U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON ENERGY AND COMMERCE

May 11, 2016

TO: Members, Subcommittee on Oversight and Investigations

FROM: Committee Majority Staff

RE: Hearing entitled "Concussions in Youth Sports: Evaluating Prevention and Research."

I. PURPOSE

On May 13, 2016, at 9:30 a.m. in 2123 Rayburn House Office Building, the Subcommittee on Oversight and Investigations will hold a hearing entitled "Concussions in Youth Sports: Evaluating Prevention and Research."

In December 2015, the Committee announced plans to begin a comprehensive review of the causes, effects and treatments of concussions. On March 14, 2016, the Subcommittee held a roundtable as the first step in the Committee's effort to begin a constructive dialogue about the risks of concussions and how we can address this public health challenge – not only for athletes and service members, but society as a whole. At the roundtable, Members and participants discussed what is known about concussions, what gaps exist in the scientific and medical community, why these gaps exist, and what is being done to address those gaps.

This hearing is the second public event in the Committee's ongoing review and will focus on concussions in youth sports, specifically issues related to prevention and research. Estimates suggest that more than 30 million children (ages 5-18) participate in organized sports each year. Given the number and complexity of youth sports organizations, multi-sport athletes, disparities in the quality of coaching, and social and cultural influences, youth athletes face significant risk of being overlooked in the event of an injury.

II. WITNESSES

Panel One:

- Kelli Jantz, R.N., the mother of Jake Snakenberg and Concussion Advocate ; and
- Karen Zegel, the mother of Patrick Risha and Chronic Traumatic Encephalopathy (CTE) Advocate .

Panel Two:

- Eugene F. (Buddy) Teevens III, Head Football Coach, Dartmouth;

- Andrew Gregory, MD, Member of Medical Advisory Committee, USA Football; Pediatric Sports Medicine, Vanderbilt University Medical Center;
- Kevin Margarucci, Manager, Player Safety, USA Hockey;
- Steve Stenersen, President and CEO, US Lacrosse;
- Terry O'Neil, Founder, Practice Like Pros;
- Dawn Comstock, PhD, Associate Professor, Department of Epidemiology, Colorado School of Public Health; and
- Thomas Talavage, PhD, Professor, School of Electrical & Computer Engineering, Weldon School of Biomedical Engineering, Purdue University.

III. BACKGROUND

Concussions

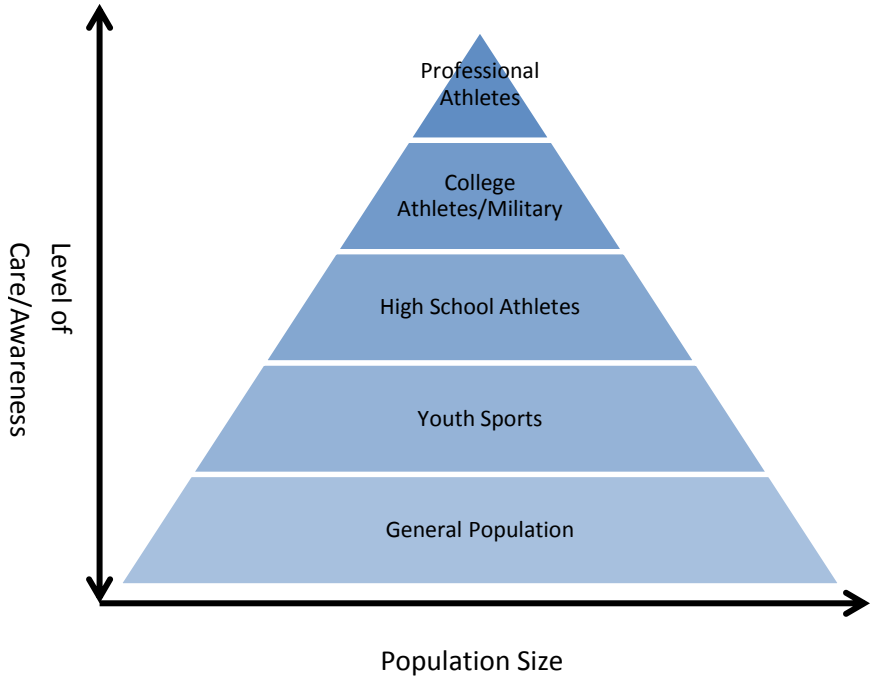
Concussions are a mild form of traumatic brain injury (TBI). TBI occurs when normal brain function is disrupted by "a bump, blow or jolt to the head or penetrating head injury."[1] There are three general classifications of TBI severity: mild, moderate, and severe. In 2010, the Centers for Disease Control and Prevention (CDC) estimated approximately 2.5 million emergency room visits, hospitalizations, and deaths due to or involving TBI.[2] This data, however, does not account for those who were not treated, individuals treated through outpatient or primary care office visits, or those treated at federal facilities, including current and former members of the military.[3] Most cases of TBI are mild (mTBI), otherwise known as a concussion, and these are the most likely cases to be treated outside of emergency rooms or to go unreported. Thus, the actual number of concussions sustained annually in the United States remains unknown, but it is likely a substantially higher number than CDC's estimate.

Until recently, public discourse and research related to TBI focused heavily on moderate and severe TBI. In the past decade, however, high profile events have increased public awareness of the risks and dangers of concussions (mTBI). This has invigorated the research community and led to significant improvements in the management and care of these injuries. Understandably, athletes and service members have been the focal point of public interest on this issue, especially given their heightened risk of injury and the potential for repetitive trauma. However, concussions pose a significant health risk to all members of society, and additional work remains to be done to ensure everyone receives the education, attention and care necessary

[1] Report to Congress, Centers for Disease Control and Prevention, U.S. Dept. of Health and Human Services, *Traumatic Brain Injury in the United States: Epidemiology and Rehabilitation* (2014), *available at* http://www.cdc.gov/traumaticbraininjury/pubs/congress_epi_rehab.html.
[2] *Id.* at 19.
[3] *Id.*

to manage these injuries. Chart 1 provides a simplified summary of the correlation between population size and awareness/standard of care.

Chart 1:



Research

Despite recent progress, significant challenges remain due to deficiencies in our scientific and medical understanding of the effects of concussions, including the history, causes, and symptoms, the short and long term effects, the variations based on such factors as age and gender, and the appropriate length of recovery. These gaps in knowledge hinder the development of effective protections, programs, and treatments to limit and mitigate the detrimental effects of concussions.

In recent years, the federal government, athletic institutions, and others have partnered with the scientific and medical community to launch critical research projects necessary to address these knowledge gaps, as well as identify technologies and innovative products that have the potential to protect against or minimize the risk of concussions. At the federal level, the Department of Defense (DOD) is a leading sponsor of research into concussions. TBI has always been a concern for DOD, but until recently, most of this work was focused on moderate to severe TBI. However, 93 percent of TBI in the military are concussions and 85 percent of these concussions occur "in garrison" (non-combat settings), prompting new attention to these injuries. Another leader in the federal space is the National Institutes of Health (NIH), in particular the National Institute of Neurological Disorders and Stroke (NINDS). In addition, both DOD and NIH have partnered with external entities — including the NFL and NCAA—on concussion research, as well as other federal stakeholders (the Centers for Disease Control and

Prevention, the Department of Veterans Affairs, etc.). As an example, the NCAA-DOD Concussion Assessment, Research, and Education (CARE) Consortium represents the largest and most comprehensive study of sport-related concussions to date. Further research is being conducted by academic and medical research institutions across the country.

Moving forward, effective leadership and coordination will be necessary to ensure the research community is working efficiently and collaboratively to address the numerous gaps in our scientific and medical understanding of concussions.

Youth Sports

Youth sports are not only the largest population group of athletes, they are also the most underserved when it comes to awareness and care for head injuries. Estimates suggest that more than 30 million children (ages 5-18) participate in organized sports each year. Given the number and complexity of youth sports organizations, multi-sport athletes, disparities in the quality of coaching, and social and cultural influences, youth athletes face significant risk of being overlooked in the event of an injury. In addition, pediatric populations, including athletes, are significantly underserved or represented in current research. Little is known about the short- and long-term effects of individual or repetitive head injuries in younger individuals.

However, progress has been made in recent years, reflecting a positive shift in the attitude towards concussions and head injuries in youth sports. For example, all 50 states and the District of Columbia have concussion laws, and some leagues have implemented policies to reduce the prevalence of head injuries in youth sports. USA Hockey raised the age for legal body checking to the Bantam age group (13-14 years) and implemented rules to prohibit any check to head or neck region.[4] In November 2015, U.S. Soccer announced new initiatives to reduce the prevalence of concussions in youth soccer, "including the limitation and/or outright banning of heading the ball for players under the age of 13."[5] Under this new protocol, children ages 10 and under are barred from heading the ball during any official practice or game, while players ages 11 to 13 are limited to heading during training sessions.[6] In addition, Pop Warner Football was the first youth football organization to officially limit contact during practices in June 2012, adding two new rules and amending one of their existing rules. The first rule bans full speed head-on blocking or tackling drills in which players line up more than three yards apart. The second rule reduces the amount of contact at each practice to a maximum of one-third of practice time. In addition to the new rules, Rule 14, which has to do with blocking and tackling restrictions, was amended to emphasize technique when it comes to teaching safe blocking and tackling.[7]

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[4]USA Hockey, Body-Checking Rule, *available at*, http://www.usahockey.com/page/show/908033-body-checking-rule.

[5] NBC Sports, November 9, 2015, *No More Heading: US Soccer Unveils New Concussion Protocol for Youth Soccer*, Andy Edwards, *Available at:* http://soccer.nbcsports.com/2015/11/09/no-more-heading-us-soccer-unveils-new-concussion-protocol-for-youth-soccer/.

[6] *Id.*

[7] Pop Warner, Rule Changes Regarding Practice & Concussion Prevention, June 13, 2012, *Available at:* http://www.popwarner.com/About_Us/Pop_Warner_News/Rule_Changes_Regarding_Practice___Concussion_Prevention_s1_p3977.htm.

While recent policy changes reflect a positive shift in attitude, questions remain about whether they go far enough. For example, due to concerns about the long-term consequences of repetitive—or sub-concussive—head injuries, some groups advocate eliminating head contact from youth sports or establishing a "hit count," similar to a pitch count in baseball. While these concepts appear logical and may ultimately be proven by science, a 2014 report by the Institute of Medicine and National Research Council (hereinafter, "IOM Report") found that "implementing a specific threshold for the number of impacts or the magnitude of impacts per week or per season is without scientific basis."[8] This is not to suggest that proposals advocating less contact or a "hit count," for youth athletes are not without merit. In fact, ongoing research continues to suggest the need for greater attention to this concern. This example, however, highlights the challenge of developing appropriate policies in the face of limited and evolving scientific research of head injuries in youth populations.

This challenge is further illuminated by numerous gaps in our scientific and medical understanding of head injuries in youth athletes identified in the IOM Report. After reviewing a large quantity of existing research, the authors observed a number of weaknesses and challenges that effect prevention efforts, including, but not limited to, a lack of injury surveillance data for athletes younger than high school age or for athletes participating in club or recreational sports outside of an academic setting; inconsistency in how concussions are defined in research; minimal attention to factors such as race, ethnicity, or socioeconomic status; limited research focused on changes in the brain for youth athletes following concussions, including the predispositions for multiple concussions or negative outcomes; the need for more clarity on differences between male and female athletes; and inconclusive evidence regarding the long-term effects of repetitive—or sub-concussive—head injuries.[9]

Improving the safety of youth sports is not just about science. Culture plays a critical role in improving awareness, attention, and care for youth athletes. Despite recent progress in improving attitudes and appreciation of the risks of head injuries, the IOM Report noted that "there is still a culture among athletes and military personnel that resists both the self-reporting of concussions and compliance with appropriate concussion management plans."[10] Educational and training programs, such as USA Football's Heads-Up initiative, seek to enhance the level of awareness and knowledge of coaches, players, and parents, at all levels. These programs, however, are not enforceable and depend on the sustained commitment of all involved, and research is currently ongoing to evaluate the success of these initiatives.

One of the greatest challenges for addressing concussion risks in youth populations stems from the volume and relatively decentralized nature of disparate leagues, club teams, and other recreational opportunities available to young athletes. Professional sports leagues are relatively

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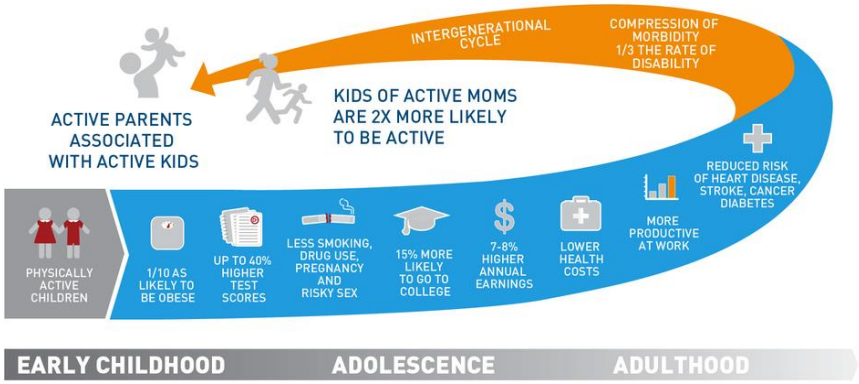
[8] Institute of Medicine (IOM) and National Research Council (NRC). 2014. *Sports-related concussions in youth: Improving science, changing the culture.* Washington, D.C.: The National Academies Press, at 11.

[9] (The examples provided in this memo reflect weaknesses that effect areas such as research and prevention. The memo does not include all findings of the IOM report, especially those addressing concussion management and treatment, equipment standards, etc.) Institute of Medicine (IOM) and National Research Council (NRC). 2014. *Sports-related concussions in youth: Improving science, changing the culture.* Washington, D.C.: The National Academies Press, at 7-11.

[10] *Id.* at 7

small populations governed by a set of enforceable rules. For example, in the NFL, teams are limited to less than one contact practice per week during the regular season. Many colleges follow a similar model, regardless of specific conference or NCAA rules, and the Ivy League recently announced unanimous agreement to eliminate all full contact from practice during the regular season, on top of already stringent limits on contact during the preseason and spring practice. The situation at the high school and especially youth levels is far more complex due to the number of different governing bodies, leagues, and teams. As a result, the health and safety of the largest population of athletes—and those who have the least amount of experience—depends on the level of awareness, education, and care provided by their respective leagues, teams, coaches—many of whom are volunteers with minimal expertise—and parents.

Many youth athletes will never play in high school, let alone at the collegiate or professional level. Research by the NCAA found that the probability of high school athletes competing in college athletics, across most major sports, was less than 10 percent.[11] Only a few sports—ice hockey and lacrosse for both men and women—yielded a greater than 10 percent probability at competing at the collegiate level.[12] Only 6.7 percent of high school football players will play in the NCAA, across all divisions,[13] and only 1.6 percent of those collegiate football players will play in the NFL.[14] These numbers are important in the context of youth sports because most young athletes are there to have fun and enjoy the benefits of team competition. These experiences provide numerous health and developmental benefits and encourage continued physical activity later in life, whether through team sports or other avenues. Developing an interest in physical activity at a young age has tremendous benefits throughout life, demonstrated in this chart developed by the Aspen Institute as part of their Project Play initiative.[15]



Unfortunately, research suggests that participation in youth sports is declining.[16] While there are a number of factors influencing this decline, a 2014 espnW/Aspen Institute survey found that

[11] NCAA Research, "Estimated probability of competing in college athletics" (Updated April 25, 2016), *available at* http://www.ncaa.org/about/resources/research/estimated-probability-competing-college-athletics.
[12] *Id.*
[13] *Id.*
[14] NCAA Research, "Estimated probability of competing in professional athletics" (Updated April 25, 2016) *available at* http://www.ncaa.org/about/resources/research/estimated-probability-competing-professional-athletics.
[15] The Aspen Institute, Project Play, "Sport for All, Play for Life: A playbook to get every kid in the game." *Available at* http://youthreport.projectplay.us/the-solution.
[16] *Id.* at, http://youthreport.projectplay.us/the-problem.

87 percent of parents are concerned about injuries in youth sports, especially concussions.[17] At the time, a quarter of parents had considered preventing their child from playing a sport due to concerns about head injuries.[18] It is important, therefore, to ensure that parents have the information necessary to weigh the risks of head injuries against the benefits of sports and athletic competition.

IV. ISSUES

This hearing is focused specifically on the areas of prevention and research, and the following issues are expected to be examined at the hearing:

- Effects on children and the disproportionate lack of attention on this large population group;
- Policies or guidelines for practice and game situations;
- Educational and training policies for athletes, coaches, and parents;
- The current scientific and medical knowledge around concussions in youth athletes and its effect on policy or rules development;
- The role of culture in youth sports; and
- Research related to youth athletes.

V. STAFF CONTACTS

If you need any assistance or have any questions, please do not hesitate to contact John Ohly or Brittany Havens of the committee staff at (202) 225-2927.

[17] Tom Farrey, ESPNW, "ESPN Poll: Most Parents have Concerns About State of Youth Sports." (October 13, 2014) *available at* http://espn.go.com/espnw/w-in-action/article/11675649/parents-concern-grows-kids-participation-sports.
[18] *Id.*