

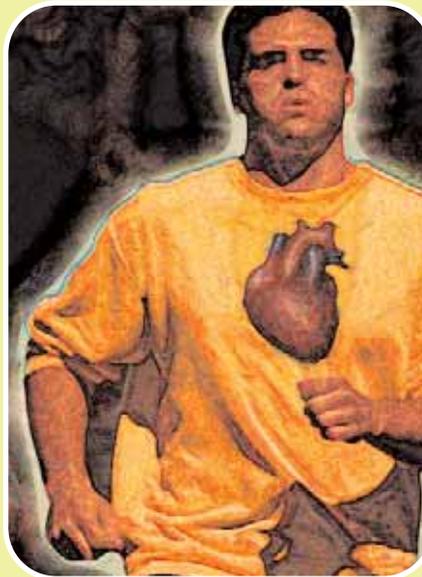
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THEME: THE HEART

Exercising with Coronary Heart Disease

by Michael Shipe, M.S., RCEP



What is coronary heart disease?

The American Heart Association (AHA) reports that 16 million adult Americans have been diagnosed with coronary heart disease (CHD), and it is responsible for 500,000 fatalities annually. CHD is characterized by a significant build-up of plaque (comprised of cholesterol and calcium deposits) in the coronary arteries of the heart. Coronary arteries provide the blood and oxygen supply to the heart, and blockage of these arteries via plaque build-up reduces the delivery of both. Although regular aerobic exercise requires the heart to work harder, a remarkable amount of scientific evidence indicates that an appropriate amount of exercise is a viable means to effectively

manage the primary risk factors associated with CHD. Individuals with CHD who observe some simple precautions can exercise independently in a safe manner.

Safety of moderate-intensity exercise

Individuals who have been diagnosed with CHD are recommended by the American Heart Association (AHA) and the American College of Sports Medicine (ACSM) to obtain their physician's consent before exercising on their own. Understandably, the prospect of exercising in an unsupervised capacity may be unnerving for someone who has previously suffered a heart attack. Yet research regarding individuals with CHD who exercise appropriately indicates there is only one heart attack and one death for every 294,000 and 784,000 hours of exercise, respectively. Although the risks of exercise are minimal, the benefits are substantial.

How exercise helps: Primary and secondary risk factors

Primary risk factors increase the chances of developing CHD. They are commonly classified as either modifiable (e.g., smoking, high blood pressure, etc.) or non-modifiable (e.g., having immediate relatives with CHD). Regular physical inactivity has a positive impact on every modifiable risk factor for CHD, such as:

- **High blood pressure:** Regular aerobic activities can lower systolic and diastolic blood pressure 5-10 mmHg, which translates into a 10- to 20-percent reduction in heart attack risk.
- **Cigarette smoking:** Smokers who become physically active are more likely to stop smoking or at least reduce the amount they smoke.
- **Diabetes:** Regular aerobic activity has a profound effect on improving resting blood sugar levels and reducing the complications associated with diabetes.
- **High cholesterol:** Individuals who perform regular aerobic activity lower their bad cholesterol (e.g., LDL cholesterol) levels while simultaneously significantly increasing their good cholesterol (e.g., HDL cholesterol) levels.

Letter from the Editor

by Jeffrey A. Potteiger, Ph.D., FACSM

Welcome to the Summer 2008 edition of the *ACSM Fit Society® Page*. This issue is dedicated to the heart – the most important muscle in the body! Heart disease is the number-one killer in the United States, so it's important to keep the heart healthy.

Even if you have coronary heart disease, you can (and should!) still exercise, and we'll explore that topic in more detail in this issue. We'll also delve into the areas of cholesterol management, hypertrophic cardiomyopathy, the importance of cardiac rehabilitation, and more.

Finally, this will be my last issue of the *ACSM Fit Society® Page* as editor in chief. I have truly enjoyed helping produce the publication and am looking forward to reading many more issues to come after my service has ended.

Dixie Thompson, Ph.D., FACSM, a long-time member of the editorial board and a highly involved ACSM member, will be taking over as editor-in-chief of the *ACSM Fit Society® Page*. She can be reached at dixielee@utk.edu.

Thanks for your continued interest and readership!

Jeffrey A. Potteiger, Ph.D., FACSM
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ACSM FIT SOCIETY®



- **Obesity:** Although regular aerobic physical is associated with moderate weight loss (e.g., a reduction of approximately 5 percent in body weight), this amount of weight loss is associated with positive changes in blood pressure, cholesterol and blood sugar.

The appropriate amount of exercise required to positively impact the risk factors can be readily demonstrated by the FIT principle: the frequency, intensity and time individuals with CHD are recommended to exercise.

Physical activity recommendations

AHA and ACSM recommend the accumulation of a minimum of 30 to 60 minutes of moderate physical activity four to five times per week, coupled with an increase in daily lifestyle activities, in order to prevent heart attack and death among patients with CHD. It is important to note that exercise can be

accumulated in 10- or 15-minute bouts. Thus, individuals can perform three 10-minute or two 15-minute bouts on the days they exercise. In addition, exercise does not have to be vigorous in order to be beneficial regarding its ability to effectively manage CHD. Moderate-intensity exercise examples include brisk walking and light cycling. One manner in which to determine if a given activity is moderate or vigorous intensity is the talk test. If an individual can maintain a conversation while they are talking, they are likely exercising at a moderate intensity; if they cannot, they may be exercising vigorously.

Exercise guidelines for individuals with CHD

In addition to following the FIT principle recommendations, individuals with CHD should take the following precautions to ensure the safety of exercise and to reduce the chances of experiencing heart complications

while exercising:

- Contact their primary physician to obtain approval before exercising independently.
- Always perform a proper warm-up and cool-down activity, such as walking slowly (e.g., two miles per hour) five to seven minutes before and after you exercise.
- Never exercise to the point of chest pain or angina. If chest pain occurs during exercise, call 911 immediately.
- Exercise with a friend and/or always carry a cell phone to ensure emergency personnel can be contacted quickly if necessary.
- If prescribed, always carry nitroglycerin, especially when exercising.
- Exercise should be stopped immediately if dizziness, nausea, unusual shortness of breath or irregular heart beats occur during or immediately after exercise. A physician should be contacted immediately, although you may simply need to slow down a bit. ➤

AMERICAN COLLEGE OF SPORTS MEDICINE ACSM FIT SOCIETY PAGE

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Q&A

By Anthony Luke, M.D., MPH

Q: How can I keep my high school athlete safer from sudden cardiac death?

A: Sudden cardiac death is one of the most catastrophic occurrences in sports. The death of several high-profile athletes from heart conditions has raised awareness of sudden cardiac death. Some athletes have warning symptoms, including chest pain, palpitations (irregular heartbeat), or lightheadedness with exercise, but some do not. The risk in high school and college athletes of sudden death from all causes is 1 in 200,000. In the U.S., the most common cause of sudden cardiac death is hypertrophic cardiomyopathy, which leads to enlargement of the muscle between the two large chambers of the heart. In the wrong situation, this can lead to a fatal arrhythmia. If your athlete expresses any signs of the heart symptoms mentioned above, you should see your primary care physician or sports medicine specialist. At the present time, the recommended preventive measure involves an annual pre-participation physical exam with a detailed history for cardiac symptoms and risk factors, followed by a good cardiac examination, including listening to the heart for murmurs, both lying down and standing up, and taking blood pressure. Make sure the pre-participation physical, which is typically good for 12 months in most states, is done early, well before the season starts!

Q: Do I need an electrocardiogram (ECG) before exercise?

A: An electrocardiogram (ECG) is a tracing of the electrical activity of the heart, which can be used to look for structural and rhythm abnormalities in the heart. I'll answer first for young athletes, then athletes over 50 years old.

Young: There have been some recommendations that an ECG can be used to screen for causes of sudden death in young athletes. An ECG can identify abnormalities in cases of hypertrophic cardiomyopathy in around 90 percent of cases. The best test is still an echocardiogram (ultrasound of the heart). An article in the *New England Journal of Medicine* outlined the experience of Italian physicians, who perform ECGs during the pre-participation physical exam on all athletes. They identified different conditions with these ECGs, some of which precluded participation by some athletes. Unfortunately, the value of the ECG to prevent injuries still needs to be clarified. At the present time, the American Heart Association recommends only the pre-participation physical exam and not a routine ECG unless there is clinical concern to get one.

Older: If you are an older athlete, an ECG may be recommended, especially if you are getting into a new exercise program. With competitive athletes over 35 years of age, the risk of sudden cardiac

(continued on page 7)

- Do not exercise outdoors when it is too cold, hot, or humid, as this weather may increase the likelihood of the aforementioned conditions.

Individuals who perform the recommended frequency, intensity and duration of exercise will likely experience minimal heart-related risks while reaping the benefits of a positive impact on their primary risk factors for CHD. These changes lead to a significant reduction in future heart attacks and fatalities associated with CHD.

THEME: THE HEART

Risk Factors for Cardiovascular Disease: Where Do You Fall?

Jenna Brinks, M.S., and Barry Franklin, Ph.D., FACSM



Cardiovascular disease (CVD) is a broad term encompassing diseases of the heart and blood vessels, including heart attack, coronary artery disease, congestive heart failure and stroke. Because CVD is the number-one killer of both men and women worldwide, identifying risk factors and prevention strategies for CVD are important steps toward avoiding health problems.

There are numerous risk factors for CVD, some of which we cannot control. For example, as we age, our blood vessels become less elastic and more likely to develop plaques that can lead to coronary artery disease and heart attacks. Furthermore, having a family history of heart-related problems (before 55 years of age in father or other male in your immediate family, or before 65 years of age in mother or other female first-degree relative) can increase your risk of developing CVD.

Although we cannot change our age or family history, there are many risk factors we can influence by making simple lifestyle modifications. One of these “modifiable” risk factors is high blood pressure. Blood pressure readings consistently above 140/90 indicate high blood pressure, or hypertension, and should be evaluated by your physician. To prevent hypertension, you should participate in regular exercise, decrease dietary salt intake, and maintain a healthy weight. If you have hypertension, your doctor may prescribe medications that can lower your blood pressure.

Dyslipidemia, or abnormal blood fat levels, also increases the risk of CVD. The three basic components of dyslipidemia are LDL (low density lipoprotein), HDL (high density lipoprotein), and triglycerides. LDL particles and triglycerides contribute to the formation of blockages in coronary arteries, increasing your risk of heart disease. Conversely, HDL particles help remove LDL cholesterol from circulation, reducing the risk of CVD. Ideal lipid/lipoprotein levels for healthy adults include a total cholesterol of < 200, LDL < 100, HDL 40, and triglycerides < 150. If you have dyslipidemia, your doctor may recommend decreasing dietary intake of cholesterol, saturated fat, and sugars, weight reduction, and a regular exercise program. You may also be started on medication to favorably modify your cholesterol and its subfractions. According to “The Rule of 40,” for every 40 points you lower your cholesterol, you cut your risk of having a heart attack in half!

Diabetes, characterized by high blood sugar, is another risk factor for CVD. Fasting blood sugar levels normally range from 60-100 mg/dL. Over time, our bodies can become less efficient at allowing sugar from the blood into our muscles to be used for energy, leading to elevated blood sugar. This can cause damage to blood vessels and coronary arteries. To prevent diabetes, your doctor may encourage you to eat a balanced diet, lose weight, and exercise regularly. If you have diabetes, several medications are available to improve blood sugar levels.

Obesity is an escalating national health problem that also predisposes you to CVD. To determine if you are at a healthy weight, calculate your Body Mass Index (BMI) by dividing your weight (in kilograms) by your squared height (in meters): for most people 20-24.9 is ideal, 25-29.9 is overweight, and 30 or more falls into the obese category. Because excess weight has numerous consequences for the heart and body, it is crucial to maintain a healthy weight. Regular exercise and a balanced diet are the most effective ways to lose weight and prevent weight gain.

Another major CVD risk factor is smoking. Smoking is a public health concern that not only increases lung cancer risk, but also increases heart rate and blood pressure, promotes abnormal heart rhythms, negatively alters cholesterol levels, damages blood vessels, and increases the risk of blood clotting. Nonsmokers can reduce their risk of CVD by never starting and avoiding secondhand smoke, and smokers should quit immediately. There are several methods that can help you quit, such as nicotine patches and gums, as well as prescription medications.

Finally, a sedentary lifestyle represents another independent risk factor for CVD, and a regular exercise program should be implemented to increase cardiorespiratory fitness. An effective exercise program should include an aerobic component, such as walking or biking, at least three to five days per week for 30-60 minutes. A structured exercise program should also be complemented by increased lifestyle activities (e.g., walking breaks at work, gardening, household chores). Additionally, a resistance training program to increase muscular strength should be performed two to three times per week and focus on the major muscle groups of the arms, legs and trunk.

There are several risk factors for CVD, many of which can be improved through simple lifestyle modifications. High blood pressure, cholesterol levels, obesity, diabetes, and lack of physical activity can all be positively affected by a regular exercise program. Furthermore, a balanced diet rich in fruits, vegetables, lean protein (i.e. chicken, fish), and fiber (the whiter the bread, the sooner you’re dead!) will reduce your CVD risk. Quitting smoking will also drastically improve your cardiovascular health. And finally, regular visits with your physician to discuss your CVD risk factors can help identify problems at an early stage. Being aware of your risk factors and effectively treating them can be the first step toward staying heart healthy!

Cholesterol Facts: The Good, the Bad, and the Ugly

Thomas S. Altena, Ed.D.



Cholesterol is everywhere! We cannot miss the commercials while watching television, and see it in print media. Indeed, media attention highlights the importance of cholesterol management, but sometimes cholesterol information can be confusing. Here is a simplistic summary of cholesterol, with a focus on the effects of exercise for prevention of and treatment for unhealthy cholesterol levels. Part of the cholesterol media blitz comes from pharmaceutical companies offering ways to manage cholesterol – yet management through exercise is often not mentioned.

The “cholesterol” molecule we know is a combination of fat and protein that is found in the blood stream. Different combinations of protein and fat make the molecule either healthy or harmful. Total cholesterol (TC) is the sum of all forms of cholesterol in the blood, with healthy TC typically being below 200mg/dl. Although TC is important, it only indicates the amount, not the type, of cholesterol. “Bad” cholesterol is classified as low-density lipoprotein cholesterol (LDL-C) and is a small molecule rich in fat and low in protein. LDL-C is the primary cholesterol form

that causes atherosclerosis and eventual artery blockage, resulting in heart disease over time. Healthy values for LDL-C are stated as being below 100mg/dl.

High-density lipoprotein cholesterol (HDL-C) is known as “good” cholesterol because it has abundant protein in its molecule. It helps transport LDL-C back to the liver, where LDL-C is disassembled and eliminated from the body. Healthy HDL-C values are 35-60mg/dl. Pre-menopausal women naturally have higher HDL-C than their same-age male counterparts. This difference is caused by estrogen and improves resistance to coronary heart disease in females compared to males.

Cholesterol is manufactured by the liver and can be influenced by fat in the diet, which appears in the blood as triglycerides (TGs). TGs alone are a risk factor for cardiovascular disease. When TGs are high in the blood, HDL-C decreases and LDL-C increases, creating a cholesterol profile that promotes cardiovascular disease. The effect of high TGs can be measured in just a few hours after eating a single meal that has even moderate amounts of fat. TGs in the blood are eventually transported to the liver and converted to unhealthy cholesterol. Cholesterol plays a role in every cell of the body, creating cell shape and function, and is partly responsible for making skin waterproof.

Statin drugs made by pharmaceutical companies improve cholesterol by lowering TC and LDL-C and increasing HDL-C, but these drugs are not without potential adverse side effects. The statin option should be considered only after diet, exercise, and weight-loss programs have been attempted. Exercise, along with dietary changes, must be the first option for cholesterol maintenance. In research studies, aerobic exercise has effectively decreased or maintained TC while decreasing LDL-C. Research has also reported an 8-percent decrease in TC and slightly increased HDL-C after just four weeks of moderate-intensity (75 percent of maximum heart rate) jogging. Cholesterol changes occurred in just 20 exercise sessions of 30 minutes each. This same study reported that LDL-C size changed, making it less prone to cause heart disease. Other research suggests that the greatest cholesterol improvements occur with inactive people who lose weight, indicating that weight management and weight loss are important for improving cholesterol.

Research also suggests that the type of exercise performed may be important for cholesterol changes. Although beneficial for other areas of health, such as preventing osteoporosis, resistance training does not affect cholesterol levels as much as aerobic exercise. Resistance training typically does not change TC levels, but slightly increases HDL-C. Resistance training could play an important role with weight management and body composition, especially when combined with aerobic exercise. HDL-C tends to respond positively to higher intensities of exercise more than low intensities. Furthermore, all forms of aerobic exercise have potential to create positive changes in cholesterol.

In conclusion, exercise positively affects cholesterol, but prescription statin drugs may still be necessary. The benefits of exercise reach far beyond cholesterol alone, leading to increased efficiency of the heart, lungs, circulatory system, and muscular system. It also increases bone mineral density and expends calories, crucial to weight loss. Statin drugs cannot claim these benefits. Furthermore, exercise promotes a sense of well-being and accomplishment, improves energy levels, prevents fatigue, and improves psychological health. Cholesterol tends to be overlooked until a physician highlights personal risk for cardiovascular disease. Preventing unhealthy cholesterol levels is easier at a younger age because most people college age and younger do not typically have cholesterol issues. The key to controlling cholesterol is abundant physical activity – at least 30 minutes five days per week – along with a diet low in saturated fat and high in fiber.

Cholesterol definitions

Cholesterol: Cholesterol is a soft substance found in the blood, used to produce cell membranes, hormones and assist in other bodily functions.

LDL: Known as “bad” cholesterol, LDL can build up on the side walls of the arteries, leading to narrowed arteries and increased risk of heart attack or stroke.

HDL: Known as “good” cholesterol, HDL is believed to carry cholesterol away from the heart and into the liver, where it is purged from the body.

Triglycerides: A form of fat made in the body, high triglycerides often correspond with high levels of cholesterol.

Cardiovascular Rehabilitation in the New Millennium

Jeffrey Roitman, Ed.D., FACSM and Thomas P. LaFontaine, Ph.D., FACSM



Cardiovascular Rehabilitation (CVR) is now a multifaceted intervention program designed to halt or reverse the progression of atherosclerosis (clogged arteries) and to reduce morbidity and mortality. CVR programs are no longer just exercise programs, but should also include comprehensive, evidence-based interventions to decrease risk of recurrent events, control symptoms, and, above all, to influence health behavior changes that lower risk factors.

History of cardiovascular rehabilitation

The interest in lifestyle intervention in cardiovascular disease dates back to the 1950s, when Ancel Keys, a noted scientist, published an article in *Circulation* discussing such things as excess caloric intake and obesity, “animal fat,” and dietary cholesterol, and their relationship to atherosclerosis. Another significant study of aggressive lifestyle intervention for secondary prevention was published in the 1980s, and almost all subsequent studies of lifestyle intervention since have shown that secondary prevention with lifestyle, particularly “aggressive” lifestyle

change, is significantly more effective than any “usual care” option. In fact, it is equally effective as almost any pharmacological and or invasive intervention.

Through the 1980s and 1990s, CVR evolved into an individualized, programmatic approach aimed at lifestyle and risk factor management. The ideal CVR program should take direct aim at reducing the risk for progression of the atherosclerotic process and future cardiac events. Active and aggressive control of lipids, blood pressure, diabetes, stress, nutrition, weight loss, and smoking cessation have all become part of CVR, accompanying exercise in the management of cardiovascular disease risk factors.

Diagnosis and reduction

The most common diagnosis for patients entering CVR is coronary artery disease (CAD), and most patients have had an angioplasty and/or coronary stenting or bypass surgery. In 2006, the Centers for Medicaid and Medicare expanded the eligible diagnoses for CVR to include stable angina pectoris, myocardial infarction, percutaneous coronary angioplasty, coronary artery stenting, heart valve repair or replacement, and heart transplant or combined heart-lung transplant.

The benefits of CVR for reducing the risk of mortality and morbidity in people with CAD are well documented. Among others, certain studies have demonstrated decreased mortality rates in CVR participants ranging from 12 percent to more than 72 percent.

Change in lifestyle, including aerobic exercise, low-fat/high-fiber diet, and weight loss improve risk factors for patients with CAD. Additionally, the American College of Sports Medicine states that exercising for at least 30 minutes five days per week improves blood lipids, blood pressure, and insulin resistance and can reduce the risk and incidence of type 2 diabetes.

Effects of exercise

“Sub-acute” effects of exercise are neither acute effects (during exercise), nor chronic effects (long-term), but rather they occur subsequent to a single bout of moderate-to-vigorous exercise. They subside with time and can be maintained only with repetition of more exercise or activity. Importantly, the sub-acute effects of exercise are bestowed on those with and without heart disease. Since they occur between bouts of exercise, it is necessary to repeat the exercise or activity on a daily basis to sustain them.

Among the known effects of exercise are positive changes in the function of arteries, decreases in the inflammation that is part of

many chronic diseases, increases in cells that function to renew the linings of arteries and many metabolic improvements that make cholesterol and other blood fats improve. Many of these changes are thought to occur after single exercise sessions, thus it makes daily exercise crucial for optimal results. The importance of both the known chronic effects of exercise, as well as the increasingly recognized sub-acute effects is to provide more support for the recommendation that persons with CAD should engage in daily moderate intensity exercise (or activity) of 30 or more minutes per session. Optimal targets for lifestyle intervention and risk factors have been published.

Recent developments in cardiac rehabilitation

Recently, the state of CVR has been addressed in two important documents. The American College of Cardiology and the American Heart Association jointly published a set of “Performance Measures” related to CVR. The following introductory statement is significant: “Occasionally, the evidence supporting a particular structural aspect or process of care is so strong that failure to perform such actions reduces the likelihood that optimal patient outcomes will occur.” This statement is profoundly positive about the importance of CVR and its place in patient care, as well as the effectiveness of a comprehensive secondary prevention program in achieving optimal outcomes for patients with CVD. Second, *Circulation* published a study about the utilization of CVR programs, showing that the average utilization in patients with myocardial infarction and bypass surgery was 13.9 percent and 31 percent, respectively. Additionally, the utilization rates for men and women were 22.1 percent and 14.3 percent, respectively. Thus, it appears that under-utilization for proven, effective therapy for CVR is the standard, not the exception.

Looking ahead

The current state of CVR is extremely bright when outcomes and prevention are considered. However, utilization and referral rates leave much to be desired. Outcomes are clearly improved in participants, but optimal secondary prevention is unlikely without referral and utilization.

The exercise professional must be aware that those with CAD are appearing en masse in health and fitness clubs, in community centers and recreation programs and for personal training. Exercise professionals must be prepared and knowledgeable about both the disease process and the rehabilitation process to fully serve this population.

Hypertrophic Cardiomyopathy: A Cause of Athlete Sudden Death

By Martha Pyron, M.D.



Definition

Hypertrophic cardiomyopathy is a genetic disorder that causes a progressive, abnormal thickening of the heart muscle. This thickening of the muscle may be minor and slowly progressive or severe and can lead to a variety of symptoms and long-term outcomes, including sudden death. In fact, hypertrophic cardiomyopathy is the leading cause of sudden death in young athletes.

What is actually wrong with the heart?

People with hypertrophic cardiomyopathy have a large and thick heart muscle. It sounds like a good thing; however, the thickened heart muscle is so large that it decreases the cavity size of the heart, which means the heart holds and pumps less blood. The thickened muscle can also cause obstruction to the flow of blood as it is pumped out of the heart. The large muscle literally gets in the way and blocks the blood from flowing out of the heart to the rest of the body. When the muscle gets large enough, it functions poorly, and can start to quiver in ventricular fibrillation, which is the cause of sudden death.

Incidence

This disorder occurs in 0.05 to 0.2 percent of the population, and is more likely in relatives of people with the disease. This disease is slightly more common in males, but does occur in females as well, and usually appears at an earlier age in females. There is no ethnic group more likely to have the disease and it has been found in all races. All age groups can be affected, from newborns to the elderly.

Symptoms

The disease is progressive, meaning a person may: A) have it and experience no symptoms; B) may develop advanced thickening of the heart muscle to the point of having chest pain, shortness of breath, dizziness, and/or palpitations; or C) may suddenly collapse and die without any previous symptoms. This type of sudden death is more likely to occur during sports or vigorous activity. The overall risk of death from this disease is 2 to 4 percent per year for the general population. Younger individuals are more likely to have sudden death, with a rate of 4 to 6 percent per year.

Physical exam

Patients with hypertrophic cardiomyopathy may have a completely normal physical exam in early stages of the disease, but also may develop a heart murmur or arrhythmia. A heart murmur is a sound made in the heart as blood is flowing through an abnormal valve or abnormal heart muscle. Just like rapids make more noise than a deep wide river, blood flowing through a narrow heart area will make more noise, which is called a murmur. Arrhythmias are abnormal rhythms of the heart. In hypertrophic cardiomyopathy, several different abnormal rhythms are possible, with the worst being ventricular fibrillation, the most common cause of sudden death.

Diagnosis

Hypertrophic cardiomyopathy can be hard to detect since the patient in question may not have any symptoms and may have a normal physical exam. Luckily, there are some tests that can help diagnose this disease. An electrocardiogram, or heart tracing, may show an abnormal electrical current flowing through the heart, due to thickened heart muscle causing changes in the current. A chest x-ray may be done, which will show an enlarged heart, but this is not specific to hypertrophic cardiomyopathy.

The best tool for making the diagnosis of the disease is an ultrasound of the heart, known as an echocardiogram. This test uses sound waves to create an image of the heart, just like an image of a baby can be seen in a pregnant woman. The echocardiogram will show thickening of the heart muscle in an asymmetric manner and abnormal changes in blood flow.

There are several criteria used to diagnose hypertrophic cardiomyopathy and several different subtypes of the disease. In some cases, genetic testing can be done to see if other family members will develop the condition. Family members should be screened for this disease if possible so that their medical care is instituted as soon as possible.

Treatment

Patients with hypertrophic cardiomyopathy have a chance of sudden death during exercise, and are therefore likely to be held from all athletic activity. They may also be given an implantable defibrillator, which is a device that can jump-start the heart if arrhythmia occurs. Sometimes, if the heart muscle is too large, surgery can be performed to remove some of the heart muscle.

Summary

Hypertrophic cardiomyopathy is a disease condition that can cause sudden death during exercise. Early detection and diagnosis can reduce the risk for sudden death. Appropriate medical management is required to ensure the health and safety of individuals with the disease condition.

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Strategies to Eat Better

By Nancy Clark, R.D., FACS M



Athletes often ask me, “What is a well balanced diet? What should I be eating to help me perform at my best?” They feel overwhelmed by the seemingly endless list of nutrition don’ts. Don’t eat white sugar, white bread, processed foods, fast foods, French fries, soda, salt, trans fats, butter, eggs, red meat . . . they’ve heard it all.

If you want to eat better but don’t know where to start, here’s a nutrition strategy that can help you fuel your body with a well-balanced sports diet.

Eat at least three kinds of nutrient-dense food at each meal. Don’t eat just one food per meal, such as a bagel for breakfast. Add two more foods: peanut butter and low-fat milk. Don’t choose just a salad for lunch. Add grilled chicken and a crusty whole grain roll. For dinner, enjoy pasta with tomato sauce and ground turkey. Two-thirds of the meal should be whole grains, vegetables, and fruits, and one-third low-fat meats, dairy, beans or other protein-rich foods.

Too many athletes eat a repetitive menu with the same 10 to 15 foods each week. Repetitive eating keeps life simple, minimizes decisions, and simplifies shopping, but it can result in an inadequate diet and chronic fatigue. The more different foods you eat, the more different types of vitamins, minerals, and other nutrients you consume. A good target is 35 different foods per week. Start counting!

Eat “closer to the earth” by choosing more foods in their natural state. For instance, choose oranges rather than orange juice; orange juice rather than sports drink; whole-wheat bread rather than white bread; baked potatoes rather than French fries. Foods in their natural (or lightly processed) state offer more nutritional value and less sodium, trans fat, and other health-eroding ingredients. You’ll find these foods along the perimeter of the grocery store: fresh produce, lean meats, low-fat dairy, and whole grain breads. If possible, choose locally grown foods that support your local farmer and require less fuel for transportation to the market.

Fuel your body on a regular schedule, eating even-sized meals every four hours. For example, a reducing diet (non-dieters need another 100-200 calories per meal) might be:

Breakfast (7 – 8 a.m.):	500 calories (cereal + milk + banana)
Lunch (11 a.m. – noon):	500 calories (sandwich + milk)
Lunch #2 (3 – 4 p.m.):	400-500 calories (yogurt + granola + nuts)
Dinner (7 – 8 p.m.):	500-600 calories (chicken + potato + greens)

This differs from the standard pattern of skimpy 200 to 300 calorie breakfasts and lunches that get followed by too many calories of sugary snacks and super-sized dinners.

Depending on your body size, each meal should be the equivalent of two to three pieces of pizza; that’s about 500 to 750 calories (or 2,000 to 3,000 calories per day). Think about having four “food buckets” that you fill with 500 to 750 calories from various kinds of foods every four hours. Even if you want to lose weight, you can (and should) target 500 calories at breakfast, lunch #1 and lunch #2. Those meals will ruin your evening appetite, so you’ll be able to “diet” at dinner by eating smaller portions. (Note: Most active people can lose weight on 2,000 calories per day, believe it or not!)

Whatever you do, try to stop eating in a “crescendo” (with meals getting progressively bigger as the day evolves). Your better bet is to eat on a timeline and consume three-fourths of your calories in the active part of your day; eat less at the end of the day.

Honor hunger. Eat when you are hungry, and then stop eating when you feel content.

Hunger is simply a request for fuel; your body is telling you it burned off what you gave it and needs a refill. To disregard hunger is

abusive. Just as you would not withhold food from a hungry infant, you should not withhold food from your hungry body. If you do, you will start to crave sweets (a physiological response to calorie deprivation) and end up eating “junk.”

While counting calories is one way to educate yourself how to fill each 500-calorie “bucket” (for calorie information, use food labels, www.fitday.com, and www.calorieking.com/foods), you can simply pay attention to your body’s signals. Keep checking in with yourself, “Is my body content? Or, does my body need this fuel?” If confronted with large portions that would leave you feeling stuffed, consider saving the food for later or letting the excess food go to waste, not to “waist,” or saving the food for later.

Think moderation.

Rather than categorize a food as being good or bad for your health, think about moderation, and aim for a diet that offers 85 to 90 percent quality foods and 10 to 15 percent foods with fewer nutritional merits. Enjoy a foundation of healthful foods, but don’t deprive yourself of enjoyable foods. This way, even soda pop and chips, if desired, can fit into a nourishing food plan. You just need to balance the “junk” with healthier choices throughout the rest of the day. That is, you can compensate for an occasional greasy sausage-and-biscuit breakfast by selecting a low-fat turkey sandwich lunch and a grilled fish dinner.

Take mealtimes seriously.

If you can find the time to train hard, you can also find the time to fuel right. In fact, competitive athletes who don’t show up for meals might as well not show up for training. You’ll lose your edge with hit or miss fueling, but you’ll always win with good nutrition!

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death is estimated to be between 1 in 15,000 and 1 in 50,000. Therefore, check with your primary care physician before starting an exercise program. ACSM recommends that for participation in moderate to vigorous activity (i.e. you’ll be breathing heavily while exercising), men greater than 45 years of age and women greater than 55 years of age with two or more risk factors for coronary artery disease, a stress test be performed. Risk factors for heart disease include: family history of heart disease, cigarette smoking, hypertension, high cholesterol, diabetes, obesity and a sedentary lifestyle. A cardiac stress test involves walking on a treadmill with a pattern of increasing difficulty, while an ECG is taken.