

Stress testing essay

[Health & Medicine](#), [Stress](#)



Stress testing is a procedure done to diagnose coronary artery disease. The procedure works by in a way that information is obtained on how the heart works when someone performs physical exercises. An exercise stress test is usually done to determine how effective a human heart can function during physical exercises. A patient is subjected to some physical mostly peddling an exercise bicycle or walking on a treadmill for a short time of about three minutes. The intensity of the exercise is increased while the reading of the heart performance is recorded. The results are then found and interpretation done (Wenger & Collins, 2005, p. 175).

There are several instances which may lead to a physician's recommendation of this type of stress-test. First when a patient states that he/she experiences some chest pains which sometimes become severe and happen more frequent. Second the stress test may be done on a patient who is recovering from a heart surgery and the progress of his/her recovery is being monitored. The test is also be done on a patient who just had a heart attack so as to determine the steadiness of his/her heart. Patients with diseases such as diabetes which may trigger heart diseases or those with existing heart diseases will have to undergo stress test before beginning a new exercise program. This is to determine the stability of their heart during such exercises so as to ensure they are not subjected to exercises that will strain their hearts and result to heart complications. Stress tests are also done to find the changing rhythm of heartbeat during exercises. This data is usually very helpful to athletes. Finally a patient may have to undergo stress test to diagnose if he/she has failure or a problem with the heart valve. The flow of blood will be noted and compared with the contraction and

contraction and relaxation forces of the heart to determine this.

The two most common ways of used to exercise a person for a stress test are peddling an exercise bicycle and walking on a treadmill. The patient is supposed to pedal or walk at different rates so as to change the rate of the heartbeat. While the patient exercises, his/her heart is measured with an instrument known as electrocardiogram initialized as ECG. It records the change in blood pressure. A patient is expected to continue with the exercise until one of the following conditions is achieved: the targeted heart rate is achieved, the patient shows extreme changes in blood pressure, the patient starts to experience chest pains, the electrocardiogram shows that the patient is not getting adequate oxygen in his/her heart muscles, or the patient gets exhausted and shows symptoms such as leg pain and he/she cannot continue with the exercise. After the exercise, the patient is monitored for ten to fifteen minutes. It may even take longer until the heartbeat returns to normalcy. In most cases, the entire stress test procedure takes approximately 60 minutes.

In preparation of the stress test procedure, the patient is supposed to observe some requirements to ensure the results are not inhibited by several factors. First, the patient is not supposed to smoke, eat, or take alcoholic drinks or beverages that have caffeine for at least 3 hours before taking the test. This is because these substances alter the physiological functioning of the body which include the rate of heart beat. This will in turn give wrong results for the test. Second, a patient is supposed to be in the right outfit. This include putting on comfortable shoes and loose clothes for an ease time during the exercise. Proper outfit also allow smooth flow of blood throughout

the body. Also, if the patient is under medication, there are some medicine he/she should not take on the day of the stress tests. Some drugs have substances that alter the normal functioning of the body. The patient should also not have taken Viagra, Cialis, or Levitra for at least 24 hours to the time of testing.

During the test, electrodes, which are conductive patches are stuck on the patient's chest. These are supposed to record activities of the heart during the exercising. The specific spots where these patches are usually prepared have to be prepared by cleaning. This will mildly burn the patient. A blood pressure cuff is places on the arm of the patient which will measure the change in blood pressure during the exercise. However, before the patient starts to exercise, his/her initial rate of heartbeat and blood pressure are measured so that they be the baseline which changes are recorded from.

When the testing process begins, the patient is supposed to begin by walking slowly if a treadmill is used or pedal softly if an exercise bicycle is used. For a treadmill the pace will slowly be increased until the desired results are achieved. Is an exercise bicycle is used the patient should be asked to increase the pace of peddling with time. The results are recorded for analysis.

After the data has been collected, they are interpreted. The meaning of the results depends on the reason behind the testing. Other factors such as age, medication problems, and the patient's history with his/her heart will greatly determine the test results and interpretation. Sometimes the stress test may give abnormal results. This may be caused by two factors: an abnormal rhythm of the heart during exercise, or blockage in the coronary artery-blood

vessels that supply the heart with blood. These factors cause changes in ECG hence give abnormal results. Abnormal results call for other heart tests such as stress echocardiography, Nuclear Stress test, and Coronary angiography. Stress tests are normally safe procedures. However, some patients may faint, collapse, or have chest pains during the session. Such patients easily recover after being administered first aid. It is rare for a patient to get heart attack or irregular heartbeats which are dangerous. Patients who are most likely to develop such complications are usually known to have weak hearts and are not allowed to take the stress test.

EKG technicians are specially trained individuals who have the skill to handle electrocardiograms, holter monitor, and are in charge of conducting stress testing to patients (Passanisi, 2001, p. 1). Apart from EKG technicians there are other professionals who help physicians to diagnose vascular and cardiovascular diseases by varying out different tests and examinations. These tests are usually non-invasive. An EKG technician makes use of electrocardiograms to measure the small electrical impulses that show the cardiovascular activities. They are responsible for attaching electrodes on arms, chest and legs of the patient. They also manipulate the machines to obtain reading which they then print out for the physician. The physician then interprets the results and makes a diagnosis.

One of the most advanced skill of an EKG technician is holter monitoring. It involves placing electrodes on the chest of the patient and an EKG monitor on his/her belt. The patient then keeps these devices for a whole day while executing his/her normal activities. After about 24 hours, the patient goes back to the health centre where the EKG technician takes the reading from

the monitor for interpretation. The EKG technician also administers the treadmill and exercise bicycle test to patients. This technician first finds the medical history of the patient and determines if he/she is fit and safe to undergo the stress test. The technician then finds the baseline heartbeat rate and blood pressure of the patient. This is the reading of the patient while at rest. The patient begins the exercise and the EKG technician takes note of the change in the physiological functioning of the patient. The technician then instruct the patient on when to change the pace of the exercise and at what rate to change it at.

Some of the common machinery which must be understood by the EKG technician are: the cardiac output monitoring, the cardiac pacemaker generators, the cardiovascular implants, the picture archiving computer system, and the vascular catheters sets. Some of these devices are not used directly by the EKG technician but it is better if they understand how they work since they are closely related to what they deal with.

References

Wenger, N., & Collins, P. (Eds.). (2005). *Women & heart disease*. Taylor & Francis.

Passanisi, C. (2001). *Electrocardiography essentials*. Orange, CA: Career Pub.