

Muscle loss tested in artificial gravity

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University of California-Irvine researchers say a bike-like centrifuge that creates artificial gravity may help astronauts combat muscle atrophy in space.

The National Space Biomedical Research Institute is exploring the concept of a Space Cycle for in-flight resistance-training exercise.

"Even with onboard exercise, astronauts face the risk of losing muscle mass and function because their muscles are not bearing enough weight, or load," said Dr. Vincent Caiozzo, lead investigator. "For exploration, it is important to find ways to increase load-bearing activity so astronauts can maintain strength."

The Space Cycle, a human-powered centrifuge under testing in Caiozzo's lab, generates various levels of artificial gravity ranging from Earth gravity to five times Earth's gravity.

Participants ride opposite one another. As one person pedals, the cycle moves in a circular motion, generating pressure on the rider, forcing him against the seat in a manner similar to the effect of gravity on Earth, scientists said.

On the platform, the other person performs squat exercises. Instruments on the device report the separate work rates of the participants.

Caiozzo is a professor in UC-Irvine's departments of orthopedic surgery, physiology and biophysics.

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