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Colorado teacher has the right stuff for NASA mission

By Kristen Browning-Blas
The Denver Post

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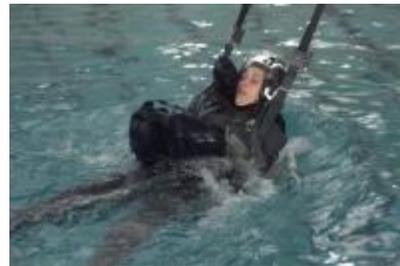


Dottie Metcalf- Lindenburger of Fort Collins, in a training version of her shuttle launch and entry suit. (NASA)

Astronaut Dottie Metcalf-Lindenburger can swim 75 meters dressed in a spacesuit and tennies. She can navigate a jet and survive in the wilderness.

To earn a spot on the March space shuttle flight, the Colorado native has done all those things. But this 34-year-old teacher-turned-astronaut's biggest challenge after a long day in the Johnson Space Center Neutral Buoyancy lab is saving some energy to play with her 2 1/2 -year-old daughter when she gets home.

"What takes the most exertion is when we do spacewalk training in the pool — you're in the water five to six hours," said Metcalf-Lindenburger by phone from the "astronaut office" in Houston where her colleagues gathered to watch the space shuttle Atlantis launch Nov. 16.



Dorothy M. Metcalf-Lindenburger is dragged through the water by a simulated wind-blown parachute during water survival training at Pensacola Naval Air Station. NASA (NASA)

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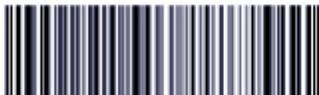
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"It's not terribly exerting at the time, although you are trying to move a big suit through the water. But afterward, I'll get out and be like, 'Wow I just want to go take a nap.' It's like after a marathon."

She would know. She's completed 16 of them, in Houston, Seattle and Boston. Although she wasn't always an avid runner, she was certain of one thing: She wanted to fly.

"We always told the girls, 'You can go anywhere you want and be anything you can be,'" says her father, Keith Metcalf, a retired engineer and teacher who passed on his love of running to both of his daughters. The Metcalfs still live in Fort Collins.

"Dorothy wanted to learn how to fly and become a pilot, but we just didn't have the funds," says her mother, Joyce Metcalf, a retired high school math teacher.

When she was in ninth grade, her parents were able to send her to Space Camp in Alabama. "She wondered, 'Am I going to be upchucking the whole time?'" says her mom. "But she came home just loving it."

That same year, she switched from gymnastics to track, and went on to win the state title in 1992 as part of the Fort Collins High cross country team. She was an All-American runner at Whitman College in Washington and graduated cum laude in 1997, with a degree in geology.



John Yaniec, lead test director of the Reduced Gravity Office, helps stabilize Dorothy M. (Dottie) Metcalf-Lindenburger, educator mission specialist astronaut candidate. (| NASA)

She became a science teacher at Hudson's Bay High School in Vancouver, Wash., and coached cross country and Science Olympiad. After she married Jason Lindenburger, her students called her "Mrs. M-L." One of her astronomy students asked the question that would set her on a course to space: "How do astronauts use the bathroom in space?"

What happened next was one of those cosmic coincidences. NASA had just posted a call for its new educator- astronaut position. Metcalf-Lindenburger not only found the answer to her student's question, she discovered a way to pursue her long-held dream. She was accepted into the astronaut training program in 2004, at 29, the youngest in her class.

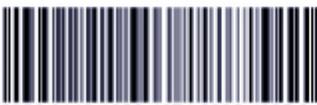
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"It was completely unreal," she said in a NASA interview at the time. "I was teaching my third-period Integrated Earth Science class. The telephone rang, and I was just expecting to hear some student's name that I needed to send down to the office. And instead, I get offered the dream job that I've always wanted. I was shaking and jumping up and down. Of course, the students wanted to know what's wrong with me."

She and her husband, Jason, a middle-school math teacher, moved to Houston, and Metcalf-Lindenburger threw herself into NASA's physical and academic demands.

"I didn't know what the training would look like but I knew it would be a *lot* of training," she says. "Until you work at NASA, you don't know about all the things that go into a mission. I knew that it would be physical, and I like a challenge like that."

Running, coaching and being part of a team helped prepare her for that challenge, she says.

Training and endurance

"I feel a lot of the things that you do in running carry over into teaching and, I think, now into the astronaut position," she told NASA. "The big thing is training and endurance and just keep going. We train hard as teachers. You work on lessons. You think about what you want to teach your students. You put it into practice. Sometimes it works wonderful, and you get to feel like you won the race. Sometimes it bombs,

and you have to pick up the pieces there and try again the next day. I think the same thing will carry over then into training. I have all this endurance that I've built up, and I know what pain is, and I know how to suffer through that. But I also know what the achievement or the goal is."

Toward the goal of earning a spot as one of the country's 321 astronauts, Metcalf-Lindenburger completed four days of wilderness training with 10 of her astro-classmates in Maine, equipped only with two canteens, a bayonet, iodine tablets, a poncho, a compass and a map.

She practiced being dragged through water by a parachute. She trained to navigate T-38 jets.

And through it all, she ran.

"I think it's really important to do hill running, and unfortunately Houston doesn't have any hills. I run on a bridge overpass here to build muscle strength and endurance, too," said Metcalf-Lindenburger, who ran the Wild West Relay from Fort Collins to Steamboat Springs with some of her NASA colleagues in 2008.

"The title is 'get your ass over the pass,' " she said, laughing. "It's two passes, up over the Continental Divide and Rabbit Ears pass down into Steamboat. By the end, each of us had run at least 30 miles."

An active bunch

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This year, she completed a half-Ironman triathlon. "All of us have come from some sort of active background. There are groups that run, folks that play basketball. We used to have a softball team until we were launching so many people, we couldn't support a team anymore and guarantee people wouldn't get injured."

(Imagine, you're all set for the shuttle launch, and you sprain your ankle stealing second base.)

Despite growing up at a mile high, Metcalf-Lindenburger says running in Houston at nearly sea level is similar to altitude training. "Here we're training in the heat so a lot of your blood volume is not going to what you wish it was going to. It's trying to cool your body. It's slow and sluggish." Nonetheless, one of her favorite forms of exercise is to meet a group for interval training.

The astronaut candidates (AsCans, in acronym-happy NASA parlance) work out with personal trainers once or twice a week. "We have gym time with trainers, which is really nice to focus on specific muscle groups," she said. "It's really necessary. We're flying in jets, getting in and out of the vehicle itself in a big 60- to 80-pound suit. And for long duration, you worry about bone loss and muscle atrophy. So you want to be in good, peak condition."

Typical of the astronaut image, Metcalf-Lindenburger keeps it understated. Asked if she thinks they are the fittest people on and off the planet, she laughs a little and says, "We are in good shape."

And, as competitive and intense as one must be to join these ranks, Metcalf-Lindenburger advises scholars and athletes alike to maintain balance. Having a toddler helps, even if you are an astronaut.

"She knows what space is, but she doesn't really get it," says Metcalf-Lindenburger of her daughter, Cambria. "I still have to go home and play with her and my husband, and I have to make dinner. Everyone needs a balance."

Kristen Browning-Blas: 303-954-1440 or kbrowning@denverpost.com

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