

New helmet tech developed to protect players from coronavirus

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LSU, in partnership with a Louisiana sports technology startup, has developed new helmet cooling technologies to make customizable air circulation devices for athletic helmets with the goal of helping to protect the players from coronavirus. The new devices, literally driven by fans, are being tested by LSU players. The improvements will help them stay cooler and more comfortable on the field, allowing the athletes to keep their helmets and additional COVID-19 safety gear on longer.

On Friday, Aug. 21, the LSU Office of Innovation & Technology Commercialization filed a patent for the new helmet cooling and circulation technologies. They are modular and can be used in combination with almost any off-the-shelf protective helmet available on the market—and not just [football](#) helmets.

"Player health and safety is a top priority at LSU," football coach Ed Orgeron said. "Our staff makes sure our players have the best equipment and technology so we can have them on the field as safe as possible."

An added bonus of these new solutions is that they can be used in combination with other protective gear, such as visors, lenses, and face guards. While such barriers are increasingly important safety features to help protect athletes from COVID-19, they have a tendency to fog up, which can make it harder for players to see, and increase overall body temperature, potentially leading to fatigue and dangerous health conditions, including heat stroke.

With COVID-19, there is a need to use full-face plastic barriers to prevent players from breathing on each other's faces and exchanging large droplets. While not mandated for football at this time, they may

become standard protective gear for contact sports. As they can restrict airflow into the helmet, however, full-face plastic barriers may make it difficult for some players to breathe.

"Players always talk about how nice it is when there's a breeze outside, and this new helmet technology creates a similar sensation of coolness," LSU Director of Athletic Training Jack Marucci said. "The benefit is even greater for players who wear protective eye shields because it eliminates the possibility of any fog developing inside that can obstruct the player's vision."

Helmets are generally designed for safety, not comfort. Excessive heat and moisture building up inside the enclosed space is a common problem, especially among athletes and in warm environments. Most helmet manufacturers have tried to mitigate this by making passive air vents part of their designs. But there can't be too many, or the structural integrity and primary function of the helmet would be compromised.

This newly developed technology, meanwhile, leverage the existing passive air vents near the back of the helmet by making them active, sucking air into the helmet with small battery-driven fans attached to a set of flexible tubing. The tubes can be customized and mounted to the inside of the helmet to direct air wherever it's needed, usually forward and downward over the face, toward a visor or plastic face shield. For increased safety, N95 filter materials can be added at the intake.

When used with a full-face plastic shield, the air circulation technology can create a positive pressure environment around the athlete's face, making it more difficult for external contaminants to enter the helmet. The angle of the airflow, meanwhile, is designed to avoid drying out the eyes of the athlete by not blowing directly into them.

By providing active ventilation to make helmets cooler and more

comfortable, LSU hopes to enable players to keep their protective gear on longer. With portable power packs that can last up to eight hours, players could keep their helmets on for an entire game or practice.

LSU has licensed the new tech to the Louisiana sports technology startup [Tigeraire](#) that is looking into commercial production for various sports—not just football.

"We are thrilled to be working with such an amazing university to implement our growing suite of air-enabled performance and [protective gear](#)," Tigeraire founder and CEO Jack Karavich said about his company's partnership with LSU. "Having the opportunity to develop this technology together with some of the most elite college football players and their expert staff has led us to valuable insights that will rapidly extend our reach into a broad set of helmet-based sports."

The market size for American [football helmets](#) nears \$150 million annually, with college football accounting for around \$57 million. With almost 74,000 participants in college football, according to the National Collegiate Athletic Association, or NCAA, and over 1 million participants in [high school football](#), as per the National Federation of State High School Associations, or NFHS, these newly developed technologies have the capacity to help not just the LSU Tigers, but players everywhere—potentially reaching millions of athletes around the world, as well as workers in need of safety helmets.

Provided by Louisiana State University

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