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Page: 26
Extract: 1 of 3
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WHITE-HEAT

THE HOTTEST NEWS FROM SCIENCE

Leo Enright

Ireland's latest and most ambitious scientific venture aboard the International Space Station is to be launched aboard a Russian space freighter next month. The project will be hugely popular with astronauts, because it aims to ensure that spacefarers in the future will have a good night's sleep.

"CASPER" is the brainchild of medical student Marc O'Griofa from University College Dublin, and was developed with Dr Derek O'Keeffe, a biomedical engineer and lecturer in the Department of Electronics and Computer Engineering at Limerick University. CASPER stands for Cardiac Adapted Sleep Parameters Electrocardiogram Recorder and is a simple, portable device for monitoring the sleep patterns of astronauts in weightlessness.

Disturbed sleep is a common problem during space flight, and about half of all astronauts end up taking sleeping tablets to cope. It's estimated that as many as a quarter of space travellers suffer sleep deprivation serious enough to affect their performance. Worse, the bad effects are cumulative and become more pronounced after about 100 days - which could have serious implications for human missions to Mars - typically lasting up to three years.

Fourty years after Yuri Gagarin became the first man in space,

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researchers O'Griofa and O'Keeffe have identified a serious gap in our knowledge about sleep patterns on long-duration space flights. The problem stems from a mundane fact of life: astronauts don't like to be hassled, and previous sleep experiments have been a major intrusion into their waking and sleeping lives. They have been required to wear complicated harnesses and attach uncomfortable sensor pads onto (and sometimes inside) their bodies.

Marc O'Griofa's breakthrough was in recognising that a lot of valuable information could be collected using far less invasive techniques that have been pioneered for monitoring heart patients going about their daily lives here on Earth. Instead of opting for high-tech brain monitors and eye sensors, the CASPER team are happy just to listen to the astronaut's heartbeat. Using this simple cue, they hope to build up a sleep profile that can be matched to a (relatively hassle-free) electronic diary that will be kept by the astronaut subject.

Astronaut Thomas Reiter of the European Space Agency, the first European to undertake a long duration mission aboard the International Space Station, will inaugurate CASPER. Reiter's mission, named Astrolab, is due to last six to seven months and he is to be launched aboard the next Space Shuttle mission, currently scheduled for 1 July. The CASPER instrumentation will be flown up earlier on 28 June aboard a Russian space freighter, Progress M-57.

Ireland is one of the few member states of the European Space Agency (ESA) that does not directly support Europe's human space flight programme, so Irish researchers have no automatic right to conduct experiments aboard the Space Station. However, CASPER has been supported by the ESA under a small programme to encourage young European space researchers.

More For more information about Ireland's involvement with the European Space Agency, see: http://www.space-ireland.com

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