Exercise helps bones, but not metabolism, in ovarian function loss

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Exercise may reduce the risk of osteoporosis associated with the loss of ovarian function, but fitness may not protect against related metabolic changes and weight gain, a new study reports. The findings will be

presented today at the American Physiological Society's (APS) Cardiovascular, Renal and Metabolic Diseases: Sex-Specific Implications for Physiology conference in Knoxville, Tenn.

The drop in estrogen that occurs with loss of ovarian function affects the skeletal system. Women in menopause have an increased likelihood of developing osteoporosis (loss of bone density) as estrogen levels fall, but exercise or hormone therapy can minimize this risk. However, the effect of estrogen deficiency on other body systems is less clear. Researchers from the University of Colorado, Denver School of Medicine, studied premenopausal women to determine the role of estrogen and exercise in metabolic rate and energy balance in the body. Energy balance refers to the amount of calories taken in through food in comparison to those burned through physical activity.

All of the women studied had temporary loss of ovarian function (ovarian suppression) that diminished estrogen levels. One group of women received estrogen supplementation and also performed supervised resistance exercise. Another group received hormone therapy but did not exercise. The estrogen supplement groups were compared with ovarian suppression control groups that did not receive hormone therapy but were matched for exercise status. The research team measured bone loss through imaging tests (DEXA scans) and energy expenditure through doubly labeled water—a special type of water that contains varied forms of hydrogen and oxygen to allow for energy tracking.

All of the volunteers had a slower metabolism, burned fewer calories and showed a decrease in muscle mass and an accumulation of belly fat due to the loss of ovarian function. These symptoms were prevented by estrogen therapy. The groups that exercised were protected against the decrease in bone density but not the changes in the other symptoms. "Our findings suggest that exercise can attenuate some (e.g. loss of bone)

but not all (e.g., decline in resting metabolic rate) of the consequences of ovarian hormone suppression," the researchers wrote.

More information: Wendy Kohrt, PhD, associate director of the Center for Women's Health and professor of medicine at the University of Colorado, Denver School of Medicine, will present "Bioenergetic and metabolic consequences of the loss of ovarian function in women" in the session "Physiology and Gender: Aging and Senescence" on Monday, October 1, at the Crowne Plaza Knoxville.

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