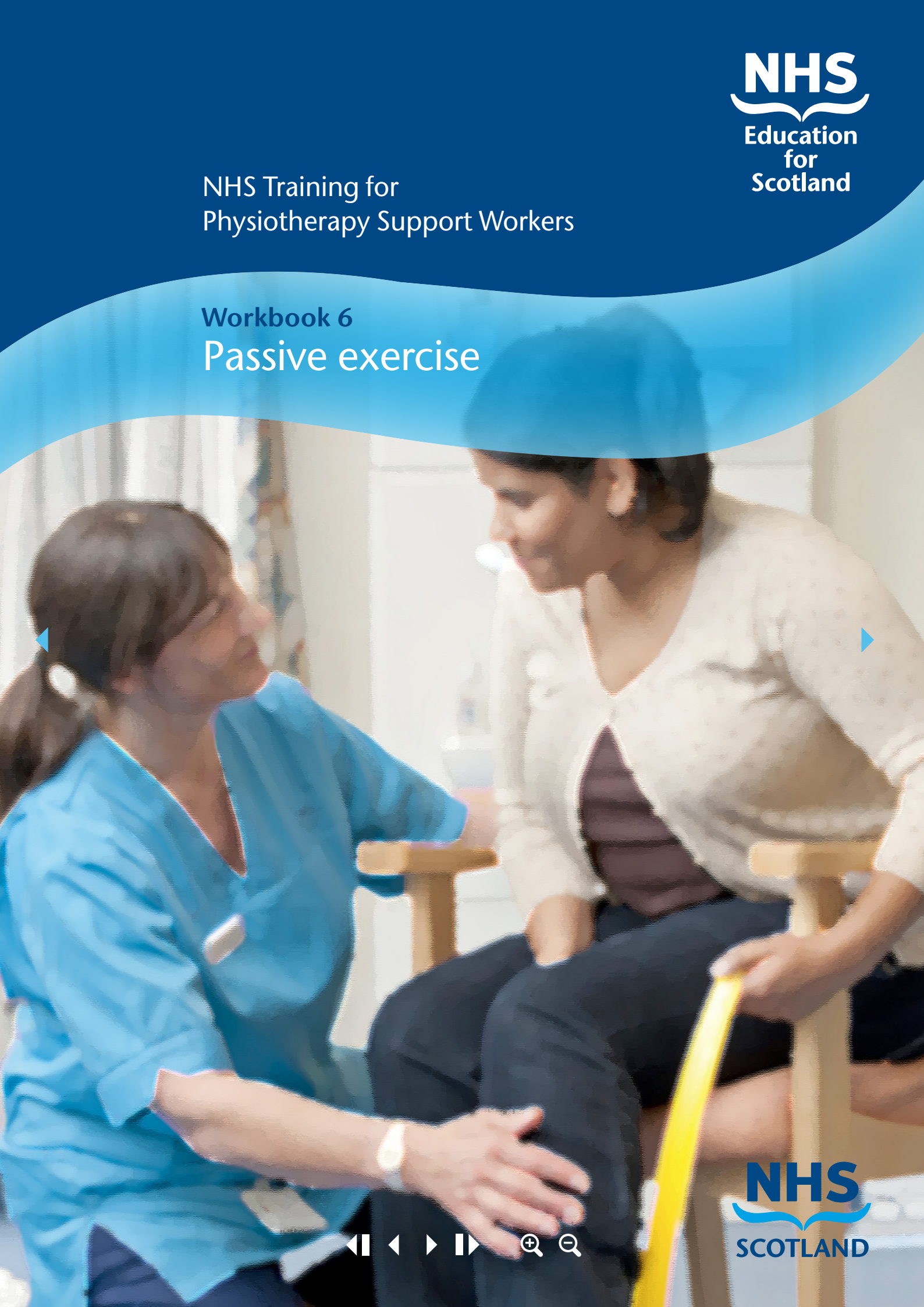
NHS Education for Scotland

NHS Training for
Physiotherapy Support Workers

Workbook 6

Passive exercise



NHS SCOTLAND

Contents

Workbook 6

Passive exercise

6.1 Aim

The aim of this workbook is to provide the Healthcare Support Worker (HCSW) with the knowledge and skills required to carry out passive exercises on appropriate patients.

6.2 Learning outcomes

By the end of this workbook you will be able to:

- Understand the purpose of passive exercise and demonstrate your knowledge of bone, joint and muscle anatomy in relation to passive exercise.
- Identify limited joint range of movement and describe possible causes.
- Identify changes in muscle tone and describe their effect on passive movement.
- Be able to carry out passive exercises on all limb joints of appropriate patients safely and effectively.

In order that you gain the most from this workbook it is important you complete the following workbooks prior to this one.

- Workbook 4 Musculoskeletal System
- Workbook 8 Skeletal Anatomy
- Workbook 11 The Articular System

6.3 Passive exercises

Many patients, at various stages in their hospital admission, are unable to move their limbs.

- They may have been left unable to move because of a stroke or another neurological condition.
- They may be unconscious and on a breathing machine in Intensive Care or Neurosurgical Intensive Care.

In any of these situations patients are at risk of developing problems with joints, ligaments, muscles and tendons.

Effects of immobility

- Muscles, joints, tendons and ligaments lose elasticity and the ability to stretch when they are immobilised and not moved.
- These changes occur even after a relatively short period of time – within a few days. Muscles become **stiff** and it becomes difficult to move normally.
- Immobility occurs because of localised changes in muscle fibres, muscle metabolism and circulation
- Muscles weaken and waste, the blood flow to them lessens and muscles are less able to work for prolonged periods.
- Joints develop changes leading to water loss, increases in fatty tissue, reduced joint cartilage volume and weakened ligaments.

Over longer periods of time, muscles and other structures shorten and develop contractures, in which they are unable to move actively or passively to their full length. In time, this will prevent the patient from being able to perform normal everyday tasks and from moving about as they would like.

Case study

Mrs Brown has recently had a stroke that has led to weakness on her right side. She is unable to move her arm or leg actively.

Since her admission to hospital, she has been sleepy most of the time, and been unsafe to sit upright in a chair. She has had an infection that has meant that she has been confined to bed and is unable to attend the physiotherapy gym.

Most of her time has been spent lying in bed.

Activity

What aspects of Mrs Brown's condition might lead her to have problems with muscle and joint stiffness?

The therapist and the Physiotherapy support worker come to review Mrs Brown
The therapist assesses her consciousness and her ability to move independently.
She decides that the patient requires passive exercises.

Evidence

Why do you think the therapist has selected passive movements for this patient?

What do you think the purpose of passive movements is in this situation?

The therapist has selected passive movements for this patent because she is unable to move by herself. Failure to move her limbs will lead to shortening and stiffness of the structures around her joints.

If she does not maintain full movement, when she recovers and is able to attend physiotherapy for rehabilitation, she will have difficulty in exercising and training during rehabilitation, and her ability to regain functional performance of everyday activities will be limited.

The purpose of passive movements with a patient such as this is therefore to:

- Maintain her muscle and tendon length and prevent shortening and stiffness through stretching.
- Maintain circulation.
- Maintain full range of movement in her joints through stretching.
- Ensure as far as possible that when the patient is ready, he or she can return to full functional ability.

6.4 Anatomy of bones, muscles and joints

Your supervising therapist will indicate which patients you will be required to carry out passive exercises with.

You will have the opportunity to practice the movements on a normal model and be graded competent by a supervising therapist before undertaking supervised treatment with a patient.

Normal movements that occur at each joint

It is very important that you know the normal range and feel of passive movements before you undertake these activities with patients.

Evidence

With your supervising therapist use the information you have already from the workbooks about bones, joints and muscle. Work out, describe and demonstrate by performing yourself the movements that occur at each of the joints of the arm and leg, starting at the shoulder and hip.

When you have done this together, write down here for each joint which movements occur.

Movements occuring at each joint ***the arm***
The shoulder and shoulder girdle
The elbow joint and radio-ulnar joints
The wrist joint
The hand, fingers and thumb

Movements occuring at each joint ***the leg***
The hip
The knee
The ankle
The foot and toes

6.5 Guidelines for performing passive exercises

Your supervisor will demonstrate on you, a normal subject, how to conduct passive movements.

This is what you need to know and be able to do:

1 Explain procedure clearly

Remember to explain clearly what you are going to do, and ensure that the patient consents to your treatment.

2 Position patient appropriately, providing due attention to patient or model dignity and comfort

Passive exercises are normally performed with the patient in lying. The patient should be in a comfortable position with their head well supported. They may be lying on their back, or on their side. Ensure that they are adequately covered up.

3 Ensure that the patient is adequately relaxed

You may perform passive movements with patients who are sedated or unconscious, however if the patient is awake and aware, you should ensure that he or she is relaxed. Remind the patient of what you are about to do and ask them to relax.

4 Position yourself to ensure your own safety and comfort

Remember the principles of safe moving and handling. Ensure that you are correctly positioned to comfortably handle the weight of the patient's limbs.

5 Adequately and comfortably support body parts being moved, fixing appropriately those joints not being moved

Your supervisor will demonstrate how to isolate the movements so that movement occurs only at the joint that you are targeting. This is important, since it ensures that the correct muscles and joints are being stretched.

6 Sequence movements proximal to distal

Start at the large joints – the shoulder and hip and work downwards.

7 Identify end of range

End-feel is the feeling of the joint or muscle at its fullest bend or stretch. Different joints have a different feel at the end of range of movement, and it is important that you recognise the end of range of movement, and whether it is normal or affected by the patient's condition.

Passive movements can be potentially dangerous since the patient has no control over the degree of stretch that is applied.

Tune into the feel of the movement and be aware of when you have reached full range.

Watch the patient's face for signs of discomfort.

Take care not to overstretch and ensure that any stretch is gentle but sustained. A stretch of 20 seconds 4–5 times can be effective in reducing muscle tightness. Forceful passive movement can lead to tears in muscle fibres.

Activity

With your supervisor go through the joints of the body on them or on a model and try to recognise the end-feel.

This is important so that you do not over stretch the joints or muscles.

Your supervisor will help you identify normal end of range, then with your supervisor try to identify the causes of limited range of movement on patients that you treat.

These will include:

- skin tightness
- scar tissue or adhesion formation
- adipose (fatty) tissue
- bony obstruction
- contracture

8 Identify changes in muscle tone and describe their effect on passive movement

Muscle tone is the state of partial contraction of a muscle that provides resistance when the joint of a relaxed patient is moved passively.

In some neurological diseases, tone may be abnormally increased or decreased.

In patients with certain conditions, such as stroke, multiple sclerosis or cerebral palsy, an increase in tone, or hypertonus may be described as spasticity and may be particularly noted in certain muscle groups.

Stretching the muscle of a patient with spasticity may lead to an abnormally strong muscle contraction, and the resistance to stretch that you feel when performing passive exercise may increase.

The stretch should therefore be slow and prolonged to gradually increase the length of the muscles and prevent shortening. The danger here is that muscle fibres may be torn if stretched too quickly.

Sometimes, patients demonstrate a reduction in tone, or hypotonus, where the limb is floppy with reduced or absent resistance to movement. This may occur in conditions such as stroke or Guillaine Barre. Here the limb feels heavy, with little resistance to stretch. The danger here is that it is easy to overstretch the muscles and joints beyond their normal range.

Evidence

What dangers exist from performing passive exercises on a patient with:

Increased tone?
Reduced tone?

Once you and your supervising therapist are happy that you are ready to perform passive exercises with patients under supervision, try to identify abnormally increased or reduced muscle tone in patients that you are treating.

Describe your experience when performing passive movements with a patient who has **reduced tone.**

How did it feel?
What went well?
What could have been better?
Anything you would do differently next time?

Describe your experience when performing passive movements with a patient who has **increased tone.**

How did it feel?
What went well?
What could have been better?
Anything you would do differently next time?

9 Report promptly to therapist any changes in patient's condition

You must be vigilant to changes in the patient's condition, in terms of increased discomfort or responsiveness or change in their range of movement, tone or ability to move, and report this immediately to the supervising therapist.

Activity

Describe how you performed **passive movements** with a patient.

Describe what you did
Describe anything that was not so good
What you would do differently another time?

Acknowledgements
NHS Tayside

Passive exercise workbook completion

Your supervising physiotherapist will sign your portfolio to indicate that you have completed this workbook successfully.

Objective	Physiotherapist's signature	Date
Describe and demonstrate normal range of movement for all main joints		
Safely perform passive movements on a model		
Safely apply sustained stretch to increase range of movement		
Describe the purpose of passive movements with individual patients		
Position patient appropriately to ensure dignity and comfort		
Position self to ensure own safety and comfort		
Adequately support body parts being moved, appropriately fixing those joints not being moved		
Identify changes in muscle tone		
Describe dangers of performing passive movements in patients with altered tone		
Recognise limits of full range of movement		

Support worker (name)
Support worker's signature
Physiotherapist (name)
Physiotherapist's signature
Date

6.6 Passive exercise Reflection

Suggested KSF Dimensions: C2, HWB2, HWB7
This form should be placed in the appropriate section of your portfolio.

What did you learn from this module?
How has this influenced your work?
Date module completed

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