

Pre-op Exercise Booklet for patients having a Selective Dorsal Rhizotomy (SDR)



It is important that your child has a pre-operative strengthening and stretching programme in place, and is regularly practising it, before they have their SDR procedure. This may take the form of formal exercise, or it may be activity related eg. Walking practise, bike riding, swimming. It is suggested that levels of activity begin to increase at least 6 weeks before their surgery

This pre-operative programme should be discussed with your local physiotherapist as you may already be practising some of these exercises with your child. Your local physiotherapist may want to modify some of these exercises, as they know your child, and what their specific therapy needs are. Therefore this booklet should serve only as suggestions, and is not prescriptive. Agreement regarding type and number of each exercise is important, as well as whether it is appropriate to introduce weight resistance

SDR surgery will help to reduce the spasticity (stiffness) in your child's legs, and there will be some muscle weakness following the surgery. A pre-operative programme will help to strengthen the muscles that will be weak and familiarise your child with the post-operative exercise programme

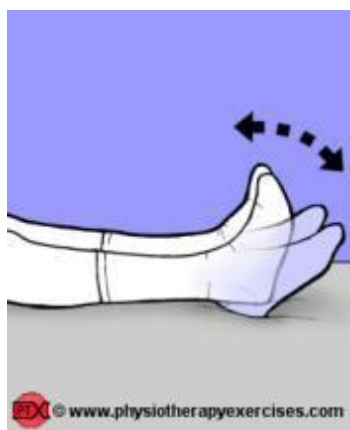
Weakness in the post-operative period may mean that your child may not be able to perform movement tasks that they could pre-operatively. Their walking may appear different, and their type of, or need for, a walking aid may change. This is normal and will improve as your child becomes stronger.

The more strengthening, and activity, your child does, the quicker they will improve. There are no rules regarding the frequency that your child will need to see a trained physiotherapist, but it is important that your child carries out either a formal exercise programme, or a physical activity, each day, in preparation for surgery, and afterwards, in order to maximise the outcome

Discuss with your local physiotherapist, about their therapy programme and physical activity to ensure it is appropriate for your child

Some children will benefit from stretching exercises, for muscles which are tight. These may include the hip flexors muscles (at the front of the hip), hamstring muscles (in the back of the leg) or calf muscles. If your physiotherapist thinks that your child needs these exercises it is important that they demonstrate them to you so that your positioning and stretch is correct

Ankle dorsiflexor/plantarflexor strengthening in supine without weights



Therapist's aim

To strengthen the ankle dorsiflexors/plantarflexors.

Client's aim

To strengthen your ankle muscles.

Therapist's instructions

Position the patient in supine. Instruct the patient to dorsiflex and plantarflex their ankle.

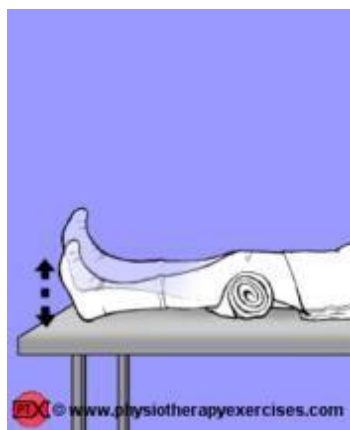
Client's instructions

Position yourself lying on your back. Start with your toes pointing down. Finish with your toes pointing up.

Progressions and variations

More advanced: 1. Progress using strength training principles.

Knee extensor strengthening in supine without weights



Therapist's aim

To strengthen the knee extensors.

Client's aim

To strengthen the muscles at the front of your thigh.

Therapist's instructions

Position the patient in supine or long sitting with a rolled towel under their knee. Instruct the patient to extend their knee.

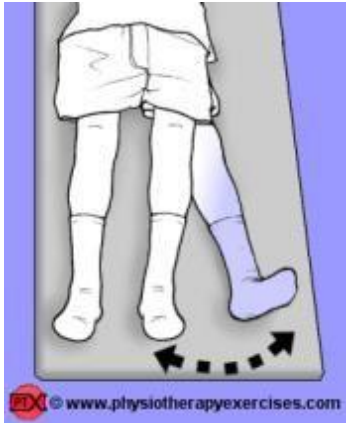
Client's instructions

Position yourself lying on your back with a rolled towel under your knee. Start with your knee bent. Finish with your knee straight.

Progressions and variations

More advanced: 1. Progress using strength training principles.

Hip abductor/adductor strengthening in supine without weights



Therapist's aim

To strengthen the hip abductors and adductors.

Client's aim

To strengthen the muscles at the side and on the inside of your hip.

Therapist's instructions

Position the patient in supine with their legs adducted. Instruct the patient to abduct and adduct their leg. Ensure that the foot remains vertical.

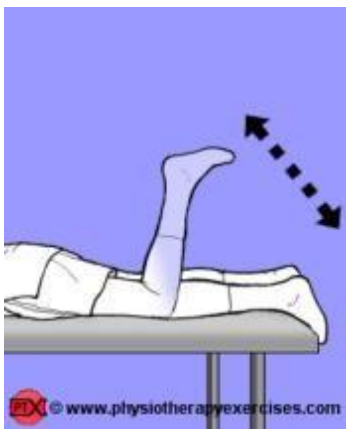
Client's instructions

Position yourself lying on your back. Start with your leg parallel to your other leg. Finish with your leg out to the side. Ensure that your foot is kept vertical.

Progressions and variations

More advanced: 1. Progress using strength training principles.

Knee flexor strengthening in prone without weights



Therapist's aim

To strengthen the knee flexors.

Client's aim

To strengthen the muscles at the back of your thigh.

Therapist's instructions

Position the patient in prone. Instruct the patient to flex their knee.

Client's instructions

Position yourself lying on your stomach. Start with your knee straight. Finish with your knee bent.

Progressions and variations

More advanced: 1. Progress using strength training principles.

Sitting on a moving lap / sitting on a ball



Therapist's aim

To improve the ability to sit unsupported, and improve trunk activity

Client's aim

To improve the ability to sit unsupported.

Therapist's instructions

Position the patient in sitting on your lap / on a ball, while holding firmly onto their hips. Position the patient sitting forward so they are not leaning backwards. Instruct and encourage the patient to sit upright while moving your knees up and down, or the ball forwards and backwards, so they are moved side to side.

Client's instructions

Position the child sitting forward on your lap, or on a ball, so they are not leaning backwards. Instruct and encourage the child to sit upright while moving your knees up and down, or the ball side to side

Progressions and variations

Less advanced: 1. Decrease knee movement. 2. Change knee position slowly. 3. Provide more trunk support. More advanced: 1. Increase knee movement. 2. Change knee position more rapidly. 3. Provide less trunk support.

Precautions

1. Maintain a secure hold on the child.

Sit to stand with assistance from a carer`s lap / bench



Therapist's aim

To improve the ability to stand up and sit down.

Client's aim

To improve the ability to stand up and sit down.

Therapist's instructions

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

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

Less advanced: 1. Provide more assistance. More advanced: 1. Provide less assistance. 2. Change height of bench to make it harder or easier

Crawling



Therapist's aim

To strengthen the shoulder and hip muscles and improve the ability to move about on the floor.

Client's aim

To strengthen your shoulder and hip muscles and improve your ability to move about on the floor.

Therapist's instructions

Position the patient on all fours on the floor. Instruct the patient to crawl forwards along the floor.

Client's instructions

Position yourself on all fours on the floor. Practice crawling forwards along the floor.

Progressions and variations

More advanced: 1. Crawl over obstacles (eg. cushions). 2. Balance activities on all 4's

Reaching in kneeling using one arm



Therapist's aim

To improve the ability to reach forward when kneeling.

Client's aim

To improve your ability to reach forward when kneeling.

Therapist's instructions

Position the patient in kneeling with objects placed at arms-length in front of them. Instruct the patient to reach up for an object and place it down on the floor.

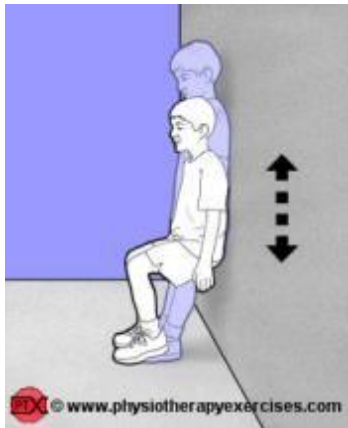
Client's instructions

Position yourself kneeling with objects placed at arms-length in front of you. 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.

Squatting against a wall



Therapist's aim

To strengthen the leg extensors and improve the ability to stand or walk.

Client's aim

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

Therapist's instructions

Position the patient in standing with their back against a wall and both feet a little away from the wall. Instruct the patient to flex and extend the knees to slide their back up and down the wall. Ensure that the feet and knees are not pushing together, the knees do not hyperextend and both feet point forwards.

Client's instructions

Position yourself standing with your back against a wall and both feet a little away from the wall. Practice bending and straightening your knees to slide your back up and down the wall. Ensure that your feet and knees are not pushing together, your knees do not lock back past straight and both of your feet point forwards.

Progressions and variations

Less advanced: 1. Decrease knee flexion. More advanced: 1. Increase knee flexion. 2. Place one leg on a step to increase weight through the other leg. 3. Use a backpack to add resistance

Stepping sideways with assistance



Therapist's aim

To improve the ability to walk.

Client's aim

To improve the ability to walk.

Therapist's instructions

Position the patient in standing with their hands resting on a table in front of them. Instruct and encourage the patient to step sideways while keeping their hands on the table and their hips extended. Provide assistance as required.

Client's instructions

Position the child in standing with their hands resting on a table in front of them. Instruct and encourage the child to step sideways while keeping their hands on the table and their hips straight. Provide assistance as required.

Progressions and variations

Less advanced: 1. Provide more assistance. More advanced: 1. Provide less assistance. 2. Remove the table support.

Precautions: Ensure the table or support used is stable

