UNIVERSITY OF COLORADO DENVER

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IMAGE Newsletter

Power Study Results

Gaining weight after menopause is a common complaint of women. The purpose of the POWER study (**P**revention of **O**besity in **W**omen via **E**stradiol **R**egulation) was to determine if the loss of the sex hormone estrogen (E) accelerates weight gain in women. Seventy healthy premenopausal women were enrolled in the study and underwent 5 months of drug treatment to decrease their estrogen to the level of a postmenopausal woman. Half of the women also received an estrogen patch to bring their estrogen level, but not other sex hormone such as progesterone, back up to normal. We measured how body composition (body weight, body fat, muscle mass, bone mass), 24-hour energy expenditure (the amount of calories burned throughout the day), and resting energy expenditure (amount of calories burned at rest) changed from before to after the 5-month intervention.

The results showed the women with decreased ovarian hormones for 5 months had:

- Decreased bone mass
- Decreased muscle mass
- No change in weight or whole body fat mass
- Increased abdominal (belly) fat
- Decreased 24-hour and resting energy expenditure

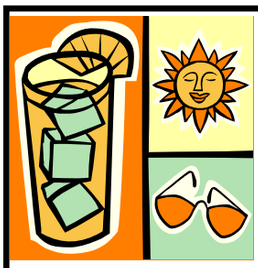
Importantly, in the other group of women that had their estrogen replaced, these changes did not occur, except for the decline in 24-hour energy expenditure.

As a preliminary study on the influence of exercise on body composition and energy expenditure changes with the loss of estrogen, about half of the women in each hormone group completed a resistance exercise program, coming into our exercise facility to do a variety of weightlifting exercises 4 days each week. Although the numbers of women in the exercise groups were small, we found some preliminary evidence that exercise may have favorable effects on bone mass, muscle mass and abdominal fat mass, similar to that observed with the estrogen replacement. Despite having these beneficial effects on body composition, resistance exercise appeared to have little to no effect on either resting or 24 hour energy expenditure in either hormone group.

In summary, the POWER study demonstrates that suppression of ovarian hormones in premenopausal women causes an increase in abdominal fat and decreases in muscle mass, bone mineral density, and resting energy expenditure and that these changes are related to the loss of estrogen. Our preliminary data further suggest that resistance exercise may help to maintain muscle mass and bone mineral density during ovarian hormone suppression, but further research will be needed to confirm this potential benefit. It is not clear whether the findings from this study of ovarian hormone suppression in premenopausal women reflect changes that occur in response to the natural menopausal transition. Our follow up study to POWER, called FAME (**F**emales, **A**ging, **M**etabolism, and **E**xercise), is now underway to help us more closely examine the role that female sex hormones play in metabolism, energy expenditure, physical activity, and chronic disease.

NEW STAFF ANNOUNCMENT

Corey Rynders received his PhD in Exercise Physiology from the University of Virginia in 2012. Following his graduate work he served for two years as an Assistant Professor of Exercise Science at Old Dominion University in Norfolk, Virginia. In January 2015 he resigned his faculty position to start a post-doctoral research fellowship with the IMAGE group under the mentorship of Dr. Wendy Kohrt. Dr. Rynders post-doctoral research will investigate the physiologic mechanisms by which energy imbalance impacts sleep and circadian rhythms with a focus on sex-related differences.



IMAGE

SUMMER ALUMNI PARTY

Tuesday, July 28, 2015

4:00-6:00 PM

Keep an eye out for the invitations. The Summer party is at the same location as last year's party (Trivisible room in RC2). Reserve the Date !!!

Directions and parking details can be found at

www.medschool.ucdenver.edu/image

(...and, yes, the chocolate fountain will be in attendance)

Does the image group have a study for you?

STUDIES FOR WOMEN & MEN:

SPARX is a study to determine whether individuals recently diagnosed with Parkinson's disease, and have not yet started drug treatment, can successfully take part in an aerobic exercise program. Individuals with PD are randomized to a control group that does not exercise, or to a group that exercises on a treadmill at a moderate or high intensity. Participants will exercise 4 days a week, for 30 minutes a day, for 6 months. If you or someone you know has been diagnosed with Parkinson's disease and is interested in participating in this clinical research, please contact at 720 848-6376 or Toby.Wellington @ucdenver.edu. (COMIRB #11-1237)

The Determination of Pain Phenotypes in Older Adults with Knee Osteoarthritis study is exploring what causes pain with knee osteoarthritis. We are looking for people aged 50 to 85 years with and without knee pain to attend a single testing session at the Anschutz Medical Campus (~2 hours) to explore factors that contribute to knee pain. Monetary compensation provided. To learn more, please email KNEEpain@ucdenver.edu or call 303-724-9590 (COMIRB#12-1188)

SITA Study: Do you have type 2 diabetes? This research study will evaluate the effects of two FDA-approved diabetes medications on cardiovascular function during exercise. Qualified participants will receive study medication, as well as free lab screenings, physical exams and exercise testing. Financial compensation is provided. If you are between the ages of 22 and 70 years old with type 2 diabetes who takes metformin only for your diabetes, you may qualify for this study. If interested, email Katie.rogers@ucdenver.edu or call Katie at 303-724-2255 (PI: Regensteiner, COMIRB# 13-2015)

Leg Blood Flow Study This is a study evaluating men and women with or without type 2 diabetes during single leg calf exercise. We are evaluating the function of heart and blood vessels during exercise. Eligible participants are healthy men and women with type 2 diabetes (not using insulin) between the ages 30-70 years who are non-smokers and currently exercise no more than once per week. The study involves 8 study visits and two weeks of supervised exercise training over the course of two months. If interested, email Katie.rogers@ucdenver.edu or call Katie at 303-724-2255 (PI: Regensteiner, COMIRB# 06-0062)

AcT2: The AcT2 study is looking at a medication called acipimox and its effects on type 2 diabetes and exercise capacity. Study participants will be financially compensated and receive no cost lab screenings, physical exams, exercise testing and more. Participants will be asked to take the investigational drug or placebo for 7- 9 days on two separate occasions. If you are a non-smoker, age 30-60 with type 2 diabetes that does not require insulin, and you exercise less than 1 hour per week, then this study could be for you! If interested, call Katie at 303-724-2255 or email Katie.rogers@ucdenver.edu.

The **B-WELL** study is to test whether decreasing time spent sitting and adding short intervals of walking improves the health of older adults. We are looking for healthy, non-smoking sedentary men or women 60 and 85 years old without orthopedic conditions that limit ability to walk briskly. To ℞ learn more please contact Kate Lyden at kate.lyden@ ucdenver.edu or call (720) 848-6474 (COMIRB# 13-2594).

In the ercise study, we seek to identify barriers to physical activity for overweight people with and without type 2 diabetes. This study hopes to provide a greater understanding of how to overcome those barriers! This is a study for people both with and without type 2 diabetes (not on insulin). We're looking for male and female non-smokers, 50-70 years of age, who exercise less than one hr. per week, but would like to do more. If that describes you, email Ian.Leavitt@UCDENVER.EDU or call Ian at 303-724-2255

STUDIES FOR WOMEN:

The **FAME study** is examining how the loss of estrogen changes metabolism and risk of disease in women. Eligible participants are healthy women between the ages of 40 and 60 years who have regular menstrual cycles and are not currently using hormonal contraceptives. Monetary compensation will be provided for your time (up to $900). To learn more, please call 720-848-6399 or email: FAMEStudy@ucdenver.edu. (COMIRB# 12-1157)

The GEM study investigates the relationship between volume of aerobic exercise and positive changes in DNA methylation over four months among previously sedentary women and whether aerobic exercise favorably influences DNA methylation in genes associated with breast cancer. We are looking for women between the ages of 30 and 45 who plan to live in the Denver Metro area for the next 10 months. Eligible participants should not be exercising regularly but should be willing to participate in an exercise program 4 times per week for 16 weeks. Monetary compensation will be provided for time (up to $300). To learn more, please call 303-492-9549 or email: GEM.CUstudy@gmail.com. (COMIRB# 13-2314)

SHAPE 2 The purpose of this study is to investigate how the menopause transition and the loss of estrogen impacts the health and function of arteries in women. We are looking for Premenopausal women 18-49 years, and Perimenopausal

To learn more about a study, offer comments, suggest an article, request this newsletter electronically or be removed from our mailing list contact: Drew Hepler, 720-848-6480, Andrew.Hepler@ucdenver.edu.

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Aging, Gender, and Exercise
Investigations in Metabolism,