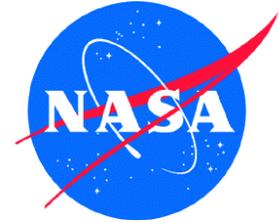


NASA Facts

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
281/483-5111



Getting Fit Can Be Rocket Science

NASA's Office of Technology Transfer and Commercialization licenses dozens of space-age technologies and connects with the private sector through business-to-business partnerships for the creation of products that improve our lives here on Earth. Provided below is a list of products developed with NASA technologies relevant to health & fitness.

Catching Cardiac Concerns Quicker

Everyday 680 Americans die from Sudden Cardiac Death (SCD) according to the American Heart Association. Ninety-five percent die before reaching a hospital. For years, cardiologists have lacked the tools to diagnose high-risk patients. Now, thanks to NASA technology, Cambridge Heart, Inc. has produced the only U.S. FDA approved tool to identify individuals with a high risk of SCD. The Microvolt T-Wave Alternans Test™ measures heartbeat patterns too small to be detected by an electrocardiogram. This technology was originally developed to determine whether space flight increases the risk of heart arrhythmias.

Spinoff 2002

Space Station Workout

Astronauts must exercise two hours a day to avoid muscle and bone deterioration in zero gravity. With astronauts aboard the International Space Station for up to six months at a time, the equipment must meet strict size and performance requirements. With NASA funding, SpiraFlex, Inc. created the Resistance Exercise Device (RED), a compact resistance machine that duplicates the benefits of free weights in outer space and on Earth. The RED works with Flexpacks™, molded into a range of shapes that provide maximum resistance with pulleys and spokes. The system is currently used on the Space Station and in fitness centers across the country.

Spinoff 2001

Solid Smoke Maintains Temperate Temperatures

Minus 3,000 degrees Fahrenheit is no cold crisis thanks to Spaceloft™, an Aerogel cloth designed for NASA missions and arctic Earth expeditions. Aerogels were invented 70 years ago and are the lightest solid known to man; however, they are extremely fragile and expensive to make. Aspen Systems created the Cryogel™ process that turns Aerogels into flexible and durable blankets, sheets, beads and molded parts for space applications. Later, Aspen created the Spaceloft™ materials that can easily be inserted into the lining of jackets, creating an inexpensive, breathable, waterproof jacket. NASA is currently using Spaceloft™ materials to develop space gloves for Mars missions, while Aspen Systems is expanding its line of high-temperature Aerogel products.

Spinoff 2001

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Muscle Monitor Made Mobile

NASA needed to measure astronauts' muscular performance in zero gravity, but electromyography (EMG) machines were too big and bulky to use in space. As a solution to this problem, Delsys, Inc. developed a cable-free MyoMonitor® EMG System. This wearable, battery-powered device can store up to three hours of continuous data, which can be transferred to a personal computer and analyzed with the EMGWorks® software. Delsys, Inc. commercially markets the device to physical therapists to aid in monitoring patients outside the therapy sessions.

Spinoff 2000

Space Attire To Keep You Toasty

Gateway Technologies, Inc. has improved textile insulation by creating thermal regulating products for boot and shoe liners, winter headgear, hats, caps and gloves. Gateway's OUTLAST™ products are made from microencapsulated phase-change materials originally designed to keep astronauts hands warm in space. Other applications for this material include housing insulation, blankets, firefighting gear and scuba diving suits.

Spinoff 1997

Better Breathing Bottle

NASA rocket propellant tank technology is helping mountain climbers and scuba enthusiasts breathe a little easier. Luxfer USA Ltd. took rocket tank technology and turned it into a lightweight, higher-capacity oxygen bottle. The bottle is an aluminum cylinder with reinforced fiberglass filaments. The new oxygen bottles contain twice as much oxygen and weigh 20 percent less than other steel cylinders.

Spinoff 1977

Clocks With Rocks

To keep missions on time, General Time Corporation developed electrically stimulated quartz crystals. Quartz provides a stable time base, giving clocks an accuracy of one minute a year. By vibrating up to 4,194,304 times a second, the clocks currently keep millions of people on time around the globe.

Spinoff 1976

For more information or to schedule an interview with a NASA expert on these topics, please contact the NASA newsroom at (281) 483-5111. For additional information about NASA's spinoffs visit:

<http://www.sti.nasa.gov/tto/spinoff.html>

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