



Magnetic Resonance Imaging (MRI)

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Talk Transcript

Hi, I'm **Ainslie Johnstone** and I am a post-doctoral researcher in the **ARM lab** at UCL. Today I'm going to tell you a bit about **MRI**, **how it works** and **what to expect** if you were to come in for an **MRI scan**.

MRI

MRI stands for **Magnetic Resonance Imaging**. We can use MRI for a few different purposes: it can **create a 3D image** of your **brain** - a bit like taking lots of photographs, which can be used to **see parts** of the **brain** that might have been **damaged** by a **stroke**. We can also use **MRI to measure brain activity**, either **at rest** or while you **perform different tasks**. This can be used to see **how brain activity differs** after a **stroke**, or whether it **changes** with **rehabilitation**.

The study that I am currently working on is **combining MRI** with a type of **non-invasive electrical brain stimulation**, which is discussed in another [talk from our lab](#). I'm using **MRI to map** out how the **electrical stimulation** is moving across the **brain**, and whether this looks **different** in **people** who've had **different types** of **strokes**.

You might be interested in how MRI works.

The **MRI scanner** is a **giant circular magnet** – so strong that it could lift the weight of a double decker bus. Then there are some **smaller magnets** inside. As you may know, your **body** and **brain** are made up of **60% water**, and these **water molecules** are constantly **rotating** around in a **random way**. But when you **come close** to a **magnet** as **strong** as the **MRI scanner** these **water molecules change** how **they rotate**, and the **MRI scanner** can **measure** this **change**.

Different types of **tissues** in your **body** have **different amounts** of **water**, for example **bone** has very **little**, **fat** a little **bit more**, and **blood** has **a lot**. That is why these **different tissues** show up **differently** on a **MRI image**.

If the idea of changing how the water molecules inside your body are moving around sounds strange or a little scary – don't worry. **MRI** is **completely safe**, it **doesn't affect** any of the **functions** of your **body** or **brain**, and you **don't feel** anything. **MRI** also **doesn't** use any **ionising radiation** like an **X-ray** or a **CAT scan**.

What happens in an MRI research session?

The **MRI scanner** is located at **12 Queen Square**, at the **Wellcome Centre for Human Neuroimaging** in **London**.

If you were to participate in **research**, you'd be met here by a researcher, who would take you downstairs to the **scanning room**. The building is equipped with **elevators**, so **everyone** can **access** the **scanning room**.

Once here, you'd be asked to **remove all metal**, things like jewellery or clothes with metallic buttons or clasps, and you might be asked to **change into scrubs**. If you have any metal inside your body then you might not be able to take part. You would then be taken through to the **scan room**, where you would **lie** on the **scanner bed**. It's very important to make yourself comfortable on the bed as the **participant** needs to **stay very still** during the **recording**.

The **bed** would then be **moved** into position inside **MRI scanner**. Your **head** and **shoulders** would be **inside** the **doughnut shaped hole**. It's quite a **tight squeeze** – so if you get **claustrophobic** then MRI might not be for you. The **MRI machine** is very **noisy**, so you would be given **ear-plugs** or **ear defenders** to protect you ears and make you more comfortable.

During an **MRI scan**, sometimes you just need to **lie still** and **rest**; but other times there might be a **task to do**. In my **study** you would also have some **non-invasive brain stimulation** while you were in the **scanner**. You would **always know** in **advance** what was going to **happen** on the day of the **scan**, but the **researcher** would go over all the **instructions** again **on the day**, and would **talk** to you over **intercom** while you were in the **scanner**.

If you are interested in taking part in MRI research, you can visit our website or the centre website, using the links below, or feel free to drop us an email.

Glossary

CAT scan: a **computerised tomography scan**, uses **x-ray** and a **computer** to create **images** of the inside of a part of the **body**.

Magnetic Resonance Imaging (MRI) : a type of **scan** that uses **strong magnets** to produce **images** of the inside of a part of the **body**.

Non-invasive brain stimulation: a set of **techniques** and **technologies** that have the ability to **change brain activity** without any invasive or surgical procedures

X-ray: a scan that uses **radiation** to create an **image** of the inside of a part of the **body**.



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