About CÚRAM

Backed by Research Ireland, CÚRAM is a world leading research centre with expertise in medical device technology. With eleven 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 Research Ireland's 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.

Photo: Dr. Jill McMahon (left) and Enrico Bagnoli (right)

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Further resources such as films, flyers and lesson plan booklets are free to download at: https://curamdevices.ie/public-engagement/teachers

This project is funded by Research Ireland

Strength in Science

The Effects of Exercise on Your Brain

Research Ireland Centre for Medical Devices

www.curamdevices.ie

Taighde Éireann Research Ireland

What is the 'Strength in Science' Project?

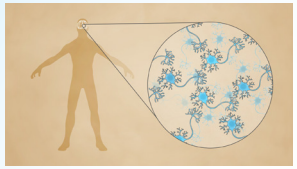
Physical inactivity is one of the leading risk factors for poor health and is now identified by the World Health Organization (WHO) as the fourth leading risk factor for global mortality.

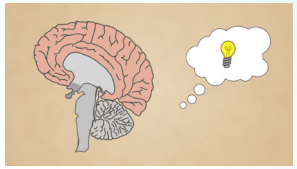
In Ireland, physical inactivity is thought to be responsible for 8.8% of the burden of disease from coronary artery disease, and 10.9% of type 2 diabetes. The 'Strength in Science' project aims to develop cross-curricular resources that are linked with both Science and Physical Education curricula that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

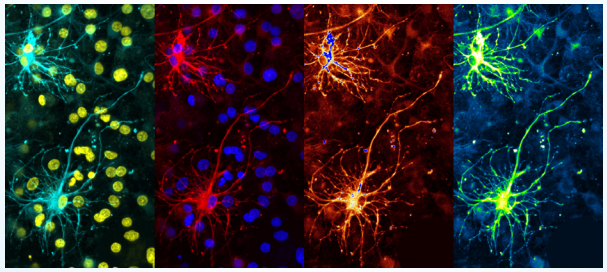
Photo: Dr. Jill McMahon (left) and Dr. Una FitzGerald (right)

How Does Exercise Affect Your Brain?

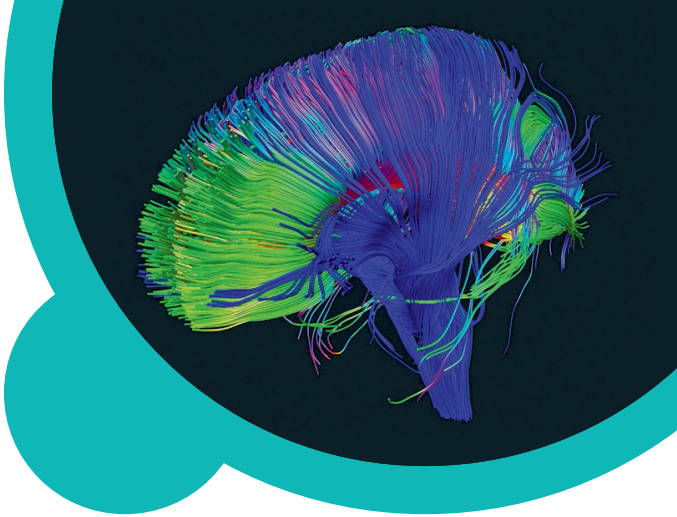
When you cycle a bike, perform a bicep curl, or go for a walk, your body is performing a movement pattern it is familiar with. The neural pathways in your brain involved in performing these movements already exist and are being reinforced through repetition. You are more or less 'going through the motions' without having to mentally concentrate on the mechanics of each step.







When dancing, you are forced to process and perform new movement patterns. This requires greater mental focus and the creation of new neural pathways in the brain. A brain with a more complex and varied neural network is stronger and may age more slowly later in life. If you don't like dancing, you can challenge your brain with unfamiliar exercise techniques instead. This will stimulate your brain to form new neural pathways also. For example, try kicking a ball with your less dominant foot, or swinging a racket or hurl with your less dominant hand!



How are Irish Researchers Developing Treatments for Diseases of the Brain?

Dr. Una FitzGerald and Dr. Jill McMahon at University of Galway are developing new therapies to treat neurodegenerative diseases such as Multiple Sclerosis and Parkinson's disease. Dr. FitzGerald's research group is collaborating with universities and companies all over Europe as part of the EU-funded BrainMatTrain project which is developing a biomaterial-based medical device to treat Parkinson's disease. Researchers in the BrainMatTrain project are studying what happens in the brain of someone who has Parkinson's disease. They are also testing a biomaterial to deliver medicine to the brain as a treatment for the disease. The biomaterial used in the project is a collagen gel which is soft and squishy just like the brain. Medicine is put inside the gel to help new neurons grow in the brain.