

A study conducted by researchers at Albert Einstein College of Medicine found that dancing and other leisure activities can reduce the risk of developing dementia. The study is just one part of a major research program at the college seeking a better understanding of aging and cognitive decline.

Dancing INTO OLD AGE

BY GARY GOLDENBERG

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When Gerald Ford took his famous tumble down an airplane ramp, the pundits and comedians immediately turned his misstep into an emblem of his presidency. The stumblebum image of our 38th president stuck, unfair though it was. As it turns out, these commentators were on to something—not about President Ford, but rather about all of us. How we walk—our gait, to be a bit more scientific—can reveal a great deal about our mental and physical health.

“Gait is a final manifestation of processes that take place all along the nervous system, from the brain down to the muscles and nerves in the feet,” explained Joe Verghese, MD, an assistant professor of neurology at Albert Einstein College of Medicine. To his finely tuned eye, subtle variances in gait—from shuffling to swaying to difficulty making turns—are invaluable prognostic clues. For example, certain gait abnormalities, he has discovered, may reveal whether one is at heightened risk for vascular dementia (the second most common form of dementia after Alzheimer’s disease) or for falling (a major cause of disability, institutionalization, and death among the elderly). “What I use gait for,” he said, “is to get a window into the brain.”

THE EINSTEIN AGING STUDY

The study of gait is just one aspect of ongoing research that Dr. Verghese and his colleagues in Einstein’s Department of Neurology are conducting in order to gain a better understanding

of aging. Of particular interest is cognitive decline as it relates to getting older. In a variety of projects, the group is searching for the first early signs in the body that could help scientists distinguish between normal changes in thinking and those associated with dementias.

At present, clinicians are hard-pressed to detect preclinical or even early dementia. In most cases, years pass from the actual onset of disease to diagnosis, forestalling any interventions (or testing of interventions) that might slow cognitive decline. Avoiding this delay has become critical, now that there are medications and cognitive therapies that can slow the progress of dementia. "If our goal is to keep people living independently in the community, we need to intervene early," said Richard B. Lipton, MD, the Lotti and Bernard Benson Faculty Scholar in Alzheimer's Disease at Einstein.

The genesis of this work dates to 1980, when Robert Katzman, MD, then a neuroscientist at Einstein, recruited almost 500 seniors living in the local community to join a long-term study of aging. The Bronx Aging Study, one of the first of its kind, gathered information on various aspects of participants' lives in the hope of identifying risk factors for dementia. All but 16 of the original subjects have since died, leaving behind a trove of data.

"It's an incredibly valuable resource," said Dr. Verghese. "The Bronx Aging Study set the foundation for future studies and led to many important papers. For instance, they reported that women who had myocardial infarctions were at increased risk of dementia, and they described some of the early changes that happen in dementia. A lot of what I have published is based on data collected from this group."

A decade later, Dr. Katzman's successors launched an even deeper, more comprehensive look at aging and dementia called the Einstein Aging Study (EAS), now in its 12th year. In three integrated projects, EAS researchers are searching for changes in cognition, metabolism, anatomy, and neuropathology that might signal the onset of dementia. The overall goal of the study, which is being led by Dr. Lipton, is to improve detection of the disease and inform the development of new treatments. Herman Buschke, MD, the Lena and Joseph Gluck Distinguished Scholar in Neurology at Einstein, and Dennis Dickson, a neuropathologist at the Mayo Clinic in Jacksonville, FL, are the other key investigators.

The EAS was recently awarded a \$15-million grant from the National Institute on Aging, ex-

tending the study for another five years. Some 600 seniors will be recruited for the investigation's next phase, bringing the total number of subjects to about 1,150.

THE BENEFITS OF LEISURE

Meanwhile, Dr. Verghese continues to mine data from the Bronx Aging Study, which has provided the grist for several important scientific papers. For one paper, he analyzed whether participation in leisure activities might reduce the risk for dementing diseases. Previous observational studies had demonstrated such a benefit, but they covered too short a period, raising the

possibility that reduced participation was not a cause of dementia but a consequence of it. Since the Bronx Aging Study was so lengthy, Dr. Verghese could eliminate from the analysis any subjects who had developed preclinical dementia, thus avoiding the cause-or-effect muddle.

As reported in the *New England Journal of Medicine*, Dr. Verghese found that seniors who devote their leisure time to reading and other cognitive activities appear to reduce their risk for developing Alzheimer's disease and vascular dementia. Playing bridge, doing crossword puzzles, or playing a musical instrument also had a protective effect. "I don't think it really matters which activity you do, as long as it is challeng-

AT EINSTEIN, DR. JOE VERGHESE AND COLLEAGUES IN THE DEPARTMENT OF NEUROLOGY ARE SEARCHING FOR THE FIRST SIGNS OF PRE-CLINICAL AND EARLY DEMENTIA.



ing,” said the researcher, whose lilting voice reflects his upbringing in the South of India. (Dr. Verghese studied medicine there, following it with training in the United Kingdom and a residency and fellowships at Einstein.)

The study looked at a variety of physical activities as well, but only dancing seemed to lower one’s risk for dementia.

For each beneficial activity, risk reduction increased with the frequency at which the activ-

ity was performed. The risk for dementia of seniors who did crossword puzzles four days a week, for example, turned out to be half that of seniors who did puzzles only once a week. Overall, participants whose scores were in the upper third on the cognitive-activity scale had a 63 percent lower risk for developing dementia than those whose scores were in the lowest third.

older you go,” he commented. One theory for this flip is that aging leads to arterial stiffness and, consequently, older people actually need higher blood pressures in order to maintain adequate blood flow in the brain.

If Dr. Verghese’s results are confirmed, doctors may need to reassess their approach to blood-pressure control in older people. “Our findings suggest that overtreatment of high blood pressure, or treatment that is too aggres-

sive, may contribute to the development of dementia,” he said.

Whether maintaining blood pressure at optimal levels can reduce the risk of dementia in elderly individuals remains to be seen. It is a question that Dr. Verghese and his colleagues plan to explore.

Test subjects are asked to walk while reciting alternate letters in the alphabet. Said Dr. Verghese, “People of all ages slow down when they do this task. But our studies show that if an older adult slows more than 25 or 30 percent, he or she is at increased risk for falls.”

The walking-while-talking test may also reveal whether one is at risk for frailty—a designation encompassing a constellation of factors, such as advanced age, illness, inadequate nutrition, poor fitness, and impaired balance—that places one at high risk for disability, disease, and death. “Previous studies have shown that most older people in the community are living near the maximal functional capacity; they don’t have much of a reserve. If you can identify the people who are near or have reached the limits of their reserve, then you might be able to intervene before they cross this threshold and start having falls or other problems,” the researcher said.

“As far as gait is concerned,” he added, “we are at the beginning of a whole series of investigations looking at the relationship among cognition, mobility, frailty, and falls. They are all linked together.”

Apparently, none of this seems to concern Gerry Ford, who is still strolling along at the age of 91, having the last laugh. ■

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BLOOD PRESSURE AND DEMENTIA

Data from the Bronx Aging Study enabled Dr. Verghese to settle another cause-or-effect conundrum that had been bedeviling researchers for years. The debate centered on whether low blood pressure contributes to or merely results from dementia. After studying 406 seniors over age 75, he found an association between low diastolic blood pressure and significantly increased risk for developing dementia, especially Alzheimer’s disease.

Curiously, in middle-aged adults, it is high blood pressure that raises the risk of dementia. “The direction of the risk factor flips over the

While that might seem a trivial distinction, it’s central to the various aging studies. “The examinations are very helpful in understanding what is normal for a given age,” he added. “For instance, a lot of older people complain about memory problems, which are often dismissed as a normal consequence of aging. But memory complaints are not always normal. They may be the earliest symptom of an underlying brain disorder.”

The situation is much the same with gait. “People commonly say, ‘I’m old, I’m supposed to