



# STRONG HEART STUDY

INVESTIGATING CARDIOVASCULAR DISEASE  
IN AMERICAN INDIANS

## newsletter

[strongheart.ouhsc.edu](http://strongheart.ouhsc.edu)

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### From Research to Healthcare



When we listen to the news we often hear about some new “breakthrough” that seems to be “just around the corner.” On the other hand, when we visit our doctor we often find out that this new treatment is like a mirage in the desert...a lot further away and hard to get a hold of. Bringing new discoveries in medicine to the point that our doctor can use them and help us to better health is called “translation.” The Strong Heart Study (SHS) works very hard to translate our discoveries into better healthcare.

To begin at the beginning, back in 1988 when SHS was starting, many medical experts felt that American Indian people had some sort of immunity to heart disease and stroke. No one knew if Indian people had higher or lower cholesterol levels than other Americans, whether these levels increased risk for heart disease like it did in Caucasians, whether smoking or high blood pressure had the same effects and so on. The SHS went on to prove that Indian people do have significant levels of these risk factors and that they generally have the same effects. With your help, the SHS also showed that diabetes was the strongest factor increasing risk of heart disease in Indian communities and that there was a serious “rising tide” of heart disease developing. This

information became the foundation for new proposals to reduce these risks. One of these proposals, the SANDS (Stop Atherosclerosis in Native Diabetics) study, was funded in 2003 to see if more intense efforts (than recommended at the time) to control blood pressure and cholesterol levels would slow down the “hardening of the arteries” that cause heart disease and stroke. SANDS reported that this new treatment standard was successful in April 2008 and doctors have begun to change their treatment as a result.

The latest example of this is in the May 2009 copy of a doctors’ education booklet mentioning the important results from the SANDS study. Doctors that specialize in family practice are required to keep up on new treatments and take tests every few years to prove they are up to date. This booklet about SANDS was for family doctors and other primary care providers, just like many of those that take care of Indian people with diabetes and high blood pressure everyday, so you, the Strong Heart Study participants, and we can be proud to have done our part to improve healthcare.

### Blood Sugar and the Blues:

The relationship between glycemic control and depression

Most of us have probably seen one of the many television ads talking about depression, the many types of medication for depression, and why it is important for us to talk to our healthcare providers about symptoms of depression. Recently, the Strong Heart Study became the first large study in American Indians to show that participants with diabetes are more likely to have depression than those without diabetes; this is similar to findings in other groups of people.

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## The Truth about Added Sugar in Food

Recently, you may have heard about an article published by the American Heart Association that provided recommended guidelines and other information about added sugar in food. One of our Strong Heart Study scientists helped write this paper.

Added sugars are sugars and syrups added to foods during food or beverage processing, in cooking, or at the table. The problem with added sugar is that it replaces other healthy foods, worsens health factors, interferes with achieving a healthy body weight, and increases risks for developing cardiovascular disease. All added sugars are bad, including ones claimed to be healthy, such as high fructose corn syrup. Sugars that naturally occur in foods, like the ones in fruits or milk, are OK. The paper stresses that added sugars in the diet are linked to bad health conditions and nutrition shortfalls. Recent research suggest that high intake of added sugars may increase blood pressure, blood triglycerides (a blood fat that along with cholesterol causes blockage of blood vessels), and levels of other substances in the blood that cause blockage.

Diets high in added sugars are typically low in fiber. A high sugar, low fiber diet is associated with higher calorie intake, which can result in weight gain. In the US over the past 30 years, total calorie intake has increased by an average of 150-300 calories per day, and approximately 50 percent of this increase

comes from liquid calories (primarily sugar-sweetened drinks). Higher intake of sugar sweetened soft drinks is especially dangerous. It leads to greater calorie intake, higher body weight, lower intake of other nutrients, and poor health. One can of soda pop contains nearly 40 grams of sugar (which is about 8 teaspoons!) and about 140 calories; you can imagine how many calories are in "Big Gulps" and other large sizes. By cutting regular soda and other sugary foods out of your diet, you can reduce your daily intake of added sugars and calories.

In light of this recent news, we hope that everyone in our community will work to lower sugar intake for the sake of their health, and make a special effort to educate children about the dangers of sugar.

*For more information, read: A Scientific Statement From the American Heart Association Circulation, Sep 2009; 120: 1011 - 1020.*



*Above: One can of soda contains about 8 teaspoons of sugar, which is 140 calories.*

## Thank you! Thank you! Thank you!

As you all know, we will be finishing the second exam of our family-study members at the end of September. All of us from the Strong Heart Study – the clinic teams and the doctors – want to let you know how much we value and appreciate the time you gave to the study. We realize that our family members are very busy, and it was hard for many to find the time to attend the exam. We also know that the exam can take 2-3 hours, and there are A LOT of forms to fill out. We hope you know that the information you provided is very valuable. Over the years, the results of the Strong Heart Study exams have been useful to tribal and

Indian Health Service healthcare workers in planning the proper care for community members. The results have also been helpful to communities in planning programs to prevent diabetes and heart disease. Also, the scientists who are part of the Strong Heart team have been writing papers for medical journals. This study is now recognized as the most important study of diabetes and heart disease in the United States, and our results have helped people in all parts of the country with diabetes and heart disease. You all should feel very proud of what you have done. Please give yourself a 'high five' from us for a job well done.

# The Connection between Physical Activity and Diabetes

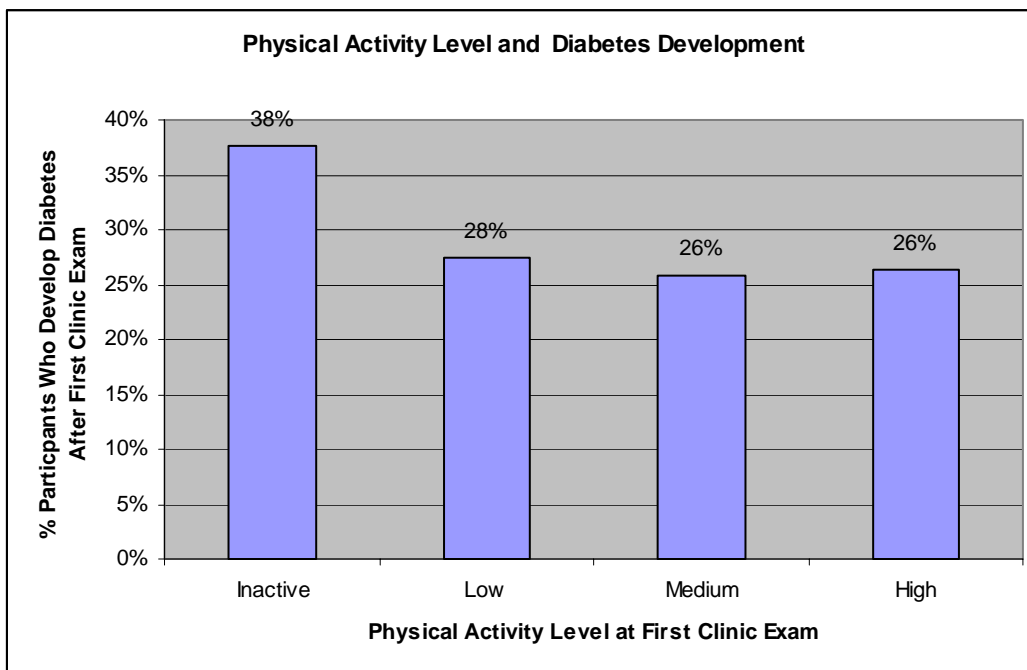
The causes of type 2 diabetes are not well understood, but diet, obesity, and physical activity have been found to be related to diabetes in many studies. Since the Strong Heart Study has measures of both diabetes and physical activity, we determined if physical activity level is related to developing diabetes over a ten-year period (1989-99). Based on the results, it appears that physical activity may play a role in preventing or delaying the development of diabetes. Individuals who are more physically active are less likely to develop diabetes. These findings support current national recommendations suggesting that individuals maintain an active lifestyle in order to remain healthy and prevent diabetes. These results suggest that maintaining a physically active lifestyle may prevent or delay the development of diabetes. Even modest amounts of physical activity are associated with a reduced risk of diabetes in American Indians.

We determined physical activity level by giving participants a questionnaire during the first clinic visit (1989-1991) that asked how many hours per week in the past year that they participated in various leisure-time and work activities, such as walking, jogging, bicycling or fishing for leisure, or lifting loads, plumbing, electrical work, or cleaning for work.

Diabetes was diagnosed based on medication history (if the participant started taking diabetes medication at the second or third clinic visit – 1993-1999) and the results of blood tests.

In general, men reported more physical activities than women. For men, the most common activities were gardening, walking, and hunting. For women, the most common activities were gardening, walking, and dancing.

During 10 years of follow-up, 454 participants were diagnosed with diabetes. More women than men developed diabetes. Participants who developed diabetes had lower levels of physical activity than those who did not develop diabetes. Among the most inactive study participants, 38% developed diabetes. Of the participants with low levels of activity, 28% developed diabetes during follow-up. Finally, 26% of participants in the medium and high activity categories developed diabetes. In other words, participation in even modest amounts of physical activity reduced diabetes risk by 33%.



Fretts, A.M., Howard, B.V., Kriska, A.M., Smith, N.L., Lumley, T., Lee, E.T., Russell, M., Siscovick, D.. Physical Activity and Incident Diabetes in American Indians: The Strong Heart Study. In Press, American Journal of Epidemiology, June 2009.



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## **Blood Sugar and the Blues: The relationship between glycemic control and depression**

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We also found that increases in depression are related to increases in blood sugar levels. This tells us that the more symptoms of depression a person is experiencing, the more difficulty they will likely have managing their blood sugar. We have learned that depression can make diabetes harder to manage and may lead to other health problems as a result. Strong Heart Study research has shown that depression and diabetes occur together among our participants. It is important to recognize the symptoms of depression and talk with our healthcare providers, especially if we have diabetes. If you are having signs of depression, the next step is to talk with your doctor about treatment options so you can improve your mood, better manage your diabetes, and improve your overall health.

What are some signs of depression? They include feeling sad, not enjoying activities that you are usually interested in, thoughts of death or suicide, changes in how much you sleep, increase or decrease in your appetite, feelings of guilt/worthlessness, and/or a change in your energy level. We all have some of these feelings from time to time, however if you notice that they are lasting for longer than two weeks and are making it hard for you to take care of your day-to-



day activities (such as going to work, caring for your household/family) this may be a sign of depression. It is a good idea to talk to your doctor or other healthcare provider about how you are feeling.

We know from several research studies that people with diabetes are two times as likely to have symptoms of depression when compared to people without diabetes. You might imagine that it is the stress of dealing with diabetes that causes someone to be depressed. While this may be the case in some instances, there are research studies that tell us that the symptoms of depression may come before the start of diabetes. Regardless of which starts first (depression or diabetes), it is important to keep an eye on your feelings/mood if you have diabetes. People who have diabetes and are experiencing depression have a harder time managing both conditions than those with either condition alone. Over the years, several studies have shown that treatment for depression leads to better blood sugar control. This is an important goal as good blood sugar control has been shown to prevent other health problems resulting from diabetes such as damage to the nerves in the eyes and feet.

Calhoun D, Beals J, Carter EA, Mete M, Welty TK, Fabsitz RR, Lee ET, Howard BV. Relationship between glycemic control and depression among American Indians in the Strong Heart Study. *J Diabetes Complications*. 2009 May 18.