

Montgomery County- Virginia Tech Helmet Study

2011-
2012

With professional and collegiate football impact injuries at the forefront of today's news media focus, the questions arose: What about youth football players? How hard are they hitting during tackle football? Montgomery County partnered with Virginia Tech to find out, and to study the effectiveness of youth football helmets.

A
collaboration
between
County and
University

Overview:

Nearly three-fourths of all people playing tackle football in this country are youth between the ages of 6 and 13. The youth are playing with helmets designed for adults, and there is no information on helmets or head injuries in youth football.

Montgomery County Parks and Recreation partnered with Virginia Tech to conduct research on youth football helmets. Virginia Tech professor Stefan Duma worked with the Auburn Mite Eagles - a recreation football team in Montgomery County for seven- and eight-year-olds - to measure the impacts on seven of the youth football players. Reporter Stone Phillips – formerly of NBC – followed a personal muse about football concussions and discovered Montgomery County and Virginia Tech were working on this study. Phillips provided an avenue to get this information to the public. So far, his coverage has been broadcast on PBS and on his website, stonephillipsreports.com.

With technology placed inside the helmets, Virginia Tech graduate students measured the strength of impacts that the youth were receiving during the 2011 football season. Because of the youth's size, it was assumed that they produce smaller hits that don't have a great impact. Through this study, it has been shown that these assumptions are wrong and the youth can create and sustain a great deal of impact during practices and games. Football head injuries and concussions are a hot topic in the news media and this study shows that even more research is needed to keep youth safe.

This study came to fruition with partnership and cooperation between Montgomery County and Virginia Tech. News coverage by Stone Phillips on this project helped to raise awareness about the issue nationally and bring information to concerned parents.

Parks and Recreation and Professor Duma have learned new and insightful information concerning youth helmets and head injuries. With the results of this research, we will be able to better understand the brain and how best to protect the children.

Challenge:

With head injuries and concussions heavily covered in the news media, and football accounting for the highest incidences of head injuries, this is a popular topic among professional players and others.

Professor Stefan Duma has been gathering data on head impacts for football players at Virginia Tech for nine years. While there has been a lot of data presented on professional, college and high school players, there had been no data collected on youth players (ages 7-13) before this study was conducted. There are approximately 3.5 million people playing football below the high school level, which account for 70 percent of players playing tackle football in the country. Youth football players currently wear helmets that are designed for adults and will not be as effective on youth. With youth being smaller in size, it's easy to assume that they create slighter hits than older individuals when playing football. Through studying the impacts created by younger football players, schools, coaches, parents and players can be educated to effectively minimize head impact exposure in youth football.

Partnering and Collaboration:

The study on youth football helmets was undertaken as a joint effort between the Montgomery County Parks and Recreation department and the Center for Injury Biomechanics at Virginia Tech. The study was covered and shared with the public by reporter Stone Phillips. Key people involved in the research were John Clark, Auburn Mite Eagles football coach; Stefan Duma, Virginia Tech professor of biomedical engineering; Gunnar Brolinson, Edward Via School of Osteopathic Medicine; Ray Daniel, Virginia Tech graduate student; Steven Rowson, research assistant professor for biomedical engineering; and Chris Slusher, athletics supervisor for Montgomery County Parks and Recreation.

Program Overview:

Professor Stefan Duma had been interested in studying youth and their helmet safety for some time now. He contacted Auburn Mite Eagles football coach John Clark about conducting a study with the team. Montgomery County Parks and Recreation and the Auburn football team decided to team up with Virginia Tech.

Virginia Tech purchased new helmets - created by Riddell Revolution - for the entire team that would be compatible with their testing equipment. Seven of the players' helmets were outfitted with a measurement device. The seven players were chosen for the study due to the high anticipation for participation in practice and the games, as well as playing offense and defense. The measurement device consists of 12 accelerometers placed in the helmet that measures head motion and transmits every impact to the computer. The device also picks up the impact location, which could be the front, side, rear or top of the helmet. This is similar equipment to what the Virginia Tech football team has been using since 2003.

Graduate students, Ray Daniel and Steven Rowson, collected the impact data for the entire eight-game season and every practice. The graduate students recorded 748 hits for the entire season, averaging 107 hits per player. Hits and impacts in this study were measured by gravitational-force (G-force). Duma was more focused and concerned with any impacts that hit in the 30 to 50 G-force range or greater.

Finances:

The funding came from the partnership with Virginia Tech and Montgomery County was not responsible for any monetary donations, costs or fees. Virginia Tech paid for the equipment and new helmets that the Auburn Mite football team received. The helmets that Virginia Tech purchased for the youth team were created by Riddell Revolution and cost \$182.99 each.

Staffing:

County Athletics Supervisor Chris Slusher contributed his time as an in-kind donation.

Results:

The study on youth football helmets has been successful in helping researchers, county staff and others gain insight into youth football and an understanding of head injury risks.

Some of the hits recorded during this study were equal to forces of a college-level hit. The median impact was 15 G, and the team had 38 impacts that were 40-G or greater. Almost every one of those 38 hits was recorded during practice. There were six impacts over 80-G, and the highest impact was recorded as 100-G. Duma said the biggest surprise during this study was how well the youth played and how hard their hits were. Luckily with some of the hard hits that were recorded, there were no concussions for the Eagles during their season.

The computer showed that the biggest hits were located on the front and side of the helmet. It also showed that there was a lot more helmet-to-helmet contact in youth football than there is for the college level. This study showed that youth coaches need to be especially cautious of hitting drills during practice.

After this study, Montgomery County Parks and Recreation has learned that coaches need to drastically alter practice. With majority of the big hits occurring during practices, the coaches learned that they needed to tone down their methods. Parks and Recreation is going to implement new ways of training the youth and teach the coaches the best way to safely hold practice for their players. This study also helped prove the importance of good helmets, so the Parks and Recreation department is reconditioning and purchasing all new helmets that have a five-star rating. Based on this research, Parks and Recreation had all the information needed to apply for funding for new helmets to equip their youth football teams.

Current plans are to conduct this study again next season and every year until the current Auburn Mite team players are in high school. Because of the positive experience with this study, Montgomery County hopes to partner with Virginia Tech in further studies and projects.



