HEALTH

# Scientists seek keys to muscle loss in space, on Earth

*Special to Sentinel-Voice*

HOUSTON — Researchers tackling the problem of muscle loss in space hope to find solutions that also will benefit people with muscle-weakening conditions on Earth.

"In a weightless environment, astronauts quickly begin to lose muscle mass," said Dr. Robert Schwartz, muscle alterations and atrophy team leader for the National Space Biomedical Research Institute.

"On Earth, similar muscle loss occurs in the elderly, in patients with nerve crush injuries or neuromuscular diseases, and in persons confined to their beds."

Astronauts lose 10 to 20 percent of their muscle mass on short missions. On long-term flights, like those on the Russian space station Mir or the proposed International Space Station, the muscle loss might rise to 50 percent in the absence of countermeasures.

In addition to muscle loss, the fibers involved in muscle contractions change their contractile properties and are weakened. "Slow-twitch" muscles, which can influence posture and the ability to stand, are the most susceptible to weakening due to microgravity.

"Long-duration space travel and exploration will be risky without methods to control these muscle changes," said Schwartz, a professor of cell biology at Baylor College of Medicine in Houston. "The ability to escape after an emergency landing could be impaired."

The most likely solution will be a combination of resistance exercises, gene therapy and drug therapy. For Schwartz' team, the answers lie in a thorough examination of the mechanisms involved in muscle changes.

Researchers at the institute's muscle labs are studying changes during weightlessness that trigger muscle atrophy through protein breakdown and rapid changes in calcium. In another lab, they are determining if atrophy affects activity of some motor neurons while others look for ways to control the loss of slow-twitch muscle through specific muscle genetic factors.

Potential drug therapies will initially be tested in healthy adults exposed to prolonged bedrest. Schwartz' team hopes to test a new drug produced by Merck that can increase growth hormone levels in the presence of high levels of glucocorticoids, hormones linked to muscle atrophy.

"We know that astronauts experience higher sustained glucocorticoid levels. In addition, while weightlessness is the major factor influencing muscle changes, sleep loss, poor light conditions and inadequate diet can add to the problem and depress growth hormone levels," he said. "Growth hormone, in combination with restrictive exercise, is critical for maintenance of muscle."

The institute's muscle team's work is being complemented by teams looking at other space health concerns such as bone loss, cardiovascular changes, balance disorders, sleep disturbances, radiation exposure, infections and immune response.

The institute, a consortium headed by Baylor with Harvard Medical School, Johns Hopkins University, Massachusetts Institute of Technology, Morehouse School of Medicine, Rice University and Texas A & M University, focuses on biomedical research related to the effects of long-term space flight on humans.

"As the NSBRI looks for ways to protect the health and safety of astronauts traveling to Mars or beyond, we expect to find solutions that will be equally applicable to health problems here on Earth," said Dr. Ronald White, the institute's associate director.

# *Pickles tasty snacks, offer little nutritional benefits*

*Special to Sentinel-Voice*

**Q: My day-care provider has told me that a pickle is an appropriate "vegetable" for children. Is this true?**

A Pickles make a fun, tasty, fat-free, low-calorie condiment or snack. And, because pickles are just cucumbers that have been cured in a brine, they are technically a vegetable. But, because pickles and cucumbers consist mainly of water, they offer little nutritional value. With no protein, just a small amount of calcium and only a trace of iron, pickles are not considered a "vegetable choice" in the School Lunch Program. So, nutritionally speaking, there are better vegetable choices that provide the vitamins and minerals necessary for health. And, by the way, one whole dill pickle can provide nearly half an adult's daily suggested supply of sodium.

**Q: Is ice cream a good choice for a child's dessert?**

A: Frozen dairy desserts are a great treat and a good source of energy and calcium for children and many adults.

Here's the scoop: one cup of most frozen dairy desserts contains at least 20 percent of the daily recommended value for calcium. Regular ice cream has approximately 16 to 18 grams of fat per cup. "Lite" ice cream has about half that amount. Low-fat ice cream and frozen yogurt have no more than 4 grams of fat per cup. Sorbets are fat-free and sherbets contain just a small amount of fat. They can be high in sugar, but may also provide vitamin C.

Because fat contains essential fatty acids needed for proper growth and development, nutritionists don't recommend restricting the fat intake of a child under 2 years of age. For children over 2 years, using low-fat and fat-free dairy treats can help keep dietary fat intake at the recommended 30 percent of total daily calories. So, read the label and know what you are buying.

**Q: Are the nutritional recommendations for fruits and vegetables the same for my toddler and my eight-year old?**

A: The Five-A-Day plan for fruits and vegetables on the

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*POSITIVELY BLACK*

# Words should carry healing, not venom

***By Junious Ricardo Stanton***
***Special to Sentinel-Voice***

"No fish ever got caught with his mouth open." There is power in speech.

Words can empower and ennoble or they can discourage and demean. Just by opening our mouths we can directly or indirectly affect our environment. All the great wisdom teachings admonish us to guard against offensive speech. Not only can our words injure others, they can harm ourselves. Our words have a way of boomeranging on us, whether they are positive or negative. The ideal situation is that every time we open our mouths we say something uplifting, intelligent, supportive, constructive and genuine.

However, too often when we open our mouths, we create unpleasant situations for ourselves or others. When we examine our lives, we can all find times when we've caused injury with our mouths; said something unkind, untrue or unflattering about ourselves or someone else.

That is why it is vitally important that we think before we speak. We should consider the consequences of our words. We ought to think about the effect and impact what we say will have on the situation, other people and ourselves. There are times when it is wiser to remain silent or just listen. Keeping our mouths shut will not cause us to end up in the frying pan of life. Lies, gossip, slander, and ill-timed or ill-intended verbiage usually come back to haunt us one way or another.

Our words are like ripples in a pond. They have far reaching impact. Just as our thoughts have potency, so do our words. They contain meaning and emotion that have a power all their own. Not only do the words we utter impact others, they impact us. Most of the time when we speak we do so with some degree of feeling. Speaking is a way of conveying what we think and feel. Quite often we speak when we are upset and our emotions are carried over in our words. These feelings come from us, they originate in us and are carried away from us in the vibrations that emanate from our vocal cords.

This is why we should be mindful of our thoughts as well as our words, because thoughts precede what we say. Energy follows thought. Everything we say or do, as well as our physiological responses, flows from our thoughts. Therefore it is important that we deliberate and weigh our words before we speak. Don't let your words entangle you, put you in an embarrassing or compromising position or provide ammunition against yourself. Say what you mean and mean what you say. Phrase your words in a way that will

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## Gum

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In the third case, a 1-year-old girl who was brought to the hospital coughing and drooling was found to have swallowed gum and coins. Doctors removed a wad containing both from her esophagus, the tube that carries food to the stomach.

Youngsters should not be given gum until they are old enough to understand the importance of not swallowing it, Milov and his colleagues wrote after treating all three children within two years at Arnold Palmer Children's Hospital in Orlando.

Similar cases have been reported previously in medical literature, Milov said.