

Progressive Resistance Training Can Build Muscle, Increase Strength as We Age

Researcher: Rob Duncan, CALA, Can-Fit-Pro Certified



Editor: Charlene Kopansky, CALA Founder and President

Research Findings

"Resistance exercise is a great way to increase lean muscle tissue and strength capacity so that people can function more readily in daily life," says Mark Peterson, Ph.D., a research fellow in the University of Michigan Physical Activity and Exercise Intervention Research Laboratory, at the Department of Physical Medicine and Rehabilitation.

"Our analyses of current research show that the most important factor in somebody's function is their strength capacity. No matter what age an individual is, they can experience significant strength improvement with progressive resistance exercise even into the eighth and ninth decades of life," he says. Normally, adults who are sedentary beyond age 50 can expect muscle loss of up to 0.4 pounds (.88 kg) a year. "That only worsens as people age. But even earlier in adulthood -- the 30s, 40s and 50s -- you can begin to see declines if you do not engage in any strengthening activities," Peterson says.

A review article by U-M researchers, published in *The American Journal of Medicine*, shows that after an average of 18-20 weeks of progressive resistance training, an adult can add 2.42 pounds (5.32 kg) of lean muscle to their body mass and increases their overall strength by 25-30 percent.

"Working out at age 20 is not the same as at age 70. A fitness professional with an understanding of those differences is important for your safety. In addition, current recommendations suggest that an older individual participate in strengthening exercise two days per week," Peterson says. "Based on the results of our studies, I would suggest that be thought of as the minimum."

As resistance training progresses and weights and machines are introduced, Peterson recommends incorporating full body exercises and exercises that use more than one joint and muscle group at a time, such as the leg press, chest press, and rows. These are safer and more effective in building muscle mass.

"You should also keep in mind the need for increased resistance and intensity of your training to continue building muscle mass and strength," he says.

"We firmly believe based on this research that progressive resistance training should be encouraged among healthy older adults to help minimize the loss of muscle mass and strength as they age," Peterson says.

Rob's Comments

We know a good deal of people who are afraid of the gym or weight training equipment. This is where water comes in.

Aquafit provides an excellent means of developing muscle strength and muscle mass in young and old



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alike. Water resistance (viscosity and speed) can contribute to the development of muscles and can be incorporated into the exercise program right from the start. No matter what movement one does in water there is resistance. The resistance and force generated depends upon the surface area, range of motion and speed of motion utilized during the movement. Progression of intensity can be regulated through proper instruction\coaching in varying speed of movement, length of lever and differing hand positions. By using these variations one can encourage the type of muscle growth needed by older adults.



Most of the exercises that take place in water, however, use concentric contraction of the muscle.

Muscle building, however, best takes place with eccentric movement. Still, concentric contractions will develop muscle growth, however, it may just take a little longer. The advantage of aquafit in this regard is that a water based program allows an individual to incorporate strength training more often than the recommended amount of two to three times per week because of the concentric muscle activation (contraction).

Eccentric muscle action (contraction) can make the body create more muscle mass and strength more quickly. And, we can do this in water through the use to resistance tubes with handles, omni-directional “bells” and “fins” or devices such as the Aqua Gymstick or the new Hydroider (bike adapted for cycling in water) that was introduced at the CALA Spring Conference in March 2011. By incorporating these devices, instructors can easily create multi joint exercise programs that have some eccentric contraction components helping to enhance muscle mass and strength. Peterson, for example, recommends incorporating full body exercises and exercises that use more than one joint and muscle group at a time, such as the leg press, chest press, and rows. These devices can be adjusted easily to allow for systematic, intensity progression of an exercise program. These are safe and more effective in building muscle mass and in water do not involved any jarring, loading or pounding of joints.



Water works well for older adults. Joints are protected from the jarring, compression and pain often associated with land based exercise. Heat is removed from bodies that do not have the same regulating mechanisms as do youths. And the massage that is generated through the turbulence of water is wonderful.