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## SPORTS

# Lindsey Vonn Got a Knee Replacement. Can She Get to the Olympics?

The 40-year-old Olympic medalist will resume ski racing this weekend on a partially rebuilt joint. Such an attempted comeback is nearly unheard of.

By [Rachel Bachman](#) [Follow](#)

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Lindsey Vonn finished 14th in a World Cup Super G race on Dec. 21 in St. Moritz, Switzerland. PHOTO: GINTARE KARPAVICIUTE/REUTERS

When Lindsey Vonn underwent a partial knee replacement last April, it seemed a mere postscript to her stellar career. She had already been retired from ski racing for more than five years. And after a string of injuries, surgery felt like a natural conclusion.

But instead of simply patching up the damage to Vonn's knee and ending her days on the slopes, the surgery has marked a new beginning for one of the greatest skiers of all time.

Against all odds—and testing the limits of science and human resilience—the 40-year-old Vonn returned in a World Cup Super G race on Dec. 21 in St. Moritz, Switzerland, and finished 14th.

More than a traditional sports comeback story, her return to competition turns Vonn into a fascinating case study for how far joint-replacement surgeries have progressed and what these repairs can mean for athletes of all abilities—particularly with more people undergoing them at younger ages. If she can overcome the considerable risks and prove to be competitive again, Vonn could become a shining example for what is possible after major knee surgery.

“I can’t tell you how big of a difference it makes to be able to ski without pain,” Vonn said after a test run down a downhill course last week. “It’s a completely new world for me. I haven’t felt this good in 15 years.”



The image on the right shows the type of implants that Lindsey Vonn received in her partial-knee replacement surgery. PHOTO: COURTESY OF DR. MARTIN ROCHE


Before the operation, the inside of Vonn’s right knee was so mangled by decades of high-level competition and repeated injury that she couldn’t fully extend it. By the time she first retired in 2019, after four Olympic Games and 82 World Cup victories, she declared her body “broken beyond repair.”

It turned out that wasn’t exactly true.

Martin Roche of the Hospital for Special Surgery, Florida, took on the partial reconstruction last spring. With robotic assistance, he precisely resurfaced the most damaged parts on the outside of Vonn’s knee with titanium alloys and polyethylene components. The replacement parts were custom positioned based on a medical imaging of Vonn’s knee joint.

Within two months, Vonn was back in the gym. Soon after that, she was plotting the unfathomable: a return to careening down a mountain at 80 miles an hour.

“We took away the debilitating deficit that was not allowing her mind and body to take control of her knee,” Dr. Roche said. “And once she had that back, then the rest is kind of her DNA, right? She knows what she can do and she feels secure enough to do it.”



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**lindseyvonn**

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Vonn is one of the most accomplished skiers in history. She won three Olympic medals across four Games. When she retired, her World Cup record ranked second all-time among alpine skiers behind Sweden's Ingemar Stenmark, who won 86. American Mikaela Shiffrin has since taken the lead with 99.

What Vonn is attempting is essentially unprecedented. Former football and baseball star Bo Jackson briefly returned to MLB after hip-replacement surgery at age 29. But alpine skiing presents another level of risk.

The chance of a high-speed crash causing serious injury is ever-present. And crashing on a rebuilt and complex fix, doctors say.

“high-impact loading after total knee replacement,” said Dr. James Huddleston, a surgeon and president of the American Orthopaedic Association. “The concern is that such repetitive stress, on a repaired knee to loosen or wear out



Lindsey Vonn in action in Beaver Creek, Colo., on Dec. 14. PHOTO: MATHIAS MANDL/ZUMA PRESS

He noted that Vonn’s rebuilt knee has already withstood the training with heavy weights and high-impact workouts required to get her back into racing shape. It’s not clear, however, how long Vonn’s knee will tolerate the toll of those workouts and racing.

“She’s definitely pushing the envelope,” Dr. Huddleston said.

Vonn’s age is another challenge. She will be 41 years old early next year, when the Winter Olympics take place in Milano-Cortina d’Ampezzo, Italy. That’s eight years older than the reigning oldest U.S. woman to compete in alpine skiing at the Olympics: a 33-year-old who raced in 2018 named Lindsey Vonn.

One person with rare insight into the life of Olympic athletes and the world of complex knee surgeries is American speedskater Eric Heiden, who hauled in five gold medals at the 1980 Winter Olympics and is now an **orthopedic** surgeon. Dr. Heiden, now 66 years old, has also undergone two knee replacements himself.

“I don’t know if she is going to be able to climb the ranks and be where she was before,” he said. “But I think myself and a lot of others in the **orthopedic** community are interested to see where she goes. Because she’s in uncharted territory.”

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