2014 PLAYER HEALTH & SAFETY REPORT

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Message from Commissioner Goodell

At the NFL, we constantly evaluate the sport we love, taking stock of what's working and looking forward to embracing what's next. For three years now, we have started each season with a report on our health and safety work.

As we begin our 95th year of play, we continue to invest not only in the future of football, but the health of our nation.

We have the ability to impact change beyond the football field and have seized the opportunity to be a part of the national consciousness on health and safety.

This year, we are inspired by the pioneering spirit in the proposals from researchers around the globe in response to the $60 million GE-NFL Head Health Challenge partnership and the $30 million grant the NFL committed to the National Institutes of Health.

We are confident this research ultimately will not only improve the safety of sports, but also advance the understanding of complex scientific issues for the benefit of all.

In 2010, I pledged the NFL would advocate for youth concussion laws until every state had one. We celebrated the passage of the final law this year, and with that, the protection of all young athletes from returning to play too soon following injury in any sport.

Our work is ongoing. We are never satisfied. We are constantly striving to improve, informed by important science and guided by the leading experts across engineering, medicine, sports and other fields.

As we continue to evolve, we will maintain the unique and positive character of football that has made it America's most popular sport with growing worldwide interest.

We thank and salute the parents, teachers, doctors, players, coaches, athletic trainers,fans, partner organizations, researchers and more who have joined us on this journey.

Roger Goodell
NFL Commissioner

BUILDING A HEALTHY FUTURE

“You can’t protect your kids from everything in life, but you can try to keep them safe in everything they do and keep supporting them in chasing their dream.”

— Dena Muller of New York; son, Gus, plays for the Harlem Jets youth football team

HEADS UP FOOTBALL – A NATIONAL MOVEMENT TO EDUCATE COACHES AND PROTECT YOUNG PLAYERS

On April 24, 2013, **Heads Up Football** (HUF) was launched by USA Football, the youth sport's national governing body and the official youth football development partner of the NFL, with support from the NFL and an initial grant of $1.5 million from the NFL Foundation. In 2014, the NFL Foundation committed an **additional $45 million** to USA Football to support HUF and youth safety programs. The educational outreach program strives to improve player safety at the youth level by teaching the game's fundamentals and increasing injury awareness and education, fills a previously unmet need for training in areas vital to safer play, and has established a new emphasis on youth football coach training.

Heads Up Football focuses on six key areas:

- **Coach training and certification (which includes tackling technique, concussion recognition and response, heat and hydration emergency preparedness and more)**
- **Establishment of Player Safety Coaches**
- **Heads Up Tackling**
- **Equipment fitting**
- **Concussion recognition and response**
- **Heat preparedness and hydration**

In the first year of HUF, more than **2,700 youth football leagues** representing approximately **600,000 players** and **90,000 coaches** across the United States adopted the program. The number of participating organizations in 2013 represented more than 25 percent of all U.S. youth leagues. HUF was also piloted in 35 high schools located in 10 states.

USA Football estimates that, by the start of the 2014 season, **5,500 youth football organizations** will be registered for Heads Up Football. This represents more than half of all youth football organizations in the country and nearly **one million young players**. In addition, approximately **750 high schools** have registered for the program for the 2014 season, and Maryland became the first state to officially endorse HUF statewide for its high schools.

Heads Up Football Delivers Success

Two of the 35 schools in the 2013 Heads Up Football high school pilot program won state championships: the Centerville Wildcats in Centerville, Va., and St. Joseph's Prep in Philadelphia.

"I think we benefitted greatly from the program. I felt like defensively we were surer tacklers. When you play 15 games and have a month of practice prior to that, you are talking about three to four solid months of competition. I think certainly the Heads Up Football fundamentals played a part in that." - *Chris Haddock, coach, Centerville Wildcats, 2013 Virginia Class 6A state champions*

"I believe that the Heads Up Tackling protocol has helped us build a very teachable model for our program and the way we teach and reinforce tackling. I also think that it has helped our parents and our players feel more comfortable about playing here knowing that we are doing everything possible to keep them safe."
- Gabe Infante, USA Football Master Trainer and head coach, St. Joseph's Prep, 2013 Pennsylvania Class 4A state champions

An Investment in Youth Football Safety

The NFL Foundation's $45 million grant to USA Football is intended to expand HUF to all youth football leagues across the nation – approximately 10,000 – as well as high school football programs in order to improve the standard of coaching both on the field and in the understanding of health and safety issues throughout the development of young players. The grant will also support USA Football programs which encourage healthy and active lifestyles, sportsmanship and teamwork, including NFL FLAG and NFL Punt, Pass & Kick.

Q&A: NFL Foundation Chairwoman Charlotte Jones Anderson Sounds Off

Following the NFL Foundation's $45 million grant to USA Football, Chairwoman Charlotte Jones Anderson is ready to kick off the 2014 youth football season.

Q: What is the intent of the NFL Foundation's donation to USA Football and why is it important?
A: For parents, our main concern is first and always our children's safety. But as a mom, my biggest fear is the unknown – that I won't have enough information to be sure I'm making the best decision to keep them safe. Our donation to USA Football funds education not just for athletes and coaches, but also for parents, through coaches' certification, training on proper equipment, and teaching proper tackling techniques. Not only are we making the game safer, but we are making sure parents know how and why. At the end of the day, we want all parents to understand the game and take an active role in making sure their children are playing it as safely as safely as possible. And we need to give them the education to do that.

Q: Why is supporting health and safety so important to the NFL Foundation and the future of football?
A: The future of the game lies in the kids in youth leagues now. Through the Foundation's support of football, we can work to ensure that they are playing the game as safely as possible and give them the tools to succeed on and off the field – from experience as a player to everything the game teaches you about life. And on the larger scale, it is really important to us that we use the visibility we have with the NFL to look beyond youth football. We have a tremendous opportunity to act as a catalyst for raising awareness of the importance of safety in youth sports more broadly, and we've tried very earnestly to live up to that.

NFL Commissioner Roger Goodell, left, and NFL Foundation Chairwoman Charlotte Jones Anderson present Scott Hallenbeck, Executive Director of USA Football, with a check for $45 million to support youth football on March 24, 2014. (AP Photo/John Raoux)

Q: What of the NFL Foundation's health and safety work makes you especially hopeful?
A: One of our primary focuses at the Foundation is on healthy kids, healthy lifestyles and promoting the wellness of football fans and their communities. There is so much more to football than what we see on the field on Sunday, and we are committed to supporting those pieces – from USA Football and NFL PLAY 60 initiatives that encourage active lifestyles and nutrition, to community-building programs such as grants for fields and youth camps, and player-matching grants for local leagues. Football's ability to bring groups together is unique, and our work tries to take advantage of this power to build community wellness beyond sports.

Supporters Join Heads Up Football

The program gained momentum throughout 2013 and 2014, as additional organizations joined as HUF supporters including the American College of Sports Medicine, National PTA and National Athletic Trainers' Association. 2014 is also the first season of mandatory participation for all Pop Warner leagues. The organization began voluntary adoption of Heads Up Football in 2013, and all 1,300 leagues will participate this season.

In total, these organizations have a combined membership of more than 85,000 professionals and reach millions of families, students, teachers, administrators and business and community leaders devoted to the health, safety and educational success of children and the promotion of family involvement in schools.

A Network of Collaboration, Education

The HUF program is supported through the participation and dedication of former NFL and college football players, as well as renowned high school football coaches. More than 120 former NFL players participate in the program as **Heads Up Football Ambassadors**, including Merril Hoge, Barry Sanders, Randy Gradishar and Guy McIntyre. The Ambassadors work with youth football leagues in their community to support commissioners and coaches while helping parents and players understand the importance of developing sound fundamentals at an early age.

"In the second year [of Heads Up Football]... Pop Warner and their leadership embraced this -- and they've been terrific. They have helped us get toward 100 percent of their members signing on. I give a lot of credit to Pop Warner and their leadership for embracing this program for the benefit of their young players." *– Scott Hallenbeck, Executive Director, USA Football*

USA Football hosted five Protection Tour stops at NFL and college facilities in 2014, where Riddell representatives properly fitted every young athlete in a helmet, teaching players and parents how to make sure the helmet remains secure throughout the season.
(Photo courtesy the San Francisco 49ers)

Heads Up Football Master Trainers include some of the top high school coaches in the nation and several former NFL and college football players. Master Trainers are trained to prepare **Player Safety Coaches** to implement the Heads Up Football program within their leagues and schools. At the launch of HUF, there were 30 Master Trainers; now there are 78 and counting who work with leagues around the country to implement Heads Up Football.

HUF Supporters

- American Football Coaches Association
- American College of Sports Medicine
- American Medical Society for Sports Medicine
- Atlantic Coast Conference (ACC)
- Big 12 Conference
- Big Ten Conference
- Centers for Disease Control and Prevention
- Korey Stringer Institute
- MaxPreps
- National Association of Sports Officials
- National Athletic Trainers' Association
- National Federation of State High School Associations
- National Interscholastic Athletic Administrators Association
- National PTA
- NFL
- NFL Alumni
- Pac-12 Conference
- Pop Warner Little Scholars
- Professional Football Athletic Trainers Society
- Sports & Fitness Industry Association
- Southeastern Conference (SEC)

Players and coaches from Pop Warner leagues in Northeast Ohio visited the Cleveland Browns practice facility to learn the five fundamentals of Heads Up Football, including the rip technique. Using a horizontal bag, coaches instruct athletes to throw double uppercuts to simulate a tackle where they "grab cloth" on the back of the ball-carrier's jersey to secure the tackle. (Photo courtesy USA Football / Joe Frollo)

Player Safety Coaches are responsible for the on-the-ground implementation of HUF, educating coaches, parents and players within each league through dedicated clinics. These men and women monitor their league's practices and games throughout the season and work alongside league commissioners, coaches, parents and players to implement the protocols of Heads Up Football.

Retired NFL players and current and former coaches at all levels also take an active role on Heads Up Football's **advisory committee**, along with youth football experts, educators, medical professionals and parents of football players. The 22-member committee works to advance Heads Up Football's mission to promote player safety by providing feedback and direction on further development of the program.

Prior to the 2014 season, NFL team owners Jerry Richardson of the Panthers and Jimmy Haslam of the Browns sent letters to high school principals, athletic directors and football coaches in North Carolina, South Carolina and Ohio, respectively. The letters encouraged adoption of the HUF program in order to assist the development, safety and growth of youth and high school football.

"I wanted to be involved in the program [HUF] because I believe that it is more important than ever for our culture to understand that the benefits for most young boys of being involved in a team sport like football far outweigh the possible negative effects. The character I and many others have developed from playing football have helped us become responsible citizens willing to sacrifice our own desires to help others—just like we did while playing for a football team."
- Jeff Hartings, HUF Ambassador, former Detroit Lions and Pittsburgh Steelers player

"Football is a sport that gives a family so much, and has given my family so much. We want to reach out and say that the sky is not falling, that there are changes happening to make the game safer." ***- Chris Golic, whose husband, Mike, played eight seasons in the NFL as a defensive lineman, and whose two sons played at Notre Dame.***

A Letter from Chris Golic

(AP Photo/ Ben Liebenberg)

Dear Reader,

As a Youth Football Consultant to the NFL, and a mother of football players, I'm proud to introduce you to Moms Clinics.

Moms Clinics provide a unique opportunity for attendees to learn firsthand from experts in sports medicine, hear from NFL club and USA Football representatives, connect with Heads Up Football Advisory Committee members, and hit the field for drills. The interactive clinic series is centered on the Heads Up Football program and designed to educate moms on how the game is being played safer than before and empowering them to act as educated advocates for their child's sports safety. In addition to athletes and coaches, parent education is key to ensuring youth athletes continue to reap the best benefits of sports while enhancing their health and safety. Clinics are typically hosted at an NFL or university football practice facility and provide an opportunity for moms to learn from leading medical experts, get on the practice field to learn USA Football's Heads Up Tackling technique, and engage with other moms on issues of mutual interest regarding youth sports safety.

Sincerely,
Chris Golic, NFL Youth Football Consultant,
HUF Advisory Committee Member and sports mom

The following organizations have hosted Moms Clinics:

- Arizona Cardinals
- Atlanta Falcons
- Buffalo Bills
- Carolina Panthers
- Chicago Bears
- Cleveland Browns
- Dallas Cowboys
- Denver Broncos
- Indianapolis Colts
- Kansas City Chiefs
- Miami Dolphins
- Minnesota Vikings
- New England Patriots
- New Orleans Saints*
- New York Giants
- New York Jets*
- Oakland Raiders
- Ohio State University
- Philadelphia Eagles*
- Pittsburgh Steelers
- San Francisco 49ers
- Tennessee Titans
- Washington Redskins*

*scheduled for September 2014

Moms FOOTBALL SAFETY CLINIC

USA Football HEADS UP FOOTBALL | NFL

Moms cheer after participating in on-field football drills during the Atlanta Falcons Moms Clinic on March 18, 2014. (AP Photo/Jason Getz)

Former Atlanta Falcons linebacker and USA Football Master Trainer Buddy Curry models a football helmet as a Riddell representative discusses the proper way to fit a helmet during the Atlanta Falcons Moms Clinic on March 18, 2014. (AP Photo/Jason Getz)

A Study on Football Safety Education

Results from the USA Football-commissioned **Youth Football Player Safety Surveliance Study** were released in February 2014 following a two-year independent analysis conducted by the Datalys Center for Sports Injury and Prevention. The independent scientific study of 4,000 players in 13 leagues across six states is believed to be the first of its scope in youth football's 80-plus year history.

The Datalys Center placed athletic trainers at the leagues' practice and game fields to manage and document player health. The study concluded (after controlling for factors such as age, player size, plays per game and playing standards) that rather than player age or weight, coach behavior has a strong impact on player safety. This finding indicates coach and player education that includes proper tackling, limited contact drills and injury recognition should be mandatory in football and possibly other sports.

The primary purpose of the study was to compare the level of safety across leagues assigning players to teams by age, or by their age and weight. The study found that there was no difference in the level of safety between these two approaches to assigning youth players to teams. The results showed **nearly 90% of players did not sustain an injury that resulted in missing a game or practice**, and the most common injuries were bruises (34%) and ligament sprains (16%).

BEYOND THE FOOTBALL FIELD

Bringing Athletic Trainers to High Schools

In May 2014, at the first-ever Healthy Kids and Safe Sports Concussion Summit at the White House, President Obama announced the NFL Foundation is committing **$25 million** to test and expand health and safety projects over the next three years. That commitment includes $1 million to fund athletic trainers in underserved high schools nationwide this year. The grant is part of a collaboration with the National Athletic Trainers' Association and the Professional Football Athletic Trainers Society. This funding is in addition to the $45 million grant provided by the NFL Foundation in support of USA Football and its Heads Up Football program.

A recent study from the American Academy of Pediatrics showed that the presence of athletic trainers (ATs) can have a significant positive impact on student-athlete health, resulting in lower injury rates, improved diagnosis and return-to-play decisions for concussion and other injuries, and fewer recurrent injuries. Currently, only 55 percent of high school student athletes nationwide have access to a full-time certified AT. The AT outreach program, which was piloted by the Chicago Bears during the 2013 season, will provide certified athletic trainers in NFL communities where they are most urgently needed, as identified by NFL clubs.

(AP Photo/Scott Boehm)

Additional health and safety initiatives that will be supported by the $25 million commitment include field grants, youth football camp grants, the Professional Football Athletic Trainers Society minority scholarship grant program, the Korey Stringer Institute health and safety support grant, the American Heart Association Back to Sports Youth Safety Clinics pilot program, and other important youth wellness initiatives.

"The Chicago Bears put a tremendous emphasis on player health and safety at all levels of our great sport. And we are proud to take a leadership role in enhancing player health and safety on the high school level by providing annual funding to Chicago Public Schools (CPS) to ensure that certified athletic trainers are on the sidelines for all CPS high school football games."
-George H. McCaskey, Chairman, Chicago Bears

Back to Sports, Back to Health

As part of the NFL and National PTA's Back to Sports initiative launched in the fall of 2013, PTA leaders across the country support Heads Up Football education and training, as well as other safety-focused programs for young athletes and their families. The Back to Sports initiative combines information on the benefits of sports participation, PLAY 60 and safety resources for young athletes and their families, presented by local community and school leaders including doctors, physical education teachers, nurses, trainers and other subject area experts. The program, designed to educate parents while helping PTAs build enthusiasm about the start of sports season, helps communities combine the value of sports for children with a commitment to safety in order to engage families in building youth health and wellness.

In May 2014, the **American Heart Association/ American Stroke Association** (AHA/ASA) joined the Back to Sports initiative for its second year. The addition of AHA/ASA will extend the breadth of the program by focusing on how to remove safety concerns as a barrier to youth sports participation. Activities planned include the convening of medical and scientific experts to address families on topics such as heat and hydration, musculoskeletal and cardiac injury, and concussion awareness and proper equipment fit. The NFL and AHA/ASA have collaborated for nine years on the PLAY 60 Challenge, a school-based program that educates teachers to help their students get 60 minutes of daily physical activity. The AHA/ASA contributes nearly 45 years of experience and leadership in youth wellness, as well as an extensive network of event volunteers, medical professionals and leaders to the Back to Sports movement.

Also in 2014, **NFL FLAG**, powered by **USA Football** and an official program of **PLAY 60**, debuted new in-school and after-school flag football curriculum for elementary and middle school physical education and after-school programming. In conjunction with Fuel Up to Play 60 and the National Recreation and Parks Association, the program will reach more than 500,000 students in schools and after-school programs with flag football kits to encourage physical activity. In addition to the curriculum, the kits contain equipment and are accompanied by in-person training for physical education teachers.

NATIONAL FEDERATION OF STATE HIGH SCHOOL ASSOCIATIONS reported that the number of high school athletes participating in 11-player football increased by **6,791 in 2013**, with more than **1 million players** across the nation.

Kids participate in PLAY 60 activities on Super Bowl Boulevard in Times Square during Super Bowl Week 2014. (AP Photo/Paul Sancya)

Lystedt Law Meets 50-State Milestone

With support from the NFL, youth concussion legislation has been passed in all 50 states. Over the past four years, the NFL has advocated on behalf of young athletes across the country for the passage of the Lystedt Law or a similar law to protect against a return to play too soon after sustaining a concussion. In January 2014, the Mississippi Youth Concussion Act was signed into law, marking the final state to achieve this goal and the success of the league's pledge to lobby state governments until all youth athletes are protected. The Mississippi law, like other Lystedt measures, contains three core principles:

- **Concussion education for young athletes and parents**
- **Immediate removal from play of an athlete suspected of sustaining a concussion or brain injury**
- **Mandatory clearance of the athlete by a licensed health care provider trained in the evaluation and management of concussions before returning to practice or competition**

"I am proud to have played a role in changing the culture of sports and head injury. I love sports to this day, and I would encourage anyone to get active and participate in the sports they love. I am honored that my legacy will be that we helped youth athletes across the country stay safer while they play."
– Zack Lystedt

NFL Joins National Sports Concussion Coalition as First Professional Partner

In October 2013, the NFL joined some of the largest youth sports organizations in the nation to form the National Sports Concussion Coalition, which aims to partner with concussion experts and athletic medicine professionals to establish best practices for diagnosing and treating young athletes. Coalition members also will share findings from their sport-specific concussion research, pool financial resources for joint studies, and coordinate outreach programs to educate athletes and parents about concussions.

The founding members of the coalition include organizations such as:

- Amateur Softball Association/USA Softball
- American College of Sports Medicine
- Datalys Center for Sports Injury and Prevention
- National Council of Youth Sport
- NCAA
- NFL
- Pop Warner Little Scholars
- Sports Concussion Institute
- U.S. Lacrosse
- U.S. Youth Soccer
- USA Basketball
- USA Football
- USA Hockey

The NFL is the only professional sports league to join the coalition, and is joined by the NFL Players Association and National Football Foundation.

Study Finds Encouraging Rate of Coaches' Concussion Education

In a February 2014 study published in *The American Journal of Sports Medicine*, researchers sought to evaluate the effect of youth concussion legislation on behavior. Surveying 270 public high school football and soccer coaches in Washington state three years after passage of the Lystedt youth concussion law, they found that greater than 98 percent of coaches were required to undergo concussion education, but athlete and parent engagement was substantially less extensive. As a result, authors concluded that education requirements for coaches are "being closely followed by public high schools," but physicians should be aware of the need for additional parent and athlete training.

"We're making progress. Things are better than last year and much better than 5 years ago. We have a long way to go before we can remove a lot of unnecessary risks, but football is moving in the right direction."
– Chris Nowinski, Co-Director, Center for the Study of Traumatic Encephalopathy, Boston University School of Medicine; Co-Founder and Executive Director, Sports Legacy Institute

"We see very clearly that young athletes idolize professional athletes and will emulate their behavior. That is why I will tell young patients about the ways we are trying to prevent concussive injuries at both the pro and youth levels. This includes eliminating dangerous plays or drills, improving concussion awareness and reporting, and proper equipment fitting. Many of the kids are very excited to know that we are treating their concussion the same way as their local pro athletes."
– Dr. Elizabeth Pieroth, neuropsychologist at NorthShore University HealthSystem; neurological consultant for the Chicago Bears, Chicago Blackhawks, Chicago Fire and Chicago White Sox; and member of the Heads Up Football Advisory Committee

Through Heads Up Football, coaches and parents are taught how to properly fit helmets and shoulder pads on their young athletes. (Photo courtesy USA Football / Jason Johnson)

Study Reinforces Need for Continued Concussion Research

In their "Sports-Related Concussions in Youth: Improving the Science, Changing the Culture" report released in October 2013, the Institute of Medicine and the National Research Council found that not only do young athletes face a "culture of resistance" to reporting a concussion and complying with treatment plans, but that much still remains unknown about all facets of concussion in youth. Citing a lack of data in the overall incidence of sports-related youth concussions, the report identified a number of areas for further research, including establishing a national surveillance system to track sports-related brain injury, conducting studies to assess the consequences and effects of concussions over a life span, and evaluating the effectiveness of sports rules and playing practices in reducing concussions.

(Tom E. Puskar/ AP Images for NFL Network)

FORGING NEW FRONTIERS WITH RESEARCH

“We are now in the position where we can have a better understanding of the time course of physiological recovery and make a more informed determination on when that athlete is out of the woods and is fit to return to participation from a physiological standpoint.”

— Michael McCrea, Director of Brain Injury Research, Medical College of Wisconsin

THE NFL-GE-UNDER ARMOUR HEAD HEALTH INITIATIVE

In March 2013, the NFL formally partnered with GE and Under Armour to launch the Head Health Initiative, a four-year, $60 million collaboration designed to improve the health and safety of not only football players, but all athletes, members of the military, and the general public by furthering concussion research and innovation. The initiative is an unprecedented partnership between sports and industry to advance research, and it hit its stride in the 2013 season with nearly 1,000 submissions for two open challenges and the launch of a study.

The initiative features two main programs:

- **The $20 million Head Health Challenge, comprising two separate competitions, which invites open submissions from scientists, entrepreneurs and other experts that propose innovative or improved approaches to the diagnosis, prognosis and prevention of brain injury**

- **A $40 million research and development effort to develop next-generation imaging technologies to improve diagnosis and enable targeted treatment of traumatic brain injury (TBI)**

The Head Health Challenge is in full swing, with the selection of the first-round winners of Challenge I in early 2014 and evaluation of Challenge II underway now.

Head Health Challenge I Winners Announced

In January 2014, GE and the NFL awarded 16 projects $300,000 each through **Challenge I: Methods for Diagnosis and Prognosis of Mild Traumatic Brain Injuries**. The winners were selected from more than **400 entries** from **27 countries** following rigorous review by a panel of experts in brain heath research and imaging technologies and brain research advocates. GE and the NFL will provide mentorship and access to GE researchers and industry thought leaders to all 16 winners. Up to six will have the opportunity to win an additional $500,000 to advance work in 2015.

The Focus

Head Health Challenge I focused on technology solutions and imaging biomarkers for advancing the detection and management of TBIs. Specific areas included:

- Development and validation of imaging and/or sensor-based biomarkers that can aid in the diagnosis and prognosis of mild TBI events
- Development of new technologies that are more sensitive to small contusions and injuries that are missed by current technologies and assessment of the long-term impact of these events
- Improved algorithms for the quantification and visualization of markers of brain injury severity and longitudinal change
- Algorithms and tools that link imaging data to clinical, cognitive and biomechanical data
- Models of individual risk and long-term prognosis and clinical decision support tools using population studies
- Robust methods for triaging acute-stage events and developing return-to-play guidelines using physiological, molecular, electrical or physical changes in brain or body functions

"With our partners, we hoped to catalyze scientific progress by trying a non-traditional path to engage innovative ideas from around the world. We've achieved that goal, and are even more optimistic about progress in this area than ever."
- Jeff Miller, NFL Senior Vice President, Health and Safety Policy

The Winners

Banyan Biomarkers, Inc.

- First of its kind point-of-care blood test to rapidly detect brain trauma to improve the medical management of head injury patients
- Researchers are working on a study with the University of Florida to analyze biomarkers, testing and neuroimaging on concussed athletes

BrainScope Company, Inc.

- Urgent care, handheld EEG-based TBI detection technology for potential field-based diagnosis
- Researchers are working with the Purdue Neurotrauma Group to conduct a study in collegiate athletes using imaging biomarkers to potentially enhance BrainScope's technology and evaluate its potential to serve as a surrogate for imaging biomarkers such as functional MRI and Diffuse Tensor Imaging

University of California, San Francisco (UCSF)

- Data analysis technology to better identify patients who are more likely to experience persistent symptoms and need further care following head injury
- Researchers are working with Silicon Valley start-up Ayasdi to apply big data analytics to detailed brain images

University of California, Santa Barbara (UCSB)

- Novel software tools to identify damage to brain connections following head injury
- Researchers are using state-of-the-art MRI in the UCSB Brain Imaging Center's laboratory to determine areas of the brain that may become disconnected due to information transmission loss after injury

Cortical Metrics, LLC

- Device for measuring brain health and tracking recovery by assessing brain communication following injury
- Scientists spun the company out of research at the University of North Carolina

ImmunArray, Inc.

- Technology to quickly diagnose brain injury by capitalizing on the connection between measureable immune system response and brain injury progression
- Researchers are gathering data to confirm acute diagnosis capability of immune response and potentially determine longer-term effects of brain injury

Indiana University School of Medicine

- Use of MRI to investigate concussion's effect on brain blood flow and resulting function
- Researchers in the Center for Neuroimaging are working with St. Vincent Sports Performance to conduct a study assessing the relationship of changes in blood flow to post-concussive symptoms

Johns Hopkins Medicine

- PET imaging to determine molecular alterations that may be part of biological changes leading to depression and memory deficit in the aftermath of repetitive head trauma
- Researchers are studying markers in the brains of active NFL players to track certain molecular changes

Medical College of Wisconsin

- Use of MRI to determine effects of sports-related concussions on brain structure and function
- Researchers are conducting a study to advance more objective ways of diagnosing concussion and judging ability to return to play

University of Montana

- Blood-based biomarkers for brain function following TBI
- Researchers are exploring levels of proteins and RNA, among other potential markers, as indicators for brain injury and recovery progression

University of Notre Dame

- Mobile app to detect concussion by identifying changes in speech acoustics
- Researchers are working with mobile software developer Contect Inc. to design a more objective, in-field concussion screening test that does not require medical equipment or training

University of Pittsburgh

- Using high definition fiber-tracking (HDFT) to identify changes in the brain following head injury
- Researchers are working with University of Pittsburgh Medical Center to combine clinical evaluation approaches with HDFT to best improve concussion identification and diagnosis

Sunnybrook Research Institute

- Imaging method to identify patients at risk for secondary injury after a concussion
- Researchers are using advanced MRI to visually detect the reduced ability of the brain's blood vessels to respond to physiological changes following brain injury

Quanterix

- Simple blood test to aid in the diagnosis of concussion
- Researchers are using digital immunoassay technology to measure biomarkers of brain injury in the blood

VTT Technical Research Centre of Finland

- Blood test to diagnose mild TBI by assessing the change in small molecules following injury
- Researchers are working with scientists from the University of Helsinki to study the reaction of small molecules in the body (cholesterol, amino acids, etc.) after mild TBI

Weill Cornell Medical College

- Using imaging technologies to determine the earliest known biological responses to brain injury for accurate assessment of concussion severity
- Researchers are working with boxers, football players and concussion-free patients to deliver a method for validating simple biomarkers

"What is most exciting to me about the Head Health Challenges is the caliber of the submissions. We have seen excellent entries from business, research and academic institutions from all around the world, which are positioned to greatly improve our knowledge of the brain today. To really advance what we know about the brain, and to maintain brain health, we all need to work together and the open innovation challenges have galvanized a community toward that shared goal."
– Sue Siegel, CEO, GE Ventures & healthymagination

Head Health Challenge II Underway

The NFL, GE and Under Armour launched **Challenge II: Innovative Approaches for Identifying and Preventing Brain Injury** on September 4, 2013. Challenge II aims to address the gap in data and commercially viable products devoted to protecting head health. The end goal of this second initiative is the identification of products for clinicians, researchers and athletes that compel behavior modification, development of protective materials and devices, and validated return-to-play protocols.

Submissions closed on February 11, 2014, with more than **450** entries submitted from teams in **19 countries**. The challenge encouraged significant engagement with more than 40,000 visitors from 110 countries to the website, HeadHealthChallenge.com, during the course of the submission period. Challenge II winners will be awarded in fall 2014.

The Focus

Head Health Challenge II focuses on novel technologies and materials with the power of prevention: most notably, those technologies able to measure head impact in real time; track biologic or physiological markers of traumatic brain injury; and protect the brain from head injury and its consequences. The specific areas of focus include:

Monitoring and Identifying Injury
- Technologies that monitor directional and rotational impact and integrate into actionable data
- Systems that monitor biomechanical and physiological responses to detect injury and quantify head impact exposures
- Systems to efficiently collect, interpret and organize large quantities of real-time data

Protection Against Injury or Its Consequences
- Materials or devices that can absorb, distribute and/or dissipate the force of impact, including smart or active materials
- Comfortable polymers that can also adapt to sudden impacts
- Equipment that reduces the force of direct impact transmitted to the brain
- Equipment to control axial rotation of the head
- Novel uniforms and protective padding equipment to dissipate excessive force
- Technology that improves effective mass by linking the head and neck as a total system to reduce head acceleration and minimize the mechanical effect on the brain

The judging panel

- **Kenneth M. Ford, Ph.D.** - Founder and CEO, Institute for Human Machine Cognition
- **Gerard Gioia, Ph.D.** - Division Chief of Neuropsychology, Children's National Medical Center
- **Kevin M. Guskiewicz, Ph.D., AT** - Kenan Distinguished Professor; Co-Director, Matthew Gfeller Sport-Related Traumatic Brain Injury Research; Director, Center for the Study of Retired Athletes, Department of Exercise and Sport Science, University of North Carolina Chapel Hill
- **Colonel Dallas Hack, M.D.** - Director, Combat Casualty Research Program; Chair, Joint Program Committee 6 (Combat Casualty Care), U.S. Army Medical Research and Materiel Command
- **Stuart Hoffman, Ph.D.** - Scientific Program Manager, Brain Injury Portfolio, U.S. Department of Veteran Affairs
- **David Hovda, Ph.D.** - Professor and Vice Chairman of Research Affairs, Department of Neurosurgery; Director, Brain Injury Research Center, University of California, Los Angeles
- **David Meaney, Ph.D.** - Associate Director, Penn Center for Brain Injury and Repair; Solomon R. Pollack Professor and Chair, Department of Bioengineering, University of Pennsylvania
- **Joseph F. Waeckerle, M.D., FACEP** - Clinical Professor of Emergency Medicine, University of Missouri-Kansas City School of Medicine

Training

- Sensors that provide biofeedback to modify behaviors that predispose athletes to injury or its consequences
- Improved training methods that reduce tissue and brain damage, such as novel conditioning regimes or neck isolation and strengthening protocols

"We're most excited about the opportunity to collaborate with some of the smartest minds in the world and to understand that we are driven by a common goal and a deep passion for this great game. We have created a dynamic forum with the Head Health Challenge that energizes people to join our pursuit of breakthrough solutions and empowers these innovators with substantial financial support to fund their ideas."
- Kevin Plank, Founder and CEO of Under Armour

Next-Generation Imaging Technologies

Another aspect of the GE-NFL collaboration, a $40 million initiative to develop innovative imaging technologies designed to speed diagnosis and improve treatment of TBI, reached an important milestone in June 2014 with the launch of its first research site at the Hospital for Special Surgery in New York City, led by neurologist Teena Shetty, M.D. Additional research will kick-off at Houston Methodist and the University of California, San Francisco in fall 2014.

The study takes a whole-brain approach to reimagining the role of MRI by looking to establish imaging biomarkers for diagnosis, outcome prediction and therapy management of patients who have experienced TBI. Establishing a better prognosis for patients and improving treatment is meant to help assess when to return to play, not just on the field, but for all those looking to get back to life after sustaining brain injury.

Study Finds Helmet Design Related to the Risk of Concussion

In a study published in the *Journal of Neurosurgery* in April 2014, researchers from Virginia Tech University found that the design of football helmets was related to the incidence of concussion. In first-of-its-kind research, scientists embedded sensors into two different types of helmets worn by more than 1,800 college football players between 2005 and 2010. After analyzing nearly 1.3 million head impacts during that period, results showed a 54 percent reduced concussion risk for players wearing one helmet model over another. Size, padding and shell configuration all played a role in the rate of head acceleration, and ultimately, the risk of concussion.

NIH PROJECTS TACKLE CONCUSSION RESEARCH

In 2012, the NFL announced a $30 million dollar grant to the Foundation for the National Institutes of Health (FNIH) for research on brain injuries, especially among athletes and veterans. Through the Sports and Health Research Program, a collaboration with FNIH and NIH to administer NFL-funded grants, eight projects received financial awards during the 2013 season.

The initial round of awards supports projects designed to advance the ability to identify concussions and predict how individuals recover from brain injury, including identifying patients at risk for progressive brain degeneration. This round of funding was divided between large-scale "cooperative agreements" that bring together teams of independent scientists and multiple smaller pilot programs as follows:

- Two $6-million cooperative agreements, dedicated to defining the long-term changes that occur in the brain after a head injury or multiple concussions;

- Six pilot projects, financed at more than $2 million total, that show early-stage promise in sports-related concussion research.

Working Together to Find a Breakthrough

The two cooperative agreements focus research on different aspects of TBI with the design of inter-institution collaboration to develop diagnostic criteria for identifying the chronic features of the entire scope of brain trauma from mild TBI to full-blown chronic traumatic encephalopathy (CTE). The cooperative awards bring together two teams of independent scientists and form a partnership among the National Institute of Neurological Disorders and Stroke (NINDS), the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) and a host of academic medical centers. Ten neuropathologists from eight universities will study brain tissue, and investigators will also help the NIH develop a registry of individuals with a history of TBI who are interested in donating brain and spinal cord tissue for study after their death. The two cooperative agreements are:

- **Neuropathology of CTE and Delayed Effects of TBI: Toward In Vivo Diagnostics**
  Led by Wayne Gordon, Ph.D., at Mount Sinai Hospital in New York, the project is focused on identifying and describing the chronic effects of mild, moderate and severe TBIs and comparing those with the features of CTE. Using brain tissue from a National Institute of Aging study and donors who suffered severe TBI, University of Washington researchers will join neuroimaging teams at Massachusetts General Hospital and Oregon Health Sciences University to use sophisticated brain scanning techniques to identify potential markers that may be used to diagnose degenerative effects of TBI.

- **CTE and Post-Traumatic Neurodegeneration: Neuropathology and Ex Vivo Imaging**
  Led by Ann C. McKee, M.D., of the Boston University School of Medicine and the U.S. Department of Veterans Affairs, a joint team is looking to define a clear set of criteria for the various stages of CTE and distinguish it from Alzheimer's and other neurodegenerative disorders. After the characteristics have been defined in post-mortem brain tissue, imaging teams from Washington University and Massachusetts General Hospital will correlate them with brain scans to identify features that might eventually be used to diagnose CTE in patients during their lifetime.

"The partnership between the NFL, the NIH and the Foundation for NIH is supporting game-changing research that will help doctors better diagnose and track concussions as well as improve our understanding of their short and long-term effects on the brain."
– Walter Koroshetz, M.D., deputy director of the National Institute of Neurological Disorders and Stroke, NIH

BRAIN Initiative Puts Head Health Front and Center

The **B**rain **R**esearch through **A**dvancing **I**nnovative **N**eurotechnologies (BRAIN) Initiative, part of a new presidential focus on improving understanding of the brain, presented its long-term vision for the program in a final working group report to the NIH Director's Advisory Committee in June 2014. The program will focus on mapping the circuits of the brain, measuring fluctuating patterns of electrical and chemical activity flowing within those circuits, and understanding how this interplay creates cognitive and behavioral capabilities. The committee endorsed the report, and has already committed $40 million within fiscal year 2014 to the project. More information is available at **www.nih.gov/science/brain**

Setting the Stage for Next-Generation Studies

The six pilot studies focus on improving the diagnosis of concussion and identifying potential biomarkers that can be used to track recovery. If results are encouraging, they may become the basis for more comprehensive projects. Currently, they are managed jointly between the NINDS, NICHD and the National Institute on Deafness and Other Communication Disorders (NIDCD).

Pilot Programs

- **Cortical GABA in Pediatric Sports Concussion**
  Lead investigator Dr. Jeffrey G. Ojemann, M.D., of Seattle Children's Hospital is using magnetic resonance spectroscopy to measure and compare levels of gamma-amino butyric acid (GABA), a chemical important for brain functions and potentially altered by TBI, in adolescents who have sports-related concussions with those of uninjured individuals.

- **Evaluation of Spot Light: A Concussion Injury Management App for Youth Sports**
  Lead investigators Laura McKenzie, Ph.D., and Dawn Comstock, Ph.D., of The Research Institute at Nationwide Children's Hospital and the University of Colorado School of Public Health, respectively, are testing the effectiveness of Spot Light, a mobile app designed to help caretakers track the progress of youth athletes following concussion, to determine if it will result in a greater incidence of injury reporting and better adherence to return-to-play guidelines.

- **Eye Movement Dynamics: A Rapid Objective Involuntary Measure of Concussion/Mild Traumatic Brain Injury**
  Principal investigators Nicholas Port, Ph.D., and Steven Hitzeman, O.D., at the Indiana University School of Optometry are developing a portable eye tracking instrument to help diagnose and monitor concussion progression in high school and college athletes by comparing eye data to cognitive test results to determine if changes in eye movement can serve as a biomarker for TBI.

- **Imaging and Biomarkers in Adolescents Cleared for Return to Play After Concussion**
  Principal investigator Harvey Levin, Ph.D., at Baylor College of Medicine is working with a team of researchers to evaluate microRNAs as potential biomarkers for concussions and recovery by looking at their levels one month after injury in adolescents who have been cleared to play.

- **Somatosensory Processing – Assessing Youth Sport-Related Concussion and Recovery**
  Led by Stacy Jennifer Marcus Suskauer, M.D., at the Kennedy Krieger Institute, researchers are investigating the potential of somatosensory system information processing as a biomarker for concussion and recovery in teens ages 13 through 17 by using perceptions of vibrations to fingertips to measure activity of sensory neurons in the brain.

- **Characterization of the Brain and Serum Metabolome in Mouse Models of Concussion**
  Led by Michael J. Whalen, M.D., of Massachusetts General Hospital, researchers are studying the collection of metabolites produced by the brain to determine if some of these molecules formed during the normal breakdown of large molecules may contribute to the serious effects of TBI and help identify targets for treating concussions.

President Barack Obama speaks at the Healthy Kids and Safe Sports Concussion Summit on May 29, 2014, at the White House. He is joined by former NFL linebacker and HUF Advisory Committee member LaVar Arrington; high school soccer player Victoria Belluci; former professional soccer player Taylor Twellman; and Gen. Ray Odierno, Chief of Staff of the United States Army.
(AP Photo/Charles Dharapak)

Second Half of NIH Funding Committed to Study Effects of Repetitive Head Trauma

As part of the NFL's $30 million grant to the FNIH, the NIH committed $16 million to support research into the chronic effects of repetitive concussions at the first-ever Healthy Kids and Safe Sports Concussion Summit at the White House in May 2014. The first longitudinal study, designed to "Detect, Define and Measure the Progression of Chronic Traumatic Encephalopathy" is accepting applications through October 31, 2014, and its findings could provide useful direction for clinical trials focused on preventing or slowing long-term effects from the injury. This second wave of funding fulfills the $30 million commitment the NFL made to the NIH in 2012 and will accompany projects already underway at cutting-edge medical institutions across the country.

(AP Photo/David Drapkin)

ADVANCING THE GAME

“The awareness of the players and the way they play is really changing, it’s really shifting. It’s clear our game is not the same as it was... We’re going in the right direction, we’re doing the right things, we’re making the right choices.”

— Pete Carroll, Seattle Seahawks head coach

CONTINUED PROGRESS, NEVER COMPLACENT

2013: What Worked — Rules, Technique, Technology

There is an undeniable improvement in protection of players when rules, technique and technology seamlessly integrate, making the game safer to play. NFL rules are regularly reviewed by the Competition Committee and adjusted to protect players from unnecessary risk and make game play safer. The development of a thoughtful and comprehensive set of rules designed to remove unnecessary risk from the game continues to be an evolving process and the league regularly evaluates how new rules can best be leveraged to address safety and health issues.

Five rules focusing on reducing unnecessary player risk were enacted in 2013, in addition to the implementation of mandatory thigh and knee protective equipment. Each year, as rules and other changes such as schedule adjustments are enacted, injury data is closely monitored to gauge if the intended positive benefits are achieved. Last season, after an initial adjustment period in the preseason, all players suited up with the mandatory thigh and knee pads for the duration of the season.

Also in the 2013 season, specific rules enacted to protect defenseless players and decrease hits to the head, and the resulting adjustment in technique, contributed to not only a **decrease in concussions due to head-to-head impacts**, but most significantly, a **decrease in the total number of concussions** over the entire season. In the future concussion rates could increase as awareness and technology for detection advance.

Players and commentators expressed concerns that the adjustments to legal tackling technique could lead to an increase in leg injuries as defenders aimed hits lower on the body. But statistics show that the total number of ACL injuries in the 2013 season

(AP Photo/Scott Boehm)

decreased slightly from the previous season, and MCL injuries remained flat. In 2014, the NFL is continuing to address concerns regarding leg injuries with more robust protective regulations.

The ability of players, coaches and officials to make fundamental adjustments to tackling techniques and other approaches to play is a testament to the continued shared commitment to football's longstanding heritage of improvements to safety and competition through progressive evolution.

NEW SAFETY RULES

- **13%** fewer concussions in 2013, following implementation of new safety rules for the 2013 season
  - **261 concussions in 2012**
  - **228 concussions in 2013**
- **23%** fewer concussions from helmet-to-helmet impact
  - **117 concussions in 2012 (53.2% of the total)**
  - **90 concussions in 2013 (48.7% of the total)**
- Fewer ACL injuries: **63** in 2012 to **57** in 2013
- Comparable MCL injuries: **132** in 2012 to **133** in 2013

Players speak out on why the new rules are good for the game:

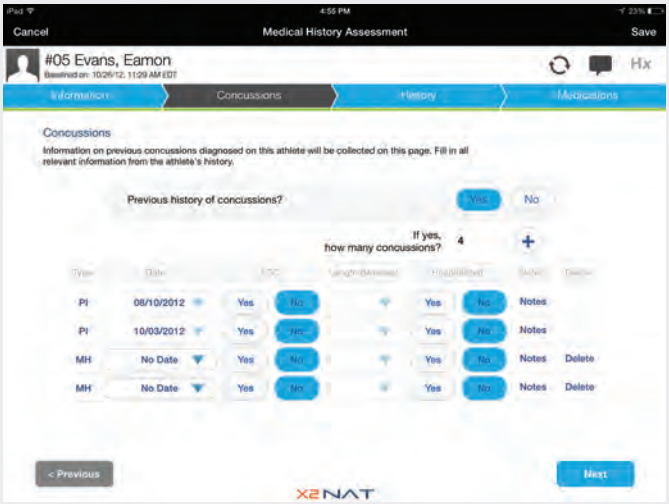
"I think the most important thing is that the league is protecting all players and making sure of the players' safety…And that's what it really comes down to, player safety."
– Detroit Lions defensive tackle Ndamukong Suh

"I think it's safer as far as the concussions and the targeting of the head. I think that's very important…I think they've done a good job as far as keeping players' heads safe."
– New England Patriots running back Shane Vereen

"I still think the game is great. I really do. I think the game is being played physical. I don't think it's backed down at all. There's a lot of good collisions happening. You see it every Sunday, clean hits, good hits. So I don't think it's done anything to the game. I just think the NFL has taken steps to really hammer the player safety home. And I think all the guys appreciate that, and everybody wants to be looked after by the league."
– Green Bay Packers offensive tackle Bryan Bulaga

Advancing Technology Aids Sideline Concussion Evaluation

The 2013 season also saw new mandates for the sideline use of electronic tablets with specially designed applications to assist team physicians in the diagnosis of concussions. The X2 app, which includes a step-by-step checklist of protocols for assessing players suspected of head injury, as well as all players' concussion baseline tests, was introduced at kickoff and is now an established piece of the in-game player safety procedure. In 2014, clubs will continue to take advantage of the interactive, user-friendly technology to hold sideline medical personnel to established standards for concussion diagnosis and care.



The X2 concussion app allows on-field physicians to record and measure symptoms and review a player's medical history to enable diagnosis of potential concussion and inform clinical evaluation of ability to return to play.

2014: Continued Improvements for Protecting Players

The primary focus for the league in 2014 will be the consistent and strict enforcement of all rules to protect players from unnecessary risk. All measures are designed to ultimately eliminate dangerous tactics from the game that increase risk of injury. Players will continue to be held to the standards set in 2013 for safe tackling. Rules have been instituted that players on both sides of the ball must use improved techniques to avoid hitting or blocking defenseless opponents in the head or neck area, or using the crown of the helmet to make forcible contact.

The Competition Committee put forth a new health and safety measure for the 2014 season designed to protect legs from serious injury. The update is to a well-known rule that protects players — especially offensive linemen — from blocks to the legs that are high risk of injury. The current rule is part of clipping and unnecessary roughness penalties, and prevents a blocker from hitting an opponent in the back of the legs to protect players from being "rolled up on," where calves and knees are at risk for serious injury. The new rule prohibits low blocks from the side of the legs that, in many cases, may cause season-ending damage.

The Head, Neck and Spine Committee also continues to evaluate research on advancing technology with helmet sensors and other cutting-edge developments in injury prevention, detection and treatment.

"We now have a new paradigm of player protection and that involves the unaffiliated neuro-trauma consultant (UNC). All same-day return-to-play decisions must be independently evaluated by the UNC. This assures that competitive pressures will not be brought to bear in returning players to the game."
– H. Hunt Batjer, M.D., Co-Chair of the NFL Head, Neck and Spine Committee

"The principal aim of the all-volunteer Head, Neck and Spine Committee is to advance the NFL's goal of keeping player safety as the first priority; advance the field of concussion research, diagnosis and management; and to educate and advocate for athletic safety regardless of the level of play or gender."
- Richard Ellenbogen, M.D., Co-Chair of the NFL Head, Neck and Spine Committee

"The unaffiliated neurological consultant (UNC) program has been enormously successful in helping to achieve our player safety goals. It provides the team physicians another bird's eye view of every play and when there is a significant event with a player, we can support the team physician's evaluation of the player. The trust between the team physicians and the UNC continues to build upon last year. They have been very receptive to the program and its goals and it is an honor to serve the NFL in this capacity."
- Mitchel Berger, M.D., NFL Head, Neck and Spine Committee member

The Team Behind the Team

Beyond team physicians and athletic trainers, a specialized squad of medical professionals are on the sideline at every NFL game. In an unprecedented move among professional sports organizations, unaffiliated neuro-trauma consultants were introduced last season to aid in on-field assessment of potential head injuries. These professionals are joined by home and visiting team medical staffs, a stadium medical crew designed to service all on-field personnel, and an expert "eye in the sky" – a certified athletic trainer positioned in a stadium box who is tasked with scanning the field and television replays to assist in identifying players with a potential head injury who may require attention. The average game-day medical team now ranges from chiropractors and orthopaedists to on-site radiology technicians, and totals 27 trained specialists – a greater number than both the offensive and defensive lineups on the playing field at any given time. By making in-game neurological assessment and independent clinical recommendation a priority, the league is committed to working with every team to promote player health and safety to the top of the game-day pile, regardless of condition or potential competitive reservations.

"The implementation of the "eye in the sky" program has been very instrumental in enabling an experienced medical specialist to obtain a bird's-eye view of the entire football field of play so that all potential injuries are viewed in real time. This may result in identification of previously unwitnessed injuries as well as clarification of the mechanism of injuries that are identified through video replay available on the sideline."
– Matthew J. Matava, M.D., President, NFL Physicians Society and head team doctor for the St. Louis Rams

THE TEAM BEHIND THE TEAM

An inside look at in-stadium medical staff on NFL gamedays

EACH SIDELINE HAS:

4 ATHLETIC TRAINERS
Assesses and treats player injuries in conjunction with team doctors

2 ORTHOPAEDISTS
Evaluates and treats players for injuries to the bones and joints

2 PRIMARY CARE PHYSICIANS
Evaluates players for general medical conditions and concussions

1 CHIROPRACTOR
Provides back/spinal adjustments for players and treats muscular injuries

1 UNAFFILIATED NEUROTRAUMA
Consultant assesses possible head injuries and concussions

STADIUM MEDICAL TEAM

1 INDEPENDENT ATHLETIC TRAINER
Notifies on-field medical staff of possible injuries from press box

1 RADIOLOGY TECHNICIAN
Takes x-rays of injured players at the stadium

1 OPHTHAMOLOGIST
Treats eye injuries

1 AIRWAY MANAGEMENT PHYSICIAN
Provides emergency intubation to severely injured, non-breathing players

1 DENTIST
Treats dental issues

2 EMT/PARAMEDIC CREW
Transports players to hospital in the event of serious injuries

27 TOTAL GAMEDAY MEDICAL STAFF

Information provided by the National Football League Physicians Society (NFLPS)

NOTE: Numbers reflect the average number of medical staff present and should not be considered official NFL protocal.

BUILDING TOTAL WELLNESS

Player Care Foundation Expands Health Programs

Since 2007, the NFL Player Care Foundation (PCF) has dedicated significant resources to serving retired players by providing medical, emotional, social and community support after they have left the game. The independent organization is administered by directors nominated by the NFL, NFL Players Association, the Pro Football Hall of Fame and the NFL Alumni Association, as well as four outside directors with expertise in foundation management, mental health, orthopaedics and social welfare.

The PCF uses a case management model that focuses on individualized strategies to help players through challenging times. Through its partnerships and diverse board membership, it effectively communicates and serves the needs of those players whose careers contributed to the success of the NFL.

First-class Healthcare Partnerships

In January 2014, the PCF named the Cleveland Clinic, one of the country's preeminent medical institutions, the medical screening partner for its **Healthy Body and Mind Screening Program**, which provides free cardiovascular and prostate evaluations, among other services, to former players throughout the country. The partnership kicked off with a session at Mt. Sinai Hospital in New York during Super Bowl week, followed by clinics in Florida, Nevada, Pennsylvania, Texas, Illinois and Ohio in concert with Players Association and Alumni meetings and other events, as well as during Pro Football Hall of Fame week in Canton. During that time, 343 players were screened, bringing the total to 2,040 players screened since the research initiative began in October 2008.

SUPPORTING FORMER PLAYERS

Former players receive support through the Player Care Foundation and collectively bargained benefits.

- **663** former players and their families have received more than **$6 MILLION** for personal and medical emergencies through the PCF since 2007
- Retired players and their families received nearly **$80 MILLION** through the Bert/Rozelle retirement plan in the past 12 months
- **$32 MILLION+** distributed through the 88 Plan, created in 2007 to provide funds for medical and custodial care for dementia, ALS and Parkinson's patients
- **$3.9 MILLION** donated to health and safety research by the PCF
- **2,040** players screened through the Healthy Body and Mind Screening Program through the PCF

Redefining the NFL Player

In 2012, the National Institute for Occupational Safety and Health published research that challenged the pervasive belief that NFL players have a shorter life expectancy than the average American male. Commissioned by the NFL Players Association, the study explored the NFL player's health outlook post-retirement. Despite the fact that its results showed that former players live longer than the general population and experience lower rates of deaths from cancer and heart disease than the rest of American men, questions have persisted. In November 2013, Troy Vincent, the Executive Vice President of Football Operations for the NFL, addressed this concern by addressing several myths associated with NFL players. Research from a number of independent sources has helped to separate fact from rumor, and the league continues to work diligently with current and former players to address the quality-of-life and health concerns identified as critical to long-term well-being.

New Standard for Helmet Testing Proposed

In June 2014, the National Operating Committee on Standards for Athletic Equipment announced revised testing criteria for football helmets, which will require manufacturers to meet additional performance requirements for concussion-causing forces to the head. Helmets are currently tested for how they withstand direct blows, or linear forces, that can make the brain move back and forth. The proposed new standard would also test performance when an impact causes the head to suddenly spin, causing rotational acceleration of the brain. The revised standard is open for comment until June 2015, and if approved, is expected to be implemented by June 2016.

Q&A: NFL Owners' Committee on Health and Safety Chairman and Co-Chairman, San Francisco 49ers, Dr. John York

Q: Which of the NFL's health and safety efforts this year have been most significant or have the most potential for positive impact?

A: Health and safety is a topic that is now part of every agenda, every meeting. This is a continual progression and a focus on doing everything we can to make the game safe. Culture change takes time, but we feel confident that, year to year, we're seeing the mentality towards sports injuries change for the better. One of the most impactful things we have done this year and the past several years is to gather the top physicians, engineers and scientists to look at two key issues: concussion and head, neck and spine injuries, and foot and ankle injury prevention. The progress made by these experts has been seen from players to coaches to team physicians to owners and beyond.

Q: Where do you think the most work is still to be done?

A: The greatest need remains in basic science. The studies that have been done reveal that we need to continue to explore basic sciences and engineering, as they pertain to the mechanism of injury. I believe as we continue to partner with the top research scientists and organizations that we will see more complex studies about the mechanism of injuries to help guide decisions about equipment, rules and culture.

MYTHBUSTER: FACT VS. FICTION

☑	☒
FACT: Retired NFL players are more likely to be currently married than men in the general population. Divorce rates for former players (ages 30-49) are lower than divorce rates for the same segment of the general population	**FICTION:** 78% of NFL players are divorced, bankrupt or unemployed two years after leaving the league
FACT: On average, NFL players live longer than men in the general population (77.5 years vs. 74.7 years)	**FICTION:** The average life expectancy of NFL players is 55 years, compared with the U.S. average of 77.6 years
FACT: NFL players commit suicide at less than half the rate of other American men	**FICTION:** The suicide rate among former NFL player is six times the national average
FACT: NFL owners have consistently and voluntarily strengthened services and benefits available to former players over the past several decades, including devoting approximately $1 billion for retiree benefits in 2011	**FICTION:** NFL owners don't care about their players. Players are commodities, not people

Participation in Team Sports Delivers Benefits for Children

In a study published in the *Journal of Pediatrics* in March 2014, researchers found that children between 8 and 10 years old who participated in team sports demonstrated better physical health and academic performance than those who did not. Sampling more than 4,000 children at age 8 and then again at 10, they found that children's involvement in team sports helps to protect health-related quality of life, including self-esteem and positive social interactions, and should be encouraged at an early age.

COLLABORATING WITH THE MILITARY FOR CULTURE CHANGE

The NFL's Salute to Service campaign unites a variety of programs dedicated to honoring and supporting the military. Traumatic brain injury (TBI) is one of the most common injuries to troops in Iraq and Afghanistan; studies show that 20 percent of all veterans of these wars have sustained a concussion, and that number is much higher for frontline troops. Through Salute to Service, the NFL and U.S. Army in 2012 launched a long-term initiative to enhance the health of soldiers and players through shared culture change, information exchange, education and increased awareness of concussion-related issues that affect athletes, members of the armed forces and the broader public.

In June 2014, NFL Senior Vice President of Health and Safety Policy Jeff Miller led the league's health and safety team to the National Intrepid Center of Excellence (NICoE) Spirit at Fort Belvoir, Va., to visit with Army Medicine experts, including Dr. Stephanie Maxfield-Panker, TBI program manager, Office of the Surgeon General; Brig. Gen. Patrick Sargent, Deputy Chief of Staff, Operations of the U.S. Army Medical Command; and Dr. Heechin Chae, the NICoE Spirit Director. The team's discussions centered around expansion of the NFL-Army collaboration on traumatic brain injury and concussion awareness and healthy behavioral change related to sleep, activity and nutrition. The primary focus for both sides has been an increase in information sharing between soldiers and athletes to help combat the stigma associated with seeking treatment for concussion. Health and safety officials are looking to continue this shared approach to culture change.

Information about the latest research activity is available at Army.mil/tbi.

Members of the military go out for a pass during NFL training camp on July 28, 2014, in Philadelphia. (AP Photo/Matt Rourke)

Department of Defense Releases Care Guidance for Concussions

In February 2014, the Department of Defense's Defense and Veterans Brain Injury Center (DVBIC) issued recommendations for standard treatment based on input from academic experts, sports concussion clinicians and all-service military TBI experts. The recommendations, which underline the need to acknowledge the seriousness of head injuries among soldiers, outline the requirements for physical and cognitive rest and include a how-to manual for returning to pre-injury activity levels in a staged approach, as well as definitions of safe rest for the brain and clinical support tools for primary care managers and rehabilitation providers.

The DVBIC offers doctor-patient discussion aids and education materials that allow patients to track their own recovery, as well as tools for caregivers. All materials are available for download at the DVBIC website at dvbic.dcoe.mil/resources/progressive-return-to-activity.

The Salute to Service campaign includes a partnership with the USO that sends former players to visit troops overseas and in military hospitals at home. New NFL Executive Vice President of Football Operations Troy Vincent traveled to Germany in May 2014 for his first USO tour, where he visited with more than 800 troops and other military personnel.

NFL Executive Vice President of Football Operations Troy Vincent visits troops at Landstuhl Regional Medical Center on May 2, 2014. (Landstuhl Regional Army Medical Center - Public Affairs)

"Seeking help for an invisible wound such as concussion is an act of courage that benefits the entire team, whether that team is a football team in the NFL or a unit in a combat zone, or a little league baseball team back in garrison."
- Brig. Gen. Patrick Sargent, deputy chief of staff, operations, U.S. Army Medical Command

"What football has taught me in the grand scheme of my life about being a part of a team and working with people and hard work, discipline and mental toughness - all those things serve me in life."
– Tom Brady, New England Patriots quarterback

WHY WE LOVE FOOTBALL

Dr. Elizabeth Pieroth,
Neuropsychologist, NorthShore University HealthSystem
"I grew up in a "football home." My brother and father both played football and my dad was a high school football referee for 35 years. I learned to yell at the TV screen after seeing missed calls from him! I have always appreciated how football creates a sense of community for those who love the sport."

(AP Photo/Charles Krupa)

Charlotte Jones Anderson,
Chairwoman, NFL Foundation
"I love football because it has the power to bring families together. For mine, it truly is the fabric of who we are. From growing up playing and cheering on my brothers, to our involvement with the NFL and seeing first-hand the impact it has on millions of lives, it is something we've always shared with each other. And that's something I think football does for a lot of families. Now my kids play, and instead of cheering for my brothers, I'm there cheering on my kids. There is no prouder moment as a parent than seeing your kids succeed. And football gives me those moments every time they take the field."

Tim Green,
Former NFL Defensive Lineman
"All our lives, we're getting knocked down. It happens to the richest, smartest, and most famous people. The difference with a kid that plays football is that for the rest of his life he knows how to get back up."

(AP Photo/Paul Sancya)

Sue Siegel, CEO, GE Ventures & healthymagination
"Doesn't everybody? Both of my sons play or played football and benefited tremendously from the team experience. Through football they learned responsibility, leadership, sportsmanship, competition and teamwork. The sport fosters a sense of team community at all ages."

(AP Photo/Ann Heisenfelt)

John York, M.D.,
NFL Owners' Committee on Health and Safety Chairman and Co-Chairman, San Francisco 49ers
"There are so many reasons to love football; but I have a very personal reason to love football, particularly the 49ers. Growing up in Little Rock, prior to the Dallas Cowboys or cable TV, I had no team close by so I watched every team and let the team pick me. My team became the San Francisco 49ers with John Brodie as quarterback and R.C. Owens catching alley-oop passes. Sitting on my living room floor as a kid, who would have ever dreamed that I would become owner and chairman of the 49ers? Dreams do come true."

Patrick Kerney,
NFL Vice President of Player Benefits and NFL Legends Operations
"While I love football because of the immeasurable thrill I received playing it, I most love it because it has given me and my family more opportunity than we could ever ask for."

Troy Vincent,
NFL Executive Vice President of Football Operations
"I love football because there is no greater force in bringing people together as friends, teammates, communities and as a nation. Football has proven that diverse people can bring their individual talent together to reach common goals. Football transcends race, religion, gender, sexual orientation and politics. As people gather together in the stands, in homes, in front of televisions, football serves as a model of diversity, inclusion and respect."

(AP Photo/Denis Poroy)

(AP Photo/Ted S. Warren)


NFL