

# **SOUTHWESTERN NEWS**

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## **ORDINARY PEOPLE VOLUNTEER FOR NASA STUDIES OF BONE LOSS AND CIRCULATION IN SPACE (WITHOUT LEAVING BED)**

DALLAS — November 4, 1994 — It's not just astronauts and scientists like the researchers at The University of Texas Southwestern Medical Center at Dallas who are contributing to the U.S. space program. Ordinary people — those who have never set foot in outer space and don't ever intend to — are helping.

Folks like Charles Procter, a Dallas consultant and petroleum engineer, and Sloan Taylor, a recent University of North Texas graduate, are helping further UT Southwestern's multimillion-dollar space-medicine research program, too.

### **CHARLES PROCTER**

Charles Procter was the first volunteer in a long-term study funded by the National Aeronautics and Space Administration on the prevention of bone loss and kidney stone formation during bed rest. The research will have a direct application on the U.S. space program since it has been shown that humans suffer bone and mineral loss after prolonged periods in space. It also could have medical applications since bone and mineral loss is a major problem for paralyzed patients, as well as patients with long-term illnesses requiring bed rest.

Procter said he agreed to participate in the five-month bed-rest study because, "I'm interested in everything. I've always been fascinated with research and someday might like to combine more science with my engineering

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skills."

Procter also said he was pleased when research staff members asked him to analyze the study from the patient's perspective and offer suggestions for making the study easier. He filled several notebooks with thoughts he would share with the staff.

"It's actually been kind of fun," Procter said. "Also, the people make it worthwhile. When you stay around here a long time you make friends with some of the staff and other patients; it's like a family here."

Another 15 to 19 volunteers like Procter will move into the National Institutes of Health-funded General Clinical Research Center (GCRC) at UT Southwestern for five-month periods to test the effectiveness of olpadronate, an osteoporosis medication for preventing bone loss and kidney stone formation. Olpadronate is a modified version of a drug that has been in use for some time, but the new drug has fewer side effects. Dr. Charles Y.C. Pak is the principal investigator on the study and directs the Robert T. Hayes Center for Mineral Metabolism Research. The Donald W. Seldin Professor in Clinical Investigation, Pak also holds the Charles Pak Distinguished Chair in Mineral Metabolism.

The study is being done under the umbrella of a \$5 million space-medicine research grant, awarded in 1993, which established NASA's only Specialized Center of Research and Training in Physiology at UT Southwestern. Dr. Gunnar Blomqvist, professor of internal medicine and physiology and a pioneer in cardiovascular space research, directs the center.

Dr. Lisa Ruml, an instructor of internal medicine who is working with

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Pak on the bed-rest study, said although bed rest is not a perfect technique for space simulation, it's a good model. Astronauts who suffer the loss of bone and certain minerals in space lose even less mass than bedridden patients.

The volunteers will undergo a battery of tests. Some weeks they will eat a controlled metabolic diet, based on individual height and weight, so that they will neither lose nor gain weight.

#### **SLOAN TAYLOR**

Twenty-six-year-old Sloan Taylor boasted he made it through his first week in a hospital bed in a head-down position without succumbing to one single talk show or soap opera.

But Taylor, the second volunteer in a weightlessness study designed to find out how the heart and circulatory system behave in space, had 11 more days ahead of never rising higher than his elbows.

Ordinarily the normal beating of the heart and the force of gravity determine the pressure levels within the cardiovascular system. But man's predominantly upright position influences this pressure. UT Southwestern research aboard NASA's Spacelab Life Sciences I flight in 1991 showed that the heart and blood system behaved differently in space than previous ground studies simulating weightlessness had indicated. Dr. Ben Levine and Dr. Jim Pawelczyk, both assistant professors of internal medicine, are co-investigators on the latest study. Levine said data from the astronauts, combined with data from research subjects, "should give us a better understanding of the function of the heart and blood vessels after bed rest or

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space flight and may lead to improved medical management."

Even before volunteering to be one of the research subjects, Taylor had been hooked on research. He had met Levine through his father-in-law, who lives next door to the researcher.

During Taylor's early college years in Utah, Levine hired Taylor to work with him and his associates on an altitude study. Taylor acted as a "front man," lining up accommodations and getting ready for the researchers' visits. Later he had the chance to participate in running the study.

"Now I'm on the other side of the coin," he said.

Taylor admitted that he got a bit restive about halfway through the study. He was tired and sore from being in bed all the time and a bit edgy about the number of invasive tests he would undergo as a volunteer; however, his love of reading and daily visits from his wife, Afton, got him "over the hump" — a period Levine says most of the volunteers go through.

Taylor underwent testing at the beginning and end of the study. Even at the end he was taken by ambulance to the Institute for Exercise and Environmental Medicine, a collaboration between Presbyterian Hospital of Dallas and UT Southwestern, so he could remain in a "weightless" state until the testing began. Levine is medical director of the institute.

"Actually, Sloan was the perfect subject," said Levine. "He is interested in the research and is patient enough to get through the bed-rest part."

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**HOW TO VOLUNTEER**

If you are interested or know someone who may be interested in being a subject for a NASA research study on the effects of weightlessness on bone loss, call (214) 648-2804 for more information.

To obtain more information about the cardiovascular study, which lasts for a total of 22 days, including testing days, call Julie Zuckerman at (214) 345-4684.

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