

Heart health concerns for

NFL Players

This summary contains information that may be related to your health. You are being sent this because you played for the National Football League (NFL) for at least five seasons during the 1959 to 1988 playing seasons.

Study background:

In 1990, the NFL Players Association (NFLPA) asked researchers at the National Institute for Occupational Safety and Health (NIOSH) to look at the rate and causes of death among players. NIOSH is a government research agency within the Centers for Disease Control and Prevention (CDC). Our mission at NIOSH is to conduct research that will improve job safety and health. We received the request from the NFLPA because there were concerns with shortened life span and heart disease among players. There are many different types of heart disease; all cause the heart to work incorrectly. Heart disease can cause arrhythmia, heart attacks, and heart failure.

In 1994, NIOSH finished the study and noted some concerns with heart disease among players, but felt further study was needed. We recently finished a study that better examined the health risks of the players.

Why was there concern for the health and life expectancy among players?

When the Players Association approached us to do this study in 1990, there had been several news articles that stated NFL players only lived into their 50's, on average. There was no scientific proof that we could find that supported this statement. We agreed that it would be important to find out if NFL players face health risks that may relate to their job.

Who was in the study?

We included all who played for the NFL for at least five seasons during 1959 to 1988. These 3,439 men were identified using the NFL pension fund.

This was a records-based study, which means we used information from the pension fund database, commercial publications, and death certificates to do the study. No surveys or blood samples were taken.

We compared the rate and causes of death among these players to what would be expected among men in the general population to see if there was a difference.

What we found:

Longevity

We found the players in our study had a much lower rate of death overall compared to men in the general population. This means that, on average, NFL players are actually living longer than men in the general population. Out of the 3,439 players in our study, 334 were deceased. Based on estimates from the general population, we had anticipated 625 would be deceased.

Cancer

We found the players in our study also had a much lower rate of cancer-related deaths compared to the general population. A total of 85 players died from cancer when we anticipated 146 cancer-related deaths based on estimates from the general population.

Heart Disease

When looking at all of the players as a group, we found the risk of dying of heart disease was lower compared to the general population. We had anticipated 186 deaths from heart disease and found only 126. However, we looked at heart disease more closely and found some higher risk of death from heart disease among certain players:

- We found players who had a Body Mass Index (BMI) of 30 or more during their playing years had twice the risk of death from heart disease compared to other players. BMI estimates body fat. It is calculated using height and weight. A BMI of 30 or more is considered obese in the general population.
- We found African American players had a 69% higher risk of death from heart disease compared to Caucasian players. We are not sure what caused this difference. Player size and position are not the reason. In general, African Americans have been found to have a higher risk of heart disease compared to Caucasians.
- We found heart disease varied by player position. Defensive linemen had a 42% higher risk of death from heart disease compared to men in the general population. A total of 41 defensive linemen died of heart disease, when we anticipated 29 based on estimates from the general population. As you can see in Table 1, this increase was only among the defensive linemen. All other positions had a lower chance of dying of heart disease compared to the general population. We are not certain why heart disease was higher among the defensive lineman. This was unexpected and needs further study.
- Among the 41 defensive linemen who died of heart disease, 8 deaths were due to cardiomyopathy. Cardiomyopathy is a specific kind of heart disease that causes the heart to enlarge and can lead to heart failure. We anticipated fewer than 2 deaths from cardiomyopathy.

Player position categories	Number of players	Number of heart disease deaths we <u>expected</u>	Number of heart disease deaths we <u>found</u>	What does this mean?
Defensive Back, Kicker, Quarterback, Wide Receiver	1,180	67	32	The risk of dying of heart disease was lower than normal
Fullback, Halfback, Linebacker, Offensive End, Running Back, Tight End	1,097	56	29	The risk of dying of heart disease was lower than normal
Defensive End, Defensive Lineman, Defensive Tackle, Nose Guard, Nose Tackle	498	29	41	The risk of dying of heart disease was higher than normal
Center, Offensive Guard, Offensive Lineman, Offensive Tackle	664	34	24	The risk of dying of heart disease was slightly lower than normal
All Positions Combined	3,439	186	126	The risk of dying of heart disease for the whole group was lower than normal

Table 1: The risk of death from heart disease varied by player position. Player positions were grouped based on player body type, size and strength. We found a 42% increase in heart disease deaths among the defensive linemen compared to what is considered normal. A 42% higher risk is in relation to the normal risk of dying of heart disease. For example, let's say the normal risk of dying of heart disease is 100 out of 1,000 people. A 42% increase risk means that this number increases to 142 people out of 1,000.

What should I do next?

We realize that professional athletes are physically unique compared to the general population. Certain positions, such as the linemen, require larger men. During playing years, these men may have a higher percentage of body fat, but their fitness routine allows them to continue to build muscle. When players retire or stop playing due to injury, activity levels tend to decrease. This lack of activity may result in an increase in percentage of body fat, which places strain on the heart.

Though football-related injuries may make it hard to exercise regularly, it is important that players continue to be active to achieve or maintain a healthy weight. It is also important to not smoke, eat right and treat medical conditions, like high blood pressure and diabetes.

Share this information with your doctor. You and your doctor can prepare a targeted plan to maintain or improve your health. Many types of heart disease can be prevented.

There is also a medical screening program available to former NFL players in which you may be able to participate. It is called the NFL Player Care Foundation Cardiovascular Screening Program. The program provides a thorough evaluation and education of heart health. Participation is free to anyone who played a down in the NFL. Screenings are scheduled each year at NFL cities throughout the country. To learn more about the NFL Player Care Foundation and free medical screening programs, visit www.nflplayercare.com.

Symptoms of heart disease include:

- Shortness of breath or difficulty breathing
- Fatigue
- Irregular heart beat or heart palpitations (heart races or pounds suddenly)
- Dizziness or fainting
- Swelling of legs
- Bloating of the abdomen
- Chest pain or discomfort that may feel heavy or like someone is squeezing your heart; you may feel the pain under your breastbone (sternum), jaw, neck, stomach, or upper back.

Learn more:

- To find out your BMI visit, www.nhlbisupport.com/bmi/
- CDC Heart Disease: www.cdc.gov/heartdisease/ or call 1-800-CDC-INFO (1-800-232-4636).
- American Heart Association: www.heart.org
- Mayo Clinic: www.mayoclinic.com/health/heart-disease/DS01120
- U.S. National Library of Medicine: Coronary Heart Disease: www.ncbi.nlm.nih.gov/pubmedhealth/PMH0004449/
- To learn more about the 1994 study, please visit: www.cdc.gov/niosh/pdfs/nflfactsheet.pdf



What are we doing next?

NIOSH is also studying neurodegenerative causes of death among the NFL players included in this study. We are mainly looking at Parkinson's, Alzheimer's, and amyotrophic lateral sclerosis (Lou Gehrig's disease). If the study finds anything of concern, we will send you a summary of findings and let you know what you can do to ensure your health.