

Brain and nervous system disorders among NFL Players

This summary reports findings from a study of brain and nervous system disorders among National Football League (NFL) players. Specifically, we looked at Alzheimer's disease, Amyotrophic Lateral Sclerosis (ALS), and Parkinson's disease. These disorders affect nerve function, resulting in loss of movement or memory.

The information in this summary is related to your health. You are being sent this because you played for the NFL for at least five seasons during 1959 to 1988.

Study background:

Over 15 years ago, we did a study that found “nervous system” deaths were increased among NFL players. Since then other studies have noted similar concerns.

More recently, studies have identified a condition called chronic traumatic encephalopathy (CTE). CTE has symptoms similar to Alzheimer's, ALS, and Parkinson's. It occurs in people who've had multiple concussions.

Concerns for CTE and other diseases that damage nerve cells are increasing among football players. Because of this, we looked more closely at these kinds of disorders to see if they were higher among NFL players.

The disorders we looked at included:

- Alzheimer's, which is the most common type of dementia. Over time, it can cause memory loss and impacts thinking and talking.
- Parkinson's, which affects movement. It can cause shaking, stiffness, or slow movement of muscles. This can affect facial expressions, talking, walking, and hand movement.
- ALS, also known as Lou Gehrig's disease, which causes weakening of the muscles needed to move, speak, eat, and breathe.

Who was in the study:

We included all who played at least five seasons for the NFL during 1959 to 1988. These 3,439 men were identified using the NFL pension fund. To do this study, we used information from the pension fund database, commercial publications, and death certificates. No surveys or blood samples were taken.

As of 2007, 90% of the 3,439 men in our study were alive; most are now 55 or older. In a study we finished earlier this year, we found the NFL players in our study are living longer than other men in the U.S., on average.

In this study, we found:

- In general, brain and nervous system disorders were more than 3 times higher among players; 17 players died with Alzheimer's, ALS, or Parkinson's compared to 5 men in the U.S. (see graph).
- More speed position players died from these disorders compared to the non-speed position players.

Speed positions included:

- quarterback
- running back
- halfback
- fullback
- wide receiver
- tight end
- defensive back
- safety
- linebacker

Non-speed positions included:

- defensive linemen
- offensive linemen

Punters/kickers were not included in this analysis.

Looking at the specific brain and nervous system disorders, we found:

- ALS was 4 times higher among players; 7 players died with ALS compared to fewer than 2 men in the U.S.
- Alzheimer's was 4 times higher among players; 7 players died with Alzheimer's compared to fewer than 2 men in the U.S.
- Parkinson's was not increased among players compared to men in the U.S.

Disease	NFL Players	Similar group of men from the US population	Risk?	What does this mean?
ALS	7 out of 3,439 players	less than 2 out of 3,439 people	Risk of dying with ALS was 4 times higher among players	Players are more at risk of ALS
Alzheimer's Disease	7 out of 3,439 players	less than 2 out of 3,439 people	Risk of dying with Alzheimer's was 4 times higher among players	Players are more at risk of Alzheimer's
Parkinson's Disease	3 out of 3,439 players	less than 2 out of 3,439 people	The risk of Parkinson's was about the same as other U.S. men	The risk of Parkinson's is similar to that of other men
Total	17 out of 3,439 players	5 out of 3,439 people	Risk of dying with a brain or nervous system disorder was more than 3 times higher among players	In general, players are more at risk of disorders that result in loss of movement or memory

Graph: The NFL players in our study may more likely have a disorder that causes loss of memory or movement compared to other men in the U.S.

What this means:

We did this study because:

- 1) A study we did years ago showed nervous system diseases may be higher among NFL players.
- 2) Other studies indicated concern for disorders that result in loss of movement or memory among football players.

We found these kinds of disorders were higher among those in our study. This does not mean that you will get one of these disorders; rather, it suggests that as a former football player, you may have a higher risk compared to someone from the general population. Some studies have found these disorders occur more often among individuals who have had multiple concussions though we were not able to assess this.

What you should do:

We sent you this information because we want you to share it with your doctor.

We recommend you send your doctor a copy of this fact sheet to keep in your file or bring a copy to your next appointment. By letting your doctor know we found some health concerns, your doctor can better monitor you for any early signs, recommend tests, and explore treatment options as soon as possible.

The NFL has several neurological health-related programs that may benefit players:

- The NFL Neurological Care Program helps players coordinate testing and treatment for neurological-related illnesses. Evaluation and treatment costs are paid for by you or your insurance provider, however if you are eligible and cannot afford evaluation or treatment, you may apply to the NFL Player Care Foundation for a grant to help with costs. Though there are many places you can go for neurological care, there are only six medical centers nationwide that participate in this program. Players interested in the program should contact:
 1. Dr. Sam Gandy/Dr. Silvana Riggio (212) 774-1722, Mt. Sinai Medical Center, New York
 2. Chris Thrasher (404) 756-8800, Morehouse School of Medicine, Atlanta
 3. Dr. David Brody (314) 362-1381, Washington University School of Medicine/Barnes-Jewish Hospital, St. Louis
 4. Dr. Mitchel Berger (415) 353-3933, University of California, San Francisco School of Medicine, San Francisco
 5. Jesse Fischer (310) 794-7688, University of California, Los Angeles
 6. Dr. Gregory Stewart, (504) 864-2104, Tulane University, New Orleans

To learn more about the program and how to participate, visit:

www.nflplayercare.com/PlayerCarePlanNeurologicalCare.aspx

- The NFL 88 Plan is a benefit for players suffering from dementia, ALS or Parkinson's disease. The 88 Plan reimburses or pays claims directly to qualified, former players. To learn more about the NFL 88 plan, visit: www.nflplayercare.com/88PlanOverview.aspx
- The Neurocognitive Disability Benefit is new and will soon be available to former players who are eligible and have a permanent neuro-cognitive impairment. The NFL plans to send information on the Neuro-cognitive Disability Benefit to former players.

Learn More:

Alzheimer's Association: www.alz.org/

The Alzheimer's Association website provides information about the differences between normal symptoms of aging compared to progressive memory loss.

ALS Association: www.alsa.org/about-als/

The ALS Association website offers information about symptoms, treatment options, and support groups. Generally, ALS affects about 5 out of every 100,000 people worldwide.

National Parkinson's Foundation (NPF): www.parkinson.org/

The NPF website offers information on symptoms, other illnesses that can mimic Parkinson's, treatment, and how to live well with Parkinson's.

