

# Heavenly gadgets: Spinoffs from space programmes

April 10 2011, by Marlowe Hood and Laurent Banguet

---



What do ceramic teeth braces, artificial hearts, airbags, insulin pumps and Olympics-calibre swimsuits have in common? Answer: they originated in space.

What do ceramic teeth braces, artificial hearts, airbags, insulin pumps and Olympics-calibre swimsuits have in common?

Answer: they originated in space.

All these gadgets and hundreds more are spinoffs from technologies developed for the multi-billion-dollar space programmes that kicked into high gear 50 years ago when [Yuri Gagarin](#) became the first human catapulted into orbit.

Many of these offshoots began with a quest by American, Soviet and European engineers for materials that could perform new tasks or

withstand [extreme temperatures](#), cosmic rays and the stresses of high or [zero gravity](#).

So-called memory metals, for example, that flex and recover their shape in response to heat are used for shower valves to prevent scalding, surgical staples and tubing for reinforcing arteries called stents.

Sharper-than-steel scalpels, [medical implants](#) and even performance-enhancing golf clubs -- stronger than titanium as elastic as plastic -- are today derived from a related class of space-age alloys called [liquid metals](#).

Likewise the flexible wire rims of your sunglasses... which may also feature a glass coating, developed to protect astronauts' eyes from glint and glare.

Often the product seems quite remote from the technology that spawned it.

When swimwear maker Speedo set about making a faster suit, it turned to experts at NASA Langley Research Institute, who had specialised in studying friction and drag.

The resulting LZR line, launched in February 2008, quickly became de rigueur for competitive swimmers: more than nine out of 10 gold-medal winners at the Beijing Olympics six months later wore them.

Other space-boosted sportsgear includes athletic shoes with a cushioning material designed by NASA for its spacesuits.

Healthcare monitoring devices have also been derived from space-related inventions.

Technology once used to gauge the temperature of distant stars and planets now monitors the body heat of humans by measuring, in less than two seconds, energy emitted by the eardrum.

Automatic pumps that continuously deliver micro-doses of insulin -- eliminating the need for painful daily shots -- are based on NASA satellite components developed for the Viking Mars mission.

Technology created to track the health of astronauts in deep space has now been integrated into fitness machines: an infrared heartbeat transmitter strapped against the chest uses the heart rate to directly modulate exercise intensity.

And an artificial heart-pump, ten times smaller than earlier models, was inspired directly by systems that monitor fuel consumption on space shuttles.

Some applications have gone from cosmic to cosmetic.

Using material from missile-tracking devices, a company working with NASA invented translucent, shatter-resistant braces that have since been worn by hundreds of thousands of smiling adolescents.

Shock-absorbent foams developed to protect astronauts from the brain-jarring effects of g-force are widely used in protective head gear, including for cyclists.

A light-weight, fibrous material five times stronger than steel -- originally made for the Viking space vehicle parachute -- will soon be integrated in radial tires of your next car, according to NASA.

Even gourmet food fans have reason to hail space-based science.

Borrowing technology developed by ESA to study how fluids move in the bodies of weightless astronauts, Spanish producers can now measure with near-absolute precision the level of humidity in their high-priced hams.

(c) 2011 AFP

Citation: Heavenly gadgets: Spinoffs from space programmes (2011, April 10) retrieved 26 April 2024 from <https://phys.org/news/2011-04-heavenly-gadgets-spinoffs-space-programmes.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.