

[Advanced Test Products](#) Weltweiter Marktführer im Bereich Kälte/Klima- und Wägetechnik www.atp-europe.de

[Vacuum Pressing Equipment](#) Electric and air-powered pumps Free instructional DVD 120 minutes www.qualityvak.com

[Dax Ausblick 2011, Gratis](#) Haben Sie ein Vermögen über 250T€? Für Sie wichtige Studie anfordern! Gruener-Fisher.c

ARTICLES EXTRA

Founded 2006

INDEX OF CONTENT

- [Adventure/Travel](#)
- [Animal Fate](#)
- [Astronomy/Space](#)
- [Common Knowledge](#)
- [Fun Stuff/Curiosities](#)
- [Health/Cooking](#)
- [Historical Accounts](#)
- [Politics/Economy](#)
- [Science/Technology](#)
- [Sports/Funsports](#)

- [Picture Gallery](#)

Search

keyword search

 [Traduction](#)

 [Traducción](#)

- [Surf-Tips](#)
- [About Articles Extra](#)
- [Home](#)

[Stylish Gravity Bin](#)

Great Display & Dispenser for Candy, Coffee, Cereal, Natural Foods, etc
www.BestBins.net

[Schnell abnehmen?](#)

Spürbar abnehmen in 14 Tagen. Ihre Traumfigur in wenigen Wochen!
www.Yves-Rocher.at/abneh...

[Gravity-Magnetic Surveys](#)

for Minerals, cavity detection Oil & Gas-India
www.parsan.biz

[Process Vacuum Equipment](#)

JET-VAC - Most

An experimental vacuum-struggle against the gravity trap

What can an astronaut withstand before he becomes unconscious? A unique Space Institute in Graz is pushes the candidates of the Austromars mission to their limits in gravitational matters. I tested the experiment out myself.

Ads by Google

[Vacuum Pumps](#)
[Buy Vacuum](#)
[Vacuum Chamber](#)
[Vacuum Hoses](#)
[Busch Vacuum](#)



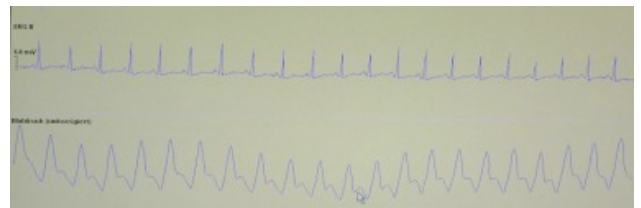
Picture by T. Micke

There is no escape! My abdomen lies securely clamped and air-tight in a Plexiglas tunnel, that the scientists ironically name "Snow White's Coffin" for Prof. Dr. Helmut Hinghofer-Szalkay. The right arm is inserted at breast height into a sort of splint, a canula in one of the veins in my arm to take blood and my fingers in small sleeves to measure my blood pressure. Another instrument measuring my blood pressure is attached to my other arm, a video camera above me films every facial emotion and my back and stomach are connected via numerous cables, like a Formula-1 racing car, for the purpose of data analysis after Friday's training.

"How are you doing?", asks the Professor, laughing amiably, and he shoves another cushion behind my neck, between all of the wires. But he knew that answer a while ago: behind my head, the "Taskforce-Monitor" – an instrument that NASA has repeatedly purchased from the "CNSystems" company in Graz for its astronaut tests – spurts out my condition in endless rows of numbers and colourful graphics on two computer screens. Blood pressure, pulse beat, the exact pumping capacity of my heart and dozens of other data, that indicates stress or imminent shock, Dr. Erik Grasser, the doctor looking after me, can read all of this information off my body like a weather report. My blood pressure is more than stable at 110 over 80; the pumping capacity of my heart is pleasing with a good 100 ml per beat. But we have not even begun to get started.

In a few minutes the scientists will gradually suck out the air in "Snow White's Coffin", so that a light vacuum forms and the blood in my body is forced downwards. My heart will fight against it, because all of the blood should not really go to the legs, but should supply my head and organs. At some point the vacuum pumps will win this tug-of-war. Then my body will switch to emergency programme. It is then simply a question of when I cave in.

Experiences that are quite decisive for the selection of astronauts. One of the biggest problems of long, manned flights in space, for example to Mars, is the lack of gravity in outer space. The body acclimatizes to the effortless abeyance and cannot get to grips when it



Picture by T. Micke

Proven Technology -
Proven Supplier
www.artisanind.com

**Dr. Eberl MBE
Components**

MBE & UHV systems,
evaporation sources,
processing equipment
www.MBE-components.com

must all of sudden work against gravity again. It is often the case that after month long stays in the space station MIR cosmonauts become unconscious upon their return to Earth, or have had to be carried off lying down. It is a problem that usually improves after a few hours, but it could be fatal after a flight to Mars for a number of months, if the unusual gravitational force of the Red Planet knocks the first human visitors for six, even before the dust has settled on the land buggies.

Prof. Hinghofer-Szalkays Institute for space travel physiology is a leading body in this field, and NASA draws on Steiermark expertise in developing solutions to the problem that would also help long-term patients in intensive care.



Picture by T. Micke

Even Austria's candidates for the "Austromars" mission will be put through their paces here, for in April 2006 (see [Mission Austromars](#)) they must get to grips in the Utah desert, cut off from the outside world for three weeks shut in a survival preserve of the "Mars Society", as if they were on the Red Planet. Along with many other capacities, it is also a question of robustness.

To get me to agree to my struggle against gravitational forces, the Professor lets the film "Space Odyssey" play on a monitor. As the screen shows the sun rising on the moons horizon, the machine sits me

almost bolt upright and produces the first mild vacuum. It feels like when you accidentally get caught in the opening of an enormous vacuum cleaner and are stuck. The vacuum becomes stronger in three minute intervals The Professor checks if cold sweat is already forming on my forehead and tests the temperature of my fingers, which are getting colder and colder due to a lack of blood. Now my knees begin to shake violently and my stomach feels so heavy, like back in my schooldays before a hopeless Latin examination.

Fourteen minutes later it is all over. Professor Hinghofer-Szalkay ends the experiment with an experts eye, shortly before I lose consciousness .The slight headache that begins to set in passes after a few minutes and comforting warmth flows back through my body with the blood. The small remuneration for the exertion: at least there is hope for me yet as a reserve astronaut for the first Mars Mission...

< [Back to Astronomy/Space](#)

© A report by Tobias Micke (18-12-05) – [Contact](#)