Advanced Resistive Exercise Device (ARED)  
[[ Record Viewer ] NLSP](https://nlsp.nasa.gov/view/lsdapub/lsda_hardware/IDP-LSDA_HARDWARE-0000000000000312)  
Advanced Resistive Exercise Device (LSDA Hardware) — Description of the device in the NASA Spacecraft Hardware Database (LSDA).  
  
[ntrs.nasa.gov/api/citations/20060028227/downloads/20060028227.pdf](https://ntrs.nasa.gov/api/citations/20060028227/downloads/20060028227.pdf)  
Mechanism Development, Testing, and Lessons Learned for the ARED (PDF) — A NASA technical document on the development of the device.  
  
[Astronaut Exercise - NASA](https://www.nasa.gov/missions/station/iss-research/astronaut-exercise/)  
Astronaut Exercise (NASA) — A recent page explains that ARED is the resistive device currently used on the station.  
summary  
The **Advanced Resistive Exercise Device (ARED)** is an advanced resistance machine designed for use in microgravity onboard the ISS. It uses vacuum pistons and mechanical systems (flywheel and cable) to simulate weight-bearing exercises (squats, deadlifts, calf raises, etc.).   
Its advantage lies in providing a more constant resistance throughout the motion path (not relying on gravity), and its resistance levels are adjustable for different astronauts, with data logging of performance.   
Research shows that ARED can help mitigate muscle atrophy and bone loss during long-duration spaceflight.