

What to pack for year in space? A 'superhero utility belt'

March 23 2015, by Marcia Dunn



In this photo provided by NASA, astronaut Scott Kelly sits inside a Soyuz simulator at the Gagarin Cosmonaut Training Center (GCTC), Wednesday, March 4, 2015 in Star City, Russia. On Saturday, March 28, 2015, Kelly and cosmonaut Mikhail Kornienko will travel to the International Space Station to begin a year-long mission living in orbit. (AP Photo/NASA, Bill Ingalls)

What's one thing astronaut Scott Kelly can't do without when he moves

into space this week for a year? A belt.

Kelly went beltless during his five-month mission at the International Space Station a few years back, and he hated how his shirttails kept floating out of his pants. So this time, the 51-year-old retired Navy captain packed "a military, tactical-style thing" that can hold a tool pouch.

Actually, scratch pouch. He prefers "superhero utility belt."

Kelly's partner on the yearlong stay at the [space](#) station—Russian cosmonaut Mikhail Kornienko—can't do without his vitamins. When their Soyuz rocket blasts off from Kazakhstan on Saturday (Friday afternoon in the U.S.), three bottles of over-age-50 vitamins will be on board.

After more than two years of training, Kelly and Kornienko are eager to get going. It will be the longest space mission ever for NASA, and the longest in almost two decades for the Russian Space Agency, which holds the record at 14 months.

Medicine and technology have made huge leaps since then, and the world's space agencies need to know how the body adapts to an entire year of weightlessness before committing to even longer Mars expeditions. More yearlong missions are planned, with an ultimate goal of 12 test subjects. The typical station stint is six months.

"We know a lot about six months. But we know almost nothing about what happens between six and 12 months in space," said NASA's space station program scientist, Julie Robinson.

Among the more common space afflictions: weakened bones and muscles, and impaired vision and immune system. Then there is the

psychological toll.

Russian cosmonaut Gennady Padalka, a frequent flier who will accompany Kelly and Kornienko into orbit, predicts it will be the psychological—not physical—effects that will be toughest on the one-year crew.

"Being far away from Earth, being sort of cramped, having few people to interact with," Padalka said. He'll break the record for most time spent in space during his six-month stay, closing in on a grand total of 900 days by the time he returns to Earth in September.

Neither Kelly nor Kornienko, though, worries about himself. They fret about the family and [friends](#) they are leaving behind for an entire year—until next March.

"If something happens ... you're not coming home, no matter what it is. You're not coming back," Kelly said in an interview earlier this year with The Associated Press.



In this Thursday, March 19, 2015 photo provided by NASA, astronaut Scott Kelly, left, plays pool with Russian cosmonaut Mikhail Kornienko, of the Russian Federal Space Agency (Roscosmos), at the Cosmonaut Hotel in Baikonur, Kazakhstan. On Saturday, March 28, 2015, Kelly and Kornienko will travel to the International Space Station to begin a year-long mission living in orbit. (AP Photo/NASA, Bill Ingalls)

Kelly's loved ones include: his two daughters, ages 20 and 11; his NASA-employed girlfriend; his widowed father; his identical twin brother Mark, a retired astronaut; and his sister-in-law, Gabrielle Giffords, a former congresswoman who barely survived an assassination attempt while he was at the space station in 2011.

Kornienko, 54, a former paratrooper, worries how his wife will cope alone at their country house outside Moscow. His 32-year-old daughter is a new mother; the baby is not quite a year old.

Wife Irina cried when she learned in 2012 that he'd be leaving Earth for a whole year. And she's still not happy about it, Kornienko told the AP.

"She understands that it's a dangerous mission. But she's getting used to the idea," he said.

A vivid reminder of the dangers of spaceflight hit home last fall when an unmanned supply ship blew up shortly after liftoff from Virginia. Kelly's original "superhero" belt was destroyed, along with the rest of the station cargo. Replacements went up on the next commercial shipment.

The two veteran space fliers are fully aware of all the risks. Kelly has flown in space three times for a total of 180 days. (Two of those trips were space shuttle quickies.) Kornienko has a single 176-day station flight on his resume.

Kelly acknowledges it will be a challenge "keeping the level of fatigue down, enthusiasm up, energy reserves to respond to an emergency."

Newly returned space station commander Butch Wilmore urges some three-day weekends for the pair.

"To maintain that mental focus for six months is difficult, and to do it for an entire year ... You don't want to make any mistakes," said Wilmore, whose 5½-month mission ended March 11.

Kornienko was selected by his bosses for the job while Kelly volunteered.



This August 2010 photo provided by the Gagarin Cosmonaut Training Center shows NASA astronaut Scott Kelly in a Russian Sokol launch and entry suit in Star City, Russia. On Saturday, March 28, 2015, Kelly and cosmonaut Mikhail Kornienko will travel to the International Space Station to begin a year-long mission living in orbit. (AP Photo/GCTC via NASA)

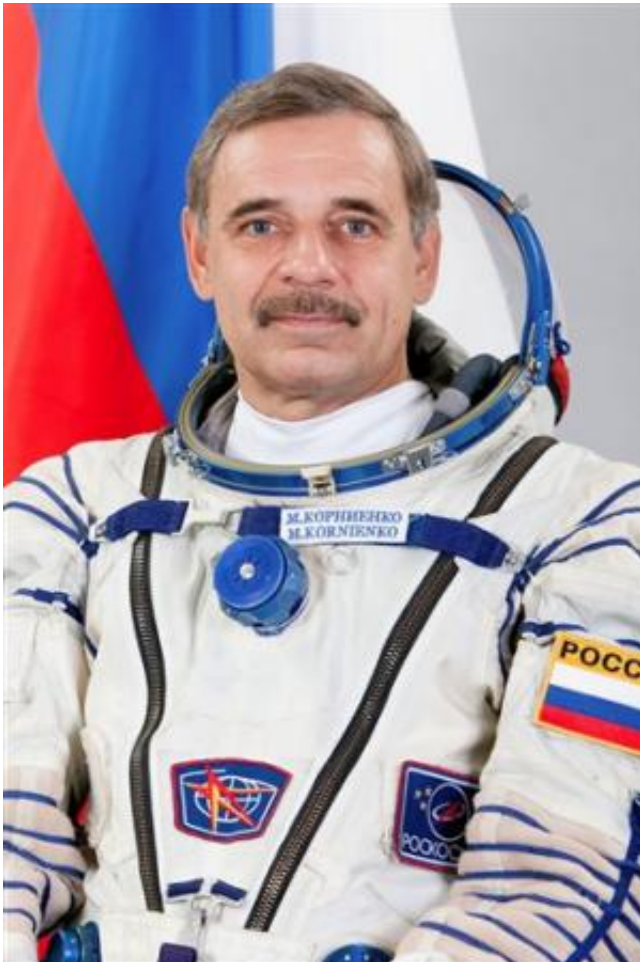
NASA actually got a 2-for-1 bonus with Kelly. He is teaming up with brother Mark for a battery of medical tests so researchers can compare the physique and physiology of the space twin with his genetic double on the ground. Raised by police-officer parents, they've lived parallel lives as Navy fighter and test pilots and space shuttle commanders.

Mark Kelly, a four-time space flier, will be at the Baikonur Cosmodrome in Kazakhstan for his brother's launch; wife Giffords will watch from Houston with Johnson Space Center friends. He's already submitted to numerous blood draws and ultrasounds in the name of space science.

"All right, do whatever you've got to do," Mark said he tells the doctors.

As for what Scott will endure, "Imagine if you went to work where your office was and then you had to stay in that place for a year and not go outside, right? Kind of a challenge," Mark said in an AP interview.

At least Scott Kelly will get outside for a spacewalk this time. Considerable work is needed to prepare the orbiting lab for the 2017 arrival of U.S. commercial crew capsules. So the year will be unusually busy, noted NASA's [space station](#) program manager Mike Suffredini, "a good thing" on such a long haul.



This Feb. 6, 2015 photo provided by the Russian Federal Space Agency (Roscosmos) and the Gagarin Cosmonaut Training Center (GCTC) shows cosmonaut Mikhail Kornienko in Star City, Russia. On Saturday, March 28, 2015, Kornienko and astronaut Scott Kelly will travel to the International Space Station to begin a year-long mission living in orbit. (AP Photo/Roscosmos and GCTC)

Another plus is that Kelly and Kornienko seem to honestly like one another. And they won't be alone. There are normally six people on board and lots of compartments, including three full-scale laboratories, in which to disappear. Besides, the U.S. and Russian crews generally spend their workdays on their respective sides, Kelly noted. The total

interior volume is roughly equivalent to two Boeing 747s.

"It's a big place, and I don't really look at it as I'm spending a year with him," Kelly said. "It's more spending a year with 14 other people, and he's one of them."

Among those coming and going, in September, will be British soprano superstar Sarah Brightman. She will visit for 1½ weeks as a paying tourist, and will perform live from on high.

Kelly expects to hear a lot of singing while she's there, but doubts he'll join in.

"Never sang before. But I could try, right?" Kelly said with a laugh. "It will be either all of us (singing with her) or none of us."

More information: NASA: www.nasa.gov/content/one-year-crew/

© 2015 The Associated Press. All rights reserved.

Citation: What to pack for year in space? A 'superhero utility belt' (2015, March 23) retrieved 6 May 2024 from <https://phys.org/news/2015-03-year-space-superhero-belt.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.