

Big Idea: Vermont inventor uses brain to save knees

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By Nancy Remsen, Free Press Staff Writer

Vehicles stream past the white clapboard building on the Mountain Road en route to Stowe Ski Resort. Inside, in a room dominated by a sophisticated contraption that nevertheless looks like a giant erector set, Rick Howell refines his design for a ski binding he predicts will reduce today's most common ski injury -- strained and ruptured knee ligaments.

He's working around the clock these days to produce

sales samples, connect with potential buyers and lock in orders for production during the summer. By next winter the 54-year-old inventor expects skiers will be able to swoop or bump their way down slopes with a ski binding by KneeBinding Inc. that will release before they "blow out a knee."

Ski bindings release now, of course. Heels pop up and out of their clamps under certain conditions, and toe pieces allow boots to slide out sideways to prevent injuries.

Howell's technology, however, will allow the heel to release laterally. More important, he said, the binding can tell the difference between controlled skiing maneuvers and events that produce knee ligament injuries. He says it won't release at the wrong time.

"That's what's new and there is nothing else like it anywhere," Howell said. "This is going to help a lot of people," he added, citing data that reported more than 17,000 anterior cruciate ligament (ACL) injuries in U.S. skiers in 2006. Diagnosis, treatment and rehabilitation of these injuries cost on average about \$15,000, Howell said. Skiing pays a price, too, he said, because 20 percent of skiers with ACL injuries give up the sport.

Steve Utter, head ski coach and program director for the Green Mountain Valley School in Fayston, said he's seen the potential for knee injuries increase as skiers use sharper, side-cut skis on today's firmer, more consistent snow surfaces. While ski and boot



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Richard Howell explains how his newly patented KneeBinding works at his Stowe office Thursday. Howell's binding features a lateral heel release to reduce ACL injuries. GLENN RUSSELL, Free Press

technologies have changed dramatically in the past three decades, Utter added, "the binding has barely changed. There needs to be some change."

Utter said Howell approached him looking for money to help launch KneeBinding because both men grew up and skied in upstate New York. Utter said he didn't become an investor and hasn't kept up with the project, but he noted that Howell understands skiing and ski racing. "That is why he might be suited to tackle this problem."

Lifetime risk-taker

Howell has been a man focused on cutting-edge technologies since his teen years, when he broke a leg skiing three times and got to wondering and experimenting with how to make better bindings. In college, he said, "I raced on my home-made bindings that never pre-released, but which allowed me to twist-out at the finish line of 80-mph-downhill races. ... Still today, my college ski racing buddies call me Dr. Frankenbinding."

He spent eight years with Geze, a German ski binding company. Then a chance incident at a traffic light when a biker tipped over because he couldn't get his foot out of the pedal's toe basket gave Howell the inspiration for a kind of clipless pedal.

Howell left Geze in 1986 to develop CycleBinding, which he claims was the first hands-free clipless bike pedal. Clipless pedals now dominate cycling. Howell's business flopped, however, when the manufacturer he picked failed to deliver.

"It was a great idea for its time," said Mark Snelling, president of The Shelburne Corp., which acquired Howell's struggling company, but couldn't revive it. "Had it gotten into the marketplace and been delivered," Snelling said, Howell's design could have been successful. "But the world moves on pretty fast."

Howell's next venture was as a member of a creative team charged with reinventing snowshoes in the early 1990s. He holds the patent for the binding that helped catapult Tubbs snowshoes from a 19th-century wood and leather look to 21st-century lightweight metal and plastic technology.

"Rick, to his credit, had a great concept and worked hard to make it come to fruition," said Kathy Murphy, current general manager of Tubbs Snowshoe Co.

Despite these professional side trips, Howell said he remained interested and concerned about skiing safety. While statistics showed that ski injuries had decreased 50 percent since the 1970s, knee injuries increased -- especially among females.

Shaped or deeply side-cut skis had burst onto the market, becoming popular with recreational skiers and racers. "They are great. We all love them. They are here to stay," Howell said. "They allow people to have more control. But when a shaped ski hooks and you aren't with it, that's what causes injuries."

"I saw this trend and said there ought to be an engineering solution," he said.

It has taken Howell five years to develop his concept into an actual binding that could be sent to market.

Howell admits to a single-mindedness of purpose, especially now as he readies his innovative binding for its public debut. He said he pulled three all-nighters in recent days.

"There is an opportunity for us in an industry where not much has changed in a long time," he said. "I am a risk taker. I take big risks."

"He has put everything he has into it -- his time, emotion and finance," said Joss Besse of West Bolton. Besse grew up with Howell in Cazenovia, N.Y., and reconnected with him because they both sail Etchells on Lake Champlain.

"It's hard to think of a conversation I've had with him when this hasn't come up," Besse said. "It has been the focus of his life for years."

Howell's tenacity has paid off. His patent was approved Jan. 15. His prototype bindings have passed rigorous product testing at the TUV Testing Institute in Munich, Germany, and he's received positive feedback from skiers who have tried them on the slopes.

"As far as the function, it works," said Paul Brown, longtime skier, ski instructor and owner of Cold Hollow Cider Mill in Waterbury. Brown tested what he described as a cobbled together binding prototype, he said, giving it a workout on "packed powder" and bumps at Sugarbush Resort. The binding never released while he was skiing, but he said when he stopped he turned his heel and stepped free of the ski.

Brown noted that he and his wife, former University of Vermont alpine racer Gail Voelker Brown, have both "blown" their ACLs skiing, so they are interested in new development that might address the problem.

Still Brown said, "I have seen innovations come and go. Any of the previous designs would detract from the experience of skiing because they were too safe." By too safe, Brown said he meant that a binding released too easily, which can be annoying to the recreational skier and dangerous for the racer.

"I was the biggest skeptic," Brown said, "but this is really something."