Engineering gives Nick a hand (brace).

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**MSU basketball player Nick Ward gets an assist from Spartan Engineering's technology and talent**

When Michigan State University's Nick Ward fractured his left hand in February, the basketball team’s title hopes faded slightly.

The 6’8”, 245-pound center has been a key player for the top-ranked Spartans, averaging 14 points and more than six rebounds a game. So to help speed Ward’s return to the team, Nick Richey, MSU men’s basketball athletic trainer, reached out to MSU’s College of Engineering.

A team of professors including Larry Drzal, from chemical engineering and materials science; and mechanical engineers Tom Pence and Tamara Reid Bush, along with other MSU engineers and students, was glad to lend a hand (brace).

Fans first saw the brace as the Spartans powered their way through the Big 10 tournament, beating the University of Michigan Wolverines – for the third time this season – and claiming the title.

**VIDEO: Lending Nick a hand**

“This was an outstanding opportunity for MSU engineering faculty and students to work together with MSU athletics to make a difference,” said Reid Bush, who’s also part of the Biomechanical Design Research Lab. “I've shared this story with all of my classes and students. The excitement it generates in the classroom is amazing; students can relate to the issue and see the engineering solution.”
The process began when Richey’s request was forwarded to Reid Bush. Her team scanned Ward’s hand and created a 3D model. Working with Ward’s stand-in – Xavier Tillman, MSU forward – her lab also collected force data to gauge the stress caused from dribbling, passing and shooting.

Reid Bush then passed the model to Drzal, Pence, Mike Rich and Ed Drown who worked with the Composite Materials and Structures Center, and the MSU-Fraunhofer Center for Coatings and Diamond Technologies. Working together, they fabricated a brace from carbon fiber and epoxy components and computed the stresses the device could withstand.

The brace was ready just four days before the Big 10 tournament. After a few adjustments, Ward practiced with it two days before tipoff.

Spartan fans were ecstatic to see Ward back in the lineup. His first test, against Ohio State, came when he threw up his arms to block a pass. Some fans gasped as they waited to see if there were any ill effects. Thankfully there were none.

Ward went on to score eight points and grab two rebounds – not bad for playing only 14 injury-free minutes.
Now with Ward back on the team, the Spartans are poised for a deep March Madness run. Reid Bush likes that he is playing well; however, she does have one request.

“Nick needs to be banned from hanging on the rim after a dunk,” she said with a laugh.

Along with a deep tournament run, Reid Bush also is hoping the Spartans will add another teammate.

“In the longterm, I’d love to see a biomechanics student being paired with athletics,” she said. “Engineering students could gather data, publish research and come up with solutions like this on a regular basis.”

Related Website: Story courtesy of MSUToday.
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