review found evidence that multicomponent interventions, which include education, may be effective at improving vaccination coverage.³ The Communicate

to Vaccinate project developed two Cochrane reviews on the effectiveness of interventions to educate parents and communities about childhood vaccinations. Although Communicate to Vaccinate focused on low- and middle-income countries, the Cochrane reviews are designed to be applied globally.

In the first of these two reviews, Saeterdal and colleagues identified two cluster-randomized trials of interventions targeting communities in low- and middle-income countries with baseline immunization rates of 45% to 51%. One study from India found that an information campaign, including community meetings conducted with low-, middle-, and high-income households and distribution of posters and leaflets, increased the number of children who received one or more vaccinations (relative risk [RR] = 1.67; 95% confidence interval [CI], 1.21 to 2.31). This study did not assess participants' knowledge about vaccine-preventable diseases, attitudes towards vaccination, or involvement in decision making. A second study from a lower middle-income district in Pakistan found that a series of community discussions focusing on information about childhood vaccines, the costs and benefits of vaccination, and local action plans to address barriers increased the uptake of the measles vaccine (RR = 1.63; 95% CI, 1.03 to 2.58) and the full course of the diphtheria, pertussis, and tetanus (DPT) vaccine (RR = 2.17; 95% CI, 1.43 to 3.29). It also increased participants' knowledge of vaccine-preventable diseases and the number of parents who think it worthwhile to vaccinate children. It did not affect the number of mothers included in decisions about vaccination. Neither community-focused study assessed resource use or costs.

In the second Cochrane review, Kaufman and colleagues examined face-to-face interventions and identified seven randomized controlled trials involving 2,978 participants. Most interventions were directed at mothers. One was directed at expectant parents, and three were directed at mothers facing additional barriers to accessing vaccination, including drug use and low socioeconomic status. Study settings included Australia, Canada, the United States, Pakistan, and Nepal. All but one were in urban or peri-urban

locations. There was considerable variety in specific interventions tested, but all involved some type of face-to-face intervention with parents as individuals or in groups. The review authors indicate that the varying trial designs and target populations made pooling of data challenging or impossible. However, they concluded that the effect of single-session and multi-session face-to-face interventions on immunization status and on knowledge or understanding of vaccination is uncertain, and the relevant evidence is of low quality.

In high-income countries, barriers may include parental concern about the risks of adverse effects, concerns that vaccinations are painful, distrust of those advocating vaccines, and beliefs that vaccination should not occur when the child has a minor illness.⁴ Although there is no clear evidence to guide face-to-face education, current guidelines suggest that family physicians intervene at every office visit, reiterate that children can get shots even when they have minor illnesses, and be aware of patient barriers as well as options for overcoming those barriers (e.g., community resources for low-cost or free vaccinations).⁵

SOURCES: Saeterdal I, Lewin S, Austvoll-Dahlgren A, Glenton C, Munabi-Babigumira S. Interventions aimed at communities to inform and/or educate about early childhood vaccination. *Cochrane Database Syst Rev.* 2014;(11):CD010232; and Kaufman J, Synnot A, Ryan R, et al. Face to face interventions for informing or educating parents about early childhood vaccination. *Cochrane Database Syst Rev.* 2013;(5):CD010038.

The practice recommendations in this activity are available at <http://summaries.cochrane.org/CD010232> and <http://summaries.cochrane.org/CD010038>.

REFERENCES

1. Zhou F, Shefer A, Wenger J, et al. Economic evaluation of the routine childhood immunization program in the United States, 2009. *Pediatrics.* 2014;133(4):577-585.
2. Epling JW, Savoy ML, Temte JL, Schoof BK, Campos-Outcalt D. When vaccine misconceptions jeopardize public health. *J Fam Pract.* 2014;63(12):E1-E7.
3. Briss PA, Rodewald LE, Hinman AR, et al. Reviews of evidence regarding interventions to improve vaccination coverage in children, adolescents, and adults. The Task Force on Community Preventive Services. *Am J Prev Med.* 2000;18(1 suppl):97-140.
4. Mills E, Jadad AR, Ross C, Wilson K. Systematic review of qualitative studies exploring parental beliefs and attitudes toward childhood vaccination identifies common barriers to vaccination. *J Clin Epidemiol.* 2005;58(11):1081-1088.
5. Nordin J, Anderson R, Anderson R, et al. Immunizations. Bloomington, Minn.: Institute for Clinical Systems Improvement; 2012:1-81. ■