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Current Comments

*Report on Blood Clots
during Exercise*



Exercise has **IMPACT**

Exercise both increases and decreases the risk of blood clot formation. People who do not exercise regularly increase their tendency to form clots during exercise. On the other hand, people who exercise regularly increase their ability to dissolve clots. This helps protect active people from exercise-induced heart attacks and is probably one of the reasons that being active decreases the risk of having a heart attack during exertion. Sedentary individuals with cardiovascular disease have a greater increase in thrombus formation during exercise compared to healthy individuals, but this increase is not balanced with a larger increase in fibrinolysis. This can lead to increased risk of stroke or heart attack during exercise for this population.



ADAPTATIONS TO EXERCISE

One potential way to improve fibrinolysis and decrease risk of a thrombus is to engage in a regular aerobic exercise program. Several studies indicate that sedentary individuals have worse fibrinolysis than individuals who exercise. In addition, sedentary individuals who begin a regular exercise program show improvements in fibrinolysis, both at rest and during physical stress. So the best way to decrease risk of having a cardiovascular event during exercise is to exercise regularly! Also, the hormonal environment can change, making it less conducive to increasing muscle mass and strength

Written for ACSM by Christopher J. Womack, Ph.D.

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There may be little one can do about age or genetics, both risk factors for poor fibrinolysis. However, regular exercise, sound nutrition, and smoking cessation can go a long way toward improving fibrinolysis. Because cardiovascular events during exercise relate to both the intensity and duration of exercise, start slowly and conservatively at the beginning of any exercise program. Walking and stationary cycling are two conservative aerobic exercises, done in moderation. Remember to consult your physician and an ACSM-certified fitness professional prior to participating in any exercise program for the best advice to increase your fitness efficiently and safely.



Blood Clots During Exercise

An ACSM Report

Although exercise reduces heart attacks and deaths from heart disease, vigorous exertion can also provoke or "trigger" a heart attack in persons with silent atherosclerosis. This is a rare event. For example, there is only one death during exercise per year for every 18,000 healthy middle-aged men (Siscovick) and only one death per 700,000 hours of exercise (Thompson). These cardiac events, heart attack and sudden death, are most often produced by a blood clot or thrombosis that blocks one of the heart's arteries.

BLOOD COAGULATION AS A RISK FACTOR

Most heart attacks or strokes are associated with a blocked artery. In some cases a blood clot may cause or complete the blockage, leading to a cardiovascular event. People with cardiovascular disease typically have an increased tendency to form blood clots, and a decreased ability to dissolve clots before they can do any damage. The ability to dissolve clots (known as fibrinolysis) has been associated with risk of heart attack, stroke, and overall mortality and is therefore an important but less recognized risk factor. In fact, some persons with fairly advanced atherosclerosis manage to escape having a heart attack or stroke possibly because of their ability to dissolve blood clots. This points out the importance of normalizing this risk factor for all populations.

FACTORS THAT AFFECT BLOOD COAGULATION AND FIBRINOLYSIS

Much like other cardiovascular disease risk factors, impaired fibrinolysis is not only linked with the disease, but with other risk factors. Age, high blood pressure, cholesterol levels, diabetes, smoking, and obesity are all cardiovascular risk factors associated with impaired fibrinolysis. In addition, postmenopausal women have impaired fibrinolysis, partly explaining the increased risk for cardiovascular events in this population. Heavy alcohol consumption can adversely affect fibrinolysis, thereby increasing the likelihood of a blood clot. Finally, much like other cardiovascular disease risk factors, genetics or inherited predisposition has a large influence on fibrinolysis.