

About CÚRAM

Backed by Science Foundation Ireland (SFI), CÚRAM is a world leading SFI research centre with expertise in medical device technology. With ten partner institutes and 32 industry partners, researchers at CÚRAM are designing the next generation of medical devices. CÚRAM's aim is to improve the quality of life for people suffering from chronic illnesses like diabetes, cardiovascular disease and Parkinson's disease.

In support of SFI's 'Agenda 2020' goal of having the most engaged and scientifically informed public, CÚRAM has developed an innovative Education and Public Engagement programme (EPE) called 'Breaking Barriers'. CÚRAM's EPE programme aims to raise awareness of Irish research and increase understanding of preventative behaviours that can reduce the incidence of chronic illnesses.



Contact CÚRAM



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Further resources such as films, flyers
and lesson plans are free to download at:

[www.curamdevices.ie/curam/public-engagement/
teachers-in-residence](http://www.curamdevices.ie/curam/public-engagement/teachers-in-residence)



WESTERN VASCULAR
INSTITUTE



This project is funded by Science Foundation
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Strength in Science



The Effects of Exercise on Your Heart and Blood Vessels



SFI Research Centre for Medical Devices

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? What is the 'Strength in Science' Project?

Physical inactivity is one of the leading risk factors for poor health and is now identified by the World Health Organization (WHO) as the fourth leading risk factor for global mortality.

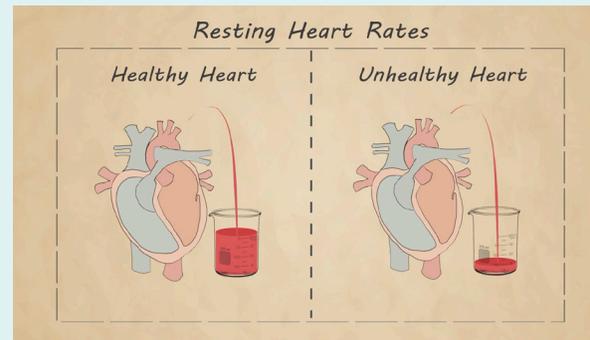
In Ireland, physical inactivity is thought to be responsible for 8.8% of the burden of disease from coronary artery disease and 10.9% of type 2 diabetes. The 'Strength in Science' project aims to develop cross-curricular resources that are linked with both Science and Physical Education curricula that will increase students' interest in both learning science and participating in exercise.

Photo: Ms. Niamh Hynes



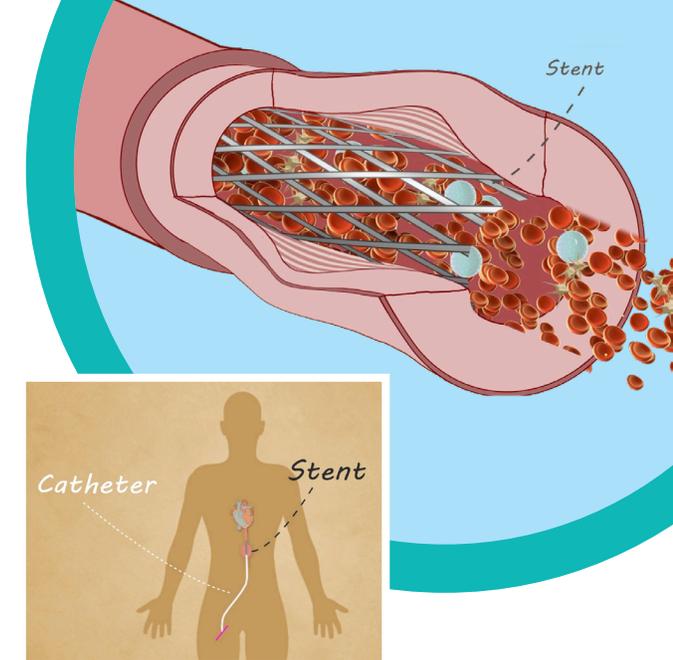
? How Does Exercise Affect Heart and Blood Vessels?

Your blood vessels transport red blood cells with oxygen to important organs in your body. The lining of these blood vessels, known as your endothelium, can be damaged when your blood pressure is too high. This higher force causes what is called 'shear stress' which can damage the delicate insides of the blood vessels. The resulting tears to the lining can weaken the blood vessels, or can become pockets where plaque can start to build. If a blood vessel is weakened too much, a bulge can form called an aneurysm. If an aneurysm bursts it can cause serious internal bleeding.



Exercise makes your heart stronger to pump more blood with less effort. Exercise also signals the release of nitric oxide by the cells lining the insides of the blood vessels (endothelial cells). This causes the cells that form the blood vessel walls (smooth muscle cells) to stay relaxed. The relaxed smooth muscle cells widen your blood vessels which lowers your blood pressure.

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? How are Irish Researchers Developing Treatments for Diseases of the Blood Vessels?

Ms. Niamh Hynes is a vascular surgeon who is developing new ways to image blood vessels in order to detect and treat vascular diseases. The term 'vascular' refers to the blood vessels outside of the heart and brain. A vascular surgeon, like Ms. Hynes, is like a plumber for the human body! A patient with an aneurysm can be treated by reinforcing the blood vessel wall with a medical device called a stent. Ms. Hynes and her research group are developing a new imaging technique to measure the ability of a patient's blood vessels to expand and contract with changes in pressure. This technique will help surgeons determine what stent is the best fit to use based on a patient's individual needs.