

Pitching an idea

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(PhysOrg.com) -- Elbow injuries suffered by pitchers in Major League Baseball occur frequently and result in tens of millions of dollars in losses each season, representing the money that must be paid in salaries to pitchers who cannot perform due to injury.

To address this issue, three Northeastern University engineering students have developed a data-logging uniform shirt for pitchers that can help prevent elbow injuries while providing an electronic analysis of pitching mechanics.

The shirt was developed by Marcus Moche, Alexandra Morgan and David Schmidt as a Capstone Design Project—a senior-level team project that requires students to solve a “real-world” engineering problem or develop a viable product.

"No single device for measuring the quality of pitching mechanics currently exists, so we have proposed a shirt that is lightweight and can be worn during bullpen sessions or exhibition games," said Moche. "The shirt can be used to show when a player becomes fatigued and his mechanics worsen, through a display of real-time information on a monitor in the dugout."

Pitchers become more susceptible to injury when they lose consistency in their mechanics—the physics of how they throw the [baseball](#), pitch after pitch.

A loss of mechanics can increase the likelihood of a pitcher tearing the ulnar collateral ligament (UCL), the ligament that prevents lateral stress on the elbow. According to the students' research, UCL injuries result in upwards of \$54 million in salary losses each season.

Current methods of analyzing mechanics are clumsy and expensive, requiring pitchers to perform in elaborate laboratory settings. The data-logging shirt, however, is lightweight, does not interfere with the pitching motion and is even machine washable.

"What the design team accomplished in designing this shirt is what the capstone project is all about," said Mohammad Taslim, design team advisor and professor of mechanical and industrial engineering in the College of Engineering.

"These students identified a real problem with the way pitching mechanics are currently analyzed and invented a viable product that has great potential to make it to the market."

Provided by Northeastern University

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