

Cochrane for Clinicians

Putting Evidence into Practice

These are summaries of reviews from the Cochrane Library.

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

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Pilates for the Treatment of Low Back Pain

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Clinical Question

Are Pilates exercises effective for patients with low back pain?

Evidence-Based Answer

There is low- to moderate-quality evidence that Pilates exercises taught by certified instructors improve pain and reduce disability in patients with chronic low back pain. It is unclear whether a Pilates regimen is superior to other exercise plans for the treatment of low back pain. Adverse effects are uncommon. (Strength of Recommendation: B, based on inconsistent or limited-quality patient-oriented evidence.)

Practice Pointers

Up to 40% of patients with acute low back pain will not have resolution of pain in the first three months, and more than one-half of these patients will have residual pain after one year.¹ No systematic review has concluded which, if any, of the commonly suggested exercise regimens—including yoga, tai chi, and McKenzie method regimens—is best for treating patients with chronic low back pain. Once known as “centrology,” the Pilates method was originally developed in the 1920s by Joseph Pilates. It is based on the principles of centering (i.e., toning the core trunk muscles), concentration (i.e., being attentive to movements), control (i.e., maintaining posture), precision (i.e., being accurate in techniques), flow (i.e., making a smooth transition between movements), and coordinated breathing. The authors of this review sought to determine whether this intervention is effective in treating patients with nonspecific low back pain.

This Cochrane review included 10 randomized controlled trials and 478 patients,

all 16 years or older. Treatments were supervised by trained or certified Pilates instructors and were carried out from once a day to once a week. All training sessions were approximately one hour long, and treatment programs lasted from 10 to 90 days. Six trials compared Pilates with minimal or no intervention, using a zero (no pain) to 100 rating scale to determine benefit. All of the included trials focused on patients with chronic back pain. Adverse effects were rarely reported; when they occurred, they were mostly mild muscle pain that did not cause patients to discontinue treatment. No trials reported outcomes beyond 12 months from the onset of treatment.

Meta-analysis of low- and moderate-quality evidence demonstrated that Pilates therapy provided pain relief during the first three months (mean difference [MD] = -14.05; 95% confidence interval [CI], -18.91 to -9.19) as well as up to one year after treatment began (MD = -10.54; 95% CI, -18.46 to -2.62) when compared with minimal or no intervention. These improvements are based on a 100-point scale, and this would be considered a clinically significant or noticeable benefit. Each of the individual trials had outcomes favoring Pilates. With regard to reducing disability, meta-analysis found that Pilates was superior in the short term (MD = -7.95; 95% CI, -13.23 to -2.67) and the intermediate term (MD = -11.17; 95% CI, -18.41 to -3.92). These differences are of marginal clinical significance. Only one trial with 86 participants reported on the outcomes of improved function and global impression of recovery. Although it demonstrated statistically significant improvements over the short term, longer-term outcomes were not considered statistically or clinically significant.

Four trials compared Pilates with other exercise regimens, although only three of the trials could be included in the meta-analysis. The comparisons were general exercise or a stationary bicycling program. The evidence was considered low quality, and the

outcomes in the studies were not consistent in determining whether Pilates is superior at improving pain. With regard to improving disability, there was moderate-quality evidence that Pilates is no better than other exercise regimens.

The conclusion that Pilates is beneficial in the short and intermediate term for relief of pain and disability is consistent with the findings of other recent systematic reviews.^{2,3} Although they do not specify one type of exercise regimen over another, current guidelines suggest that all patients with chronic pain participate in some form of exercise therapy to improve function and fitness.⁴ Patients can find Pilates instruction from many resources, including free introductory videos available online. One such source is <https://www.youtube.com/watch?v=cuv3kOp2wLI>.

SOURCE: Yamato TP, Maher CG, Saragiotto BT, et al. Pilates for low back pain. *Cochrane Database Syst Rev*. 2015;(7):CD010265.

The practice recommendations in this activity are available at <http://summaries.cochrane.org/CD010265>.

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Impact of Antenatal Dietary Education and Supplementation on Maternal and Infant Health Outcomes

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Clinical Question

Does antenatal dietary education or supplementation to increase energy and protein intake in pregnancy impact maternal and infant health outcomes?

Evidence-Based Answer

Antenatal dietary education appears to decrease the rate of preterm birth and increase infant birth weight among undernourished women. Providing balanced energy and protein supplements to pregnant women decreases the risk of stillbirth, low birth weight, and having an infant that is small for gestational age (number needed to treat [NNT] = 28). The use of high-protein supplements does not improve any outcomes and may cause fetal harm. Neither dietary advice nor supplementation affects maternal outcomes. (Strength of Recommendation: B, based on inconsistent or limited-quality patient-oriented evidence.)

Practice Pointers

As of 2010, the infant mortality rate in the United States ranked number 26 out of 29 developed nations surveyed.¹ Preterm births and low birth weight are important factors that influence infant mortality. In the United States, 11% of births are preterm (i.e., born before 37 weeks of gestation) and 8% of infants are born at a low birth weight (i.e., less than 2,500 g [5 lb, 8 oz]).² Reducing the incidence of low birth weight and preterm births is a stated objective of Healthy People 2020.³ The authors of this Cochrane review hoped to determine whether providing nutritional counseling to pregnant women can improve these outcomes.

This Cochrane review includes 17 randomized controlled trials with a total of 9,030 pregnant women. The variables studied were advice to increase caloric intake, advice to increase protein intake, or being given dietary supplements. There were four categories of trials: (1) trials that provided specific nutritional advice to increase dietary energy and protein intake, (2) trials that provided balanced energy and protein supplements (i.e., less than 25% of total calories from protein), (3) trials that provided high-protein supplements (i.e., more than 25% of total calories from protein), and (4) trials that provided isocaloric protein supplements. Seven of the included trials were conducted in high-income countries such as the United States and the United Kingdom, although more than two-thirds of the included women were considered undernourished or nutritionally at risk.

Several studies had unclear or high risk of bias. The quality of the studies was rated low to moderate.

Antenatal dietary education affected undernourished women more than any other group. Undernourished women are those with a body mass index of less than 18 kg per m², with stunted height, or with micro- and macronutrient deficiencies. In this group, birth weight was significantly increased (mean difference [MD] = 489.76 g; 95% confidence interval [CI], 427.93 to 551.59), whereas rates of preterm birth (relative risk [RR] = 0.46; 95% CI, 0.21 to 0.98; *P* < .05) and low birth weight were decreased. However, these improvements did not translate into positive effects on neonatal death (defined as death in the first 28 days after birth), stillbirth, or being small for gestational age; these indices remained unchanged.

Providing balanced energy and protein supplements decreased the risk of stillbirth (RR = 0.60; 95% CI, 0.39 to 0.94) and being small for gestational age (RR = 0.79; 95% CI, 0.69 to 0.90; NNT = 28; 95% CI, 19 to 59), and increased birth weight (MD = 40.96 g; 95% CI, 4.66 to 77.26). These trials did not demonstrate any change in the rates of preterm birth or neonatal death. High-protein supplements had no effect on birth weight or preterm birth, but they nonsignificantly increased the rates of stillbirth and neonatal death. High-protein supplements also increased the number of infants who were small for gestational age (RR = 1.58; 95% CI, 1.03 to 2.41; number needed to harm = 15; 95% CI, 6 to 250). Use of isocaloric protein supplements demonstrated no benefit or harm to the women or their babies.

Current guidelines recommend that clinicians counsel pregnant women on nutrition and weight at every visit from preconception through postpartum, although specific caloric and protein recommendations are lacking.⁴ Evidence-based reviews recommend increasing daily energy intake by 300 to 400 calories in the second and third trimesters with no mention of protein intake.⁵ Nutritional supplements other than folic acid are not recommended. Although additional better-quality research is needed, this review provides some guidance to the family physician on why such counseling matters.

EDITOR'S NOTE: The number needed to treat and number needed to harm reported in this Cochrane for Clinicians were calculated by *AFP* medical editors based on raw data provided in the original Cochrane review.

SOURCE: Ota E, Hori H, Mori R, Tobe-Gai R, Farrar D. Antenatal dietary education and supplementation to increase energy and protein intake. *Cochrane Database Syst Rev*. 2015;(6):CD000032.

The practice recommendations in this activity are available at <http://summaries.cochrane.org/CD000032>.

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