

Grass vs. concrete: Golf shoe traction

Where you stand on alternative spikes may depend on where you walk.

Thomas A. Nikolai; John N. Rogers III, Ph.D.; Douglas Karcher; John Hardy; and Paul E. Rieke, Ph.D.

The trend toward banning metal shoe spikes began as a winter rule to protect dormant golf course greens in the U.S. Northwest (3). Then, in 1992, two or three courses around the country adopted year-round spikeless policies.

Over the next several years, a handful of courses invoked spikeless policies to create truer putting surfaces. The trend became a craze, however, when it became obvious inside clubhouses that the alternative cleats were less destructive to floors, rugs and carpets than the 8-millimeter metal spike.

In the past four years, alternative cleats and shoe soles have flooded the

market, although not all golfers have expressed satisfaction with them. Early alternative cleats were suspected of providing too little traction for anchoring the golfer during a swing or for walking on slopes. Our research reveals that some cleats can provide traction comparable to that of the 8-millimeter metal spike.

Arguments

As 8-millimeter bans proliferated, some golfers fought the trend with three basic arguments.

1. "Metal spikes have always been on golf courses." This is not true. Metal



Photos courtesy of Thomas Nikolai

To simulate traction in the rain, a slope was watered liberally throughout the day of the survey. Turfgrass wear was so severe that this test was moved at noon.

KEY POINTS

- On the tee and on dry slopes, some new golf soles and cleats offer as much traction as traditional metal spikes, according to ratings by golfers.
- On wet slopes, nothing gives better shoe traction than the traditional metal spike.
- On concrete, the traditional metal spike received the poorest traction rating of several cleats or soles tested.

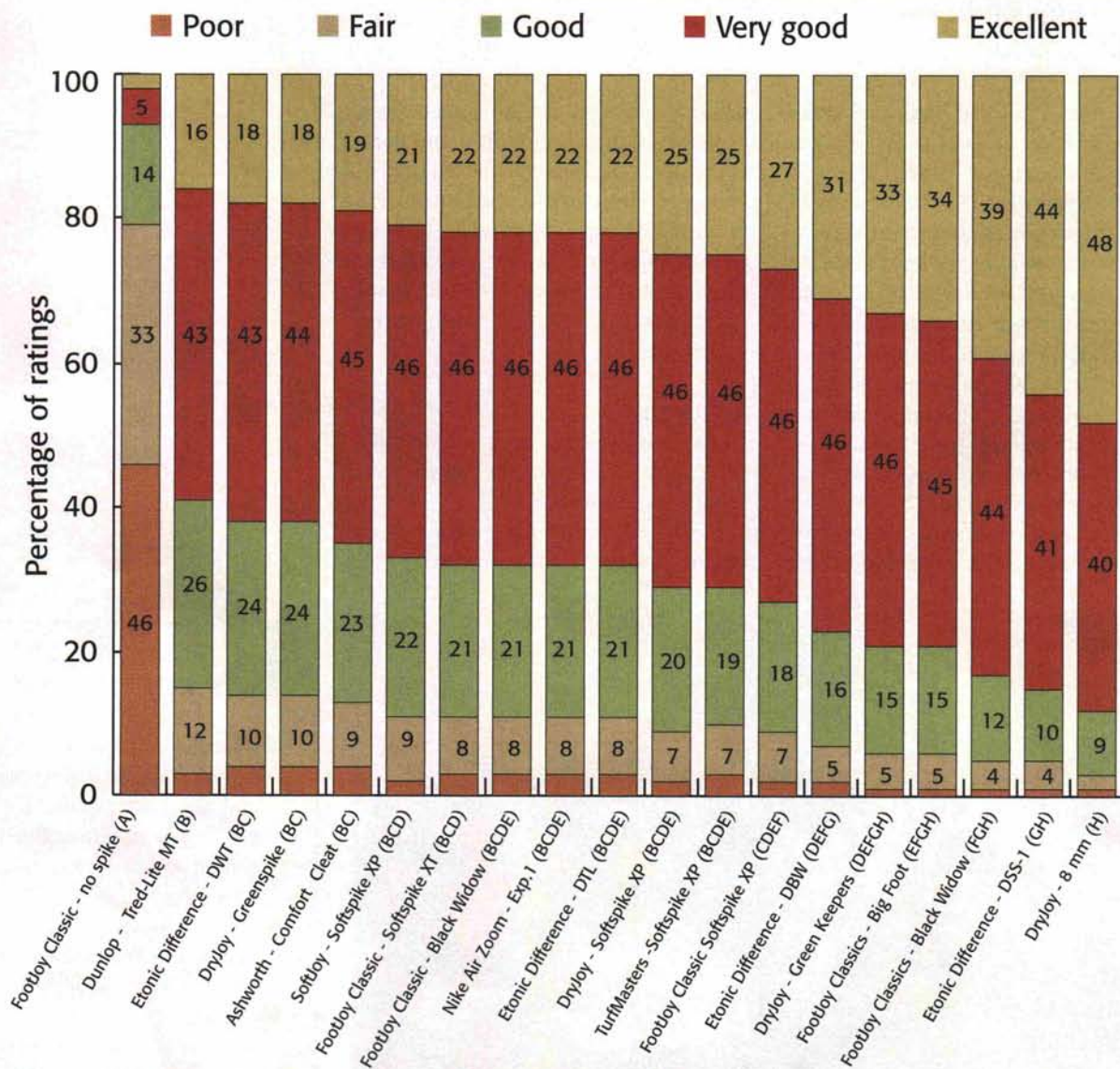
spikes were not introduced until the dawn of 20th century and did not become standard golf attire until the 1920s (2). Golf has been around much longer, which nearly relegates metal spikes to fad status.

2. "Since the wear produced on putting surfaces was tolerable in the past, why is it unacceptable today?" In fact, the traffic wear researched in the

past, though caused by 8-millimeter spikes, was different from the wear produced by 8-millimeter spikes today.

On most of today's putting surfaces, the 8-millimeter metal spike picks up grass plants, leaving behind displaced tufts that resemble tiny Christmas trees. This type of wear is noticeable after just one golfer traverses a putting surface with 8-millimeter spikes.

Traction during golf swing

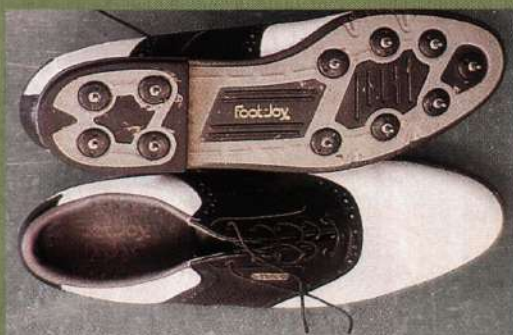


Five shoes (labeled with an "H" beside name) received top ratings for traction during the golf swing.

Modern management practices may play a role in this type of wear (5). Researchers who examined spike damage on greens in 1948, 1959 and 1983 never mentioned an uplifting of the grass plant by 8-millimeter spikes (1,2,4). Vic Gibault, Ph.D., did not record wear data after a week of traffic in his 1983 study because “there was no visible damage” on the plots. Most wear data from early studies deal primarily with indentations in thatch caused by the cleat base that holds the spike —

somewhat like the coin-sized indentations left by many of today’s alternative cleats, ironically.

3. “Alternative spikes don’t provide enough traction for swinging or hill walking.” Even proponents of alternative spikes have generally conceded that no alternative on the market provides traction equal to that of metal spikes. Traction, or footing, during the golf swing has an important effect on the flight of a golf ball. Moreover, lawsuits over falls on golf courses have increased



8-millimeter metal spike



Etonic Difference 2000 sole with DSS-1 cleats



Black Widow cleat



Big Foot cleat



Green Keepers cleat

Five shoe soles topped the competition for best traction on tees during the golf swing: the 8-millimeter metal spike, the Etonic Difference 2000 sole with DSS-1 cleats, the Black Widow cleat, the Big Foot cleat and the Green Keepers cleat.

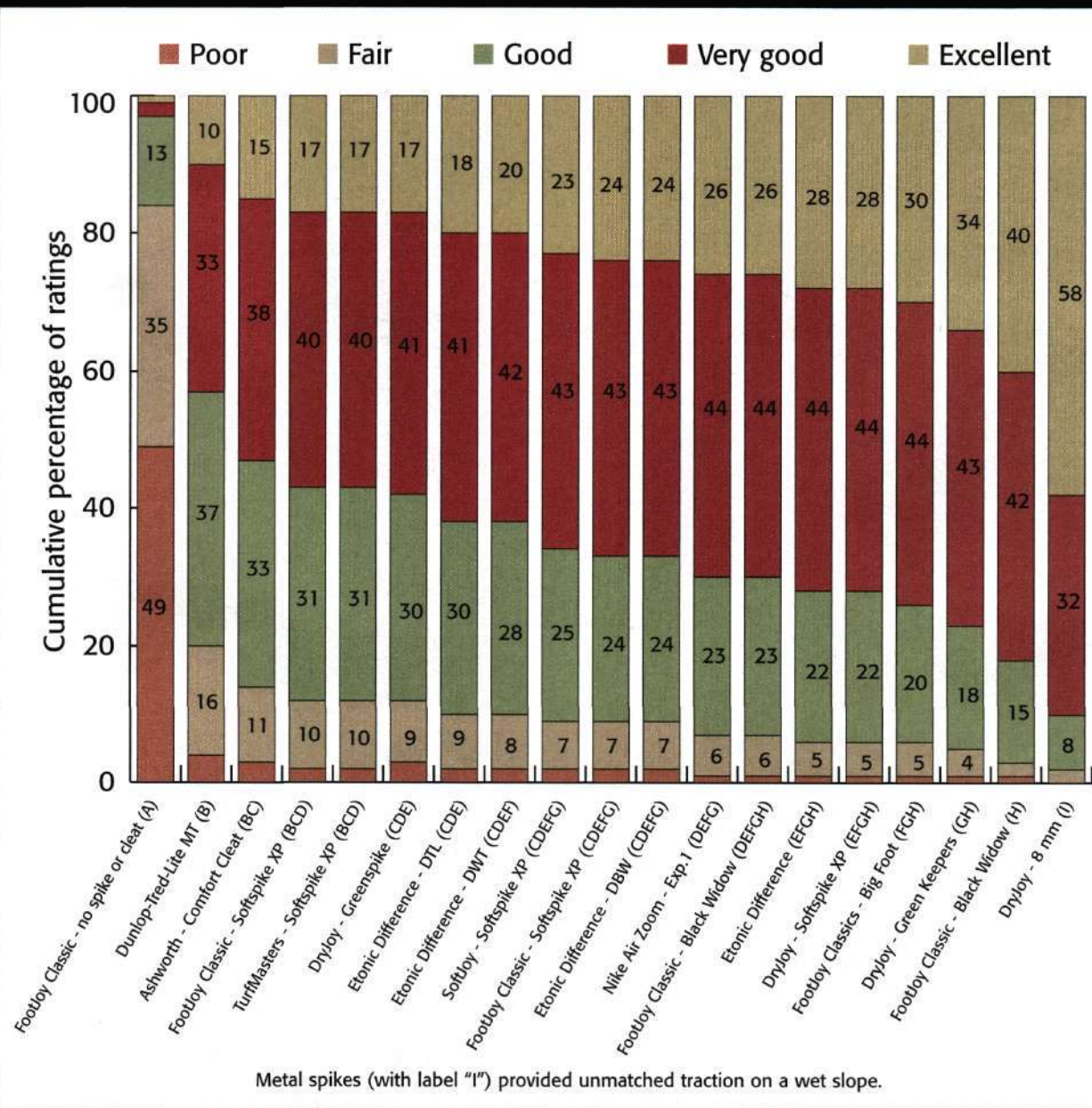
the importance of traction.

With these concerns in mind, Michigan State University conducted an alternative spike traction survey July 13, 1999, at the Forest Akers East Driving Range in East Lansing. Seventy volunteers from across Michigan, Indiana and Ohio took part. All participants wore size-11 golf shoes. While signing in, participants were asked not to look at the soles of

shoes they'd be wearing during the study.

Participants began by lacing on a pair of golf shoes and proceeding to the range tee. After hitting balls, they were asked to rate the golf shoe's traction as "poor," "fair," "good," "very good" or "excellent." Next, the participants traversed a dry slope, a wet slope and then concrete. On both dry and wet slopes, the participants walked diagonally up and

Traction on wet slope



down in a route that made a large “W.”

After traversing each area, they were asked to rate each golf shoe on the five-point traction scale. The volunteers repeated the test course wearing 19 different pairs of golf shoes with different soles or with different cleats inserted into each.

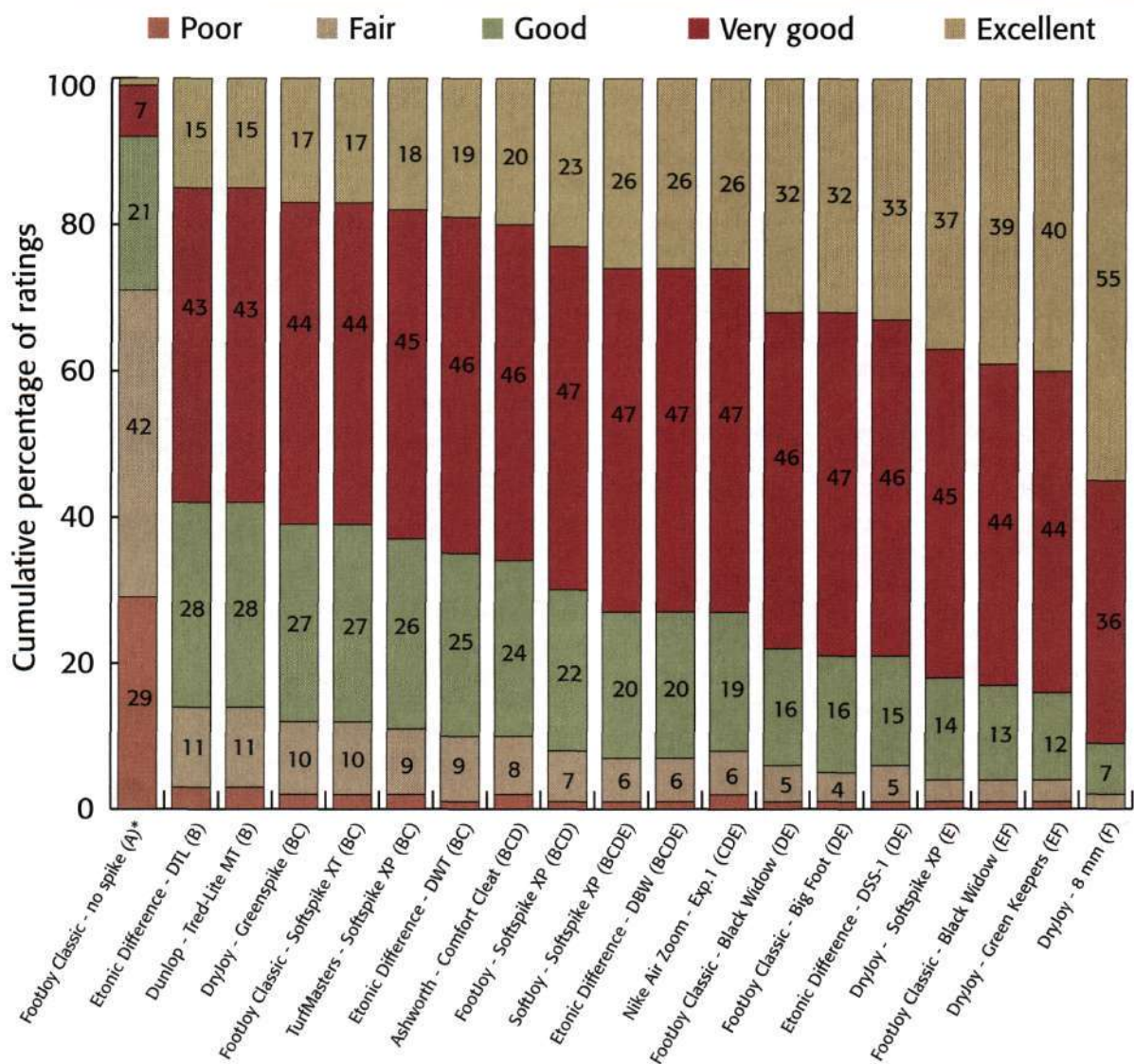
A pair of FootJoy Classic golf shoes with no cleat or spike was included as a check. If these smooth, leather-soled

golf shoes were not judged to provide the worst traction, then the study would have little merit. As it turned out, this pair of check shoes received far worse traction ratings on turf than any other treatment.

Results

In the traction ratings from the golf swing, a pair of DryJoys with 8-mil-

Traction on dry slope



Three soles (labeled with the letter F) performed in the top group for traction on a dry slope.

limeter metal spikes received the most "excellent" ratings. However, statistical analysis indicates that the rating for the 8-millimeter spikes is not significantly better than the ratings for four other shoe treatments.

Those four comparable treatments were the Etonic Difference with factory standard DSS-1 cleats, a pair of FootJoy Classic Drys with the Black Widow spikes, a pair of FootJoy Classics with the Big Foot cleat and a pair of DryJoys with Green Keepers in the soles.

At the other end of the traction scale were the smooth-soled check shoes, with nearly 50 percent of participants giving the pair a rating of "poor" and another 33 percent rating the shoe as merely "fair."

No other product performed as poorly as the check pair of shoes. A pair of Dunlops with the Tred-Lite MT spike insert was rated among cleats as providing the worst traction during the swing. However, nearly 60 percent of the participants rated the traction of this shoe as either "excellent" or "very good," with another 26 percent rating the traction as "good."

Side hill walking

When the survey was initiated at 7 a.m., the turf was still moist from the previous night's irrigation and from morning dew. As the day progressed toward the 5 p.m. quitting time, our "dry" slope became drier, mimicking the natural events that take place on a golf course under ideal weather conditions.

On the dry slope, the 8-millimeter metal spike once again received the highest number of "excellent" ratings, although Green Keepers cleats in a pair of DryJoys and Black Widow cleats in a pair of FootJoy Classic Drys provided traction equivalent to the 8-millimeter spike. The smooth check shoe received unacceptable ratings from more than 70 percent of the participants.

For the wet slope study, a grassy knoll was watered throughout the day to simulate traction conditions that a golfer would encounter while playing in the rain. Under these conditions, the 8 millimeter metal spike provided unequaled traction, and the smooth check shoes received their worst traction rating, with more than 80 percent of the participants giving them an unacceptable rating.

Dry concrete

As for traction traversing dry, flat concrete, the Nike Air Zoom with the Waffle spike, Etonic Difference with DSS-1 spike, Green Keepers inserted in the DryJoys, and Big Foot cleats inserted in the FootJoy Classics received the highest ratings. At the other end of the scale was the 8-millimeter metal spike, which received an unacceptable rating over 50 percent of the time. No other treatment performed as poorly as the 8-millimeter metal spike under these conditions.

Stay on guard

The good news is that alternative spikes continue to outperform their 8-millimeter predecessor by inflicting less wear on greens. However, we cannot assume that all alternative spikes that come off the drawing board will be green friendly or acceptable to golf course

superintendents. Recall that an early benefit of alternative spikes was that lost plastic spikes were less damaging to mowers' cutting reels and bedknives than metal spikes. However, most of today's alternatives now have metal threads, eliminating this advantage.

The only constant is change, so stay aware of what golfers are wearing on their soles. If you have concerns regarding some of the alternatives, set up demonstration plots on your putting green and determine whether your concerns are warranted. Invite your membership to observe the exercise and rate the plots as you stay on guard for your greens and their game. ■

Acknowledgments

The authors would like to acknowledge Ken Horvath and Ron Foote and his crew for the use of their driving range. We would also like to recognize the volunteer efforts of the Hancock Turfgrass Research Center Staff, MSU turfgrass graduate students and the traction survey participants, all of whom donated several hours to make the traction survey a success. Thanks also to all golf shoe and spike manufacturers that graciously provided products and financial support for the study. Funding and encouragement were provided by the Michigan Turfgrass Foundation and the Golf Association of Michigan.

Literature cited

1. Ferguson, M.H. 1959. Turf damage from foot traffic. *USGA Journal and Turf Management* 12(5):29-32.
2. Gibeault, V.A., V.B. Younger and W.H. Bengeyfield. 1983. Golf study II. *USGA Green Section Record* 21(5):1-7.
3. Gilhuly, L. 1996. The metallic mashers of monocots: golf spikes! *USGA Green Section Record* 34(5):1-4.
4. Grau, F.V., and M.H. Ferguson. 1948. Steel spikes vs. lug soles for golf shoes: A report on 1948 trials by USGA Green Section. *USGA Journal and Turf Management* 1(6):13-15.
5. Nikolai, T.A., and P.E. Rieke. 1998. 8-mm metal spikes get failing marks. *Golf Course Management* 66(2):49-55.

Thomas Nikolai is a research assistant in the department of crop and soil sciences at Michigan State University. John Rogers III, Ph.D., is associate professor in turfgrass management. Douglas Karcher and John Hardy are research technicians at MSU. Paul Rieke, Ph.D., is a professor in the department.