

“Not All Soles Are Created Equal” Transcript

Excerpt from [December 2, 2016](#) episode of Science Friday.

IRA FLATOW: Now it's time to play good thing, bad thing. Because every story has a flip side. As winter approaches, I'll bet some of you are shopping right now for some new winter boots. And if so, you might be happy to know that the Toronto Rehabilitation Institute has come up with a rating system to test the slip resistance of 98 different types of winter boots, based on how they performed against icy conditions simulated in their state-of-the-art winter lab.

What you won't be happy to know is what they discovered when they tested them. Barry Westhead is director of research engineering at the Toronto Rehabilitation Institute, and he joins us via Skype. Barry, welcome to Science Friday.

BARRY WESTHEAD: Hello, thanks for having me here.

FLATOW: Why did you start testing winter boots for slip resistance?

WESTHEAD: Well, as a rehabilitation hospital, we're obligated to and mandated to prevent injuries. Part of our work is to restore people who have disabilities from injuries or disabilities. But we also-- as a research division-- have a high mandate to reduce injuries. And we've been working with the shoe industry, because one of the major health care issues is slips and falls on ice in winter. And here in Ontario where we have a population of about 15 million, we get 21,000 visits a year to hospital beds due to slips on ice.

FLATOW: I lived in Buffalo, so I know what the weather is like. Well, let's start with the bad news. When you tested these boots, what did you find?

WESTHEAD: Well, unfortunately, we tested over 100 boots, and only nine of them passed.

FLATOW: Say that again. You tested 100 boots?

WESTHEAD: 100 Boots, and only nine passed.

FLATOW: Wow. Tell us why that was. What about the good boots? That's the bad news, what's the good news? Why did the good boots pass?

WESTHEAD: The good news is that there are some new technologies, and we are aware these are on the market now. And so we could finally begin to raise public awareness to the fact that some boots could be better than others. And so there are two technologies that perform very well. One is called a Green Diamond Technology, and that involves taking a hot boot sole and sprinkling granules of silicon-dioxide onto it. And then covering it with a thin layer of rubber and sanding off some of the rubber so that the crystals are exposed. So you have a rubber sole with crystals protruding through it.

FLATOW: So you basically made cleats, or they made cleats on these boots.

WESTHEAD: Yeah, very small cleats, that's right.

FLATOW: And the other boot that worked?

WESTHEAD: The other technology is even more high tech. It's a soft rubber compound that has a combination of micro-grooves. It's the softness of the rubber, and the micro-grooves that are cut into it. And also embedded in the rubber are glass fibers. And these glass fibers create basically again, like little grippers. So when you rub your hand on the material, it feels a little rough like fiberglass. And they do a great job of gripping on ice.

FLATOW: Well, are the other 90 makers of the boots looking at this and saying, hey, maybe we should try this?

WESTHEAD: Yes they are. And a lot of the retailers are very responsible and no doubt, disappointed that their boots didn't make it this year. But the technology is there, it will be available next year. And I'm sure that the entire footwear landscape for winter footwear will look quite a bit different next year. And that was our intent.

FLATOW: Well, that's great. Good to hear that you're making progress there, because there's not much that can hold on ice.

WESTHEAD: That's right. That's right.

FLATOW: Thank you, Barry. Barry Westhead is director of research engineering at the Toronto-- or as they say up here Toronto Rehabilitation Institute. We're going to take a break. And when we come back, our picks for the best science books of 2016. Stay with us, we'd like to know what you think they are. We have our own panel of experts, so don't go away. We'll be right back.