IT’S BEEN NEARLY 500 YEARS SINCE JUAN PONCE DE LEÓN SCOURSED THE FLORIDA PENINSULA IN SEARCH OF THE MYTHICAL FOUNTAIN OF YOUTH. MUCH TO THE CHAGrin OF TODAY’S RETIREES, THE SUNSHINE STATE’S MANY SPRINGS SPOUT NOTHING BUT PLAIN OLD WATER, SOME OF IT SALTY. BUT HOPE, UNLIKE YOUTH, SPRINGS ETERNAL, AND THE QUEST TO DEFEAT THE CLOCK PERSISTS. TODAY’S YOUTH-SEEKERS HAVE SIMPLY TRADED MAGIC FOR TECHNOLOGY, SHIFTING THEIR ATTENTION TO VITAMIN-ENHANCED WRINKLE CREAMS AND PLASTIC SURGERY. THESE PRODUCTS MAY WORK WONDERS AGAINST THE PHYSICAL RAVAGES OF TIME. BUT WHAT ABOUT THE MENTAL ONES?

Jennifer Etnier conducts a motor skill test. The volunteer is allowed eight seconds to trace the star figure while watching her hand in a mirror.
Etnier corrected for this problem in her second study. She required that all subjects reach a specified ability level before she tested their retention. Subjects were allowed to repeat the trials as many times as needed to reach this level.

Etnier also measured fitness levels using a certain mental abilities–such as memory, performance speed, and problem solving–begin to decline. Despite the claims of some dietary supplements, no products have been proven to reverse this process in otherwise healthy adults.

Etnier's research was funded by a Faculty Grant-in-Aid. For more information, contact Jennifer Etnier, Ph.D., Department of Exercise Science and Physical Education, 480.965.7042. Send e-mail to jennifer.etnier@asu.edu.

TO THE MAX

How do researchers measure aerobic fitness? Exercise scientists Jennifer Etnier says there are two favored methods: VO2 max and VO2 submax tests.

In a VO2 max test, subjects activate large muscle groups through an activity like walking or running on a treadmill. During this activity, they breathe into a device that measures the oxygen and carbon dioxide they exhale. They also wear heart-rate monitors or EKG electrodes. Researchers gradually increase the incline and/or speed of the treadmill until the subject reaches a plateau in the amount of oxygen they consume. They also use other criteria such as an oxygen/TC ratio of 3.3, or the subject’s age-predicted maximum rate.

The amount of oxygen consumed tells scientists how efficient the muscles are at using oxygen. Physically fit people use oxygen more efficiently than unfit people, and have a lower VO2 max.

For safety purposes, a physician must be present for all VO2 max tests on male subjects over age 40 and females over age 50. The physician monitors the subjects’ blood pressure and EKG readings and makes sure they don’t experience any health problems.

Etnier knows the importance of this precaution firsthand. In one of her studies, the physician stopped the test because the subject’s EKG was producing some strange results. The physician told the man to visit his own doctor. Within a month, the subject ended up having a successful quadruple bypass surgery.

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