

# Sports

SKIING SOCCER COLLEGE FOOTBALL

## Ski racers not ready to embrace air bags

SKIING MOLVENA, ITALY

Federation approves use but skiers are afraid of giving up slightest edge

BY SAM BORDEN

Broken collarbones. Shattered shoulders. Internal bleeding. Punctured lungs. Those injuries, and worse, are possible every time a world-class skier plunges out of a starting gate and slides down a snowy racecourse.

Given that, it is not surprising that skiing's international governing body recently approved for use an airbag safety device that has been in development for nearly four years. But many racers have expressed reluctance toward the new technology.

To outsiders, this reaction might seem incongruous. What skier hurtling downhill at up to 90 miles per hour would not want a bit more protection, especially if his or her neck, shoulders and chest might be shielded in the event of a violent crash? But as often happens in pro sports, money and above all performance are factors that rival, if not surpass, safety concerns.

"As racers, we all want to go as fast as possible, and it does add a little weight, a little more of a hump on your back," the United States Olympian Marco Sullivan said of the most recent airbag design, which resembles a skintight vest with a small computer sensor and a tiny gas canister tucked in its back. "If you're the only guy wearing it, it's probably a disadvantage as far as speed goes."

Despite the apparent benefits of the airbags, similar to those used in motorcycle racing, the International Ski Federation has hesitated to make them mandatory. The federation, known by its French acronym, F.I.S., said last week during the Alpine world championships in Beaver Creek, Colo., that it would wait until skiers had more options, because the airbag is currently manufactured by only one company.

"No one is going to wear it until everyone is wearing it," Sullivan said.

Sullivan's perspective is not unique, in any sport. High-level athletes are, as a rule, persnickety about changes to anything even remotely related to their performance. (Baseball fans might recall how many players rejected early versions of newer, safer batting helmets simply because of their bulbous appearance.) On the list of what to obsess about, equipment is perhaps the area in which athletes are most particular.

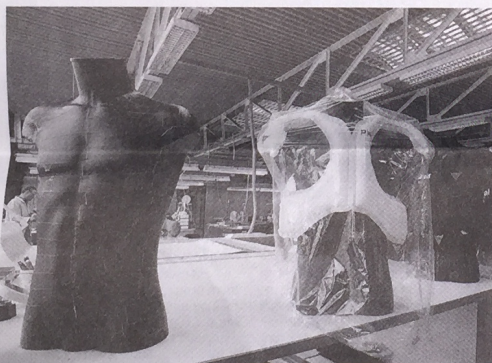
In some ways, the reticence of the skiers is understandable; after all, the difference between first place and 12th place in the men's downhill at the Sochi Olympics last year was less than a second. Anything that might have a minuscule effect on results (or might even be perceived as having one) is to be avoided.

But while catastrophic crashes in top-level skiing are not common, the injuries athletes sustain when they happen can be gruesome. Lower-body injuries, such as torn knee ligaments or broken legs, occur most frequently, yet the damage to the upper body is often the most severe. The American Bode Miller, who injured his back in a crash last March, has missed the entire World Cup season after having surgery in November to repair a herniated disk; he returned to competition on Thursday in the super-G at the world championships but promptly crashed head over heels again.

According to data compiled by F.I.S.,



Jan Farrell, a British skier, tested the vest earlier in February and crashed at 50 miles per hour, below the speed of one of his standard runs. "It was like being inside a shell," he said.



The airbag prototype, right, at the Dainese factory. The device has a credit-card-sized electronics board, a gas canister to inflate the airbags, and the bags themselves.

nearly 20 percent of the 726 recorded injuries over the past eight seasons of Alpine events in the World Cup series involved the head, neck, shoulders or chest. More than a quarter of those injuries made athletes miss 28 or more days of training and competition.

An effort to reduce those numbers led F.I.S. to work with the Italian company Dainese, perhaps best known for its link to motorcycle racing, to create a safety device for skiers. Dainese has created numerous such devices, including an airbag system used by top-level racers.

In 2011, Dainese, in partnership with F.I.S., began developing an airbag that could be used in skiing. The challenges were considerable. First, there was the matter of creating a system that could consistently determine when it was needed, effectively distinguishing the difference between skiers who lost their balance but were able to recover and skiers who lost their balance and went into a dangerous tumble.

"That's why we call it intelligent clothing," Vittorio Cafaggi, a manager for strategic development at Dainese,

said in an interview at the company's research and development lab in Molvena. "It isn't enough for it to just protect you; it has to know when you need protection, too."

To make that possible, Dainese's technicians use gyroscopes, accelerometers and a GPS tracking device to monitor an athlete's position, angle to the ground and speed. If a skier's angle and speed suddenly change drastically, sending the values outside the algorithm's normal range, the airbag inflates.

One of the biggest challenges was accounting for the various jumps racers might encounter on their way down a course. Initially, skiers risked inflating their airbags whenever they zoomed off an incline, so a flying mode was added.

The other issue for Dainese was the physical design. Skiers wear skintight body suits while racing, with a thin back pad underneath, and the initial airbags resembled bulky flak jackets. The latest version, which Cafaggi said was ready for use, is much sleeker and uses thin synthetic material — similar to that in a moisture-wicking jogging shirt — to hold a credit-card-sized electronics board, a gas canister to inflate the airbags, and the bags themselves. The system is run by a small battery.

At present, Cafaggi said, the system is not for use by recreational skiers, because they simply fall too often to make a single-use airbag vest practical. Still, Dainese has created a motorcycle airbag for street use, and although tweaking the skiing airbag's algorithm to make it appropriate for recreational use would be a significant undertaking, an amateur version is not impossible,

Cafaggi said. During the development process, Dainese worked with athletes from a number of national federations to solicit feedback, and Cafaggi disputed Sullivan's claim that anyone who wore the airbags would be at a disadvantage in terms of speed.

Early versions of the system were actually deemed by F.I.S. to be advantageous to skiers who wore them, Cafaggi said. After frequent wind-tunnel testing, the current models were found to be "aerodynamically neutral."

The system, which Dainese calls the D-air, has been approved for use since Dec. 31, and Cafaggi said Mirena Kung, a Swiss skier, used it in competition during a women's event in St. Moritz, Switzerland, last month.

That inaction has been the exception, though. Ted Ligety, an American downhill star, was skeptical about the entire concept of airbags, noting that in motorcycle racing, an airbag could be designed to inflate as soon as the rider comes off the bike. "In ski racing," he said, "it's not that simple."

Werner Heel, an Italian skier who has a partnership with Dainese, said he was willing to use the airbag only in training because he felt a bit "constricted" in the vest. Steven Nyman, an American who is not affiliated with Dainese, said he was offered one of the vests but turned it down because it was not made by one of his sponsors and because he did not trust it yet.

If the airbag goes off at the wrong time, Nyman said, "it's sketchy."

Kelley McMillan contributed reporting from Beaver Creek, Colo.

## University reconsiders decision to end program

COLLEGE FOOTBALL

Alabama school cited cost, but outcry forced a humbling turnaround

BY ZACH SCHONBRUN AND BEN STRAUSS

In the turbulent weeks since the University of Alabama at Birmingham announced that it would shutter its Division I football program, rallies and protests have erupted on campus, powerful donors have threatened to withhold their support, and the faculty senate has approved a resolution of no confidence in President Ray L. Watts's ability to lead the university.

The message was delivered: Football is a serious matter in Alabama. And up against a wave of opposition, Watts and U.A.B. have cracked open the door for a potential reinstatement of the football program in 2016.

A task force is reviewing the finances of the athletic department, which has two-thirds of its \$30 million operating budget subsidized by the university, and reappraising the findings from an independent consulting company, CarrSports, that led to the decision to drop football. The task force will make recommendations, but the university reserves the right to decide whether football is feasible.

It is a humbling turnaround from the confident statements by Watts and the board of trustees in the wake of the original decision on Dec. 2, when they asserted that the escalation of the arms race in top-tier college football had made the sport financially untenable for a program like that of U.A.B. But the community, with its voracious appetite for football, did not take the conclusion lightly. Questions about the consultant's report have emerged, too.

At the annual N.C.A.A. convention outside Washington last month, the five biggest conferences voted to allow their

Some of the report's math has since come under fire.

members to increase the value of scholarships to cover student-athletes' full cost of attendance, leaving administrators at other midmajor programs to face the same changing landscape. The mid-major programs do not receive the same millions of dollars from lucrative television contracts, and many report already strained athletic budgets even as some count on football as an important marketing tool. Many have stated that they plan to follow the lead of the larger programs as they examine how football and other sports fit into their budgets and on their campuses.

When CarrSports, a consulting firm run by Bill Carr, a former Florida athletic director, audited U.A.B.'s athletic budget, its report concluded that football would drive subsidies even higher in the future and require a \$49 million investment during the next five years to remain competitive.

Some of the report's math, though, has since come under fire. Articles by Jon Solomon on the CBS Sports website and by the economist Andy Schwarz at Vice Sports offered pointed critiques, noting that the report did not account for football's role in annual payouts to the university of around \$2 million from Conference USA and may have underreported football donations to the university's athletic department.

The questions helped fuel the anger over Watts's decision, and the undergraduate and graduate student governments and faculty senate have passed resolutions of no confidence in the president. With public pressure mounting, Watts announced the formation of a new task force Jan. 9 to re-examine the issue of whether football should be reinstated.

"He went from saying, 'There's no way in the world we're bringing back any of these sports,' to saying, 'We're going to have a task force,'" said Frank

## With African Cup over, Manchester City gets linchpin back



Rob Hughes

GLOBAL SOCCER

were expected to fly to England and the icy grip of winter. Their club, Manchester City, has a vital league game at Stoke City on Wednesday.

Modern players — aided by the wonders of medical science and the comforts of executive jets — have extraordinary powers of recovery.

Yet not even Touré, voted Africa's finest soccer player for the last four years, nor Bony, whose \$38 million transfer from Swansea City to Manchester City was the highest ever

the statistics are damning.

With Touré playing, City had won 14 league matches, drawn two and lost two.

But without him, it has failed to win in the league this season; its goals scored are down, the number conceded has almost doubled and the club's ability to play a physical match has been gutted.

There is no question that Africa deserves to see its players, just as South Americans deserve to see a glimpse of

able to live up to what was expected of it and win the African Cup. Didier Drogba had to retire without winning a continental title, but on Sunday, the Elephants delivered, with Yaya Touré as captain.

It had been a final etched by fear of failure from both sides, one destined to go to the penalty shootout.

Hervé Renard, the Frenchman who in 2012 coached Zambia to an emotional African Cup title — also won on penalty kicks — now guides Ivory Coast.

