

Unit 6

THE NERVOUS SYSTEM

A. Warm-up

The nervous system is one of the two major communication systems of the human body.

Working in pairs or threes try to answer the questions given below.

1. What do we need the nervous system for?
2. What structural elements does the nervous system consist of?
3. What other systems does the nervous system cooperate with, why and how?

Compare and discuss your answers to sum up the information gathered.

B. Reading and Vocabulary Practice

Task 1

Study the **nervous system anatomy** related text and answer the questions which follow.

PART ONE

The nervous system is traditionally divided into the central nervous system which contains the brain and the spinal cord and the peripheral nervous system which covers nerves responsible for carrying messages to and from the central nervous system as well as sensory receptors and sensory organs (the ears, eyes and nose) allowing us to gather information from the environment.

The brain and the spinal cord, the organs which form the central nervous system and constitute the main governing and coordinating centres of the body, are both well protected and well supplied with blood vessels. Apart from the bony structures (the cranium and the vertebral column), they are covered by three layers of connective tissue, the meninges. The outer layer is the dura mater, the middle – the arachnoid and the inner – the pia mater. The space between the arachnoid and the pia mater, called the subarachnoid space, contains cerebrospinal fluid and blood vessels.

1. How is the nervous system divided?
2. What functions do the brain and the spinal cord perform?
3. How are they protected?

PART TWO

The brain is a complex organ. The two largest regions of the brain are the cerebrum and the cerebellum. The cerebrum is divided by a longitudinal fissure into two cerebral hemispheres connected by corpus callosum. Each hemisphere is divided into four lobes (frontal, parietal, occipital, temporal), each with a specific function and an insula. In general the cerebrum is concerned with conscious perception, interpretation and judgment of

Vocabulary

CNS (central nervous system)
ośrodkowy układ nerwowy
peripheral obwodowy
meninx opona
meninges opony
arachnoid pajęczka
dura mater twarda
pia mater naczyniowa
cerebrospinal fluid płyn
mózgowo-rdzeniowy
cerebral hemisphere półkula
mózgowa
corpus callosum ciało
modzelowate; spoidło wielkie
mózgu
brainstem pień mózgu
thalamus wzgórze
cranial nerves nerwy czaszkowe

The neuron is a basic cell of the nervous system. It of the cell body, the dendrites and the axon. The dendrites off from the cell body, messages and them on to the cell body. The axon is a single, often long extension, branched at its end, which impulses from the axon to other neurons or to muscles. In terms of function it is customary to three classes of neurons: afferent or sensory neurons, efferent or motor neurons and interneurons or association neurons.

Neuroglia, also called glia, as connective or supporting tissue of the nervous system. They are cells and tissues which, protect and the neurons. They also an important role in the reaction of the nervous system to injury and infection.

PART TWO

takes • continues • leads • reaches (2) • becomes • gives • conduct
 • initiate • release • generate • travels • called • depolarize

When a stimulus the cell membrane, the latter permeable to sodium ions which the membrane. As the diffusion of sodium ions, a reverse polarization place and the membrane becomes impermeable to sodium but permeable to potassium which to repolarization of the membrane. The movement of sodium and potassium rise to an impulse which down to the axon. The minimum stimulus required to a nerve impulse is called a threshold stimulus. Once the impulse the synaptic end bulb of the axon, the vesicles present at this point a molecule called the neurotransmitter. As there is no direct contact between neurons, the function of the neurotransmitter is to the impulse across the space between the end of the axon of one neuron and the dendrite of another which is the synapse to the receptors of the postsynaptic membrane and an electrical signal there.

Task 4

Mark the statements T (true) or F (false). Justify your opinion.

1. There is one dendrite and numerous axons branching off from the body of the neuron.
2. Dendrites and axons have different functions.
3. There are different types of neurons.
4. Neuroglia do not conduct impulses.
5. The nerve cell membranes are impermeable.
6. The diffusion of sodium and potassium ions is not absolutely necessary.
7. The synapse is one of the neurotransmitters.
8. Reaching the receptors of another neuron the neurotransmitter triggers an electrical signal.

D. Vocabulary Practice

Study the nervous system emergencies related text.

Task 5

Complete the text with the vocabulary given in the boxes.

PART ONE

location • diving • threatening • assessment • involvement • severity • motor • direct • whiplash • back • height • extent • blows • communication

Injuries to the nervous system are always dangerous as they sever the pathways of the body. Their depends on the of the site of the injury or damage, its nature and Injuries to the head and spine resulting from vehicle crashes (among others, injuries which do not

Vocabulary

blow uderzenie
 dive nurkować
 fall from the height spadek,
 upadek z wysokości
 sever odłączyć, odciąć,
 przerwać, zerwać
 trauma severity ciężkość urazu
 concussion wstrząśnienie mózgu
 confusion stan splątania,
 dezorientacji
 impaired sensation zaburzone
 czucie
 irreversible nieodwracalny
 slurred niewyraźny
 impaired responsiveness
 zaburzenie świadomości
 facial droop opadanie, obwis
 mięśni twarzy
 arm drift przesunięcie ramienia
 twitching drganie mięśni

involve injury to the head), accidents, falls from , sports injuries, forceful to the head, neck or upper regions are particularly health and life Thus, whenever the nature of the accident or injury suggests the of large forces, a head or spinal injury should be a must.

PART TWO

inability • lack • levels • rest • position • suspicion • line • victim • deformity • signs • bleeding • body • vital signs • stabilization

The general symptoms and suggestive of head and spinal injuries may include the presence of a of the head, neck or back, unequal pupils, stiff neck, to move any part of the body or or impaired sensation in the extremities, headache, confusion or varying of responsiveness. A of potential injury to the head and spine should make the rescuer particularly careful in moving or repositioning the while taking care of maintaining his/her and/or controlling or other injuries. If the victim is responsive, he/she should be asked not to change or move on their own. Inline is recommended which positions the head of the victim in with the of the body.

PART THREE

mental status • pupils • fractures • function (2) • damage • seem • complain • bleeding • swelling • rapidly • temporary • temporarily • serious •

Brain injuries are usually associated with skull and involve into and of brain tissue. The victim may be unresponsive, have an altered, seizures, nausea and vomiting, unequal, problems with vision and speech. Seemingly mild initial signs and symptoms may deterio-

rate Serious injuries to the brain may actually part of the brain which causes, often irreversible depletion of the body for which this part of the brain was responsible. Even when there is no evident injury to the skull, a impairment of the brain may have developed, referred to as a concussion. The victim may confused, unresponsive, behave in a strange way or of a headache.

PART FOUR

muscles • nerves (2) • neck (2) • crashes • vertebrae • displacement • severity • fracture • loss of feeling • damage • extremities • spine • spinal cord

Spinal cord injuries are always serious because any or of the vertebrae which protect it affect the and the which depart from it. Depending on the location and of the injury, the latter may cause impaired functioning, for instance of breathing when responsible for controlling relevant are affected, or paralysis, for instance of the lower when the lower was injured. Injuries to the area, for instance in car or diving accidents, are particularly dangerous as they may produce permanent of the cervical and spinal cord resulting paralysis and in the entire body below the

PART FIVE

blood supply • loss • heavy • sharp (2) • stroke • brain cells • drift • reduced • droop • disturbances • less serious • lower

Surprisingly, pain in the back, stiffness and movement in the back as well as pain in the leg are usually signs and symptoms of a lower back injury following, for instance, the victim's attempt to move or lift a object.

..... of function, confusion, palsy or paralysis, understanding, speech or vision, facial or arm may also be signs and symptoms of a, a cerebrovascular accident (CVA) due to a disturbed to the brain which may cause a group of to become necrotic.

Only careful professional assessment of the victim's condition and well-focused history can pinpoint the underlying origin of the problem.

Task 6

Answer the following questions to the text. Expand your answers where possible.

1. Why are injuries to the nervous system particularly dangerous?
2. What does the severity of these injuries depend on?
3. What are the most common causes of injuries to the nervous system?
4. What symptoms and signs may be suggestive of a potential injury to the nervous system?
5. Why shouldn't a patient with a potential nervous system injury be moved?
6. What is the recommended inline stabilization position?
7. What do brain injuries usually involve?
8. What symptoms and signs may minor and major injuries to the brain generate?
9. What is a concussion?
10. What functional impairment may spinal cord injuries produce and why?
11. What does its severity and extent depend on?
12. What effects may a CVA produce and why?

E. Vocabulary in Action

Task 7

Write the questions. Report the information obtained.

1.
He collided with another player and didn't get up.
2.
Yes. I drove into a fence yesterday but it was nothing serious.
3.
Yes. His face looks sort of changed, as if he couldn't control his facial muscles.
4.
No. His speech has never been like this. He's never slurred words.
5.
I was trying to move a bookshelf. It was heavy. The pain just hit me. It was sharp, excruciating.
6.
Initially, I did feel pain in the lower back but it lasted just a moment. Now I'm stiff and I can't move very much and not without pain.
7.
No. I don't feel a thing. Should I? Is it a problem?
8.
I'm trying to move it but I can't. And I don't feel any pain.
9.
Immediately after the accident? I just felt happy I was alive.
10.
I must have hit myself in the head. I have a bruise on my forehead.

Task 8

Complete the sentences with the verbs given below.

prevent • put • check • reposition • make sure • maintain • control • keep • place • protect • help

1. Don't the victim!
2. Take care to the victim's vital signs!
3. the bleeding to a massive loss of blood!
4. the head of the victim in line with the rest of the body!
5. the victim's pupils!
6. that the victim is breathing!
7. the victim calm and warm!
8. an unconscious casualty in the recovery position!
9. a conscious casualty to lie down with the head and shoulders raised!
10. the casualty until he/she is fully recovered!

Task 9

Complete the sentences with the nouns given below.

loss • pupils • vision • damage • status • impairment • drift • movement • depletion • speech • consciousness • twitching • state

1. There is an evident arm
2. The victim seems to have an altered mind
3. The victim's respond to light.

4. The range of is reduced but there is no complete of function.
5. The victim reported temporary of brain function.
6. The brain caused an irreversible of some body functions.
7. The victim's and deteriorated significantly following the accident.
8. The victim with minor epilepsy suffers from a brief blurring of, like daydreaming.
9. The casualty performs odd sort of 'automatic' movements, such as chewing, lip-smacking or of the eyelids.
10. The casualty has been found in a confused, emotional mental

Task 10

Complete the sentences with the adjectives given below.

permanent • blurred • reversible • deformed • disturbed • temporary • slurred • unequal • fixed • squinting • noisy • clenched • dazed

1. The left lower extremity was severely
2. Unresponsiveness and confusion were only
3. The accident must have been caused by a blood supply to the brain.
4. damage to the cervical vertebrae and spinal cord always results in a paralysis of the entire body from the neck down.
5. The consequences of a minor stroke may be partly

6. The patient's speech seems
7. vision is a frequent consequence of an injury to the brain.
8. The casualty's pupils are of size.
9. Convulsions in young children may result in twitching of the face with, or upturned eyes.
10. The casualty feels His jaw seems to be and breathing very

Task 11

Complete the questions about a victim's condition.

1. any deformity to the head, neck or back?
2. the victim's pupils?
3. What other injuries
4. What about
5. responsive?
6. When the accident
7. a frontal collision?
8. What height
9. How long under water?
10. to restore respiration? succeed?

Task 12

Complete the sentences with the English equivalents of Polish words and phrases.

1. There is an evident in the left part of the body. (utrata panowania na czynnościami)

2. The patient has problems with even simple questions. (zrozumienie)
3. There is an evident on one side of the face suggestive of a stroke. (obwis mięśni)
4. The man complains of and in the lumbar area. (sztywność; brak elastyczności)
5. The man reports experiencing in the lower back and in on lifting a heavy case. (ostry ból; noga)
6. There is no evident (złamanie czaszki)
7. I suspect because the victim has loss of and function in the lower extremity. (uszkodzenie lędźwiowego odcinka rdzenia kręgowego; czucia)
8. Sensation in the lower extremities is but not (zakłócone; nieobecne)
9. The victim has no to the cranium but we are taking him to hospital for further (widoczne uszkodzenie; ocena)
10. The man complains of (ból głowy, nudności, wymioty) of recent origin.

F. Listening Practice & Dialogue Completion

Task 13



Listen and complete the dialogue between the caller (C) and the dispatcher (D).

C: I'm calling from the in Lindley Street. Our friend has had an accident.

D: What type of accident?

C: We were running to the pool. He and fell.
He must have hit himself on the

D: Is he? Can he answer your questions?

C: Not exactly. At least we can't understand what he is saying.

D: Can he? Has he

C: I don't think so. He's lying as he fell. And he's
from the

D: How old is your friend? How old are you? And where's the
.....? There should be a lifeguard at the pool.

C: We are The lifeguard is with my friend. He's
told me to

D: I see. I'm sending an ambulance.

Task 14

Recap the information to the ambulance crew to be sent to the site of the accident.

Task 15

Listen and complete the dialogue between the caller (C) and the dispatcher (D).

C: I'm calling from the My friend
has had an accident.

D: What

C: We had a situation here, an argument. You know a bit of
wrestling and pushing. My friend missed a step and
..... the stairs.

D: What are his

C: He's bleeding from the head and he

D: Did you try to help him up?

C: We did but he's sort of and he wouldn't
..... or even

D: I understand that he's Can
you with him?

C: He is breathing. In fact he's sort of gasping for breath but he
seems

D: Any visible, broken limbs?

C: Not that I can see.

Task 16

Read the completed dialogue above. Work in pairs and prepare similar mini-dialogues. Choose a site where in your opinion an accident like the one described in Task 15 is likely to happen (e.g. a funfair, a roller-skating rink, a kart circuit etc.). Act out your dialogue(s).

Task 17

15 

Listen to the dialogue between the caller (C) and the dispatcher (D) and mark the statements T (true) or F (false). Correct the false statements.

1. The caller is related to the victim.
2. The caller witnessed the accident.
3. The victim has communication problems.
4. There are noticeable changes in the victim's appearance.
5. The victim does not remember what happened.
6. The victim is lying in bed.
7. The victim is in his late 50s.
8. There are no grounds to suspect a cardiac origin of the problem.