

# **Making exercise accessible**



## **Researchers test success of at-home fitness programs.**

by **Mary E. King, PhD**

It's no secret that exercise benefits almost everyone—including those with multiple sclerosis. And when an exercise professional helps design a program to an individual's needs, those benefits can be magnified.

"We know that supervised training may improve muscle strength, walking ability, balance, fatigue and quality of life in people with MS," says Lara Pilutti, PhD, assistant professor in the department of Kinesiology and Community Health at the University of Illinois at Urbana-Champaign.

But that's only half the battle, as Edward McAuley, PhD, Khan Professor in Applied Health Sciences at the University of Illinois at Urbana-Champaign points out. "While we have very good supervised exercise programs in university settings or medical centers, simply getting there can be a major issue for people with MS," he says. And the same holds true for attending a local recreation center or gym.

For starters, MS-related fatigue might prevent some individuals with the disease from venturing out into the community to exercise. Mobility and transportation problems can add to the difficulty, says Bo Fernhall, PhD, dean of the College of Applied Health Sciences at the University of Illinois at Urbana-Champaign. Home-based fitness programs may be one answer.

With the help of pilot study grants from the National MS Society, including projects supported with funds from a special MS-focused Illinois Lottery program, each of these researchers has

been designing and testing a different home-based fitness program specifically for individuals with MS. “We want to take the known benefits of supervised training and deliver it to people in their own homes,” Dr. Pilutti explains.

### **DVDs for older adults**



**A participant in Dr. Edward McAuley's exercise program for older adults performs a leg abduction exercise with a resistance band. Beginners can practice a modified version of this exercise by holding onto a chair.** Photo courtesy of the Exercise Psychology Laboratory, University of Illinois

Dr. McAuley has developed an exercise program for older adults that incorporates flexibility, muscle toning and balance exercises, and is delivered on DVDs. The DVDs provide instructions for performing each exercise, with options for both easier and more challenging variations, using older adults as the “models.”

In earlier research, the program was tested on more than 300 adults 65 and older (a group that Dr. McAuley says is not typically targeted for exercise programs) who did not have MS. He found that the program improved mobility, lower-body strength and balance in this group. Now, in a small pilot study, Dr. McAuley has tested the program on 48 middle-aged people with MS to see if they, too, will benefit. He hopes to have final results later this year.

To keep participants motivated, Dr. McAuley included a logbook and an introductory DVD that discusses how to set goals, build self-confidence in exercising and be more physically active in general. “We also provided some telephone support [during the study] to ask about barriers to exercise the participants may be facing, and we provided suggestions on how to overcome these,” he states.

If the program is successful, Dr. McAuley hopes to eventually make it available to MS clinics, so doctors and therapists could have a proven training program to recommend. Dr. McAuley is also continuing to study how well the program works with older adults without MS. His intent is to determine whether offering it simply as DVD-based training—without the additional phone support and personalized feedback—is equally effective.

### **Muscling up motivation**

Dr. Pilutti developed an at-home resistance-training program to restore and improve muscle strength. In a pilot study of the program, 32 adults with MS were given baseline tests of walking speed and endurance, along with tests of certain cognitive skills (like the speed of processing information as well as visual and verbal memory). She also assessed fatigue, pain and quality of life in each participant. She then randomly assigned participants to either the resistance-training program or to a stretching program (the control group) for six months.

The individuals learned their exercises during their first visit to the university. If they were in the strength-training program, they received resistance equipment (weighted vests and resistance bands) and a training manual to take home. Study participants returned monthly for progress checks and feedback, and they received periodic phone coaching. At the final visit, everyone repeated the initial tests to see how much progress they had made.

Dr. Pilutti, like Dr. McAuley, stresses that motivation is very important. “We incorporated strategies, like how to set goals appropriately, and we gave tips to help participants stick to [the program].” She too included a participant logbook because, she says, “It helps with accountability.”



**For the forward shoulder raise, a participant raises and lowers his arms with slow, controlled movements.** Photo

courtesy of the Exercise Psychology Laboratory, University of Illinois

If the program is successful, she wants to make it accessible to more people in the community by requiring fewer visits to the university. Dr. Pilutti also is considering alternate ways of providing the coaching aspect, such as through online programs.

“We hope to see benefits with this home exercise program similar to those that people with MS achieve with supervised exercise,” she says. “[That] would allow us to improve functional fitness outcomes in many more people with MS.”

Preliminary results from the study suggest improvements in some measures of cognition and walking in response to the strength-training intervention. Dr. Pilutti is still analyzing the data, however, and anticipates submitting final results for publication sometime in 2015.

### **Cyber-cycling**

Dr. Fernhall is enrolling 54 adults with MS who have mild to moderate mobility impairments in a study of a home-fitness program with online support. Each participant first wears an accelerometer (like a personal fitness monitor) for a week to establish baseline activity. Next, the person takes a timed walking test and other tests of mobility and a baseline test of physical performance on an exercise bike at Dr. Fernhall’s campus laboratory.

Dr. Fernhall explains that other research has shown that people with MS have an increased risk for cardiovascular disease, possibly because of the lack of regular exercise and worsening mobility, so he is looking for early signs of atherosclerosis (narrowing of arteries due to plaque buildup) as well. He does this by taking some non-invasive measurements of how well the person’s blood vessels are functioning, which can reveal early atherosclerosis.

After those initial tests, Dr. Fernhall places a stationary bicycle that is hooked up to the Internet in each participant’s home. This allows his research group to get direct feedback on how much the bike is being used and how intense the exercise is during the 12-week study.

Each participant receives a personalized exercise prescription for the bike, usually starting with a fairly low and steady resistance setting for 10 to 15 minutes three times a week. They then try to build to 30 to 40 minutes of cycling four to five times a week.

To help maintain motivation, Dr. Fernhall conducts a quick weekly counseling session online with each person, usually through Skype. Individual exercise prescriptions are updated

periodically as needed. Participants also return to the laboratory at six and 12 weeks to repeat the initial tests.

Preliminary results from initial participants indicate that both fitness and walking ability may be improved with this home cycling program.

“We are hoping that this will be a very efficacious type of treatment for improving fitness, but we also hope that this will improve [early signs of] atherosclerosis,” Dr. Fernhall says. Ultimately, he says, it could serve as a model to help a large number of people with MS in a relatively low-cost setting. Dr. Fernhall anticipates final results sometime in late 2015.

### **Hope at home**

All of these researchers want to extend their programs, if successful, to even more people with MS. As Dr. McAuley points out, “If we can get people with MS to do these activities at home on a regular basis, the programs have the potential to reduce injury, disability and early morbidity.”

He adds, “It will also, we hope, help participants [develop the strength and endurance to] do some of the things they would like to do, like picking up their grandchildren, walking to see friends and so forth.”

**Mary E. King, PhD, is a medical writer in Boulder, Colorado.**

For more on home-based fitness, see “[Bringing exercise home](#).”