

Research shows testosterone spiking in winners in the wrestling mat

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(PhysOrg.com) -- The KU investigator said that losing wrestlers had testosterone rises associated with adrenaline (also known as epinephrine); but winners had an extra boost that could be the result of the win itself or some other mechanism.

Facing off with an opponent of similar size and strength, all wrestlers experience a rush of “flight-or-fight” adrenaline that contributes to levels of testosterone in their bodies.

But new research by Andrew Fry, professor of health, sport and exercise sciences at the University of Kansas, shows that testosterone in winning collegiate wrestlers increased more than in the losing wrestlers.

“We simulated a wrestling tournament with high-level collegiate wrestlers,” said Fry. “Winning wrestlers had a greater testosterone response. Then we looked for a possible mechanism of action that might cause the winners to have a greater response.”

Fry’s research appears in the January issue of the *Journal of Strength and Conditioning Research*. It was funded by a grant from the U.S. Olympic Committee.

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“Before the matches there was no difference, but when you’d sample the blood within five minutes after the match, you’d see a difference between winners and losers,” said Fry. “We couldn’t have picked it out ahead of time. Something is triggering this increase, and it seems to be fairly consistent.”

Average testosterone levels increased from 16.4 to 23.2 nanomoles per liter for winners, as compared to a rise from 14.8 to 19.4 nmol/L for losers.

“Between the beginning and the end of a five-minute international style match you would see a difference that would evolve — so it’s happening fairly quickly,” Fry said.

The testosterone changes in [wrestlers](#) seem to mirror the way the hormone acts in other species.

“This ties in very closely with work in the animal world where people look at male-male interactions, where males of a species compete with each other for territory, food or breeding mates,” Fry said. “You see that the [testosterone](#) characteristics of various species is often tied in to success in those encounters.”

Indeed, Fry’s results suggest that social dominance may play a large role in success or failure in wrestling and other competitive sports from a physiological — not just psychological — basis.

“What does this mean to the coach or the athlete?” asks Fry. “It means the ability to establish dominance sets the stage for following matches. The ‘Challenge Hypotheses’ in animals is developed around the thought that if I win that helps prepare me for further encounters, and if I lose that makes me less dominant and less likely to step into a challenge situation.”

As in the animal kingdom, Fry said that each win in sports competition prepares a participant for subsequent wins. The phenomenon may be evident when a player or a team goes on a winning streak.

“As a wrestler, if I can establish the win, that sets the stage for another one,” Fry said. “If I can perhaps schedule my opponents, maybe I can set the stage for starting out the season getting some wins, building and building, then I hit my tough competition in the finals of the tournament or later in the season. Yes, you build psychological confidence, but there’s also a physiological basis for it as well.”

Provided by University of Kansas

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