The enclosed sheets contain stretches and exercises which can be used to delay and minimise the development of contractures and deformities occurring in children with Duchenne muscular dystrophy.

These sheets accompany the booklet *Physiotherapy management for Duchenne muscular dystrophy*.

Each stretch and exercise is on a separate sheet and can be combined, on the advice of your physiotherapist, into an individual programme to suit your child’s needs. This programme can be carried out at home but should be reviewed regularly as the needs of your child change.

All the enclosed stretches and exercises are general. Some may not be appropriate for your child and additional ones may be recommended.

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## Exercise chart
(for recording the exercises you do and the order in which you do them)

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1 Stretch for the ankles

Position
- The child lies on his or her back and is encouraged to go floppy and relax. The helper stands on one side.
- Place one hand on the sole of the foot with the fingers pointing towards the heel.
- Grasp the heel, firmly but gently, between the fingers and thumb.
- Hold the knee straight with the other hand but do not push down on it.

Stretch
- Look at your child so that you can see the face.
- Gently, but firmly, pull down on the heel, as if trying to make the leg longer, and push the front of the foot up to a right angle (dorsiflexion) or as far as possible.
- Do not let the knee bend.
- You will find it easier and less tiring if, rather than just using the strength of your arms, you lean towards the child’s head transferring your weight from one foot to the other as you push the foot up with your forearm.
- If you encounter some tightness or resistance to the movement, maintain the pressure for a little and then gradually increase it again to move the foot a few more degrees.
- It may be helpful to ask the child to try to pull up his or her foot as you stretch.

Hold ________________ seconds  Repeat ________________ times
(There is evidence to advocate holding stretches for 15 -20 seconds to allow the muscle to accommodate it.)
2 Stretch for the knees

Position
- To stretch the knee flexor muscles at the back of the thigh the child must lie on his or her back.
- Bend one leg so the hip and knee are at right angles (90 degrees).

Stretch
- Gradually straighten the knee keeping the thigh still.
- The other leg should be kept down flat.

Hold _______________ seconds  Repeat _______________ times
Position
- The child lies on one side with the underneath leg bent and the top leg straight.
- Stand behind and place one hand on the child’s pelvis to steady it and slide your other hand under the lower thigh of the top leg.

Stretch
- Draw the leg back towards you, so stretching the hip flexors across the front of the hip joint.
- Ensure that the pelvis is steady and use your body to stabilise the child’s lower back.
- Repeat the stretch on the other side.

Hold ____________________ seconds  Repeat ____________________ times
Position
■ The child lies on his or her back and the leg not being stretched is bent up towards the chest and held in that position by the carer or, if possible, by the child.

Stretch
■ Place your hand just above the knee of the leg to be stretched and exert a downward pressure.
■ Repeat with other leg.

Hold ___________ seconds  Repeat ___________ times
3c Stretch for the hips

Position
- The child lies face down.
- Place the hand nearest the child’s head firmly on the child’s bottom and push downwards.

Stretch
- Use your other hand to grasp underneath the thigh of the leg nearest to you and lift the leg up as far as possible.

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4a Iliotibial stretch

**Position**
- The child lies face down. Stand on the opposite side to the leg that is to be stretched.
- Place the hand nearest the child’s head firmly on the child’s bottom and push downwards.

**Stretch**
- Use your other hand to grasp underneath the thigh of the leg the furthest away from you and lift the leg up as far as possible and then pull it towards you.

Hold _______________ seconds | Repeat _______________ times
Position
- The child lies on his or her side with the leg to be stretched uppermost and the knee straight.
- The lower leg is bent.
- Use your hand and knee to stabilise the pelvis.

Stretch
- Gently move the uppermost leg as far back as possible.
- Apply firm downward pressure at the knee.

Hold ______________ seconds  Repeat ______________ times
5a Stretch for the elbows

Position
- Stand on the same side as the elbow to be stretched.
- Hold the upper arm firmly in one hand while keeping the child’s palm facing up.

Stretch
- Hold the wrist with your other hand and exert a gentle downward pressure to straighten the elbow.

Hold ___________ seconds  Repeat ___________ times
Stretch for the elbow and wrist

The ability of the child to turn or rotate the forearm is important because it allows objects to be grasped and the hand to be brought to the mouth. This stretch will help preserve that movement.

Position
- Hold the upper arm firmly in one hand while keeping the child’s palm facing up.
- Move your other hand down to hold the child’s hand. The grip should be as if you were shaking hands but with the fingers extended over the wrist.

Stretch
- Keep the shoulder still and with the elbow bent at 90 degrees, simply turn the forearm so that the child’s hand faces up.

Hold _______________ seconds    Repeat _______________ times
6a Stretch for the wrist, elbows and fingers

**Position**
- Use one hand to support the forearm near the wrist joint. Keep the child’s elbow as straight as possible.
- Place the palm of your other hand on your child’s palm.

**Stretch**
- Move the wrist backwards, trying to keep the fingers straight (if they curl over and bend it reduces the stretch on the tight tendons in the wrist).

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6b  Stretch for the wrist, elbows and fingers

Position
- The child lies on his or her front with the arm over the edge of a couch.
- Grasp the upper arm with one hand.

Stretch
- Place your other hand under the palm and fingers of the child’s hand and straighten the elbow, keeping the wrist bent backwards and the fingers extended.

Hold ___________________ seconds   Repeat ___________________ times
Self-stretch for the calf

Position
- The child stands facing the wall.
- The back leg and knee should be kept straight with the heel on the floor, toes pointing to the wall.

Stretch
- The child leans towards the wall, keeping the bottom tucked in, until he or she can feel the stretch in the calf of the back leg.

Hold ___________________ seconds    Repeat ___________________ times
8a Self-stretch for the knees

Position
- The child sits on a floor or hard surface with hips against the wall and the spine as straight as possible.
- One leg is stretched out in front, slightly to one side, with the knee as straight as possible, toes should point upwards.
- The other leg is bent in so the foot touches the inner thigh of the straight leg.

Stretch
- Sitting in this position will stretch the hamstring muscle of the straight leg, but the stretch can be increased by leaning forwards.
- Repeat with other leg.

Hold ___________ seconds  Repeat ___________ times
8b Self-stretch for the knees

Position
- The child lies on his or her back in the doorway or beside a post.
- The child places the leg to be stretched on a doorframe or post. The knee is slightly bent and the bottom is close to the wall.
- The other leg is straight on the floor.

Stretch
- Straighten the knee.

Hold __________ seconds  Repeat __________ times
Deep breathing

**Position**
- The child should be reclining comfortably, with the knees bent up and two or three pillows behind the head and shoulders for support. Breathing exercises can also be done in a sitting position with the child’s arms supported.

- Place your hand over the lower part of the ribcage, with your fingers pointing towards the back, and apply firm but gentle pressure. Ask the child to breathe in as much as possible and try to move the ribs outwards against your hands.

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<th>Hold the breath</th>
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<td>Repeat</td>
<td>__________ times resting between every one or two breaths</td>
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Some children with Duchenne muscular dystrophy have difficulty clearing phlegm from their chest, particularly when they have a cold. Postural drainage can often be helpful.

- Make a wedge using a very firm cushion or pile of towels, covered with a pillow or blanket.
- The child lies face down over these so that the hips are across the wedge and the chest is about 45 degrees from horizontal.
- The child stays in this position for 10-20 minutes and is encouraged to take deep breaths.
- Pause between every two or three breaths otherwise the child may become dizzy.

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Older children with Duchenne muscular dystrophy who have difficulty clearing secretions on the chest may find a prone position unsuitable for postural drainage, as it can push the diaphragm up and make it hard to breathe. In this case, the child may benefit from lying on his or her side in a high supported position.

Hold position ________________________________ minutes
This technique can be used to clear secretions from the chest and should be done while postural drainage is taking place or when the child is sitting and leaning forward.

- Encourage the child to take several deep breaths and then ask him or her to ‘huff’ as this helps move the sticky secretions from the furthest part of the lungs up towards the throat. To ‘huff’ the child takes a deep breath and then forces the air out as hard as possible with the mouth open.
- Pause after two or three ‘huffs’ and breathe gently for a moment.
- Repeat this several times with periods of deep breathing in between, and when the phlegm is near the throat, a cough will clear it.
- A parent or carer can help the child to cough by placing their hands firmly round the lower ribs, but a physiotherapist needs to demonstrate these procedures first.