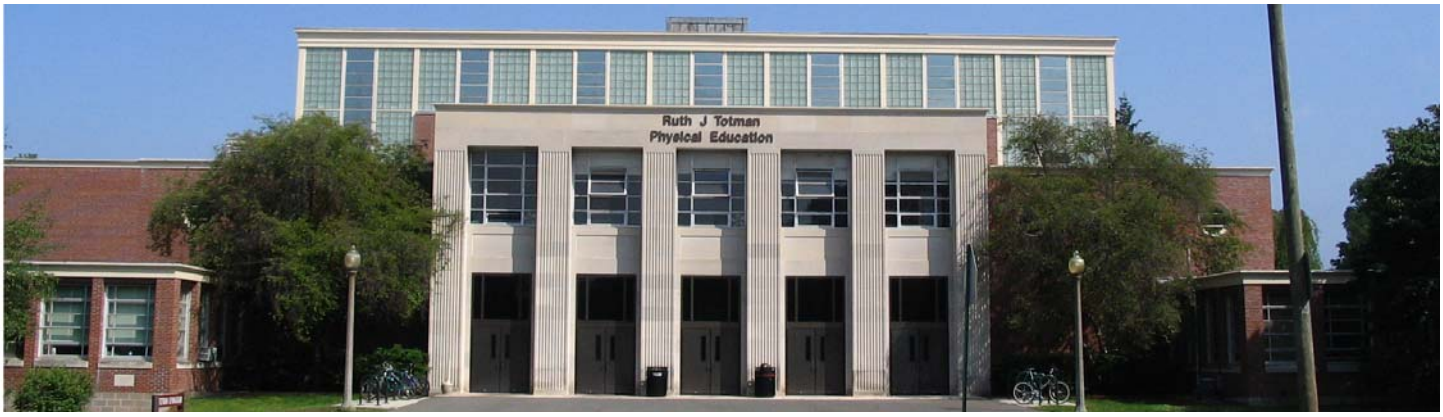
Healthy Living

MUSCLE PHYSIOLOGY LABORATORY



About the Muscle Physiology Laboratory!

The Muscle Physiology Laboratory is located in the Kinesiology Department at the University of Massachusetts, Amherst. It is staffed by a group of researchers dedicated to understanding the changes that occur in the human neuromuscular system with advancing age. We are particularly interested in the role that physical activity habits play in these changes, and how alterations in muscle function impact the mobility and independence of our aging population. Our current research is focused on the effect of age on muscle fatigue, and understanding how energy is supplied to exercising muscle in young and older adults. The primary source of funding for our work is the National Institute on Aging, a division of the National Institutes of Health.

As members of the UMass-Amherst community, we would like to take the opportunity to share information with you about what we and other researchers are learning about healthy aging. The aim of this newsletter is to translate leading-edge research into practical information about a range of subjects, including:

- incorporating physical activity into your routine
- maintenance of muscle function
- healthy lifestyle habits
- mobility and balance

We hope that this newsletter will provide you with resources that help you live life to the fullest!

Healthy Aging

Approximately 37 million people in the United States (just over 12% of the population) are 65 years of age or older. It is estimated that in the next 20 years, this number will nearly double, to roughly 71 million people. With such a large proportion of the population in this age category, a collective focus on their overall health and quality of life is imperative. Fostering healthy aging is a responsibility shared by all, including scientists, physicians, clinicians, community organizations, and older individuals themselves.

Changes in physical function with advanced age are inevitable. Over the years, scientists and physicians who have studied the aging process have noted that there is not one set of physical changes that defines "normal" aging; everybody ages differently. However, it has been well established that advanced age is not synonymous with disease, and that the development of health problems is not a necessary consequence of growing old.

There are many factors that help to determine the physiological and psychological changes that are experienced by each individual in the later decades of life. While some of these factors, such as genetics, are beyond our control, there are many simple lifestyle choices that can greatly enhance our quality of life and

Centers for Disease control and Prevention:
http://www.cdc.gov/aging/

Environmental Protection Agency (protect the environmental health of older individuals):
http://www.epa.gov/aging/

U.S. Department of Health and Human Services:
http://www.hhs.gov/aging/

National Institutes of Health:
http://nihseniorhealth.gov/category/healthyaging.html

Healthy Aging®:
http://www.healthyaging.net/

National Council on Aging:
http://www.nca.org/content.cfm?sectionID=302

Amherst Senior Center:
70 Boltwood Walk
Amherst, MA 01002
413-259-3060

Belchertown Council on Aging and Senior Center:
60 States Street
Belchertown, MA 01007
(413) 323-0420

Hadley Senior Community Center:
46 Middle Street
Hadley, MA 01035
Phone: (413) 586-4023

reduce our risk of certain health complications as we age. The simplest preventative measure is the practice of a healthy lifestyle, including regular physical activity, a healthy diet, avoiding alcohol and tobacco, and remaining socially engaged. A healthy lifestyle can help prevent the development of many health problems, and can reverse some of the decline in physical and mental function. A very important principle that has emerged is that ***it is never too late to start.*** Scientific research has shown that beginning an exercise program can improve physical function and overall life satisfaction in people of all ages, including those in the eighth and ninth decades of life. The bottom line truly fits the old adage "use it or lose it." To put this into action, we should all use what we can every day.

There are several national organizations dedicated to understanding the biology and psychology of aging. These organizations are also committed to the promotion of healthy aging, and offer some excellent resources for older individuals. Each of these organizations provides information about starting and maintaining a physically-active and nutritionally-sound lifestyle. They also contain information about some of the common health issues in

"Use it or Lose it!"

individuals over the age of 50 (e.g., heart disease, stroke, cancer, depression, dementia, and balance disorders), and an assortment of other topics including financial concerns, finding physicians, and information for care givers. In Western Massachusetts, there are many Senior Centers established by the Council on Aging. These organizations offer programs to encourage healthy aging through social and physical activities. A list of some of these resources, as well as some of the Senior Centers in Western Massachusetts is provided above.

Simple tips for Maintaining a Healthy Lifestyle:

1) Be physically active. If you engage in physical activities that you enjoy, you are more likely to stick with it.
2) Be safe. Consult your physician before getting involved in any physical activity program, and don't try to do too much too fast.
3) Eat a healthy diet.
4) Avoid tobacco.
5) If you consume alcohol, do so in moderation.
6) Get regular screenings for breast cancer, colorectal cancer, diabetes, and heart disease. Early detection of these health problems can lead to more successful treatment.
7) Stay informed and use common sense.

You can't help getting older,

but you don't have to get old.

— George Burns

Physical Activity: How much is enough?

One of the most common questions that people have about being active is, "How much do I need to exercise?" Before you become active, you need to understand the difference between exercise and physical activity. While "exercise" generally refers to a structured activity (such as working out at the gym or swimming), "physical activity" includes all of the movements you do over the course of the day, including walking around the mall and going up the stairs. It is now suggested that people focus on physical activity, rather than only exercise, because all activity confers health benefits.

How much activity? Guidelines for physical activity were established over a decade ago, but these were developed for younger adults. In the last two years, the United States Department of Heath and Human Services, with help from the American College of Sports Medicine and the American Heart Association, has developed a specific set of physical activity recommendations for older adults. These recommendations are designed to help maintain health, fitness, and physical function.

The recommendations for physical activity contain 4 major components: aerobic (endurance), strength (resistance), flexibility, and balance. Aerobic exercise is exercise that challenges the heart and cardiovascular system. Examples of this include walking, swimming, jogging, bike riding, and many sports. Dancing, climbing stairs, vacuuming, and mowing the yard with a push mower can also be considered aerobic activity. Current recommendations are that adults perform 2 hours and 30 minutes a week of moderate-intensity, or 1 hour and 15 minutes a week of vigorous-intensity aerobic physical activity, or some combination of the two. Judging what is moderate and vigorous activity can be done by thinking of a scale from 1-10, with 1 being no effort or exertion during the activity and 10 meaning you can't work any harder. Moderate activity is defined as a 5-6 and produces noticeable increase in your breathing. You should feel like you are exercising, but not so hard that you couldn't keep going. Vigorous activity is a 7-8 on that scale, and it can be distinguished by large increases in heart and breathing rate. This should feel challenging, but not so hard that you think you might get dizzy. Physical activity time should be accumulated over the course of each week. There are many simple ways to incorporate more aerobic activities into your daily life, such as taking the stairs instead of the elevator, parking further from the building when you go out, or walking for short trips instead of taking the car.

As people age, loss of muscle mass generally occurs. This can lead to weakness, which can make it more difficult to do everyday tasks. As a result, it is important for older adults to do strength training at least twice a week. A good strength training regimen includes all of your major muscle groups (arms, legs, and trunk), and uses moderate-to-high resistance. This can be achieved at a gym using traditional weight machines and calisthenics. If you prefer, you

For more information, consult the following resources, or contact us at the Muscle Physiology Lab at (413)-545-5305:

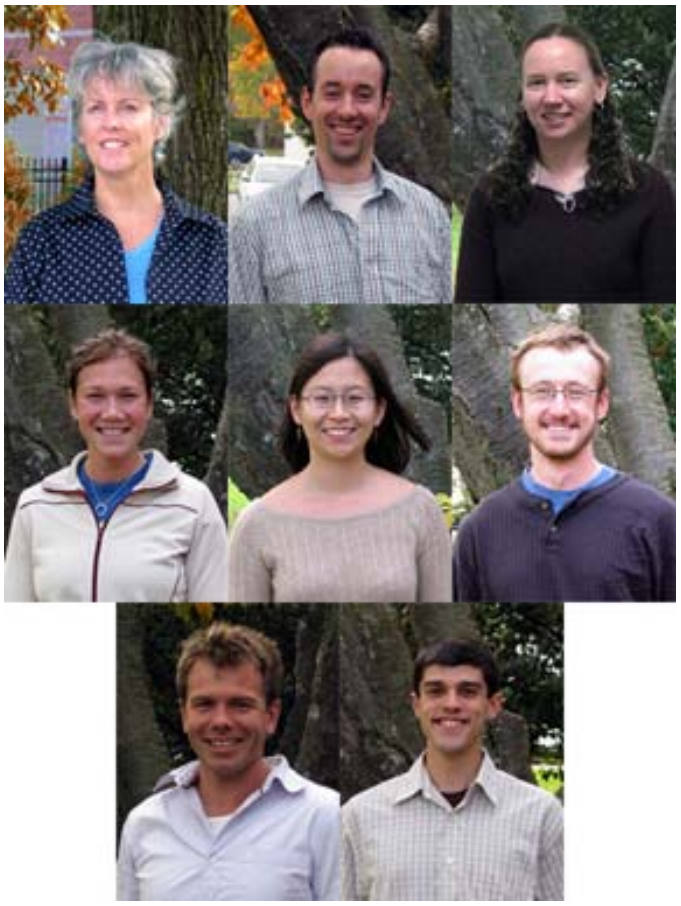
Exercise & Physical Activity: Your Everyday Guide from the National Institute on Aging:
http://www.nia.nih.gov/HealthInformation/Publications/ExerciseGuide
or
call 1-800-222-2225 to request a free copy

2008 Physical Activity Guidelines for Americans:
http://www.health.gov/paguidelines/guidelines/default.aspx

can also work strengthening activities into your routine by doing activities such as carrying the groceries across the parking lot, using a variety of simple strengthening devices at home, or trying some non-traditional core-strengthening exercises, like tai chi and yoga.

The final components of the physical activity guidelines are balance and flexibility activities. Balance is important, particularly in older adults, because it plays a crucial role in determining the extent to which an individual can prevent falls and continue to live independently. Balance activities can include backwards walking, standing on one foot, certain types of yoga, and repeatedly getting up from a chair without using your arms. Finally, it is important to spend 10 minutes each day stretching all of your major muscle groups. This is especially helpful after doing any physical activity.

There are, of course, some things to keep in mind as you increase your activity level. Begin by talking to your doctor about whether you have any limitations to keep in mind. Then, start slow and work your way up to more intense activities, particularly if you haven't been active in a while. Do only what you can, and remember: Any activity is better than no activity! If you find an activity is causing you pain, do something different. You don't want to get hurt and become sidelined! Most gyms and senior centers have certified personal trainers who can teach you proper use of equipment, as well as some good home exercises and stretches. Be active with a friend. Many studies have shown that people who find a friend to exercise with are more likely to stick with it. Most importantly, remember to have fun!



Best wishes and good health from the Muscle Physiology Lab!