

# CASE REVIEW

THE JOURNAL FOR CASE MANAGEMENT PROFESSIONALS

## DISEASE MANAGEMENT

The disease state management concept brought proactive case management to the forefront. What is the future for programs?

## DATA INFORMATION

Systems must streamline the case review process but be flexible enough to incorporate many case management needs and styles.

## PULMONARY CARE

With total care planning, pregnancy for women with chronic pulmonary conditions is more viable today than ever before.

## STRENGTH TRAINING

Regimens help seniors build body mass and improve physiological functions to enhance health and aid in recovery.

## COORDINATING POSTACUTE CARE

Revolutionary changes in health management and technology have expanded the postacute continuum to include skilled nursing, home health, custodial, and outpatient services.

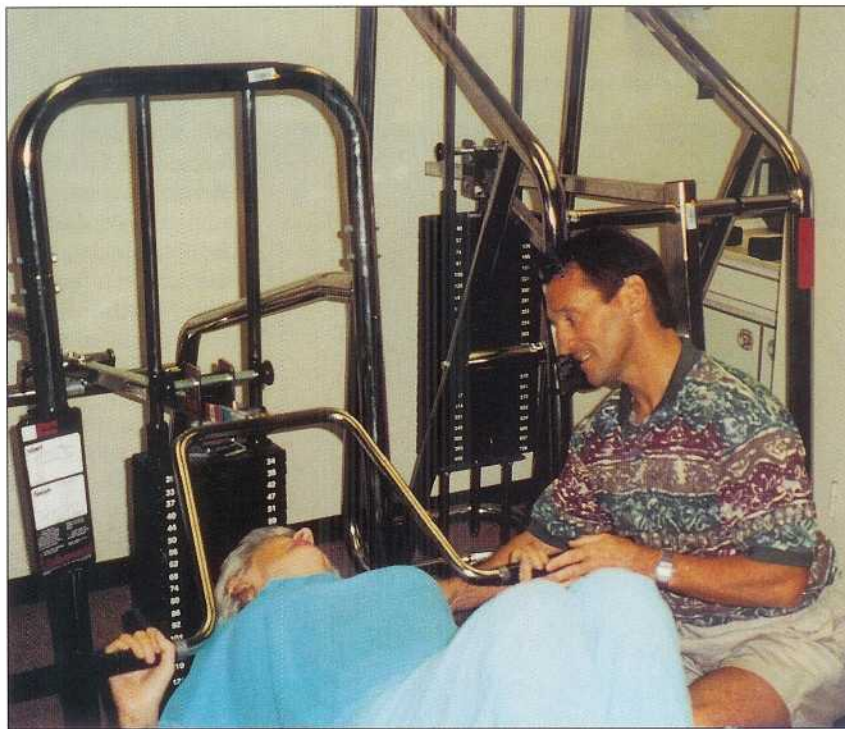
Gary Jacobs, MPA, and Sue Zimmerman, RN, CCM, merged the benefits of a postacute provider network with case management oversight in Capitated Health Care Services, Sunrise, Fla





# New Strength for. Seniors

By Rich Smith



*Many elderly Americans shun strength training as a pursuit for the young. However, researchers have found that a progressive resistance regimen can build up the body to stave off physical degeneration and stand up to illness and injury.*

Reducing hospital, nursing home, and physician office utilization for seniors represents one of the most daunting challenges for case managers. After all, the older an individual is, the more frail and increasingly vulnerable to injury and illness he/she is likely to become.

A growing body of research suggests that geriatric population utilizations of health care services can be significantly decreased by treating—or better, preventing frailty through a strength-training regimen of progressive-resistance exercises. “Strength training reduces health care costs while it improves patient quality of life,” says Maria Fiatarone, MD, assistant professor at Harvard Medical School, Cambridge, Mass, and chief of the physiology laboratory at the Human Nutrition Center at Tufts University, Medford, Mass. “Frailty produces functional dependence, which leads to much higher health care costs in the form of either institutionalization or extensive home health services.”

Linda K. Hall, PhD, director of cardiovascular services at The Cardiac Wellness Center, Memphis, says elderly individuals who have undergone strength training are far less likely to fall and break a hip or fracture an arm than individuals in the same age bracket who are sedentary. That is because strength training not only reverses many of the effects of aging on bone and connective tissue (thereby lessening the potential for damage from a tumble), but improves a person’s balance, minimizing the likelihood of taking a spill in the first place.

Strength training increases muscle mass

According to Wayne T. Phillips, PhD, research associate with the Center for Research in Disease Prevention at Stanford University, Palo Alto, Calif, a regular strengthening regimen offers numerous physiological and psychological benefits to the health of seniors.

in the elderly, says Wayne T. Phillips, PhD, research associate with the Center for Research in Disease Prevention at Stanford University School of Medicine, Palo Alto, Calif. Phillips conducted a pioneering study on the issue.<sup>1</sup> According to Phillips, increased muscle mass helps the aging body bear up much better under viral infections. At the same time, it helps individuals avoid developing metabolic conditions such as insulin resistance or adult-onset diabetes.

Ancillary benefits to strength training for this age group are numerous. First, it helps overcome depression, a serious mental health problem among the elderly. Progressive-resistance exercises stimulate the brain’s production of the hormones necessary for a sense of well-being. Moreover, as each successive workout adds to improved body function, strength, and appearance, the aging adult commonly experiences a significant boost in self-esteem and activity. Strength training helps elderly individuals sleep more restfully at night as well.

#### **1% LOSS PER YEAR**

To appreciate the value of strength training, experts say it is helpful to recognize the degree to which the aging process degenerates nerve and muscle cells along





According to Maria Fiatarone, MD, chief of the physiology laboratory at the Human Nutrition Center at Tufts University, Medford, Mass, a body of research has shown the benefits of strength training for seniors. "Strength training reduces health care costs while it improves patient quality of life," she says. Studies conducted at Tufts and other universities have shown that a regular strength-resistance regimen increases muscle mass, helps the body fight infection, improves metabolic function, and provides a sense of well-being to avoid depression, a common psychological inhibitor in healing.

with the integrity of all the body's systems. "Degeneration begins about the time a person turns 40, and it occurs at a rate of approximately 1% per year," Hall says. "As such, by the time a person reaches his/her 70th birthday, he/she will have lost approximately 30% of the power of the heart to move blood and of the lungs to oxygenate. However, if this same person exercises 30 minutes a day, three or four times a week, the rate of degeneration can be cut in half."

Researchers estimate that only about 20% of Americans over age 60 engage in any kind of exercise—progressive resistance or otherwise—on a regular basis. Consequently, Hall estimates that 70% of ostensibly healthy men and women 65 and older are unable to carry a loaded grocery bag up a flight of stairs.

"For the sedentary elderly, when they face an acute event or an acute chronic event, they enter the hospital with the disease process [and] already experiencing a

lack of strength, a lack of muscular power, and a lack of total systemic energy," Hall says. "From that entry point, the rate at which they lose muscle, bone tissue, and strength in general accelerates the longer they remain inactive. The greater the loss, the more it impairs function and movement from that time forward."

Hall credits strength training with sparing about 45% of her elderly congestive heart failure (CHF) patients from admission to long-term subacute care or readmission to acute care during the months immediately following discharge from an acute

*Frailty produces functional dependence, which leads to much higher health care costs in the form of either institutionalization or extensive home health services.*

setting. "We have a CHF patient—an elderly woman who also is a recovering cancer patient missing one half of her right lung and a third of her left lung—who is today able to engage in a variety of activities of daily living," Hall says of an individual in the Cardiac Wellness Center program. "When she first arrived here, she was so weak she had to be driven here by a nurse and brought in in a wheelchair. Contrast that with now: last week, for the first time, the woman was able to drive herself here

without assistance. She goes out to lunch with friends. She's been liberated."

### **MISPERCEPTIONS AND DISINCENTIVES**

With all that strength training has to offer, it is a wonder more seniors are not engaged in it. Most elderly people are at least vaguely aware of their need to exercise, thanks to the bombardment of health and fitness messages aimed at them via television, talk shows, and commercials, plus a plethora of books, newspapers, and magazines.

However, the dearth in actual participation by the elderly in regular strength-training regimens comes as no surprise to experts who recognize that the information and advice gleaned from the mass media are frequently incomplete and inaccurate. "Walking, for instance," Fiatarone says. "The elderly know they should be doing it, but what they don't know is that walking by itself is insufficient to prevent muscle atrophy."

Many elderly who otherwise might be willing to undertake a progressive-resistance exercise routine hew to the unfounded belief that weight lifting may pose dangers if they suffer heart disease, high blood pressure, or general frailty. Physicians unaware of the latest research have yet to set the record straight. "A woman diagnosed with heart valve disease was instructed by a physician to avoid lifting anything heavy for fear of aggravating the condition," Hall says. "She followed that advice. She ended up having a valve replacement at age 55, but returned home from the hospital in such a weakened condition that she required assistance doing even simple tasks of daily living, such as turning on the water from the tap."

Another inhibitor of elderly participation in strength training is the faulty notion that progressive-resistance exercise involves nothing but pumping iron. "Barbells and dumbbells aren't the only types of weights that can be used," Hall says. "A patient can derive benefit just from three times a day taking all the canned goods off the kitchen shelves and then putting them back where they belong."

Some elderly women are opposed to the concept of strength training out of fear that it will cause them to develop bulging muscles. "In the South particularly, elderly women feel it's not feminine to exercise and condition for strength," Hall says. "The message simply has not reached a lot of women that strength training is incredibly important in terms of maintaining postmenopausal bone and muscle strength."



Fiatarone adds that many women—and men, too—fret that working out with weights will require enrollment in a hard-body-thronged fitness club when they would much prefer to exercise in the privacy of their homes. But there is a Catch-22 involved.

“A gym is a place where they can access appropriate equipment and instruction,” Fiatarone says, “but many elderly are not comfortable in that environment. Yet, while most would be comfortable training at home, they are reluctant to do so for want of adequate supervision. Part of the problem, too, is that there is a lack of suitable equipment for strength training at home. There is a lot of aerobic and cardiovascular equipment available, but not as much useful equipment for strength training that doesn’t seemingly consume all the space in a room.”

#### CULTURAL EXPECTATIONS

Perhaps the greatest inhibitor of all is not misinformation but Americans’ views of old age. Unlike in other parts of the world, the United States tends to view the sunset years as a time of well-deserved leisure, a time to slow down and enjoy the fruits of youthful labor—lifting weights does not gel well with that mentality. Meanwhile, a minority of seniors take the opposite view, that the best years of their lives are still to come, and so remain in the workforce long after retirement age or load their social calendars to the point of bursting—the result is the complaint that they do not have the time to engage in strength training, according to Hall.

Debunking the misperceptions and overcoming the attitudes requires a concerted effort. But once a senior is persuaded and begins strength training, impressive results soon follow, experts assure. The swiftest and most substantial gains are achieved in highly controlled settings where patients work one-on-one with a skilled trainer, using the latest in computerized equipment, Fiatarone says. Conversely, gains come about slowest and least dramatically when patients exercise on their own, without supervision, instruction, and motivational coaching.

However, some experts are convinced strength training can occur anywhere—even in bed. “As long as the patient is medically stable, he/she could be in a coma and still benefit from strength training,” Hall says. “In this situation, though, the exercise would obviously have to be in the form of passive activity performed with the help of a therapist. But it would still be helpful in staving off

the daily acceleration of degeneration.”

For cardiac patients Hall advocates that progressive resistance exercises be initiated in the acute setting and continue as the patient moves from point to point within the care continuum. “Strength training should be a standard feature of recovery, whether the patient is in a subacute or skilled nursing facility or in home care,” she says. “And then, it should carry forward as a daily part of living after the patient has exited the care continuum.”

#### SETTING GOALS

As in traditional therapy, goals should be established for elderly patients who enter a strength-training program. Fiatarone suggests an overarching objective should be to increase the patient’s strength 50% to 100% within 12 weeks of the start of training. Such a goal—wholly feasible in a great many cases—requires the amount of weight lifted to be increased in manageable increments weekly.

There currently are no critical paths or algorithms that case managers or clinicians can draw upon to help develop a training regimen. However, Hall recommends consulting those reference texts that describe the aging process and the rehabilitation of each type of musculoskeletal condition in order to identify exercises the patient absolutely should not do. “The training regimen has to be tailored to each individual’s condition, taking into account his/her abilities, stamina, interests and desires,” Hall says. “We start by evaluating the patient for nutrition adequacy, exercise tolerance, disease status, and risk factors. Goals are set to reflect those factors, but the patient is really the one who sets the agenda. We develop those goals based on what the patient wants to achieve and on what he/she places importance on.”

Patient participation in this goal-setting process is crucial, Hall says. “Because, if they’re not part of the process [of] deciding where they’re going, they aren’t going to be part of the process of getting there.”

Getting there also means rigorous monitoring to ensure progress is made. Good record keeping is essential in this effort. Fiatarone says patients should be asked to log the amount of weight lifted and the number of repetitions achieved for each exercise at the end of each workout. The log should be reviewed by clinicians every few weeks. Clinicians should also periodically observe each patient

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## THE PURSUIT OF STRENGTH

*Although aerobic exercise provides cardiovascular benefits, strength training provides the muscle mass to support seniors in daily functions.*

Barring a medical indication to the contrary, there may be no upper limit to the age at which men and women can participate in and derive benefit from a high-intensity strength-training program. “Gains of 100% in strength for men and women with an average age of 92 have been shown now to be possible,” says Wayne T. Phillips, PhD, research associate with the Center for Research in Disease Prevention at Stanford University School of Medicine, Palo Alto, Calif. “That’s quite impressive.”

Because not a great deal was known until recently about the effects of strength training on the elderly, most geriatric exercise programs emphasized aerobic training. For the past 10 years, the exercise fad has become aerobic in nature for all ages, and although experts maintain that an aerobic regimen has definite benefits, providing improved stamina and balance, building muscle mass, they argue, is as important, if not more important, particularly for the elderly.

“What we now understand is that, as one ages, aerobic exercise becomes less important and resistance exercise become more important,” Phillips says. “The reason is that the challenges of life after age 65 are more related to getting up out of a chair or going up a flight of stairs. For those activities you need strength more than aerobic fitness.”

According to Phillips, a high-intensity strength-training program is one in which the elderly participant strives to perform eight to 10 repetitions of a given exercise—such as a leg extension or an arm curl—using weights that are equal to at least 80% of the maximum poundage it would take to prevent the individual from completing more than a single repetition. And although machines found in fitness centers provide the best protection against injury, experts suggest a simple regimen can do equally well, provided the individual is dedicated to getting results. ■



working out in order to gauge whether the actual performance comports with the most recent log entries and to ensure that exercises are done correctly.

Generally, though, compliance among the elderly in strength training is better than it is among younger adults, Fiatarone says. She attributes this to the fact that the older the individual and the poorer his/her health at the start of training, the better the individual will soon feel as a result of full compliance with the program. "Patients feel so good that they want to continue, they don't want to go back to feeling bad again," she says. "The first time they do stop, they realize how quickly their strength and the resultant good feeling fades away. For many patients, that one step backward is enough to motivate them to not slack off again. They become almost religious about the regimen from that point."

Approximately 65% of patients will be in full compliance with their exercise regimens at the Cardiac Wellness Center, according to Hall. The program attempts to inspire compliance in all participants by mandating that each newcomer attend a 3-hour anger, communication, and stress-management workshop. This, Hall implies, helps reduce bitterness and frustration that can contribute to noncompliance. Meanwhile, smokers are sent to a smoking cessation workshop—the idea being to make it easier for participants to breathe and thereby find it less a struggle to exercise. "Sometimes, you have to start with a physician prescription for an antidepressant drug to get enough life into the patient that they can participate in a strengthening program," she says.

Fiatarone advises that compliance can be abetted with rewards. These can run the gamut from a pat on the back to certificates for free or discounted products and services.

Because of the repetitious nature of strength-training exercises, boredom can

quickly set in. Fiatarone identifies boredom as the source of many a spotty compliance record. To combat this, she suggests periodically employing substitute exercises—those that work the same muscle groups as before but involving different equipment, movements, or a combination of the two. "Boredom is not the barrier to compliance some might think, Fiatarone says. "It is possible to conquer it and, at the same time, inspire long-term compliance.

For example, we have a few nursing home residents in their late 90s who've been with our program 6 years now."

Frustration is another compliance killer. Some patients faithfully and enthusiastically adhere to their workout regimen only to become discouraged once they sense themselves making little or no progress. "People do eventually reach a strength plateau, but it takes a long time to get there," Fiatarone says. "Studies indicate that strength gains keep building for at least 2 years from the starting point, as long as compliance is consistent and the amount of weight is regularly increased."

Hall says this underscores the need to view strength training as more than a short-term proposition. "The patient has to

be in it for the long haul in order for him/her—and by extension, the providers and payors—to realize the benefits," she says. "And the benefits are potentially quite significant. So much so that I think over the next 5 years, we'll see centers devoted to building exercise tolerance and strengthening for the elderly popping up all over the country. Strength training is a very cost-effective mechanism." ■

*Rich Smith is a contributing writer for Case Review.*

#### REFERENCE

1. Phillips WT, Hazeldene R. Strength and muscle mass changes in elderly men following maximal isokinetic training. *Gerontology*, 1996;42:114-120.

*The sedentary elderly enter the hospital with the disease process and already experiencing a lack of strength, a lack of muscular power, and a lack of total systemic energy.*