

Volume 5, Issue 2 (April 2009)

This complimentary e-newsletter from The North American Menopause Society (NAMS) presents clinical questions and cases commonly seen in a menopause specialist's practice. Recognized experts in the field provide their opinions and practical advice. Robert A. Wild, MD, PhD, MPH, the Editor of *Menopause e-Consult*, encourages your suggestions for topics to be addressed in future issues. Note that the opinions expressed in the commentaries are those of the authors and are not necessarily endorsed by NAMS or Dr. Wild. Previously published issues may be viewed on the NAMS Web site (www.menopause.org/econsult.html).

Question

Does exercise attenuate or prevent the weight gain that occurs during peri- and post-menopause?

Commentary from:



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The short answer is, yes, exercise *can* attenuate or prevent weight gain during peri- and postmenopause. The prevention of weight gain *at any age* requires only that energy intake not exceed energy expenditure. Thus, it is possible to maintain body weight by modifying exercise and/or eating habits. However, although simple in theory, there are physiologic changes that make it particularly challenging for middle-aged women to maintain energy balance (ie, intake = expenditure). Because the menopause transition occurs over a number of years, it is difficult to determine whether the increased propensity for weight gain at midlife is primarily a consequence of the menopause transition or of advancing age. Both involve factors that make weight maintenance a challenge.

Menopause-related factors that promote weight gain. Studies of laboratory animals provide compelling evidence that estrogen plays an important role in the regulation of body weight. Oophorectomy has consistently been found to cause excess weight gain, and this is prevented by estrogen replacement.¹ There appear to be multiple mechanisms by which estrogen deficiency leads to weight gain in animals, including increased food intake, decreased spontaneous physical activity, and a suppression of metabolic rate. If such effects of estrogen deficiency also occur in humans, this would suggest that there is a “biological drive” around the time of menopause toward weight gain.

In fact, there *is* evidence that estrogen regulates body weight in women. A number of large, randomized, placebo-controlled, and open-label trials of estrogen-based hormone therapy (HT) have provided strong evidence that weight gain and, more specifically, fat gain, is attenuated in women on HT when compared to women on placebo or no HT.² Suppressing sex hormone levels in premenopausal women with gonadotropin-releasing hormone (GnRH) agonist therapy also causes fat gain. For example, women treated for 16 weeks with a GnRH agonist gained 1.0 kg of fat, which equates to an energy excess of about 80 kcal per day.³ Because it is difficult to accurately measure changes in energy intake and expenditure of this magnitude in humans, it is not clear whether the suppression of sex

hormones influences eating and/or exercise habits. However, short-term hormone suppression has been found to cause a decrease in resting metabolic rate of 40 to 70 kcal per day.⁴ This reduction in metabolic rate would be expected to cause weight gain if not accompanied by a compensatory decrease in energy intake or increase in physical activity.

Ageing-related factors that promote weight gain. Even if the menopause transition does not alter bioenergetics in a way that promotes weight gain, there are unavoidable factors related to aging that do so. Two important factors are the loss of muscle mass and the decline in maximal aerobic power. Lean body mass is an important determinant of resting metabolic rate. As lean mass declines with aging, there is a decrease in metabolic rate and, therefore, daily energy expenditure. The decline in metabolic rate will result in weight gain unless appropriate behavioral changes are adopted (ie, decrease in energy intake or increase in physical activity).

Maximal aerobic power, also referred to as aerobic capacity or VO_2 max, is a direct index of the *rate* at which an individual can expend energy during exercise. For example, a healthy young woman with an average VO_2 max for her age can easily increase her energy expenditure by 8 to 10 kcal per minute during exercise. However, there is a decline in VO_2 max with aging that cannot be avoided, due in part to the inevitable decrease in maximal heart rate (ie, maximal heart rate = 220 minus age). Accordingly, with advancing age there is a decline in the rate at which energy can be expended during exercise, even in people who maintain a vigorous level of physical activity.⁵ Rather than being able to increase energy expenditure by 8 to 10 kcal per minute during exercise, middle-aged women may be able to burn only 6 to 8 kcal per minute. This has an important impact on how women can use exercise to maintain body weight as they age. Because the rate at which energy can be expended decreases gradually with aging, maintaining the same level of total exercise energy expenditure may require an increase in the amount of exercise time.

Do physically active women gain less weight than sedentary women during peri- and postmenopause? Exercise can prevent weight gain in peri- and postmenopausal women, but factors related to menopause and aging make weight maintenance a challenge. Even though regular exercise does not come with a guarantee against weight gain, prospective studies of perimenopausal women indicate that the most active women gain the least weight.^{6,7} Most important, women should not abandon their exercise habits if they become discouraged by what they perceive as a lack of effectiveness of exercise to prevent weight gain. Exercise has numerous health benefits that are independent of its effects on body weight regulation.⁸

Disclosure: Dr. Kohrt reports: Research support—National Institutes of Health.

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Case

During her office visit, a perimenopausal woman says that she recently read in *Fitness Magazine* that if she were to increase her vitamin D intake that it will not only benefit bone health but will also reduce risk of upper respiratory tract infections and possibly reduce her risk of developing deadly cancers of the colon and breast. Is there any truth to these claims? And, if so, how much vitamin D should she take in order to obtain these additional health benefits of vitamin D?

Management Issues by:



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We now recognize that most tissues and cells in the body have a vitamin D receptor and thus respond to vitamin D, which is essential for the maintenance of good bone health. The National Osteoporosis Foundation recommends that all women around the time of menopause take at least 800 to 1000 IU of vitamin D per day.

However, recent studies suggest that an intake of 2,000 IU of vitamin D a day may have additional health benefits. Postmenopausal women who received 2,000 IU of vitamin D₃ a day for 1 year reduced their risk of upper respiratory tract infections by 90%.¹ This study is supported by the recent observation that risk of upper respiratory tract infection is reduced in adults who have the highest circulating blood levels of 25-hydroxyvitamin D, which is a measure of a person's vitamin D status.

Vitamin D also plays an important role in controlling cell growth and thus may help reduce risk of deadly malignancies. Lappe et al² reported that when postmenopausal women who took 1,100 IU of vitamin D₃ along with 1,500 mg of calcium a day, the risk of developing any cancer was reduced by 60% compared to women who received placebo in the ensuing 4 years. This observation is consistent with others that suggest that taking at least 1,000 IU of vitamin D per day may reduce risk of developing colorectal and breast cancer by as much as 50%.

Some other recent benefits of vitamin D that have been noted for women include reducing risk of multiple sclerosis by as much as 42% in women who ingest more than 400 IU of vitamin D per day and reducing risk of developing rheumatoid arthritis by 44%.³ There is, in my opinion, no downside to increasing vitamin D intake by at least an additional 1,000 IU of vitamin D₂ or vitamin D₃ per day along with a multivitamin containing 400 IU of vitamin D.

Our recent study⁴ revealed that 1,000 IU of vitamin D per day during the winter in healthy adults does not raise the blood level of 25-hydroxyvitamin D above 30 ng/ml, making it clear that without adequate sensible sun exposure in the spring, summer, and fall, adults including postmenopausal women need at least 1,400 to 2,000 IU to satisfy their body's vitamin D requirement. This will not only be for maintenance of bone health but for reducing risk of both upper respiratory tract infections and many serious chronic diseases.

Vitamin D supplements are relatively inexpensive and readily available at most pharmacies. I encourage all postmenopausal women—in fact, all children and adults—to increase their vitamin D intake by at least 1,000 IU of vitamin D per day and preferably 2,000 IU of vitamin D per day for all its health benefits. There is no need to worry about vitamin D intoxication since it is so rare and a person

would need to ingest more than 10,000 IU of vitamin D a day for at least half a year to even begin to worry about potential toxicity.

Disclosure: Dr. Holick reports: Consultant—Bayer, Merck, Novartis, Procter & Gamble, Quest; Speaker—Amgen, Merck, Novartis, Procter & Gamble.

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Letter to the Editor

Having read the case of a woman with hourly hot flashes and sleep disorders, who has been using HT intermittently since reading about the Women's Health Initiative (WHI) (*Menopause e-Consult*, Vol. 5, No. 1, January, 2009), we respectfully disagree with the proposed management. Although she is already using the polypharmacy that is said to avoid menopausal symptoms, this woman continues to have disabling symptoms and is asking for help. She has a long history of taking hormone therapy (HT) until quite recently and without known complications. No HT risk factors are

mentioned, nor has she shown deterioration on HT in the past.

She is a victim of a misconception of the results of the WHI.

This woman should have a careful review of her history, risk assessment, and a clotting workup. If these are negative and she understands the possible complications of HT and the need for surveillance, she should be offered a 3-month trial of low-dose HT. If this assuages her symptoms and all examinations (including mammogram, uterine ultrasound, etc.) remain within normal limits, she should have the choice of continuing the treatment.

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Editor's Note

NAMS is pleased to publish dissenting views of evidence. Reasonable people can disagree. The original Commentary and those expressed in this Letter are opinions, and each is based on a different view of a risk-benefit decision, which reminds us that clinical decision making is an art that involves much more than merely citing evidence. We can individualize the risk-benefit decision by using evidence, experience, and patient values to help inform proper choice.

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NAMS 20th Annual Scientific Meeting
“A New Experience: Bringing Technology to Menopausal Health”
San Diego, California
September 30-October 3, 2009

There are many compelling reasons to consider attending this year’s meeting. The CME scientific program is outstanding, with all sessions focusing on exciting technological advances to enhance health. The cornerstones of the NAMS Annual Meeting—cutting-edge science, world-class experts, and networking—will take place against the backdrop of the spectacular Manchester Grand Hyatt.

In addition, this year’s Annual Meeting marks the last meeting for Dr. Wulf Utian as Executive Director before his retirement at year’s end. As a friend and colleague of Dr. Utian’s, you will no doubt want to offer your good wishes in person. A special session, “20 Years of Progress in Menopausal Medicine: The Utian Years,” has been planned, followed by an evening reception on Wednesday, September 30.

For more information, visit www.menopause.org/meetings/2009HCP.aspx.

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