Exercise – Good for the Heart... and the Brain?

You probably already knew that regular exercise has been shown to prevent heart attacks and strokes. But, did you know that regular exercise may also prevent Alzheimer’s disease? A study was published in the Annals of Internal Medicine earlier this year looking at this topic. The study authors looked at whether better fitness levels for middle-aged adults were associated with a lower likelihood to develop Alzheimer’s disease in later life. The authors found a 20% lower risk of developing Alzheimer’s disease in participants with the best fitness levels as compared to those with the worst fitness levels. Improving fitness levels in middle age is associated with a lower risk of developing Alzheimer’s disease. In addition, worsening fitness levels were associated with a greater risk of developing Alzheimer’s disease.

If you are interested in increasing your physical activity levels, please refer to the following recommended resources on ways to set and reach physical activity goals, and see below for some other opportunities to join exercise-related research studies.

Recommended Physical Activity Resources

(press control click to access site):

- Physical activity guidelines for Americans
- Center for Disease Control and Prevention physical activity recommendations
- Be Active your Way- Physical Activity Booklet

Opportunities For Participation in Exercise Related Research

Have you ever thought about playing a part in advancing medical knowledge? Maybe you have wanted to do more physical activity but you would like further guidance on what type of exercise you should do. Or perhaps you are healthy, but you have watched a family member or friend struggle with diabetes and you would like to help scientists learn more about how the body’s response to exercise is different in people who are healthy as compared to people with diabetes? With the help of volunteers like you, our AcTIVe research lab at the University of Colorado School of Medicine seeks to develop and test improved disease management options for people with type 2 diabetes through research studies. One key mission of our lab is to help people become more physically active in order to reduce cardiovascular risk and to improve quality of life for individuals with type 2 diabetes and peripheral arterial disease.
If it interests you to know that data from your participation in a study could possibly help others who have type 2 diabetes, then we’re waiting for your call. The following paragraphs describe our current research studies in greater detail. Please feel free to contact our lab to discuss any studies described below that you would like to learn more about.

**Exercise** In the **Exercise** study, we will learn information that will help us to develop a better exercise prescription for people with type 2 diabetes. Specifically, we seek to identify barriers to physical activity for overweight people with and without type 2 diabetes. Even more importantly, we hope that this study provides a greater understanding of how to overcome those barriers!

Being a participant in this research study means learning important information about your medical conditions and your exercise abilities. For example, you will take surveys to identify your exercise barriers, and you will perform exercise testing that allows us to give you a personalized exercise prescription that takes your current fitness levels into account. Participants with diabetes will also receive diabetes education visits and/or a supervised 3-month exercise program.

This is a study for people both with *and* without type 2 diabetes. We’re looking for male and female non-smokers, 50-70 years of age, who exercise less than one hour per week but would like to do more. If that describes you, then please contact Dylan at (720) 848-7103 or Dylan.mogk@ucdenver.edu to learn more! Qualified study participants will receive financial compensation.

**Exenatide and Exercise Study**

Do you have type 2 diabetes? Exenatide is an FDA-approved medication to treat type 2 diabetes. We are evaluating whether exenatide *also* increases exercise capacity in people with diabetes. Qualified participants in this study will receive study medication (either injectable exenatide or salt-water), as well as free lab screenings, physical exams and exercise testing, and will be offered financial compensation!

If you are a non-smoker, age 45-70 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, please contact Leah at (720) 848-6688 or leah.herlache@ucdenver.edu.
Leg Blood Flow Study

The Leg Blood Flow study plans to learn more about how Type 2 Diabetes affects the amount of blood flow and oxygen uptake in your muscles during exercise. This study is looking for healthy men and women with or without type 2 diabetes (not using insulin) between the ages 30-55 year who are non-smokers and currently exercise no more than once per week. Participants in the study are asked to attend 8 study visits and two weeks of supervised exercise training at the Anschutz Medical Campus. Study participants will be financially compensated and receive no cost lab screenings, physical exams, exercise testing and more. To learn more, please contact Shawna McMillin at 303-724-2255 or by email at Shawna.mcmillin@ucdenver.edu. (PI: Regensteiner, COMIRB: 06-0062)

AcT2 Study

The AcTIVe Research Lab is studying 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 to 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, please contact Leah at 720-848-6688 or leah.herlache@ucdenver.edu.

The Women’s Integrated Services in Health (WISH) supports the research opportunities described in this article. For more information call and ask to speak to your doctor

720-848-9474 or go to www.wishforwomen.org
Judith Regensteiner, PhD

Director of the Center for Women's Health Research
Professor of Medicine in the Divisions of Internal Medicine and Cardiology

Dr. Regensteiner is a Professor in the Divisions of Internal Medicine and Cardiology in the School of Medicine of the University of Colorado. She is the Director of the Center for Women’s Health Research and Principal Investigator and Program Director for the “Building Interdisciplinary Research Careers in Women’s Health” K-12 grant. Her expertise is in the areas of women’s health, diabetes and cardiovascular disease. Her research in diabetes in particular is focused on gaining understanding of the cardiovascular effects of type 2 diabetes in women so that optimal treatments can be sought. She has been Principal Investigator or Co-Investigator of several current and previous large grants in type 2 diabetes and peripheral arterial disease funded by NIH and American Diabetes Association. She was an Investigator for the National Institutes of Diabetes Prevention Program and is currently an Investigator of the Look Ahead program of NIH to prevent cardiovascular events in people with diabetes by reducing obesity. She has published extensively in these areas and has received honors including the Department of Medicine Ph.D. Teaching and Research Award and the Henry Christian award for outstanding cardiovascular research from the American Federation for Medical Research. She was awarded the Elizabeth Gee lectureship award for the University of Colorado because of her work with the Center for Women’s Health Research. More recently, she was invited by the Secretary of Health and Human Services to be one of 13 people from around the country to provide the evidence for the first Physical Activity Guidelines for Americans. Dr. Regensteiner has published more than 90 papers. She is frequently invited to give talks both nationally and internationally on women’s health, diabetes and peripheral arterial disease. Dr. Regensteiner is both a scientific and a career mentor for many junior faculty, especially those interested in a career in women’s health.

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Overcoming Barriers to Physical Activity for Type 2 Diabetes Patients
As a general internist, I highly value chronic disease prevention as well as chronic disease management. However, I have noticed that effective disease management late in a disease
process is generally not as effective as disease management early on. For example, while we do our best to provide optimal treatment for patients with advanced diabetes accompanied by severe complications, their disease is often disabling regardless of the medical treatments used. To some extent, their ship of good health has sailed, and while we seek to maintain current levels of health and function, it is difficult. However, in observing both my patients and my father’s fight to control type 2 diabetes, I have seen how durably well-controlled this disease can be when people are proactive in their lifestyle management, and how the opposite is true when they are not. These observations inspired my current academic interests in identifying and overcoming barriers to exercise for people with type 2 diabetes during a critical window of opportunity — before they develop disabling complications that make it even more difficult to preserve their health and functional status.

While there is a considerable amount of public messaging about implementing healthy lifestyles to prevent diabetes (e.g., the USDA ‘My Plate’ portion control, “Move More” physical activity messages), and while there is a strong focus on diabetes education for dietary adjustments in people with diabetes, there are not widespread programs in place to help the growing number of people who already have diabetes start and maintain exercise programs. We need to offer physical activity programs to people with diabetes to minimize the associated health and functional deterioration of the disease.

My research passions
Currently, I am working to understand the barriers to exercise and effective ways to overcome those barriers. After we have developed an effective program to identify and overcome barriers for individuals, the next step will be to find ways to broaden the reach of such a program so that it can impact more people. A challenge in this will be to develop a cost-efficient way to get that effective program to work across a larger community.

My dream to address these challenges is to develop and test a validated exercise/activity ‘tool’ that physicians and patients can access via the internet. I envision this tool as a key community resource that is used by physicians to give ‘prescriptions’ for activity specific to the patient, and that provides a wide variety of information and ideas. For example, the online tool could be used to monitor and track activity levels, and could function as an electronic coach by sending prompts to optimize current activity levels.