

Athens native working to keep astronauts strong

By **JOE HIGGINS**

Messenger staff writer

Published: Wednesday, January 14, 2009 4:40 PM EST

An Athens native is working to keep astronauts healthy and strong while on their extended trips into low-gravity atmospheres.

Lori Ploutz-Snyder was raised in Athens, is a 1984 graduate of Athens High School and spent an extensive amount of time studying at Ohio University, where she was also a competitive swimmer. Ploutz-Snyder earned her bachelors, masters and doctorate at Ohio University and is now the lead exercise physiologist at Lyndon B. Johnson Space Center in Houston, Texas

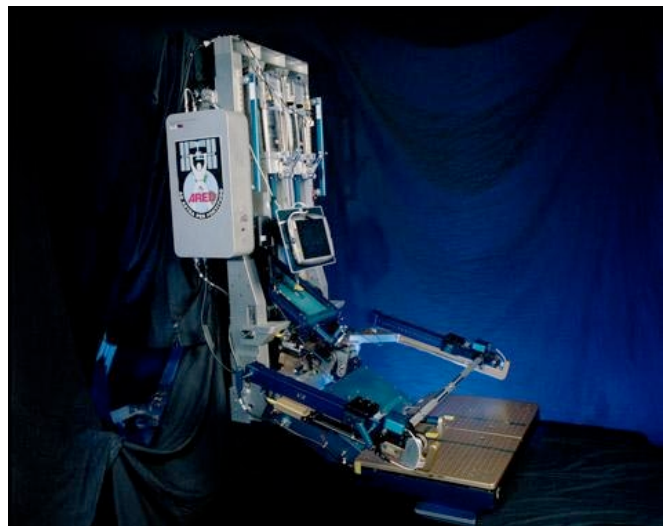
“This is a really cool job. It’s lots of fun. No two days are ever the same,” said Ploutz-Snyder who accepted the position last September.

Ploutz-Snyder is the daughter of Paul and Geri Ploutz of Albany and says still keeps in touch with her roots.

“(Athens) is an absolute beautiful part of the country. It’s home,” she said. “I like the small town feel and it’s a classic college town.”

Ploutz-Snyder was recently a professor and Chairwoman of Exercise Science at Syracuse University before being recruited by the National Aeronautics and Space Administration.

Before astronauts head into orbit and after they return, they are required to undergo a battery of tests. Some of those tests examine the person’s



The Advanced Resistive Exercise Device shown here was created by NASA engineers and an exercise physiology team, of which Athens native Lori Ploutz-Snyder is a member, and constructed on the space station last week.

muscle strength, aerobic fitness and functional fitness. That's where Ploutz-Snyder and her team comes in. Every United States astronaut or international partner that trains in Houston will lend themselves to Ploutz-Snyder's tests and research to learn how best to keep them healthy in space.

Ploutz-Snyder explained that astronauts are not using their muscles to move around in the low-gravity atmosphere in the same manner as they would on Earth. When prolonged to the low-gravity atmosphere as many are for 180 days or more muscle atrophy becomes a serious concern. Ploutz-Snyder is compiling research for a hopeful return trip to the moon and a venture to Mars as well.

"It's like being on bed rest here. Even though you're moving around up there, there's no muscle usage. We discovered a lot of methods are largely ineffective in countering this (muscle atrophy)," Ploutz-Snyder said. She added that equipment such as elastic bands to create resistance for exercise have been less than productive.

"We were only able to produce about 150 pounds of resistance. That's not much considering the physical shape the astronauts are in," she said.

NASA engineers paired with the exercise physiology team to help create the Advanced Resistive Exercise Device (ARED) which was constructed on the space station this past week. This massive machine allows for 29 different exercises to be performed with up to 600 pounds of resistance.

For a planned mission to the moon in 2020 and to Mars afterwards, ARED simply won't fit. Billed at over twice the size of a normal all-purpose exercise machine, ARED would not fit inside the smaller-sized capsules that make the space flights. A treadmill suited to operate in low-gravity environments is also being designed with a plan of implementation within the coming months.

Ploutz-Snyder and her team will continue to develop exercise programs to use on ARED and the treadmill while simultaneously trying to devise ways to create a smaller machine capable of executing exercises in low-gravity environments.

"This is really cool. It's lots of fun and I love coming to work everyday. I've always loved research and developed an appreciation of applied research in my time at OU. This really is the perfect place for someone like me," said Ploutz-Snyder.

jhiggins@athensmessenger.com