



Understanding neuromuscular physiotherapy assessments and reports

This leaflet has been designed to help you understand what we do in the physiotherapy assessment and what is written in the follow-up report. Health professionals can talk and write in what appears to be a foreign language; this booklet should help you recognise some of the medical terms used and enable you to understand achievements and changes over time.

Strength Testing

There are two ways the physiotherapist may measure the strength of muscles. These are called manual testing (MRC scale) and Myometry.

Manual testing

This is the standardised way of testing that was produced by the Medical Research Council (MRC) in the 1940's. It is a subjective and descriptive scale graded from 0 to 5 – so not entirely precise. The numbers describe how strong a movement is, this is not an exact number, such as pounds or kilograms of force.

- 0 No muscle movement at all
- 1 A twitch of the muscle – only a very small amount of muscle power but not enough to move the joint/ limb
- 2 Movement with the effect of gravity taken away. This is a very weak movement but enough to move a limb out to the side when lying down.
- 3 The muscle is strong enough to move the joint/ limb against gravity; lifting the leg or arm up, but the muscle is not strong enough against resistance.
- 4 The muscle is strong enough to move the limb or joint against resistance
- 5 This is the full normal power expected for the child's age.

* Some departments including ours will use a '+' and '-' alongside the number above to describe the power

Myometry

Some children will be tested using a myometer. This is a small machine that measures resistance. It gives measurements in Newtons. We use it mostly to measure grip strength. In a few children we may also measure knees, hips, elbows and shoulders. It is very useful being more specific than MRC, it can measure smaller changes over time.

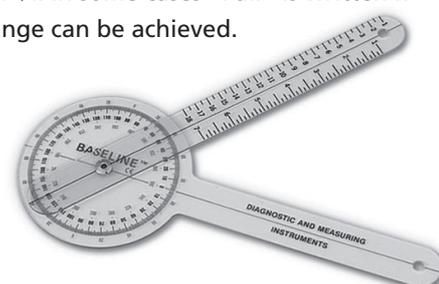


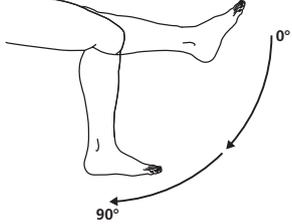
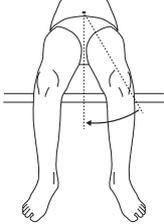
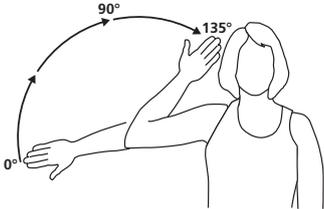
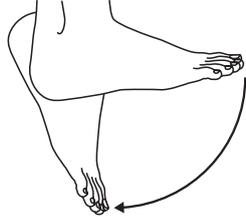
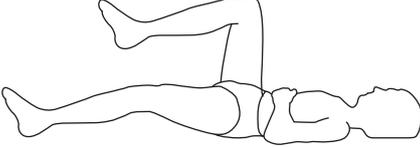
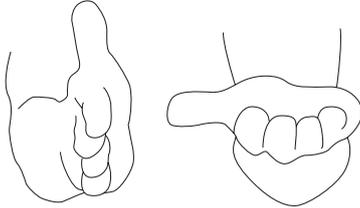
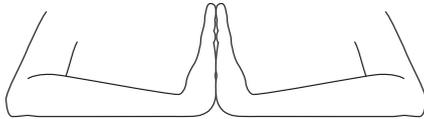
Joint range testing

It is important to measure joint range as tight joints, and over bendy joints, can greatly interfere with function and mobility.

To understand how tight a joint is, you need to know what is normal. Some people are naturally bendy while others are stiffer but are all "normal". A joint range with a plus sign (+) in front means the joint is over bendy. We measure joint range in degrees using a goniometer.

For some ranges we write "tight end of range" or tight, or talk about reduction of the range, by, for example 1/2 or 1/4. In some cases "Full" is written if the whole range can be achieved.



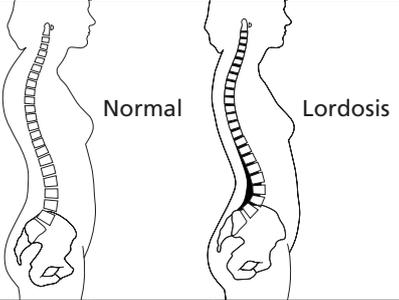
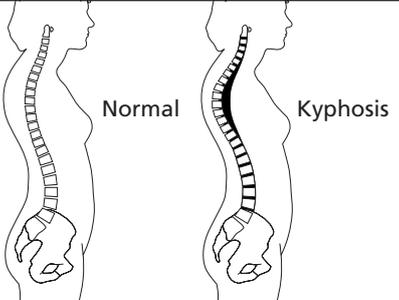
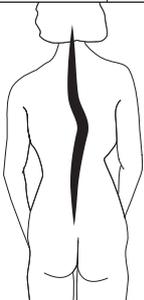
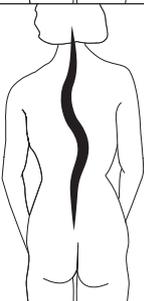
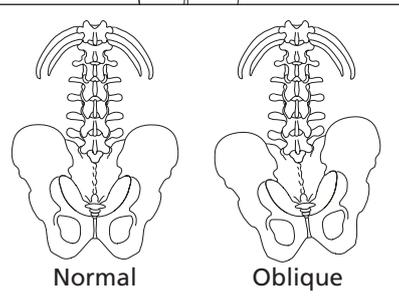
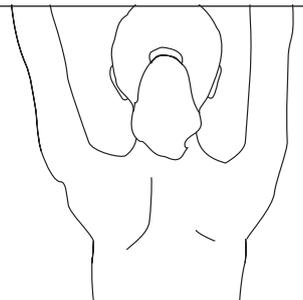
<p>Hip flexion contracture.</p>	<p>Normal = 0 (no contracture). Anything over 0 means the joint is tight e.g. 20°.</p>	
<p>Knee flexion contracture.</p>	<p>Normal = 0. Anything over 0 is tight. We may measure knee valgus, (knock-knees).</p>	
<p>Ilio-tibial band (ITB).</p>	<p>Normal = 20. Anything over 20 is tight.</p>	
<p>Elbow flexion contracture.</p>	<p>Normal is 0. Occasionally we will measure the amount of flexion (how much it bends).</p>	
<p>Ankle – dorsiflexion – toes up. The amount a foot moves is measured from a right angle.</p>	<p>Normal range is about 20°. If the foot does not get to a right angle and the toes point down, it will be minus a number of degrees.</p>	
<p>Popliteal angle. This is a measure of hamstring length. Note: hamstring length varies with age.</p>	<p>Usual length for a child under three is less than 20°. After this, it varies and we only become worried that the hamstrings are tight if they are over 50° after about nine years old.</p>	
<p>Forearm Supination.</p>	<p>This is turning the hand palm up and we don't measure this in degrees but as the amount of range.</p>	
<p>Fingers.</p>	<p>We talk about the fingers being tight if they do not straighten when the hand is up.</p>	

These are the joints most commonly measured but if your child has a condition where there is a lot of joint tightness, more ranges will be written in the table on page 3.

Posture

Spinal posture

There are a number of medical terms that are used to describe different shapes of the spine and neck:

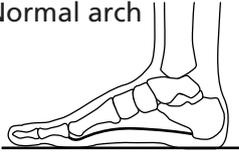
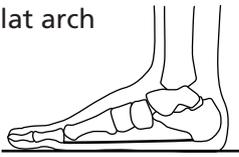
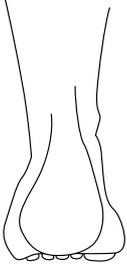
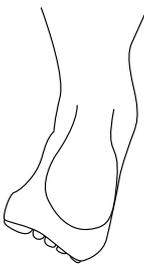
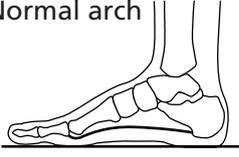
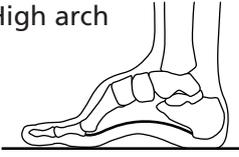
<p>Lordosis</p>	<p>An increased forward curve, often in the lower back (lumbar spine).</p>	
<p>Kyphosis</p>	<p>A backwards curve, often in the upper back (thoracic spine).</p>	
<p>C-shaped scoliosis</p>	<p>A single sideways curve of the spine.</p>	
<p>S-shaped scoliosis</p>	<p>A double sideways curve to the spine.</p>	
<p>Pelvic Obliquity</p>	<p>A sideways tilted pelvis.</p>	
<p>Scapula winging</p>	<p>The shoulder blades are prominent as they do not rest flat on the rib cage.</p>	

The report may mention the symmetry of the waist contours, ribs and spinal muscles.

It may say the ribs are more prominent on one side of the back – this is described as posterior rib rotation.

Foot posture

Many children with neuromuscular disorders have altered foot posture.

<p>Flat foot</p>	<p>No arch in the middle of the foot. The entire sole of the foot rests flat on the ground. Sometimes the foot may arch when the child stands on their toes.</p>	<p>Normal arch </p> <p>Flat arch </p>
<p>Inverted/everted foot</p>	<p>The foot tilts and more weight goes through one side of the foot. Inverted is more weight is on the outside. Everted is more on the inside.</p>	<p> </p> <p>Normal left Everted right</p>
<p>Pes Cavus</p>	<p>The foot has a very high arch.</p>	<p>Normal arch </p> <p>High arch </p>

Function

We use functional scales to look at activities the children can manage. There are different scales for different conditions, ages and abilities. A description of new skills learnt or skills no longer able to do follows. If a child cannot score because they are not old enough, then we compare the score expected for their age.

Commonly used scales are:

- North Star
- Hammersmith Functional Scale
- SMA (II or III) scale
- Scales to measure activities of daily living

Timed tests

The physiotherapist may measure how fast your child can stand up from the floor. How quickly they can walk 10m, and in some cases they will do a six minute walk test (this measures how far they can walk in six minutes). The results of the timed tests will depend on age and strength.

Mobility

Gait pattern (walking)

For children who can walk, we want to know how far and how fast. We observe what their feet, knees and hips do and the gait pattern used. Do they swing their arms or lean over with their body. Do they walk on their toes? Do they fall?

If possible we will want to see them run and walk in their splints or insoles if they wear them.

Children with limited independent mobility

If a child cannot walk or can take only a few steps because they are too young or too weak, we want to know how they move around both in the house and outside. They may crawl, bottom shuffle or be carried indoors and use a buggy or wheelchair outdoors. All this is important to know. If there are problems with mobility we will try to help but assessments for wheelchairs, mobility equipment and changes to the house must be done locally.

Glossary

Flexion	a bending movement
Extension	movement to straighten a joint
Abduction	movement away from the body or mid-line
Adduction	movement towards the body or mid-line
Dorsiflexors	ankle muscles that lift the foot up
Plantarflexors	ankle muscles that point the foot down
Inversion	movement that turns the soles of the feet inwards
Eversion	movement that turns the soles of the feet outwards
Ilio-tibial band (ITB)	a band of tissue on the outside of the thigh between the hip and knee.
Tendo-achilles (TA)	the big tendon at the back of the ankle.
Supination	turning the hand palm up
Pronation	turning the hand palm down
Gowers-sign	when a child needs to push on their thighs to stand from the floor – this indicates weak hip muscles
Dystrophy	disorders of muscle where the actual muscle fibres can be damaged
Myopathy	a disorder where the basic structure of the muscle is disrupted

For further information or explanation of your report please call 020 7405 9200 ext 0099