

The Scientists

A wide range of healthcare professionals are involved in the prescription of special seating to meet wheelchair users' needs.

Clinical Scientists assess the user and design bespoke parts based on their needs. They are responsible for ensuring the end product is safely designed and manufactured.

Rehabilitation Engineers manufacture and modify seats and wheelchairs.

Wheelchair Technologists are responsible for repairing and maintaining wheelchairs.

Occupational Therapists and Physiotherapists provide clinical expertise at appointments.



IPEM Institute of Physics and
Engineering in Medicine

This series of leaflets highlights the science and the scientists behind some widely used medical techniques. They are produced by the Institute of Physics and Engineering in Medicine. To find out more about Medical Physics or Biomedical Engineering, or to request free leaflets or posters in this series, contact us:

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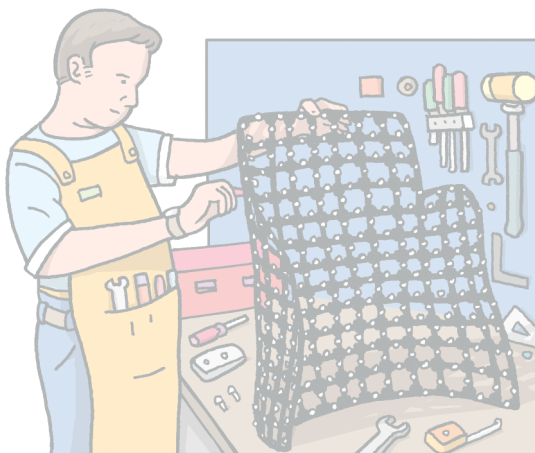
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The techniques described in this leaflet are only suitable in certain cases and some are not yet widely available. If you need customised contoured seating, your local team will advise you.

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The Science & The Scientists

Special seating for wheelchair users

Specialised seating is provided for wheelchair users who need additional support to improve their sitting posture, comfort and mobility. There are many off-the-shelf support systems a wheelchair user may need but here we look at one solution – a customised contoured seat.



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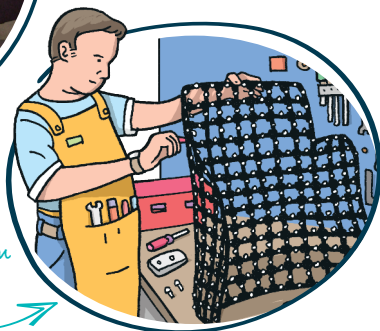
The specialised seating process begins with an assessment of the user's needs. The appointment is conducted by a Clinical Scientist and / or a Senior Rehabilitation Engineer with a Physiotherapist or Occupational Therapist.

At the assessment the user's daily activities and goals are discussed. A physical examination of the user's body and their posture is carried out to understand the biomechanics behind the user's sitting posture. All of this information is used to determine the appropriate type of special seating they need. Custom contoured seating may be recommended to support a client with a complex posture, when off-the-shelf systems do not meet their needs.

If a custom contoured seat is required, it can be made from a range of materials – foam, plastic or metal links – and the process for each type is similar. Firstly, an impression of the user's desired posture in their best sitting position is captured using a casting bag and this is then scanned into a computer for manufacture.



Scientist using a casting bag to take an impression of the client



Engineer making custom contoured seating using metal links

To make the customised contoured seat out of foam, the scan is sent to a carving machine to carve an impression into foam to create the seat. The wheelchair user will be invited back into the clinic to ensure the foam fits them well. Once finalised, the foam is sealed to make it waterproof, a fabric cover is made for hygiene and appearance and the seat is mounted on a wheelchair base ready for use.

When making the seat from moulded plastic or metal links, the cast might not be scanned. Instead, the links are placed over the plaster cast and adjusted to match the user's body shape.

Whichever method is used the end product directly matches, and therefore supports, the wheelchair user's body shape. This should result in improved pressure distribution, posture and comfort.

