Bauer RE-AKT 75 is the best performing hockey helmet on the consumer market

12 May 2016

Bauer RE-AKT 75

The latest hockey helmet to be released, the Bauer RE-AKT 75, is the best performing helmet on the consumer market according to the Virginia Tech Helmet Ratings system developed by Virginia Tech researchers. The Bauer helmet is rated the highest of 38 hockey helmet models that have been tested to date, earning 3 stars.

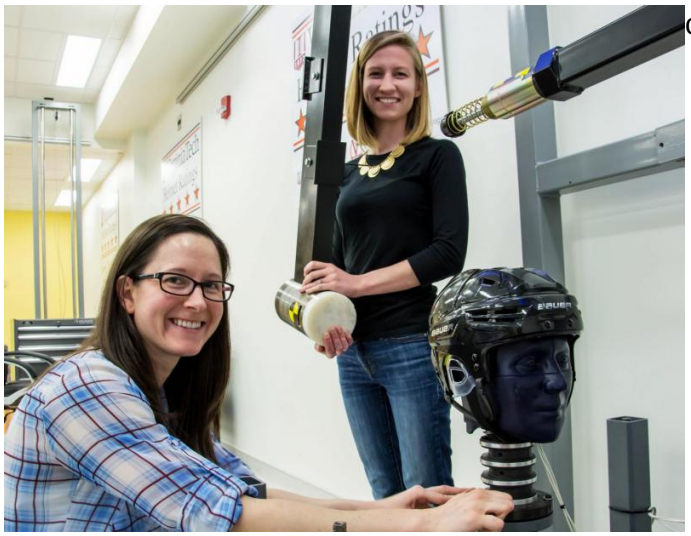
The hockey helmet ratings consist of more than 1,800 impact tests on 38 helmets, some which have been available to consumers for more than two years. More stars equate to better protection, with five stars representing the best possible rating. The helmet ratings seek to identify the helmets that best reduce chances of a concussion.

"The Bauer RE-AKT 75 did the best job of managing impact energy and lowering head acceleration of all the hockey helmets we've tested to date," said Steve Rowson, director of the Virginia Tech Helmet Laboratory and an assistant professor in the Department of Biomedical Engineering and Mechanics in Virginia Tech's College of Engineering. "While there is still room for improvement, this places the new Bauer hockey helmet at the very top of our hockey helmet ratings."

The $119 Bauer helmet ranked slightly higher than the $79.98 Warrior Krown 360 helmet, which also earned 3 stars under the Virginia Tech rating system.

The methodology behind the tests aims to provide consumers with independent data characterizing relative helmet performance and to provide helmet manufacturers with impact performance criteria for improved helmet design.

The Hockey Summation of Tests for the Analysis of Risk (STAR) evaluation system was developed over three years and initially released in April 2015. The paper published in the *Annals of Biomedical Engineering*, "Hockey STAR: A Methodology for Assessing the Biomechanical Performance of Hockey Helmets," details the approach that Rowson, alongside Stefan Duma, head of the Department of Biomedical Engineering and Mechanics, and Bethany Rowson of Monrovia, Maryland, doctoral student in the Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, take to test the protective capabilities of the helmets.



Doctoral student Bethany Rowson, at left, and research associate Abigail Tyson, both of the Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, prepare to test a Bauer hockey helmet.

The ratings evaluate the ability of helmets to reduce linear and rotational acceleration of the head, both of which contribute to concussion risk. The test conditions range from the everyday impact that players experience to the severe impact most likely to result in concussion, with each condition weighted based on how often they occur in hockey. The overall performance of each helmet throughout the entire range of test conditions is summarized and disseminated to the public with a number of stars, allowing consumers to make informed decisions when purchasing helmets.

"It is great to see a leading company like Bauer step-up and design an improved hockey helmet," said Duma, the Harry Wyatt Professor in Engineering. "The Hockey STAR system provides companies with the engineering foundation needed to optimize their helmet's performance."

For the past five years Duma and Rowson have been providing additional and independent data on helmet performance, starting with testing of football helmets, using the current rating system. While helmets being sold on the consumer market must satisfy minimum safety requirements specified by standards organizations, not all helmets are created equal.

By spring 2014, the duo analyzed more than 2 million head impacts recorded directly from high school and collegiate football players using helmet-mounted sensors. The data was used to create lab testing conditions representative of all the impacts players experience on the field.

In October 2015, the National Institutes of Health's National Institute of Neurological Disorders and Stroke awarded Virginia Tech a $3.3 million, multi-center, five-year study that will track head impact exposure in children—the largest and most comprehensive biomedical study of youth football players to date. Duma leads the multi-university team's research, focusing on six teams of nine and 10-year-old players in three states, following each team during a five-year period, as well as the players themselves until they reach the age of 14.

The Virginia Tech Helmet Ratings program is independent of all helmet manufacturers.

More information: Bethany Rowson et al. Hockey STAR: A Methodology for Assessing the Biomechanical Performance of Hockey Helmets, *Annals of Biomedical Engineering* (2015). DOI: 10.1007/s10439-015-1278-7

Provided by Virginia Tech