Cochrane for Clinicians

Putting Evidence into Practice

Pelvic Floor Muscle Training vs. Control for Urinary Incontinence in Women

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Clinical Question

Does pelvic floor muscle training improve the symptoms of urinary incontinence in women?

Evidence-Based Answer

Use of pelvic floor muscle training to treat women with all subtypes of urinary incontinence results in improvement or cure vs. no treatment (number needed to treat [NNT] = 2.5; 95% CI, 1.4 to 5.4). Treatment with pelvic floor muscle training also results in one fewer episode of leakage per day and a reduction in leakage volume of 9.7 g per hour. Treatment is cost-effective, and risks are minimal.[1] (Strength of Recommendation: A, based on consistent, good-quality patient-oriented evidence.)

Practice Pointers

Urinary incontinence affects an estimated 15% to 46% of community-dwelling older adults[2] and has profound health impacts, limiting social engagement and sexual function. Urinary incontinence is a primary driver for initiation of nursing home care and contributes to skin breakdown and increased falls, with a projected cost of $82.6 billion in 2020.[3] Historically, pelvic floor muscle training has been reserved primarily for stress incontinence, rather than mixed or urge incontinence.[4] The authors of this Cochrane review sought to demonstrate whether pelvic floor muscle training can be applied to all types of urinary incontinence in women, as well as to confirm its effectiveness.

This Cochrane review included 31 trials and 1,817 patients, with a follow-up time of less than 12 months.[1] Trials varied widely in study populations, outcome measures, and treatment characteristics. Only randomized controlled trials or quasi-randomized controlled trials were included in the review, with women who had urinary incontinence randomized to treatment with pelvic floor muscle training or to a control arm that consisted of no treatment, sham/placebo treatment, or inactive control treatment. Treatment duration varied from six weeks to six months, and trials were subgrouped by diagnosis of urinary incontinence and outcome measures.

Studies with different end points could not be merged, but for women with urinary incontinence of any subtype, pelvic floor muscle training improved the likelihood of reporting improvement or cure using various validated scales and questionnaires compared with patients in the control groups (67% vs. 29%; relative risk = 2.39; 95% CI, 1.64 to 3.47; two trials; 166 women; moderate-quality evidence). Pelvic floor muscle training also decreased average daily leakage episodes in women with any type of urinary incontinence. Volume of urine leakage varied among patients studied, but it was reduced in all women with incontinence, no matter the subtype.

The highest-quality randomized controlled trials indicated that women with stress urinary incontinence who received pelvic floor muscle training were more likely to report a symptomatic cure than patients not using pelvic floor muscle training (56% vs. 6%; four trials; 165 women; NNT = 2.2; 95% CI, 1 to 6). Women with stress urinary incontinence were also more likely to report improvement or cure (NNT to achieve this parameter = 1.5; 95% CI, 1 to 3). Volume of urine leakage was reduced in those with stress urinary incontinence by a mean difference (MD) of 9.7 g per hour (95% CI, 0.5 to 18.92). The authors of the review did not comment on what should be considered a clinically meaningful difference. Women with stress urinary incontinence treated with pelvic floor muscle training also had fewer episodes of leakage per day (MD = 1.23 fewer episodes per day; 95% CI, 0.68 to 1.78; seven trials;

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CME **This clinical content** conforms to AAFP criteria for continuing medical education (CME). See CME Quiz on page 391.

SUMMARY TABLE

Pelvic Floor Muscle Training vs. No Intervention for All Types of Urinary Incontinence in Women

Outcomes	Anticipated effects with no intervention	Anticipated effects with pelvic floor muscle training (95% CI)	ARR and NNT (95% CI)	Participants (studies)
Participant-perceived cure after 8 to 12 weeks of treatment	62 per 1,000	329 per 1,000 (171 to 632)	ARR = 26.7% NNT = 3.7 (1.7 to 9.2)	290 (3 RCTs)
Participant-perceived cure or improvement after 6 to 8 weeks of treatment	288 per 1,000	687 per 1,000 (471 to 998)	ARR = 39.9% NNT = 2.5 (1.4 to 5.4)	166 (2 RCTs)
Leakage episodes in 24 hours (following 8 to 12 weeks of treatment)	1.06 to 2.50 episodes per 24 hours	Mean difference = 1 fewer episode per 24 hours (0.64 to 1.37)	NA	349 (3 RCTs)

ARR = absolute risk reduction; NA = not applicable; NNT = number needed to treat; RCT = randomized controlled trial.

432 women), although as a whole, women with urinary incontinence of all types also had fewer episodes per day (MD = 1.00 fewer episodes; 95% CI, 0.64 to 1.37; four trials; 349 women).

Women who received pelvic floor muscle training also reported improved quality of life and higher satisfaction with treatment. Trials were small and mostly of moderate quality using GRADE rating for many reasons, including the inability to blind patients to treatment intervention. However, trials consistently demonstrated that pelvic floor muscle training conferred significant benefit on all types of urinary incontinence, including mixed and urge urinary incontinence. Adverse effects were rare and minor, with the most common being psychological discomfort from focusing on incontinence.

Practice guidelines from the American College of Obstetricians and Gynecologists state that pelvic floor muscle training can be effective when used as first-line therapy for stress, urge, or mixed urinary incontinence.[5] Information for patients about how to do pelvic exercises on their own can be found online at https://www.youtube.com/watch?v=kQKR5uLkeUM. Family physicians should engage patients using a shared decision-making approach and consider educating patients on the usefulness of pelvic floor muscle training as first-line treatment for women with any type of urinary incontinence.

The practice recommendations in this activity are available at http://www.cochrane.org/CD005654.

Editor's Note: The absolute risk reductions and numbers needed to treat reported in this Cochrane for Clinicians were calculated by the authors based on raw data provided in the original Cochrane review. Dr. Fogleman is an assistant medical editor for *AFP*.

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Interventions for Reducing Childhood Obesity

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Clinical Question

Do dietary and physical activity interventions reduce obesity rates in children?

Evidence-Based Answer

Individual dietary interventions alone fail to change body mass index (BMI) or the standardized BMI z-score (zBMI) across all age groups. The impact of regular physical activity or combined dietary and physical activity interventions is modest at best.[1] (Strength of Recommendation [SOR]: C, based on consensus, disease-oriented evidence, usual practice, expert opinion, or case series.)

In children five years and younger, combined dietary and physical activity interventions mildly decrease BMI and zBMI.[1] (SOR: C, based on consensus, disease-oriented evidence, usual practice, expert opinion, or case series.)

In children six to 12 years of age, physical activity interventions alone mildly decrease BMI without changing zBMI, whereas combined interventions mildly decrease zBMI without changing BMI.[1] (SOR: C, based on consensus, disease-oriented evidence, usual practice, expert opinion, or case series.)

In children 13 years and older, low-quality evidence shows no change in either BMI or zBMI, even when dietary and physical activity interventions are combined.[1] (SOR: C, based on consensus, disease-oriented evidence, usual practice, expert opinion, or case series.)

Practice Pointers

Obesity in children is defined as a BMI at the 95th percentile or greater on growth charts from the Centers for Disease Control and Prevention (CDC). Childhood obesity rates are increasing, affecting 14% of children in 1999 and 19% in 2016.[2] Obesity rates in low- and middle-income families are nearly double those in high-income families.[2] Obesity rates among Hispanic and black children are more than double those in Asian children and nearly double those in non-Hispanic white children.[2] The authors of this review sought to characterize the effect of lifestyle interventions to prevent childhood obesity in different age ranges.

This Cochrane review included 153 randomized controlled trials with 51,946 patients.[1] Studies were heterogeneous in population, interventions, and duration. Nearly 90% of studies were from the United States and Europe, and more than 60% of studies evaluated a combination of dietary and physical activity interventions. More than one-half were conducted in school or day care settings, 14% of which had a family component, and 9% were conducted in homes. Populations studied varied from all children to only overweight or obese children. Interventions included education, health promotion, and family or behavioral therapy. Studies were conducted for a minimum of three months with only 24% of studies exceeding 12 months and only 8% exceeding two years. No adverse effects, including an increased rate of underweight children, were reported from any intervention.

SUMMARY TABLE

Effects of Dietary and Physical Activity Interventions on Body Mass Index and Body Mass Index Z-scores in Children 0 to 18 Years of Age

Age group (years)	Intervention	Outcome	Difference	Studies	Participants	Evidence quality
0 to 5	Diet	zBMI	Not significant	1	520	Moderate
	Physical activity	zBMI/BMI	Not significant	4/5	1,053/2,233	High
	Diet and physical activity	zBMI	MD = 0.07 lower (95% CI, 0.14 to 0.01)	16	6,261	Moderate
		BMI	MD = 0.11 kg per m^2 lower (95% CI, 0.21 to 0)	11	5,536	Moderate
6 to 12	Diet	zBMI/BMI	Not significant	6/9	7,231/5,061	High
	Physical activity	zBMI	Not significant	8	6,841	Moderate
		BMI	MD = 0.10 kg per m^2 lower (95% CI, 0.14 to 0.05)	14	16,410	Moderate
	Diet and physical activity	zBMI	MD = 0.05 lower (95% CI, 0.10 to 0.01)	20	24,043	Low
		BMI	Not significant	25	19,498	Low
13 to 18	Diet	BMI	Not significant	2	294	Low
	Physical activity	zBMI	MD = 0.20 lower (95% CI, 0.30 to 0.10)	1	100	Low
		BMI	MD = 1.53 kg per m^2 lower (95% CI, 2.67 to 0.39)	4	720	Very low
	Diet and physical activity	zBMI/BMI	Not significant	6/8	16,543/16,583	Low

BMI = body mass index; MD = mean difference; zBMI = body mass index z-score.

The results of interventions were measured as changes in BMI or zBMI, with more than one-half of studies using BMI. zBMI is commonly used to measure obesity in children while correcting for variation in average BMI with age. CDC growth charts are developed using a modified zBMI, and both BMI and zBMI are inaccurate for evaluating severe obesity, in which the BMI exceeds the 97th percentile.[3] Changes in zBMI approximate changes in BMI.

In children five years and younger, neither dietary nor physical activity interventions alone improved obesity measures. Combined dietary and physical activity interventions led to an average decrease in BMI of 0.11 kg per m^2 (95% CI, 0.21 to 0) and an average decrease in zBMI of 0.07 (95% CI, 0.14 to 0.01). These results were driven by three studies of home interventions that reduced BMI and zBMI, whereas eight studies of day care interventions showed no effect. The effective home studies were implemented by pediatricians, nurses, or health educators and were six months to two years in duration.

In children six to 12 years of age, physical activity interventions led to an average decrease in BMI of 0.10 kg per m^2 (95% CI, 0.14 to 0.05) without a change in zBMI. Dietary interventions alone were ineffective. Combined dietary and physical activity interventions led to an average decrease in zBMI of 0.05 (95% CI, 0.10 to 0.01) without a change in BMI. Interventions were effective if they were conducted in school or lasted up to 12 months. No home interventions were conducted in this age group.

In children 13 years and older, physical activity interventions alone led to an average decrease in zBMI of 0.20 (95% CI, 0.30 to 0.10) and in BMI of 1.53 kg per m^2 (95% CI, 2.67 to 0.39) in small, low-quality, short-duration studies performed at school. Larger, higher-quality studies of combined dietary and physical activity interventions conducted in various settings failed to demonstrate benefit. No home interventions were conducted in this age group.

Guidelines from the Department of Health and Human Services recommend at least an hour per day of moderate-intensity aerobic physical activity for all children.[4] Similarly, the National Institute for Health and Care Excellence recommends 60 minutes of moderate to intense aerobic exercise each day and states that dietary modifications alone are insufficient to prevent obesity.[5] The limited evidence presented in this review supports combining dietary and physical activity interventions given the benefits for reducing childhood obesity. Interventions did not increase health inequalities and could temper existing inequalities.

The practice recommendations in this activity are available at http://www.cochrane.org/CD001871.

Editor's Note: Dr. Arnold is a contributing editor for *AFP*.

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