



# Research

MAGAZINE OF SCHOLARSHIP  
AND CREATIVE ACTIVITY AT  
ARIZONA STATE UNIVERSITY



BUTTERFLY SIGHT

HEALTHY THINKING

GAINING DIMENSION

**ASU**

FALL 2002 | A MEASURE OF STRESS



A close-up photograph of a red mallet with a dark grey, textured head. The mallet is positioned diagonally, with the head at the top right and the handle extending towards the bottom left. The red handle shows signs of wear, with several dark, scuffed patches. The background is a plain, light-colored surface, and a soft shadow of the mallet is cast to the right. The overall image has a slightly grainy texture.

Aging

the Healthy  
WAY

TEXT BY DIANE BOUDREAU :: PHOTOS BY JOHN C. PHILLIPS



**“People say coming here is what keeps them going. It helps them stay well.”**

When the 78-year-old man first came to see Diane Nuñez, he was visiting the emergency room at a local hospital about once a month to get treatment for severe asthma attacks. Gregory (not his real name) had suffered asthma all his life. It continued to get worse.

After each visit, doctors gave him new medicines and some type of inhaler device. Gregory wasn't really sure how to use them. The hospital provided little instruction.

Unsure of how to use his medications and equipment properly, Gregory's future probably included more frightening asthma attacks and more expensive hospital visits. Fortunately, he was a regular visitor to the Escalante Senior Center in Tempe, where Nuñez works as a nurse practitioner.

“I could see he didn't know how to mix treatments and use the equipment properly,” says Nuñez, also an assistant professor of nursing at ASU. “When you go to the hospital, if you don't learn how to do your treatments there they will send a home health aide to your house. You get one or two home visits. That's it. But some people don't learn that fast.”

Because Gregory visited the center daily, Nuñez could offer him assistance that the hospital could not. She administered his daily treatments. She also showed him how to put his machine together each time. “We used some creative techniques,” Nuñez explains. “I took a big paper and drew the machine, all the pieces, and how to fit them together. When Gregory needed to use it he could roll it out the diagram each time. It took probably three months for him to gain strong enough understanding that he could do it on his own. But now he's been doing well for four years.”

Gregory's monthly hospital visits stopped. During the past four years, he has been in the hospital a few times total.

Gregory's tale is one of many individual success stories generated by the Healthy WAY (Wellness Activities with You) Program in Tempe's Escalante neighborhood. The program is part of the Escalante Health Partnerships. It is designed to address the unmet health needs of Tempe neighborhood residents. Healthy WAY was the first of the Partnerships' programs, founded in 1991 by ASU nursing professor Betty Gale. It specifically addresses the needs of older residents.

“The College of Nursing was involved with the Escalante neighborhood for quite a while. They saw so many needs there—safety issues and health needs,” says Charlotte Armbruster, a faculty associate in the College of Nursing and the program director for the health partnerships.

Healthy WAY participants range in age from 56 to 90 years, with the majority being 65 and over. The program offers health promotion and education, group screenings, and individual wellness planning. To date, it has enjoyed remarkable success.

For example, Healthy WAY participants average 4.2 doctor visits per year, compared with a national average of 7.1 office visits for their peers nationwide. Healthy WAY participants spend an average of 1.6 days in the hospital each year, compared to 2.1 days for the national group.

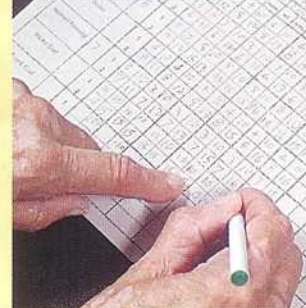
Healthy WAY participants report better health than their peers, responding to survey categories such as physical functioning, body pain, vitality, and mental health.

Escalante is a multi-ethnic, low-income neighborhood. The majority of the older adults in the area are women who live alone and report annual incomes of less than \$6,000. “If they see their doctor even two times a month and the co-pay is \$10, that hurts them financially,” explains Nuñez. “If I'm able to triage and work with the doctor over the phone, I can help keep patients from being in the doctor's office all the time.”

For example, one of her patients has congestive heart failure. The woman requires daily monitoring of her blood pressure, weight, and other health indicators. “If she had to go to the doctor every day that would cost a lot!” says Nuñez. Instead, Nuñez monitors the woman at the center and refers her to a doctor only when necessary.

The health and financial benefits Healthy WAY offers its participants are obvious. But the program also helps lower costs for everyone. Nuñez notes that all of her clients are on Medicare, which is taxpayer-funded.

“All of us are paying for their healthcare, so it behooves us all to keep them healthy,” she says. “Our program costs are really minimal compared to the impact on the overall economy. If there were more programs like ours, there wouldn't be so many costs.”







**"These are high-cost clients. If we can keep them well**

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**And on their quality of life."**

DIANE NUÑEZ CHECKS  
BLOOD PRESSURE FOR ESCALANTE  
WEIGHTROOM REGULAR BOB JUSTUS.

Healthy WAY takes a holistic approach to health. The program takes advantage of the strengths of the community and the resources of the attached community center. Nuñez calls it "one-stop shopping" for health, socializing, physical conditioning, and more. Seniors can socialize with their friends at the center, attend a health class, and then go exercise in the gym or swimming pool, for example. Nuñez works with clients to create a personalized wellness plan.

The center hosts workshops and courses on topics ranging from how to communicate with your doctor to managing diabetes. The program also offers numerous health screenings such as cholesterol and hearing tests, flu vaccine clinics, and geriatric massage therapy. "The successes [of Healthy WAY] have to do with seeing the clients every day, or on a regular basis," explains Nuñez. "This group is a very close knit family network."

Many of the clients live alone. They may not have family members to help them manage prescriptions or other health issues. At the senior center they have friends to talk to and a trained nursing staff to help them.

**R.J.'s Story** R.J. is 65 years old and has had diabetes for more than 20 years. His wife was his primary caregiver. She gave him his daily insulin injections and planned his diet. When she died, R.J. became responsible for managing a disease he really didn't understand. His health care providers assumed that he knew all about diabetes because he had lived with it for so long. Because of that misconception, they did not offer any help.

R.J.'s health took a nosedive. He needed increased amounts of insulin and began suffering complications such as foot ulcers and kidney problems.

Then R.J. visited a nurse at the Escalante Senior Center. She helped him enroll in a diabetes education class provided by his health plan. She met with him weekly to review concepts learned in the classes. She offered support. She checked his blood pressure and foot condition weekly, and monitored his glucose levels periodically as well.

After six months of such individualized care, R.J. now takes half as much insulin as he did before joining the program. His blood pressure readings have normalized. His foot ulcers have disappeared and his kidneys are functioning within acceptable ranges.

All of the health services provided through the Escalante Health Partnerships are free of charge. The program is sustained through partnerships with more than 100 local groups, including nonprofit organizations, local government agencies, schools and businesses. These groups provide goods, services and monetary contributions. In addition, more than 300 volunteers each year help keep the Health Partnerships alive and well.

Participants themselves often give back to the program.

"There are no fees or co-pays. However, many clients will voluntarily give a donation to the center for the services if they are able," says Nuñez. "People say coming here is what keeps them going. It helps them stay well."

The benefits of better health reach far beyond the confines of the Escalante neighborhood. "These are high-cost clients," Nuñez says. "If we can keep them well it has a national impact on healthcare. And on their quality of life."

HEALTHY WAY AND OTHER HEALTH PARTNERSHIP PROGRAMS ARE SUPPORTED BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, TEMPE ST. LUKE'S CHARITABLE HEALTH TRUST, THE FLYNN FOUNDATION, AND THE AREA AGENCY ON AGING. FOR MORE INFORMATION, CONTACT THE COLLEGE OF NURSING, 480.965.3244. OR VISIT [HTTP://NURSING.ASU.EDU/ESCALANTE/INDEX.HTM](http://nursing.asu.edu/escalante/index.htm)

## Strength That Lasts

The scene never fails to shock people. Walking past the weight room at the Escalante Senior Center, visitors glimpse a 92-year-old man pushing 350 pounds on the leg press machine. A gray-haired lady squeezes out one last repetition on the shoulder press. Another is doing biceps curls with free weights.

"Invariably, people ask if this is safe for them to do," says Wayne Phillips, an ASU East professor of exercise and wellness and director of the weight training program at Escalante. "Not only is it safe, it's beneficial."

Phillips studies the effects of weight training on the health of older adults. He hopes to improve the health and expand the physical capability of seniors participating in his program.

The program consists of six exercises: chest press, leg press, shoulder press, seated row, triceps press, and bicep curl. Participants execute just one set of 12 to 15 repetitions, to fatigue. In other words, they lift enough weight that they cannot physically manage more than 15 reps. The entire workout only takes 20 minutes to a half-hour, three times a week. The results are positive.

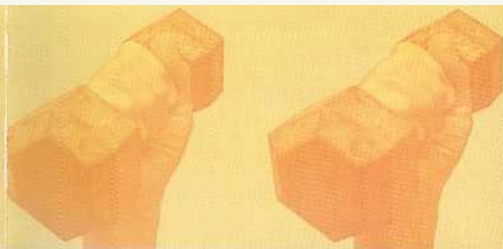
To date, Phillips' research results indicate that after 12 weeks on the program, participants show an improvement in physical function. The improvement is measured by their performance on three tests.

Subjects sit in a chair as part of the first test. They stand up and then sit down as many times as they can in 30 seconds. The second test measures the time it takes for a subject to rise from a chair, walk quickly around a cone, and sit down again. The third test measures how many times the subject can lift a weight onto a shelf from a seated position.

Phillips found that the participant's ability to do these tasks increased by a margin of 22 to 34 percent. He compared an individual's performance on Day 1 with that after 12 weeks in the program.

Matt Essex is an ASU research specialist who works with Phillips. As part of the research for his master's thesis, Essex compared blood lipid levels among 14 of Escalante's weight-lifters and 14 non-exercising controls. "We basically found that the workout program had positive effects," he says. "People not in the program worsened quickly. People in the program didn't get worse, and some got better."





WAYNE PHILLIPS

He says that the positive results included raised levels of high-density lipoprotein cholesterol (HDL or "good" cholesterol) in the blood of people taking part in the exercise program. Those same people also had decreased levels of low-density lipoprotein cholesterol (LDL or "bad" cholesterol).

The researchers also measure self-efficacy and quality of life as reported by participants. While more difficult to measure, these factors are probably most meaningful to the participants.

Phillips shares a story to illustrate. "Hazel is one of our regulars," he says. "Last year she came in and told us that the television set in her living room had broken. 'Do you know what I did?' she said. 'I went into the bedroom and picked up the other TV and brought it into

the living room. I could never have done that without your strength training.'

"Could she have done it without strength training? I don't know. I do know that she probably never would have tried," Phillips adds.

Phillips says he still battles the stereotype that senior citizens shouldn't exert themselves. "When I first started there weren't many studies on the effects of strength training on seniors. It was assumed to be contraindicative for older people," he explains. "It is now pretty well accepted among scientists that strength training is a good thing. Still, there are some people who are still surprised that it's okay," he says.

Another common misconception is that a lighter workout, using lower weight or exercise bands, will have the same health effects as a workout with heavier resistance. "You need to be lifting about 70 percent of your maximum ability. For our group, the average intensity is around 75 percent. We raise the weight once the person can do at least 12 reps consistently," says Phillips.

Many participants at Escalante are hesitant at first. Phillips and his assistants encourage them by saying, "If you can do more, you'll get more health benefits."

Webster Willieford has been with the program since it began three years ago. After finishing his weightlifting for the day, he stops to say goodbye to Phillips. He is quick to proudly add,

"Be sure to mention that I'm 92 years old and married for 71 years!"

He should be proud, and Phillips and Essex obviously feel the same. They speak fondly of current and past participants. "Bob, the ex-Marine, is at the maximum weight level for the leg press. On the standing up test, he is as good as he can get. He can't do any more reps because you simply can't move that fast. We love him but he screws up our averages!" jokes Phillips.

"Richard was our hooligan," he adds, referring to a former participant. "He would climb up on the weight machines and race people down the halls. He would tell us stories of his coal mining days."

Essex adds, "Most of these people are no strangers to hard work. It's just that people tell them they shouldn't exercise because they are older."

Those people are being proven wrong. Phillips says that most observers focus on the impressive amount of weight the participants lift. But what really keeps people like Webster and Bob coming back is the workout's effect on their daily activities.

"What's important to these people is not doing aerobics or having washboard abs," Phillips says. "They like being able to do the laundry. They like being able to play with their grandkids." Diane Boudreau

"They like being able to do the laundry.

They like being able to play with their grandkids."

**Weight training can be a good thing.** There are ways to maximize the health benefits of a workout with weights. Wayne Phillips is an assistant professor of exercise and wellness at ASU East. He says that a person must lift about 70 percent of his or her maximum capacity to gain the maximum health benefit. Sounds good. But how do you know what your maximum capacity is?

Phillips says that your max weight is the highest amount of weight you can lift one time for a given exercise. If you can lift 60 pounds once on the overhead press, but you cannot lift 65 pounds at all, then your max weight would be 60 pounds for that exercise.

If you want the maximum health benefit during a workout, you should then aim to lift 70 percent of that weight—somewhere around 42 pounds.

To figure out your maximum weight capacity for any given exercise, follow these steps:

- 1: CHOOSE AN EXERCISE, THEN SELECT A WEIGHT THAT YOU THINK IS CLOSE TO YOUR MAXIMUM.
- 2: EXECUTE THE EXERCISE ONCE AT THIS WEIGHT.
- 3: IF YOU SUCCEED, INCREASE THE WEIGHT TO THE NEXT LEVEL AND TRY AGAIN.
- 4: REPEAT STEPS 2 AND 3 UNTIL YOU REACH A WEIGHT THAT YOU ARE UNABLE TO LIFT.
- 5: DECREASE THE WEIGHT DOWN ONE NOTCH AND TRY AGAIN. IF YOU SUCCEED, INCREASE THE WEIGHT AGAIN.
- 6: IF YOU FAIL A SECOND TIME, YOU'VE REACHED YOUR LIMIT. THE WEIGHT JUST BELOW FAILURE IS YOUR MAXIMUM CAPACITY.
- 7: MULTIPLY THIS AMOUNT BY .70 TO FIGURE OUT HOW MUCH WEIGHT YOU SHOULD LIFT DURING A REGULAR WORKOUT.

Keep the number of trials low when determining your maximum weight capability. "Four to five times is optimal," says Phillips. "If you attempt too many trial lifts, you are likely to fail out of fatigue, not because you have reached the highest weight you can lift." Diane Boudreau