

# ImPACT helps athletes return safely to play



Times photo by Joaquin Siopack, jsioPACK@stcloudtimes.com

Erin McNamara, 21, a St. Cloud State University senior on the women's hockey team, undergoes a test of memory and attention used to set a baseline value to compare against in the case of a concussion. St. Cloud State is using the test as a more scientific way to determine when it is safe for athletes to return to action after a concussion.

## System helps teams measure repercussions of concussions

By Mick Hatten  
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Melissa Sutton admits that her competitive nature has caused her to lie to athletic trainers about her concussion symptoms. Sutton, who is in her first year as a goalkeeper for the St. Cloud State University soccer team, has done so because she wanted to return to the soccer field.



**Tim Tinius**  
Psychology professor

"I try to lie to athletic trainers, but they always catch me," said Sutton, who will seek a medical redshirt for this season after suffering a concussion in practice. "I wanted to get back so bad that I wouldn't tell

### ImPACT features

Here are some features of the Immediate Post-Concussion Assessment and Cognitive Testing system:

- Assists physicians and athletic trainers in making return-to-play decisions after a concussion.
- Measures attention, memory, processing speed and reaction time.
- Reaction time measure to 1/100th of a second.
- Measures player symptoms, provides reliable baseline test information and stores data for repeat testing.

Source: [www.impacttest.com](http://www.impacttest.com).

### Student athletes reported having had a concussion

St. Cloud State University, 2001-02



Source: Tim Tinius, Ph.D. and Phil Godding, Ph.D., St. Cloud State University

### What causes a concussion

- 1 A blow to a player's head.
- 2 The brain accelerates in the cranial vault.
- 3 Damage occurs when the brain strikes the skull and rotates.



Source: USA Today

Times graphic by Mark Marshall, mmarshall@stcloudtimes.com

the truth."

Some help for St. Cloud State athletic trainers in determining when athletes can play again after a con-

cusssion has arrived with the assistance of Tim Tinius, a professor in the psychology department. Tinius, a former University of North Dakota football player and

clinical psychologist, has had a long-term interest in brain injuries to go with a love of sports.

See ImPACT, 4A ►

# ImPACT

Tinius asked whether the athletic department would be interested in helping him do research on concussions. With a grant of about \$1,000 last year, the university bought the Immediate Post-Concussion Assessment and Cognitive Testing, or ImPACT, system.

St. Cloud State is one of fewer than 100 colleges and universities in the country using the program and the only one in Minnesota. The system also is being used by nine NFL teams, the NHL, three Major League Baseball teams, two NBA teams and for all Major League umpires.

The one-time cost of the program is \$1,245 for colleges and \$995 for high schools.

Athletes are individually tested before the season begins to give trainers a baseline of their reaction speed and memory.

"It allows us to actually have



**Julie Alexander**

System offers data as backup

some data to say, 'This kid's not functioning well,' " said Julie Alexander, St. Cloud State's head athletic trainer. "The criteria for us

(previously) was balance

and coordination, memory and headache or dizziness.

"If those symptoms are fairly mild, they can fool us and they can lie," she said of athletes. "We get kids all the time that lie to us, then they end up getting hit a second time and everything's worse."

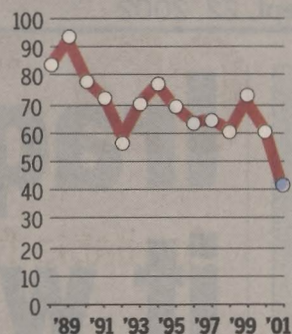
The plan is to have all but a select group of athletes at the university tested before their respective seasons begin. While getting the players playing again is important, long-term damage from a concussion can occur if players rush to return to play before their bodies fully recover.

"What (athletic trainers) worry about the most with all concussions is not how they're performing on the field, but how it affects them off the field," Alexander said. "We know that if they get a second-degree concussion, they can have a lot of problems in the classroom. We worry about that and their over-

## Injuries in the NCAA

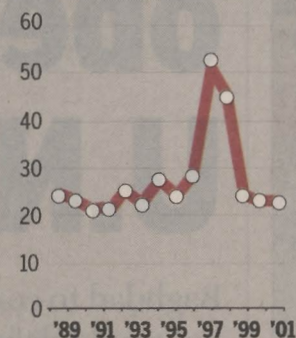
per 1,000 athletes; includes games and practices.

### Football

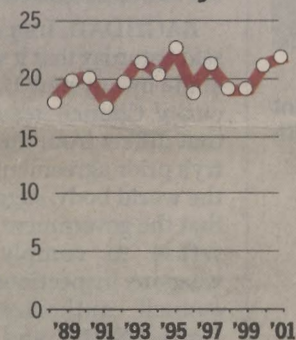


○ Spring games and practice not included

### Women's soccer



### Men's hockey



Source: NCAA

Times graphic by Mark Marshall, mmarshall@stcloudtimes.com

stuff and some of it was easy and some of it I couldn't do," Sutton said. "There were some that gave me a headache and, since I already had a headache, it made it even worse.



**Melissa Sutton**  
Goalkeeper for SCSU soccer

"I think I got frustrated during the test. I don't know if it was because I had a concussion, or if I hadn't had a concussion, if I would have done better."

St. Cloud State trainers have the test at Halenbeck Hall and at the National Hockey Center

tact, it is easy to understand how a hockey player could get a concussion even with wearing a helmet. Football players also wear helmets, but also have physical contact on almost every play.

Huskies head football coach Randy Hedberg suffered a concussion playing in the NFL.



**Randy Hedberg**

Had a concussion playing in NFL

"It's not a fun thing to go through," said Hedberg, who suffered his injury in his rookie season in 1977 with the Tampa Bay

Buccaneers. "I took a shot and bounced off the turf.

"Take a look at what's happened in the last couple years in the NFL with (quarterbacks) Troy Aikman and Steve Young where they've had a series of concussions. It's a serious thing, something we need to pay a lot of attention to. I think the data we're collecting will be a huge factor in our treatments of all our athletes."

Tinius said many people are surprised by the number of concussions in soccer. But soccer players do not wear helmets, are often leaping in the air to redirect the ball with their heads and the ball can be kicked into the face of players at close proximity.

"Soccer, with those short kicks and angle kicks, players take shots to the face and jaw and your brain stem is right behind your face," Tinius said. "The weight and protection of your head is up top. But your breath and blood flow regulating comes from your brain stem, so (soccer) may be the worst for concussions."

"I can think of three we had, offhand, last year," said soccer coach Stephanie McGuinness, whose sport has 11 players on a side. "In one, the player missed the season and the other two were able to rehab and come back.



**Stephanie McGuinness**

Soccer has become more physical

"I think the women's game has come really far recently in letting the physicality of the sport be there. Players have come really far and they've been playing longer and

## ImPACT program

The program includes memory and reaction tests in six sections taken in about 30 minutes. While trainers know the symptoms of concussions, each individual recovers from an injury at a different rate, Alexander said.

She has been a trainer at the university since 1989 and a trainer at the collegiate level since 1985.

In the 2001-02 school year, the St. Cloud State women's soccer team, the football team and the men's and women's hockey teams were given the test before the season. Those results gave Tinius and Alexander a baseline for 114 athletes.

"We got the software in the summer of 2001 and we had a little trouble getting it loaded, so we tested about 50 percent of the football team and almost all of the hockey teams," Tinius said.

Of the 114 athletes tested last year, 37 percent answered on a questionnaire that they had had at least one concussion before last season. Tinius had 500 of his Introduction to Psychology class students fill out the same questionnaire and 13 percent said they had had a concussion.

"That's a substantial number of people," Tinius said. "Athletes are bigger and stronger and the speed is faster than 20 years ago, so concussions are more common now."

Before the fall season, all but two of St. Cloud State's 102 football players and all of the women's soccer and volleyball teams had been tested.

Swimmers, golfers, nordic skiers and nonjumping track and field athletes won't be tested because the chance of those athletes getting a concussion is significantly lower because of less contact in those sports.

## The plan

Athletes are given the test before the season to give Tinius and fellow psychology professor Dr. Phil Godding, Alexander and Dr. Chris Schearer a baseline to test against. If a player suffers a concussion, the player will take the test again within a week of the injury.

Sutton suffered a concussion last year playing at Apple Valley High School and then had another, less-severe concussion in practice in August before she took the ImPACT test the first time.

"There was a lot of memory

Twenty computers in Stewart Hall are used for preseason testing.

After a concussion is diagnosed and a second test is given, Tinius will compare results of the two tests. He then will give Alexander an overview of what he sees within a day of the second test.

If concussion symptoms persist, the test will be administered again after the athlete's condition has improved.

"It's not something that we're going to totally base return to play on, but it's a piece of the puzzle," Alexander said. "We're going to send them to the physician, the physician's going to give us (their) idea.

"We're also going to use our own gut feeling about how the kid handles things, whether or not that particular athlete is acting a little abnormal. With real bad concussions, you can tell by looking at them. It's the in-between ones, the dingers, where it can be hard to tell."

## Coaches cooperate

Alexander said St. Cloud State's coaches have all been supportive of the new program.

"They've all been behind it and that really helps when athletes know that there are consequences if they don't take the test," Alexander said.

Craig Dahl has been a college coach since 1980 and is beginning his 15th season as the Huskies' head men's hockey coach. Dahl said there is a heightened awareness about concussions compared with when he started coaching.

"It's a big concern now and concussions can have cumulative effects where the players are more susceptible to getting them again after they've had one," he said. "I really rely on our medical staff and they always (err) on the side of caution.

"You don't want to lay down (on the ice) now or you won't be playing," Dahl said of a player going down in a game. "It takes some of the dramatics out of the game where you had players go down and they'd try to get sympathy from the fans."

With the ice, the boards, the speed and the amount of con-

they're lifting weights now. And coaches realize that if they can't match up physically with other teams all over the field, the way to get around that is to play in the air."

## The future

Tinius would like to help the two conferences St. Cloud State plays in, North Central Conference and the Western Collegiate Hockey Association, get and use the ImPACT program in the next few years. He'd also like to help area high schools get or work with the program.

He also would like to have his findings put into a national network to help with head-injury research.

But first, Tinius wants to alleviate some of the guesswork about when an athlete can return to action after a concussion.

The test also helps avoid some cost. For instance, magnetic resonance image, or MRI, often are used to determine the extent of injuries. The test can cost \$1,400 or more locally. The ImPACT test, however, is of no further cost once a school has the program.

"CT scans and MRIs are OK to do, but they're awfully expensive to do every time you have a ding," Alexander said. "We're not going to do that every time that someone gets a bump on the head.

"On the other hand, we're much more cautious about concussions, especially first concussions, than say 15 years ago."

And what never seems to change is that athletes will often stretch the truth to get back on the field sooner.

"They aren't going to be truthful with you because they don't think that anything can happen to them, and these kids are competitive and they want to play," Alexander said.

The ImPACT program will uncover some of athletes' tall tales.

"This is objective data and it's subjective to the individual athlete," Tinius said. "Athletes typically underreport symptoms. Athletes are notorious for that."

Alexander is pleased that the program has found its way to St. Cloud State.

"When you're not functioning right, it's a frustrating test to take," Alexander said. "We do a lot of things with memory, but it's not as sensitive as the computer testing."



**Craig Dahl**  
Concussions are a growing concern