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Nik Wallenda's 'tricks' are incredible balance and arm muscle endurance

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Nik Wallenda, who completed a 1,400-foot tightrope walk over a river gorge near the Grand Canyon on live television Sunday, is not super-human despite his successful feat, according to Ajit Chaudhari (AH-jit CHOW-dree), an assistant professor of orthopaedics at The Ohio State University.

The Discovery Channel invited Chaudhari to serve as a biomechanics consultant for the program that aired Sunday night.

Chaudhari might even call Wallenda an "average guy" except for two specific qualities: better balance than 99 percent of other humans and significant endurance in his arm muscles, enabling him to carry a 43-pound pole for 45 minutes without experiencing fatigue.

Wallenda also has excellent control over his heart rate variability, which indicates his ability to remain calm on the wire, noted Chaudhari, who is co-director of the Movement Analysis & Performance Program in Sports Medicine at Ohio State's Wexner Medical Center.

"I can't say whether it's genetics or practice, but from what I observed, it comes down to the mental fortitude to be able to not think about fear or falling and to focus on the task at hand," Chaudhari said. "I'm sure it doesn't hurt that he has been practicing for essentially his entire life."

Chaudhari made an appearance on the Sunday program; he collected data about Wallenda during practice walks in Sarasota, Fla., earlier in

June. Under study: Wallenda's balance with shoes and barefoot, with eyes open and closed, and with and without the balancing pole; grip strength; and heart rate. Chaudhari also used electromyography to detect the muscle activity in Wallenda's arms.

Even after watching Wallenda practice without safety gear, Chaudhari said he was nervous while watching the live broadcast on TV.

Chaudhari's research focuses on the role of core stability and balance in the prevention and treatment of injuries across the entire body and the mechanisms behind overuse running injuries, ACL injuries and throwing injuries, all with the goal of answering a basic question: Can we better understand how athletic injuries happen by studying the human body as a mechanical system?

Provided by The Ohio State University