

## Unit 8 Neurological Physiotherapy

**Homework tasks:** (1 or both completed)

### Tips to Prevent Falls

<http://www.youtube.com/watch?v=0pCVacKQBsI>

**Watch the video and answer the questions:**

1. What injuries has Libby had?
2. Which walking aid does she use to be more confident?
3. What are the main reasons for falls in older people?
4. What are the 5 steps people should implement to prevent falls?

### Tai Chi - Video

<https://www.youtube.com/watch?v=D-GFreeZTow>

What are the main benefits of Tai Chi for older adults?

**Watch again and complete the gaps with one word:**

A person will come into a Tai Chi class because they have ..... at least once and they are ..... about where that fall will lead. The purpose of Tai Chi is to ..... strength and to prevent falls. Participants will learn how to prevent falls from ..... They will strengthen their muscles, they will ..... the fear of falling because that is often also a factor in provoking ..... falls. So people come out of these experiences stronger, better informed and less .....

### Revision from seminar 7

#### Narrative tenses – rules and form:

1. *Past simple*: to talk about consecutive actions in the past.
2. *Past continuous*: to describe a longer, continuous past action.
3. *Past perfect*: to talk about an action which happened before a time in the past when the main events of the story happened. It Connects two times in the past.
4. *Past perfect continuous*: to talk about a longer continuous action that was occurring before a specific time in the past when the main events of the story happened.

**\* Use the correct form of the verb in brackets to complete the sentence:**

a) My dad \_\_\_\_\_ (have) a total hip replacement last year. He was \_\_\_\_\_ (admit) to the hospital on the 5<sup>th</sup> of May, the surgeon \_\_\_\_\_ (operate) on his hip the next day, and then he was \_\_\_\_\_ (discharge) from hospital once he could walk independently on elbow crutches. He \_\_\_\_\_ have physiotherapy in hospital every day during his stay.

b) My grandmother \_\_\_\_\_ (slip) and \_\_\_\_\_ (fall) recently and had to go to hospital by ambulance. She was in so much pain that by the time they arrived at the emergency department she \_\_\_\_\_ (pass out). The emergency staff \_\_\_\_\_ (give) her oxygen for quite some time before she regained consciousness.

c) Last week I \_\_\_\_\_ (have) a follow up appointment at the hospital to review my osteoporosis. I \_\_\_\_\_ (wait) in the waiting area for already one hour, when the nurse \_\_\_\_\_ (come) out and said that the geriatrician was sick and had to cancel the rest of his clinic. I \_\_\_\_\_ (feel) angry and frustrated for the rest of the day after that!

d) Unfortunately my neighbour suffers from Alzheimer's disease. Last week when she \_\_\_\_\_ (walk) in the street with her walking stick, she got to the end of the street before she \_\_\_\_\_ (realise) that she \_\_\_\_\_ (leave) the door open.

e) Recently I had to go to hospital because I \_\_\_\_\_ (trip over) while using my walking frame. I \_\_\_\_\_ (break) the neck of femur in my right leg and I \_\_\_\_\_ (stay) in hospital for almost a week. Then on the weekend while I \_\_\_\_\_ (do) my home exercise program I almost \_\_\_\_\_ (fall) over again!

f) Last week I \_\_\_\_\_ (consult) with an orthopaedic surgeon about my painful knee. After an X-ray, he \_\_\_\_\_ (diagnose) the problem as osteoarthritis. He said I \_\_\_\_\_ (develop) OA in my knee for some years and it was now quite advanced.

g) My aunt \_\_\_\_\_ (suffer) a bad fall last weekend during a race. She \_\_\_\_\_ (run) in the forest on some really uneven terrain, when suddenly she \_\_\_\_\_ (step) on a stone, lost her balance and \_\_\_\_\_ (fall over). By the time she recovered and got to her feet, she \_\_\_\_\_ (fall) a long way behind the other competitors in the race.

h) Last week I \_\_\_\_\_ (visit) my grandmother in her nursing home. While I was there I \_\_\_\_\_ (watch) her do a chair aerobics class run by a physiotherapist. It was fun to watch as all the residents \_\_\_\_\_ (try) to improve their strength and balance with a range of different exercises, but they \_\_\_\_\_ (have) a lot of fun while they \_\_\_\_\_ (exercise).

*\* Complete the gaps in the below paragraphs:*

### **Geriatric Physical Therapy**

Physiotherapy can be extremely beneficial to elderly patients. Geriatric physiotherapy deals with a range of different problems commonly experienced in the older p\_\_\_\_\_. These include problems with general mobility, strength d\_\_\_\_\_ and balance problems which increase the risk of f\_\_\_\_\_ in this population. Physiotherapists use various different types of t\_\_\_\_\_

and physical exercises to improve the overall physical c\_\_\_\_\_ of their geriatric patients, and enable them to function at an o\_\_\_\_\_ level.

Geriatric physiotherapy also can help with cardiovascular health. Through such exercise programs as h\_\_\_\_\_ and aqua aerobics, gym based c\_\_\_\_\_ and osteoporosis classes and other forms of a\_\_\_\_\_ and conditioning exercises, the physiotherapist can help reduce the risk of or aid recovery from heart disease or s\_\_\_\_\_.

The elderly are also highly p\_\_\_\_\_ to arthritis, osteoporosis, and other skeletal problems. Because of the f\_\_\_\_\_ of some elderly patients, geriatric physiotherapists use milder, more g\_\_\_\_\_ therapies. But among the things they can work on with elderly patients are basic b\_\_\_\_\_ and motion issues to decrease the risk of falls, since what would be just a fall in a younger person can often *result in* serious i\_\_\_\_\_ such as fractures in an older person.

People who have had knee or hip r\_\_\_\_\_ surgery sometimes have difficulty getting used to walking and everyday activities due to the changes in their body. Geriatric physiotherapy can use exercise and g\_\_\_\_\_ rehabilitation during the post-s\_\_\_\_\_ rehabilitation period to make the person more comfortable getting around and completing their normal a\_\_\_\_\_ of daily living.

([http://www.associatedcontent.com/article/5766418/the\\_use\\_of\\_physiotherapy\\_in\\_geriatric.html?cat=5](http://www.associatedcontent.com/article/5766418/the_use_of_physiotherapy_in_geriatric.html?cat=5))

## Paediatric Physical Therapy

Childhood is a time when the body grows very fast, and problems in childhood can have a negative effect on the rest of a person's life. Paediatric physical therapy is p\_\_\_\_\_ designed to help adolescents, children and babies to make the most of their growth, and to overcome physical problems and d\_\_\_\_\_ that may be preventing them from achieving normal developmental m\_\_\_\_\_. Paediatric physiotherapists i\_\_\_\_\_ play and fun activities into their treatment p\_\_\_\_\_ for their patients, as the r\_\_\_\_\_ needs to be interesting and engaging for their young patients to p\_\_\_\_\_ in it. The aim of such programs is often to build strength, to stretch tight muscles, to encourage new m\_\_\_\_\_ patterns and to encourage the children to catch up in their physical d\_\_\_\_\_ compared to other children of the same age.

## Unit 8 Neurological Physiotherapy

### 1. Neurological Physical Therapy

Neurological problems, such as spinal cord injuries, stroke, multiple sclerosis, Parkinson's, Alzheimer's, brain injuries or cerebral palsy, strike at the nervous system, which is how your brain controls your body. Many neurological problems are c\_\_\_\_\_, meaning they are unlikely to be healed outright; and some are p\_\_\_\_\_, where they worsen over time. But physiotherapy can have a hugely positive impact on managing neurological disorders. By learning and practicing t\_\_\_\_\_ exercises, the effects of neurological disorders on the body, muscles and movement can be made much more m\_\_\_\_\_ or tolerable.

## 2. Speaking: Neurological Terminology

\* *What areas of the brain / nervous system may be involved in neurological conditions?*

\* *What do the following terms mean? Why they are important:*

- **Muscles:** muscle tone / spasticity / flaccidity
- **Cardiovascular:** ischaemia and haemorrhage
- **Central nervous system:** motor cortex / brainstem / spinal cord / neurons
- **Peripheral nervous system:** myelin sheath / spinal and peripheral nerves / plexus (brachial)
- **Disease course:** exacerbation / remission / progressive / disabling
- **Symptoms:** ataxia / paralysis / paresis / tremor / seizure
- **Spinal cord injury:** paraplegia / quadriplegia

## 3. Reading: Neurological Conditions

**a) Cerebrovascular accident (CVA / Stroke):** A cerebrovascular accident (CVA) or stroke is a sudden stop of the brain function due to; a restriction or obstruction of the blood flow to a specific region of the brain, known as an *ischemic stroke*, or a rupture of a blood vessel in any area of the brain, known as a *hemorrhagic stroke*. This can result in sudden loss of brain function that can cause physical limitations, coordination and movement disorders, cognitive or behavioural challenges, among other limitations. The symptoms depend on the severity of the stroke and the brain region affected, which makes each presentation unique for each patient.

Physiotherapists use repetitive movements, performed with the correct patterns and postures, to retrain the brain to complete movements properly. Some patients recover quickly though many will need long term stroke rehabilitation to improve outcomes. While most recoveries will occur within the first 3-6 months following the stroke, neurological recovery can occur over years and research has shown that the brains' ability to learn and adapt continues.

**b) Parkinson's Disease:** Parkinson's disease is a brain disorder that leads to shaking, stiffness, and difficulty with walking, balance, and coordination. Parkinson's disease occurs when nerve cells, or neurons, in an area of the brain that controls movement become impaired and/or die. Normally, these neurons produce an important brain chemical known as dopamine. When the neurons die or become impaired, they produce less dopamine, which causes the movement problems of Parkinson's. Scientists still do not know what causes cells that produce dopamine to die.

Parkinson's symptoms usually begin gradually and get worse over time. As the disease progresses, people may have difficulty walking and talking. They may also have mental and behavioural changes,

sleep problems, depression, memory difficulties, and fatigue. Both men and women can have Parkinson's disease. However, the disease affects about 50 percent more men than women.

**c) Multiple Sclerosis:** Multiple sclerosis (MS) is a potentially disabling disease of the brain and spinal cord (central nervous system). In MS, the immune system attacks the protective sheath (myelin) that covers nerve fibers and causes communication problems between your brain and the rest of your body. Eventually, the disease can cause permanent damage or deterioration of the nerves.

Signs and symptoms of MS vary widely and depend on the amount of nerve damage and which nerves are affected. Some people with severe MS may lose the ability to walk independently or at all, while others may experience long periods of remission without any new symptoms. There's no cure for multiple sclerosis. However, treatments can help speed recovery from attacks, modify the course of the disease and manage symptoms.

**d) Motor Neuron Disease:** Motor neuron disease (MND) is the name for a group of diseases that affects the motor nerves. In MND, those neurons degenerate and die and slowly the muscles become weaker. This eventually leads to paralysis. It is also known as Lou Gehrig's disease, amyotrophic lateral sclerosis or ALS.

MND is a progressive disease that usually starts slowly and gets worse over time. Symptoms sometimes start on one side of the body and then spread. Usually, the first things people notice are: weakness in the hands and grip, slurred speech, weakness in the legs, and a tendency to trip, weakness of the shoulder, difficulty lifting, cramps and muscle twitches. Later on, people with MND have little or no movement, have trouble talking, breathing and swallowing.

**e) Spinal Cord Injury:** A spinal cord injury — damage to any part of the spinal cord or nerves at the end of the spinal canal - often causes permanent changes in strength, sensation and other body functions below the site of the injury. Your ability to control your limbs after a spinal cord injury depends on two factors: the place of the injury along your spinal cord and the severity of injury. The lowest normal part of your spinal cord is referred to as the *neurological level* of your injury.

The severity of the injury is classified as either of the following: *Complete* - If all feeling (sensory) and all ability to control movement (motor function) are lost below the spinal cord injury, your injury is called complete. *Incomplete* - If you have some motor or sensory function below the affected area, your injury is called incomplete. Additionally, paralysis from a spinal cord injury may be referred to as: *Tetraplegia* - Also known as quadriplegia, this means that your arms, hands, trunk, legs and pelvic organs are all affected by your spinal cord injury. *Paraplegia* - This paralysis affects all or part of the trunk, legs and pelvic organs.

#### 4. Neurological Physiotherapy Treatments

**\* Now match the treatments below with the above conditions where they are used:**

- Initial assessment including gait evaluation and assessment of muscle strength, muscle length, muscle tone, balance and co-ordination.

- Strengthening exercises to reduce *progressive muscular atrophy and weakness*, and to maintain available function for as long as possible.
- Prescription of assistive devices, supports, braces and wheelchairs to maximise independence with activities of daily living.
- Breathing exercises and assisted coughing in order to maintain a clear chest, lungs and airways.
- Gait re-education including use of a *quad cane* where necessary, to promote independent mobility and function.
- Muscle stretching and relaxation techniques to reduce muscle spasm and *rigid patterns of muscular contraction*.
- Regular standing and balance exercise in order to promote weight bearing and assist normal function of normal organs.
- Muscle stretching *below the level of injury* to reduce muscle tone, allow normal joint ROM and prevent muscular contractures.
- Developing an individualised program to optimise strength and ROM of muscles and overall functional ability, due to the *wide variety of possible presentations* of this condition.
- Advice on positioning to *help posture and prevent pressure sores*.
- Physiotherapy exercises to enhance co-ordination, balance and stability in order to minimise the effects of *ataxia*.
- Applying heat to help relieve chronic muscular or joint pain.

## 5. Neuro Quiz

*\* Answer the following questions? Be specific and include examples with your answer:*

- a) What is a quad cane used for?
- b) What are parallel bars used for?
- c) What is a slide board?
- d) When do we see hemi-lateral neglect?
- e) What is a seizure?
- f) Name some medical staff who work with neurological patients? What are their roles?

g) Where might we see neurological patients commonly? Think about acute, sub-acute and chronic management of these patients.

h) What is a hemiplegic shoulder?

### **Homework Task**

Think about the language you would use when you are giving advice or educating a patient. In particular think about how you might advise / tell / encourage someone to:

- exercise more regularly
- stop smoking
- try and sit better / improve their posture when they're working
- do their home exercise program regularly to maximise their recovery
- warm up and stretch before or after exercise
- to complete their exercises with good form / technique and a focus on quality
- not to over-exercise

*\* Will listen to some examples of this language from the group next seminar*

### **Revision Assignment and Presentation**

The final seminar(s) this semester will be used to revise the course content before the final test / exam. This assignment and presentation will hopefully help you with this revision and give you some speaking / presentation practice in English.

*\* In pairs, prepare a 6-7 minute presentation (no longer) on one of the seminars.* Try and choose a range of important points and information from the seminar to present to the group, and try and rephrase the language (use your own words to describe the information when appropriate, don't just read what has been presented). You don't need to cover everything that was in the seminar, try and choose what you think is most important or helpful for your English in physiotherapy.

You can also add some information, eg more detail on a topic if you would like, or if it's of interest to you / the group, eg more information on a pathology, a different sports injury etc.

*\* We will listen to the presentations in the final 1-2 weeks of the seminars.*

*\* Please communicate with the other members of your seminar group and/or myself to make sure that different seminar topics are being covered / presented. The more different topics covered, the better it will be for your revision of the topics.*

Any questions – please contact me.