

Gait analysis – information for parents and carers

This leaflet explains what is involved in a gait analysis appointment at the One Small Step Gait Laboratory at Guy's Hospital. If you have any questions or concerns, please contact us (details at the end of this leaflet).

Gait analysis

Gait analysis is the measurement of how people move when walking. At a gait analysis appointment we record the movement pattern of your child's legs using a video camera and motion capture system while they walk across a large (10 metre) room. This data is then used to create a 3D computer model of their legs. We also measure how flexible their legs are by gently moving them and measuring the angles.

Benefits of gait analysis

We are taking these measurements so that we can understand how your child walks. Walking requires precise and well-timed movement of the legs. One step normally takes less than a second, so it is not possible to watch the hips, knees and ankles on both sides at the same time. Gait analysis gives us information about all of these movements in 3D. All of this information is put together into a report that will allow the doctors, physiotherapists, or surgeons to make decisions about your child's medical treatment.

How gait analysis works

Your child will need to come to the One Small Step Gait Laboratory at Guy's Hospital, with 1 parent or guardian. Your child will have their walking analysed for up to 2 hours. We will ask your child to change into shorts, and to take off their shoes and socks. The appointment has 3 parts: a clinical examination, recording of your child walking, and asking questions about your child's medical history and walking ability.

Part A: Clinical examination

We will measure your child's height and weight, and make a selection of lower limb measurements. We will also measure the range of movement of their hips, knees, and ankles using a goniometer, which is a small plastic tool similar to a protractor, as shown being used to measure the hip in picture 1. We might also use ultrasound to take images of your child's muscles.



Picture 1: Measurement of hip range of motion using a goniometer.

Part B: Recording of walking

We will record the movement pattern of your child's legs while they are standing and while they walk along a 10-metre path in the gait laboratory (picture 2). We will attach small plastic reflective balls to the skin on their feet, legs, and around their waist using double-sided sticky tape. Our motion capture cameras can see how these balls move, recording your child's movements in 3D. Depending on your child's diagnosis, we may also stick some small sensors on their legs that record the electrical signals of their muscles. This tells us when their body is turning their muscles on and off. You can see how this will look in pictures 3 and 4.

When all of the plastic balls and sensors are in place, your child will be asked to walk at their natural walking speed for 10 metres in the room (picture 2). In total they will be asked to walk about 100 metres, with the option of short rest breaks if needed. We will then remove the plastic balls and sensors. This might be a little uncomfortable but they are less sticky than plasters.



Picture 2: The gait laboratory.



Picture 3: The balls and sensors



Picture 4: Close-up of the balls and sensors.

Part C: Questions about your child's walking

We will ask you some questions and talk to you about any concerns you have about your child's walking. We will also ask about any interventions your child has had on their legs.

What to bring

Please bring any walking aids or ankle foot orthosis (AFOs) (splints) your child uses to walk. Their legs and trunk need to be seen clearly by the cameras so ideal clothing for the appointment is a t-shirt and loose shorts. Part of the appointment is done with them wearing no shoes or socks.

After the appointment

The results of gait analysis are not available on the same day. After the information has been collected, it is analysed and discussed by the gait laboratory team. Recommendations are made on the basis of the analysis. These can include continuation of the current treatment programme or the development of a new programme.

The completed report will be sent to the professional that referred your child within 6 weeks of the appointment. They will discuss the results with you. Any suggestions in the report are only recommendations. The next steps in your child's care will depend on your discussion with the referring professional. No decisions about treatment will be made without discussing them with you or without your agreement.

We will not send you a copy of your child's report. If you would like a copy of the report, you will need to ask the professional that referred your child.

Coronavirus (COVID-19)

Due to the pandemic, we have made changes to our service. You and your child will need to clean your hands with alcohol gel when you come into the department.

Visit our **website** www.guysandstthomas.nhs.uk/coronavirus-covid-19, for the latest information about coronavirus and the precautions we are taking.

Visit the NHS **website** www.nhs.uk/coronavirus, for all the latest information.

If your child cannot come to their appointment

If you need to change this appointment, please contact us, **phone** 020 7188 2476. Failing to attend means we are not using our staff effectively and other patients are waiting longer. If you fail to attend without telling us at least 24 hours before the appointment, this will be recorded as a 'did not attend'. Your child will not be sent another appointment and will be discharged back to the professional that referred them. **This policy does not apply for people with coronavirus in their household. Important: please do not come for an appointment if you, your child, or anyone in your household have coronavirus symptoms.**

More support and information

We are a Clinical Movement Analysis Society (CMAS) accredited laboratory. More information about our service and our statement of purpose can be found on our **website** www.evelinalondon.nhs.uk/our-services/hospital/gait-laboratory/patient and on the CMAS **website** www.cmasuki.org/laboratories.

Contact us

If you would like more information about your appointment or have any questions, please contact The One Small Step Gait Laboratory, **phone** 020 7188 0135, Monday to Wednesday. If no one can answer your call, please leave a message including your name and telephone number and someone will call you back as soon as possible.

The Gait Laboratory is in the basement of **Guy's Hospital**, Southwark Wing, by lift C and stairwell C.

For more information on conditions, procedures, treatments and services offered at our hospitals, please visit, **web** www.guysandstthomas.nhs.uk/leaflets

Leaflet number: 4578B/VER4

Date published: May 2022

Review date: May 2025

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A list of sources is available on request

The way you walk

This leaflet explains a gait analysis appointment to children under 10 years. If you have any questions, please speak to your parent/guardian or a doctor or nurse caring for you.

What is gait analysis?

'Gait' is another way of saying 'the way you walk', and in a gait analysis appointment we record how you move your legs while walking, using video cameras.

What we do

First, we measure your height and weight. Using a small plastic tool like a protractor we will measure how bendy your legs are, like in picture 1.

We will put some small, plastic, shiny balls on your feet, legs, and tummy using double-sided sticky tape. While you are wearing them, we will ask you to walk up and down the room. We might also stick some small sensors on your legs that listen to your muscles. This tells us when your body is turning your muscles on and off. You can see how this will look in picture 2.

After you have done the walking we will remove the balls and sensors. The appointment is then finished and you can leave the hospital. We'll write a report about your walking and send it to your doctor so that they can think about how best to help you.



Picture 1: Someone having their legs measured to see how bendy they are



Picture 2: Close up of the shiny balls and sensors