Home Exercise Programme for Pre-Operative Selective Dorsal Rhizotomy Candidates.
Pre-Operative Exercise Programme for Selective Dorsal Rhizotomy Candidates

It is very important that you discuss any plans to have this operation as early as possible with your local doctor and physiotherapist to ensure they will be able to support you and your child after the surgery. The team at The Leeds Teaching Hospitals NHS Trust will also contact your local team to discuss the plan for surgery and advise them on the post-operative recommendations for your child. There are no rules regarding the frequency you should be seen by a trained physiotherapist and local teams may not have the capacity to increase the frequency that they see your child. However, intensive rehabilitation is essential both before and after the surgery to maximize the outcome. It is therefore expected that parents/carers carry out the exercise programme or appropriate activity on a daily basis.

Before your child attends the hospital for their surgery it is important to continue with their regular stretching programme and splint regime.

The surgery will reduce the spasticity (stiffness) in their legs but there will be some muscle weakness immediately following surgery. This exercise programme will help to strengthen the muscles that will be weak and familiarise your child with the post-operative programme.

The weakness post surgery will mean your child may not be able to perform some of the movement tasks that they could pre-operatively. Their walking may appear different or they may require some form of walking aid where they didn’t previously. This is normal and will improve as your child grows stronger. It is expected that your child will return to their pre-operative level of function within the first month however, this will vary from child to child and their endurance levels may take a lot longer to improve.

The more strengthening activities a child does, the quicker they will improve. The more a child walks the stronger they will get.
Pre-Operative Home Exercise Programme for Selective Dorsal Rhizotomy Candidates.

The following exercises should be carried out twice daily.

**Bridging while rolling a ball under the body**

**Client's aim**
To strengthen the muscles at the back of your hip.

**Client's instructions**
Position your child lying on their back with their knees bent up and feet flat. Ask them to practice lifting their bottom up and roll a ball underneath them from one side to the other.

**Progressions and variations**
1. Perform bridging only. 2. Use a small ball. 3. Use a large ball. 4. Hold one leg in the air while maintaining the bridge position.

**Knee extensor strengthening in supine without weights**

**Client's aim**
To strengthen the muscles at the front of your thigh.

**Client's instructions**
Position your child lying on their back with a rolled towel under their knee. Start with their knee bent. Finish with their knee straight. Ensure they pull their foot up towards their knee throughout the exercise ie, points to the ceiling.

**Progressions and variations**
More advanced: add ankle weights.

**Hip abductor/adductor strengthening in supine without weights**

**Client's aim**
To strengthen the muscles on the outside and the inside of your hip.

**Client's instructions**
Position your child lying on their back. Start with their legs together. Move one leg away from the other. Ensure that their foot points to the ceiling. Move the leg back towards the other.

**Progressions and variations**
Less advanced: Bend hip and knees up with feet flat on the bed. Move knees away from each other. Move knees back towards each other. More advanced: Use your hand to resist the movement (this can be done with legs straight or bent). Variation: get your child to squeeze a ball between their knees.
Knee flexor strengthening in prone without weights

**Client's aim**
To strengthen the muscles at the back of your thigh.

**Client's instructions**
Position your child lying on their tummy. Start with their knee straight. Finish with their knee bent.

**Progressions and variations**
More advanced: Put a squeezy toy/ball on your child's bottom and encourage them to squeeze it with their heel.

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Ankle dorsiflexor strengthening in sitting without weights

**Client's aim**
To strengthen the muscles at the front of your ankle.

**Client's instructions**
Position your child sitting with their feet together in front of them. Start with their feet flat on the floor. Ask them to lift their toes up. Ensure that they keep their heels on the ground.

**Progressions and variations**
Less advanced: 1. Position the feet further forwards. 2. Place a bandage around the knees to hold them together. More advanced: 1. Position the feet further back

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Sitting on a moving lap

**Client's aim**
To strengthen the muscles in the trunk (body).

**Client's instructions**
Position the child sitting forward on your lap so they are not leaning against you. Support at your childs’ pelvis/hips. Instruct and encourage the child to sit upright while moving your knees up and down alternately.

**Progressions and variations**
Sit to stand with assistance from a carer’s lap

Client's aim
To strengthen the leg muscles.

Client's instructions
Position the child sitting on your lap while you kneel behind them. Instruct and encourage the child to stand up to and reach forward or place an object on the table. Provide assistance as required.

Progressions and variations

4 Point kneeling with leg lift.

Client's aim
To strengthen shoulder and hip muscles.

Client's instructions
Position your child on all fours on the floor. Ask your child to lift one leg out behind them. Ensure that their back stays flat at all times.

Progressions and variations

Reaching in kneeling using one arm

Client's aim
To strengthen muscles in hips and body.

Client's instructions
Position your child kneeling with objects placed at arms-length in front of them. Practice reaching up for an object and place it down on the floor.

Progressions and variations
Less advanced: 1. Position the objects lower down and closer. 2. Use larger objects. More advanced: 1. Position the objects higher up and further away. 2. Use smaller objects. Progress to child being on one knee and one foot up (half kneeling).

Repeat 10 times alternately.
Moving sideways in kneeling with assistance

Client's aim
To strengthen hip and body muscles.

Client's instructions
Position the child in kneeling with their hands resting on a table in front of them. Instruct and encourage your child to move sideways on their knees while keeping their hips straight. Provide assistance as required.

Progressions and variations

Squatting against a wall

Client's aim
To strengthen the muscles that straighten your leg and improve your ability to stand or walk.

Client's instructions
Position your child standing with their back against a wall and both feet a little away from the wall. Ask them to practice bending and straightening their knees to slide their back up and down the wall. Ensure that their feet and knees are held together, their knees do not lock back past straight and both of their feet point forwards.

Progressions and variations

Stepping sideways with assistance

Client's aim
To strengthen hip muscles and improve the ability to walk.

Client's instructions
Position the child in standing with their hands resting on your hands or furniture. Instruct and encourage the child to step sideways while holding hands or furniture.

Repeat 10 steps each way.