

A Career 'Head' Start

Local native helps invent a device to detect concussions

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WESTMINSTER — Sean Jacobone never thought this would happen for him.

The 22-year-old native of Westminster, a senior at Wentworth Institute of Technology, believed he would graduate and follow a typical career path of 40-hour weeks with a company — not become an inventor before earning his bachelor's degree.

"I didn't see this happening the way it happened," Mr. Jacobone said. "This is a change of pace and a whole new career path."

It started as a school project that Mr. Jacobone had to create during his junior year.

The assignment called for a project that would require electrical and mechanical elements. Mr. Jacobone and his team of classmates designed a device that alerts coaches to the possibility of concussions among players.

The team — consisting of classmates Matthew Joyal, Alex Schwarzkopf, Dylan Powers and junior Jennifer Roy — met last September and decided to move forward with the project — to build a device that could help reduce the number of unreported concussions.

"Initially, the drive was to finish the requirement," Mr. Jacobone explained. "But we (the team) played sports and some of us have even had a concussion — the idea stayed with us."

Mr. Jacobone said the device, which is a prototype and not commercially available — is built into a headband that an athlete can wear under a helmet. A thumb-size detector in the headband monitors impacts and instantly reports whether a bump is relatively minor or could lead to a concussion.

The device sends the information to a tablet or cell phone app that coaches and medical staff would use to see if a player requires medical attention or just a rest break. Mr. Jacobone said athletes would also have access to the data and help decide what actions to take.

"Protective gear is lacking technology," Mr. Jacobone said. "Helmets, chest and knee pads — all of that has been around forever but none can tell if an athlete had been injured enough



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Courtesy photo

Westminster native Sean Jacobone was part of a team of students at Wentworth Institute of Technology that invented a thumb-size head trauma detector that will measure impacts during games and alert coaches and medical staff to potential concussions.

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According to the Centers for Disease Control and Prevention, about 10 percent of athletes will receive a concussion during a normal sports season. More than 75 percent of concussions are sustained during games, when players are more likely to disregard a potential head injury in order to focus on competing.

Mr. Jacobone said that one of his teammates shared the story of being hit in the head and falling down. The student got up and played the rest of the game — and had no recollection of anything that happened after the first quarter.

“Concussions are unique,” Mr. Jacobone said. “You don’t always know if you have one.”

The CDC reports that 47 percent of athletes do not report feeling any concussion-related symptoms, and less than 10 percent of sport-related concussions involve a temporary loss of consciousness. Most athletes who experience symptoms complain of headaches or dizziness — symptoms that don’t always prompt them to seek medical attention.

The CDC also reports that multiple untreated concussions can lead to permanent brain damage and even death. The latest research suggests that the more concussions a person suffers, the more likely a blow to the head will lead to another concussion.

“We want to help athletes to protect themselves,” said Mr. Jacobone.

He explained that while developing the device the team realized it would need funding from an outside source. The group turned to Accelerate — a program with the Wentworth Innovation and Entrepreneurship Center. Team members met with advisers and discussed their product before pitching the idea to a panel of judges.

The judges — made up of Wentworth instructors and area business leaders — asked questions, requested background data, and wanted a time line of when a sample device could be completed.

“It was exciting, but there was a lot of pressure,” Mr. Jacobone said. “But the whole group got to present as a team and we were prepared.”

The preparation paid off, with the team receiving \$13,000 for manufacturing costs.

“They are a very dedicated team,” said Monique Fuchs, associate vice president and co-founder of Accelerate, in a press release. “As a result, they have looked for inspiration in tangential industries and are on the path to developing a great product.”

Mr. Jacobone said there is “still a lot of work to be done,” but with the funding and more time the team has been “making great progress.” With the education and training he has received, Mr. Jacobone said the team is considering launching a startup.

“We’re taking this leap of faith together,” he said.