8. From lying to sitting

8.1 Rotation of the shoulder over the pelvis

The rotation of the shoulder over the pelvis is an important movement to reduce the extensor spasm pattern. This is an active exercise for the someone who has had a stroke to do on his own. At first, however, you can help the person by holding the affected shoulder forward with the arm straightened.

- the person has clasped hands, palms touching (fingers interlaced)
- his wrists and elbows are straightened, the shoulders are drawn forward
- the affected leg is bent
- both arms are then raised up and down by the person (see “handclasp exercise”, section 6.4)

Fig. 30

Or

- he moves his shoulders from side to side
  (see picture below)

Fig. 30.1
8.2 Rolling to the unaffected side
Someone who has had a stroke will find it much harder to rotate her body towards the unaffected side than to rotate towards the affected side. Some assistance may be necessary.

- From lying on the back, hands clasped
- Affected leg bent, feet on the bed
- Encourage her to look towards the unaffected side and straighten both arms towards this side; this will help the body to roll towards the unaffected side

![Fig. 31](image)
You can help the person to roll, guiding her movement from her affected shoulder and hip

8.3 Rolling to the affected side
If necessary, shift the person to the side of the bed opposite to the rotation before starting this activity. This will give more room to roll. If left unaided, she will try to carry out the movement using the unaffected side. However you must teach her to perform the movement using both sides so that her activity will be symmetric.

- ask the person to bend her legs, giving some help in bending the affected one

- hold your hands on her pelvis, ask and help the to raise her buttocks and to move the pelvis laterally (see “bridging”, section 7.7)
• the next step is to assist the person in rolling towards the affected side

• you control the affected limbs; the person moves the unaffected ones

Or

• he rolls unaided with clasped hands, fingers interlaced and shoulders forward

Note:
The **handgrip** described in the “Note” in section 6.1 can be used to facilitate shoulder protraction and to reduce the typical spasm pattern in flexion of the affected arm (see fig. a, page 5):

• keep the person’s thumb opened and the wrist bent backward; this makes releasing of fingers easier

• through this grip, keep his shoulder forward and turned outward with the elbow straightened

• encourage him to bend the unaffected leg so that the foot is flat on the bed

• pushing with the foot on the bed he brings the hip forward, towards the affected side

• help him to roll forward and sideways
8.4 Transfer from lying to sitting
The person who has had a stroke should learn to use her affected side when getting out of bed. At first, she will need help to move from lying to sitting (passive–assisted). With practice, less help will be needed (active-assisted). Finally, teach her to reach the sitting position without help. This activity will help to reduce the spasm pattern in flexion of the arm and will increase the individual’s awareness of her affected side.

Sequence of movements to reach the sitting position from the affected side

**Passive assisted movement**
- the person rotates towards the affected side (see section 8.3)
- hold the person’s scapula with one hand; with your other hand help her to move her legs out of bed
- encourage her to push with the unaffected hand placed on the edge of the bed (see fig 33) or by maintaining clasped hands, palms touching

**Active assisted movement**
- the person rolls towards the affected side with legs bent until she starts to reach the sitting position pushing with the hand placed on the edge of the bed and straightening the elbow
- guide the movement from the pelvis and push downwards with your hand placed on her unaffected shoulder and hip
- she reaches the sitting position, with her feet flat on the floor
In some individuals the motor and/or sensory loss is so severe that they cannot actively use the affected side and rotation is possible only toward the unaffected side. Even so, some involvement of the affected side is still important.

**Sequence of movements to reach the sitting position from the unaffected side (unaided)**

- the person grabs the affected wrist with the unaffected hand (or he adopts the “handclasped” position)
- he takes the affected leg near the edge of the bed with the unaffected leg

**Note:** Someone who has had a stroke must be taught to actively move the affected leg. Only if this proves impossible should the person learn to hook his unaffected leg under the affected one to lift it out of the bed.

- lifting the head and propping on the unaffected elbow (see next section), he moves the affected leg out of the bed

- the person will reach sitting position propping on the unaffected arm
8.5 Propping on the affected elbow
Rolling to prop on the affected elbow is one of the early bed exercises which you must teach the person who has a stroke to do. This activity will increase the extensor tone in the upper affected limb. The rotation of the shoulder over the pelvis is important for early weight bearing on the affected side.

Provided that the shoulder is correctly positioned, the person will be taking an active part in her own rehabilitation every time she rotates her shoulder over her pelvis and reaches across her body toward the bed table. This is an additional reason for placing the bed table on the affected side.

The person who has had a stroke can practise this exercise and use it to reach the sitting position from lying on the back, rolling towards the affected side. You can help her from the unaffected shoulder and hip, as described in section 8.4 (fig. 33.2). If more help is needed, carry out the procedure described below:

- the person rolls to prop on the affected elbow
- she lifts the unaffected leg across the affected one
- use the handshake grasp to pull her from the unaffected hand, while with your free hand control her affected hand and elbow
- the person should try to push with her affected arm
9. Training sitting balance

9.1 Weight transfer from hip to hip
- with the person in sitting position, trunk upright, legs bent to 90° with knees apart, feet placed on the floor
- you can control his affected leg with your knee to avoid the hip turning outward
- you can facilitate the trunk control and the weight transfer from hip to hip from his shoulders

9.2 Weight transfer from hip to hip and trunk elongation
This exercise will facilitate weight transfer from hip to hip and trunk elongation on the affected side. It should be repeated rhythmically.
- Sit at the person’s affected side
- help him to bear the weight on the affected side
- keep his affected arm turned outward, straightened and apart from the body, with the shoulder forward
- keep his feet flat on the floor (you can control this with your own left foot)
- help him to transfer the weight on the unaffected hip, asking him to raise the affected hip
9.3 Weight transfer, bearing weight on the affected arm
This is an exercise to facilitate transfer and weight bearing on the affected side and to promote elongation of the trunk. It inhibits the “spasm pattern of the arm in flexion” described in fig. a, page 5.

- place the person’s affected hand on the bed (or training table)
- with one hand you should support her shoulder, while your other hand facilitates the elbow straightening
- with your right hand pull her towards you, elongating the affected side
- the hand remains open on the table for support

9.4 Protective lateral straightening of the arm

- Hold the person’s hand on your hand, maintaining the elbow straightened
- use manual pressure to teach her to hold the position (give a short and quick push through the palm of her hand to the arm kept turned outward)
- repeat until her arm remains straight (without the elbow straightening provided by you) and the hand remains open during weight bearing (support)
- the protective lateral extension should be re-established as an automatic reaction

Fig 39

Fig 39.1
different handgrips may be used
9.5 Exercises to practice when sitting alone

- from lying on the back, the person moves the affected leg out
- than he rotates towards the affected side, moving the unaffected shoulder forward and placing the unaffected hand on the bed
- he then moves out the unaffected leg,
- he props on the affected arm to reach the sitting position

Fig. 40
From an active-assisted exercise, as described in fig. 33.2, to an active movement

9.6 Weight-transfer backwards on both arms

- carefully grasp the person’s arms and brings them backwards providing support with your hands
- you can make his arms straighten easier by pushing and pulling them slowly and within a small range of motion, until the arms bear the weight (the elbows remain straight)
- he should then practice weight bearing from one arm to the other maintaining the elbow straightened

Fig. 41

9.7 Approximation from shoulder to hand

The person is weight-bearing from the heel of his hand (thumbs and fingers opened, wrist bent backward) through a straightened elbow to an turned outward shoulder

Fig. 41.1
if necessary, approximation with manual pressure can be added by the trainer (see fig. 39.1)

Activities:
- rock backwards and forwards over a straightened wrist and elbow
- lean over finger-tips through straightened and opened fingers and thumbs (see fig. 89)
- weight bearing over the affected leg
- leg exercises (i.e. control of the leg in space) can also be practised
10. Training for standing

The lateral transfer of body weight and the ability to move the hips forwards and backwards in a sitting position are important exercises in preparation for standing. They further improve the pelvis mobility and control. The person must first learn to sit on the edge of the bed or on a chair.

10.1 Practice of pelvis movement forward and backward.

Encourage the person who has had a stroke to practice haunch walking, moving forward to the edge of the bed and backward to the starting position. The hip must be lifted clear of the bed the feet placed on the floor.

The transfer of body weight can be practised by the person with her hands placed at your side (fig. 42) or with her hands clasped and arms straightened (fig 42.1). With improvement in the restoration of movement, this activity can be practised with the arms free for balance (fig. 42.2).

Fig. 42

Fig. 42.1

Fig. 42.2
10.2 Standing up and sitting down

A variety of solutions can be adopted to help someone who has had a stroke to stand up. The choice depends on the person’s ability.

It is important to start with rocking movements, teaching the person to push forward to standing, and not to pull. As soon as he pushes forward, you can put one hand on the back of his head to give mild resistance to neck straightening.

The person must stand on a correctly positioned foot. This means that weight must be transmitted through the heel, with the whole of the foot resting on the floor. The feet should be parallel. If he lifts his affected foot, you must keep it down with gentle pressure from your own foot. It is important to avoid backward over-stretching of the knee.

If the foot stiffens downward, resting on tiptoe with the heel off the floor, you can apply manual pressure downwards from the hip to the heel. Hold the pelvis laterally with firm manual contact and apply strong pressure downwards in vigorous thrusts.
10.3 Other exercises for standing

The following training suggestions can be used according to the stage of the rehabilitation programme and the progress made by the individual.

Begin with the passive exercises and work towards the person carrying out independent activities.

- Use your knees to support the person’s knees, leaving your hands free to control her pelvis movement so as to encourage weight transference forward over the foot

- she keeps her hands on your shoulders (or her interlaced fingers are kept behind your neck)

- in the beginning of the movement, you can control her shoulder retraction, as shown in the circle

- Using your arm, grip and support the person’s affected arm in a good position (shoulder forward with the arm turned outward and straightened) leaving your hands free to control her pelvis
• If the person has a painful shoulder or an affected arm which is completely floppy an alternative exercise for standing is suggested in fig 43.5.

Fig 43.5

• place your hands on the person’s pelvis (to help him in raising his bottom)
• his affected foot is slightly backwards
• he holds his arms forward with hands clasped and then he bends his body forward to stand up

Fig. 43.6

• the person actively reaches the standing position
• guide the movement from his hands and from the back (your hand placed on his neck helps him in pushing up and forward)

Fig. 43.7
stand at his affected side, using your knee and foot to stabilise person’s knee and foot

Fig. 43.8

• the final aim of these exercises is to prepare the person for standing up unassisted with his hands clasped and elbow straightened