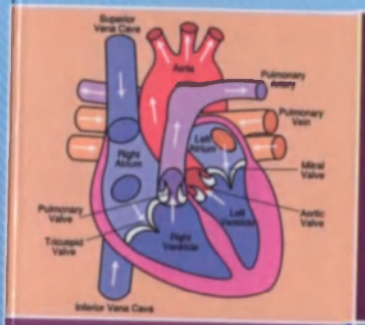
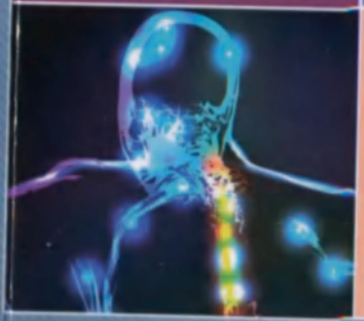
ГОШОВСЬКА Л. М.

PROFESSIONAL ENGLISH
FOR PHYSICAL THERAPY STUDENTS

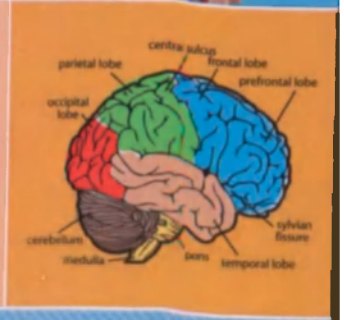
ПРОФЕСІЙНА АНГЛІЙСЬКА МОВА
ДЛЯ СТУДЕНТІВ СПЕЦІАЛЬНОСТІ «ФІЗИЧНА РЕАБІЛІТАЦІЯ»



НАВЧАЛЬНИЙ ПОСІБНИК



Львів
2016



ЛЬВІВСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ ФІЗИЧНОЇ КУЛЬТУРИ

Кафедра української та іноземних мов

ГОШОВСЬКА Л. М.

PROFESSIONAL ENGLISH FOR PHYSICAL THERAPY STUDENTS

ПРОФЕСІЙНА АНГЛІЙСЬКА МОВА ДЛЯ СТУДЕНТІВ СПЕЦІАЛЬНОСТІ «ФІЗИЧНА РЕАБІЛІТАЦІЯ»

Навчальний посібник

Львів
Компанія «Манускрипт»
2016

УДК 811.111(075.8)
ББК 81.2 Англ.я73
Г 74

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Ухвалено до друку Вченою радою
Львівського державного університету фізичної культури
(протокол № 9 від 24 травня 2014 р.)

Гошовська Л. М.
Г74 Професійна англійська мова для студентів, що навчаються за напрямом підготовки «фізична реабілітація» [Текст] : навч.-метод. посіб. для студ. виш. навч. закл. фіз. культури і спорту III–IV рівнів акредитації / Л. М. Гошовська. – Львів : Компанія «Манускрипт», 2016. — 200 с.

Посібник містить 10 розділів, кожен з яких відображає основні теми, передбачені навчальними програмами з дисциплін «Іноземна мова» та «Фізична реабілітація» для студентів II-III курсів ЛДУФК. Матеріали посібника укладені з використанням оригінальних англомовних джерел, містять навчальний матеріал для розвитку комунікативних навичок професійного спілкування, навичок диференційованого читання, аудіювання та академічного письма. Кожен розділ посібника завершується завданнями для контролю опрацьованого матеріалу.

Призначений для студентів вищих профільних навчальних закладів III-IV рівнів акредитації, які спеціалізуються за фахом «фізична реабілітація» та вивчають професійну англійську мову, а також для працівників медичних установ та фахівців практичної охорони здоров'я, які потребують знання спеціалізованої англійської мови у своїй професійній діяльності.

УДК 811.111(075.8)
ББК 81.2 Англ.я73

CONTENTS

ВСТУП

У зв'язку із входженням України до Болонського процесу особливо актуальними постають проблеми впровадження та дотримання європейських стандартів у професійній підготовці випускників ВНЗ. Провідного значення набуває **володіння іноземними мовами з метою професійного спілкування,** тому навчальна дисципліна «Іноземна мова для професійного спілкування» у вищому немовному закладі освіти є однією з найважливіших ланок фахового навчання, яка забезпечує умови адаптації студентів до майбутньої професійної діяльності.

Фахівець з фізичної реабілітації – чи не наймолодша спеціальність на вітчизняному ринку послуг, і розвиток цієї галузі залежить насамперед від якості професійної підготовки працівників.

Диплом фахівця з фізичної реабілітації дає право випускникам працювати у науково-дослідних інститутах клінічного профілю, лікарнях, медичних центрах, санаторіях, навчально-спортивних комплексах, закладах системи освіти усіх рівнів, оскільки фізична реабілітація знаходиться на стику галузей охорони здоров'я та фізичного виховання і спорту.

Міжнародні стандарти вимагають від фахівців фізичної реабілітації глибоких знань іноземних мов, які потрібні як для власного професійного зростання, яке полягає в постійному ознайомленні з новітніми методиками впровадження реабілітаційних засобів, участі у міжнародних студентських конференціях тощо, так і для майбутньої практичної діяльності, підтримки зв'язків з профільними іноземними організаціями, бізнес-партнерства та особистих контактів з фахівцями іншомовних країн.

Неадекватність існуючих навчальних посібників, традиційних підручників з англійської мови, а також брак автентичних ресурсів, які б відповідали потребам студентів-реабілітологів, що навчаються за кваліфікаційним рівнем «бакалавр», вирішено було компенсувати створенням посібника з англійської мови цільового призначення, яким і став посібник *Professional English for Physical Therapy Students.* Робота зі створення та

упорядкування посібника проводилася на кафедрі української та іноземних мов Львівського державного університету фізичної культури.

Посібник *Professional English for Physical Therapy Students* призначений для студентів вищих профільних навчальних закладів Ш-IV рівнів акредитації, які спеціалізуються за фахом «фізична реабілітація» та вивчають професійну англійську мову, а також для працівників медичних установ та фахівців практичної охорони здоров'я, які потребують знання спеціалізованої англійської мови у своїй професійній діяльності.

Засадничим концептуальним положенням, покладеним в основу створення посібника, стала його орієнтованість на майбутню професію фахівця з фізичної реабілітації, що здійснюється шляхом **навчання іншомовного мовлення через зміст спеціальності,** тобто студенти отримують можливість оволодівати англійською мовою на основі реальних фахових проблем. Цей принцип забезпечується залученням до посібника виключно автентичних фахових дискурсів різних жанрів (від зразків спеціальної наукової літератури, науково-популярних текстів та оглядових статей до текстів ЗМІ та зразків художньої літератури, присвяченої проблемам фізичної реабілітації) із друкованих та електронних джерел.

Таким чином, окрім розвитку мовленнєвих навичок та вмінь рецепції та продукції професійного усного та письмового мовлення, студенти, працюючи над матеріалами посібника, поглиблюють свою суто фахову підготовку, доповнюють та розширюють безпосередні та фонові знання з дисципліни «фізична реабілітація».

До інноваційних особливостей посібника можна віднести використання таких видів професійного іншомовного мовлення як: **підготовка та публічний виступ студентів із самостійно підготованими презентаціями**, тематика котрих стосується їх професійної діяльності та виконання професійних обов'язків (наприклад, презентація з питань особливостей підготовки фахівців-реабілітологів в Україні та за кордоном; презентація самостійно розроблених

реабілітаційних програм із урахуванням певних індивідуальних потреб неповносправних осіб тощо).

У посібнику також наводяться **зразки проблемних і ситуативних завдань**. у яких моделюються певні професійні ситуації, а від студентів очікується виявлення вмінь прийняти відповідне професійне рішення та оформити його за допомогою англомовних вербальних засобів (наприклад, які рекомендації надати пацієнтові, який перебуває в умовах клінічного відновлювального періоду або проходить амбулаторну програму реабілітації; яку реабілітаційну програму запропонувати згідно наведеного набору симптомів захворювання тощо).

Розділи посібника містять **професійні дискусії** з певних питань, пов'язаних із вирішенням теоретичних, практичних чи профілактичних завдань фізичної реабілітації (наприклад, організація робочого місця на виробництві чи в установі, профілактика захворювань опорно-рухового апарату тощо).

До інноваційних прийомів у посібнику можна віднести упровадження **наскрізної проектної роботи студентів,** яка полягає в упорядкуванні упродовж курсу навчання індивідуальних професійних термінологічних глосаріїв, які наприкінці курсу об'єднуються, коректуються і являють собою кінцевий матеріальний продукт виконаного проекту. Слід додати, що цей вид начальної роботи вимагає умінь і навичок користування мережею Інтернет та інформаційного пошуку на професійних англійських сайтах та у галузевих словниках.

Іншою характерною особливістю посібника є велика питома частка **оригінального текстового матеріалу** та відповідних завдань для розвитку навичок ознайомлювального, переглядового та пошукового читання, тобто саме тих видів читання, якими послуговується зрілий читач при відборі професійно релевантної інформації.

Іще однією концептуальною храктеристикою посібника є **інтеграція усіх видів мовленнєвої діяльності** (усного мовлення, аудіювання, читання, письма)

у навчальному процесі, що забезпечується самою структурою посібника, яка безпосередньо обумовлена вищезгаданими концептуальними засадами.

Посібник побудовано у відповідності з кредитно-модульною системою організації навчального процесу, що запроваджується в Україні.

Навчальний посібник *Professional English for Physical Therapy Students* складається із 4-х модулів, кожен з яких містить 2-3 розділи (усього 10 розділів - Units). Розділи посібника тематично присвячені розгляду наступних проблем: **перший модуль** складається з трьох розділів:

1) Предмет та завдання фізичної реабілітації; її становлення як самостійної науково-практичної дисципліни; підготовка фахівців з фізреабілітації в Україні та інших країнах;

2) Перша медична допомога; вибір та застосування засобів першої медичної допомоги відповідно до видів отриманих травм чи ушкоджень; поведінка рятувальника;

3) Тілобудова людини: ознайомлення та закріплення англійської медичної термінології, пов'язаної з анатомічною будовою тіла людини.

До **другого модулю** входять наступні розділи:

4) – 5) Фізіологічні системи організму, їх функції для підтримки гомеостазу; серцево-судинна та дихальна системи організму;

6) Фізична реабілітація при захворюваннях серцево-судинної та дихальної систем.

У **третьому модулі** розглядається:

7) Опорно-руховий апарат людини;

8) Фізична реабілітація при порушеннях опорно-рухового апарату в ортопедії.

Четвертий модуль містить розділи:

9) Нервова система людини та

10) Робота фізреабілітологів з пацієнтами, які мають ураження неврологічного характеру.

Усі 10 розділів посібника завершуються контролюючими завданнями переважно тестової форми. Кожен розділ опрацьовується упродовж п'яти - семи двогодинних практичних занять та восьми - десяти годин індивідуальної самостійної роботи.

Усі навчально–методичні матеріли посібника, їх тематичне наповнення та професійне спрямування засвідчують ще одну концептуальну особливість посібника, а саме – **здійснення міжиредметних зв'язків між навчальними дисциплінами «ділова іноземна мова» та «фізична реабілітація».**

Аудиторне та самостійне опрацювання матеріалів посібника *Professional English for Physical Therapy Students* покликане допомогти студентам розвинути навички комунікативної компетенції для ефективного спілкування англійською мовою у професійному середовищі з метою:

- обговорення навчальних та пов'язаних зі спеціалізацією питань заради досягнення порозуміння зі співрозмовником;
- підготовки публічних виступів з цілої низки галузевих питань, застосовуючи відповідні засоби вербальної комунікації та адекватних форм ведення дискусій;
- отримання даних (текстової, графічної, відео шнформації), що є необхідними для виконання професійних завдань та прийняття професійних рішень;
- перекладу англомовних професійних текстів на рідну мову, користуючись двомовними термінологічними словниками, електронними словниками та іншим програмним забезпеченням;
- ознайомлення з правилами написання наукових статей, укладання анотацій, тез та бібліографій.

UNIT I
SUBJECT AND GOALS OF PHYSICAL REHABILITATION

I.A. COMPREHENSION AND DISCUSSION:

1. Learn the vocabulary to TEXT IA "SUBJECT AND GOALS OF PHYSICAL REHABILITATION". Pay special attention to synonymous expressions.

health care profession	[helθl [kɛə]	медична спеціальність
drugs = medications = medicine = remedy		медикаменти / ліки/ лікувальні засоби
surgery	['sɜ:dʒ(ə)rɪ]	1) хірургія;2) операція, хірургічне втручання
to be actively involved		брати активну участь
to look after		доглядати, піклуватися
injury = trauma = lesion	['ɪndʒ(ə)rɪ] ['trɔ:mə] ['li:ʒ(ə)n]	рана, травма, ушкодження, патологічні зміни
illness = sickness = disease = malady = ailment = morbus		хвороба, захворювання, розлад
hands-on treatment		мануальне лікування
exercises suited to the individual		вправи індивідуального призначення
treatment = healing = cure	['hi ɪnl	лікування, догляд
to occur = to happen	[ə'kɜ:l	траплятися, відбуватися
to provide serviees		надавати послуги
health-related conditions		обставини, пов'язані зі здоров'ям
to improve mobility		поліпшити здатність рухатися
to relieve = to alleviate pain	[rɪ'li:vl [ə'li:vɪeɪt]	позбавляти болю, полегшувати біль
to restore		відновлювати (здоров'я)
overall fitness	['əuvərɔ:l] ['fɪtnəs]	загальний стан здоров'я
flexibility	[fleksɪ'bɪlətɪ]	гнучкість
strength	[streηθ]	сила, міцність
endurance	[ɪn'djuər(ə)ns]	витривалість
preventing problems		питання профілактики
to affect	[ə fekt]	1) впливати; 2) уражати, шкодити здоров'ю
muscle	['mʌs]	м'яз
tendon	['tendən]	сухожилля, сухожилок
ligament	['lɪgəmənt]	зв'язка
bone	[bəun]	кістка
heart	[hɑ:t]	серце
blood vessel	[blʌd] ['ves(ə)l]	кровоносна судина
cardiovascular system	[kɑ dɪəu'væskiuləl	серцево-судинна система
lungs	[lʌnz]	легені
breathing = respiration	['bri:ðɪŋ]/ [resp(ə)'reɪʃ(ə)n]	дихання
pulmonary=respiratory system	['pʌlmən(ə)rɪ]/ [rɪ'spɪrət(ə)rɪ]	дихальна система
skin		шкіра
wound	[wu:nd]	рана, поранення
burn	[bɜ:n]	опік
patient and therapist interaction		взаємодія між пацієнтом та реабілітологом
to return to prior level of independence		*(тут)* повернутися до самостійного життя
postural improvement	[pɔstʃ(ə)rəl]	виправлення постави
industrial safety and health		охорона праці та здоров'я на виробництві

II. Read the following article making use of the pretext vocabulary. Vocabulary units (Task I) are italicized in Text 1A.

- ***While reading all the textual materials of Unit 1 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project.***

  A ***glossary*** *could be described as an alphabetical list of terms or words found in or relating to a specific subject or text with explanations, which means that you don't need to translate the term but to look for its definition /explanation in a special monolingual (explanatory) dictionary (тлумачний словник).*

- ***Make use of any of the on-line or printed dictionaries like ABBYY Lingvo x3 or ABBYY Lingvo x5; dictionary.reference.com or www.merriam-webster.com***

TEXT 1A

SUBJECT AND GOALS OF PHYSICAL REHABILITATION

1. Physical rehabilitation (PhR) or physical therapy (PhT), as it is commonly named, is a *health care profession* that improves people's health without use of *drugs* or *surgery*. Physical therapy can help people to achieve their highest level of physical activity, at any stage of life, by using functional movements. Patients *are actively involved* in their therapy and can, therefore, learn how to *look after* their own *injuries* and *illnesses*.
2. Physical rehabilitation involves a lot of *hands-on treatment* that helps to get normal movement in *joints* and muscles. Physical rehabilitation usually includes *exercises suited to the individual*, and machines that can help *healing* to *occur* quickly and correctly.
3. Physical rehabilitation *provides services* for people of all ages, from newborns to the very oldest, when medical problems or other *health-related conditions* limit their ability to move and function in their daily lives.
4. The goals of physical rehabilitation are to *improve mobility* (such as walking, going up stairs, or getting in and out of a car), *to relieve pain*, and *to restore* physical functions and *overall fitness*. Depending on an injury, disease, or condition, one may need to work on *flexibility*, *strength*, *endurance*,

coordination or *balance*. To do this, *treatment* may focus on *preventing problems* or treating problems that *affect*:

- *muscles, tendons, ligaments and bones (musculoskeletal system)*
- nerves and *related muscles* (neuromuscular system)
- *heart* and related *blood vessels (cardiovascular system)*
- *lungs* and *breathing (pulmonary system)*
- *skin*, including *wounds* and *burns*

5. Through *patient and therapist interaction*, physical rehabilitation can help restore movement and function helping patients *return to* their *prior level of independence*.
6. Physical rehabilitation also provides for preventive rehabilitation programmes and programmes to promote general health and fitness, *postural improvement*, and *industrial safety and health*.

VOCABULARY CONSOLIDATION

III. Read Text 1A again to find the words whose definitions are given below. The number of the paragraph where each appropriate word could be found is given in brackets.

1. _____ the state of being physically healthy (4, 6);
2. _____ designed to keep something undesirable such as illness, harm, or accidents from occurring (6);
3. _____ capability of being easily bent without breaking or tearing (4);
4. _____ impairment of normal physiological function affecting all or part of an organism (1);
5. _____ to make or become better in quality (1, 4);
6. _____ the ability to move physically (4);
7. _____ application of medicines, surgery, physical therapy to a patient (1, 2);
8. _____ the sensation of acute physical hurt or discomfort caused by injury, illness, etc.(4);
9. _____ physical damage or hurt or a specific instance of this (4);
10. _____ to bring alleviation of pain, distress, etc. to someone (4);
11. _____ reciprocal action or influence (5);
12. _____ the action of helping or doing work for someone (3).

IV. Compiete the sentences with the appropriate word combinations from the box.

a) *provides services*	f) *are actively involved*
b) *industrial safety and health*	g) *health-related conditions*
c) *health care profession*	h) *patient and therapist interaction*
d) *to restore physical function*	i) *suited to the individual*
e) *healing to occur quickly*	j) *preventive rehabilitation programmes*

1. Through _____, physical rehabilitation can help restore movement and function helping patients return to their prior level of independence.
2. One of the goals of physical rehabilitation is _____and overall fitness.
3. Patients _____in their therapy and learn how to look after their own injuries and illnesses.
4. Physical rehabilitation _____for people of all ages when medical problems or other _____limit their ability to move and function in their daily lives.
5. Physical rehabilitation also provides for _____and programmes to promote _____.
6. Physical rehabilitation usually includes exercises _____, and machines that can help _____and correctly.
7. Physical rehabilitation is a _____that improves people's health without the use of drugs or surgery.

V. After reading TEXT I and vocabulary consolidation make a group discussion of the following issues pertaining to the topic in question. Commenting on the issues be sure to use the following phrases:

Agreement:		**Disagreement:**	
As I see it	На мій погляд	**I don't (happen to) think so**	Я іншої думки
In my opinion	На мою думку	**I can't agree with this**	Я не можу з цим погодитись
As far as I can see	Наскільки я розумію	**I shouldn't say so**	Я б так не сказав
I fully / certainly agree with this	Я повністю погоджуюсь з цим	**Of course not / Not in the least**	Нічого подібного
I should say so	Мабуть, що так	**You never know**	Важко сказати
It's common knowledge that	Усім відомо, що	**I must express some disagreements with**	Я не зовсім згоден з ...

- ***Physical therapy as a health care profession***
- ***Physical therapy deals mainly with restoring human health***
- ***Major goals of physical rehabilitation***
- ***A physical therapist could be equaled with a physician.***

I.B. COMPREHENSION AND DISCUSSION

VI. Learn the vocabulary to Text 1B "PROFESSION OF A PHYSICAL REHABILITATOR". Read the text and do the after-text activities.

to evaluate the disorders of a human body	визначати розлади людського організму
primarily by physical means	передусім засобами фізичного впливу
to implement physical rehabilitation programme	втілювати, виконувати програму фізреабілітації
physician	лікар
healthcare practitioner	медик
guardian	опікун
congenital and acquired disorders	вроджені та набуті порушення
rehabilitation measures	засоби фізреабілітації
to stretch and strengthen muscles	розтягувати та зміцнювати м'язи
traction machine	пристрій для розтягування
assistive devices	допоміжні пристрої
crutches	милиці
cane	палиця
walker / Zimmer frame / walking frame	ходунки
as appropriate	відповідно, належно
occupational therapist	лікар-реабілітолог з працетерапії
recreational therapist	лікар-реабілітолог з відновлення

TEXT 1B

PROFESSION OF A PHYSICAL REHABILITATOR

Physical therapists (rehabilitators) are specialists in evaluating and treating disorders of the human body primarily by physical means. They are responsible for examining the patient and planning, implementing and evaluating a physical therapy programme. A physical rehabilitator consults and works closely with physicians, orthopedists, surgeons and other healthcare practitioners in attaining treatment objectives. A physical therapist is also involved in educating and instructing patients and their families, guardians and social workers.

A physical therapist provides services to people of all ages who have pain or functional limitations resulting from various diseases and injuries, as well as congenital and hereditary disorders.

Rehabilitation measures often involve specific exercises to stretch and strengthen muscles as well as to improve posture, balance and endurance. Physical

procedures may include heat, cold, ultrasound, hydrotherapy and electrical stimulation. Traction machines and massage are two other valuable techniques for functional improvement and pain alleviation. Assistive devices such as crutches, canes and walkers are often used to increase patient independence.

Over the course of the rehabilitation period physical rehabilitators document progress and modify treatment strategies when necessary. They often work as a team with a variety of other professionals including physicians, speech pathologists, occupational therapists and recreational therapists. They all solve the same problem of reaching a patient's maximal functional independence in his everyday life.

The field of physical therapy, much like other medical-related occupations, continues to grow in demand. Professional physical therapists attend at least a four year course in college-level training, with a particular emphasis on human physiology and biology. Most candidates also spend years working directly with experienced physical therapists before seeking their own licenses to practice. There are numerous job opportunities available for a physical therapist including nursing homes, rehabilitation centres, professional sports teams and hospitals. Many physical therapists continue their training and become supervisors or private practitioners for home health care needs.

VII. Work in pairs or groups. Discuss advantages or disadvantages of a physical therapist job. Which of the following aspects could be associated with your future walk of life?

- It's well-paid
- It's stressful
- It's hard work physically
- It's challenging
- You need to have special talents
- You have to work long hours
- You need special training and qualifications
- You have to work shifts
- There's a lot of responsibility
- You don't need to have a knack for dealing with people
- There's a lot of opportunities

VOCABULARY CONSOLIDATION

VIII. Match words 1 - 10 to their synonyms a – j.

1. profession	a) medicine
2. drugs	b) to alleviate
3. illness	c) respiratory
4. to relieve	d) therapy
5. wound	e) to achieve
6. pulmonary	f) occupation
7. to reach	g) injury
8. practitioner	h) physician
9. treatment	i) to supply
10.to provide	j) disease

IX. Use the words from exercise VIII to complete the following sentences:

1. Physical rehabilitation is a health care _____ that improves people's health without the use of drugs or surgery.
2. Depending on _____ a physical therapist needs to work on flexibility, strength, balance etc.
3. Physical therapists involve patients in their own therapy, teaching them how to take care of their own _____ and _____.
4. There is a great variety of special breathing exercises for _____ system rehabilitation.
5. Assistive devices such as crutches, canes, and walkers are often used to help a therapist _____ complete and long-term rehabilitation goals.
6. Physical rehabilitation involves a lot of hands-on treatment that helps to restore functional movements without use of _____ or surgery.
7. A physical therapist helps _____ pain resulting from various diseases or injuries.
8. Physical rehabilitation focuses on treatment of the problems that affect among others the skin, including _____ and burns.
9. Many physical therapists _____ their services as supervisors or private practitioners for home health care needs.

X. Reply to the following questions making use of the information from the previous text.

1. What are the first steps taken by a physical rehabilitator in the treatment of a disabled person?
2. How does a physical therapist cooperate with other healthcare practitioners in attaining treatment objectives?
3. Which common physical rehabilitation procedures are incorporated in the treatment process?
4. Do physical rehabilitators apply drugs or surgery while implementing physical rehabilitation programmes?
5. What assistive devices are commonly used to help patients' mobility?
6. Do physical rehabilitators stick to one universal programme for a certain disability over the course of a rehabilitation period?
7. Whom does a physical rehabilitator usually cooperate with to develop a comprehensive and appropriate rehabilitation programme?
8. How and where are physical therapists trained in the USA / (in Ukrame)?
9. What medical job opportunities are available for a physical therapist?
10. How would you explain the phrasal unit "*a private practitioner for home health care needs*"?

XI. Work in pairs.

Student A *you are a school graduate who has decided to enter Lviv Physical Culture University. You approach your friend, a second-year student of the University in question, and enquire into his future occupation.*

Student B *you are a second-year student of the Lviv State Physical Culture University. Your specialized field is physical rehabilitation. Have a conversation with your friend where you try to elucidate all the specific features of your future profession.*

II. B. READING AND COMPREHENSION

XII. Review the vocabulary units before reading each item of the Text 2B. While reading the text look for the information about:

- ***the spheres of everyday life where Physical Rehabilitation becomes of importance in helping people;***
- ***the epidemics which gave impetus to the development of PhT;***
- ***who the*** "Reconstruction Aides" ***were;***
- ***where physical therapists are trained;***

TEXT 2B

PHYSICAL THERAPY IN THE UNITED STATES OF AMERICA: PAST AND CURRENT DEVELOPMENTS

While some of the techniques used in physical therapy have their roots in antiquity, Physical Therapy as a distinctive profession began during World War I. In an effort to provide early rehabilitation to wounded soldiers, ***the US Surgeon General's Office*** formed the ***Division of Special Hospitals and Physical Reconstruction.*** This division created what were known as "Reconstruction Aides", who would later come to be known as Physical Therapists. Over 2,000 of these ***Reconstruction Aides*** were sent from American hospitals to the hospitals in France to care for the rehabilitation needs of the wounded veterans. Thus Pbysical Therapy began to slowly grow as a recognized medical profession until the ***polio epidemics*** of the 1940's and 50's. From this time on the role of physical therapy became increasingly important as physical therapists ***became instrumental*** in helping people with this disease minimize or overcome its paralyzing effects.	***the US Surgeon General's Office*** - *Головне управління американських хірургів* ***the Division of Special Hospitals and Physical Reconstruction*** – *відділення спеціального лікування та фізичного відновлення* ***Reconstruction Aides*** – *асистенти з відновлення* ***polio epidemics*** – *епідемія поліомієліту* ***become instrumentai*** – *бути необхідними, корисними*

Since then physical therapy has continued to grow and progress in both its ***art and science of healing***. Today, physical therapy provides health care services to patients of all ages and health conditions. It serves infants with birth defects to aid motor development and functional abilities; people with ***burns and wounds*** to prevent ***abnormal scarring*** and loss of movement; ***survivors of strokes*** to	***art and science of healing*** – *мистецтво і наука зцілення* ***burns and wounds*** – *опіки та поранення* ***abnormal scarring*** – *патологічні шрами* ***survivors of strokes*** – *ті, що перенесли інфаркт або параліч*

regain movement, function, and independent living; patients with cancer to regain strength and relieve discomfort; patients with low back problems to reduce pain and restore function; and patients with cardiac involvement to ***improve endurance*** and achieve independence. Physical therapy also provides for ***preventive exercise programmes*** and programmes to promote general health and fitness, postural improvement and industrial safety and health.	***improve endurance*** – *поліпшувати витривалість* ***preventive exercise programmes*** – *профілактичні оздоровчі програми*

Because physical therapists are required to understand a ***vast array of problems*** that can affect movement, function, and health, all physical therapists are college graduates. All physical therapists must pass a national examination and be licensed by the state in which they practice. Some physical therapists ***seek advanced certification*** in a clinical specialty, such as orthopedic, neurologic, cardiovascular and pulmonary, pediatric, geriatric, sports physical therapy, or electrophysiological testing and measurement.	***vast array of problems*** – *великий обсяг проблем* ***seek advanced certification*** – *(ут) продовжують навчання для отримання сертифікату*

Physical therapists do not confine their training and talents to treating people who are ill. They work as consultants to industries to ***improve workplace design*** and reduce the risk of such things as ***muscle overuse*** or developing ***low back pain***. They also provide services to athletes by foreseeing potential problems and elaborating preventive exercise programs. With the boom in the fitness industry, some physical therapists consult with individuals and fitness clubs ***to develop workouts*** that are safe and effective, especially for people who have problems with their joints or their backs. Currently, there are an estimated 115,000 physical rehabilitators practicing in the United States. The need for their care is growing.	***to improve workplace design*** – *поліпшити планування робочого місця* ***muscle overuse*** – *м'язова перевтома, перенапруження* ***low back pain*** – *біль у поперековому відділі спини* ***to develop workouts*** – *розробляти тренувальні програми*

- ***Compare the US system of physical therapists' training with that of the Ukrainian one. Make a list of rehabilitation issues common to both the US and Ukrainian physical therapists training system.***

SMALL TALK

XIII. Read the following English proverb. Provide a Ukrainian equivalent if possible. If not, please provide an accurate translation. Discuss the proverb with your group mates.

Folks spend their health to acquire wealth and later spend their wealth in an effort to regain their health.

III. A. LISTENING AND COMPREHENSION:

XIV. Sophie Brown works for a hospital in London. Listen to Sophie's daily routine. What is the sphere of her job activities? Before you listen to/read the information, check you know the following phrases:

- ***to affect the lower extremities*** *– уражати нижні кінцівки*
- ***torn ligaments*** *– розрив зв язок*
- ***muscle sprains*** *– розтягнення м язів*
- ***hip repiacement*** *– заміна стегна*
- ***crutches or Zimmer frames*** *– милиці або ходунки*
- ***appointment*** *– прийом хворих*
- ***joint disiocation*** *– вивих суглоба*
- ***range of motion (ROM)*** *– амплітуда руху*

A Day in the Lile of a Physical Therapist

Sophie is a hospital physical therapist. She works mainly with patients who have conditions or injuries affecting the lower extremities such as fractures, torn ligaments and muscle sprains. She also works with patients in rehabilitation lollowing orthopaedic surgery. Some are young people with sports injuries; others are elderly people who have bad hip replacements. Among her therapy modes are hands-on treatment, massage and exercises to keep the joints mobile and to strengthen muscles. Rehabilitating orthopaedic patients means helping them to walk again using crutches or Zimmer frames.

Sophie's work begins around 8.00 am. She checks for new patients on the computer and prepares for ber morning appointments. Between 9.00 and 12.00 she

sees new patients around the hospital and examines them. She elaborates rehabilitation programmes for persons with broken limbs, joint dislocations and ligament tears.

After lunch she sees regular patients. Their therapy usually includes exercises to increase range of motion and to strengthen muscles.

What does she like about being a physical therapist? It is getting people back to normal without chemical drugs. She enjoys rehabilitating people so they can get on with their lives after an injury or operation.

Listen again to answer the following questions:

- ***What personal qualities does Sophie possess?***
- ***Which of them are necessary for a job of a physical therapist? Choose from the list in the box below and justify your choice. Use a dictionary if necessary.***
- ***Are all of these qualities equally essential for a job of a physical therapist?***

dealing with people	patience	politeness
job experience	resolution	charm
sense of humour	responsibility	motivation
professionalism	efficiency	accuracy
numerical abilities	tolerance	sympathy

- ***Decide whether the following sentences are "true", "false" or "impossible to answer". Correct any false statement.***

1. Sophie usually receives new patient after lunch.
2. Sophie mainly works with patients who have mental health conditions.
3. Sophie communicates with her patients through a computer.
4. She deals with A&E (accident and emergency) patients mainly.
5. Among Sophie's patients there are people of different ages and occupations.
6. Sophie helps to rehabilitate patients after orthopedic operations.
7. Her task is to establish industrial safety and health rehabilitative programmes.
8. Sophie's patients don't use any supportive devices during rehabilitation sessions.

XV. Learn the instructions given by physical therapists during physical examinations. Think of the Ukrainian equivalents to those instructions:

PHYSICAL EXAMINATION

While examining a patient you should:

1. Introduce yourself if necessary.

Good morning, I'm John Mason, your physical therapist.

2. Brief the patient on what he/she should expect in a clear and simple way.

Do you know what we're going to do this morning?

What we're going to do today is ...

I'm going to examine you so that I can find out which exercises suit you the best.

I'll ask you to ...

Are you ready?

3. Instruct the patient in a clear but polite manner. When examining a patient or showing him how to perform this or that movement, the following polite forms are usually used for the instructions:

Could you bend forward as far as you can?

If you could cross your legs some 10 cm above the floor.

What I'd like to do is examine your posture.

Some direct instructions also might be used:

Stand with your feet together.

Lie perfectly still.

Slide your hand down your side.

Tell me if it hurts.

To soften an instruction you may say:

Can you just roll on to your back?

Could you just lie on your side?

4. Show sensitivity to the patient's needs and respond to discomfort, reassuring if appropriate:

You might feel a bit of pain or discomfort in your stiff knee.

This might hurt a little but otherwise the massage will have no effect.

Let me know if it's sore.

It won't take long to learn this movement.

You're doing very well.

You'll feel a relief.

5. Talk to the patient through the procedures:

I'm just going to ...

First I'll ...

Then I'll ...

You'll feel a slight discomfort.

That's it. Our physiotherapeutic procedure is over.

OTHER VERBS USED IN INSTRUCTIONS

bend down	нахиліться донизу
breathe in	вдихніть
breathe out	видихніть
close your eyes	заплющіть очі
curl up	згорніться у клубок
do this	зробіть ось так
follow my fingertip (with your eyes)	слідкуйте очима за кінчиком пальця
keep your knees straight	не згинайте коліна
let your wrist /arm go floppy / loosely	опустіть зап'ясток / руку вільно
lie on your side / back	лягайте на бік / на спину
lie on the bed / couch	лягайте на ліжко / на кушетку
lie down	лягайте
look straight ahead	дивіться прямо поперед себе
open your mouth	відкрийте рота
pull as hard as you can	тягніть до себе якомога сильніше
push as hard as you can	штовхайте від себе якомога сильніше
put your head down	опустіть голову
raise your leg	підніміть ногу
roll on to your back / front	повернiться на спину / на живіт
roll over	перевернiться
roll up your sleeve	підніміть догори рукав
sit	сидіть
sit up	сядьте
slide your hand down your side	опустіть руку вздовж тулуба донизу
stand straight	стійте рівно
stand up	встаньте
take off your top things	зніміть сорочку

tell me if it hurts	скажіть, якщо буде боляче
tilt your head back	нахиліть голову назад
touch your shoulder with your chin	торкніться плеча підборіддям
turn your head to the left / right	поверніть голову направо / наліво
turn on your side	поверніться на бік
relax	розслабтеся
show me what movements you can manage	покажіть, які рухи ви можете виконувати

XVI. Write instructions to describe the movements in the pictures 1 to 13.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____

XVIII. Case study. Work in pairs:

Student A you are a patient. *You have been sent by a hospital doctor to a physical therapist for rehabilitation after a fractured wrist bone (перелом променевозап'ясткового суглобу) / a fractured collar bone (перелом ключиці) / a sprained ankle (розтягнення гомілкового суглобу). You still complain of some pain and stiffness of the injured joint. Inform your physical therapist of your past medical history and how you feel now, after having been discharged from hospital. Respond to the therapist's manual treatment if necessary.*

Student B you are a physical therapist. *A patient after a fractured wrist bone / a fractured collar bone / a sprained ankle is visiting you to start a rehabilitation programme. Identify any painful or tender areas of his/her injured extremities. Brief the patient on what he/she should expect. Instruct the patient in a clear but polite manner. Show sensitivity to the patient's needs and respond to his/her discomfort. Talk to the patient through the procedures. Give some instructions of how to exercise at home. Make an appointment for the next meeting.*

IV. A. READING AND WRITING

- ***Read the following article with the help of a dictionary.***
- ***Accomplish written translation of the article in Ukrainian.***
- ***Write an abstract of the article in English.***

You have never written an abstract for an academic or scientific paper before? Don't get anxious. Read some useful information, abide by simple rules and you'll see it's easy to accomplish! (For additional tips consult p. 84).

How to Write an Abstract

Nowadays, abstracts are widely used in electronic storage and retrieval systems and by on-line information services. Their role in dissemination and circulation of written research products is further increasing in the informative age.

A **research paper (or journal) abstract** (Ukr. *анотація*) is a short account of a research paper placed before it. In contrast to the abstracts, which appear in abstracting journals, the research article abstract is written by the author of a paper.

A research paper abstract performs a number of important functions. It:

- serves as a short overview of the paper, which provides the most important information;
- helps, therefore, the potential audience to decide whether to read the whole article or not;
- prepares the reader for reading full text by giving an idea of what to expect;

The journal /research paper abstract has certain textual and linguistic characteristics. It:

- consists of a single paragraph;
- contains 2 - 7 full sentences;
- tends to avoid the first person and to use impersonal active constructions (e.g., "This research shows …", "This paper investigates …") or passive voice (e.g., "The data were analyzed…");

Now get down to work "without fear or reproach". Good luck!

TYPES OF PHYSICAL THERAPY

There are many specialty areas in the field of physical therapy. The aim of this article is to acquaint you with the most important medical spheres of physical therapy application areas.

Orthopaedic Rebabilitation. Orthopedic physical therapists manage and treat disorders and injuries of the musculoskeletal system as well as rehabilitate patients after orthopedic surgery. This specialty of physical therapy is most often found in the out-patient clinical setting. Orthopedic therapists are trained in the treatment of post-operative joints, acute sports injuries, arthritis and amputations just to name a few. Joint mobilizations, strength training, hot/cold packs, and electrical stimulation are modalities often used to expedite recovery in the orthopedic setting. Those who have suffered injury or disease affecting the muscles, bones, ligaments or tendons of the body will benefit from assessment by a physical therapist specialized in orthopedics.

Geriatric Rebabilitation - Geriatric physical therapy covers a wide area of issues concerning people as they go through normal adult aging but is usually focused on the older adults. There are many conditions that affect people as they grow older and include arthritis, osteoporosis, cancer, Alzheimer's disease, hip and joint replacement, balance disorders, incontinence and the like. Geriatric physical therapy helps those affected by such problems in developing a specialized programme to help restore mobility, reduce pain and increase general fitness level.

Neurological Rebabilitation - Neurological physical therapy is a discipline focused on working with individuals who have a neurological disorder or disease. These include Alzheimer's disease, brain injury, cerebral palsy, multiple sclerosis,

Parkinson's disease, spinal cord injury and stroke. Common problems of patients with neurological disorders include paralysis, vision impairment, poor balance, inability to ambulate and loss of functional independence. Therapists work with patients to improve these areas of dysfunction.

Cardiovascular and Pulmonary Rebabilitation - Cardiovascular and pulmonary rehabilitation physical therapists treat a wide variety of patients with cardiopulmonary disorders or those who have had cardiac or pulmonary surgery. Primary goals of this specialty include increasing patient endurance and functional independence. Patients with disorders including heart attacks, post coronary bypass surgery, chronic obstructive pulmonary disease and pulmonary fibrosis are only a few examples of those who would benefit from cardiovascular and pulmonary specialized physical therapists.

Peoiatric Rebabilitation - Pediatric physical therapy assists in early detection of health problems and uses a wide variety of modalities to treat disorders in the pediatric population. These therapists are specialized in treatment and management of infants, children and adolescents with a variety of congenital and acquired neuromuscular or skeletal disorders. Treatments focus on improving gross and fine motor skills, balanee and coordination, strength and endurance as well as cognitive and sensory processing/integration. Children with intellectual retardation, cerebral palsy, spina bifida and a variety of mobility disorders are a few of the patients treated by pediatric physical therapists.

- ***Here you can get acquainted with an exampie of an abstract of the articie you have read. Compare it with your own abstract. Don't worry if it differs from the sampie. So many men, so many minds. It is OK if you have abided by the ruies suggested above.***

Abstract. The article presents a brief descriptlon of the five most common specialty areas in physical therapy including orthopedics, geriatrics, neurology, pediatrics and cardiopulmonary domain. Primary goals of physical therapy for each of the medical areas mentioned above as well as major therapeutic modalities applied for functional recovery of certain physical abnormalities and dlseases are described.

UNIT I
SUBJECT AND GOALS OF PHYSICAL REHABILITATION
Voeabulary Check-up

I. Match the words from the right column with their definitions:

1. to keep from happening, especially by taking precautionary actions	**a) to restore**
2. to make pain, sorrow, etc. easier to bear; lessen; relieve	**b) geriatric**
3. relating to the sphere of medicine concerned with older people	**c) fitness**
4. the sensation of acute physical hurt or discomfort caused by injury	**d) pain**
5. a long staff of wood or metal having a rest for the artnpit, for supporting the weight of the body	**e) to alleviate**
6. to bring back to health, good spirits, etc	**f) massage**
7. to work out in detail; develop; create	**g) crutches**
8. physical damage or hurt or a specific instance of this	**h) to prevent**
9. the act of kneading, rubbing, etc., parts of the body to promote circulation, suppleness, or relaxation	**i) disease**
10. the of being physically healthy state	**j) to elaborate**

II. Complete the sentences using suitable verbs of instruction:

1. _____ straight ahead and _____ your nose with your right finger; then with your left finger.
2. _____ on the edge of the couch and _____ your legs hang loosely.
3. _____ your eyes tightly.
4. _____ your chest with your chin.
5. _____ slowly and look over your left shoulder.
6. _____ on your side.
7. _____ your sleeve.
8. _____ my fingertip.
9. _____ your hand down your side.

III. One out of four doesn't fit. Encircle a), b), c) or d) according to your choice.

1.	a) to heal	b) to treat	c) to cure	d) to care
2.	a) fitness	b) malady	c) disease	d) illness
3.	a) medication	b) medicine	c) safety	d) remedy
4.	a) lesion;	b) leisure;	c) trauma;	d) damage;
5.	a) harmful	b) not simple	c) dangerous	d) not safe
6.	a) handicapped	b) dislocated	c) disabled	d) impaired
7.	a) to occur	b) to relieve	c) to lessen	d) to alleviate
8.	a) to supply	b) to secure	c) to affect	d) to provide
9.	a) healthy	b) sophisticated	c) sound	d) fit

IV. Match the endings with their beginnings:

1. Over the course of the rehabilitation period physical rehabilitators …
2. Physical therapy can help people to achieve …
3. The physical therapist provides services to people of all ages who have pain or functional limitations resulting from …
4. Physical therapists work as consultants to industries to improve workplace design and reduce the risk of …
5. Physical therapy helps people with burns and wounds …
6. Physical rehabilitators incorporate such methods and procedures as …
7. While some of the techniques used in physical therapy have their roots in antiquity, Physical Rehabilitation as a distinctive profession …

a) … to prevent abnormal scarring and loss of movement.
b) … their highest level of physical activity by using functional movements.
c) … began during World War I.
d) … document progress, modify treatment strategies as appropriate.
e) … exercises, heat, cold, electricity, massage and hydrotherapy.
f) … such things as muscle overuse or developing low back pain.
g) … various diseases and injuries, as well as congenital and hereditary disorders.

V.V. Translate into English:

1. Мета фізичної реабілітації полягає у відновленні функціональних властивостей організму без використання ліків або хірургічного втручання.
2. Фізреабілітологи розробляють програми підтримки загального стану здоров'я, виправлення постави, а також охорони праці та здоров'я на виробництві.
3. Фізреабілітологи допомагають неповносправним особам досягти відносної незалежності та основ самообслуговування у повсякденному житті.
4. Фізреабілітологи співпрацюють із ортопедами, хірургами, психологами, а також членами сімей та опікунами пацієнтів.
5. Оскільки від реабілітологів вимагається знання анатомії, психології, біохімії, медицини тощо, вони повинні мати вищу освіту.

UNIT 2
FIRST AID

I. A. COMPREHENSION AND DISCUSSION:

I. Learn the vocabulary units to the text "FIRST AID":

first aid		перша (до)медична допомога
the simplest necessary measures	[ˈmeʒə]	найпростіші необхідні заходи
accident = casuaity	[ˈæksɪd(ə)nt] [ˈkæʒjuəltɪ]	нещасний випадок, аварія
musculoskeletal system		опорно-руховий апарат
rescuer	[ˈreskjuə]	рятівник
to be accompanied	[əˈkʌmpənɪd]	супроводжуватися
impairment = abnormality = pathology	[ɪmˈpɛəmənt]	порушення, відхилення, патологія
graze = scratch		подряпина
brulse	[bru:z]	синець
dislocation		вивих
sprain		розтягнення (зв`язок)
fracture simple fracture compound fracture comminuted fracture stress fracture	[ˈfræktʃə] [ˈkɔmpaund] [ˈkɔmmjʊ:tɪd]	перелом, тріщина, розрив м`яких тканин простий перелом відкритий перелом роздрібнений перелом втомний перелом
muscle or tendon tear	[ˈmʌslˌ] [tɛə]	розрив м`язів або зв`язки
hemorrhage = bleeding	[ˈhem(ə)rɪdʒ]	кровотеча
faint *(n, v)*	[feɪnt]	(*ім.*) непритомність (*дієсл.*) знепритомніти
poisoning	[ˈpɔɪz(ə)nɪŋ]	отруєння
victim = casuaity	[ˈkæʒjuəltɪ]	потерпілий, жертва
splintage	[ˈsplɪntɪdʒ]	шинування
splint *(n, v)*		(*ім.*)шина,(*дієсл.*)накладати шину
clean dressing		чиста пов'язка, перев'язка
contamination	[kən tæmɪˈneɪʃ(ə)n]	зараження, забруднення
preservation of a good airway		забезпечення вентиляції дихальних шляхів
unconscious cases	[ʌnˈkɔnʃəs]	випадки втрати свідомості
minor crushing injuries		незначні травми від ударів
direct blow		прямий удар
damage of the capillary blood vessels	[kəˈpɪl(ə)rɪ]	ушкодження капілярів
subcutaneous fat	[sʌbkjuːˈteɪnɪəs]	підшкірний жир
swelling to swell swollen	[ˈsweliŋ] [ˈswəul(ə)n]	набряк, набухання набрякати, розпухати набряклий
haematoma	[hi:məˈtoumə]	гематома
to suspect = to presume		припускати, думати, вважати
to complain of		скаржитися на
severe localized pain	[sɪˈvɪə] [ˈləukəlaɪzd]	сильний місцевий біль
tenderness	[ˈtendənəs]	чутливість
to puncture the skin	[ˈpʌnktʃə]	проколоти, пробити шкіру

exposed bone end		край кістки, що виступає назовні
to accomplish immobilization	[ɪˌməubəlaɪˈzeɪʃən]	здійснювати іммобілізацію
inviolable position	[ɪnˈvaɪələbl]	нерухоме положення
beyond the vessel	[bɪˈjɔnd] [ˈves(ə)l]	поза судиною
to pose a threat to life	[θret]	становити загрозу для життя
tight bandage application	[taɪt] [ˈbændɪdʒ]	накладання тугої пов'язки
forced bending	[fɔ:st]	форсоване згинання
blood-stopping tourniquet	[ˈtuənɪkeɪ]	джгут для зупинки кровотечі
cold application		холодний компрес
to elevate the limb		піднімати, підносити кінцівку
above the trunk		вище тулуба
sinking	[ˈsɪŋkɪŋ]	потоплення
suffocation	[ˌsʌfəˈkeɪʃ(ə)n]	удушення
artificial breathing	[ˌɑ:tɪˈfɪʃ(ə)l] [ˈbri:ðɪŋ]	штучне дихання
surgical operation	[ˈsɜ:dʒɪk(ə)l]	хірургічне втручання
measures of resuscitation	[rɪˌsʌsɪˈteɪʃ(ə)n]	заходи реанімації
respiratory standstill	[ˈstændstɪl]	зупинка дихання
cardiac arrest	[ˈkɑ:dɪæk] [əˈrest]	зупинка серця

II. Read Text 1A using the pretext vocabulary.

While reading all the textual materials of Unit 2 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project.

Make use of any of the on-line or printed dictionaries like ABBY Lingvo x 3 or ABBYLingvo x 5; dictionary.reference.com or www.merriam-webster.com

TEXT 1 A

FIRST AID

First aid is a complex of the simplest necessary measures to be taken in the cases of accidents. A person who gives the first aid is usually called a rescuer. Accidents might be accompanied by various impairments and traumas of musculoskeletal system, such as: grazes and bruises, dislocations and sprains, bone fractures, wounds, muscle or tendon tears, hemorrhages, faints, poisonings etc.

Very often an adequate first aid could save the life of a wounded person.

It is necessary to know different methods of helping in accidents. Usually they consist of the splintage of injured parts and the control of bleeding. Open wounds should be covered by a clean dressing to prevent further contamination.

General measures are directed towards minimizing shock by keeping the patient warm, and reducing movement to a minimum. The preservation of a good airway is important in unconscious cases.

Minor crushing injuries, such as those that may result from direct blows, produce mainly bruises, which are due to the damage of the capillary blood vessels In the subcutaneous fat. Bruises are often accompanied with local swelling and blue coloration of the skin, known as a haematoma.

The presence of a fracture should be suspected if a patient complains of a severe localized pain and tenderness in the region of a bone on movement. In case of a simple fracture there is no skin wound at fracture site. A compound fracture is one where the broken bone has punctured the skin, resulting in an exposed hone end at the place of fracture.

If accidents are accompanied by a bone fracture, an immobilization should be accomplished. Immobilization of the broken bone is required during the transportation of a wounded person to the nearest hospital. Immobilization can be done with the help of a special (often improvised) splint.

Very often injuries resulting from casualties are followed by hemorrhages. A hemorrhage appears as a result of blood flowing out beyond the vessel due to its walls' damage. Hemorrhage often poses a threat to a wounded person's life. There are several ways of stopping a hemorrhage: tight bandage application, forced bending, use of blood-stopping tourniquet or special splint, cold applicatlons or elevating the patient's injured limb above the trunk.

In the cases of sinking, suffocatlon, poisoning or other special situations artificial breathing and heart massage are sometimes applied. There are two types of artificial breathing: "mouth to mouth" and "mouth to nose". The amount of breathing movements must be 12 to 20 times a minute.

Heart massage can be direct (open) or indirect (closed). Rescuers can apply indirect massage only, for the direct one is connected with surgical operation. Closed massage is carried out by straight arms through rhythmic pressing upon the victim's chest. The amount of such movements must be 60 times a minute for adults and from 80 to 120 times a minute for children.

Both artificial breathing and heart massage are referred to as the measures of resuscitation (or reanimation) and should be applied within the shortest period of time possible after respiratory standstill or cardiac arrest.

When a rescuer applies the first aid measures he must be caim and act without panic. Very often the life and health of a casualty depends on knowledge and skills as well as feeling of responsibility of a rescuer. However, to become a fully competent first aider one should compiete a programme of study and gain an appropriate certificate.

VOCABULARY CONSOLIDATION

III. Complete the sentences with the appropriate word combinations from the box:

a) *haematoma*	g) *blood flowing out beyond the vessei*
b) *no skin wound*	h) *compound fracture*
c) *within the shortest time possible*	i) *compiete a programme of study*
d) *the control of bleeding*	j) *local swelling*
e) *through rhythmic pressing*	k) *the splintage of injured parts*
f) *blood-stopping tourniquet*	l) *direct heart massage*

1. In case of a simple fracture there is _____ at fracture site.
2. A _____ is one where there's skin wound directly communicating with the bone ends.
3. _____ is connected with surgical operation.
4. A hemorrhage appears as a result of _____ in the case of its wails' damage.
5. To become a fuiiy competent first aider one should _____ and gain an appropriate certificate.
6. Use of _____ or special splint is one of several ways of stopping hemorrhage.
7. Closed massage is carried out _____ upon the victim's chest.
8. Heart massage should be applied _____ after a cardiac arrest.
9. Bruises are often accompanied with _____ and blue coloration of the skin, known as _____.
10. Different methods of helping in accidents usually consist of _____ and _____.

IV. Provide answers to the following questions using as many new vocabulary units as possible:

1. Try to give a general definition to the term "first aid".
2. Whom do we usuaiiy caii "a rescuer", and what does "a victim/a casuaity" mean?
3. Which two conditions must be met first in any accident?
4. What are the dangers of shock in a traumatic accident?
5. How is the danger of primary and secondary infection managed?
6. Describe the typicai management of a traumatic case: what happens before the injured person is moved to a hospital?
7. How are minor crushing injuries treated?
8. When would you suspect the presence of a fracture?
9. What are the major types of fractures?
10. What are the characteristics of a compound fracture?
11. How is the immobilization of a bone fracture achieved?
12. Which injury do you think is more dangerous for a wounded person – a hemorrhage or a haematoma?
13. Which first aid measures are taken in the cases of sinking or suffocation?
14. Why is it important to maintain a certain rhythm while applying a heart massage or artificial breathing?
15. Why do you think it is necessary to know the ABCs of the first aid?

II. A. READING AND COMPREHENSION

1. ***Review the vocabulary units before reading each item of the text. Read the texts and do the activities that follow.***

BRUISE	
In case of fall or severe blow one might get a bruise on the part of the body which has been hurt. For instance when you fall on your knee ***you are certain to get a bruise*** on it. The bruise piace looks red and swoiien at first. If there's a scratch on the bruise piace the wound should be treated with 3-percent or 6-percent ***solution of peroxide***. The skin around	***you are certain to get a bruise*** – *ви напевно матимете синець* ***solution of peroxide*** - *розчин перекису водню*

the wound should be treated with solutions which include spirits. To defend the wound against secondary infection the bandage should be put on.

If the injured place ***hurts considerably*** and there are no severe cuts or bleeding, take some cloth, wet it in cold water and then place it on the bruise. You may also apply an ice-poultice. Cold applications will relieve the pain and help to avoid haematoma. If the fall or the blow was extremely heavy, you should consult a doctor right away.

hurts considerably – *сильно болить*

BLEEDING

When the blood flows from an ***artery*** its colour is scarlet. When the blood flows from a ***vein*** it is dark red.

It is vitally necessary to stop the bleeding as soon as possible. The simple method is to put a clean cloth or ***pad of sterile gauze*** over the wound and ***fasten it rather tightly***.

If the bleeding is from an arm or leg, raise the limb. If a person has a nosebleed after a heavy blow, you must put a cold compress on the nose. The person must breathe through his mouth then. In ***severe cases*** of bleeding doctors will utilize blood transfusion.

artery - *артерія*
scarlet - *яскраво-червоний*
vein - *вена*
pad of sterile gauze – *стерильний марлевий тампон*
fasten rather tightly – *зв'язати досить туго*
severe cases - *серйозні випадки*

FAINTING

The cause of ***fainting*** might be different: strong emotion (fright or joy), want of food, ***fatigue*** or pain.

In fainting a person ***loses his consciousness***. Blood does not get properly to the brain. The face of a person before fainting might ***get very pale*** and ***sweat*** might appear on his forehead. He ***feels dizzy*** and weak. The person falls unconscious. His breathing is shallow. The heart rate is slow and the pulse is weak.

Here are some steps to help a person who lost his consciousness:

- Lay a person flat on his back;
- Raise his feet a little.
- Loosen his clothes.
- Cover him warmly and make sure he has a clear airway.
- Sprinkle cold water on his face.

fainting - *втрата свідомості, зомління*
fatigue- *втома*
to lose consciousness – *втрачати свідомість*
get pale - *зблiднути*
sweat - *піт*
feel dizzy- *відчувати запаморочення*

VI. Here is the list of injuries that might occur while practicing sports. Fill in the chart. Use the information from the texts given above aml apply your imagination to think of causes aml possible first aid measures for the following traumas. No1 is done for you.

	Injury		Cause	First aid measures
1.	**an open fracture**	відкритий перелом	*a fall from a gymnastic apparatus during a training session*	*Cover the wound with sterile dressing; secure the dressing with a bandage if possible; immobilize the injured part and arrange to transport the casualty to hospital.* *Do not press down directly on a protruding bone end. Do not allow the casualty to drink, eat or smoke, as a general anaesthetic may be needed.*
2.	**a brulse**			
3.	**a dlslocated shoulder**			
4.	**a spralned ankle**			
5.	**swellIng**			
6.	**falnt**			
7.	**baematoma**			
8.	**bemorrbage**			
9.	**mlnor bleedlng**			
10.	**dlzzlness**			

III. A. LISTENING AND COMPREHENSION:

VII. You are going to listen to / read the information about basic types of bone fractures. The words from the box might ease your comprehension. Listen attentively in order to accomplish the follow-up tasks.

direct communication	*безпосередній контакт*
comminuted fracture	*осколковий перелом*
stress fracture	*утомний перелом*
to subject to stress	*піддавати напрузі*
splint	*шина*
legible ['ledʒəbl] ***rules***	*чітко визначені правила*
plaster cast	*гіпсова пов язка*
reduction	*вправляння, репозиція*

FRACTURES

The word "fracture" means a break of a bone. There are several types of fractures: simple, compound, comminuted, stress and some others.

In simple fractures there is no open wound on the surface of the skin. In a compound fracture there is a wound in the place of direct communication of the skin and the broken bone. Compound fractures are more serious than simple ones.

A comminuted fracture is present when the bone has been broken into more than two fragments.

A stress fracture may occur in bones subjected to abnormal stress.

If a person breaks his arm or leg he complains of pain in the place of fracture. The pain becomes more severe if he presses the place or tries to move.

Swelling appears quickly. Do not let the person move. Use a splint for the broken limb. Bind the splints to the broken extremity but not at the place of the fracture. There are legible rules for using splints in the cases of different fractures.

Doctors perform an X-ray on the patient to examine the fracture site. Usually plaster casts are put on the broken limbs.

The treatment of an average fracture can be divided into three phases:

reduction – to restore normal bony alignment;

immobilization – to maintain the reduced position until union has occurred;

rehabilitation – to restore normal function of the injured part.

VIII. Define if the sentences below are "true" or "false". Correct all the false statements.

1. If a person breaks his arm or leg there's usually no swelling on the fracture site.
2. A comminuted fracture can be defined as an incomplete fracture.
3. Splintage belongs to one of the first aid measures in bone fractures.
4. Plaster cast is removed after the union has occurred.
5. Immobilization belongs to the measures of treatment taken after rehabilitation.
6. Compound fractures are more serious than comminuted fractures.
7. If a person breaks his arm or leg, he has to go to the hospital immediately to get an X-ray.

IX. Listen to the information again to perform a matching task: match words* 1-8 *with words a)-h) to form collocations. Use each word only once. Try to explain the meaning of each collocation.

1 simple	**a)** site
2 direct	**b)** pain
3 abnormal	**c)** communication
4 severe	**d)** fracture
5 broken	**e)** cast
6 legible	**f)** stress
7 fracture	**g)** rules
8 plaster	**h)** extremity

SMALL TALK

X. Read the following English proverb. Provide a Ukrainian equivalent if possible. If not, please provide an accurate translation. Discuss the proverb with your group mates.

The best doctors are Dr. Diet, Dr. Quiet and Dr. Merryman.

IV. A. READING AND WRITING

XI. You are offered a passage from Arthur Hailey's "The Final Diagnosis" novel. While reading the passage, consult the dictionary for any unknown words. Perform the tasks you'll find enclosed in the text.

Arthur Hailey *(5 April 1920 – 24 November 2004) was a British/Canadian novelist.*

Each of his novels has a different industrial or commercial setting and includes, in addition to dramatic human conflict, carefully researched information about the way that particular environments and systems function and how these affect society and its inhabitants.

He would spend about one year researching a subject, followed by six months reviewing his notes and, finally, about 18 months writing the book. That aggressive research — tracking rebel guerrillas in the Peruvian jungle at age 67 for The Evening News (1990), or reading 27 books on the hotel industry for Hotel – gave his novels a realism that appealed to readers. Many of his books have reached #1 on the New York Times bestseller list and more than 170 million copies have been sold worldwide in over 40 languages.

Bibliography

- *Runway Zero-Eight* (1958) – in-flight medical emergency, caused by food poisoning
- *The Final Diagnosis* (1959) – hospital politics as seen from the pathology department
- *In High Places* (1960) – Cold War Era politics in North America
- *Hotel* (1965) – hotels
- *Airport* (1968) – airport politics
- *Wheels* (1971) – automobile industry
- *The Moneychangers* (1975) – banks
- *Overload* (1979) – power crisis in California
- *Strong Medicine* (1984) – pharmaceutical industry
- *The Evening News* (1990) – newscasters
- *Detective* (1997) – investigation politics

... Roger McNeil, the pathology resident, suspected that no matter how many years he stayed in medicine he would never become hardened to performing autopsies on children. He had just completed one, and now, in the autopsy room, the body of the four-year-old boy lay open, before him...

An hour or two earlier the child had been struck by an automobile outside his own home. He had been brought to the hospital by ambulance but was dead on arrival. Now Dr Pearson, the Three Counties Hospital's elderly Head of the Pathology Department, entered the autopsy room. McNeil told Pearson what they had discovered.

The old man said, "You mean that's all?" He seemed incredulous.

McNeil answered, "That's all that killed him. Nothing else."

... The three occupants of the hospital anteroom looked up as Pearson entered. One was a uniformed patrolman of the city police, and near him was a tall man whose eyes were red-rimmed. The third occupant – dejected and sitting alone in the far corner – was a mousy little man apparently feeling miserable.

Pearson introduced himself and asked the patrolman, "Were you at the scene of the accident?"

"I arrived just after it happened." He indicated the tall man. "This is the father of the boy. The other gentleman was the driver of the car."

The mousy man looked up. Appealing to Pearson, he said, "He ran straight out – straight out from the side of the house. I'm not a careless driver. I've got kids of my own. I wasn't going fast. I was almost stopped when it happened."

"And I say you're a lousy liar." It was the father, his voice choked with emotion and hitterness. "You killed him, and I hope you go to jail for it."

Pearson said quietly, "Just a moment, please." There was silence, the others watching him. He paused. "The autopsy has shown it was not the car that killed the boy." The patrolman looked puzzled. The father exclaimed, "But I was there! I tell you ..."

"I wish there were some other way to tell you this," Pearson said "but I'm afraid there isn't." he addressed the father. "The blow your boy received knocked him to the road, and there was a mild concussion which rendered him unconscious. He also sustained a small fracture of the nose - quite minor, but unfortunately it caused his nose to bleed profusely." Pearson turned to the patrolman.

"The boy was left lying on his hack, I believe – where he fell."

The officer said, "Yes, sir, that's right. We didn't want to move him until the ambulance came."

"And how long was that?"

"I'd say about ten minutes."

Pearson nodded slowly. It was more than enough time; five minutes would have been sufficient. He said, "I'm afraid that was the cause of the death...

- ***Before you continue reading make your own "final diagnosis" taking into account the circumstances of the accident. Read the following part of the passage and check the answers you've given.***

"The blood from the nosebleed ran back into the boy's throat. He was unable to breathe and be aspirated blood into the lungs. He died of asphyxiation."

The father's face revealed horror, incredulity. He said. "You mean ... if we'd only turned him over..."

"Mother of God!" It came from tbe father – a despairing, tortured wail. He was sobbing, his bands to his face.

The patrolman's face was white. He said ...

- ***Stop readiug for a while and try to guess the reason for the patrolman's embarrassment. What could he probably say to Dr Pearson?***

He said, "Doctor, I was there all the time. I could have moved the boy ... but I didn't know. I took the first-aid course. I got a badge for it! All the time they taught us – don't move anybody; whatever you do, don't move them!" He was talking as if in a daze. "It was my fault... All fault was mine ..."

Dr Pearson toucbed tbe patrolman's arm gently. "I don't think you should blame yourself." Then he continued slowly, "Unfortunately there are always some exceptions to the rule – one of them is when someone is bleeding in the mouth ..."

Abridged from
Arthur Hailey "The Final Diagnosis"

- ***Skim through the story once more to compile a list of words and word combinations which you consider to belong to a professional (medical) vocabulary.***

- ***Write down the first aid measures you would personally apply in the case described above.***

VOCABULARY CHECK-UP

I. Match the Ukrainian terminological units with their English equivalents. Mind that there are 20 Ukrainian but 24 English items:

1) нещасний випадок	2) рятівник	3) потерпілий
4) зупинка дихання	5) холодний компрес	6) чутливість
7) скаржитися на біль	8) відкритий перелом	9) реанімаційні заходи
10) набряк	11) хірургічне втручання	12) зупинка серця
13) втратити свідомість	14) отруєння	15) запобігти зараженню
16) гіпсова пов'язка	17) накласти тугу пов'язку	18) кровотеча
19) штучне дихання	20) крововилив	

1) to complain of pain	2) immobilization	3) splintage
4) respiratory standstill	5) plaster cast	6) to apply tight bandage
7) tenderness	8) poisoning	9) compound fracture
10) haematoma	11) measures of resuscitation	12) haemorrhage
13) rescuer	14) solution of peroxide	15)cardiac arrest
16) to prevent contamination	17) cold application	18) swelling
19) surgical operation	20) artificial breathing	21) bone fracture
22) accident	23) to lose consciousness	24) victim

II. Match the words from both columns to make synonymous pairs:

1. impairment	1. scratch
2. dressing	2. bleeding
3. graze	3. cold application
4. to lose consciousness	4. dysfunction
5. ice-poultice	5. to pain
6. to relieve	6. injury
7. haemorrhage	7. fatigue
8. to apply	8. to use
9. wound	9. to faint
10. to hurt	10. haematoma
	11. bandage
	12. fainting
	13. to alleviate

III. Complete the sentences:

1. The application of medicines, surgery, physical therapy etc. to a patient is called the _____.
2. Heart massage should be applied within the shortest time possible after a _____.

3. The restoration of normal bony alignment is called the _____ .
4. The sensation of acute physical hurt or discomfort caused by injury, illness etc. is called _____.
5. To _____ from contamination means to take precautions from infection.

IV. Accomplish the cloze test by completing the text:

There are several types of __*a)* __: simple, compound, comminuted, stressed and some others.

In simple fractures there is no open __*b)* __ on the surface of the skin. Compound fractures are more serious than simple ones. A __*c)* __ fracture is present when the bone has been broken into more than two fragments.

If a person breaks his arm or leg he __*d)* __ of pain in the place of fracture. Swelling appears quickly. Do not let the person __*e)* __. Use a splint for the broken limb. Bind the splints to the broken __ *f)* __ but not at the place of the fracture. Doctors send the patient to X-raying to __ *g)* __ the fracture site. The __ *h)* _ of an average fracture can be divided into three phases: reduction – to restore normal bony __*i)* _; immobilization – to maintain the reduced position until __ *j)* _ has occurred; __*k)* _ – to restore normal function of the injured part.

a)	*g)*
b)	*h)*
c)	*i)*
d)	*j)*
e)	*k)*
f)	

IV. Translate the sentences into English:

1. Знання та навички першої домедичної допомоги необхідні кожній людині.
2. Нещасні випадки часто супроводжуються ушкодженнями та травмами опорно-рухового апарату і кровотечами.
3. Перша медична допомога при переломах кінцівок полягає у мобілізації ушкодженої кінцівки.
4. Штучне дихання використовують у випадках потоплення.
5. Непрямий масаж серця здіійснюється ритмічним натисканням на грудну клітку жертви нещасного випадку.

UNIT 3
PARTS OF THE BODY

I. A. COMPREHENSION AND DISCUSSION:

1. Learn the vocabulary to the text "PARTS OF THE BODY". Pay special attention to synonymous pairs and special professional vocabulary.

head	[hed]	голова
neck	[nek]	шия
trunk	[trʌnk]	тулуб
limbs = extremities upper extremity lower extremity	[lɪmz] [ɪk'stremətɪz]	кінцівки верхня кінцівка нижня кінцівка
bone	[bəun]	кістка
shape	[ʃeɪp]	форма
cartilage	['kɑ:tɪlɪdʒ]	хрящ
ligament	['lɪgəmənt]	зв'язка
joint	[dʒɔɪnt]	суглоб
tendon	['tendən]	сухожилок
skull	[skʌl]	череп
to be composed of		складатися з
cranial part	['kremɪəl]	черепна частина
facial part	['feɪʃ(ə)l]	лицева частина
to enclose = to contain		містити
brain	[breɪn]	мозок
forehead	['fɔrɪd] ['fɔ:hed]	чоло
temple	['templ]	скроня
cheek	[ʧi:k]	щока
cheekbone	['ʧi:kbəun]	вилиця
jaw	[dʒɔ]	щелепа
tongue	[tʌn]	язик
to be lodged = to be located		знаходитися
to be attached	[ə'tæʧt]	кріпитися
to chew	[ʧu:]	жувати
pelvic girdle	['pelvɪk] ['gɜ:dl]	тазовий пояс
taste *(n, v)*	[teɪst]	*n* смак; *v* відчувати на смак
lip		губа
thigh	[0aɪ]	стегно
margin	['mɑ dʒɪn]	край
to breathe breath *(n)*	[bri:ð] [breθ]	дихати дихання, подих
to smell		відчувати запах
to give protection		оберігати
vertebra *(pl.* vertebrae) cervical vertebrae	['vɜ:tɪbrə] ['vɜ:tɪbri:] ['sɜ:vɪk(ə)l]	хребець шийні хребці
pharynx	['færɪnks]	глотка, горло
larynx	['lærɪnks]	гортань
vessel	['ves(ə)l]	судина
spine – spine column = vertebral	[spaɪn]] ['kɔləm]	хребет, хребтовий стовп

column = backbone	['bækbəun]	
chest = thorax = ribcage	[ʧest] ['θɔ:ræks]	груди, грудна клітка
pelvic bones		тазові кістки
bony ring	['bəuni] [rɪŋ]	кістисте кільце
elastic pillar	['pɪlə]	пружна опора
to support	[sə'pɔ t]	підтримувати
spinal cord	['spaɪn(ə)l] [kɔ:d]	спинний мозок
cavity	['kævətɪ]	порожнина
lower leg = shank = shin	[ʃæŋk] [ʃɪn]	гомілка
liver	['lɪvə]	печінка
gallbladder	['gɔ:l blædə]	жовчний міхур
pancreas	['pæŋkrɪəs]	підшлункова залоза
spleen	[spli:n]	селезінка
kidneys	['kɪdnɪz]	нирки
urinary bladder	['juərɪn(ə)rɪ] ['blædə]	сечовий міхур
small intestine	[ɪn'testm]	тонка кишка
large intestine		товста кишка
reproductive organs	[ri:prə'dʌktɪv]	статеві органи
internal /external genitals	[ɪn'tɜ:n(ə)l][ɪk'stɜ:nəl] ['ʤenɪtl]	внутрішні/зовнішні статеві органи
navel	['neɪv(ə)l]	пупок
rib	[rɪb]	ребро
hip	[hɪp]	бік, стегно, поперек
waist = loins	[weɪst] [lɔɪnz]	поперек, крижі
sboulder	['ʃəuldə]	плече
shoulder blade	['ʃəuldə] [blɔɪd]	лопатка
backside = buttocks	['bæk'saɪd] [bʌtəks]	сідниці
upper arm	['ʌpə] [ɑ:m]	плечова частина руки
elbow	['elbəu]	лікоть
forearm	['fɔ:(r)ɑ:m]	передпліччя
wrist	[rɪst]	зап`ясток
collar bone = clavicle	['kələ] ['klævɪkl]	ключиця
shoulder girdle	['ʃəuldə] ['gɜ:dl]	плечовий пояс
thumb	[0ʌm]	великий палець руки
patella = kneecap	[pə'telə] ['ni:kæp]	колінна чашечка
shin	[ʃɪn]	гомілка
calf	[kɑ:f]	литка
ankle	['æŋkl]	щиколотка
foot	]fut]	стопа
toe	[təu]	палець на нозі
sole	[səul]	підошва
balls of tbe foot		кінчики пальців на нозі
dorsum	['dɔ:rsəm]	задня поверхня, спина
arch	[ɑ:rch]	підйом, дуга
heel	[hi l]	п`ятка
abdomen = belly	['æbdəmen] ['belɪ]	живіт, черево
breastbone = sternum	['brestbəun] ['stɜ:nəm]	грудна кістка
stomaeh	['stʌmək]	шлунок

II. Read the following article using the pretext vocabulary.

TEXT 1 A

PARTS OF THE BODY

The main parts of the body are the head, the neck, the trunk and the limbs (extremities). There are more than 230 bones of different sizes and shapes in the skeleton. The bones are connected together by the cartilages, the ligaments (tendons) and joints. The joints allow the bones to move.

The main part of the head is called the skull. The bones of the skull are composed of cranial and facial parts. The skull encloses the brain.

The forehead, the temples, the cheeks, the cheekbones, two jaws and the mouth compose the face. The teeth and the tongue are lodged in the mouth. One chews food with the teeth and tastes food with the tongue. The lips are the two margins of the mouth. We see with the eyes, breath and smell with the nose and hear with the ears.

The neck connects the head with the trunk. It contains the cervical vertebrae, the pharynx, the larynx and important vessels and nerves.

The trunk consists of the spine (spinal column / vertebral column / backbone), the chest, the pelvic bones and the abdominal cavity.

There are many vertebrae in the spine. The vertebrae are bony rings which together form the spinal column. This is an elastic pillar which supports the trunk and the skull. Through the column runs a canal which contains the spinal cord.

The trunk is divided into two large cavities by the diaphragm. The upper cavity of the trunk is called the thorax (the chest). The lungs and the heart are enclosed within the thorax. The lower part is called the abdomen (belly). In the middle of the chest there is a long bone named the breastbone (sternum).

Inside the abdominal cavity we find the stomach, the liver, the gallbladder, the pancreas, the spleen, the kidneys, the urinary bladder, the small and large intestines (bowels) and the internal reproductive organs.

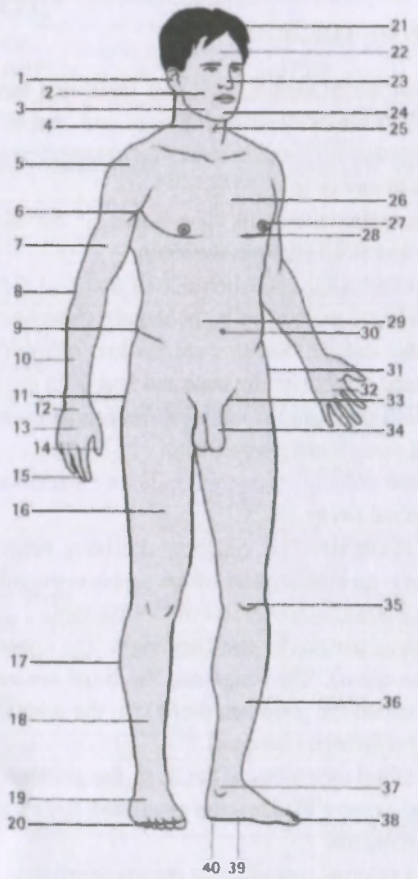
On the abdomen we see the navel and external reproductive organs (genitals).

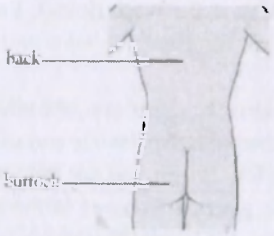
The part of the body between the ribs and hips is the waist (loins). From the back view we see the shoulders and shoulder blades, the back, the loins and, at the lower end, the backside (buttocks / posterior).

The upper extremity is divided into the shoulder, the upper arm, the elbow, the forearm, the wrist and the hand. The shoulder together with the clavicle and shoulder-blade belongs to the shoulder girdle. Each hand has four fingers and one thumb.

The lower extremity is attached to the pelvic girdle. It consists of the hip, the thigh, the knee (to which the patella gives protection), the lower leg (shank) with shin in front and the calf at the back, the ankle and the foot. The foot itself consists of the toes, the sole, the ball of the foot, the dorsum, the arches and the heel.

Parts of the body





1. ear
2. cheek
3. jaw (mandible)
4. neck
5. shoulder
6. armpit (axilla)
7. upper arm
8. elbow
9. loin
10. forearm
11. buttock
12. wrist
13. hand
14. thumb
15. finger
16. thigh
17. calf
18. leg
19. foot
20. toe
21. hair
22. forehead
23. nose
24. chin
25. Adam's apple (laryngeal prominence)
26. chest (thorax)
27. nipple
28. breast
29. stomach, tummy, belly (abdomen)
30. navel, belly button (umbilicus)
31. hip
32. palm
33. groin (inguinal region)
34. genitals (penis and testicles)
35. knee (patella = kneecap)
36. shin
37. ankle
38. big toe
39. sole
40. heel

VOCABULARY CONSOLIDATION

III. Where do the following parts of the body or organs belong? Fill in the table below.

brain	shin	trachea	urinary bladder	liver
ankle	wrist	pancreas	gallbladder	eyes
ears	shoulder	upper arm	knee	thumb
spleen	stomach	mouth	forearm	sole
lungs	kidneys	heart	chin	forehead
cheeks	toes	hip	calf	nose
heel	tongue	fingers	elbow	patella

HEAD	THORAX	ABDOMINAL CAVITY	LOWER AND UPPER EXTREMITIES

IV. Guess the following riddles. Jumbled answers might help you:

1. Two brothers live across a path but never see each other. *(eesy)*
2. What has an eye but cannot see? *(rollad notakenb)*
3. Why are teeth like verbs? *(both are "sinattrive" and "insinattrive")*
4. Two mothers have five sons each, and all have the same names. What are they? *(owt shadn + gifners)*
5. What is it that no one wishes to have but no one wishes to lose? *(thete)*
6. It always beats and hops. It never sleeps or stops. Life-long we don't part with our restless … *(arhet)*

V. Provide detailed answers to the following questions using new anatomical vocabulary you've studied:

1. What are the main parts of the human body?
2. What does the neck contain?
3. How are movements of the bones possible?
4. Which organs do we find in the abdominal cavity?
5. In what structure is the brain lodged in?
6. What is the face composed of?
7. What is the major function of the spinal column?

8. What is the lower extremity attached to?
9. What can we see on the abdomen?
10. Into which parts is the upper limb divided?
11. What parts does the lower extremity consist of?
12. What are the principal systems of the human body?

VI. Provide questions to the underlined words:

1. The head consists of the cranial and facial parts.
2. The part of the body between the ribs and the hip is the waist.
3. Each hand has four fingers.
4. The abdominal cavity includes the small and large intestines.
5. The heart is situated inside the thoracic cavity.
6. Voluntary muscles are capable of complicated movements.
7. Involuntary muscles are controlled unconsciously.
8. The trunk is divided into two large cavities by diaphragm.

VII. Complete the sentences with the suitable word combinations from the box:

a) together with the collar bone	*e) between the ribs and hips*
b) breath and smell	*f) a long bone*
c) Inside the abdominal cavity	*g) Through the column*
d) of different sizes and shapes	*h) are connected together by*

1. The part of the body _____ is the waist (loins).
2. There are more than 230 bones _____ in the skeleton.
3. The shoulder _____ and shoulder-blade belongs to the shoulder girdle.
4. The bones _____ the cartilages, the ligaments (tendons) and joints.
5. We see with the eyes, _____ with the nose and hear with ears.
6. In the middle of the chest there is _____ named the breastbone (sternum).
7. _____ we find the stomach, the liver, the gallbladder, the pancreas, the spleen, the kidneys, the urinary bladder, the small and large intestines (bowels), and the internal reproductive organs.
8. _____ runs a canal, which contains the spinal cord.

VIII. Read the following Fast Facts concerning the human body. Discuss with your group mates any facts that were previously unknown to you. Use the following word combinations to express disbelief or surprise:

- ***Could it really be true?*** - *Невже це дійсно так? / Невже це правда?*
- ***Imagine my astonishment when I learned that...*** - *Уявіть моє здивування, коли я дізнався, що...*
- ***Who would have thought it!*** - *І хто б міг подумати!*
- ***Just imagine!*** - *Лише уявіть собі!*
- ***It is inconceivable that...*** - *Важко уявити собі, що ...*

FAST FACTS

1. The adult body is made up of: 100 trillion cells, 206 bones, 600 muscles, and 22 internal organs.
2. Every hour about 1 billion cells in the human body have to be replaced.
3. The circulatory system of arteries, veins and capillaries is about 60,000 miles long (1 mile equals about 1.6 km).
4. There are about 9,000 taste buds on the surface of the tongue, in the throat, and on the roof of the mouth.
5. The strongest muscle in the body is the tongue.
6. You blink over 10,000,000 times a year.
7. It takes about 20 seconds for a red blood cell to circle the whole body.
8. Only 10% of the population is left handed.
9. One fourth of the bones in your body are in your feet.
10. Children tend to grow faster in spring.
11. More men are color-blind than women.
12. More people have brown eyes than any other colour.

II. A. READING AND COMPREHENSION

IX. Read the text and find the information to answer the following questions:

- ***What is the difference between voluntary and involuntary muscles?***
- ***What kind of movements do voluntary and involuntary muscles provide?***
- ***What are the specific qualities of the cardiac muscle?***

While reading all the textual materials of Unit 3 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project. Make use of any of the on-line or printed dictionaries like ABBY Lingvo x 3 or ABBYLingvo x 5; dictionary.reference.com or www.merriam-webster.com Please be sure to do the similar job while working upon other Units that follow.

MUSCLES

Muscles form about 40 per cent of the body weight. There are about 600 skeletal muscles. They are subdivided into three groups. These groups are the muscles of the trunk, head and extremities. Muscles are attached to bones, internal organs and blood vessels. They allow us to perform internal or external movements due to their ***contraction and relaxation***. As far as their form is concerned the muscles can be long, wide or short. The long muscles compose the free extremities. The wide ones lay the trunk and form the walls of the body cavities. The short muscles are not numerous, some of them forming facial muscles.	***contraction and relaxation*** – *скорочення і розслаблення*

We also distinguish between ***voluntary*** and ***involuntary muscles***. Most of the voluntary muscles are found in the extremities, the trunk and the head. Voluntary muscles are capable of rapid and complicated movement. They move all the bones, the face and the eyes. Involuntary or smooth muscles only provide slow mechanical movement in the walls of the ***digestive and urinary tracts***, other internal organs and walls of the blood vessels. They ***are controlled unconsciously*** through the autonomous (sympathetic and parasympathetic) nervous system.	***voluntary muscles*** – *м'язи, що довільно скорочуються* ***Involuntary muscles*** – *м'язи, які мимовільно скорочуються* ***digestive and urinary tract*** – *травний та сечовидільний тракт* ***be controlled unconsciously*** – *контролюватися несвідомо*

Cardiac muscle is a separate, extremely well developed voluntary muscle. Its ***fibers are striated*** but they are short and thick. They contract rhythmically without any nervous impulse. The nerves can only ***modify the rate of contraction.***	***cardiac muscle*** – *серцевий м'яз* ***fibres are striated*** – *волокна поперечно-смугасті* ***modify the rate of contraction*** – *змінювати частоту скорочень*

III A. LISTENING AND COMPREHENSION:

X. You are going to listen to/read the text entitled "WHAT IS REMARKABLE ABOUT THE HEART?" concerning certain distinctive features of human heart functioning. Make an educated guess as to what the text will be about on the assumption of the title. Identify any unknown words before listening / reading.

remarkable -	*особливий, дивовижний*
digested food -	*(тут) засвоєні поживні речовини*
waste gas -	*відпрацьовані гази*
carbon dioxide -	*двоокис вуглецю, вуглекислий газ*
to get rid of -	*звільнитися, позбавитися*

WHAT IS REMARKABLE ABOUT THE HEART?

Our heart is an amazing organ that keeps the blood moving through the blood vessels in our skin. The heart pumps blood to the lungs, back to the heart, out to every part of the body, and back to the heart again. The blood makes each round trip in about a minute.

The blood carries digested food and oxygen to all parts of the body. The human body needs food and oxygen to sustain life. The blood also picks up a waste gas called carbon dioxide. The blood carries this waste gas from each part of the body back to the lungs. When we breathe out, we get rid of the carbon dioxide gas.

When we relax, the heart pumps about two and a half litres of blood a minute through the body. But if we practice sports or simply run or jump, the heart speeds up because muscles need the extra oxygen for the energy replacement. It may pump as much as seven and a half litres of blood a minute. In young ones the heart beats at about 90 times a minute rate. The rate of an adult's heart beat is a bit lower: about 70 or 80 times per minute. But the heartbeat is different in the same people under

different conditions. For example, the heartbeat is faster during exercising, or when a person is angry, scared or excited. During sleep the heart rate slows down.

- ***Are the sentences below "true" or "false"? Correct the false answers. Listen again to check your answers.***

1. When we relax or during sleep the heart pumps approximately seven and a half litres of blood per minute.
2. At different times of the day and in various life circumstances a person's heart can vary greatly.
3. During exhalation we breathe out carbon dioxide gas.
4. Blood carries the waste gas to all parts of the body.
5. When a person is in a state of extreme excitement his heart rate slows down.

XI. Translate the following sentences into English making use of the information you've listened to:

1. Серце качає кров до легенів, потім знову до серця, а потім до всіх частин тіла і знову до серця.
2. Організму потрібна їжа та кисень для підтримки життєдіяльності.
3. Упродовж видиху ми звільняємося від вуглекислого газу.
4. Коли людина збуджена або налякана, її серцебиття частішає.
5. Серце здатне перекачувати до семи з половиною літрів крові за хвилину.

IV. A. READING AND WRITING

XIII. For your independent reading an abridged article from the magazine "Newsweek" is suggested. Read with the help of a dictionary and write down your opinions on the information using the following expressions:

the article under review was published in - *стаття, яка розглядається, надрукована в*
the article is about - *у статті йдеться про ...*
the purpose (aim/object/goal) of the article is to describe - *мета статті - описати*
the first paragraph deals with - *у першому абзаці йдеться про ...*
then the article goes to the problem of - *далі стаття торкається проблеми...*
it is evident that - *очевидно, що ...*
it is interesting to note that - *цікаво зауважити, що ...*

the final paragraph states / ends with *- в останньому абзаці стверджується, що...*
to the best of my knowledge *- наскільки мені відомо...*
I, for one, consider that *- я, наприклад, вважаю, що ...*
in my opinion / to my mind *- на мою думку...*

MENDING BONES WITH BIOLOGICAL «GLUE"

If flesh is weak, bones can be weak, too. Fractures are often painfully slow to heal, and bone degenerate with age. Doctors make attempts to repair severe breaks with bone taken from the patient's body, usually the bip, or with implants of new synthetic substances. Such impiants, however are either scarce or expensive. Now researchers have identified a biochemical substance that could speed up the process that makes bones mend – and might even make old bones strong again.

Collagen Corp., oĭ Palo Alto, Calif., has isolated a hormone like protein that induces connective tissue cells surrounding bone to form cartiiage. The protein, dubbed "cartilage inducting factor" (CIF), is present in human and animal bone, but in quantities tbat are too minute to heal major fractures quickly. By applying a mixture of CIF and other proteins to a fractured area, scientists hope to force cartilage and, eventuaily, bone growth.

So far Collagen's scientists have used tbe metbod exclusively to heal animal fractures, employing CIF extracted from the bones of cows. Once CIF extracts are avaiiable, Collagen's researchers hope to use tbe material to do more then just knit together simpie fractures. The protein, they believe, can be applied to replace bone tissue lost from gum disease, fuse spines, reconstruct cleft palates and correct other congenital defects.

VOCABULARY CHECK-UP

I. One out of four doesn't fit. Encircle the one you've chosen.

1. a) the thorax; b) the calf; c) the abdomen; d) the sternum;
2. a) the shoulder; b) the clavicle; c) the skull; d) the shoulder blade;
3. a) cranial; b) digestive; c) reproductive; d) skeletal;
4. a) to smell; b) to taste; c) to attach; d) to breath;
5. a) the kidneys; b) the lungs; c) the gallbladder; d) the toes.

II. Find an appropriate definition to each of the words from the box:

a) kidneys	b) lungs	c) tongue	d) patella	e) trunk
f) brain	g) liver	h) pancreas	i) forehead	j) joint

1. the body excluding the head, neck and limbs;
2. a pair of spongy saclike respiratory organs within the thorax;
3. controlling and coordinating centre of the nervous system;
4. the junction between two or more bones usually formed of connective tissue and cartilage;
5. an organ occupying most of the upper right part of the abdominal cavity immediately below the diaphragm;
6. the organ of taste, aids mastication and swallowing of food;
7. the part of the face between the natural hair line and the eyes;
8. a large elongated glandular organ situated behind the stomach and secreting insulin;
9. pair bean-shape organs at the back of the abdominal cavity, one on each side of the spinal column;
10. a small flat triangular bone in front of and protecting the knee joint;

III. Match the words from both columns to make up synonymous pairs:

1. dorsum	a) loins
2. collar bone	b) to connect
3. trunk	c) torso
4. ligament	d) back
5. waist	e) to support
6. to attach	f) lower leg
7. abdomen	g) brain
8. limbs	h) clavicle
9. to enclose	i) cavity
10. spine column	j) tendon
11. patella	k) to contain
12. chest	l) backbone
13. shank	m) thorax
	n) belly
	o) extremities
	p) kneecap

IV. Match the endings with the beginnings:

1. The main parts of the hody are …
2. There are more 230 hones of …
3. Each hand has …
4. The spinal column is an elastic pillar which …
5. The cervical vertehrae, the pharynx, the larynx and …
6. The hones are connected together hy …
7. The shoulder together with the collar hone and shoulder hlade …
8. The forehead, the temples, the cheeks, the cheekbones, …
9. The lower extremity consists of …
10. The part of the hody hetween the rihs and …

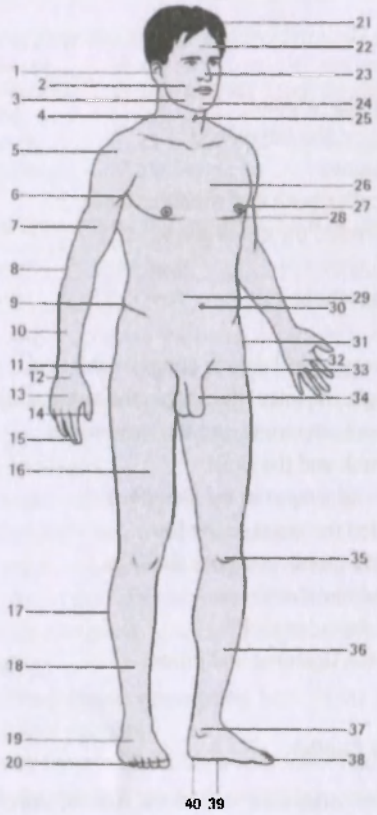
a) …the important vessels and nerves compose the neck.
h) … the hip, the thigh, the knee, the shank, the ankle and the foot.
c) … the head, the neck, the trunk and the extremities.
d) … supports the trunk and the skull.
e) … different sizes and shapes in the skeleton.
f) … and hips is called the waist or the loins.
g) … two jaws and the mouth compose the face.
h) … four lingers and one thumh.
i) … helongs to the shoulder girdle.
j) … the cartilages, the ligament and joints.

V. Translate the following sentences into English:

1. Тіло людини складається з таких основних частин як голова, шия, тулуб та верхні і нижні кінцівки.
2. Такі важливі органи як легені та серце містяться у верхній частині тулуба у грудній клітці.
3. Інші внутрішні органи, такі як шлунок, сечовий та жовчний міхур, печінка, селезінка, нирки, підшлункова залоза, кишечник та внутрішні репродуктивні органи містяться у черевній порожнині.
4. Вздовж хребта проходить канал, в якому знаходиться спинний мозок.
5. Нижні кінцівки кріпляться до тазового поясу.
6. М'язи складають близько 40 % ваги людського тіла.
7. М'язи кріпляться до кісток, внутрішніх органів та кровоносних судин.
8. Переважна більшість вольових м'язів знаходиться на кінцівках, тулубі і голові.
9. Серцевий м'яз скорочується ритмічно, без нервових імпульсів.
10. Людина здійснює рухи завдяки скороченню та розслабленню м'язів.

VI.Name the parts of the body from 1 to 40:

Parts of the body



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UNIT 4
MAJOR PHYSIOLOGICAL SYSTEMS:
Cardiovascular system

I. A. COMPREHENSION AND DISCUSSION:

I. Learn the vocabulary to text 1A "MAJOR PHYSIOLOGICAL SYSTEMS". Pay special attention to medical lexicon.

food processing	['prəusesɪŋ]	(тут) засвоєння їжі
salivary glands	['sælɪvərɪ] [glænd]	слинні залози
esophagus	[i:'sɔfəgəs]	стравохід
rectum	['rektəm]	пряма кишка
hypothalamus	[ˌhaipə'θæləməs]	гіпоталамус
pituitary gland	[pɪ'tju:ɪt(ə)rɪ]	гіпофіз
pineal gland	['pɪnɪəl]	шишкоподібна залоза
thyroid	['θaɪrɔɪd]	щитовидна залоза
parathyroid	[ˌpærə'θaɪrɔɪd]	прищитоподібна залоза
adrenal gland	[ɔd'ri:nl]	надниркова залоза
pathogens cell	['pæθədʒən]	патогенна клітина
integumentary system	[ɪnˌtegjə'mentərɪ]	покривна система тіла
transfer of lymph	[trɑ:ns'fə:] [lɪmf]	переміщення лімфи
blood stream	[blʌd] [stri:m]	кровоток
node	[nəud]	вузол
disease causing agent	[dɪ'zi:z 'kɔ:zɪŋ 'eɪdʒ(ə)nt]	збудник захворювання
leukocytes	['l|u:kəusaɪt]	лейкоцити
tonsil	['tɔns(ə)l]	мигдалеподібна залоза
adenoids	['æd(ə)nɔɪdz]	аденоїди
thymus	['θaiməs]	тимус (зобна залоза)
ureter	[juə'ri:tə]	сечовід
urethra	[juə'rɪ:θrə]	сечівник, уретра
fluid balance	['flu:ɪd] ['bæləns]	баланс рідини
excretion	[ɪks'kri:ʃ(ə)n]	виділення, екскреція

II. Read text 1 A "MAJOR PHYSIOLOGICAL SYSTEMS" in order to perform the after-text activities. New vocabulary units are italisized in the text.

- ***While reading all the textual materials of Unit 4 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project.***
  Make use of any of the on-line or printed dictionaries like ABBY Lingvo x 3 or ABBYLingvo x 5; dictionary.reference.com or www.merriam-webster.com Please be sure to do similar job while working upon other Units that follow.

MAJOR PHYSIOLOGICAL SYSTEMS

Major organ (or physiological) systems of the human body are as follows:

- Circulatory (or cardiovascular) system accompiishes the pumping and channeling of blood to and from tbe body organs by means of the lungs, heart, blood, and blood vessels.
- Digestive system is responsible for digestion and *processing* food with the help of *salivary glands*, *esophagus*, stomach, liver, gallbladder, pancreas, intestines, *rectum* and anus.
- Endocrine system provides communication within the body using hormones made by endocrine glands such as the *hypothalamus*, *pituitary gland*, *pineal gland*, *thyroid*, *parathyroids*, and adrenals or *adrenal glands*.
- Immune system is responsible for protection against diseases by identifying and killing *pathogens* and tumour *cells*.
- *Integumentary* system includes skin, hair and nails.
- Lymphatic system contains structures involved in the *transfer of lymph* between tissues and the *blood stream*. The lymph and the *nodes* and vessels that transport it cooperate with the immune system that defends the body against *disease-causing agents* with *leukocytes*, *tonsils*, *adenoids*, *thymus* and spleen.
- Musculoskeletal system (also known as the locomotor system) is an organ system that gives humans the abillty to move. The musculoskeletal system provides form, support, stability, and movement to the body. It is made up of the bones of the skeleton, muscles, cartilages, tendons, ligaments, joints, and other connective tissue.
- Nervous system is the network of nerve cells and fibres, whicb transmits nerve impulses between parts of the body. It includes central nervous system, autonomic nervous system and peripherai nervous system. Nervous system provides collecting, transferring and processing information.
- Reproductive system inciudes the sex organs.

- Respiratory system is made up of the organs used for breathing, such as the pharynx, larynx, trachea, bronchi, lungs and diaphragm.
- Urinary system is made up of kidneys, *ureter*, bladder and *urethra* that are involved in *fluid balance*, electrolyte balance and *excretion* of urine.

VOCABULARY CONSOLIDATION

III. Compiete the sentences with the words from the box:

a) integumentary	***e) immune system***	***i) musculoskeletal***
b) disease-causing agents	***f) lymphatic***	***j) hormones***
c) cardiovascular system	***g) breathing***	***k) endocrine***
d)processing information	***h) stomach***	***l) spinal cord***

1. Respiratory system consists of the organs used for … .
2. … is responsible for protecting the body against diseases.
3. Skin, hair and nails belong to the … system.
4. Immune system cooperates closely with the … system defending the body against … .
5. Salivary glands, esophagus, … are the parts of the digestive system.
6. Hypothalamus, pituitary gland, thyroid and other glands produce … to maintain the … system's function.
7. The heart and circulatory system make up the … .
8. Nervous system performs its function of collecting, transferring and … by means of brain, … and nerves.
9. … system provides for the body movements with the help of muscles and skeleton.

IV. Make up word combinations using a word from each box. Some words can be used more than once.

1. tumor	a) vessel
2. blood	b) cord
3. salivary	c) of food
4. fluid	d) nerves
5. spinal	e) urine
6. cardiovascular	f) cells
7. immune	g) bladder
8. peripheral	h) balance
9. excretion of	i) glands
10. disease causing	j) tissues
11. digestion	k) system
12. urinary	l) agent
13. muscle	m) stream

V. Fill in the table with the missing parts of speech. Some spaces might be left blank:

Noun	Verb	Adjective	Adverb
		helpful	
circulation			
	digest		
			productively
		structural	
	protect		
activity			

VI. Complete the sentences with the words from the previous exercise:

1. The system that _____ blood and lymph through the body, consisting of the heart, blood vessels, blood, lymph, and the lymphatic vessels and glands is called the _____ system.
2. The nurse _____ suggested that she could change the dressing on the wound.
3. What is the _____ ingredient in aspirin?
4. When you _____ food it is changed into substances that your body can use.
5. Regular exercise will improve blood _____.
6. Physical therapy sessions became more _____ with the application of new diagnostic technologies.
7. How well does the physical therapist _____ his rehabilitation programme depends upon his practical experience and theoretical knowledge.

VII. Answer the following questions:

1. Which organs are involved in the functioning of the respiratory system?
2. Is the digestive system sustained by tbe lungs and heart?
3. What is the function of the immune system?
4. Which physiological system helps to maintain fluid and electrolyte balance in the human body?
5. What do the endocrine glands produce in order to maintain tbe proper functioning of the endocrine system?

6. What body organs maintain the circulatory system activity?
7. Is the pancreas the most important organ in regards to proper immune system functioning?
8. How does the nervous system function?
9. What organs and tissues help to produce body movements?
10. What parts of the body are included in the integumentary system?

II.A. READING AND COMPREHENSION

VIII. Pronounce properly and memorize the following medical terms to the text "The Heart"

to expand	[ɪks'pænd]	розширюватися
to contract	[kən'trækt]	скорочуватися, стискатися
double-layered membrane	['dʌbl 'leɪə 'membrem]	двошарова мембрана
pericardium	[perɪ'kɑ:dɪəm]	перикардій, навколосерцева сумка
to surround	[sə'raund]	оточувати, огортати
to be attached	[ə'tæʧt]	кріпитися
coating of fluid	['kəutɪŋ] ['flu:ɪd]	шар рідини, рідинна оболонка
chamber	['ʧeɪmbə]	порожнина, камера (серця)
septum	['septəm]	перегородка
atrium (*pl* atria)	['eɪtrɪəm] ['eɪtrɪə]	передсердя
ventricle	['ventrəkəl]	шлуночок (серця)
valve	[vælv]	клапан (серця)
aortic valve	[eɪ'ɔ:tɪk]	клапан аортальний
tricuspid valve	[traɪ'kʌspɪd]	клапан тристулковий (передсердношлуночковий правий)
pulmonary valve	['pʌlmən(ə)rɪ]	клапан легеневий
mitral valve	['maɪtr(ə)l]	мітральний, двостулковий клапан (передсердношлуночковий лівий)
aorta	[eɪ'ɔ:tə]	аорта

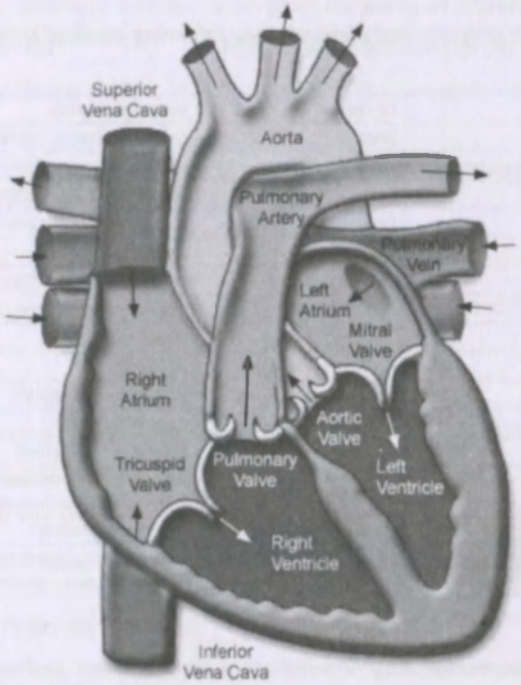
IX. Read and memorize the following word combinations and expressions. They will help you better understand Text 1B. Read Text 1B and do the after-text activities:

a little larger then...	трошки більший за ...
in fact	справді, в дійсності
on the average	в середньому
slightly to the left	трошки лівіше
have enough force to ...	мати достатньо сили, щоби ...
to the rest of the body	до всього організму (тіла)

TEXT 2 A

THE HEART

The heart welghs between 7 and 15 ounces (200 to 425 grams) and ls a llttle larger than the slze of a fist. By the end of a long llfe, a person's beart may have beaten (expanded and contracted) more than 3.5 billlon times. ln fact, each day, on the average the heart beats 100,000 tlmes, pumplng about 2,000 gallons (7,571 llters) of blood.



The heart ls located between the lungs ln the mlddle of the chest, beblnd and sllghtly to the left of tbe breastbone (sternum). A double-layered membrane called the perlcardlum surrounds the heart llke a sac. The outer layer of the perlcardlum surrounds the roots of the heart's major blood vessels and ls attached by llgaments to the splnal column, diaphragm and other parts of the body. The lnner layer of the

pericardium is attached to the heart muscle. A coating of fluid separates the two layers of membrane, letting the heart move as it beats, yet still be attached to the body.

The heart has 4 chambers. The upper chambers are called the left and right atria, and the lower chambers are called the left and right ventricles. A wall of muscle called the septum separates the left and right atria and the left and right ventricles. The left ventricle is the largest and strongest chamber in the heart. The left ventricle's chamber walls are only about 5 to 7 millimeters thick, but they have enough force to push blood through the aortic valve and into the body.

Four types of valves regulate blood flow through the heart:

- The tricuspid valve regulates blood flow between the right atrium and right ventricle.
- The pulmonary valve controls blood flow from the right ventricle into the pulmonary arteries, which carry blood to the lungs to pick up oxygen.
- The mitral valve lets oxygen-rich blood from the lungs pass from the left atrium into the left ventricle.
- The aortic valve opens the way for oxygen-rich blood to pass from the left ventricle into the aorta, the body's largest artery, where it is delivered to the rest of the body.

VOCABULARY CONSOLIDATION

X. Match the Ukrainian terms with their English equivalents:

1) кровоток	2) шлуночок (серця)	3) збудник захворювання
4) нирки	5) слинні залози	6) перегородка
7) передсердя	8) двостулковий клапан	9) хрящ
10) стравохід	11) система травлення	12) легеневий клапан
13) щитоподібна залоза	14) гіпофіз	15) сухожилок
16) дихальна система	17) спинний мозок	18) навколосерцева сумка

1) respiratory system	2) integumentary system	3) septum
4) pulmonary valve	5) aortic valve	6) spinal cord
7) salivary glands	8) kidneys	9) pericardium
10) esophagus	11) pituitary gland	12) adrenal gland
13) stomach	14) disease causing agent	15) hypothalamus
16) digestive system	17) blood stream	18) atrium
19) mitral valve	20) cartilage	21) thyroid
22) ventricle	23) tendon	24) ligament

XI. Choose the most appropriate word or word combination, which best corresponds to the sentence content:

1. The human heart weighs between …
   a) 500 to 725 grammes:
   b) 100 to 150 grammes;
   c) 200 to 425 grammes;
   d) 400 to 525 grammes) .
2. A double-layered membrane called the … surrounds the heart.
   a) diaphragm:
   b) pericardium;
   c) ventricle;
   d) atrium;
3. The outer layer of the pericardium is attached to the spinal column and some other parts of the body by … .
   a) bones;
   b) muscles;
   c) ligaments;
   d) cartilages)
4. The … valve lets oxygen-rich blood from the lungs pass from the left atrium to the left ventricle.
   a) tricuspid;
   b) aortic;
   c) pulmonary;
   d) mitral
5. The … opens the way for oxygen-rich blood to pass into aorta.
   a) pulmonary artery;
   b) pulmonary valve;
   c) aortic valve;
   d) tricuspid valve;
6. The tricuspid valve regulates blood flow between … .
   a) the right atrium and right ventricle;
   b) the left ventricle and aortic valve;
   c) the right atrium and pulmonary valve;
7. The lower chambers of the heart are called …
   a) the right atrium and the left atrium;
   b) the left ventricle and the right ventricle;
   c) the pulmonary artery and pulmonary vein;
   d) the right atrium and the right ventricle).

XII. Define if the following statements are "true" (T) or "false" (F). Correct the false statements:

1. The human heart weighs hetween 200 to 425 grammes.
2. Over a hundred major arteries make a path through the body tissues, where they hranch into arterioles.
3. Veins carry oxygen-rich blood away from the heart, and arteries carry oxygen-poor hlood hack to the heart.
4. The left ventricle is the largest and strongest chamher in the heart.
5. The hody's requirement for oxygen varies widely with muscular activity.
6. The lower chamhers of the heart are called the left and right ventricles.
7. Lymphatic system sustains fluid and electrolyte halance in the hody.
8. The right lung is usually somewhat smaller in size and less heavy than the left lung.
9. The upper respiratory tract includes lungs, hronchi and alveoli.
10. The expired air essentially contains no oxygen.

II B. READING AND COMPREHENSION

XIII. Review the vocabulary units before reading each item of the text. Read TEXT 2B and do the following activities. While reading the text look for information about:

- ***the average length of the body's vessels;***
- ***the difference between venules and veins;***
- ***the functional difference between the arteries and veins in blood circulation;***
- ***the lesser and greater circulatory systems;***

TEXT 2 B

The heart and circulatory system make up the cardiovascular system. The heart works as a pump that pushes blood to the organs, tissues and cells of the hody. Blood ***delivers oxygen and nutrients*** to every cell and ***removes the carbon dioxide and waste products*** made hy those cells. Blood is carried from the heart to the rest of the hody through a complex network of arteries, arterioles, and capillaries. Blood is returned to the heart through venules and veins.	***to deliver nutrients*** – *постачати поживні речовини* ***carbon diaxide*** – *вуглекислий газ* ***to remove waste products*** – *виводити продукти розпаду*
If all the vessels of this network in the hody were laid end-to-end, they would ***extend*** for ahout more than 96 500 km, which is far enough to circle the earth more than twice!	***to extend*** – *простягатися*

Although the heart is regarded as an anatomical and functional unit, it can be thought of as two isolated pumps – the "right heart" and the "left heart". Normally ***the only route of communication*** between these two parts of the heart is the lungs. The right heart receives blood from the veins and pumps it into the lungs by way of the ***lesser circulatory system***. In the lungs the blood is supplied with oxygen. Then it moves into the left heart. From the left heart the well-oxygenated blood is pumped into a large artery called the aorta, which distributes it to the entire body by means of the ***greater circulatory system***. The blood is returned to the heart by means of the veins. This process of blood flow within the body is called circulation.	***the only route of communication*** – *єдиний спосіб сполучення* ***the lesser circulation*** – *мале(легеневе) коло кровообігу* ***the greater circulation*** –*велике коло кровообігу*

The one-way circulatory system carries blood to all parts of the body. Arteries carry oxygen-rich blood away from your heart, and veins carry oxygen-poor blood back to your heart. In pulmonary circulation, though, ***the roles are switched***. It is the pulmonary artery that brings oxygen-poor blood into the lungs and the pulmonary vein that brings oxygen-rich blood back to the heart. Twenty major arteries make a path through the tissues, where they branch into smaller vessels called ***arterioles***. Arterioles further branch into capillaries, the true deliverers of oxygen and nutrients to the cells. Most capillaries are thinner than a hair. Once the capillaries deliver oxygen and nutrients and pick up carbon dioxide and other waste, they move the blood back through wider vessels called ***venules***. Venules eventually join to form veins, which deliver the blood back to the heart to pick up oxygen.	***the roles are switched*** – *ролі міняються* ***arteriole*** [ɑːˈtɪərɪəʊl] – *артеріола* ***venule*** ['venjuːl] - *венула*

XIV. Decide, which of the suggested titles best corresponds to the text content:

a) "The Way the Heart Works"
b) "Cardiovascular System"
c) "Circulatory Dysfunctions"

XV. Work in two groups. One group speaks of the role and the function of the "right heart" and another group proves the importance of the "left heart" in the circulatory system.

VOCABULARY CONSOLIDATION

XVI. Put the phrases in the correct order to make sentences. Reproduce the information oraiiy iliustrating your report with the heart picture from the text.

How does the heart pump blood?

1. is due to of the cardiac muscle. the regular and repetitive The pumping action of the heart contractions and relaxations

_____

2. around keeps This the body. constantly the blood llowing

_____

3. the atria the heart muscles relax, blood on both sides. When enters

_____

4. open, with blood. The valves to be filled allowing the heart

_____

5. immediately. contract The heart muscles then

_____

6. the atria squeeze begin at the top of The contractions downwards. and

_____

7. the valves. into the ventricles the blood This forces through

_____

8. and then contracts, of the ventricle walls squeezes upwards. but this starts The muscle from the bottom

_____

9. and the blood between the atria the arteries. The valves are lorced shut is pushed into and ventricles

_____

10. is more muscular of the left ventricle than the right ventricle. The wall

_____

11. all around Blood from needs to be the body. pushed the left side of the heart

_____

12. a heartbeat about 70 times per minute and is called it occurs This cycle of contraction and relaxation while resting.

_____

_____

XVII. Now that you've learnt a lot about heart structure and its functioning, let us learn about certain dysfunctions and diseases of the heart and circulation. Try to match the diseases and problems from the box with the paragraphs below:

angina	arteriosclerosis	atherosclerosis	heart attack	hypertension	thrombosis

1. _____ - If this occurs in the coronary artery, it can stop the heart beating. To start the heart beating again, it needs to be massaged or given electrical shocks.

2. _____ - This is a condition with severe chest pains. The pains result from the hardening of the coronary arteries, which restrict the flow of blood to the heart muscles. The heart has to work harder to pump blood through the coronary arteries because it gets a continuous supply of food and oxygen.

3. _____ - This is also known as high blood pressure. When someone suffers from this dysfunction it means that the great force is exerted on the arteries, especially when the heart contracts. So the patient's systolic reading will be much higher than 120.

4. _____ - This is the hardening of arteries, which makes them lose their elasticity. This makes it impossible for the artery to stretch to accommodate the blood, which is being forced through it.

5. _____ - This is when the diameter of the artery becomes narrower due to the build-up of fatty deposits of cholesterol on the artery wall.

6. _____ - This occurs when the cholesterol built-up in an artery creates a very rough surface through which the blood passes. This can result in the formation of a blood clot, which is released into the blood flow. If the blood clot is large enough, it can block the narrow passage in an artery and stop the blood flow through it.

XVIII. Try to give correct answers to all the HEART QUIZ questions. Compare your answers to those following the quiz.

Heart Disease Quiz

1. What is an infarction?
   - A device used to restart the heart
   - Death of cells
   - Heart attack

2. If the coronary artery is blocked it is called angina. What happens if an artery near the brain is blocked?
    - Autism
    - Alzheimer's
    - Stroke
3. What is the upper number of your blood pressure reading called?
    - Systolic blood pressure
    - Diastolic blood pressure
    - Myocardial blood pressure
4. What is considered a normal blood pressure?
    - Systolic blood pressure less than 90 and diastolic blood pressure less than 150
    - Systolic blood pressure less than 140 and diastolic blood pressure less than 90
    - Systolic blood pressure less than 180 and diastolic blood pressure less than 150
5. What kind of medication used to treat hypertension works by excreting extra water and salts to lower blood pressure?
    - ACE (angiotensin-converting enzyme) inhibitors
    - Anti-adrenergic drugs
    - Diuretics
6. What's the relation between coronary artery disease and cholesterol?
    - An elevated level of low density lipoprotein (LDL) and decreased level of high density lipoprotein (HDL) are associated with reduced risk of coronary artery disease
    - A decreased level of LDL and an elevated level of HDL are associated with a reduced risk of coronary artery disease
    - Levels of LDL and HDL should be about the same to reduce the risk of coronary artery disease
7. How do beta-blockers work?
    - These medications work by dilating the veins
    - These medications work by preventing clots in the vessels leading to heart
    - These medications work by decreasing the heart rate

ANSWERS:

1. If cell death occurs it is called *infarction*. Since heart attack is cell death of heart muscle, it is called a *myocardial infarction*.
2. A stroke occurs when one of the arteries near the brain is blocked.
3. Your blood pressure has two numbers: the reading of the *upper* number is called *systolic blood pressure*, while the *lower* number is called the *diastolic blood pressure*.
4. The readings of a normal blood pressure are as follows: Systolic blood pressure less than 140 and diastolic blood pressure less than 90.
5. Diuretics also known as water pills excrete extra water and salt to lower blood pressure. There are 6 classes of medications to treat hypertension, which can also be reduced by weight loss, giving up smoking and decrease of salt intake.
6. An elevated level of LDL (the "bad" cholesterol) is associated with an increased risk of CAD. An elevated level of HDL (the "good" cholesterol) is associated with a decreased risk of CAD.
7. Beta-blockers decrease the heart rate and force of the heart's contractions by blocking the effects of the nervous system on the heart. This class of medications reduces heart attacks and decreases mortality in patients who have had heart attacks.

XIX. Review the vocabulary units before reading the text. Read the text and do the the activities that follow:

distension - *розширення, набухання*	***heart beat*** - *скорочення серця, пульсація*
superficial - *поверхневий, зовнішній*	***volume*** - *об'єм, ємність, місткість*
convenient - *зручний*	***propulsive power*** – *сила проштовхування*
anterior surface - *передня, зовнішня поверхня*	***even*** - *рівний, однаковий*
radial artery - *променева артерія*	***irreguiarity*** - *нерегулярність,неправильність*
radius - *променева кістка*	***heart apex beat*** - *верхівковий серцевий поштовх*
frequency - *частота*	***intercostal space*** - *міжреберовий простір*

PULSE

The pulse is the way of distension produced in the arteries when the left ventricle of the heart contracts and pumps blood into aorta. It is most easily felt where a large superficial artery crosses a bone. The most convenient point is on the anterior surface of the wrist, where the radial artery crosses the radius.

The pulse rate is the frequency of the heartbeat. This can vary considerably. The normal pulse rate of some adults is as slow as 50 per minute and others as fast as

90 per minute: the average is considered to be 72. In the infant. the pulse rate can be as rapid as 140. The pulse volume indicates the amount of blood in circulation and the propulsive power of the heart.

The pulse rhythm is normally even in time and force, but irregularities occur in health and in illness. In all cases where irregularities are noted, the heart apex beat is counted. The apex beat can be located in the fifth intercostal space about 2 inches (5-6 cm) to the left of the sternum.

- ***Tell your group mates how the pulse rate interrelates with the heart beat;***
- ***Take the pulse indices of your group mates. Comment the actions you are performing;***
- ***Discuss the obtained results with your colleagues.***

III. A. LISTENING AND COMPREHENSION:

XX. You are going to listen to / read an extract about the significance of exercise for persons suffering from cardiorespiratory disorders. Before you listen, read through the notes below. As you listen, complete the notes with appropriate adjectives/adverbs.

1. *Exercise makes the heart and lungs _____.*
2. *The lungs exchange oxygen and carbon dioxide _____.*
3. *It can help to maintain an _____ body weight.*
4. *Exercise and activity is of _____ importance.*
5. *Without exercise, the heart and lungs functioning will only get _____.*
6. *When a person has a _____ disease he should adjust many aspects of exercise to his needs.*
7. *The type of _____ exercises should suit your health status.*
8. *Physical therapists can help educate sick people about _____ methods of exercise.*

There are many ways that physical therapists can help improve the patient's health and quality of life if he suffers from heart and/or lung diseases. Exercise makes the heart and lungs healthier. It helps the heart pump the blood easier, the lungs exchange oxygen and carbon dioxide better, and it can help to maintain an optimal body weight.

Some people might think that because they have a heart or lung disease, they should stop doing many activities. People may be afraid that exercise might worsen their health problems. However, in order to make the heart and lungs healthy, exercise and activity is of greatest importance! Without exercise, the heart and lungs functioning will only get worse.

When a person has a cardiorespiratory disease he should adjust many aspects of exercise to his needs. The type of therapeutic exercises, the exercise environment and the exercise routines should suit your health status.

Cardiorespiratory physical therapists are experts in developing and planning patients' exercise routine. Physical therapists can help educate sick people about the safest methods of exercise and personalize an exercise programme that will suit their needs, goals and lifestyle.

Listen to the information again. Give your personal opinion concerning the following issues:

- ***Patients with cardiovascular and pulmonary diseases stop physical activities believing it might be dangerous for their health.***
- ***Rehabilitation programmes include a similar set of exercises for heart and respiratory cases.***
- ***Physical therapists favour the application of preventive measures rather than rehabilitative.***

SMALL TALK

XXII. Learn the following English proverbs. Provide Ukrainian equivalents if possible. If not, please provide an accurate translation. Discuss the proverbs with your group mates. What common theme is addressed in these proverbs?

1. **Many individuals shorten their days by lengthening their nights.**
2. **He who sleeps late has short days.**
3. **You dig your grave with your own fork.**
4. **Health is not valued till sickness comes.**
5. **Diseases are the tax of pleasure.**

UNIT 4
MAJOR PHYSIOLOGICAL SYSTEMS:
Cardiovascular system

VOCABULARY CHECK-UP

I. Complete the sentences with the appropriate terms:

1. The physiological system, which protects the body against diseases, is called the _____.
2. The system that includes organs used for breathing is called the _____.
3. _____system of the human body is responsible for digestion and processing food.
4. Disorders in the spinal cord functioning are connected with the dysfunction of the _____.
5. Prolonged high blood pressure might occur as a result of the _____ system malfunctioning.
6. Skin, hair and nails belong to the _____ system.
7. The immune system cooperates closely with the lymphatic system which defends the body against _____.
8. _____ system provides for the body movements with the help of muscles and skeleton.

II. Match the words 1-9 with their definitions a-i:

1. heart	**a)** *the main vessel in the arterial network, which conveys oxygen-rich blood from the heart to all parts of the body except the lungs*
2. blood	**b)** *to encircle or enclose or cause to be encircled or enclosed*
3. ventricle	**c)** *to make or become greater in extent, volume, size, or scope*
4. aorta	**d)** *a reddish fluid that is pumped by the heart through the arteries and veins, supplies tissues with nutrients, oxygen, etc., and removes waste products*
5. hollow	**e)** *to make or become smaller, narrower, shorter*
6. pericardium	**f)** *a chamber of the heart, having thick muscular walls, that receives blood from the atrium and pumps it to the arteries*
7. to surround	**g)** *the hollow muscular organ whose contractions pulps the blood through the circulatory system*
8. to expand	**h)** *the membranous sac enclosing the heart*
9. to contract	**i)** *having a hole, cavity, or space within; not solid*

III. Which of the alternatives is correct in the following sentences?

1. Arterioles further branch into capillaries, the true ***(a) delivery; b) deliverers; c) deliver)*** of oxygen and nutrients to the cells.
2. The right heart receives blood from the veins and pumps it into the lungs by way of ***(a) the smaller; b) the greater; c) the lesser)*** circulatory system.

3. The outer layer of the pericardium ***(a) attached; b) is attached; c) attachement)*** to the spinal column by ligaments.
4. If all the vessels of this network in the body were laid end-to-end, they would ***(a) extend; b) expand; c) expect)*** for about 60,000 miles (more than 96 500 kilometers).
5. The one-way ***(a) circulative; b) circulatory; c) circulation)*** system carries blood to all parts of the body.
6. The pulse rate is the ***(a) frequency; b) frequent; c) frequently)*** of the heart beat.
7. The pulse rate can vary ***(a) considerate; b) considerable; c) considerably).***

IV. Put the words/phrases in the correct order to make comprehensive sentences:

1. receives from The right heart the veins. Blood

   _____

2. in the lungs. with is supplied The blood oxygen

   _____

3. pumps through system. The right heart circulatory blood the lesser

   _____

4. From blood into the aorta. the well-oxygenated is pumped the left heart

   _____

5. blood The pulmonary brings back vein to the heart. oxygen-rich

   _____

6. is returned the veins. to the heart The blood by means of

   _____

7. circulation. of blood flow is called The process the body within

   _____

V. Cloze test: Fill in the gaps to complete the following text:

The cardiovascular system is the system of blood ***__a)__***. Hence, by cardiovascular system we mean ***__b)__***, the arteries, the veins, and capillaries of the human body. Basically the heart is a ***__c)__***organ which is divided into four ***__ d)__***. The right heart consists of an upper chamber called an ***__e)__*** and a lower chamber called a ventricle. Between these two chambers there is a one-way valve, called the ***__ f)__***. The left heart has two similar chambers but the valve that separates its

chambers is called the __ *g)*__. The walls of the capillaries are so thin that the dissolved nourishment, which comes from the __ *h)*__ system, and the oxygen, which comes from the __ *i)* __ and is contained in the blood, can pass through them into the tissues of the body and so nourish it. At the same time the __ *j)*__ from the tissues are taken up by the capillaries and are carried away in the blood. The __ *k)*__ form a close net-work all over the body, and, gradually joining together and getting larger, they become __ *l)*__.

a)	*e)*	*i)*
b)	*f)*	*j)*
c)	*g)*	*k)*
d)	*h)*	*l)*

UNIT 5
MAJOR PHYSIOLOGICAL SYSTEMS:
Respiratory System

I A. COMPREHENSION AND DISCUSSION:

I. Learn the vocabulary to text 1 A "Respiratory System: Oxygen Delivery System". Pay special attention to medical lexicon.

While reading all the textual materials of Unit 5 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project.

Make use of any of the on-line or printed dictionaries like ABBY Lingvo x 3 or ABBYLingvo x 5; dictionary.reference.com or www.merriam-webster.com Please be sure to do similar job while working upon other Units that follow.

to deliver oxygen	[dɪ'lɪvə] ['ɔksɪʤən]	постачати кисень
to inhale oxygen	[ɪn'heɪl]	вдихати кисень
to exhale carbon dioxide	[eks'heɪl] ['kɑ:b(ə)n] [daɪ'ɔksaɪd]	видихати вуглекислий газ
exchange of gases	[ɪks'ʧeɪnʤ]	газообмін
breathing = respiration	['bri:ðɪŋ] [resp(ə)'reɪʃ(ə)n]	дихання
bronchus (*pl* bronchi)	['brɔŋkəs] ['brɔŋkaɪ]	бронх
tiny sac	['taɪnɪ] [sæk]	маленький мішечок
alveolus (*pl* alveoli)	[ælvɪ'əuləs] [ælvɪ'əulaɪ]	альвеола
spongy	['spʌnʤɪ]	губчастий
to diffuse	[dɪ ʧju:s]	розповсюджувати, проникати
waste-rich blood	['weɪstrɪʧ]	кров зі шлаками
to release	[rɪ'li:s]	випускати, виділяти

II. Read the text 1A in order to perform the after-reading activities:

TEXT 1A

RESPIRATORY SYSTEM: OXYGEN DELIVERY SYSTEM

The primary function of the respiratory system is to supply the blood with oxygen in order for the blood to deliver oxygen to all parts of the body. The respiratory system does this through breathing. When we breathe, we inhale oxygen and exhale carbon dioxide. This exchange of gases is the respiratory system's means of getting oxygen to the blood.

Respiration is achieved through the mouth, nose, trachea, lungs, and diaphragm. Oxygen enters the respiratory system through the mouth and the nose. The oxygen then passes through the larynx and the trachea that enters the chest cavity. In the

chest cavity, the trachea splits into two smaller tubes called the bronchi. Each bronchus then divides again forming the bronchial tubes. The bronchial tubes lead directly into the lungs where they divide into many smaller tubes, which are connected to tiny sacs called alveoli. The average adult's lungs contain about 600 million of these spongy, air-filled sacs that are surrounded by capillaries. The inhaled oxygen passes into the alveoli and then diffuses through the capillaries into the arterial blood. Meanwhile, the waste-rich blood from the veins releases its carbon dioxide into the alveoli. The carbon dioxide follows the same path out of the lungs when you exhale.

The diaphragm's job is to help pump the carbon dioxide out of the lungs and pull the oxygen into the lungs. The diaphragm consists of muscles that lie across the bottom of the chest cavity. Breathing takes place as the diaphragm contracts and relaxes. Oxygen is pulled into the lungs when the diaphragm contracts. When the diaphragm relaxes, carbon dioxide is pumped out of the lungs.

VOCABULARY CONSOLIDATION

III. Complete the sentences with the words from the box:

a) **diffuses through the capillaries**	*d)* **into two smaller tubes**	*g)* **to supply the blood**
b) **the respiratory system**	*e)* **average adult's lungs**	*h)* **lie across the bottom**
c) **from the veins**	*f)* **the diaphragm relaxes**	*i)* **the diaphragm contracts**

1. The primary function of the respiratory system is _____ with oxygen in order for the blood to deliver oxygen to all parts of the body.
2. The inhaled oxygen passes into the alveoli and then _____into the arterial blood.
3. When _____, carbon dioxide is pumped out of the lungs.
4. Oxygen enters _____ through the mouth and the nose.
5. In the chest cavity, the trachea splits _____ called the bronchi.
6. The waste-rich blood _____ releases its carbon dioxide into the alveoli.
7. When _____, oxygen is pulled into the lungs.
8. The diapbragm consists of muscles that _____ of the chest cavity.
9. The _____ contain about 700 million of alveoli.

IV. Make up word combinations using a word from each box. Some words can be used more than once. Make use of those phrases in the sentences of your own.

1. carbon	a) system
2. oxygen	b) sacs
3. respiratory	c) oxygen
4. air-filled	d) dioxide
5. chest	e) function
6. bronchial	f) blood
7. primary	g) carbon dioxide
8. inhaled	h) supply
9. exhaled	i) tube
10. waste-rich	j) cavity

V. Combine the words from both columns to make up verbal phrases:

1. to exhale	a) with oxygen
2. to inhale	b) the capillaries
3. to split into	c) to all parts of the body
4. to lead directly	d) into the lungs
5. to diffuse through	e) smaller tubes
6. to deliver oxygen	f) oxygen
7. to supply the blood	g) carbon dioxide

VI. Replace the italicized words in the sentences by their synonyms from the box:

a) attached; b) thoracic; c) pulmonary; d)exhaled; e) penetrates; f) extends; g) divides

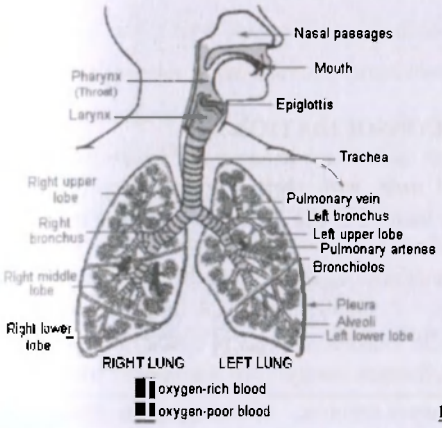
1. The primary function of the ***respiratory*** system is to supply the blood with oxygen
2. Oxygen ***enters*** the respiratory system through the mouth and the nose.
3. In the chest cavity, the trachea ***splits*** into two smaller tubes called the bronchi.
4. The bronchial tubes divide into many smaller tubes, ***connected*** to tiny sacs called alveoli.
5. The inhaled oxygen passes into the alveoli and then ***diffuses*** through the capillaries into the arterial blood.
6. The diaphragm consists of muscles that lie across the bottom of the ***chest*** cavity.
7. ***Inspired*** air contains 21% oxygen and essentially no carbon dioxide.

II B. READING AND COMPREHENTION

VI. Read TEXT 1B to perform the after-text activities. Try to translate the underlined words and word combinations without a dictionary, making use of the illustration below.

TEXT 1B

ANATOMY OF THE RESPIRATORY SYSTEM



Respiration is the act of breathing:

- inhaling (inspiration) is muscle contraction, during which the ribs are lifted and pulled outward, which increases lung volume, allowing air to rush in (inspired air contains 21% oxygen and essentially no carbon dioxide) .
- exhaling (expiration) is muscle relaxation that decreases lung volume and lets the air passively flow out (expired air contains 16% oxygen and 4.5% carbon dioxide).

The **respiratory system** functions to deliver the oxygen to the blood -- the transport medium of the cardiovascular system -- and to remove oxygen from the blood. The actual exchange of oxygen and carbon dioxide occurs in the lungs. The respiratory system consists of two tracts: The **upper** respiratory tract includes the nose, mouth, larynx and trachea (windpipe). The **lower** respiratory tract includes the **lungs, bronchi** and **alveoli**.

The two lungs, one on the right and one on the left, are the body's major respiratory organs. Each lung is divided into **upper** and **lower lobes**, although the upper lobe of the right lung contains a third subdivision known as the **right middle lobe**. The right lung is larger and heavier than the left lung, which is somewhat smaller in size because of the predominately left-side position of the heart. A clear,

thin, shiny coating*, the pleura, envelopes the lungs. The inner layer of the pleura attaches to the lungs; the outer layer attaches to the chest wall (thorax). Pleural fluid holds both layers in place. The lungs are separated from each other by the mediastinum**, an area that contains the heart and its large vessels, the **trachea** (windpipe), esophagus, thymus and lymph nodes. The diaphragm, the muscle that contracts and relaxes in breathing, separates the thoracic cavity from the abdominal cavity.

*coating - *оболонка*

** mediastinum – *міжлегенева мембрана*

VOCABULARY CONSOLIDATION

VII. Match the English terminological units with their Ukrainian equivalents. Compose sentences of your own using at least 10 of the 16 English phrasal units.

1. act of breathing; 2. lower lobe; 3. mediastinum; 4. muscle contraction; 5. lymph nodes; 6. to envelope the lungs; 7. smaller in size; 8. lungs volume; 9. thin coating; 10. inner layer; 11. muscle relaxation; 12. to attach to the thorax; 13. pleural fluid; 14. lymph nodes; 15. thoracic cavity; 16. respiratory tract.

1. нижні дихальні шляхи; 2. нижня частка легенів; 3. плевральна рідина; 4. скорочення м'язів; 5. торакальна порожнина; 6. кріпитися до легенів; 7. оточувати легені; 8. розслаблення м'язів; 9. кріпитися до грудної клітини; 10. газообмін; 11. менший за розміром; 12. зовнішній шар; 13. дихальний процес; 14. внутрішній шар; 15. лімфатичні вузли; 16. міжлегенева мембрана 17. об'єм легенів; 18. дихальні шляхи; 19. лімфатичні вузли.

VIII. Translate the word combinations in brackets to complete the sentences:

1. Through the exchange of gases the respiratory system ***(постачає кисень до крові).***
2. ***Верхні дихальні шляхи)*** includes the nose, mouth, larynx, and trachea.
3. The right lung is larger and heavier than the left lung, which is somewhat smaller in size ***(через переважно лівостороннє положення серця).***
4. In the chest cavity, ***(трахеї розділяються на менші трубки)*** called the bronchi.

5. The average adult's lungs contain about 600 million of *(альвеол, оточених капілярами).*
6. Each lung is divided *(на верхню і нижню долі)*, although the upper lobe of the right lung contains *(третю частину, яка називається права середня частка).*
7. The diaphragm's job is to help *(викачувати вуглекислий газ із легенів)* and *(нагнітати кисень)* into the lungs.

IX. Choose the correct word from the three choices given in the sentence:

1. Respiration is the chemical breakdown of *(food / carbohydrates / fueis)* in cells to produce energy.
2. There are two types of respiration: *(upper and iower / aeroblc and anaerobic / active and passive)* respiration.
3. Aerobic respiration occurs in the *(isoiation / absence / presence)* of oxygen and the products are carbon dioxide, water and energy.
4. Anaerobic respiration *(creates / occurs / develops)* in the absence of oxygen.
5. In muscle cells and bacteria anaerobic fermentation produces *(aicohol / oxygen / lactic acid).*
6. Aerobic respiration releases much more (*gas / energy / acid*) than either form of anaerobic respiration.
7. Breathing is a *(biometric / mechanicai / chemicai process)* in which air is drawn across the respiratory surface.
8. The human respiratory system consists of the *(oesophagus / epiglottis / trachea)*, bronchi and lungs.
9. In humans, gas exchange occurs in the air *(sacs / baiioons / bags)*, or alveoli in the lungs.

X. Give the answers to the foiiowing questions using the information from TEXT 1A and TEXT 1B:

1. What is the primary function of the respiratory system?
2. What body organs are involved in the breathing act?
3. Where are the alveoli located and how do they look like?
4. How does the inhaled oxygen get into the arterial blood?

5. Does the waste-rich blood flow in veins or in arteries?
6. When the diaphragm contracts, carbon dioxide is pulled into the lungs, isn't it?
7. When the inhaling takes place, the lungs volume increases, doesn't it?
8. What is the percentage of oxygen and carbon dioxide in the exhaled air?
9. Where does the actual exchange of oxygen and carbon dioxide occur?
10. What organs does the lower respiratory tract include?
11. How is the tboracic cavity separated from the abdominal cavity?

XI. Now that you've studied human lungs structure and the way the lungs function, let us learn about certain respiratory problems caused by environmental pollution. Try to match the words from the box with the correct paragraphs:

asthma	**bronchitis**	**emphysema**
pollutants and respiratory problems	**lung cancer**	**pneumonia**

1. _____ - An inflammation of the lung caused by infection with bacteria or viruses, which sometimes develops from a simple viral cold or influenza.

2. _____ - This is a long-term condition that occurs when the main air passages of the lungs, the bronchial tubes, become inflamed and go into spasm. The spasms and the build-up of mucus clog or partially block the respiratory passage.

3. _____ - This is the uncontrolled growth of abnormal cells in one or both of the lungs. These abnormal cells reproduce rapidly and form tumours, which destroy that part of the lung so that it does not work properly.

4. _____ - We obtain our continuous supply of oxygen from the air around us. However, the air we breathe may contain pollutants that harm us. Many of the pollutants found in air are dust particles, toxic or harmful gases released in smoke, microorganisms and other substances that irritate respiratory organs.

5. _____ - Tbis is the abnormal enlargement of alveoli (air space) in the lung, which also causes them to lose elasticity. As a result the alveoli are unable to efficiently exchange gases between the lung and the blood.

6. _____ - This involves an inflammation of the bronchial tubes (the air passage between the trachea and the lungs), which causes a persistent cough and produces a significant amount of mucus.

III. A. LISTENING AND COMPREHENSION:

XII. First read sentences 1 – 7 below. You will listen to/ read information about the way respiratory system functions. Decide, which of the sentences are true (T), which are false (F) and which are impossible to answer (I) according to what you've heard. Identify any unknown words before listening / reading.

to vary widely – значно відрізнятися	***respiratory distress** - розлади дихання*
***in conjunction** — разом, спільно*	***laboured breathing** - ускладнене дихання*

1. The rate and depth of ventilation changes dramatically during relaxation and physical activity.
2. It is commonly acknowledged that all mammals share a similar breathing system with fish and birds.
3. Physical exertion not only deepens ventilation, but also increases the blood flow.
4. Laboured breathing is similar to artificial breathing.
5. Lung cancer is a minor disease, which doesn't affect other body organs and systems.
6. Respiratory distress might be caused by inadequate gas exchange.
7. Respiratory organs might be irritated by dust particles and toxic or harmful gases.

VENTILATION AND ITS PROBLEMS

The body's requirements for oxygen vary widely with muscular activity. In violent exercise the rate and depth of ventilation increase greatly: this will only work in conjunction with increase in blood flow, controlled mainly by the rich innervation of the lungs. Inadequate gas exchange is common in many diseases, producing respiratory distress.

The lungs sometimes fail to maintain an adequate supply of air. The lungs sacs either fail to expand, or expand and then collapse during expiration, which results in laboured breathing. In adults it might occur due to accidental inhalation of water, smoke, vomit or chemical fumes. Acute bronchitis might occur due to infection that penetrated the bronchial tree, causing lungs malfunction because of fluid accumulation. Pneumonia involves the lungs directly. Lung cancers are a malignancy that may spread to other tissues via the lymphatic system in the lung roots.

- ***Listen to the information again and underline the words / phrases in italics you hear:***

1. The hody's requirements for *nitrogen / oxygen* vary widcly with muscular activity.
2. Inadequate gas exchange is common in many *diseases / distresses.*
3. The lungs sometimes fail to maintain *inadequate / an adequate* supply of air.
4. The lungs sacs *either / rather* fail to expand.
5. In adults it might occur due to *incidental exhalation / accidental inhalation* of watcr, smoke, vomit or chemical fumes.
6. *Acute bronchitis / a cute bronchitis* might occur due to infection that penetrated the hronchial tree.
7. Lung cancers are a *malignant cell / malignancy* that may spread to other tissues.

IV. A. READING AND WRITING

XII. Read the following article with the help of a dictionary.

- ***Give the written translation of the article in Ukrainian.***
- ***Write an abstract of the article in English.***

While writing an abstract:

1. **Avoid using direct acronyms or abbreviations** in the ahstract, as these will need to he explained in order to make sense to the reader. That uses up precious writing room, and should generally he avoided.
2. **Write it from scratcb.** Your ahstract is a summary, yes, hut it should he written completely separate from the paper or the article. Don't copy and paste direct quotes from the article, and avoid simply paraphrasing the sentences from elsewhere in anyhody's writing. Write your ahstract using completely new vocahulary and phrases to keep it interesting and redundancy-free.
3. **Avoid being too specific.** An abstract is a summary, and as such should not refer to specific points of the research other than possihly names or locations. You should not need to explain or define any terms in your abstract: a reference is all that is needed. Avoid heing too explicit in your summary and stick to a very hroad overview of the work.

4. **Be sure to do basic revisions.** The abstract is a piece of writing that, like any other, should be revised before being completed. Check it over for grammatical and spelling errors and make sure it is formatted properly.

For more tips see page 22-23. Abide by those rules and you'll score great successes!

MECHANISM OF BREATHING

Dr D.R. Johnson, Centre for Human Biology

In order to grasp the way in which we breathe we have to grasp the following facts: Each lung is surrounded by a pieural cavity or sac, except where the plumbing joins it to the rest of the body, rather like a hand in a boxing glove. The glove has an outer and inner surface, separated by a layer of padding. The pieura, similarly, has two surfaces, but the padding is repiaced by a thin layer of fluid.

Each lung is enclosed in a cage bounded below by the diaphragm and at the sides by the chest wall and the mediastinum. It is not usualiy appreciated that the lung extends so high into the neck. A syringe inserted above a ciavicle may pierce the lung.

Breathing works by making the cage bigger: the pieural layers slide over each other and the pressure in the lung decreases, so air is sucked in. Breathing out does the reverse, the cage coliapses and air is expelied. The main component acting here is the diaphragm. This is a layer of muscle, which is convex above, domed, and squashed in the centre by the heart. When it contracts it flattens and increases the space above it. When it relaxes the abdominal contents push it up again. The proportion of breathing, which is diaphragmatic, varies from person to person. For instance breathing in children and pregnant women is largely diaphragmatic, and there is said to be more diaphragmatic respiration in women than in men.

The process is heiped by the ribs which move up and out increasing the space available. The complexity of breathing increases as does the need for efficiency. In **quiet respiration.** say whilst lying on ones back, aimost aii movement is diaphragmatic and the chest wall is stiii. This will increase thoracic volume by 500-700ml. The expansion of the lung deforms the flexible walls of the aiveoli and

hronchi and stretches the elastic fibres in the lung. When the diaphragm relaxes elastic recoil and ahdominal musculature repositions the diaphragm agaln.

Deeper respiration hrings in the muscles of the chest wall, so that the rihs move too. We must therefore understand the skeleton and muscular system of the thoracic wall. The 12 pairs of rihs pass around the thoracic wall, articulating via synovial joints with the vertehral column - in fact two per rib. The rihs then curve outwards then forwards and downwards and attach to the sternum via the flexihle costal cartilages. The first seven pairs of rihs (true rihs) are attached directly, the next five rihs hitch a lift on each other and the last two float i.e. are unattached. Costıl cartilages are flexihle. Two sets of intercostal muscles run between the rihs, the external intercostals running forward and downwards, the internal intercostals running up and hack. These two muscle sheets thus run hetween rihs with fihers roughly at right angles. When they contract, each rih moves closer to its neighbours. Because the lowest ribs float, and the first rih is suspended from the scalene muscles contraction of the intercostal muscles tends to lift rih 2 towards rih 1, and so on. The rihs are all, therefore pulled up towards the horizontal, increasing anteroom-posterior and lateral thoracic diameters.

VOCABULARY CHECK-UP

I. One out of four units doesn't fit. Circle the one, which for some reasons falls out.

1. ***a)*** breathing	***b)*** inflammation	***c)*** inhalation	***d)*** exhalation
2. ***a)*** clavicle	***b)*** bronchi	***c)*** trachea	***d)*** larynx
3. ***a)*** distress	***b)*** malfunction	***c)*** abnormality	***d)*** exertion
4. ***a)*** asthma	***b)*** bronchitis	***c)*** arthritis	***d)*** emphysema
5. ***a)*** to diffuse	***b)*** to penetrate	***c)*** to extend	***d)*** to withstand
6. ***a)*** to prevent	***b)*** to deliver	***c)*** to supply	***d)*** to provide
7. ***a)*** to split	***b)*** to divide	***c)*** to separate	***d)*** to inspire

II. Match the Ukrainian terms with their English equivalents:

1) судина	2) ускладнене дихання	3) трахея	4) камера серця
5) вуглекислий газ	6) кисень	7) злоякісна клітина	8) поживні речовини
9) шар рідини	10) скорочення м'язів	11) зв'язка	12) передсердя
13) газообмін	14) навколосерцева сумка	15) спинний мозок	16) вдих
17) видих	18) мале коло кровообігу	19) ребро	20) міжлегенева мембрана

1) nutrients	2) septum	3) gas exchange	4) rib
5) muscular contraction	6) mediastinum	7) carbon dioxide	8) pericardium
9) ligament	10) spinal column	11) ventricle	12) oxygen
13) mitral valve	14) the lesser circulation	15) pulmonary valve	16) spinal cord
17) malignant cell	18) vessel	19) laboured breathing	20) windpipe
21) chamber	22) expiration	23) atrium	24) inhalation

III. Choose the synonyms from the right column for the words or phrases from the left column:

1. windpipe	a) exhaling
2. inhaling	b) lymphatic system
3. expiration	c) respiration
4. cardiovascular system	d) to extend
5. pulmonary system	e) trachea
6. to pump	f) circulatory system
7. breathing	g) respiratory system
8. to supply	h) to push
9. cavity	i) to diffuse
10. to expand	j) inspiration
	k) hole
	l) to support
	m) esophagus

IV. Choose a), b) or c) to complete the sentences:

1. The primary function of the human respiratory system is ...
   a) to pump and channel blood to and from the body organs.
   b) to supply the blood with oxygen.
   c) to modify the rate of lungs contraction.

2. Tbe upper respiratory tract includes...
   a) bronchi, lungs and diaphragm.
   b) lungs, bronchi and alveoli.
   c) pharynx, larynx and tracbea.

3. In the chest cavity the trachea splits into ...
   a) two smaller tubes called bronchi.
   b) smaller tubes connected to alveoli.
   c) millions of alveoli surrounded by capillaries.

4. The diaphragm's job is to help ...
   a) release carbon dioxide from the waste-rich blood.
   b) digestion by regular contraction and relaxation.
   c) pump carbon dioxide out of the lungs and pull the oxygen into the lungs.

5. The left lung is somewhat smaller in size because...
   a) the rigbt lung is heavier than the left lung.
   b) the right lung contains additional subdivision called the right middle lobe.
   c) of the predominantly left-side position of the heart.

V. Cloze test: Fill in the gaps to complete the following text:

The two lungs, one on the right and one on the left, are the body's major __ ***a)***_. Each lung is divided into upper and lower __ ***b)***__, although the upper lobe of the right lung contains a third subdivision known as the __***c)***__. The right lung is larger and heavier than the left lung, which is somewhat __***d)***__ in size because of the predominately left-side position of the __ ***e)***_. The pleura envelopes the _ ***f)***_. The inner layer of the pleura is attached to the lungs; the __***g)***__ layer is attached to the chest wall (thorax). Pleural __***h)***__ holds both layers in place. The lungs are separated from each other by the __***i)***__ , an area that contains the heart and its large vessels, the trachea, esophagus, thymus, and lymph nodes. The __***j)***__ , the muscle that contracts and relaxes in breatbing, separates the thoracic cavity from the __ ***k)***__ cavity.

a)	***e)***	***i)***
b)	***f)***	***j)***
c)	***g)***	***k)***
d)	***h)***	

UNIT 6
PHYSICAL REHABILITATION IN CARDIOPULMONARY DISEASES

I. A. COMPREHENSION AND DISCUSSION:

1. Learn the vocabulary to the text "PHYSICAL REHABILITATION IN CARDIOPULMONARY DISEASES". Pay special attention to medical lexicon.

- *While reading all the textual materials of Unit 6 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project.*
  Make use of any of the on-line or printed dictionaries like ABBYY Lingvo x 3 or ABBYLingvo x 5; dictionary.reference.com or www.merriam-webster.com
  Please be sure to do similar job while working upon other Units that follow.

cardiopulmonary disease	[ˌkɑːdɪəˈpʌlmənərɪ]	серцево-легеневе, пневмокардіальне захворювання
disability=impairment= handicapping condition		неповносправність, інвалідність
death	[deθ]	смерть, летальний випадок
etiology	[ˌiːtɪˈɔlədʒɪ]	етнологія, причина виникнення захворювання
partially environmental	[ɪn vaɪərənˈmentəl]	частково пов'язаний з екологією
self-inflicted		заподіяний самому собі, з власної вини
ravage	[ˈrævɪdʒ]	руйнівна дія
to arrest		затримати, припинити
to reverse	[rɪˈvɜːs]	повернути назад
to deal with		мати справу з
tissue perfusion	[ˈtɪʃuː] [pəˈfjuːʒ(ə)n]	кровопостачання тканин
obese patient	[əuˈbiːs]	пацієнт, хворий на ожиріння
small airways		дихальні шляхи
ischemic	[ɪˈskiːmɪk]	ішемічний; що погано постачається кров'ю
myocardium	[maɪəuˈkɑːdɪəm]	міокард, серцевий м`яз
weakness		недостача; слабкість
essentially healthy		по суті здоровий
functional capacity		функціональна спроможність; ємність
acute phase	[əˈkjuːt]	період загострення
discharge	[dɪsˈʧɑːdʒ]	виписка хворого з лічниці
to take into account		брати до уваги
susceptible	[səˈseptəbl]	чутливий, що піддається
in response to		у відповідь на
initial	[ɪˈnɪʃ(ə)i]	попередній, початковий

II. Read TEXT IA making use of the pretext vocabulary. Be ready to discuss the main issues of the text starting with the following introductory phrases:

to the best of my knowledge ... - наскільки мені відомо ...
I, for one, consider that ... - я, наприклад, вважаю, що ...
in my opinion / to my mind ... - на мою думку...

- ***Points for discussion are as follows:***

a) The major reasons for heart and lung diseases in industrialized societies.
b) The most important areas for a physical therapist to target when treating a cardiopulmonary patient.

TEXT IA

PHYSICAL REHABILITATION IN CARDIOPULMONARY DISEASES

At the beginning of the twenty first century diseases of the heart and lungs remain major sources of dysfunction, disability and death in industrialized societies. The knowledge that the etiology of cardiopulmonary disease is partially environmental and often self-inflicted suggests that the ravages of these diseases can be arrested, reversed or even prevented by changes in lifestyle.

While we may need two separate specialists to deal with the heart and lungs disorders, we cannot separate the heart and lungs either in their normal physiology or their pathological dysfunctions. While the heart and lungs appear as separate structures in the thorax, they function as a unitary system for gas exchange and tissue perfusion.

The terminology of the "right heart" (or the respiratory heart) and the "left heart" is necessary because of this unity of function. The functional unity of the cardiopulmonary system consists in the delivery of oxygen to and the removal of carbon dioxide from the tissues of the body.

The cigarette-smoking, obese patient with coronary artery disease also has small airway disease. The emphysemic or chronic bronchitic patient surely has a deconditioned or even ischemic myocardium. A patient presenting symptoms of shortness of breath may have a cardiac or pulmonary disorder, or both. These

weaknesses in the total gas delivery system are the basis for the symptoms and the targets for clinical and physical therapy.

The field of rehabilitation medicine has expanded during the past decade from treating essentially healthy people with some physical disability (such as an amputation) to working with patients with serious disabling illnesses (such as coronary artery diseases (CAD) or chronic obstructive pulmonary disease (COPD). Physical rehabilitation for the latter type of patients is aimed at restoring the patient's previous condition of health and functional capacity.

A typical rehabilitation may begin during an acute phase of the illness while a patient is hospitalized, and extend for many months after his discharge. The goals of rehabilitation programmes may differ from one patient to another, but they have in common the goal of improving a patient's functional capacity so that he can care for himself and maintain his occupational, recreational and social activity.

It should be taken into account though, that not all patients or diseases are susceptible to rehabilitation. Cardiac patients can show tremendous improvements in response to an effective rehabilitation programme. They may even achieve a higher degree of fitness than they had for many years previously. Pulmonary patients, on the other hand, are often less able to restore functions which have already been destroyed.

A typical rehabilitation would use an initial exercise test to select patients for the appropriate programmes and to establish their initial functional capacities.

VOCABULARY CONSOLIDATION

III. Match the words from the left column with their definitions from the right column:

1. "right heart"	a) a part of an organism consisting of a large number of cells having a similar structure and function
2. "left heart"	b) to keep from catching any illnesses, especially by taking precautionary actions
3. coronary artery	c) either of two arteries branching from the aorta and supplying blood to the heart
4. to discharge	d) lesser or pulmonary circulation

5. tissue	e) the condition of being unable to perform a task or function because of a physical or mental impairment
6. small airway disease	f) to release or allow to go from the hospital
7. to prevent a disease	g) inflammation of bronchioles
8. pulmonary disorder	h) greater or systemic circulation
9.acute phase of a disease	i) illnesses relating to or affecting the lungs
10. disability	j) disease that arises suddenly and manifests intense severity

IV. Complete the sentences with the appropriate word combinations from the box.

a) *susceptible to rehabilitation*	f) *occupational, recreational and social activity*
b) *improving a patient's functional capacity*	g) *dysfunction, disability and death*
c) *previous condition of health*	h) *removal of carbon dioxide*
d) *an acute phase of the illness*	i) *tremendous improvements*
e) *the total gas delivery system*	j) *pulmonary patients*

1. At the beginning of the twenty first century diseases of the heart and lungs remain major sources of _____ in industrialized societies.
2. Physical rehabilitation is aimed at restoring _____ and functional capacity.
3. _____ are often less able to restore functions which have already been destroyed.
4. It should be taken into account though, that not all patients or diseases are _____.
5. Cardiac patients can show _____ in response to an effective rehabilitation programme.
6. The goal of physical rehabilitation is _____so that be can care for himself and maintain his _____.
7. A typical rehabilitation may begin during _____while a patient is hospitalized.
8. The functional unity of the cardiopulmonary system consists in the delivery of oxygen to and the _____ from the tissues of the body.
9. Weaknesses in _____are the targets for clinical and physical therapy.

V. Fill in the table with the missing parts of speech. Some spaces might be left blank. Supply the words with their Ukrainian equivalents.

Noun	Verb	Adjective	Adverb
			functionally
response			
	separate		
		initial	
			shortly
	occupy		
disability			

VI. Complete the sentences with the words from the previous exercise:

1. One of the major principles of a society democratic arrangement is the principle of _____ of powers.
2. The police should _____ to emergencies in just a few minutes.
3. Two similar organs might differ _____ without differing morphologically.
4. New technocratic government promised to _____ a whole range of economic reforms.
5. If an injury or illness _____ a person, it affects his/her quality of life.
6. There is no _____ of entertainments to enjoy in a big city.
7. _____ therapy is a method of helping people recuperating from illness to perform some sort of activities required in daily life.
8. Flu is a virus that is not _____ to drug treatment.
9. The conference participants were photographed _____ and then as a group.
10. In November the temperatures drop and the days _____ .

I. A. READING AND COMPREHENSION

V. Review the vocabulary units while reading each item of text 2A "CARDIAC REHABILITATION". Read the text and do the post-reading activities.

TEXT 2A

CARDIAC REHABILITATION

The latest decades of the twentieth and the beginning of the twenty first century have been the period of ***"the boom of exercise"*** the entire world round. ***Preoccupation with exercise*** and physical fitness has become widespread across the population of all developed countries.	***"the boom of exercise"*** - *аксіоматично, підвищений інтерес до занять спортом* ***preoccupation with exercise*** - *захоплення спортом*

Recently cardiac patients have also benefited from exercise, with cardiac rehabilitation programmes becoming the ***standard of care*** in many hospitals and clinics. The use of exercise in rehabilitation of the cardiac patient for both diagnostic and ***recovery purposes*** will undoubtedly continue to increase in popularity.	***standard of care*** - *засіб догляду (за пацієнтами)* ***for recovery purposes*** - *з метою відновлення*

A cardiac rehabilitation programme is usually deslgned lor both ***documented cardiac patients*** and for patients with a high risk for heart disease. The "high risk" patient is one with multiple primary risk factors (hypertension, smoking, diabetes etc.)	***documented cardiac patient*** - *хворий із серцевою патологією, який стоїть на обліку*

Phase II begins after dlscharge from the hospital and continues for one or two months. Phase II may involve exercise at home (on a ***stationary cycle*** or outdoor walking). It may also include visiting an ***outpatient clinic*** which uses telemetry ***to monitor*** the exercise programme. The outpatient clinic programme normally involves the exercise modes of cycling, ***treadmill*** walking, rowing, swimming and similar activities, and continual telemetry or ECG (electrocardiogram) monitoring. During Phase II the frequency of clinical visits will decrease and physical activity will increase. At the conclusion of Phase II the patient should receive a ***symptom-limited graded exercise test*** and a new exercise prescription. Phase III is usualiy conducted at home or at any commercial health organization. The initial one to three months of ***involvement of the patient*** in Phase III should be under the supervision of a physician or a nurse. Afterwards the patient may be transferred from a medically-supervised programme to a paramedically supervised programme conducted by physical rehabilitator or physical education instructor. The patient should become involved in recreational activities such as tennis, racquetball, swimming, cross country skiing or other recreational sports. With ***counseling*** and training the patient may be transferred to a totally non-supervised programme to meet his individual needs, schedule and interests.	***stationary cycle*** – *велотренажер* ***outpatient clinic*** – *лічниця для амбулаторних хворих* ***to monitor*** – *спостерігати, контролювати* ***treadmill*** – *тренажер «доріжка, що біжить»* ***symptom-limited graded exercise test*** – *тест на поступове фізичне навантаження залежно від симптомів захворювання* ***involvement of the patient*** – *участь пацієнтів* ***counseling*** – *консультування, консультація*

VI. Give the most comprehensive adequate Ukrainian translation of the following English word combinations:

1. medically- / paramedically-supervised programme;
2. commercial health organization;
3. exercise prescription;

4. overwhelming publicity about exercising;
5. to continue to increase in popularity;
6. to monitor the exercise programme;
7. to be involved in recreational activities;
8. to meet one's individual needs;
9. to receive a new exercise prescription;
10. accomplished level of cardiovascular fitness.

VII. Give answers to the following questions making use of the information from the previous text.

1. What are tbe primary risk factors tbat trigger *(мут:запускати)* the development of cardiac diseases?
2. Which of the three cardiac rehabilitation phases particularly needs a physical therapist's care?
3. How is the cardiac patient's fitness level monitored during the second phase of rehabilitation?
4. Whose supervision is necessary for a cardiac patient's rehabilitation in Phase I and Phase II?
5. What types of exercise modes should be recommended for Phase II rehabilitation programme?

VIII. Think of the questions to which the following sentences might be the answers:

1. Usuaily hypertension, smoking, diabetes etc. are referred to as multiple primary risk factors.
2. On tbe average it lasts from one to three months.
3. It might be supervised by a physical therapist or physical education instructor.
4. No, you're wrong. Cross country skiing or lawn tennis should not be recommended to cardiac patients' rehabiiitation activities in Phase I.
5. Yes, you are right. Nowadays cardiac rehabilitation programmes bave become the standard of care in many hospitals and clinics.

III. A. LISTENING AND COMPREHENSION:

IX. You are going to hear / to read an account of recommended rehabilitative procedures administered to individuals with respiratory disorders.
Which of the following issues are not mentioned in the passage?
Identify any unknown words before listening / reading.

to break the vicious circle	*розірвати замкнене коло*
exertional dyspnea	*диспное, задишка при фізичних навантаженнях*
progressive overload principle	*принцип поступового навантаження*
bending and twisting	*нахили та обертання*
vigorous activity	*активна діяльність*

1. *Cigarette smokers are potential chronic obstructive pulmonary disease (COPD) cases.*
2. *Rehabilitative modalities are applied to prevent exertional dispnea.*
3. *Severe lung diseases like emphysema or bronchitis can lead to COPD*
4. *The progressive overload principle is applied in therapeutic weight training for patients with respiratory disorders.*
5. *Track-and-field athletics in the outdoors is extremely beneficial for this category of patients.*

PULMONARY REHABILITATION

During the past three decades incidence of chronic obstructive pulmonary disease (COPD) caused by cigarette smoking have been approaching near-epidemic proportions in the world.

Pulmonary rehabilitation began in the 1940s for tuberculosis patients, but only recently large scale programmes have been established for COPD patients. A marked increase in the number of individuals with COPD has stimulated the development of pulmonary diagnostics and rehabilitation programmes throughout the world. The scientific investigations in this field indicate that exercise therapy is extremely beneficial for this category of patients.

Usually patients with respiratory disorders can tolerate only minimal stress on the pulmonary system. Golf, archery, table tennis, shuffleboard, bowling, weight training and swimming provide exercises to strengthen the chest muscles that aid the process of breathing. Weight training is of special value because the specific muscles

that assist inhalation can be isolated and strengthened, applying the progressive overload principle.

The objective is to have the patient exercise for 20 minutes continuously for three days per week as a minimum. All exercise sessions should be preceded by a brief warm-up period. Patients should be instructed in a few standard stretching, bending and twisting movements to warm the musculature progressively and prepare it for more vigorous activity. Slow walking or cycling prior to exercising is also beneficial. Cool-down exercises such as slow walking or cycling together with some of gymnastic exercises aid the patient's speedy recuperation.

- ***Listen again and complete the sentences:***

1. Incidences of chronic obstructive pulmonary disease have been approaching _____ in the world.
2. Pulmonary rehabilitation began in the 1940s for _____.
3. Exercise therapy is extremely beneficial for COPD patients.
4. Usually patients with respiratory disorders can tolerate _____ on their pulmonary system.
5. Weight training is of special value because the specific muscles that assist inhalation can be _____, applying the progressive overload principle.
6. _____ prior to exercising is also beneficial for COPD patients.

- ***Are the sentences below are "true" or "false"? Correct the false statements.***

1. Scientific research in pulmonary rehabilitation started prior to that carried out in cardiac rehabilitation.
2. Slow walking or stationary cycle activities should be included into a COPD patients' rehabilitation programme work-outs.
3. Some standard calistbenics exercises are recommended as extremely beneficial for most COPD patients as they strengthen specific thorax muscles.
4. Running, jumping and other strenuous activities are perfectly appropriate for patients with breathing problems.
5. Weight training for patients with respiratory disorders should be accomplished cautiously and in a gradual manner.

SMALL TALK

XI. Learn the following English proverbs. Provide Ukrainian equivalents if possible. If not, please provide an accurate translation. Discuss the proverbs with your group mates. What common idea do all these proverbs try to make clear for us?

1. **A sound mind in a sound body.**
2. **We are what we eat.**
3. **An apple a day keeps the doctor away.**
4. **Early to bed and early to rise makes a man healthy, wealthy, and wise.**

IV. A. READING AND WRITING

XII. Read the following article with the help of a dictionary.

- ***Make written translation into Ukrainian.***
- ***Single out the key words and write an abstract of the article in English.***

How to pick up key phrases and words. A key word is a key to information. Key words are significant words (or word-combinations consisting of more than one word) from a research paper or a document used as an **Index to the contents**. They enable the reader to quickly find the texts on the topic of interest.

Let us take an example to see why key words are useful. A paper titled '*A New approach to the treatment of diabetes*' describes how some medicinal herbs can help in treating the disease. However, the title does not mention this, nor does it mention the names of those herbs. Suitable key words for such a paper will include the scientific names of those herbs, and a search for any of those names will lead other researchers to that paper.

For instance, if you're writing a research paper on physical differences in Cerebral Palsy, be sure to use words like "*neurological disease*", "*multiply handicapping condition*", "*spasticity*", "*athetosis*", "*ataxia*", "*rigidity*", "*societal acceptance / non-acceptance*" and the like. These might be **search terms** people use when looking for a paper on your subject.

Do not use words or phrases from the title as key words: the function of key words is to supplement the information given in the title. Words in the title are automatically included in indexes, and key words serve as additional pointers.

Key words are usually **placed after the abstract** before the main body of the text. The **number of key words** usually comprises from **5 to 10** important words or phrases key to the research or the abstract.

EXAMPLES OF GAMES TO DEVELOP MORE EFFICIENT BREATHING

For children with inefficient hreathing patterns (dyspnoea), games that assist in the development of control of expiration and encourage diaphragmatic hreathing are recommended. The games enlisted may he used as models.

1. A halloon is tossed into the air. As it descends, everyone whistles a low note until the balloon touches the floor. The player who first stops whistling hefore the balloon hits the floor must toss the halloon into the air for the next round.

2. Jugs and hottles of different sizes are secured as instruments for a jug hand. Sound is created hy hlowing across the opening of the container. The children are encouraged to blow low, long, steady sounds rather than short and loud ones. Homemade drums and rhythmic devices may he added to the hand. These could he played hy children who do not need the hreathing exercises.

3. Two players stand at opposite ends of a short tahle. A tahle tennis hall is placed in the centre of the tahle. Each player tries to hlow it off the other end.

4. Several players are grouped around a circular tahle. A halloon is placed in the centre and all the players try to hlow it off the table, while attempting to prevent the halloon from going off the tahle on either side of them. No one is allowed to touch the halloon.

Muscles that assist in expiration can he strengthened hy trunk exercises rather than breathing exercises. Hence, any movement that rotates, ahducts, or extends the trunk will strengthen these muscles If the progressive overload principle is applied. Examples of exercises that might he used are as follows:

1. Lie in the prone position on a hench with the trunk extended over the end. Lower the trunk toward the floor and return to the original position. Weights may he held behind the head to increase the difficulty.

2. Stand with the feet spread and the arms raised at the sides. Twist the trunk from one side to the other and back.

3. Stand with the feet apart and the hands on the hips. Move the trunk from side to side, lowering it as far as possihle to each side.

Any exercise that flexes the spinal column or the pelvis is suitable for strengthening their muscles, applying the progressive overload principle. Two suitable exercises are given as follows:

1. Lying in the supine position on the floor, raise the head and shoulders four or five inches off the floor and return to the original position. To increase the difficulty weigbts may be held on the lorehead.

2. Lying supine on tbe floor, with the knees bent and the feet on the floor, move to a sit-up position and return. Weights held behind the head increase the difficulty.

- ***Here you can get acquainted with an example of key words to the article you have read. Compare it with your own choice. Don't worry if it differs from the sample. So many wells, so many buckets. It is OK if you have abidden by the rules suggested above.***

Key words. children with dispnoea; breathing exercises; exercises for trunk muscles strengthening; flexibility exercises; progressive overload principle.

PHYSICAL REHABILITATION IN CARDIOPULMONARY DISEASES

VOCABULARY CHECK-UP

I. ***One out of five units doesn't fit. Circle the one, which falls out.***

1. *a)* disease	*b)* malady	*c)* illness	*d)* fitness	*e)* sickness
2. *a)* target	*b)* objective	*c)* aim	*d)* goal	*e)* aid
3. *a)* dysfunction	*b)* capacity	*c)* weakness	*d)* disability	*e)* impairment
4. *a)* acute	*b)* starting	*c)* initial	*d)* first	*e)* primary
5. *a)* outpatient clinic	*b)* treadmill	*c)* walking	*d)* stationary cycle	*e)* racquetball

II. ***Choose the appropriate word for each of the following definitions:***

1. to regularly check or watch someone in order to find out what is happening means …

a) to recommend; *b)* to maintain; *c)* to restore; *d)* to monitor;

2. the greater or systemic circulation is called …

a) coronary artery; *b)* right heart; *c)* cardiovascular system; *d)* left heart;

3. to release or to allow the patient to go from the hospital means …

a) to discharge; *b)* to prevent; *c)* to monitor; *d)* to disagree;

4. illnesses relating to or affecting the lungs are qualified as …

a) cardiac; *b)* clinical; *c)* pulmonary; *d)* diaphragmatic;

5. special exercise device with a moving surface that one walks or runs on is called …

a) stationary cycle; *b)* calisthenics exercise; *c)* treadmill; *d)* shuffleboard.

III. ***Match the words from both columns to form phrasal units. Make up 3 sentences using some of those phrasal units.***

1. exercise	*a)* recovery
2. coronary	*b)* movements
3. progressive overload	*c)* artery
4. speedy	*d)* delivery
5. tissue	*e)* prescription
6. oxygen	*f)* training
7. outpatient	*g)* risk factors
8. weight	*h)* clinic
9. bending	*i)* principle
10. primary	*j)* perfusion

IV. Match the words from both columns to form verbal phrases. Make up 3 sentences

1. to monitor	*a)* account
2. to benefit	*b)* individual needs
3. to take into	*c)* a patient
4. to restore	*d)* from exercising
5. to meet	*e)* carbon dioxide
6. to break	*f)* the blood pressure
7. to prevent	*g)* a disease
8. to discharge	*h)* exercise prescription
9. to receive an	*i)* the vicious circle
10. to remove	*j)* functional capacity

V. Match the endings with the beginnings to make comprehensive sentences:

a) ... clinical and physical therapy.
b) ... rather than breathing exercises.
c) ...the accomplished level of cardiovascular fitness.
d) ... restoring previous condition of health and functional capacity.
e) ...a unitary system for gas exchange and tissue perfusion.
f) ... partially environmental and often self-inflicted.
g) ...a symptom-limited graded exercise test and a new exercise prescription.
h) ...should be under the supervision of a physician or a nurse.
i) ...the exercise modes of cycling, treadmill walking, rowing, and similar activities.
j) ...only minimal stress on the pulmonary system.

1. The etiology of cardiopulmonary disease is ...
2. The weaknesses in the total gas delivery system are the targets for ...
3. Physical rehabilitation for the COPD patients is aimed at ...
4. The outpatient clinic programme normally involves ...
5. Muscles that assist in expiration can be strengthened by trunk exercises...
6. Usually patients with respiratory disorders can tolerate ...
7. After achieving rehabilitation goals the individual should continue participating to maintain ...
8. At the conclusion of Phase II the patient should receive ...
9. The initial one to three months of involvement of a cardiac patient in Phase III ...
10. While the heart and lungs appear as separate structures in the thorax, they function as ...

UNIT 7
HUMAN MUSCULOSKELETAL SYSTEM

I. A. COMPREHENSION AND DISCUSSION:

*I. **Before reading the text on the Human Musculoskeletal System make sure you remember basic terminology from the previous units:***

1. bone	2. muscle	3. tendon	4. skull
5. spine	6. sternum	7. rib	8. shoulder girdle
9. brain	10. joint	11. posture	12. vertebra
13.cartilage	14. thorax	15. limb	16. pelvis girdle
17. skin	18. cranial	19. tissue	20. abdomen
21. ligament	22. head	23. wrist	24. spinal cord

1. верхні кінцівки	2. тулуб	3. грудна клітка	4. хребет
5. шлунок	6. череп	7. ребро	8. тазовий пояс
9. зв'зка	10. грудна кістка	11. шкіра	12. суглоб
13.кістка	14. суглоб	15.спинний мозок	16. м'яз
17. сухожилля	18. кінцівка	19. постава	20. голова
21. хребець	22. плечовий пояс	23. хрящ	24. черепний
25. живіт	26. шия	27. тканина	28. зап'ясток

II. Learn the vocabulary to the Text 1A "HUMAN MUSCULOSKELETAL SYSTEM". Pay special attention to the meaning and pronunciation of medical lexicon. While reading all the textual materials of Unit 7 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project.

Make use of any of the on-line or printed dictionaries like ABBY Lingvo x 3 or ABBYLingvo x 5; dictionary.reference.com or www.merriam-webster.com

Please be sure to do similar job while working upon other Units that follow.

locomotor system	[ˌləukə'məutə]	опорно-руховий апарат
to provide		постачати; забезпечувати
essential to life	[ɪ'sen(t)ʃ(ə)l]	важливий для життя
protection		захист; охорона
to maintain upright posture		підтримувати вертикальну поставу
blood cell formation		утворення кров'яних клітин
mineral homeostasis	[ˌbəumɪə'steɪsɪs]	гомеостаз / баланс мінералів
storage **to store**	['stɔ:rɪdʒ]	зберігання, накопичення накопичувати, зберігати
leverage **lever**	['li:v(ə)rɪdʒ] l'li:və]	підйомна сила, дія важеля важіль, плече важеля
axis (*pl* axes) **axial skeleton**	['æksɪs] ['æksɪəl]	вісь осьовий скелет (скелет голови і тулуба)
connective tissue		сполучна тканина

to support		підтримувати, нести навантаження
to bind	[baɪnd]	зв'язувати, з'єднувати
vital organ	['vaɪl(ə)l]	життєво важливий орган
critical component		важливий елемент
haematopoletic system	] hi:mʌtəpɔi'etɪk]	система кровотворення
to depict		відображати
muscle fibre	['faɪbə]	м'язове волокно
motion		рух
to prevent from		перешкоджати, запобігати
to rub directly on to sth.		безпосередньо тертися (*про кістки)*
to contract		скорочуватися
to extend		витягатися, подовжуватися
to be attached		кріпитися

HI. Read the text IA "HUMAN MUSCULOSKELETAL SYSTEM" In order to perform the follow-up activities:

T E X T IA'

HUMAN MUSCULOSKELETAL SYSTEM

The huinan musculoskeletal system (also known as the locomotor system) is an organ system that gives humans the ability to move using the muscular and skeletal systems. These two systems work together to provide basic functions that are essential to life, including:

- Protection: protects the brain and internal organs
- Support: maintains upright posture
- Blood cell formation: haematopolesis
- Mlneral homeostasis
- Storage: stores fat and minerals
- Leverage: A lever is a simple machine that magnifies speed of movement or force. The levers are mainly the long bones of the body and the axes are the joints where the bones meet.

The human musculoskeletal system is made up of the body's bones (the skeleton), muscles, cartllage, tendons, ligaments, joints and other connective tissues (the tlssue that supports and binds tlssues and organs together). The musculoskeletal system's primary functions include supporting the body, allowing motion and

protecting vital organs. The skeletal system serves as the main storage system for calcium and phosphorus and contains critical components of the hematopoietic system.

This system depicts how bones are connected to other bones and muscle fibers through the connective tissues such as tendons and ligaments. Muscles keep bones in place and also play a role in movement of the bones. To allow motion different bones are connected by joints. Cartilage prevents the bone ends from rubbing directly on to each other. Muscles contract and extend to move the bone attached at the joint.

VOCABULARY CONSOLIDATION

IV. Make up word combinations using the words from each box. Some words can be used more than once.

1. musculoskeletal	*a)* formation
2. connective	*b)* homeostasis
3. blood cell	*c)* functions
4. muscle	*d)* organ
5. haemopoietic	*e)* system
6. mineral	*f)* posture
7. storage	*g)* fiber
8. vital	*h)* tissue
9. basic	
10. upright	

V. Complete the sentences with the words from the box:

a) supporting the body	*e) the ability to move*
b) the main storage system	*f) protecting vital organs*
c) prevents the bone ends	*g) connective tissue*
d) tendons and ligaments	*h) contract and extend*

1. The locomotor system is an organ system that gives humans _____ using the muscular and skeletal systems.
2. _____ is the tissue that supports and binds together tissues and organs of the body.
3. The musculoskeletal system's primary functions include _____, allowing motion, and _____.
4. Cartilage _____ from rubbing directly on to each other.

5. Muscles _____ to move the bone attached at the joint.
6. The skeletal system serves as _____ for calcium, phosphorus and other minerals necessary for the human body.
7. Bones are connected to other bones and muscle fibers through the connective tissues such as _____.

VI. Fill in the table with the missing parts of speech. A few spaces should be left blank:

Noun	Verb	Adjective	Adverb
		connective	
storage			
	digest		
			directly
		functional	
	protect		
prevention			

VII. Complete the sentences with the appropriate parts of speech from the previous task:

1. In winter season people have to take all possible _____ measures not to catch the flu.
2. A _____ disorder is an illness which occurs when an organ of the body fails to perform its _____.
3. Yellow bone marrow is used _____ fats.
4. Tbe athlete's trauma was a _____ result of bis overuse during training session.
5. A patient with a bone fracture was taken _____ to the X-ray room.
6. Could you please _____ me to the new rehabilitation centre?
7. Tbe eirculatory and pulmonary systems are closely _____.
8. Scientists have established a _____ between cholesterol levels and heart disease.
9. People who don't eat meals at regular intervals might develop poor _____.
10. The conservation and _____ of the environment are problems of paramount importance for the humanity.
11. An ounce of _____ is better than a pound of cure.

III. Provide the answers to the following questions:

1. What are the essential functions of the human musculoskeletal system?
2. What function does the connective tissue perform in the body?
3. What fundamental minerals necessary for a human health are stored in the skeletal system?
4. Provide a few examples of the connective tissues in the body.
5. How does cartilage prevent the bone ends from rubbing directly on to each other?
6. By means of what tissues in the body is the human upright posture maintained?
7. Which bones perform the functions of levers in human body movements?

II. A. READING AND COMPREHENSION

IX. Pay special attention to proper pronunciation of the following terms:

cranium ['kreɪnɪəm]	**mandible** ['mændɪbl]	**clavicle** ['klævɪkl]
scapula ['skæpjələ]	**humerus** ['hju:mərəs]	**ulna** ['ʌlnə]
sacrum ['seɪkrəm]	**coccyx** ['kɔksɪks]	**carpals** ['kɑ:p(ə)lz]
metacarpals [ˌmetə'kɑ:pəl]	**phalanges** [fə'lændʒi:z]	**femur** ['fi:mə]
patella [pə'telə]	**fibula** ['fɪbjulə]	**tibia** ['tɪbɪə]
tarsals ['tɑ səlz]	**metatarsals** [ˌmetə'tɑ:səlz]	

X. Before reading the text on the Human Skeleton, make sure you remember basic anatomic terminology: match corresponding English and Ukrainian terms and be sure to pronounce them properly. Consult the picture of a skeleton on the next page in order to check your answers:

1) cranium	2) mandible;	3) clavicle;	4) scapula;	5) stemum;
6) ribs;	7) humerus;	8) vertebrae;	9) innominate bone;	10) radius;
11) ulna;	12) sacrum;	13) coccyx;	14) carpals;	15) phalanges;
16) metacarpals;	17) femur;	18) patella;	19) fibula;	20) tibia;
21) tarsals;	22) metatarsals			

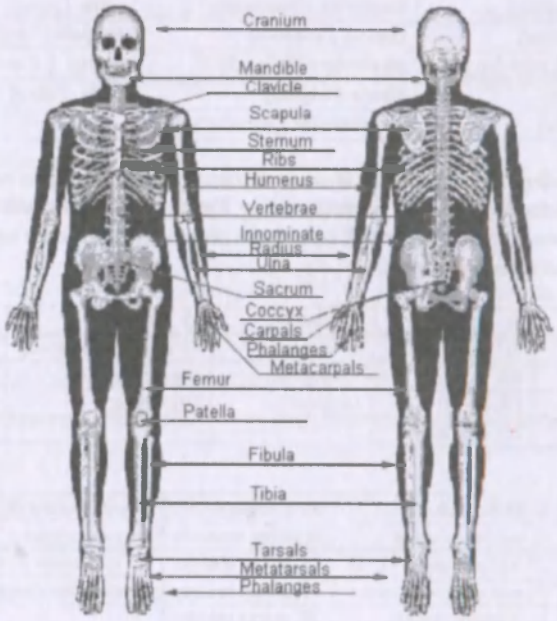
1) лопатка	2) ліктьова кістка;	3) плечова кістка	4) крижова кістка;	5) куприк
6) череп	7) кістки зап'ястка;	8) кістки заплесна	9) тазова кістка	10) ребра
11) наколінок	12) малогомілкова кістка	13) кістки п'ястка	14) променева кістка	15) хребет
16) груднина	17) великогомілкова кістка	18) кістки плесна	19) стегнова кістка	20) ключиця
	21) фаланги пальців	22) нижня щелепа		

XI. Learn the vocabulary to the text 2A "HUMAN SKELETON". Read the text and do the after-reading activities.

to fuse together	[fju:z]	зростатися
permanent bone		постiина кiстка
axiai skeieton	['æksıəl]	осьовии скелет
appendiicular skeieton	[æpən'dıkıulə]	додатковии скелет
cranium	['kreınıəm]	череп
to transmit tbe bodv weight		*(mym)* розподiляти вагу тiла
to encloses the spinal cord		мiстити спинниии мозок
fibrous tissue	['faıbrəs] ['tıʃu:],	фiброзна тканина
cartiiaginous diisk	[kɑ:tı'lædʒınəs]	хрящевин диск
to absorb tbe mechanical shock		поглинати механiчнi удари
cervicai section	['sɜ:vık(ə)l]	шийний вiддiл *(хребта)*
tboracic section	[θə'ræsik]	грудниН вiддiл
lumbar section	['lʌmbə]	поперековин вiддiл
sacral section	['seıkr(ə)l]	крижовии вiддiл
coccvx sectlon	['kɔksıks]	куприковии вiддiл
vertebral bodv	['vɜ:tıbr(ə)l]	тiло хребця
neural arcb	['njuər(ə)l] [ɑ tʃ]	дуга хребця
vertebral foramen	[fə'reımen]	хребцевий отвiр

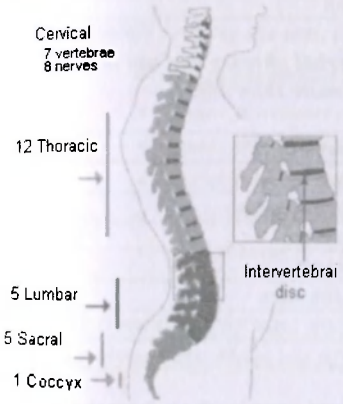
TEXT 2A

HUMAN SKELETON



The average human adult skeleton consists of 206 bones, which are attached to the muscles by tendons. Babies are born with 270 soft bones - about 64 more than an adult. These will **fuse together** by the age of twenty or twenty-five into the 206 hard, **permanent bones.**

The skeleton has two main parts: the **axial skeleton** and the **appendicular skeleton**. The axial skeleton consists of the skull (cranium), the spine, the ribs and the sternum (breastbone) and includes 80 bones. The appendicular skeleton, consisting of 126 bones, includes two **limb girdles** (the shoulders and peivis) and their attached limb bones. 64 of the appendicular skeleton bones are located in the shoulders and upper limbs and 62 belong to the pelvis and lower limbs.



The vertebral column or "the spine" is the most vitaily important part of the axial skeleton as it contains the spinal cord. The vertebral column **transmits the body weight** from the head, thorax, and abdomen to the lower extremities and **encloses** and protects the **spinal cord**. Each vertebra has essentially the same basic components. They are separated by intervertebral disks and fibrous tissue. These cartilaginous disks act as cushions to absorb the mechanical shock during walking, running etc.

The spine is divided into five sections: the cervical, the thoracic, the lumbar, the sacrum and the coccyx. There are 7 cervical, 12 thoracic, 5 lumbar, 5 fused sacral, and 3 to 5 fused vertebrae (together called the coccyx).

The vertebral column is characterized by a variable number of curves. These curves are: 1) a sacral curve, in which the sacrum curves backward and helps support the abdominal organs, 2) a forward cervical curve, which develops soon after birth as the head is raised and 3) a forward lumbar curve and a backward thoracic curve, which develops as the child sits and walks. The vertebral body and the neural arch encircle the vertebral foramen. Stacked one on top of the other, these foramina form the vertebral canal, where the spinal cord resides.

VOCABULARY CONSOLIDATION

XII. Match the words from both columns to form phrasal units and give their Ukrainian equivalents. Some words can be used more than once.

1. lower	*a)* hody
2. vertehral	*b)* component
3. appendicular	*c)* girdle
4. permanent	*d)* limhs
5. limh	*e)* arch
6. critical	*f)* skeleton
7. axial	*g)* foramen
8. pelvis	*h)* extremities
9. shoulder	*i)* hones
10. neural	*j)* column

XIII. Match the words from both columns to form verbal phrases and use them in the sentences of your own. Some words can be used more than once.

1. to he attached	*a)* the spinal cord
2. to contaln	*b)* together
3. to consist of	*c)* vertehral foramen
4. to transmit	*d)* hody weight
5. to protect	*e)* 126 hones
6. to fuse	*f)* to the muscles
7. to enclose	
8. to encircle	

XIV. Complete the sentences with the appropriate word combinations from the box.

a) ... limb girdles (the shoulders and pelvis)...	*f) ... encloses and protects ...*
b) ...the spine. the ribs and the sternum	*g) ... 62 belong to the pelvis and lower limbs.*
c) ... and the neural arch ...	*h) ... essentially the same ...*
d) ... is divided into five sections:	*i) The vertebral column or "the spine"...*
e) ... transmits the body weight ...	*j) ... of 206 bones.*

1. The average human adult skeleton consists ...
2. The spine ... the cervical, the thoracic, the lumhar, the sacrum, and the coccyx.
3. ... is the most vitally important part of the axial skeleton as it contains the spinal cord.
4. The appendicular skeleton includes two ... and their attached limh hones.
5. The vertehral column ... the spinal cord.

6. The vertebral column … from the head, thorax, and abdomen to the lower extremities.

7. 64 bones are located in the shoulders and upper limbs and …

8. The vertebral body … encircle the vertebral foramen.

9. Each vertebra bas … basic components.

10. The axial skeleton consists of the skull (cranium), …

II B. READING AND COMPREHENSION

XV. Review the vocabulary units before reading each item of Text 2B. Read the text and do the following activities:

a) While reading the text, look for the information about:

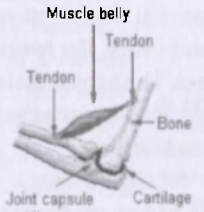
- ***the fundamental types of musculoskeletal tissues;***
- ***major functions performed by connective tissue in the body;***
- ***bones structure and their general classification;***
- ***the difference between ligaments and tissues;***
- ***what kind of liquid is "synovial fluid";***
- ***the location of "bursa" in the body;***

b) Compile a glossary: an alphabetical list of terms found in the text 3A with their explanations. Make use of specialized medical or electronic dictionaries.

TEXT 2B

BODY TISSUES

tissue	*тканина*
"mother" cell	*материнська клітина*
proteoglycans	*протеоглікани*
to manufacture	*виробляти*
fibroblasts	*фібробласти*
collagen ['kɔlədʒən]	*колаген*
ground substance	*основна речовина*
fiber	*волокно*



Modified from: DeLisa, Stolov, p. 30

Detail views: elbow

Representation of the typical arrangement of musculoskeletal tissues

There are 5 basic tissues comprising the musculoskeletal system:

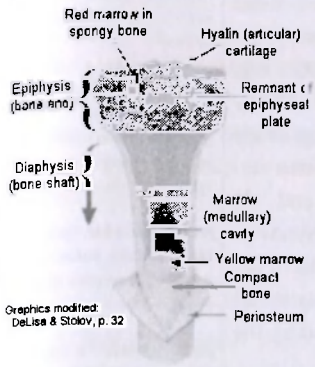
1. **bones**.
2. **ligaments** (attaching bone to bone),
3. **cartilage** (protective gel-like substance lining the joints and intervertebral discs)
4. **skeletal muscles**, and
5. **tendons** (attaching muscle to bone).

Each of these contains various combinations of 4 **connective tissue** building blocks:

- ***fibroblasts*** - the "mother" cell of the connective tissue, producing the other 3 connective tissue components (collagen, elastin [i'læstin] and mucopolysaccharide).
- ***collagen*** - the principal protein manufactured by the fibroblast. Organized into various configurations, these long, thin fibres intertwine to form very strong fibres which do NOT stretch.
- ***elastic fibres*** - highly elastic fibres, unlike collagen, particularly abundant in the walls of arteries.
- ***proteoglycans*** - the "ground substance," or "matrix," in which fibroblasts, collagen, and elastic fibres reside.

BONES

There are five general classifications of bones. These are long bones, short bones, ***flat bones***, ***irregular bones***, and ***sesamoid bones***. The human skeleton is composed of both fused and individual bones supported by ligaments, tendons, muscles and cartilage. A living bone consists of three layers, all ***honeycombed*** with nerves and blood vessels: 1) the ***periosteum***, 2) the hard ***compact bone***, supporting the weight of the body and	***flat bone*** - *плоска кістка* ***irregular bone*** - *змішана кістка* ***sesamoid bone*** ['sesə moid] - *сесамоподібна кістка* ***honeycombed*** - *пронизаний*



3) ***spongy bone*** (***bone marrow***). Spongy bone occurs at the ends of long bones and is less dense than compact bone. The spongy bone of the femur, humerous and sternum contains red bone marrow, producing red blood cells (which carry oxygen), white blood cells (which fight infection), and platelets (that help stop bleeding).

Yellow bone marrow, at the centre, is used ***to store fats.***

periosteum [ˌperɪ'ɔstɪəm]- *окістя*

compact bone – *компактна кістка*

spongy bone - *губчаста кістка*

bone marrow - *кістковий мозок*

dense – *щільний*

platelet ['pleɪtlət]- *тромбоцит*

to store fats - *зберігати, накопичувати жирову тканину*

A bone, which is a specialized form of connective tissue, consists of both organic components (e.g. collagen) and inorganic minerals (calcium, phosphorus, ***magnesium***, ***potassium*** and ***sodium***). The minerals calcium and phosphorus give bone its hardness, strength and rigidity to resist compressive forces. The collagen fibres impart the bone its flexibility.

Bone continuously remakes itself: new bone is produced and old bone is ***removed***. *Osteoblasts*, the cells responsible for bone formation, maintain the balance of calcium in the blood and bone. When this balance is ***disrupted***, as in osteoporosis, the removal of bone (for which *osteoclasts* are responsible) ***exceeds*** its production, making bone thin and ***brittle***, thus more easily fractured.

In long bone, illustrated above, growth occurs at the diaphysis side (shaft) of the epiphyseal plate, thus increasing the length of the shaft. Long bone growth stops when the ***hyaline*** (articular) cartilage stops reproducing itself and fully converts to bone. Hyaline cartilage is the most important cartilage: it serves as the "original" skeleton in the embryo from which bones develop.

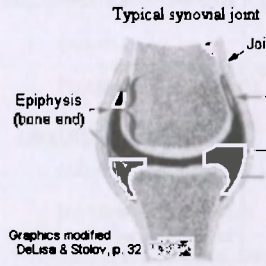
magnesium [mæg'ni:zɪəm] – *магній*
potassium [pə'tæsɪəm] - *калій*
sodium ['səudɪəm] – *натрій*

to remove – *усувати, видаляти*

to disrupt – *порушувати*
to exceed – *перевищувати*
brittle – *крихкий*

hyaline ['haɪəlɪn] – *гіалоїдний (суглобовий)*

JOINTS



Joints are classified into three groups: 1) ***immovable (fibrous) joints***. e.g. skull bones; 2) ***slightly movable (cartilaginous) joints***. e.g. intervertebral discs; and 3) ***freeiy movable (synovial) joints***, e.g. limb joints. Synovial joints permit the greatest degree of flexibility and have the ends of bones covered with a connective tissue (synovial membrane) filled with joint synovial fluid produced by the synovial membranes.

A typical synovial joint, seen on the rigbt, bas four main features:

1. ***joint capsule*** - the joint enclosure, reinforced by and strengthened with ligaments;
2. *synovial membrane* - ***a continuous sheet of connective tissue*** lining the capsule; its cells produce synovial fluid tbat lubricates the joint and prevents the two cartilage caps on tbe bones from rubbing together:
3. *synovial fluid* - produced by the synovial membrane, tbe fluid lubricates the joint. In the normal joint, very little fluid (less than 5cc) exists in the cavity;
4. *hyaline (articular) cartilage* - where the bones actually "meet".

immovable (fibrous) ['faɪbrəs] ***joint*** - *нерухомий фіброзний суглоб*

siightly movable (cartilaginous) [ˌkɑːtɪ'lædʒɪnəs] ***joint*** - *малорухомий хрящеподібний суглоб*

freely movable (synovial) [saɪ'nəuvɪəl] ***joint*** - *рухомий синовіальний суглоб*

joint capsule - *капсула (сумка) суглоба*

a continuous sheet of connective tissue - *неперервна поверхня сполучної тканини*

TENDONS

A tendon is a tough, flexible band of flbrous connective tissue that connects muscles to bones. Muscles gradually become tendon as the cells become closer to the ***origins and insertions on bones***, eventually becoming ***soiid bands of tendon*** that merge into the periosteum of individual bones. As muscles contract, tendons ***transmit the forces*** to the ***rigid bones***, pulling on tbem and causing movement.

origins and insertions on bones - *початок та місце кріплення до кістки*
solid band of tendon - *твердий пучок (смужка) сухожилків*
to transmit the forces - *передавати навантаження*
rigid bones - *(тут) нерухомі кістки*

LIGAMENTS

A ligament is a small band of dense, white, fibrous elastic tissue. Ligaments connect the ends of bones together in order to form a joint. Most ligaments ***limit dislocation***, or prevent certain movements that may cause breaks. Since they are only elastic they ***increasingly lengthen*** when under pressure. When this occurs the ligament may be ***susceptible to tear*** resulting in an unstable joint.	***to limit dislocation*** - *обмежити можливість вивиху* ***to increasingly lengthen*** - *значно подовжуватися* ***susceptible*** [sə'septəbl] ***to tear*** - *уразливий / схильний до розривів*

BURSA

A ***bursa*** is a small fluid-filled sac made of white fibrous tissue and lined with synovial membrane. Bursa may also be formed by a synovial membrane that ***extends outside*** of the joint capsule. It provides a cushion between bones and tendons and muscles around a joint. Bursa is filled with synovial fluid and is found around almost every major joint of the body.	***bursa*** ['bərsə] - *синовіальна сумка* ***to extend outside*** *виходити за межі*

VOCABULARY CONSOLIDATION

XVI. Give complete answers to the following questions. Support your answers with the illustrations presented in the Unit:

1. What parts of the human body belong to the axial skeleton?
2. Does the pelvis girdle belong to the axial skeleton?
3. Which of the two major skeleton parts comprises a larger number of bones: the appendicular skeleton or the axial one?
4. Name all the synonymous terms (there are 4) in English for the Ukrainian term «хребет /хребтовий стовп»?
5. What are the main functions of the spinal column?
6. Which section of the spine has the largest number of vertebrae?
7. What is the major functional difference between a ligament and a tendon?

8. Name 4 principal building blocks of a connective tissue.
9. Wbat part of the bone might be called "the skin of the bone"?
10. Can a bone be considered as the most "permanent", nonchangeable part of the human body?
11. Which bone cells are responsible for tbe removai of the dead or corrupted parts of the bone?
12. What happens to the bone when its hyaline cartilage stops reproducing itself? At what age does it usually occur?

XVII. Match the beginnings with the endings, read the sentences, write them down and use in your topic presentation:

1. Movement is an integral ...	**a)** ...joints, immovable, partially movable and movable jolnts.
2. The buman skeleton has...	**b)** ...a framework inside the human body and is made up of tbe axial and appendicular skeletons.
3. The skeleton forms ...	**c)** ...bones joined together; movement takes place at these joints.
4. The axial skeleton consists of ...	**d)** ... characteristic of life.
5. The vertebral column is made up of ...	**e)** ...many bones called vertebrae and includes the cervical, thoracic and lumbar vertebrae.
6. The appendicular skeleton consists of ...	**f)** ...many functions, one of which is movement.
7. The skeleton is made up of many ...	**g)** ...muscles, tendons and ligaments at tbese joints.
8. Movement is brought about by ...	**h)** ... the cranium and vertebral column.
9. Tbere are many kinds of ...	**i)** ... tbe limbs and ribcage.

XVIII. Formulate questions to the underlined parts of the sentences. Have your group mates answer your questions:

1. The spongy bone of the femur, humerus, and sternum contains red bone marrow, producing red blood cells (which carry oxygen), white blood cells (which fight infection), and platelets (that help stop bleeding).
2. A bursa is a small fluid-filled sac made of white fibrous tissue and lined with synovial membrane.
3. Since the ligaments are highly elastic they increasingly lengthen when under pressure.
4. As muscles contract, tendons transmit the forces to the rigid bones, pulling on them and causing movement.
5. In the normal joint, very little synovial fluid (less than 5cubic centimetre) exists in the cavity.

III A. LISTENING AND COMPREHENSION:

XIX. You are going to listen to/read the information about different types of muscle tissue in a human body. Identify any unknown words from the box before listening and then listen to the information.

- ***As you listen, decide if these statements are true, false or impossible to answer. Correct any false statements:***

1. There are a little less than 600 muscles of various types in the human body.
2. The majority of muscles in the human body are of the striated type.
3. Visceral muscles found within arteries and veins are controlled consciously.
4. Skeletal muscles'tissue possesses a characteristic smooth appearance.
5. Visceral muscles alone are responsible for movement of the upper and lower extremities.
6. Cardiac muscle is not consciously controlled.
7. Muscles responsible for the digestive system functioning belong to the voluntary group of muscles.
8. Striated muscles form muscle layers rather than bundles.
9. There's only one nucleus in a smooth muscle cell as compared to the abundance of nuclei in a voluntary muscle cell.
10. Every muscle system of a human body is infiltrated with a great amount of nerves and blood vessels.

TYPES OF MUSCLE TISSUE

voluntary / striated muscle *- м'яз, що довільно скорочується / поперечносмугастий /посмугований м'яз*	***smooth (visceral) muscles*** *- гладкі м язи (м'язи внутрішніх органів)*
nucleus *(pl.* ***nuclei*** *['nju:klıaı]) - ядро*	***muscle layers*** *- м язові нашарування*
protein *['prəuti n]* ***strand*** *- протеінова нитка*	***elongated*** *- подовгастий*
opposing groups of muscles *- м'язи-антагоністи*	***sheets rather than bundles*** *- смуги, а не пучки*

There are three types of muscle tissue:

Skeletal (or ***voluntary/strlated***) muscle. They are the most abundant tissue in the human body, producing movement. Each skeletal-muscle liber is almost cylindrical, contains many nuclei and consists of two main protein strands – actin and myosin. The fiber appears dark at the place where the strands overlap. Where they do not overlap the fiber appears light. These alternating bands of light and dark give skeletal muscle its characteristic striated appearance. Fibers bind together into bundles with the help of connective tissue. These bundles, in turn, blnd together to form muscles. Thus, skeletal muscles are composite structures composed of many muscle fibers, nerves, blood vessels and connectlve tlssue. Skeletal muscles are controlled by the somatic nervous system (SNS), which means they are consciously controlled. Skeletal muscles are attached to bones and arranged ln opposing groups around joints.

Smooth (or ***vlsceral***) muscles form the ***muscle layers*** in the walls of the digestive tract, bladder, various arteries and veins, and other internal organs. Smooth muscle cells are ***elongated*** and thin, not striated, have only one nucleus and interlace to form ***sheets rather than bundles*** of muscles. Smooth muscles are controlled by the ***autonomlc nervous system*** (ANS), which means they are not consciously controlled.

Cardiac (or heart) muscle is a combination of the smooth and striated muscles, comprising the heart tissue. Like smooth muscle it is innervated by the autonomic nervous system.

Only skeletal and smooth muscles are part of the musculoskeletal system and only the skeletal muscles are responsible for body movements. Each of more than

600 muscles is honeycombed by nerves which link the muscle to the brain and spinal cord.

- ***Complete the statements about different types of muscles with appropriate prepositions. Listen to the information again to check your answers.***

Skeletal muscles are the most abundant tissue _____ the human body. Each skeletal-muscle fiber consists _____ two main protein strands – actin and myosin. The fiber appears dark _____ the place where the strands overlap. Fibers bind together _____ bundles _____ the help of connective tissue. Skeletal muscles are controlled _____ the somatic nervous system. Skeletal muscles are attached _____ bones and arranged _____ opposing groups _____ joints. Smooth muscles form the muscle layers _____ the walls _____ the internal organs. The skeletal muscles are responsible _____ body movements.

IV. A. READING AND WRITING

XX. Read the following article with the help of a dictionary and make a summary of the article. Below you will find some recommendations to be implemented while writing a summary to the article **"Current methods of sports injuries diagnosing".**

Summary (Ukr. *розширена анотація*, sometimes *реферат*) is a shortened version of a text almed at giving the most important information or ideas of the text. A good summary satisfies the following requirements:

1. It condenses the source text and offers a balanced **coverage of the original.** Avoid concentrating upon information from the first paragraph of the original text and don't exclusively focus on interesting details.
2. Write the summary **in your own words**. Don't try to pick up the "ready" sentences from the text.
3. Don't evaluate the contents of the text. Try to **he impartiai** and write the summary in a generally **neutral manner**.
4. The **first sentence of the summary** contains the name of the author of the summarized article, the title of the paper, and the main idea.
5. The **length** of a summary might be quite different; however, for a rather short text, the summary is usually between **one-third and one-fourth** of its original length.

Steps in summarizing:

1. Skim the original text and think of the author's **purpose and main idea** of the paper.
2. Try to **divide the text into sections**: think about the idea and **important information that each section** contains.
3. **Highlight** with a marker **important information in each section** or take notes.
4. Try to write a **one-sentence thesis/statement for each section IN YOUR OWN WORDS**: use the words and expressions synonymous to those used by the author of the original text.
5. **Add** appropriate transition devices (**logical connectors**) to show logical relationship of the ideas and to improve the flow of the summary.

CURRENT METHODS OF SPORTS INJURIES DIAGNOSING

Dr. Wolfgang Gowin
Hunter Imaging Group, Australia

Some factors influencing the performance level of an athlete are the condition of an athlete, the environment, the psychophysiological stress level, food and fluids, and the circadian rhythm of hormonal output. While in training or during a high peak performance injuries can occur.

The injury spectrum can range from acute trauma occurring in body contact and high-velocity sports to a more subtle and chronic musculoskeletal condition with insidious onset. Rehabilitation after the acute treatment is becoming an increasing issue in active athletes who want to go back to their previous peak performances. New concepts arising from better knowledge about bone, tendon and cartilage physiology will eventually dominate the future for physiotherapy and individually tailored rehabilitation programs.

Magnetic and vibrational therapy ideas have been around for a few years. Studies are now underway involving larger population samples. Observational study results are promising, even in osteoporotic patient participants.

The old cornerstone of an accurate diagnosis is a thorough physical examination and clinical assessment, coupled with knowledge of the anatomy and physiology of the involved organs. Certainly, understanding of the pathology and physiological

repair mechanisms of different tissues is essential for the management of the injured athlete.

The provisional clinical diagnosis is mandatory for any decision to be made on how to proceed. This rational decision about additional laboratory work and/or imaging modaiities is important for interpreting test results when they become available. Change of management, or more specifically directed therapeutic processes are usuaily tbe result of these tests. Consequently, the treating physician, physiotherapist or rehabilitation specialist must be flexible enough to change the provisional diagnosis. The athiete, not usuaiiy educated in medicine, sbould be fully informed about the provisional as well as the final diagnosis. This is essential for compliance. The uninformed or only partially informed athlete will not fully cooperate with the treatment and, therefore, reduces his chances to fully recuperate. The uninformed or misinformed injured athlete will later become a burden to trainers and eventuaily might develop a chronic illness.

Understanding of the normal variations and asymptomatic age-related changes is paramount for the interpretation of additional imaging procedures. Subclinical pathology is present in a large proportion of athletes. The temptation to overplay the significance of an abnormal report must be resisted. However, it is known that intervertebral disc herniations, rotator cuff tears, or degenerative joint disease can sometimes be compietely asymptomatic.

Plain radiographs are usuaily tbe first procedure to be ordered. These commoniy allow the exclusion of underlying fractures. Tben, depending on the tissue type that may have been injured, ultrasound, CT, or MRI imaging migbt be required to assess the injury further or in greater detail.

Bone injuries are best imaged witb plain X-rays, CT or nuclear medicine scans. Joint injuries are more compiex involving a variety of different tissues. For overall assessment and exclusion of small avulsion fractures, plain X-rays are again the first imaging modallty in evaluating the assumed damage to the joint. Secondarily, CT and MRI, occasionally nuclear medicine scans, are being used for thorough evaluations.

Tendon, ligament and muscle injuries are assessed with ultrasound and MRI. CT or plain X-rays are much less useful for the damage assessment of soft tissues. Compiex injuries involving nerves and vessels demand active and immediate attention of medical personnel. Fast decision making is essential for the survival of depended tissues and organs. An array of imaging modalities involving ultrasound and both MR and CT angiography is commonly ordered for an accurate diagnosis.

When the athlete is in the rehahiiitation, monitoring their progress is required in most circumstances. A singie imaging modality for monitoring is selected according to the type of injured tissue. Switching between different methods is usually confusing, in particular when measurements are required to assess progress or failure. Bone injuries are commoniy monitored with plain radiographs. Joint injuries are monitored with MRI, whereas tendon or ligament and muscle injuries can be safely monitored with uitrasound. However, complications or failure to improve during rehabilitation may require a completeiy new approach and a new set of imaging procedures.

UNIT 7
HUMAN MUSCULOSCELETAL SYSTEM

VOCABULARY CHECK-UP

I. One out of four doesn't fit. Which one is it?

1. a) respiration;	b) bending;	c) inhalation;	d) breathing;
2. a) fibroblast;	b) proteoglycans;	c) collagen;	d) cartilage;
3. a) to rotate;	b) to abduct;	c) to touch;	d) to extend;
4. a) cranium;	b) tendon;	c) ligament;	d) bone;
5. a) outpatient clinic;	b) stationary cycle;	c) shuffleboard;	d) treadmill;
6. a) rehabilitation;	b) disability;	c) restoration;	d) recovery;
7. a) hypertension;	b) obesity;	c) smoking;	d) walking;
8. a) to support;	b) to digest;	c) to maintain;	d) to sustain;
9. a) compact bone;	b) bone marrow;	c) body cell;	d) periosteum;
10. a) clavicle;	b) cervical;	c) sacral;	d) lumbar;

II. Choose one word from the box for each of the following definitions.

a) periosteum	*b) proteins*	*c) to transmit*	*d) bursa*	*e) tendon*
f) disability	*g) small airway disease*	*h) to restore*	*i) osteoblasts*	*j) to discharge*

1. A physical or mental condition that limits a person's movements, senses, or activities is called …

2. A dense layer of vascular connective tissue enveloping the bones except at the surfaces of the joints is …

3. To return someone to a former condition means …

4. Illnesses relating to or affecting the lungs is called …

5. To release or allow the patient to go home from the hospital means …

6. Nitrogenous organic compounds that consist of large molecules composed of one or more long chains of amino acids are called …

7. … is a tough, flexible band of fibrous connective tissue that connects muscles to bones.

8. … are the cells responsible for bone formation and maintenance of the balance of calcium in the blood and bone.

9. … means to cause (something) to pass on from one place or person to another.

10. A small fluid-filled sac made of white fibrous tissue and lined with synovial membrane is called a … .

III. Cloze test: approximately every 7th word in the text is omitted. Fill in the gaps to reconstruct the text. Choose the words from the box below. Pay attention to the fact that the number of the gaps is 15 though there are 18 words in the box.

a) transmitted	b) leukocytes	c) bone	d) minerals	e) withdrawn	l) during
g) red	h) platelets	l) phosphorus	j) restoration	k) second	l) blood
m) function	n) fatty	o) heart	p) storage	q) destroyed	r) stream

Located in long bones are two distinctions of __*1*__ marrow (yellow and red). The yellow marrow has ___*2*___ connective tissue and is found in the marrow cavity. __*3* __ starvation, the body uses the fat in yellow marrow for energy. The __ *4* __ marrow of some bones is an important site for __ *5* __ cell production, approximately 2.6 million red blood cells per __ *6* __ in order to replace existing cells that have been __ *7* __ by the liver. Here all erythrocytes, platelets, and most __ *8* __ form in adults. From the red marrow, erythrocytes, __ *9* __, and leukocytes migrate to the blood to do their special tasks.

Another __ *10* __ of bones is the storage of certain minerals. Calcium and __ *11* __ are among the main minerals being stored. The importance of this __ *12* __ "device" helps to regulate mineral balance in the blood __ *13* __. When the fluctuation of minerals is high, these __ *14* __ are stored in bone; when it is low it will be __ *15*__ from the bone.

IV. Provide written comments on the following issues:

a) Fundamental types of musculoskeletal tissues in the human body.

b) Negative disease causing factors of minerals mishalance in the human organism.

UNIT 8
PHYSICAL REHABILITATION IN ORTHOPEDICS

I. A. COMPREHENSION AND DISCUSSION:

I. Before reading the text on Orthopedic Disabilities make sure you remember the fundamentals concerning musculoskeletal system terminology. Match corresponding English and Ukrainian terms:

1. motor	2. spinal cord	3. neck	4. prevention	5.disability
6. treatment	7. locomotor	8. abdomen	9. lumbar	10. bladder
11. shoulder	12. cervical	13. limb	14. spinal column	15. vertebra
16. tendon	17. pelvic girdle	18. wrist	19. rib	20. thigh
21. sacral	22. bowels	23. thoracic	24. trunk	25. joint

1. крижовий	2.черевна порожнина	3. ребро	4. лікування	5. профілактика
6. руховий	7. опорно-руховий	8. стегно	9. зап'ясток	10. тазовий пояс
11. сухожилок	12.неповносправність	13. шия	14. плече	15. кишківник
16. кінцівка	17.спинний мозок	18. тулуб	19. хребет	20. поперековий
21. грудний	22. сечовий міхур	23. суглоб	24. хребець	25. шийний

II. *Learn new vocabulary to TEXT 1A "ORTHOPEDIC DISABILITIES". While reading all the textual materials of Unit 8 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project. Make use of any of the on-line or printed dictionaries like ABBY Lingvo x 3 or ABBYLingvo x 5; dictionary.reference.com or www.merriam-webster.com Please be sure to do similar job while working upon other Units that follow.*

to straighten	['streɪt(ə)n]	виправляти(-ся), випростовувати(-ся)
orthopedic **orthopedy/orthopedics**	[ˌɔːθəˈpiːdɪk] [ˌɔːθəˈpiːdɪ]	ортопедичний ортопедія
to encounter		стикатися з
spinal bifida		спинно-мозкова грижа, кила
to affect **affected person**		уражати; впливати уражена особа
to emerge	[ɪˈmɜ dʒ]	виявлятися, виходити, випливати
to suffer		страждати, потерпати
to sever **to be severed** **severance**	['sevə] ['sev(ə)rəns]	роз'єднувати, розділяти; рвати бути розірваним, ушкодженим розрив
lesion **partial lesion**	['liːʒ(ə)n]	пошкодження, ушкодження; ураження часткове пошкодження
weakness		слабкість, кволість, неміч
quadriplegia	[ˌkwɔdrɪˈpliːdʒɪə]	квадриплегія /параліч усіх кінцівок

parapiegia	[pærə'pli ʤə]	параплегія/параліч нижніх або верхніх кінцівок
assistive device		допоміжнии пристріи
to sustain injury		зазнавати ушкодження
to rctain		утримувати; підтримувати, зберігати
to groom oneself		доглядяти за собою
to appiy braces		застосовувати підтяжки
wrist extensor		зап ястковии м яз розгинач
adroit person	[ə'drɔit]	вправнии, спритнии
flexion		згинання
intrinsic muscles	[ɪn'trɪnzɪk]	внутрішні м язи
ambulation		здатність пересуватися (після операції)
feasible	['fi:zəbl]	можливии, имовірнии
voiuntary muscies		м язи, шо довільно скорочуються
to supply nerves		підводити нерви (до м'язів)

III. Read the article (TEXT 1A) making use of the pretext vocabulary. Before reading check your pronunciation of the following words:

orthopedic [ˌɔ:θə'pi:dɪk]	traumatic [trɔ:'mætɪk]	voluntary ['vɔlənt(ə)rɪ]	lumbar ['lʌmbə]
locomotor[lɔkə'məutər]	vertebra ['vɜ:tɪbrə]	trapeze [trə'pi:z]	thigh [θaɪ]
limbs [lɪmz]	vertebrae ['vɜ:tɪbri:]	intrinsic [ɪn'trɪnzɪk]	lesion ['li:ʒ(ə)n]
severe [sɪ'vɪə]	diaphragm['daɪəfræm]	consequent ['kɔnsɪkwənt]	wrist [rɪst]
wheelchair ['wi:lʧɛə]	deltoid ['deltɔɪd]	thoracic [thə'ræsik]	bowel ['bauəl]

TEXT 1A

ORTHOPEDIC DISABILITIES

Orthopedic is derived from the Greek words meaning "to straighten the child", and in modern usage is applied both to a specific type of disability and to the branch of medicine concerned with its prevention and treatment. An orthopedic disability is one that does not allow the individual to properly perform the motor and locomotor functions of the body and limbs. Such disabilities affect the functions of the bones, joints and tendons.

Disorders That Immobilize Lower Limbs

Many types of orthopedic disorders can cause such severe paralysis of the lower limbs that the use of a wheelchair or similar device is required to achieve locomotion. The two types of such disorders a physical therapist most frequently encounters are traumatic spinal cord injuries and spinal bifida.

Injury to the spinal cord affects the innervations of muscles. The higher the level of injury, the less will be the amount of muscle movements available to the

affected person. Because groups of muscles are innervated from nerves emerging at particular level of the spinal column, it is possihle to specify the limits of muscle action remaining to individuals who suffer spinal cord injury at a specific vertebra.

When the cord is severed at or ahove *the third cervical vertebra*, lethal termination is inevitahle. Partial lesion in this area creates weakness over the entire body.

Complete severance of the cord ahove *the second thoracic vertebra* (T-2) results in involvement of the upper and lower limhs. The term for this condition is quadriplegia, meaning all limhs are affected. Complete severance at the second thoracic vertehra (T-2) or helow resuits in paraplegia (involvement of only the lower trunk and legs).

The person with n injury just helow *the fourth cervical vertebra* has use of only the neck muscles and the diaphragm (the main muscle of respiration). Upper limh function is possihle only with an electrically powered assistive device that moves the arm and opens and closes the hand.

Those who sustain injury helow *the fifth cervical vertebra* retain use of the neck muscles, diaphragm, deltoid muscles of the shoulder, and hiceps of the arms. Persons with this type of injury can perform many activities with their arms: they're able to groom themselves, help apply their hraces and push their wheelchair for short distances.

A person with a functional *sixth cervical vertebra* has the use of the wrist extensors in addition to the movements retained hy those with higher levels of injury. Those with injuries at this level can in addition push the wheelchair for long distances and make use of the overhead trapeze (a har hung overhead to he grasped with the hands as an aid in moving the body). Some very adroit Indivlduals with this injury are ahle to drive a car with hand controls.

When the injury is heiow *the seventh cervical vertebra*, the major additional functions that remain are extension of the elhow and flexion and extension of the fingers. Movement of the hand is not completely normal hecause the intrinsic muscles of the hand do not function. The person with this level of injury can do pull-ups, pushups, and grasp and release. Consequently, the enahled person can he fairly

independent in manipulating the wheelchair and in transferring from one place to another.

Individuals with lesions in *the first through the ninth thoracic vertebrae* have total movement capacity in the arms but none in the legs (the condition being called paraplegia). Control remains of some of the muscles of the upper hack, the abdominal muscles and the muscles of the ribs. Complete control of the wheelchair is possible, as are self-feeding and grooming. Although standing is possible by use of long leg braces with pelvic hands, ambulation is very limited.

Those with a separation of the spinal cord in *the lower thoracic upper lumbar level* (T-10 to T-12 inclusive) have the movement potential of all types described above and possess complete abdominal muscle control as well as control of all the muscles of the upper back. Complete innervations of the abdominal muscles makes walking feasible with the support of long leg braces.

The lumbar levels one through three innervate the muscles of the hip joint that flex the thigh. The fourth level of the lumbar also innervates the muscles of flexion of the hip and together with the fifth level innervates all the muscles of the lower leg and the muscles that extend the hip. Those with a lesion at the upper lumbar levels have fairly good walking ability. With injuries *below the fifth level* the voluntary muscles of the lumbar region are not affected.

The sacral level (S-1 to S-5 inclusive) supplies nerves to the muscles of the pelvic girdle, the bladder, the anus and the external genitals. The disabled person with the lesion in this area or at any level above it do not have bladder or bowel control.

VOCABULARY CONSOLIDATION

IV. Give English equivalents to the following word combinations. Find the sentences in the text, which contain these units.

1. профілактика та лікування захворювання;
2. виконувати рухові та опорно-рухові функції;
3. часто стикатися з якоюсь проблемою;
4. впливати на інервацію м'язів;
5. рухові можливості людини з ураженнями спинного мозку;

6. визначити обмеження м'язової активності залежно від ураження спинного мозку на рівні певного хребця;
7. параліч усіх кінцівок;
8. ураження тільки верхніх або тільки нижніх кінцівок;
9. зберегти рухові можливості м'язів шиї та плечового поясу;
10. користуватися інвалідним візком;
11. обмежені можливості пересування:
12. повна інервація черевних м'язів;
13. можливість пересуватися за допомогою спеціальних підтяжок для ніг;

V. Match the words from the right column with their definitions from the left column:

1) body hygiene	***a)* to affect**
2) set free allowing to move	***b)* to support**
3) have an effect on; attack or infect (of an illness)	***c)* ambulation**
4) seize and hold firmly	***d)* grooming**
5) the action of bending, esp. a limb or joint	***e)* to grasp**
6) continue to have or to hold (something)	***f)* to release**
7) the action of moving a limb from a bent to a straight position	***g)* flexion**
8) give assistance to, enable to function or act	***h)* extension**
9) a region in an organ that has suffered damage through injury or disease	***i)* to retain**
10) ability to move esp. using lower limbs	***j)* lesion**

VI. Complete the sentences with the appropriate word combinations from the box.

a) traumatic spinal cord injuries	*f) severance of the cord*
b) lesion at the upper lumbar levels	*g) the innervations of muscles*
c) to drive a car with hand controls	*h) self-feeding and grooming*
d) the amount of muscle movements available	*i) makes walking feasible*
e) the intrinsic muscles of the hand do not function	*j) total movement capacity in the arms*

1. Injury to the spinal cord affects _____.
2. Those with the _____ have fairly good walking ability.
3. Individuals with lesions in the first through the ninth thoracic vertebrae have _____ but none in the legs.
4. Complete _____ above the second thoracic vertebra (T-2) results in involvement of the upper and lower limbs.
5. The two types of orthopedic disorders a physical therapist most frequently encounters are _____ and spinal bifida.

6. Compiete innervations of the abdominal muscles _____ with the support of long leg braces.
7. When the injury is below the seventh cervicai vertebra, movement of the hand is not compietely normal because _____ do not function.
8. As individuais with lesions in the first through the ninth thoracic vertebrae have total movement capacity in the arms, complete control of the wheelchair is possible, as are _____.
9. Some very adroit individuals with a functional sixth cervicai vertebra are able _____.
10. The higher the level of spinal cord injury is the less will be the amount of muscie movements available to the affected person.

II. B. READING AND COMPREHENSION

VII. Review the vocabulary units before reading each item of the text 1B "Other Common Orthopedic Disorders". Read the text and do the following activities:

a) While reading the text look for the information about:

- *the most common forms of arthritis;*
- *inward and outward manifestations of arthritis;*
- *the condition called bursitis;*
- *the most common causes of bursitis;*
- *the formation of bone spurs affected by cervical spondylosis;*
- *treatment options for cervical spondylosis;*
- *the necessity of screening school-aged children for evidence of scoliosis.*

TEXT IB

OTHER COMMON ORTHOPAEDIC DISORDERS

There are many conditions that affect our body's musculoskeletai system and require clinicai care by a physician, a physical therapist or other healthcare professional. The most common orthopedic disorders, both ***congenital*** and ***acquired***, are as follows: ***Osteoarthritis***, ***Rheumatoid Arthritis***, Bursitis, ***Lateral Epicondylitis*** (Tennis Elbow), Medial Epicondylitis (Golfer's or Baseball Elbow), Fractures, Low Back	***congenital*** - [kən'dʒenɪt(ə)l]- *вроджений* ***acquired*** - [ə'kwaɪəd]- *набутий* ***osteoarthritis***[ˌɔstəuɑ:'θraɪtɪs] *остеоартрит* ***rheumatoid arthritis***- ['ru:mətoid ɑ:'θraɪtɪs] - *ревматоїдний артрит* ***lateral epicondylitis*** – [epikondi'laitis]– *латеральний епікондиліт*

Pain, ***Carpal Tunnel Syndrome***. Neck Pain and Problems, Elbow Pain and Problems, Knee Pain and Problems, Shoulder Pain and Problems, Ligament Injuries to the Knee, Kyphosis, Osteoporosis, Scoliosis, Soft-Tissue Injuries and some others.	***carpal tunnel syndrome*** - *синдром зап'ясткового каналу*

Arthritis, which means inflammation of a joint, actually refers to more than 100 different diseases. Rheumatic diseases include any diseases that ***cause pain, stiffness and swelling*** in joints or other ***supportive body structures***, such as muscles, tendons, ligaments and bones. Arthritis and other rheumatic diseases are often mistakenly associated with old age, because osteoarthritis (the most common form of arthritis) occurs more often among elderly persons. However, arthritis and other rheumatic diseases affect people of all ages. The most prevalent form of arthritis is osteoarthritis. It is a chronic disease involving the joints, particularly the ***weight-bearing joints*** such as the knee, hip, and spine. ***Osteoarthritis*** is characterized by the following: • ***destruction of cartilage*** • ***overgrowth of bone*** • ***spur formation*** It occurs in most people as they age, but also may occur in young people as a result of injury or overuse.	***cause pain, stiffness and swelling*** – *викликати біль, ригідність і набряк* ***supportive body structures*** – *підтримуючі частини тіла* ***weight-bearing joints*** – *суглоби, на які найбільше припадає вага тіла* ***destruction of cartilage*** – *руйнування хряща* ***overgrowth of bone*** – *розростання кістки* ***spur formation*** – *утворення кісткового наросту*

Bursitis: a bursa is a closed, fluid-fllled sac that functions as a ***cushion*** and ***gliding surface to reduce friction*** between tissues of the body. The major bursae are located ***adjacent to*** the tendons near the large joints, such as in the shoulders, elbows, hips and knees. When the bursa becomes inflamed, the condition is known as bursitis. Bursitis is usually a ***temporary condition***. It may ***restrain motion***, but generally does not cause deformity. The most common causes of bursitis are injury or overuse, although infection may also be a cause. Chronic bursitis may involve repeated attacks of pain,	***cushion*** - *амортизатор* ***gliding surface*** - *гладка поверхня* ***to reduce friction*** - *зменшити тертя* ***adjacent to*** - *прилеглий до* ***temporary condition*** - *тимчасовий стан* ***to restrain motion*** - *обмежувати рухи*

swelling, and ***tenderness***, which may lead to the ***deterioration*** of muscles and a limited range of motion.

Bursitis most often occurs in people who are in poor physical condition and/or have had posture. Bursitis may also occur by overusing an affected limb, or by using an affected limb incorrectly.

Although bursitis can occur anywhere in the body where bursae are located, there are several specific types of bursitis, including the following: ***anterior / posterior*** Achilles tendon bursitis, hip bursitis, elbow bursitis, knee bursitis, and kneecap bursitis.

tenderness - *чутливість*

deterioration - *1. погіршення, 2. ушкодження*

anterior - *передній*
posterior - *задній*

Cervical spondylosis is a ***degenerative condition*** involving the vertebrae and discs of the neck. It is also known as cervical osteoarthritis, a condition that occurs in both males and females usually after the age of forty. With age, the discs between the vertebrae begin to loose water and thus their height. This results in ***collapse of the discs*** with the tendency of them ***to bulge inward and outward*** against the ligaments of the spine. The mechanical stress placed on the ligaments by the bulging discs causes the formation of bone spurs.

Symptoms of cervical spondylosis include: arm, hand or finger weakness; neck pain that ***radiates down*** the arm; headaches.

Treatment options for cervical spondylosis include neck immobilization, pharmacologic treatments, lifestyle modifications and physical therapy. Physical therapy management of cervical spondylosis includes isometric neck strengthening exercises as well as ***gentle stretching***. ***Modalities*** such as ***cervical traction*** and manual manipulation are also helpful.

cervical spondylosis - *шийний спондильоз*
degenerative condition - *стан переродження*
collapse of the discs - *руйнування дисків*
to bulge inward / outward - *вигинатися до середини /назовні*
to radiate down - *розходитися вниз (по руці)*
gentle stretching – *легке розтягування*
modality – *спосіб терапевтичного впливу*
cervical traction - *витягування шийних хребців*

Scoliosis is a deformity of the spine which causes a ***sideways*** S- or C-shaped ***curvature*** to develop over time. Many of us have ***slight deviations*** in our spines,

sideways curvature - *викривлення убік*
slight deviation – *незначне відхилення*

but medicai professionals tend to wait untii the curvature is past ten degrees to dlagnose scollosls. A ten degree spinal deviation is ***not easily detectable***: it may oniy appear as a slight ***droop*** in one shoulder or a slightly ***uneven waistiine.*** Some ***scoliosis sufferers*** can have as much as a thirty degree deviation without ***notlceable pain***. Scoliosis with a C-curve is more common than an S-curve. The S- shape forms as tbe spine tries to correct the ***original*** C-shape deviation.

Scoliosis may be functional or structural in nature. If the curve tends to disappear when ***hanging or prone position*** is assumed, it is probably functional. The causes of scoliosis are varied: a shortened leg, disease, injury, congenital conditions and ***fauity postural habits*** are the most frequent.

Because scoliosis is a common problem affecting from 10 to 15 per cent of the school-aged population in the worid, it is important that schools initiate a ***screening*** process. School-children and students should be periodicaiiy checked for ***evidence*** of scoliosis untii growth is compiete.

not easily detectable - *не легко помітити*

droop - *сутуліcть, нахил*
uneven waistline - *нерівна лінія талії*
scoliosis sufferer - *той, хто страждає на сколіоз*
noticeable pain - *помітний, суттєвий біль*
original - *початковий*

hanging/prone position – *положення висячи/лежачи*

faulty postural habit – *звичка до неправильної постави*

screening - *масове обстеження населенняя*

evldence - *(тут) наявність*

b) Discuss with your group mates, which orthopedic disorders are considered congenitai and which are of an acquired nature.

VIII. Review the vocabulary units before reading each item of the text 2 B "Orthopedic Physicai Rehabilitation". Read the text and do the after-reading activities.

T E X T 2 B

ORTHOPEDIC PHYSICAL REHABILITATION

Orthopaedic physical therapists manage, and treat disorders and injuries of the musculoskeletai system including rehabilitation after orthopaedic surgery. This speciaity is most often found in the ***out-patient ciinicai setting***. Orthopaedic therapists are trained in the treatment of post-operative orthopaedic procedures, fractures, acute sports injuries, arthritis, sprains, strains,

in out-patient clinical setting – *в амбулаторних умовах*

reeducation – *відновлення функцій (нервів та м язів)*

hot/cold packs – *гарячі / холодні компреси*

back and neck pain, spinal conditions and amputations. Jolnt and splne mobilization/manipulation, therapeutic exercise, neuromuscular ***reeducation***, ***hot/cold packs***, and electrical muscle stimulation (***cryotherapy***, ***iontophoresis***, electrotherapy) are modalities often used to ***expedite recovery***. An additional procedure recently used is ***sonography*** (another term for ultrasonography), especially in treatments of muscle retraining.

cryotherapy – *кріотерапія*

iontophoresis[aɪɔntəfə'rɪ:sɪs] – *іонофорез*

to expediate recovery – *пришвидчити одужання*

sonography *ультразвукова ехографія*

Physical therapists use a variety of treatment modallties to help strengthen, relax, and heal muscles. Among these are stretching, strengthening (***closed chain***, ***proprioceptive*** exercises), ice and heat therapy, ultrasound, etc. Stretching is essential lf a patient has ***stiff joint***, which can affect normal activlties severely. Strengthening exercises are used to aid a patient in improving the function of his/ber muscles, increasing endurance and maintaining or improving the ***range of motions***. Closed chain exercises are meant to help balance the strength of muscles whereas proprioceptive exercises help patients who lost the sense of knowing where a body part is in space due to a sprain, for example, re-learning how to control the positlon of tbe ***respective*** injured joint. Ice and heat therapy warm up and cool off muscles and ***contribute to*** tbe stimulation of blood circulation and help decrease swellings.

rehabilitation tools – засоби реабілітації

closed chain exercises – циклічні вправи

proprioceptive exercises – пропріоцептивні вправи

stiff joint – негнучкий, малорухливий суглоб

range of motions (ROM) – амплітуда рухів

respective – відповідний

contribute to – сприяти

Other forms of pbysical therapy may actually improve range of motion or ***realignment of the affected area***. Patients may have to learn how to use their non-dominant hand or develop a new walking style to accommodate ***prosthesis***. Physical therapy may also involve the use of braces, walkers or other mobility alds. Patients may be encouraged to exercise the injured areas wbile wearing ***supportive devices***. Water therapy may also be used to reduce the amount of weight placed on an injured limb. Physical therapy can also ***duplicate*** the conditions patients may face at work or home during a typical day.

realignment of the affected area – *відновлення ураженої ділянки*

prosthesis ['prɔs0i:sɪs]- *протези*

mobility aids /supportive devices – *допоміжні засоби пересування*

duplicate ['dju plɪkeɪt]- *відтворювати*

Some of physical therapy methods are:

R.I.C.E. (Rest, Ice, ***Compression and Elevation***). Physical therapy treatment of ***sprains and strains*** mostly includes R.I.C.E. in the first day or two after injury. After that physical therapists ***proceed with*** trauma evaluation and plan a rehabilitation programme based on this evaluation.

Therapeutic exercises are the most widely used and best-known type of physical therapy. They include exercises for range of motion, stretching, strengthening, ***postural modification***, improving balance and coordination abilities.

Hydrotherapy/aquatic therapy - therapeutic exercise performed in a pool or bathtub. Can ***ease muscle spasm*** pain and help strengthen movements. Aquatic therapy is mostly considered as a therapeutic procedure, and hydrotherapy is mostly considered a modality.

Pain management - includes modalities, methods for decreasing the pain and healing the injured tissue - uses properties of heat, cold, air, light, water, electricity, sound and mechanical energy. Some of them are: electrical stimulation, hot packs, cold packs, infrared lamps, ultraviolet lights, ultrasound, TENS (***transcutaneous*** electrical nerve stimulation), ***whirlpools, pelvic traction*** and cervical traction.

"Hands on techniques" - Therapeutic Massage and Manual Therapy.

Education - includes instructions in walking, with or without equipment (***gait training***), providing home exercise program and advice for enhancing quality of life, prevention of disabilities and promotion of health.

Some of the methods that a therapist could use include utilizing different rehabilitation equipment, like weights, pulleys (блоки), stationary bikes and treadmills.

compression and elevation *– стискання і підняття*

sprains / strains *– розтягнення, вивих*

to proceed with *- братися до чогось*

postural modification *– (тут) корекція постави*

to ease spasm pain *- полегшити спастичні болі*

to ease spasm pain *- полегшити спастичні болі*

transcutaneous *- скрізьшкірний*

whirlpool *– лікувальна ванна з віруючою водою*

pelvic traction *– витягування тазових суглобів*

cervical traction *– витягування шийних хребців*

gait training *– вправляння у ходінні*

IX. Match the definitions from the left column with their corresponding terms fro the right column:

1) a device fitted to a weak or injured neck, leg, or other part of the body for support	**a) out-patient clinic**
2) a tecbnique of introducing ionic medicinal compounds into the body through the skin by applying a local electric current	**b) cryotherapy**
3) an exercise machine, typically with a continuous belt, that allows one to walk or run in place	**c) iontophoresis**
4) a beated pool in which hot, typically aerated water is continuously circulated	**d) sonography**
5) individual supportive device to provide mobility for disabled persons, like wheelchairs or crutches	**e) proprioceptive**
6) he action of pressing or being pressed	**f) braces**
7) relating to stimuli that are produced and perceived within a body, esp. those connected with the position and movement of the bodv	**g) mobility aid**
8) medical institution where a patient receives treatment without being admitted to a hospital	**h) compression**
9) the analysis of sound using an instrument tbat produces a graphical representation of its component frequencies	**i) w birlpool**
10) the use of extreme cold in surgery or otber medicai treatment	**j) treadmill**

X. Read the following physicai rehabilitation recommendations pertaining to certain orthopedic disorders.

a) The good news is that most sufferers of this disease either outgrow the condition or undergo successful corrective surgery. Some orthopaedists will use a hody hrace resemhling a corset on the patients who are still growing. The hrace is meant to encourage a straighter path for the developing spine to follow, hut it won't necessarily correct any existing curvature. A common surgical practice for severe cases involves fusing several vertehrae together to correct the patient's posture and prevent further twisting.

b) Treatment options for this orthopedic disorder include neck immohilization, pharmacologic treatments, lifestyle modifications and physical therapy. Physical therapy management of this disease includes isometric neck strengthening exercises as well as gentle stretching. Modalities such as cervical traction and manual manipulation are also helpful.

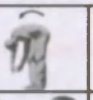
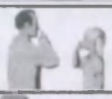
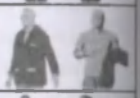
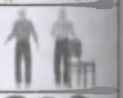
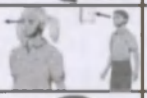
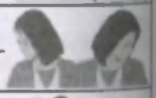
c) Physical therapy is of a great importance in helping patients with this disorder. First, a physical therapist will design a treatment plan. The treatment plan is based on the evaluation and may include exercises and pain relief measures. The programme of exercises should be composed of: strength exercises (isometric, isotonic, isokinetic), passive exercises, postural exercises, balance training and relaxation techniques. It is crucial that exercises should not put any sudden or excessive strain on patient's bones. Exercising under the supervision of a physical therapist is a good way to improve patient's bone health, to increase muscle and bone strength and restores balance and coordination. For pain management physical therapy uses different modalities (heat and cold, massage therapy etc.).

- ***Decide which of the treatment plans might be recommended for the diseases enlisted in Text 2A : scoliosis, arthritis, cervical spondylosis, bursitis or osteoporosis. Before making a decision, look through the disorders' characteristics once again. Consult the dictionary for the unknown words. Justify your reasoning.***

XI. This task is meant to check your knowledge of different parts of speech. Complete the gaps with the suitable form of the word in brackets. There might be some words that you don't have to change.

Most common _____ (TREAT) in orthopaedics is that of the postoperative conditions. Treatment after the surgery includes two types of exercises: a) post-operative type of exercises for _____ (DECREASE) pulmonary and circulatory complications and b) specific exercises for _____ (OPERATE) limb. Although physical therapists use all _____ (POSSIBLE) measures to reduce the pain on minimum sometimes it is impossible to _____ (REDUCE) the pain. Joint stiffness may occur after a _____ (SURGERY) process. This is the time when a patient and his therapist must work together to reach an important goal: to gain full range of joint motion.

XII. Fill in the blanks with the appropriate instructions. Turn to page 21 to recall the appropriate verbs of instructions.

1)---------- 	12)---------- 
2)---------- 	13)---------- 
3)---------- 	14)---------- 
4)---------- 	15)---------- 
5)---------- 	16)---------- 
6)---------- 	17)---------- 
7)---------- 	18)---------- 
8)---------- 	19)---------- 
9)---------- 	20)---------- 
10)---------- 	21)---------- 
11)---------- 	22)---------- 

III A. LISTENING AND COMPREHENSION:

VIII. After hearing the title, try to make out what the listening will be about. Look through the words that might be unknown to you.

to take a toll – *завдавати шкоди*	***rotator cuff*** – *м'язи плечового пояса*
oestrogen effectiveness – *вироблення естрогену*	***surgical incision*** – *хірургічний розріз*
to counter – *(тут) нейтралізувати*	***to quit smoking*** – *кинути курити*
disc degeneration - *переродження диску*	***peripheral part*** – *зовнішні органи*

- ***Listen to the information and decide if these statements are true, false or not given.***

1. Heavy smoking usually neutralizes the antioxidant properties of vitamins C and E.
2. Smoking can trigger not only orthopedic prohlems hut takes a severe toll on human cardiovascular system.
3. Quitting smoking decreases the risk of osteoporosis dramaticaiiy.
4. Heavy smokers usualiy have cardiovascular disorders due to had hlood circulation.
5. The post-surgical healing period is shorter with smokers as compared to non-smokers.
6. Scientific research on the effect of smoking upon the musculoskeletai system fails to provide delmitive evidence that smoking has a pernicious impact on the human body.
7. Coronary prohlems aggravate the healing process in orthopedic disorders.

- ***Compiete the words in the extracts:***

1. Tohacco and nicotine increase the risk of hone f_____ and interlere with the h_____ process.
2. Nicotine can siow fracture healing and estrogen e_____ .
3. Nicotine can counter the antioxidant p_____ of vitamins C and E.
4. Smoking is often accompanied with severe disc d_____.
5. Smokers often sulfer from o_____ as a result of faster hone loss
6. Postoperated smokers take longer healing time for surgical i_____.
7. Heavy smokers suffer from poor hlood supply to the p_____ part of the hody.

- ***Listen again and check your answers.***

SMOKING AND THE MUSCULOSKELETAL SYSTEM

Smoking takes a significant toll on your musculoskeletal system. According to a growing body of research, tobacco and nicotine increase the risk of bone fracture and interfere with the healing process. Nicotine can slow fracture healing, estrogen effectiveness, and can counter the antioxidant properties of vitamins C and E. At a 2012 meeting of the American Academy of Orthopaedic Surgeons, research on the topic of smoking and its effect on the musculoskeletal system was reviewed. Some of the orthopaedic problems caused by smoking include:

- more severe disc degeneration
- weakened spinal ligaments
- reduced production of bone cells
- osteoporosis as a result of faster bone loss
- fractures take longer to beal
- rotator cuff surgery is less successful
- longer healing time for surgical incisions
- more post-surgery complications

However, quitting smoking seems to improve the healing process in most cases except for long-term, heavy smokers. According to the researchers, tbey have permanent artery damage. Those with permanent artery damage due to smoking may not heal easily when a peripheral part of the body is involved, since blood supply may be poor there.

IV. A. READING AND WRITING

XVI. Read the following article with the help of a dictionary. Write the summary of the article in English. See page 119-120 for the recommendations on summary writing.

Here are some additional guidelines for you to observe.

A summary can be tricky to write at first because it's tempting to include too much or too little information. And once you are actually putting pen to paper (or fingers to keys!), **remember these tips**:

- Do not rewrite the original piece.
- Write in the present tense.

- The first sentence of the summary contains the name of the author of a summarized text, its title, and the main idea.
- Be concise: a summary should not be equal in length to the original text. It usually should he hetween one-third and one-fourth of the text length.
- Use your own wording. If you must use the words of the author, cite them.
- Don't put your own opinions, ideas, or interpretations into the summary. The purpose of writing a summary is to accurately represent what the author wanted to say, not to provide a critique.

Below are some **possible patterns** that you may use in your summaries:

According to Dr. John M. Dunn in his article *Orthopedic Medicine,* ... (main idea)

Dr. John M. Dunn in his article *Orthopedic Medicine* discusses ... *(*main topic*)*

Dr. John M. Dunn in his article *Orthopedic Medicine* states/describes/explains/claims/argues that/presents/familiarizes with/shows/argues that ... (main idea)

In Dr. John M. Dunn discussion of PT modalities in *Orthopedic Medicine* ... (main idea)

In his article *Orthopedic Medicine,* Dr. John M. Dunn states/describes/explains/claims/argues that/presents/familiarizes with/shows/argues that ... (main idea)

Below is an article "Orthopedic Medicine" by Dr. John M. Dunn from his book "Special Physical Education". Write a summary of the text following all rules of summarizing process. Then compare your summary with the text of your group mate and ask him/her to evaluate it according to the requirements listed above.

ORTHOPAEDIC MEDICINE

Dr. John M. Dunn, the University of Utah

Orthopaedic is the medical specialty devoted to diagnosis, treatment, rehabilitation and prevention of injuries and diseases of the body's locomotor system.

Orthopaedic deals with the pathology of hones, joints, ligaments, tendons, muscles and nerves. Most common orthopedic conditions are: arthritis, back pain, frozen shoulder, tennis elbow, scoliosis etc.

What are the most common procedures and treatment options in the orthopaedic branch of medicine? This is a list of the most common treatment modalities in this hranch of medicine: evaluation, procedures like electro stimulation, ultrasound, postoperative and specific exercises, patient's education (walking with assistant devices, learning exercise home programme and healthy lifestyle).

A group of congenital orthopaedic conditions like pes equinovarus (*клишоногість*), torticollis *(кривошия)* and genu valgum (*зовнішнє відхилення гомілки)* is treated mostly with passive and active exercises programme until the normal range of motion is achieved.

Another group of disahilities (like arthritls of the knees, hips, hack pain etc.) could he treated with warm or cold compresses to prepare muscles for exercises, with electrotherapy for decreasing pain and with exercises for stretching and strengthening of different groups of muscles.

Physical therapy for sprains and strains mostly includes R.l.C.E. during the first or second day after injury. After that therapists proceed with an evaluation and then elahorate programmes hased on this evaluation.

Motivation, duration of rehahilitation and psychological characteristics of the patients are of great significance in PT treatment. Patients should rememher that they are a part of the team involved in an extensive process of improving their health. One should not he an ohject of rehahllitation practice, hut an active part. A physical therapist will guide a patient through this long and sometimes painful process. Only effective teamwork can produce any posltive results.

Sometimes pain may occur, although a physlcal therapist does his hest to decrease pain, especially after a surgical procedure when the affected joint hecomes stiff. At that time a patient and his therapist must work together to reach full range of joint motion.

First what a therapist would do is perform a physical therapy evaluation. This is a standard procedure. Evaluation includes: testing assessment of posture, gait, range of motlon, strength, soft tissue changes, joint mohility, muscle strength, cardiovascular function, reflexes, or functional skills. These measures take place in the heginning and at the end of the treatment.

After the physical therapy evaluation a personalized treatment program must he created.This program will contain the hest possihle exercises, a "hands on" rehahilitation program or modalities for a patient's conditlon.

Some of the methods that a therapist could use are: joint mohilization, soft tissue massage, modalities (ice/hot packs, water, electrical procedures) or dlfferent rehahilitation equipment, like weights, pulleys, stationary hikes and treadmills. What they will use depends on the diagnosls.

The physical therapy profession provides therapy that can treat paln. Whether it's a case of acute or chronic pain, we use many passive modalities like: massage, hot/cold therapy, electro-muscular stimulation, hydrotherapy. The goal is pain management but it isn't just that. It also increases metaholic processes and helps to heal inflammatlon in affected tlssue.

VOCABULARY CHECK-UP

I. One out of five words doesn't fit. Which one is it?

1. a) to remedy;	b) to cause;	c) to heal;	d) to treat;	e) to cure;
2. a) injury;	b) disorder;	c) lesion;	d) ligament;	e) trauma;
3. a) to recover;	b) to decrease;	c) to restrain;	d) to diminisb;	e) to reduce;
4. a) clavicle;	b) lumbar;	c) cervical;	d) thoracic;	e) sacral;
5. a) sonography;	b) iontopboresis;	c) electrostimulation;	d) ultrasound;	e) assistive device.
6. a) to assist;	b) to suppose;	c) to support;	d) to sustain;	e) to aid;
7. a) amputation;	b) braces;	c) self-feeding;	d) grooming;	e) ambulation;
8. a) sprain;	b) tendon;	c) dislocation;	d) strain;	e) fracture;
9. a) poultice;	b) application;	c) compression;	d) pack;	e) compress;
10. a) treadmill;	b) cryotherapy;	c) stationary bike;	d) crutches;	e) wheelchair;

II. Find an appropriate definition to each of the words from the box:

a) **parapicgia**	*b)* **locomotion**	*c)* **to innervate**	*d)* **congenitai**	*e)* **posture**
f) **inflammation**	*g)* **temporary**	*h)* **to restrain**	*i)* **curvature**	*j)* **deviation**

1. paralysis of the legs and lower body, typically caused by spinal injury or disease;
2. the fact of being curved or the degree to which something is curved;
3. a position of a person's body when standing or sitting;
4. a localized physical condition in which part of the body becomes reddened, swollen, hot, and often painful, esp. as a reaction to injury or infection;
5. lasting for only a limited period of time; not permanent;
6. movement or the ability to move from one place to another;
7. (disease or physical abnormality) present from birth;
8. to prevent (someone or something) from doing something; keep under control or within limits;
9. supply (an organ or other body part) with nerves;
10. the action of departing from an established course or accepted standard.

III. Match the words in the left column with those on the right to make synonymous pairs:

1. to require	a) to cure
2. operation	b) strengthening
3. complication	c) to need
4. crucial	d) surgerv
5. modality	e) compression
6. to treat	f) method
7. traction	g) to prevent
	h) aggravation
	i) stretching
	j) urgent

IV. Match the endings with the beginnings to make comprehensive sentences:

1. … increase the risk of bone fractures and interfere with the healing process.
2. One should not he an object of rehabilitation practice, …
3. Physical therapy treatment of sprains and strains mostly includes R.I.C.E. …
4. … is the most widely used and best-known type of physical therapy.
5. Osteoarthritis is a chronic disease involving the joints, …
6. … a primary role is to create a personalized treatment program.
7. Patients should remember that they are a part of the team …
8. Water therapy may also be used to reduce …
9. Some scoliosis sufferers can have as much as …
10. Physical therapy can also duplicate the conditions patients may face …

a) … the amount of weight placed on an injured limb.
b) … but an active part.
c) … in the first day or two after injury.
d) … at work or home during a typical day.
e) Tobacco and nicotine …
f) … involved in an extensive process of improving their health.
g) After the physical therapy evaluation …
h) … a thirty degree deviation without noticeable pain.
i) Therapeutic exercise …
j) … particularly the weight-bearing joints such as the knee, hip, and spine.

V. Accomplish the cloze test by completing the text. Make use of the words from the box. Notice that there are more words than the gaps:

1. motivation	*2. becomes*	*3. team*	*4. range*	*5. some*
6. before	*7. must*	*8. emphasized*	*9. painful*	*10.any*
11. health	*12. but*	*13. therapist*	*14. after*	*15. patients*
16. therapy	*17. pack*	*18. degenerative*	*19. guide*	

Uniqueness of patient condition and therapy is yet more ___*1*___since in the PT treatment big role have the __*2*__. duration of rehabilitation and psychological characteristic of the __*3*___.

Patients should remember that they are a part of the __*4*___ involved in an extensive process of improving their __*5*___. One should not be an object of rehabilitation practice, __*6*___ an active part. A physical therapist will __*7*___ a patient through this long and possibly __*8*___ process; only effective teamwork could show ___*9*__ results.

Sometimes pain may occur, although a physical __*10*___ will do as much possible to decrease pain. Especially __*11*___is a surgical procedure when the affected joint __*12*___ stiff. At that time a patient and his therapist __*13*___ work together with an important goal: to reach full __*14*___ of motion of joint.

UNIT 9
HUMAN NERVOUS SYSTEM

I A. COMPREHENSION AND DISCUSSION:

1. Read the article on Human Nervous System (TEXT 1A) making use of the pretext and post text vocabulary. Pay special attention to the pronunciation of the medical terms.

While reading all the textual materials of Unit 9 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project.

Make use of any of the on-line or printed dictionaries like ABBY Lingvo x 3 or ABBYLingvo x 5; dictionary.reference.com or www.merriam-webster.com

Please be sure to do similar job while working upon other Units that follow.

bioiogicai information highway		біологічна інформаційна магістраль
to control the biological processes		регулювати біологічні процеси
centrai nervous system (CNS)		центральна нервова система
information processing centre		центр обробки інформації
peripheral nervous system (PNS)	[pə'rɪf(ə)r(ə)l]	периферична нервова система
nerve cell = neuron interneuron afferent neuron efferent neuron	['njuərɔn]] ['æfərənt] ['ef(ə)r(ə)nt], ['i:-]	нервова клітина = нейрон проміжний нейрон аферентний/сенсорний/чутливий нейрон еферентний/ руховий нейрон
nucieus (*pl* nuciei)	['nju:klɪəs] ['niu klɪaɪ]	ядро (*мн.* ядра)
cell bodv		тіло клітини
outgrowth	['autgrəuθ]	розростання, розгалуження
	['prəuses]	відросток
axon axon terminai		аксон аксональне закінчення
to orlginatc		брати початок
somatic nervous system		соматична нервова система
autonomic/ invoiuntary / visceral nervous system	[ˌɔtə'nɔ:mɪk] ['vɪs(ə)r(ə)l]	вегетативна / автономна нервова система
receiving external stimnii		прийом зовнішних подразників
sympathetie nervous system	[sɪmpə'θetɪk]	симпатична нервова система
parasympathetie nervous system	[ˌpærɔˌsimpə'θetɪk]	парасимпатична нервова система
enteric nervous system	[en'terɪk]	ентеральна (черевна) нервова система
sexuai arousai	['sekʃuəl ə'rauzəl]	статевий потяг
compiementary in nature	[kɔmplɪ'ment(ə)rɪ]	доповняльний за своєю природою
constriction of the pupil	[kɔn'strɪkʃ(ə)n]	звуження зіниці ока
diiation of the blood vesseis	[daɪ'leɪʃ(ə)n]	розширення кровоносних судин

HUMAN NERVOUS SYSTEM

The human nervous system is essentially a *biological information highway*, which is responsible for *controlling* all the biological processes and movement in the body, and can also receive information and interpret it through electrical signals which pass in the human body.

It consists of the *Central Nervous System* (CNS), which is essentially the *information processing centre*, and the *Peripheral Nervous System* (PNS), which detects and sends electrical impulses through the nervous system.

The Central Nervous System consists of the **brain** and the **spinal cord**. It is responsible for receiving and interpreting signals from the peripheral nervous system and also sends out signals to it, either consciously or unconsciously. The nervous system consists of many *nerve cells*, also known as *neurones*.

Nerve Cells:

Each neuron consists of a *nucleus* situated in the *cell body*, where *outgrowths* called *processes* originate from. The main one of these processes is the *axon*, which is responsible for carrying outgoing messages from the cell. This axon can *originate* from the CNS and extend all the way to the body's extremities, effectively providing a highway for messages to go to and from the CNS to these body extremities.

Dendrites are smaller secondary processes that grow from the cell body and axon. On the end of these dendrites lie the *axon terminals*, which 'plug' into a cell thus passing the electrical signal from a nerve cell to the target cell.

Classification of Neurons:

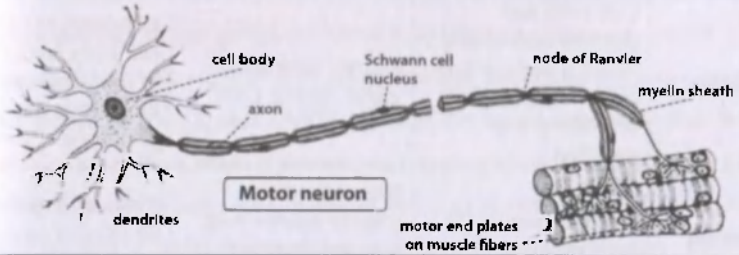
Interneurons - neurons lying entirely within the CNS.

Afferent Neurons - also known as sensory neurons; these are specialized to send impulses towards the CNS away from the peripheral system.

Efferent Neurons - also known as motor neurons; these nerve cells carry signals from the CNS to the cells in the peripheral system.

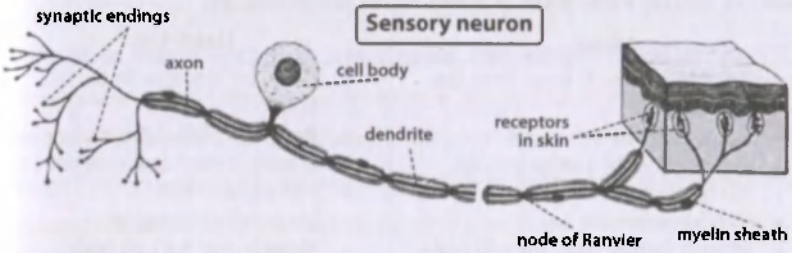
Motor Neurone:

- **Efferent Neuron – Moving toward a central organ or point**
- **Relays messages from the brain or spinal cord to the muscles and organs**



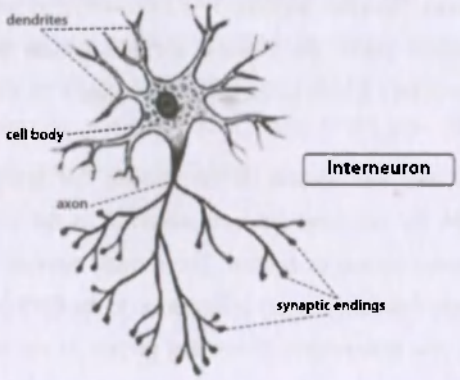
Sensory Neurone:

- **Afferent Neuron – Moving away from a central organ or point**
- **Relays messages from receptors to the brain or spinal cord**



Interneuron (relay neurone):

- **Relays message from sensory neurone to motor neurone**
- **Make up the brain and spinal cord**



	Sensory neuron	Interneuron	Motor Neuron
Length of Fibers	Long dendrites and short axon	Short dendrites and short or long axon	Short dendrites and long axons
Location	Cell body and dendrite are outside of tbe spinal cord; the cell body is located in a dorsal root ganglion	Entirely within the spinal cord or CNS	Dendrites and the cell body are located in the spinal cord; the axon is outside of the spinal cord
Function	Conduct impulse to the spinal cord	Interconnect the sensory neuron with appropriate motor neuron	Conduct impulse to an effector (muscle or gland)

There are several differences between axons and dendrites:

Axons	Dendrites
▪ Take information away from the cell body ▪ Smooth Surface ▪ Generally only 1 axon per cell ▪ No ribosomes ▪ Can have myelin ▪ Branch further from the cell body	▪ Bring information to the cell body ▪ Rough Surface (dendritic spines) ▪ Usually many dendrites per cell ▪ Have ribosomes ▪ No myelin insulation ▪ Branch near the cell body

The Peripheral Nervous System is functionally, as well as structurally, divided into two major parts: ***the somatic nervous system*** and ***the autonomic nervous system***. The main function of the PNS is to connect the CNS to the limbs and organs.

The somatic nervous system is responsible for coordinating the body movements, and also for *receiving external stimuli*. It is the system that regulates activities that are under conscious control. The somatic nervous system consists of peripheral nerve fibers that send sensory information to the CNS (via sensory neurons = afferent neurons) and motor nerve fibers that project to the skeletal muscle (via efferent neurons).

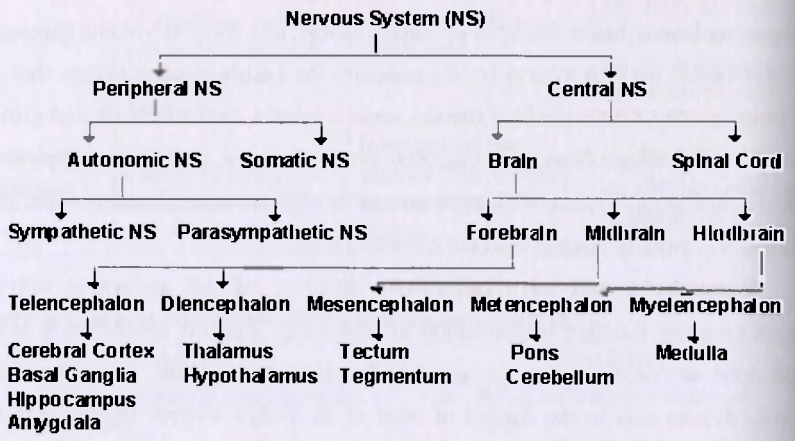
The autonomic nervous system is split into three divisions: ***the sympathetic nervous system , parasympathetic nervous system and enteric nervous system.***

The **autonomic nervous system** (**ANS** / ***involuntary*** or ***viscerai nervous system***) is the part of the peripheral nervous system that acts as a control system functioning largely below the level of consciousness, and controls visceral functions. The autonomic nervous system (ANS) regulates the body's visceral organs through the innervations of three kinds of tissues: smooth muscle, cardiac muscle and glands. Thus the ANS affects heart rate, digestion, respiration rate, salivation, perspiration, urination and *sexual arousal*. Whereas most of its actions are involuntary, some, such as breathing, work in tandem with the conscious mind.

Sympathetic and parasympathetic divisions of the autonomic nervous system typically function in opposition to each other. But this opposition is better understood as *complementary in nature* rather than antagonistic. The sympathetic nervous system aids in the control of most of the body's internal organs. It is not consciously operated. The sympathetic division typically functions in actions requiring quick responses (increase of one's heartbeat and blood pressure, the sense of excitement one feels due to the increase of adrenaline in the system and the like). The parasympathetic division functions with actions that do not require immediate reaction (*the constriction of the pupil*, the slowing of the heart, the *dilation of the blood vessels*, the stimulation of digestion, relaxation and rest).

The role of the **enteric nervous system** is to manage every aspect of digestion, from the oesophagus to the stomach, small intestine and colon. The enteric nervous system is represented as a meshwork of nerve fibers that innervate the viscera (gastrointestinal tract, pancreas, gall bladder).

The following table shows how the nervous system can be structured. The bottom row of the table contains the names of specific areas within the brain. You can check your pronunciation according to the table given below.



cerebrum=encephalon	[sə'ri:brəm]	головний мозок
forebrain / prosencephalon	['fɔ brein] [ˌprɔsen'sefələn]	передній мозок, прозенцефалон
midbrain / mesencephalon	[ˌmezen'sefələn]	середній мозок, мезенцефалон
hindbrain / rhombencephalon	['hain(d)ˌbrein] [ˌrɔm ben'sefələn]	задній мозок, ромбоподібний мозок
telencephalon	[ˌtelən'sefələn]	кінцевий мозок
diencephalon	[ˌdaien'sefələn]	проміжний мозок
metencephalon	[ˌmetən'sefələn]	задній мозок
myelencephalon	[ˌmaiələn'sefələn]	довгастий мозок, мієлоенцефалон
cerebral cortex	['serəbr(ə)l] ['kɔ teks]	кора великих півкуль (головн.мозку)
basal ganglia	['beɪsl] ['gæŋgliə]	базальні ганглії (вузли)
hippocampus	[ˌhɪpəu'kæmpəs]	гіпокамп
amygdale	[ə'mɪgdeɪl]	мигдалоподібна залоза
thalamus	['θæləməs]	таламус
hypothalamus	[ˌhaipə'θæləməs]	гіпоталамус
tectum	['tektəm]	покривна структура
tegmentum	[teg'mentəm]	оболонка
pons	[pɔ:nz]	варолієвий міст
cerebellum	[ˌserɪ'beləm]	мозочок
medulla	[me'dʌlə]	довгастий мозок, медула

II. Complete the sentences with the appropriate word combinations from the box:

a) Peripheral Nervous System (PNS)	*f) smaller secondary processes*
b) typically function	*g) the peripheral nervous system*
c) the sensory neuron	*h) electrical signals*
d) complementary in nature	*i) to manage every aspect*
e) the brain or spinal cord	*j) the limbs and organs*

1. The human nervous system can receive information and interpret it through _____ which pass in the human body.
2. Sympathetic and parasympathetic divisions of the autonomic nervous system _____ in opposition to each other.
3. Dendrites are _____ that grow from the cell body and axon.
4. _____ detects and sends electrical impulses through the nervous system.
5. The main function of the PNS is to connect the CNS to _____.
6. Interneurons interconnect _____ with appropriate motor neuron.
7. The ANS is the part of _____ that acts as a control system functioning largely below the level of consciousness.
8. Motor neurone relays messages from _____ to the muscles and organs.
9. The role of the enteric nervous system is _____ of digestion.
10. Opposition between sympathetic and parasympathetic divisions of the ANS is better understood as _____ rather than antagonistic.

III. Choose the correct word/words from the three choices given in the sentence:

1. Dendrites branch (***entirely within / further from / near***) the cell body.
2. Somatic nervous system regulates activities that are under ***(involuntary / remote / conscious)*** control.
3. The sympathetic division of ANS typically functions in actions requiring ***(immediate / complementary / slow)*** responses.
4. Efferent neurons are also known as ***(effector / sensory / motor)*** neurons.
5. The role of the enteric nervous system is to control every aspect of ***(heart rate / breathing / digestion).***
6. Neuron's nucleus is located in the (muscle fiber / cell body / synaptic ending).
7. Axon terminals 'plug' into a cell thus passing the ***(nutrients / electrical signal / blood)*** from a nerve cell to the target cell.

IV. We'd like to bring to your attention an Alphabet guiz. Read the clues and write the words that begin with the following letters of the alphabet:

Aa _____ long threadlike extension of a nerve cell that conducts nerve impulses from the cell body;

Bh _____ part of the brain consisting of the medulla oblongata, the midbrain, and the pons Varolii;

Cc _____ the surface of the cerebrum composed of six thin layers of neurons.

Dd _____ the process in living organisms of breaking down ingested food material into easily absorbed and assimilated substances;

Ee _____ any strong feeling, as of joy, sorrow, or lear;

Ff _____ equivalent to "prosencepbalon";

Gg _____ any furrow or channel on a bodily structure or part: sulcus;

Hb _____ equivalent to "rbombencephalon";

Il _____ neuron that eonnects alferent and efferent neurons in a reflex arc;

Kk_____eitber of two bean-shaped organs at the back of the abdominal cavity;

I l _____ tough fibrous connective tissue that restrict movement in joints, connect various bones or cartilages, support muscles, etc;

Mm _____ equivalent to "mesencephalon";

Nn _____ nervous cell;

Oo _____ a fully differentiated structural and functlonal unit, such as a kidney or a heart;

Pp _____ a person who is receiving medical care;

Qq _____ paralysis of all four limbs, usually as the result of injury to the spine;

Rr _____ any pattern of muscular or electrical reactions that arises from stimulation of the nervous system;

Ss _____ tbe tiny space between nerve cells;

Tt _____ the degree of hotness of a body, substance, or medium;

Uu _____ the tube that conveys urine from the kidney to the urinary bladder;

Vv _____ the large internal organs of the body collectively, esp those in the abdominal cavity;

Ww _____ a special chair for use by invalids or others for whom walking is impossible or temporarily inadvisable;

Xx _____ a diagnostic aid used in medicine;

Zz _____ equivalent to "walker".

II. A. READING AND COMPREHENSION

II. Read TEXT 2A on BRAIN STRUCTURES in order to complete the after-reading activities. Review the vocabulary units before reading each item of the text. Get ready to discuss brain structures' functional differences.

Points for discussion:

- ***Composition of the brainstem***
- ***Divisions of the cerebral cortex***
- ***Cerebrum – the most superior region of the human CNS***
- ***Functions of cerebellum***
- ***Brain area responsible for breathing, heart rate and blood pressure***
- ***Hypothalamus – the smallest brain area***
- ***"Emotional brain"***
- ***"Memory and learning" brain area***
- ***Basal ganglia and movement disorders***

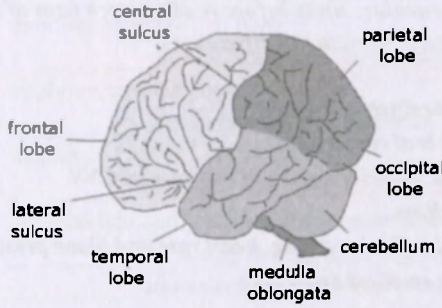
TEXT 2A

BRAIN STRUCTURES

The brain is divided into two halves, called ***hemispheres***. Each hemisphere communicates with the other through the ***corpus callosum***, a bundle of nerve fibers. Another smaller fiber bundle that connects the two hemispheres is called the ***anterior commissure.*** The brain is composed of three main parts: the forebrain, midbrain and hindbrain. The forebrain consists of the cerebrum, thalamus and hypothalamus (part of *the* ***limbic system***). The midbrain consists of the tectum and tegmentum. The hindbrain is made of the cerebellum, pons and medulla. Often the midbrain, pons and medulla ***are referred to as the brainstem.***	***hemisphere*** ['hemɪsfɪə] – *півкуля* ***corpus callosum*** ['kɔ:pəs 'kæləsəm] - *мозолисте тіло* ***anterior commissure*** [æn'tɪərɪə 'kɔmɪsjuə] - *передня спайка* ***limbic system*** – *лімбічна система* ***are referred to as*** – *називаються* ***brainstem*** ['breɪn,stem] – *стовбур головного мозку*

Cerebral Cortex • **Functions:** Thought; ***Voluntary movement***; Language; ***Reasoning***; ***Perception*** The surface of the cerebrum - the cerebral cortex - is composed of six thin **layers of neurons**. The cerebral cortex is divided into four sections, called "**lobes**":	***voluntary movement*** – *вольовий рух* ***reasoning*** - *мислення, аргументація* ***perception*** - *відчуття* ***layer of neurons*** – *нашарування нейронів*

the **frontal lobe, parietal lobe, occipital lobe and temporal lobe**.



exterior of the cerebrum from the left side

frontal lobe ['frʌnt(ə)l] – *лобна доля*
parietal lobe [pə'raɪət(ə)l] – *тім'яна доля*
occipital lobe [ɔk'sɪpɪtl] – *потилична доля*
temporal lobe ['temp(ə)r(ə)l] – *скронева доля*

What does each of these lobes do?

- Frontal Lobe is assoeiated with reasoning, planning, parts of speech, movement, emotions and problem solving.
- Parietal Lobe is assoeiated with movement, orientation, recognition and perception of stimuli.
- Occipital Lobe is associatcd with visual processing.
- Temporal Lobe is associated with perception and recognition of auditory stimuli, memory and speech.

The word "cortex" comes from the Latin word for "bark" (of a tree). This is because the cortex is a sheet of tissue that makes up the outer layer of the brain. The thickness of the cerebral cortex varies from 2 to 6 mm. In higher mammals such as humans, the cerebral cortex looks like it has many **bumps and grooves**. A bump or bulge on the cortex is called a **gyrus** ['dʒaɪrəs] (the plural of the word gyrus is ***"gyri"***) and a groove is called a **sulcus** ['sʌlkəs] (the plural of the word sulcus is "***sulci***").

bumps and grooves – *виступи і жолобки*

gyri and sulci ['dʒairai] ['sʌlsai] – *звивини і борозни*

Cerebrum [sə'ri:brəm]

The **cerebrum** or **telencepbalon**, together with the diencephalon, constitutes the forebrain. It is the principal and most anterior part of the brain, located in the front area of the skull and consisting of two hemispheres, left and

right, separated by a ***fissure***. It is responsible for integration of complex sensory and neural functions and the initiation and coordination of voluntary activity in the body.

"Telencephalon" refers to the embryonic structure, from which the mature "cerebrum" develops. The ***dorsal*** telencephalon, or ***pallium***, develops into the cerebral cortex, and the ventral telencephalon, or subpallium, becomes the basal ganglia. The cerebrum is also divided into symmetric left and right cerebral hemispheres. With the assistance of the cerebellum the cerebrum controls all voluntary actions in the body and is involved in coordination of movements.

Cerebellum [ˌserɪ'beləm]. **Functions:** Movement; Balance; Posture

The word "cerebellum" comes from the Latin word for "little brain." The cerebellum is located behind the ***brain stem***. In some ways, the cerebellum is similar to the cerebral cortex: the cerebellum is divided into hemispheres and has a cortex that surrounds these hemispheres.

fissure - ['fɪʃuə] - *борозна*

dorsal - *дорсальний, спинний, потиличний, задній*

pallium ['pælɪəm] – *мантія*

brain stem – *стовбур головного мозку*

Brain stem. Functions: Breathing; Heart Rate; Blood Pressure

The brain stem is a general term for the area of the brain between the thalamus and spinal cord underneath the limbic system. The brain stem is made of the midbrain, pons and medulla. Some of these areas are responsible for the most basic functions of life such as breathing, heart rate and blood pressure. The lower part of the brainstem, comprising the cerebellum, pons, and medulla oblongata is called rhombencephalon or hindbrain.

Midbrain / Mesencephalon - the ***rostral part*** of the brain stem, which includes the tectum and tegmentum. It is involved in functions such as vision, hearing, eye movement and body movement. The ***anterior part*** has the ***cerebral peduncle***, which is a huge bundle of axons traveling from the cerebral cortex through the brain stem and these fibers (along with other structures) are important for voluntary motor function.

rostral part - ['rɔstrəl] *дзьобоподібна частина*

anterior part [æn'tɪərɪə] - *передня частина*

cerebral peduncle - [pɪ'dʌŋkl]- *ніжка мозку*

Pons is a part of the metencephalon in tbe hindbrain. It is involved in motor control and sensory analysis. It has parts that are important for the level of consciousness and for sleep. Some structures within the pons are linked to tbe cerebellum, thus are involved in movement and posture.

Medulla Oblongata - this structure is the ***caudal-most part*** of the brain stem, between tbe pons and spinal cord. It is responsible for maintaining vital body functions, such as breathing and heart rate.

caudal-most part ['k ɔ dəlməust] - *хвостата частина*

Hypothalamus. Functions: Body Temperature; Emotions; Hunger; Thirst; ***Circadian Rhythms***

The bypothalamus is composed of several different areas and is located at the base of the brain. Although it is the size of only a pea (about 1/300 of the total brain weight), the hypothalamus is responsible for some very important functions. One important function of the hypothalamus is the control of body temperature. The hypothalamus acts as a "thermostat" by sensing changes in body temperature and then sending signals to adjust the temperature. For example, if you are too hot, tbe hypotbalamus detects this and then sends a signal to expand the capillaries in your skin. This causes blood to be cooled faster. The hypothalamus also controls the ***pituitary*** glands.

circadian rhythms [sə:'keidiən] – *добові біологічні ритми*

pituitary [pɪ'tju:ɪt(ə)ɪ]- *слизотвірний*

Thalamus. Functions: Sensory processing; Movement

The thalamus receives sensory information and relays this informatlon to the cerebral cortex. The cerebral cortex also sends information to the thalamus which then transmits tbis information to other areas of the brain and spinal cord.

Limbic System. Functions: Emotions; Memory

The limbic system, often referred to as the "emotional brain", ***is found buried*** within the cerebrum. This system contains the thalamus, hypothalamus, amygdala and hippocampus.

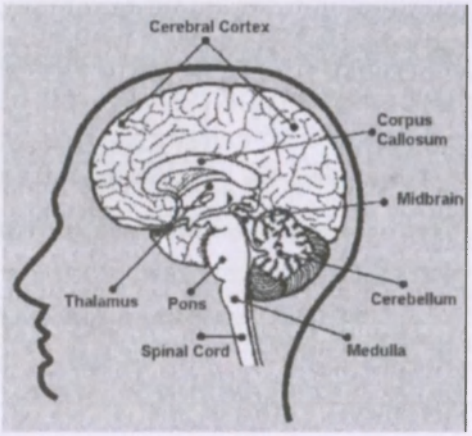
The limbic system or the limbic areas are important for controlling the emotional response to a given situation.

is found buried – *(зуп) схований, занурений*

Hippocampus. Functions: Learning; Memory The hippocampus is a significant part of the limbic system that is responsible for memory and learning.	

Basal Ganglia. Functions: Movement The ***basal ganglia*** are a group of structures, including the ***globus pallidus***, ***caudate nucleus***, ***subthalamic nucleus***, ***putamen*** **and** ***substantia nigra*** that are important in coordinating movement. The basal ganglia (or basal nuclei) are situated at the base of the forebrain and are strongly connected with the cerebral cortex, thalamus and other areas. The basal ganglia are associated with a variety of functions, including motor control and learning. Currently popular theories ***implicate*** the basal ganglia primarily in action selection, that is, the decision of which of several possible ***behaviours to execute*** at a given time. The basal ganglia play a central role in a number of neurological conditions, including several movement disorders. The most notable are Parkinson's disease, which involves degeneration of the ***dopamine-producing*** **cells** in the substantia nigra, and Huntington's disease, which primarily involves damage of the **striatum**.	***basal ganglia*** - ['beɪsl] ['gæŋgliə] - *базальні вузли* ***globus pallidus*** ['gləubəs 'pælɪdəs] - *бліда куля* ***caudate nucleus*** ['kɔ:deɪt] - *хвостате ядро* ***subthalamic nucleus*** – *субталамічне ядро* ***putamen*** [pju:'teimən] – *путамен* ***substantia nigra*** [səb'stænʃə naɪgrə] – *чорна речовина* ***to implicate*** – *(тут) пов язувати* ***to execute behaviors*** ['eksikju t]– *здійснювати вчинки* ***dopamine-producing*** ['dɔpəmɪn] - *що виробляє допамін* ***striatum*** ['straiətəm] - *смугасте тіло*

Now that you have read about the areas of the brain, take a look at where these areas are located:



VOCABULARY IN CONTEXT

III. Decide which of the alternatives is correct in the following sentences?

1. The brain stem comprises …
- **a)** subthalamic nucleus, putamen and substantia nigra.
- **b)** midbrain, pons and medulla oblongata.
- **c)** thalamus, hypothalamus, amygdala and hippocampus.

2. The basal ganglia are situated …
- **a)** in the base of the forebrain.
- **b)** in the frontal lobe of the brain.
- **c)** between pons and spinal cord.

3. Brain hemispheres communicate with each other…
- **a)** by means of limbic system.
- **b)** with the help of anterior and posterior commissures.
- **c)** through the corpus callosum.

4. Occipital lobe is associated with …
- **a)** visual processing.
- **b)** recognition of auditory stimuli.
- **c)** reasoning, planning and emotions.

5. Medulla Oblongata is responsible for maintaining such vital body functions as…
- **a)** control of body temperature.
- **b)** emotional response to certain situations.
- **c)** breathing and heart rate.

IV. Match the beginnings and the endings of the sentences:

1. The nervous system consists …	**a)** … a number of neurological conditions.
2. The brain and spinal cord of the CNS and the nerves of the PNS are composed of …	**b)** … of the central nervous system (CNS) and the peripheral nervous system (PNS)
3. The brain consists of the three main parts: …	**c)** … nerve cells.
4. The cerebrum controls …	**d)** … electrical impulses.
5. The medulla oblongata are responsible for ..	**e)** … chemical neurotransmitters.
6. The tiny space between nerve cells is called	**f)** … is the control of body temperature.
7. Messages travel through neurons as …	**g)** … a synapse.
8. Messages pass across synapses …	**h)** … involuntary movements.
9. The basal ganglia play a central role in …	**i)** … voluntary movements.
10. One important function of the hypothalamus…	**j)** … the cerebrum, cerebellum and the medulla oblongata

V. Now, that you've learned that one important function of the hypothalamus is the control of body temperature, read the text on body temperature reviewing the vocabulary units before reading. Read to discuss the following items:

- *The margins of a "normal" body temperature;*
- *Which body processes cause temperature "loss";*
- *Reaction of the body to a rise or a fall of blood temperature;*

BODY TEMPERATURE

to maintain *- підтримувати*	***heat loss*** *- втрата тепла*
body heat *- теплота тіла*	***heat-regulating centre*** *- центр теплорегуляції*
evaporation of sweat *- потовиділення*	***minute*** *[mai'nju.t]* ***variations*** *- найменші зміни*
excretions *- екскреція*	***unwillingness to move about*** *- небажання рухатися*
heat production *- утворення тепла*	***shivering*** *- здригання*

Human beings maintain an almost constant body temperature. The normal temperature of some adults is as low as 97°F (36,1°C) and in others it is as high as 99°F (37,2 °C). Tbere is also a normal daily variation of about one degree. The temperature is lowest in the early hours of the morning and highest in the evening.

Body heat is produced by metabolic and muscular activity. It is lost by evaporation of sweat from the skin, expiration of air from the lungs and excretions.

The balance between the heat production and heat loss is maintained by the heat-regulating centre in the hypothalamus, which is sensitive to minute variations in the temperature of the blood passing through it.

A rise in blood temperature produces an increase in the flow of blood to the surface of the body. Sweat glands activity is increased, muscle tone is diminished and there is unwillingness to move about.

A fall in blood temperature produces a decreased flow of blood to the superficial vessels. There is decreased activity of the sweat glands, increased muscle tone and a desire to move about. Shivering, which is a reflex contraction of the muscles, may occur to increase heat production.

V. Read the following information and learn how to convert degrees Fahrenheit into degrees Centigrade:

FAHRENHEIT AND CELSIUS (CENTIGRADE)

The Fahrenheit thermometric scale extends from 0° to 212°. 0°F = - 18°C. 32°F = 0°C (freezing point) and 212°F = 100°C (boiling point). Normal body temperature is 98.4°F.

To convert degrees Fahrenheit into degrees Centigrade, we subtract 32, multiply by 5, and divide by 9.

Example: 100°F

100 – 32 = 68
68 x 5 = 340
340 : 9 = 37.7
100 ° F = 37.7°C

To convert from Centigrade into Fahrenheit, we multiply by 9, divide by 5, and add 32.

Example: 25°C

29 x 9 = 225
225 : 5 = 45
45 + 32 = 77
25°C = 77°F

II. B. READING AND COMPREHENSION

VI. Read TEXT 2B in order to describe in what manner different body organs are innervated through the sympathetic and parasympathetic nervous system.

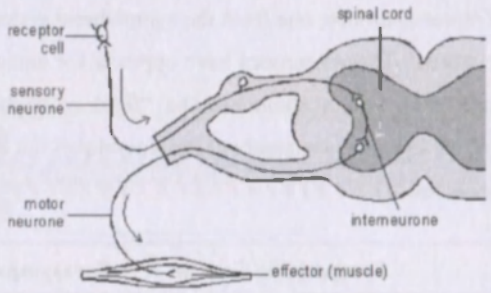
T E X T 2 B

ORGANIZATION OF THE HUMAN NERVOUS SYSTEM

Tbe three types of neurons are arranged in circuits and networks, the simplest of which is the **reflex arc**. A rellex arc is a neural pathway involved in a rellex action. In higher animals, most sensory neurons do not pass directly into tbe brain, but synapse in the spinal cord. This cbaracteristic allows reflex actions to occur relatively quickly by activating spinal motor neurons without tbe delay of routing

signals through the brain, although the brain will receive sensory input while the reflex is carried out. Analysis of the signal takes place after action has been taken.

There are two types of reflex are: autonomic reflex arc (affecting inner organs) and somatic reflex arc (affecting muscles).



In a simple reflex arc, such as the knee jerk, a stimulus is detected by a receptor cell, which synapses with a sensory neurone. The sensory neurone carries the impulse from site of the stimulus to the central nervous system (the brain or spinal cord), where it synapses with an interneuron. The interneuron synapses interact with a motor neuron, which carries the nerve impulse out to an effector, such as a muscle, which responds by contracting.

The human nervous system is far more complex than a simple reflex arc, although the same stages still apply. The organisation and functional structure of the human nervous system is shown in the following diagram:

Human Nervous System

Central Nervous System (CNS)
Brain and spinal cord
interneurones

Peripheral Nervous System (PNS)
Everything else
sensory and motor neurones

Somatic Nervous System
Voluntary
Input from sense organs
Output to skeletal muscles

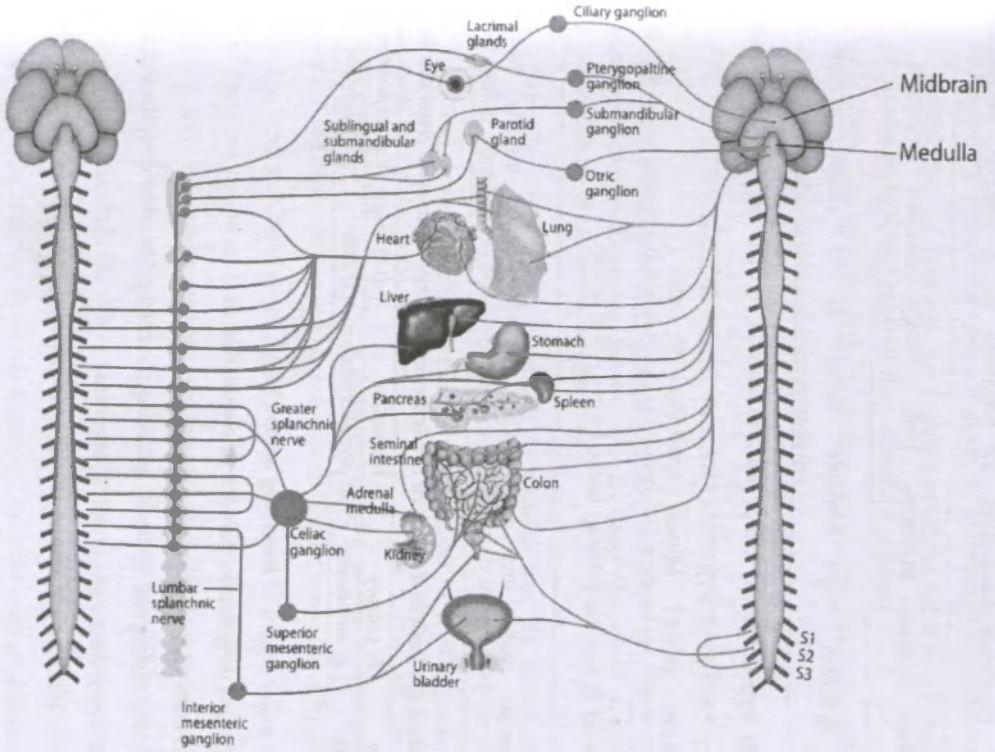
Autonomic Nervous System
Involuntary
Input from internal receptros
Output to smooth muscles & glands

Sympathetic Motor System
'Fight or flight' responses
Neurotransmitter: noradrenaline
'Adrenergic System'

Parasympathetic Motor System
Relaxing responses
Neurotransmitter acetylcholine
'Cholinergic System'

It is easy to forget that much of the human nervous system is concerned with routine, involuntary jobs, such as homeostasis, digestion, posture, breathing, etc. This is the job of the autonomic nervous system, and its motor functions are split into two divisions, with anatomically distinct neurones. Most body organs are innervated by two separate sets of motor neurones; one from the sympathetic system and one from the parasympathetic system. These neurones have opposite (or antagonistic) effects. In general the sympathetic system stimulates the "fight or flight" responses to threatening situations, while the parasympathetic system relaxes the body. The details are listed in the tables below.

Organ	Sympathetic System	Parasympathetic System
Eye	Dilates pupil	Constricts pupil
Tear glands	No effect	Stimulates tear secretion
Salivary glands	Inhibits saliva production	Stimulates saliva production
Lungs	Dilates bronchi	Constricts bronchi
Heart	Speeds up heart rate	Slows down heart rate
Gut	Inhibits peristalsis	Stimulates peristalsis
Liver	Stimulates glucose production	Stimulates bile production
Bladder	Inhibits urination	Stimulates urination



Sympathetic **Parasympathetic**

VOCABULARY CONSOLIDATION

VII. Arrange the following words into comprehensive sentences.

1. sensory Cerebrum integration for functions. of is complex responsible

_____

2. temperature. Human an almost body beings constant maintain

_____

3. occur Sclerosis might Multiple factor. as of genetic a result

_____

4. of body hypothalamus. temperature is function of The an important control

_____

5. contractures related Muscle spasticity. to are

_____

6. A reflex arc is a neural pathway involved in a reflex action.

_____

7. of Sclerosis cause loss and Multiple a independence. mobilty can

_____

VIII. Replace the italicized words in the sentences by their synonyms from the box.

a) neuron	*b) sensory*	*c) immediate*	*d) through*	*e) respiration*
f) regulated	*g) autonomic*	*h) prosencephalon*	*i) split*	*j) midbrain*

1. The major organs of ***breathing*** are the lungs.
2. Tbe news programmes came to us ***via*** satellite.
3. This bank account gives you ***instant*** access to your money.
4. The anterior part of tbe brain, including the cerebral hemispheres, the thalamus and the hypothalamus is called ***forebrain***.
5. ***Nerve cells*** carry information within tbe brain and between the brain and other parts of the body.
6. ***Afferent*** neurons have a single long axon witb a short central and a long peripheral branch.
7. To ***relay*** television or radio signals means to send them or broadcast them.

8. The lower part of the brainstem, comprising the cerebellum, pons, and medulla oblongata is called ***rhombencephalon***.
9. The action of heat will ***separate*** the chemical into a substance and oxygen.
10. The part of the nervous system responsible for control of such bodily functions as breathing, the heartbeat, and digestive processes is called the ***visceral*** NS.
11. The traffic lights are ***controlled*** by a central computer.
12. A small central part of the brainstem, developing from the middle of the embryonic brain is called ***mesencephalon***.

III.A. LISTENING AND COMPREHENSION:

VII. You are going to listen to / read the information about the "teamwork" of the central and peripheral nervous systems. After listening check your comprehension by accomplishing the after-text assignment.

Nervous system responds quickly to changes that are stimuli. It receives information from the environment and passes it through the body to the point where the body can sense outside information and respond to it. The nervous system comprises two main parts: the central nervous system (CNS) and the peripheral nervous system (PNS). The CNS is the main control centre in the human body and it consists of the brain and the spinal cord. The PNS is an extensive network of nerves extending from the CNS throughout the body.

The nervous system links receptors with effectors. Receptors, such as the sense organs, receive information and respond to a change in the surrounding environment, which is called a stimulus, by sending a message through the PNS to the CNS. In the CNS, a decision is made about how to respond and a message is sent through the PNS to an effector, such as a muscle. For example, when you see a ball heading towards you, the eye is the receptor and sends a message from the eye to the brain. Then, the brain decides that the best way to respond is to kick the ball. Lastly, the brain sends messages to the leg and foot muscles to prepare to respond – to kick the ball.

- ***Which of the following statements are true?***

1. ***a)*** The human nervous system transmits all information it receives from its surroundings.

b) The brain and the spinal cord constitute the peripheral nervous system.

c) The central nervous system is represented by a wide network of nerves all over the body.

2. ***a)*** The PNS is "a decision-taking centre" by means of sending a message to receptors.

b) The function of receptors in our body is performed by muscles.

c) A stimulus can be described as a response of our sense organs to changes in the environment.

3. ***a)*** Kicking the ball is a response of the CNS to the stimulus from the PNS.

b) Kicking the ball is a response of the PNS to the message from the CNS.

c) Leg and foot muscles send a message to the CNS by kicking the ball.

- ***Listen again and complete the sentences with proper neurologic terminology:***

1. Nervous system responds quickly to changes that are _____ .
2. The CNS is the main control centre in the human body and it consists of _____and _____.
3. The nervous system links _____ with _____ .
4. Receptors, such as _____, receive information and respond to a change in the surrounding environment.
5. A message is sent through the PNS to _____, such as a muscle.

- ***Which of the following titles best corresponds to the content of the previous text?***

   1. **Major parts of the Human Nervous System;**

   2. The Structure and Function of the Nervous System;

   3. Receptors and Effectors of the Nervous System.

IV. A. READING AND WRITING

VIII. Read the following article with the help of a dictionary.

- ***Make a written translation into Ukrainian.***
- ***Write a summary of the article in English. (For guidelines see p. 118 or 139)***

Multiple Sclerosis Rehabilitation

Multiple Sclerosis Rehabilitation is a process that helps a person to achieve and maintain maximal physical, psychological, social and vocational potential, and quality of life consistent with physiologic impairment, environment, and life goals. Achievement and maintenance of optimal function are essential In a progressive disease such as Multiple Sclerosis (MS).

Multiple Sclerosis (MS) is a chronic inflammatory, demyelinising disease (*захворювання, яке призводить до руйнування мієлінового шару)* of the central nervous system (CNS). It affects largely young adults between the ages of 20-50, and is often referred to as the "great crippler of young adults".

Multiple Sclerosis was described as early as 1822 in the diaries of an English nobleman and further depicted in an anatomy book in 1858 by a British medical illustrator. Dr. Jean Cruveilhier, a French physician, first used the term "islands of sclerosis" to describe areas of hardened tissue discovered on autopsy. However, it was Dr. Jean Charcot in 1868 who defined the disease by its clinical and pathological characteristics: paralysis and the cardinal symptoms of intention tremor (*інтенційний тремор*), scanning speech (*скандована мова*) and nystagmus (*ністагм - мимовільні ритмічні рухи очних яблук*), later termed Charcot's triad. Using autopsy studies he identified areas of hardened plaques *[pla:k] (затверділі бляшки)* and termed the disease *sclerosis in plaques*.

Usually the first symptoms of MS are tingling and numbness in the face, hand and feet, as well as vision problems. As the disease gets worse, symptoms such as shaky movements, walking problems, difficulty with movements and sensation, bowel and bladder control problems, and feelings of exhaustion develop.

Multiple Sclerosis Rehabilitation can help people with MS after they have had an attack, help to educate them how to prevent other complications, and teach them how to compensate for changes that may not get better. They can also help direct them to MS organizations in their community.

The goal of rehabilitation is to improve and maintain body functions. From the time of diagnosis onward, Multiple Sclerosis Rehabilitation specialists provide education and treatment designed to promote good health and general fitness, reduce fatigue and help the patient feel and function at his best at home and at work. If symptoms begin to interfere with everyday activities Multiple Sclerosis Rehabilitation team can address problems concerning mobility, dressing and personal care, role performance at home and work etc. They also provide evaluation and treatment of speech and swallowing difficulties as well as thinking and memory problems. Multiple Sclerosis Rehabilitation includes physical therapy, occupational therapy, speech therapy and cognitive retraining, which may help reduce these disabilities.

Multiple Sclerosis Rehabilitation is an important part of health care services for persons with multiple sclerosis. Since the majority of people are diagnosed between the ages of 20 and 50, MS affect those at the peak of their professional careers and childbearing age.

MS can cause significant impairments including balance and coordlnation problems, muscle stiffness and weakness, cognitive problems, impaired speech or vision, extreme fatigue and even paralysis. Prognosis varies but the disease can cause loss of mobility and independence. Interest in multiple sclerosis rehabilitation has increased in recent years as research has shown it can lead to substantial improvements in patients' quality of life. Multiple Sclerosis Rehabilitation is especially helpful for MS patients because of the often progressive and unstable nature of the disease. Patients go through periods of remission and flare up, and symptoms change over time; Multiple Sclerosis Rehabilitation must be adjusted accordingly.

Multiple Sclerosis Rehabilitation is considered a necessary component of comprehensive, quality health care for people suffering from MS at all stages of the disease.

Epidemiological studies of MS have provided hints as for the possible causes of the disease. Various theories try to combine the obtained data into a comprehensive system, but none has proved to be definitive. MS is most likely to occur as a result of some combination of both environmentai and genetic factors.

Tbere are several types of MS rehabilitation therapies:

Physical Therapy (PT) in Multiple Sclerosis Rehahilitation

Physical therapist evaluates and addresses the body's ability to move and function, with particular emphasis on walking, strength, balance, posture, fatigue, and pain. PT might include stretching, range-of-motion and strengthening exercises, gait training, and training in the use of mobility aids (canes, crutches, scooters and wheelchairs) and other assistive devices. The ultimate goal is to achieve and maintain optimal functioning and prevent unnecessary compiications such as de-conditioning, muscle weakness from lack of mobility, and muscle contractures related to spasticity.

Occupational Therapy (OT) in Multiple Sclerosis Rehahilitation

The goal of OT is to enhance independence, productivity, and safety in all activities related to personal care, employment, and leisure activities. Occupational therapists provide training in energy conservation techniques and the use of adaptive tools and devices to simplify tasks at bome and in the office. They recommend strategic modifications to the home and workplace to ensure accessibility and convenience. Occupational therapists also evaluate and treat problems with thinking and memory.

Therapy for Speech and Swallowing Prohlems in Multiple Sclerosis Rehabilitation

Speech/language pathologist (SI.P) evaluates and treats problems with speech and/or swallowing—both of which can result from damage in the CNS that reduces control of the muscles used in these important functions. The goal of therapy is to

enhance ease and clarity of communication and promote safe swallowing and overall health. Some SLPs also evaluate and treat problems with thinking and memory.

Cognitive Rehabilitation

Neuropsychologists, as well as many occupational therapists and speech/language pathologists, evaluate and treat changes in a person's ability to think, reason, concentrate or remember. While these professionals use different evaluation and treatment strategies, they share the common goal of helping people function optimally if cognitive changes are experienced.

Vocational Rehabilitation

State vocational rehabilitation programmes offer job readiness training, job coaching, job placement assistance, mobility training, and assistive technology assessments—with the goal of helping people maintain their current employment or find new employment that accommodates their needs. Appropriately designed exercise programs in Multiple Sclerosis Rehabilitation are of enormous benefit to people with MS.

Vocabulary Check-up

I. Identify the word / word combination that does not belong in each group of four:

1. ***a)*** to treat;	***b)*** to prevent;	***c)*** to cure	***d)*** to heal
2. ***a)*** to include	***b)*** to comprise	***c)*** to contract	***d)*** to consist
3. ***a)*** relaxation	***b)*** response	***c)*** reaction	***d)*** answer
4. ***a)*** complementary	***b)*** compulsory	***c)*** additional	***d)*** extra
5. ***a)*** to communicate	***b)*** to exchange	***c)*** to improve	***d)*** to connect
6. ***a)*** giddiness:	***b)*** vertigo	***c)*** readiness	***d)*** dizziness
7. ***a)*** perspiration	***b)*** respiration	***c)*** aggravation	***d)*** heart rate
8. ***a)*** sympathetic	***b)*** voluntary	***c)*** enteric	***d)*** visceral
9. ***a)*** to perform	***b)*** to strengthen	***c)*** to execute	***d)*** to fulfill
10. ***a)*** diabetes	***b)*** multiple sclerosis	***c)*** myasthenia	***d)*** polyneuropathy

II. Complete the sentences with one / two word(-s):

1. A specialized cell that transmits nerve impulses is called a _____.

2. The long threadlike part of a nerve cell along which impulses are conducted from the cell body to other cells is a _____ .

3. To divide or cause to divide into parts or elements means _____ .

4. The state of being awake and aware of one's surroundings is referred to as _____.

5. To receive and pass on information or a message, to transmit means _____ .

6. _____ bring information **to** the cell body and branch near the cell body.

7. A neuron that transmits impulses between other neurons is called _____ .

8. _____ means something that is concerned with bodily processes that are not under conscious control (esp. of muscles or nerves).

9. The nerve pathway involved in a reflex action. At its most basic form a sensory nerve and a motor nerve with a synapse between them is referred to as a _____ .

10. We say " _____ " of two or more different things when the are combined in such a way as to enhance or emphasize each other's qualities.

III. Complete the sentences choosing the most appropriate word from the box:

a) nerve; b) to innervate; c) innervated; d) to relax; e) relaxing; f) relaxation; g) relaxingly; h) conscious; i) consciously; j) consciousness; k) to act; l) action; m) active; n) activities; o) to decrease; p) decreased; q) increasing; r) increasingly;

1. _____ activity leads to many health problems and an overall poor quality of life.
2. The autonomic nervous system is the part of the peripheral nervous system that acts as a control system functioning largely below the level of _____ .
3. The loss of tension in a part of the body, especially in a muscle when it ceases to contract happens due to _____ .
4. Carry-over leisure _____ are an important aspect of the majority of rehabilitation programmes for children with cerebral palsy.
5. In order _____ the risk of a training injury in gymnastics a safety leader should be present at every apparatus.
6. Most body organs are _____ by two separate sets of motor neurones; one from the sympathetic system and one from the parasympathetic system.
7. Air and water pollution brings the whole planet to an _____ dangerous situation.
8. She became _____ after the anesthesia wore off.
9. _____ music serves as a good sleep-aids and relieves from nervous tension.
10. The complex of strengthening exercises should be introduced in an _____ order of complexity.

IV. Match the words from the left column with those from the left one to make synonymous pairs:

1. nerve cell	*a)* to split
2. via	*b)* midbrain
3. immediate	*c)* motor neuron
4. afferent neuron	*d)* rhombebcephalon
5. to separate	*e)* prosencephalon
6. forebrain	*f)* tbrough
7. autonomic NS	*g)* brain stem
8. to control	*h)* to regulate
9. respiration	*i)* neuron
10. mesencephalon	*j)* somatic NS
11. to transmit	*k)* breathing
12. hindbrain	*l)* instant
	m) to relay
	n) visceral NS
	o) sensory neuron

V. Match the beginnings and the endings of the sentences:

1. The nervous system consists	**a)** is the control of body temperature.
2. A reflex arc is the simplest example of	**b)** of the central nervous system (CNS) and the peripheral nervous system (PNS).
3. Frontal l.obe is associated with	**c)** how the human nervous system functions.
4. The cerebral cortex is composed	**d)** a synapse.
5. The limbic system is often referred to	**e)** for the level of consciousness and for sleep.
6. The tiny space between nerve cells is called	**f)** important for memory and learning.
7. The hippocampus is one part of the limbic system that is	**g)** reasoning, planning, parts of speech, movement, emotions, and prohlem solving.
8. Pons has certain parts that are important	**h)** of six thin layers of neurons.
9.Some of the brainstem areas are responsihle for the most basic functions of life	**i)** such as breathing, heart rate and hlood pressure.
10. One important function of the hypothalamus	**j)** as the "emotional hrain".

UNIT 10
PHYSICAL THERAPY AND NEUROLOGICAL CONDITIONS

I.A. COMPREHENSION AND DISCUSSION

I. Learn new vocabulary to TEXT 1A. :

Alzheimer's disease	[æltshaɪmə(r)z dɪ'zi z]	хвороба Альцгеймера
amyotrophic lateral sclerosis (ALS)	[ˌæmɪətr'ɒfɪk 'lætərəl sklə'rəusɪs]	аміатрофічний боковий склероз
cerebral palsy	['serəbr(ə)l] ['pɔ:lzɪ]	(дитячий) церебральний параліч
multiple sclerosis		множинний /розсіяний склероз
(brain) stroke		інсульт
premature death	[ˌpremə'tjuə]	передчасна смерть
to affect		уражати, впливати
autoimmune disease	[ˌɔ:təuɪ'mju:n]	автоімунне захворювання
Myasthenia Gravis	[ˌmʌɪəs θi:nɪə]	міастенія, хвороба Ерба-Гольдфлама
manifestation of a disease		прояв захворювання
swallowing		ковтання
to complicate complication		ускладнювати ускладнення
to cause dizziness	[kɔ:z] ['dɪzɪnəs]	викликати запаморочення
to necessitate	[nə'sesɪteɪt]	потребувати
to suffer from		потерпати від

II. Read the following article making use of the pretext vocabulary. Vocabulary units are italicized in Text 1A.

While reading all the textual materials of Unit 10 pick up special terms pertaining to physical therapy specialized field. Make a list of these terms to compile your own glossary of physical therapy terminology that will further be a part of a group project.

Make use of any of the on-line or printed dictionaries like ABBY Lingvo x 3 or ABBYLingvo x 5; dictionary.reference.com or www.merriam-webster.com Please be sure to do similar job while working upon other Units that follow.

TEXT 1A

PHYSICAL THERAPY AND NEUROLOGICAL CONDITIONS

1. Neurological physical therapy is a discipline focused on working with individuals who have a neurological disorder or disease. These include *Alzheimer's disease, ALS (amyotrophic lateral sclerosis)*, brain injury, *cerebral palsy, multiple sclerosis*, Parkinson's disease, spinal cord injury and stroke. Common problems of patients with neurological disorders include paralysis, vision impairment, poor

balance, inability to ambulate or loss of functional independence. Therapists work with patients to improve these areas of dysfunction.

2. The brain and spinal cord control movements and sensations. Injuries to the brain or spinal cord can cause death of the cells that control certain movements and sensations, and therefore one might lose certain brain or spinal cord functions. Following the injury there is a certain amount of time when the cells that are not injured in the brain and spinal cord can learn to control the missing functions. Without physical therapy following a neurological injury, patients may lose many functions and abilities to perform certain activities. Decreased activity leads to many other health problems such as heart and lung diseases, diabetes, decreased independence and an overall poor quality of life.

3. Physical therapists that specialize in neurology work with a broad range of conditions in both adults and children that include:

- Spinal cord injury
- Brain injury that results from trauma or conditions such as stroke or tumors
- Multiple sclerosis
- Parkinson's disease
- Amyotrophic lateral sclerosis
- Polyneuropathies such a Guillian-Barre syndrome or chronic inflammatory polyneuropathy
- Vestibular disorders such as BPPV (Benign Paroxysmal Positional Vertigo), acoustic neuroma or other conditions that cause dizziness and loss of balance
- Paediatric conditions such as spina bifida or cerebral palsy

4. A neurologic physical therapist can help neurology patients if they have any of the following complaints:

- Dizziness.
- Imbalance which might cause falls.
- Difficulty in walking or moving around in your daily life.
- Changes in your ability to do the things that you enjoy in your life like recreational activities or outings with your family.

- If you are not able to walk 6 minutes without having to stop to rest.
- If you need more help than you did before to go through your daily activities.
- If you have a brace or wheelchair that is in disorder and needs to be re-evaluated.

5. One of the most dangerous neurological disorders is the Alzheimer's disease which can result in *premature death*. This disease particularly *affects* elderly people, but might also occur in young adults.

ALS (amyotrophic lateral sclerosis) is another neurological disease which reduces the motion abilities of the spine. However, physiotherapy has proven to be helpful when treating both these disorders.

Parkinson's disease can result in the loss of coordination and creates problems in walking. Again, physiotherapy can bring some relief to such patients.

6. Neurological disorders, which come under the category of *autoimmune diseases*, are extremely hard to cure. One such disease is *Myasthenia Gravis* which causes weakness of the muscles due to bad communication between the muscles and nerves. In order to treat this type of neurological disorder extensive physical therapy is required. Some of the physical therapy methods for this disorder are strengthening training. However, excessive exercising might aggravate the *manifestations of the Myasthenia Gravis disease* instead of bringing alleviation to the patients.

7. Generally the people suffering from neurological disorders are unable to perform their daily activities like personal grooming and work obligations. They might experience difficulties in walking, standing and climbing stairs. Even eating, *swallowing* and breathing can be complicated for these patients. These *complications* can *cause dizziness* and poor balance. These conditions *necessitate* physical therapy, which provides solutions that the other branches of medicine fail to offer.

8. As in all other methods of physiotherapy, exercising also helps in treating neurological disorders. Aerobic exercises are of great importance for patients *suffering from* various neurological disorders. Physical therapists should elaborate a rehabilitation programme, which involves aerobics. The programme should include balance training as well as coordination training. By practicing these skills the patient

will be able to perform aerobic exercises more effectively. For some patients water exercises are also recommended.

Physical therapists are very knowledgeable about human movements and can teach patients how to move correctly again. A physiotherapist often behaves as a psychoanalyst who can replace the patient's despair with hope. Thus many patients can learn to live independently again, which makes them happier and more accomplished.

VOCABULARY CONSOLIDATION

III. Read Text 1A again to find the words whose definitions are given below. The number of the paragraph where each appropriate word can be found is given in brackets.

1. _____ denoting exercise that improves the efficiency of the body's cardiovascular system in absorbing and transporting oxygen *(8)*
2. _____ a disruption of normal physical or mental functions; a disease or abnormal condition *(1; 3)*
3. _____ a sudden disabling attack or loss of consciousness caused by an interruption in the flow of blood to the brain, esp. through thrombosis *(1)*
4. _____ the cylindrical bundle of nerve fibers and associated tissue that is enclosed in the spine and connects nearly all parts of the body to the brain, with which it forms the central nervous system *(1; 2; 3)*
5. _____ other ways of conveying this condition is "giddiness", "vertigo" or "swimming" *(4)*
6. _____ an act of giving a neat and tidy appearance to someone *(7)*
7. _____ occurring or done before the usual or proper time; too early *(5)*
8. _____ of a disease caused by antibodies or lymphocytes produced against substances naturally present in the body *(6)*
9. _____ the ability to use different parts of the body together smoothly and efficiently *(5; 8)*
10. _____ make a problem or injury worse or more serious *(6)*

IV. Fill in the table with the missing parts of the speech. Consult the dictionary if necessary. Give Ukrainian equivalents to the "family" words. Some spaces should be left blank:

Noun	Verb	Adjective	Adverb
	impair		
improvement			
		dangerous	
			necessarily
	weaken		
		following	
strength			
		helpful	
	depend		
reduction			

V. Complete the sentences with the words from the previous exercise:

1. _____ is the mother of invention.
2. The faculties of the mind generally are _____ by exercise.
3. A physical therapist _____ an impaired patient off with his clothes.
4. Tall and big men are not _____ strong and robust.
5. He always behaves _____ and politely.
6. She has lost much weight. She has been on a _____ diet for the last few weeks.
7. Lack of sleep had _____ her concentration.
8. Quite a few taste _____ added to the foodstuffs are actually insecure to human health.
9. Aggravation of the disease _____ the patient's chances for complete recovery.
10. Why don't you find a job and end this _____ upon your parents?
11. Very often cerebral palsy is accompanied with visual, hearing or other sensory _____.
12. Quite a number of neurological disorders _____ physical therapy as one of the most efficient solution.
13. Some of the physical therapy methods for these neurological disorders are _____ training.
14. Patients have to_____ out therapist's instructions down to the last detail.
15. Loss of functional _____is a common problem of patients with neurological disorders.
16. Some weeks _____ the surgery were extremely tense for the patient.

VI. Read and discuss the importance of minerals for: a) neurological conditions; b) cardiac diseases; c) orthopaedic disordrs

Important Mineral Facts You Should Know

- Arthritis pain can be caused by lead, cadmium, or mercury poisoning.
- Taking too much of any one vitamin or mineral can be harmful.
- Too much vitamin C can actually make an infection worse.
- Hair analysis is the most efficient means of determining exactly what vitamins and minerals you do need.
- Approximately 80% of our population lack the necessary enzymes and natural stomach acids to digest their food.
- Hyperactive children often have too much lead in their systems.
- Obesity is frequently caused by chronic blood sugar problems.
- Mercury toxicity in the mother's system can kill her unborn child.
- Magnesium supplements may prevent brain damage of alcoholics.
- The male prostate gland contains more zinc than any other organ in the body. Because of this, adequate zinc ievels are important for male potency.
- Diuretics, often prescribed for patients with high blood pressure and heart trouble, can decrease the potassium supply.
- High levels of copper and iron in the body tissue can cause migraine headaches, and even schizophrenia.
- Adequate zinc Intake helps to regulate blood sugar levels.
- I ead toxicity is linked to multiple sclerosis.
- Zinc deficiency can retard bone development and produce malformed sex organs.
- Doctors often diagnose heart attacks by the amount of the mineral manganese in the body.
- Chromium, magnesium, manganese and vitamin B6 deficiency are related to diabetes.
- Vitamin C, the B Complex, zinc and manganese are being used to treat schizophrenia.
- Magnesium deficiency is related to epilepsy, leukaemia, heart disease and kidney disorders.
- Beryllium, iead, cadmium, nickel and arsenic poisoning can cause cancer.
- The mineral lithium is being used to alleviate many of the problems associated with manic depressive illness.

II. A. READING AND DISCUSSION

VII. Read TEXT 2A on PHYSICAL THERAPY IN ALZHEIMER'S DISEASE in order to complete the after-reading activities. Review the vocabulary units before reading each item of the text. Get ready to discuss the effect of exercise for patients suffering from Alzheimer's disease. Points for discussion:

- ***benefits of exercising for Alzheimer's cases;***
- ***difference in balance exercises for the beginners, intermeiate and advanced patients;***
- ***importance of "core" strengthening exercises for Alzheimer's patients;***
- ***necessity of strengthening quadriceps and leg muscles for patients with Alzheimer's disease.***

PHYSICAL THERAPY IN ALZHEIMER'S DISEASE

Many research have shown tbat exercise is beneficial for people with Alzheimer's disease. Along with cardiovascular fitness, ***increased endurance*** and strengtb people with Alzheimer's disease get additional benefits from exercising. These benefits from regular exercises include ***maintenance*** of motor skills, ***decreased falls*** and ***reduced rate*** of disease associated with mental decline. Improved behaviour, improved memory and better communication skills are few other benefits resulted from routine exercise programmes in Alzheimer's disease.	***increased endurance*** - *більша витривалість* ***maintenance*** - *підтримка, утримання* ***decreased falls*** - *зменшення падінь* ***reduced rate*** - *менший рівень*

Flexibility, balance, and strength ***exercises*** have been studied in patients with Alzheimer's disease ***versus medical treatment alone***. At the end of the study the patients who received both physical exercise and medical treatment were less depressed than those in the control group and showed ***considerable improvement*** of their physical body functioning. Physical therapy plays an important role in maintaining physical fitness of patients with Alzheimer's disease by adjusting routines to meet tbe individual needs of each patient.	***exercises versus medical treatment alone*** - *фізичні вправи у порівнянні з виключно медикаментозним лікуванням* ***considerable improvement*** - *значне покращення* ***to meet the individual needs*** – *згідно до індивідуальних потреб*

Balance Exercises Often with aging an individual's balance skills ***deteriorate***. That is why it is important to perform special exercises to improve and maintain balance throughout our lives. Balance exercises are especially significant for Alzheimer's cases ***to avoid unexpected*** falls. They can be performed daily ***in home setting***. A patient can start out with simple balance activities and increase the difficulty as his balance improves. Improving halance takes time and practice.	***to deteriorate-*** *погіршуватися* ***to avoid*** *- уникати, ухилятися* ***unexpected*** *– несподіваний, раптовий* ***in home setting*** *– у домашніх умовах*

Beginner: - Stand up straight behind a tall chair or at a counter top. - ***Lightly grasp*** the chair or ***counter top*** with your fingertips. - Raise one leg a foot off the ground. - ***Maintaln your balance*** while standing on one leg. - ***Hold for a count of ten seconds***. - Repeat with the other leg. - Perform five times on each leg. **Intermediate:** - Stand up straight behind a tall chair or at a counter top for safety only. - Without holding on to the chair or countertop raise one leg a foot off the ground. - Maintain your balance while standing on one leg. - Hold for a count of ten seconds. - Repeat with the other leg. - Perform five times on each leg. **Advanced:** - Stand up straight behind a tall chair or at a counter top for safety only. - Close both eyes. - Without holding on to the chair or countertop raise one leg a foot off the ground. - Maintain your balance while standing on one leg. - Hold for a count of ten seconds. - Repeat with other leg. - Perform five times on each leg.	***counter top*** *– (тут) поверхня стола* ***to grasp lightly*** *- ухопитися злегка* ***to maintain balance*** *– підтримувати рівновагу* ***to hold for a count of ten seconds*** *- утримувати (положення) упродовж 10сек.*

Strengthening Exercises The body's **"*core*"** refers to the muscles around the abdomen, pelvis, and back. The body's centre of gravity is located within this "core". As a result, it plays a significant role in almost all the body activities. While sitting or standing, walking or running, the core muscles are at work, stabilizing our body against ***the force of gravity***. Weak core muscles make a person more ***susceptible to*** poor posture, back pain and injuries during ***physical exertions***. That is why it is important to have strong core muscles. For maximum effectiveness core strengthening exercises should be performed at least three times per week. The abdominal muscles are made up of four muscle groups. These groups of muscles help to stabilize the trunk, provide organs stability and assist in ***flexion*** **and** ***rotation*** of the trunk. Strengthening these muscles helps to support the ***body's frame*** and decreases back injuries. Here are several easy exercises to help strengthen abdominal muscles.	***core*** *- центр, основа, каркас, корпус* ***force of gravity*** *- сила тяжіння* ***susceptible to*** [sə'septəbl] – *вразливий, схильний до...* ***physical exertions*** *- фізичне навантаження, зусилля* ***flexion*** **and** ***rotation*** *– згинання та обертання* ***body's frame*** *– корпус тіла*
Sit Ups 1) Lay on your back. 2) ***Bend your knees*** to a comfortable position. 3) ***Lock your fingers*** behind your head. 4) ***Curl up*** your head, shoulders, upper and lower back ***off the floor***. 5) ***Hold this position*** for 5 seconds. 6) Slowly return to starting position. 7) Repeat 10 times.	***bend your knees*** *- зігніть ноги в колінах* ***lock your fingers*** *- зімкніть пальці замком* ***curl up off the floor*** *- згорніть у клубок та підніміть від підлоги* ***Hold this position*** *– утримуйте це положення*
Leg Raises 1) Lay on your back. 2) Bend your knees to 15 degrees. 3) Contract your abdominal muscles to ***lift your feet off the floor in an arc-like motion above your head***. 4) Slowly (in the same arc-like motion) return your legs/feet to the floor. 5) Repeat 10 more times. ***Be cautious to avoid any strain*** to your lower back while performing tbis exercise.	***lift your feet off the floor in an arc-like motion above your head*** *- підніміть ноги дугою над головою* ***Be cautious to avoid any strain*** *– намагайтеся уникати будь-якого напруження, зайвих зусиль*

Twisting Sit Ups 1) Lay on your pack. 2) Bend your knees to a comfortable position. 3) Lock your fingers behind your head. 4) Curl up your head, shoulders, upper and lower back off the floor and ***angle*** your left elbow toward your right knee. 5) Hold this position for 5 seconds. 6) Slowly return to starting position. 7) Curl your head, shoulders, upper and lower back off the floor and angle your right elbow toward your left knee. 8) Hold this position for 5 seconds. 9) Slowly return to starting position. 10) Repeat 10 more times ***alternating twisting motion.***	***angle*** *- нахиліть навхрест* ***alternating twisting motion*** *– міняючи перехресні нахили*

Wall Slides: An Effective Quadriceps Strengthening Exercise Wall slides are an effective way to strengthen your ***quadriceps muscles***, more commonly referred to as "the quads." This exercise should be done tbree times a day for effective strengthening. Although wall slides ***appear easy***, it is an exercise that should not be done too early in the rehabilitation process, especially if a patient had a back injury. Discuss this exercise with your physician or physical therapist before proceeding.	***wall slides*** *– ковзання по поверхні стіни* ***quadriceps*** ['kwɔdrɪseps] ***strengthening*** *– зміцнення чотириглавого м язу* ***appear easy*** *– здаються нескладними*

Wall Slide 1) ***Stand upright with your back against a wall*** and ***feet shoulder-width apart***. 2) Slowly bend your knees, sliding your back down the wall ***for a count of five*** until your knees are bent at a 45-degree angle. (Do not bend too much further than this, as it will cause increased strain on your knees.) 3) Hold this position for 5 seconds. 4) ***Begin straightening your knees*** for a count of five, sliding up the wall until you are fully upright with knees straight.	***Stand upright with your back against a wall*** *– встаньте рівно, торкаючись спиною стіни* ***feet shoulder-width apart*** *– стопи на ширині плечей* ***for a count of five*** *– рахуючи до п'яти* ***Begin straightening your knees*** *– починайте виправляти коліна*

5) Repeat the above steps five more times. 6) Do this three times per day. As performing this exercise becomes easier, increase the ***number of repetitions*** per day. Also as your quads become stronger ***try one-legged wall slides*** or do the ahove exercise ***holding weights in your hamls***. Being primarily a strengthening exercise this activity will also help patients to improve their halance.	***number of repetitions*** – *кількість повторювань* ***try one-legged wall slides*** - *спробуйте воконувати ковзання на одній нозі* ***holding weights in your hands*** – *з обтяженнями (гирями) в руках*

III. A. LISTENING AND COMPREHENSION:

VIII. You are going to listen to/read about the preventive properties of hydrotherapy. Can you explain the meaning of the word "hydrotherapy" borrowed from Greek?

Look through the words that might be unknown to you.

sophisticated – *складний, тонкий*	***purifying process*** – *процес очищення*
coherently – *гармонійно*	***challenge*** – *проблема, важке завдання*
deposits leave the body cells – *шлаки виводяться з клітин*	***lukewarm*** - *прохолодний* ***soothing effect*** – *заспокійливий вплив*

- ***Listen and decide if the sentences below are "true" or "false". Correct the false statements.***

1. It is recognized that water has a healing effect upon the human body.
2. Water in the form of ice or steam is not recommended as a hydrotherapeutic procedure.
3. Blood rusbes to every part of the body where the cold water hits.
4. Hydrotherapy is an outdated tradition and is quite complicated in application.
5. Warm shower applied to a patient's forehead will make him sleepy.
6. Cold water poured below the lower lip will prevent the brain hemispheres from worklng properly.
7. A cold shower stimulates the hlood circulation and contributes to the cells' renovation.

PREVENTIVE HYDROTHERAPY

Hydrotberapy is the use of water to treat a disease or to maintain health. The term "hydrotherapy" (water therapy) can mean either exercise in the water or using water for care and healing of soft tissues. This type of therapy is based on the theory that water bas many properties that give it the ability to heal:

- Water can store and carry heat.
- Water is found in different forms, such as ice, liquid, or steam. Ice may be used to cool, liquid is used in baths and compresses at varying pressures or temperatures, and steam is used in steam baths or for breathing in.
- Water also has a soothing, calming, and relaxing effect on people.
- Exercise in water takes the weight off a painful joint while also providing resistance.

The science of hydrotherapy is very ancient, *sophisticated*, and at the same time very simpie. If you regularly take a cold shower your body can be totally rebuilt. When you take a cold shower your blood rushes out to meet the *challenge*. This means all tbe capillaries open up and all the *deposits leave the body cells*. It's an extremely *purifying process*. After a cold shower all the blood that is in capillaries and in circulation goes back to the organs. Thus every cell of the body will get a rich supply of oxygen-enriched blood.

If you take a cold shower and let it fall just below the lower lip for some two to three minutes, you will be bright and your *mind will function coherently*. When you pour *lukewarm* water on tbe forehead for some five minutes it has a *soothing effect*. If you let the cold water flow down your neck in the front and let the water run down your entire body and hands, that will help to totally renovate the body cells. This is how the health balance is maintained.

- ***Listen again to answer the following questions:***

1. How can you interpret the meaning of the word "*hydrotherapy*"?
2. What is the theoretical background for hydrotherapeutic procedures?
3. How would you convey the phrase "*лікувальні властивості води*" into English?

4. What are the three physical forms of water?
5. What physical form of water is used for inhalations?
6. Why are regular cold showers beneficial to our health?
7. What water temperature regime produces a soothing effect upon human nervous system?
8. To what part of the body should one direct the cold water flush in order to assist body cells renovation?

IV. A. READING AND WRITING

IX. Read the following article with the help of a dictionary.

- ***Make a written translation into Ukrainian.***
- ***Write a summary of the article in English.***

THE HANDICAPPING CONDITION

Written by ***Theo Braddy, Community Blogger*** | Sep 18, 2015

There are many negative words when it comes to defining the word "disabled" or describing people with disabilities. These are just a few: crippled, helpless, useless, maimed, wounded, wheelchair bound, lame, mangled, mutilated, weakened, sick, invalid; the list goes on. Go ahead and look it up for yourself! However, one of my favourites is "handicapped", which brings me to my real life story:

The Handicapping Condition

It was February of 1989. I had just been hired to be the Executive Director of the first Center for Independent Living in Central PA. I believed I was made for this position. I wanted to change the world, starting with Central PA. My goal was simple: - I wanted the community to see people with disabilities as contributing members of society, people of worth and value and people who should not be dealing with discrimination.

I remember writing an article based on the use of the word, "handicapped". I figured I had to start with changing this outdated term because if society viewed us as handicapped, we would be seen as handicapped. To my surprise, The Patriot News

published it. In this article I described society as the one with 'the handicapping condition,' not people with disabilities. This 'handicapping condition' that society had included a negative attitude toward peopie with disabilities, resulting in physical and attitudinal barriers that prevented us from full participation in all walks of life. I also pointed out if we could remove this handicapping condition that society processed, people with disabilities would no longer be handicapped.

But now that I am oider and a tad bit wiser, there is another reason why this word "handicapped" needs to be addressed.

With some quick research, you will find there are a few views on the origin of the word "handicapped" and also a few reasons why the majority of people with disabilities do not appreciate being referred to as "handicapped". "Handicapped" is a negative word for people with disabilities. It is attached to a long negative archaic bistory of pity and treating people with disabilities as beggars on the street, "cap in hand" asking for money. Many people with disabilities, including myself, believe the word, "handicapped" needs to be eliminated.

When I started on my journey 24 years ago as Executive Director of my agency, and then when I wrote the article, I hoped the word "handicapped" would be re-defined and no longer be used to refer to persons with disabilities. I was wrong! It is still used and I am stili trying to remind society to view people with disabilities as valuable contributing members of society, instead of someone who is to be pitied and devalued.

It is an outdated term that is associated with beggars on the street asking for money. The more appropriate terminology to use is People First Language; simply put the person before the condition or disability. For example, instead of saying "a biind person", say "a person who is blind" or "a person visually impaired". We are people first, not a condition or a disease.

The words we use in society really do matter. Words can speak positive things about a group of people or they can speak negative things about a group of people. If we, as a society, decide to use more positive terminology, we can be a more inclusive community.

Vocabulary Check-up

I. Identify one word / word combination that does not belong in each group of four:

1. *a)* to reduce	*b)* to enlarge	*c)* to lessen	*d)* to diminish
2. *a)* complicated	*b)* sophisticated	*c)* different	*d)* complex
3. *a)* relaxation	*b)* effort	*c)* exertion	*d)* strain
4. *a)* endurance	*b)* balance	*c)* flexibility	*d)* facility
5. *a)* to recover	*b)* to deliver	*c)* to supply	*d)* to bring
6. *a)* beneficial	*b)* harmful	*c)* advantageous	*d)* favourable
7. *a)* strong	*b)* sick	*c)* feeble	*d)* weak
8. *a)* to recommend	*b)* to advise	*c)* to suggest	*d)* to necessitate
9. *a)* swallowing	*b)* treating	*c)* breathing	*d)* eating
10. *a)* impairment	*b)* incapacity	*c)* improvement	*d)* disability

II. Find an appropriate definition to each of the words from the box:

***a)* physician**	***b)* to maintain**	***c)* baiance**	***d)* recovery**	***e)* stroke**
***f)* unconsciousness**	***g)* soothing**	***h)* to interrupt**	***i)* weak**	***j)* immediately**

1. without delay or intervention; at once; instantly;
2. the act or process of restoration to a former or better condition, esp from sickness or a shock;
3. a person legally qualified to practise medicine, especially one specializing in areas of treatment other than surgery;
4. having a calming, assuaging, or relieving effect;
5. to continue or retain; to keep in proper or good condition; to support;
6. lacking in physical or mental strength or force; frail or feeble;
7. the state of being without normal sensory awareness; insensibility;
8. rupture of a blood vessel in the brain resulting in loss of consciousness, often followed by paralysis, or embolism or thrombosis affecting a cerebral vessel;
9. to break the continuity of an action, process or event, etc.; to obstruct
10. equilibrium of the body; steadiness.

III. Matchup the words from both columns to make antonymous pairs:

1. to complicate	**a)** to perform
2. death	**b)** birth
3. decreased	**c)** enlarged
4. aduit	**d)** child
5. to lose	**e)** to maintain
6. dizziness	**f)** deterioration
7. beneficial	**g)** to find
8. to reduce	**h)** vertigo
9. improvement	**i)** harmful
10. to raise	**j)** to drop
	k) favourable
	l) to increase
	m) to simplify

IV. Accomplish the cloze test by completing the text. Make use of the words from the box. Notice that there are more words (15) than gaps (11):

1. many	**2.** spinal	**3.** with	**4.** examination	**5.** neurology
6. muscle	**7.** them	**8.** neurorehabilitation	**9.** harmful	**10.** circulatory
11. much	**12.** by	**13.** pain	**14.** measures	**15.** neurological

A neurological disorder is a disorder of the body's nervous system. Structural, biochemical or electrical abnormalities in the brain or ___**a)** ___ cord, or in the nerves leading to or from ___**b)**___, can resuit in symptoms such as paralysis, ___**c)**___ weakness. poor coordination, loss of sensation, seizures, confusion, ___**d)**___ and aitered level of consciousness. There are many recognized ___**e)**___ disorders, some are relatively common but ___**f)**___are rare. They may be revealed by neurological ___**g)**___ and studied and treated within the specialities of ___**h)**___ and clinical neuropsychology. Interventions include preventative ___**i)**___, lifestyle changes, physiotherapy or other therapy, ___**j)**___, pain management, medication, or operations performed ___**k)**___ neurosurgeons.

a)	**d)**	**g)**	**j)**
b)	**e)**	**h)**	**k)**
c)	**f)**	**i)**	

V. Translate the text into English without consulting a dictionary.

Певні неврологічні розлади та захворювання можуть докорінно погіршити життя людини. Наприклад хвороба Паркінсона може призвести до втрати координації рухів та рівноваги. Деякі аутоімунні неврологічні хвороби дуже важко піддаються лікуванню. Фізична реабілітація може допомогти у багатьох випадках неврологічних розладів.

Фізреабілітологи розробляють програми, що містять вправи на розтягування, для зміцнення м'язів та суглобів, для покращення кисневого обміну, водні процедури тощо.

Кваліфікований фізреабілітолог часто поводиться як психоаналітик, який замість відчаю може вселити у пацієнта надію.

APPENDIX I

LAY TERMS AND DEFINITIONS

Explanations should be given in words the patient will understand, avoiding medical terminology and jargon. Using **lay terms (непрофесійні, розмовні терміни)** – words familiar to people without medical knowledge – can help patients understand explanations better.

Here are some **lay terms for medical conditions:**

Medical conditions	Lay terms	Translation
acute cerebrovascular event	stroke	удар, параліч, інсульт
arrhythmia	palpitations	сильне серцебиття
dyspnoea	breathlessness	задишка
fractured neck of femur	broken hip	перелом стегна
Haematemesis [hi:mə'temisis]	vomiting blood	блювати кров'ю
haematuria	blood in the urine	кров у сечі
insomnia	trouble with sleeping	проблеми зі сном, безсоння
myocardial infarction	heart attack	серцевий напад

One may also use some **lay terms for medications:**

analgesics [ænəl'dʒi:ziks]	pain killers	ліки проти болю
anti-depressants	tablets to improve your mood	ліки для покращення настрою
anti-inflammatories	medicine to reduce swelling	ліки проти набряків та запальних процесів
broncho-dilator	a substance which causes the airways to open up	речовина, що сприяє розширенню дихальних шляхів
diuretics	water tablets	таблетки для виведення зайвої рідини
hypertension medication	pills for blood pressure	таблетки від тиску
hypnotics	sleeping tablets	снодійні ліки

Most patients have rather poor medical knowledge, so it is important to use **simple definitions** they will understand when talking about certain parts of the body or medical conditions.

arterles	tubes which carry blood around thc body	артерii
benign [bı'naın]	not due to cancer or infection	доброякісний
bronchi	airways that connect the windpipe to the lungs	бронхи
cholesterol	fat that clogs the arteries	холестерин
Intervertebral dlsks	shock absorbers which separate tbe bones in the back	міжхребцеві диски
oesophagus	the tube that connects the back of the throat to the stomach	стравохід
pancreas	a gland that helps digestion and makes insulin to control blood sugar	підшлункова залоза
tbyroid	a gland that produces some of the hormones required in daily life	щитоподібна залоза
urethra	the tube tbat carries urine from the bladder	сечовипускальний канал

APPENDIX II

ABBREVIATIONS
IN MEDICAL TERMINOLOGY

The use of medical and scientific abbreviations is timesaving and often a standard practice in the health care industry. A number of the abbreviations may appear with or without periods and with either capital or small letters.

Abbreviation	Meaning	Transiation
ac	before meals (ante cibum)	перед їжею
AC	air conduction	провідність повітря
Acc	accommodation	акомодація
ACG	angiocardiography	ангіокардіографія
AD	right ear (auris dextra)	праве око
ad lib	as desired	як завгодно, скільки завгодно
ADH	antidiuretic bormone; vasopressin	антидіуретичний гормон, вазопресин
AE	above the elbow	вище ліктя
AKA	above-knee amputation	ампутація вище коліна
AMA	American Medical Association	американська медична асоціація
AMI	acute myocardial infarction	гострий інфаркт міокарда
ANS	autonomic nervous system	автономна нервова система
A&P	auscultation and percussion	вислуховування та перкусія
ARDS	adult respiratory distress syndrome	синдром розладу дихання у дорослих
AS	1. left ear (auris sinistra); 2. aortic stenosis	1. ліве вухо; 2. стеноз аорти
ASD	atrial septal defect	дефект міжпередсердної перегородки
ASHD	arteriosclerotic heart disease	артеріосклеротична хвороба серця
Astigm	astigmatism	астигматизм
AV	atrioventricular	передсердно-шлуночковий
AVR	aortic valve replacement	заміна аортального клапану
baso	basophil	базофіл
BBB	bundle-branch block	міжшлуночкова блокада
BE	below the elbow	нижче ліктя
b.i.d.	twice a day	двічі на день
BIN, bin	twice a night	двічі вночі
BKA	below knee amputation	ампутація нижче коліна
BM	bowel movement	стілець
BMR	basal metabolic rate	швидкість основного обміну речовин
BNO	bladder neck obstruction	контрактура шийки сечового міхура
BP	blood pressure	кров'яний тиск
BT	bleeding time	час кровотечі
bx	biopsy	біопсія
C1, C2, etc.	first, second cervical vertebra	перший, другий, ... шийний хребець
CA	cancer	рак
Ca	calcium	кальцій
CAD	coronary artery disease	ішемічна хвороба серця
CAT scan	computerized axial tomography	комп'ютерна аксіальна томографія
CBC	complete blood count	клінічний аналіз крові
cc	cubic centimeter	кубічний сантиметр
CC	chief complaint	головна скарга хворого
CDH	congenital dislocation of the hip	вроджений вивих стегна
CEA	carcinoembryonic antigen	карциноембріональний антиген

CHD	coronary heart disease	ішемічна хвороба серця
CHF	congestive heart failure	застійна серцева недостатність
Cl	chlorine	хлор
cm	centimeter	сантиметр
CNS	central nervous system	центральна нервова система
COPD	chronic obstructive pulmonary disease	хронічне обструктивне захворювання легенів
CP	cerebral palsy	кірковий параліч, ДЦП
CPD	cephalopelvic disproportion	клінічно вузький таз
CPR	cardiopulmonary resuscitation	серцево-легенева реанімація
CS, C-section	cesarean section	кесарів розтин
CSF	cerebrospinal fluid	спинномозкова рідина
CT scan	computerized tomography scan	комп'ютерна томографія
CV	cardiovascular	серцево-судинний
CVD	cardiovascular disease	серцево-судинне захворювання
CXR	chest X-ray	рентгенограма грудної клітки
cysto	cystoscopy	цистоскопія
dc	discontinue	припинити
/ day	per day	за день, за добу
DI	diagnostic imaging	діагностична візуалізація
diff	differential count (white blood cells)	визначення лейкоцитарної формули
DOA	dead on arrival	доправлено мертвим
DOB	date of birth	дата народження
DPT	diphtheria, pertussis, tetanus	дифтерія, коклюш, правець (щеплення)
DSA	digital subtraction angiography	цифрова субтрактивна ангіографія
DTRs	deep tendon reflexes	глибокий сухожилковий рефлекс
DVT	deep vein thrombosis	глибокий венозний тромбоз
Dx	diagnosis	діагноз
ECG, EKG	electrocardiogram	електрокардіограма
ECF	extracellular fluid	позаклітинна рідина
EEG	electroencephalogram	електроенцефалограма
EENT	eye, ear, nose, and throat	око, вухо, ніс і горло
EMG	electromyogram	електроміограма
ENT	ear, nose, and throat	вухо, горло, ніс
eosins, EOS	eosinophil	еозинофіл
ESR	erythrocyte sedimentation rate	швидкість осідання еритроцитів
EST	electric shock therapy	електрошокова терапія
F.	Fahrenheit	за шкалою Фаренгейта
FBS	fasting blood sugar	аналіз на рівень цукру у крові
FEKG	fetal electrocardiogram	електрокардіограма плоду
FES	forced expiratory spirogram	форсована спірометрія
FEV	forced expiratory volume	об'єм форсованого видиху
FH	family history	сімейний анамнез
FS	frozen section	заморожений зріз
FUO	fever of undetermined origin	лихоманка невідомого походження
FVC	forced vital capacity	форсована життєва місткість легенів
Fx	fracture	перелом
GB	gall bladder	жовчний міхур
GH	growth hormone	гормон росту
GI	gastrointestinal	шлунково-кишковий
gm	gram	грам
GP	general pratctitioner	лікар загального профілю, терапевт
gtt	drops (guttae)	краплі
Gyn	gynaecology	гінекологія

h	hour	година
H	1. hydrogen; 2. hypodermic	1. водень; 2. підшкірний
HCl	hydrochloric acid	соляна кислота
HCT, hct	hematocrit	гематокрит
HD	1. hemodialysis; 2. hearing distance	1. гемодіаліз; 2. відстань чіткої чутності
HDL	high-density lipoprotein	альфа-ліпопротеїн високої щільності
Hg	mercury	ртуть
Hgb, Hb	haemoglobin	гемоглобін
HNP	herniated nucleus pulposus (herniated disk)	грижа міжхребцевого диску
hs	at bedtime	перед сном
HX, Hx	history	історія хвороби
ICF	intracellular fluid	внутрішньоклітинна рідина
ICU	intensive care unit	відділення інтенсивної терапії
I&D	incision and drainage	розтин та дренаж
Ig	immunoglobulin	імуноглобулін
IH	infectious hepatitis	інфекційний гепатит, хвороба Боткіна
IM	intramuscular	внутрішньом'язовий
inj	injection	ін'єкція
IOP	intraocular pressure	внутрішньоочний тиск
IQ	intelligence quotient	коефіцієнт інтелекту
IV	intravenous	внутрішньовенний
K	potassium	калій
kg	kilogram	кілограм
l	liter	літр
L1, L2, etc	first, second lumbar vertebra	перший, другий поперековий хребець
LA	left atrium	ліве передсердя
LAT, lat	lateral	латеральний, боковий
LB	large bowel	товста кишка
LDL	low-density lipoprotein	ліпопротеїн низької щільності
LE	lower extremity	нижня кінцівка
LP	lumbar puncture	люмбарна (спинномозкова) пункція
LPN	Licenced Practical Nurse	атестована молодша медсестра
LV	left ventricle	лівий шлуночок
lymphs	lymphocytes	лімфоцити
M.D.	Medical Doctor	доктор медицини (наук. ступінь)
mets	metastases	метастази
mg	milligram	міліграм
MI	1. myocardial infarction; 2. mitral insufficiency	1. інфаркт міокарда; 2. мітральна недостатність
mix. astig	mixed astigmatism	змішаний астигматизм
ml	milliliter	мілілітр
mm	millimeter	міліметр
mono	monocyte	моноцит
MRI	magnetic resonance imaging	візуалізація методом ядерного магнітного резонансу
MS	1. mitral stenosis; 2. multiple sclerosis	1.мітральний стеноз; 2.розсіяний склероз
myop	myopia	короткозорість
NA	sodium	натрій
NB	newborn	новонароджений
NSAID	nonsteroid anti-inflammatory drug	нестероїдні протизапальні ліки
OA	osteoarthritis	остеоартрит
OB	obstetrics	акушерство
OC	oral contraceptives	пероральні контрацептиви

od	once a day	раз на день
OD	1. right eye (oculus dexter); 2. overdose	1.праве око; 2.передозування
OHS	open heart surgery	операція на відкритому серці
OR	operating room	операційна
ORIF	open reduction internal fixation	відкрита репозиція з внутрікістковою фіксацією
Ortho, ORTH	orthopedics	ортопедія
os	1. mouth; 2. bone	1.ротова порожнина; 2.кістка
OS	left eye (oculus sinister)	ліве око
Oto	otology	отологія
OU	both eyes (oculi unitas)	обидва ока
OV	office visit	візит до лікаря
oz	ounce	унція (*28,3 гр*)
P	pulse	пульс
paren	parenterally	парентерально
PAT	paroxysmal atrial tachycardia	пароксизмальна тахікардія передсердь
Path	pathology	патологія
pc	after meals	після їжі
PCV	packed cell volume (hematocrit)	гематокритне число
PE	physical examination	медичний огляд
PET	positron emission tomography	позитрон-емісійна томографія
PGH	pituitary growth hormone	гіпофізарний гормон росту
PH	past history	анамнез
pH	hydrogen ion concentration	концентрація іонів водню
PI	present illness	поточне захворювання
PID	pelvic inflammatory disease	запалення тазових органів
PKU	phenylketonuria	оксифенілкетонурія
PND	paroxysmal nocturnal dyspnoea	нічна пароксизмальна задишка
PNS	peripheral nervous system	периферійна нервова система
P.O., p.o.	orally	для внутрішнього вживання
PP	private practitioner	лікар, що має приватну практику
pp	after meals (postprandial)	після їжі
PT	1. Physical Therapy; 2. prothrombin time	1.фізична реабілітація; 2.протромбіновий час
PTH	parathyroid hormone	паращитоподібний гормон
PVC	premature ventricular complex	шлуночкова екстрасистола
qam	every morning	кожного ранку
qd	every day (quaque die)	щодня
qh	every hour	щогодини
q2h	every 2 hours	кожних дві години
qid	four times a day	чотири рази на день
qpm	every night	щовечора
qns	quantity not sufficient	недостатня кількість
R, rt	right	правий
RA	1. right atrium; 2. rheumatoid arthritis	1.праве передсердя; 2.ревматоїдний артрит
rad	radiation ahsorbed dose	отримана доза опромінення
RAI	radioactive iodine	радіоактивний йод
RBC	1. red blood cell; 2. red blood count	1.еритроцит; 2.підрахунок еритроцитів у крові
RD	respiratory disease	дихальна недостатність
R.I.C.E.	rest, ice, compression, and elevation	спокій, холод, компресія, підняття
RNA	ribonucleic acid	рибонуклеїнова кислота
ROM	range of motion	амплітуда руху
RU	routine urinalysis	стандартний аналіз сечі
RV	right ventricle	правий шлуночок

Rx	1.prescription, 2.treatment, therapy	1.рецепт; 2.лікування
S1, S2, etc.	first, second sacral vertebra	перший, другий крижовий хребець
SD	shoulder dislocation	вивих плеча
SH	serum hepatitis	інокуляційний гепатит, гепатит В
SOB	shortness of breath	задишка
SOBOE	shortness of breath on exercise	задишка при навантаженнях
sos	if necessary	за необхідності
sp. gr.	specific gravity	питома вага
ss	half	половина
st	stage (i.e., staging of a disease)	стадія захворювання
staph	staphylococcus	стафілокок
stat	immediately	негайно
STD	sexually transmitted disease	венеричне захворювання
strep	streptococcus	стрептокок
subcu, subq	subcutaneous	підшкірний
TAH	total abdominal hysterectomy	абдомінальна гістеректомія
T	temperature	температура
T1, T2, etc.	first, second thoracic vertebra	перший, другий грудний хребець
T&A	tonsillectomy and adenoidectomy	видалення мигдалин та аденоїдів
TB	tuberculosis	туберкульоз
THA	total hip arthroplasty	артропластика стегна
THR	total hip replacement	повне заміщення тазостегнового суглобу
tid	three times a day	тричі на день
TKA	total knee arthroplasty	артропластика колінного суглобу
TKR	total knee replacement	повне заміщення колінного суглобу
TNM	tumour, nodes, metastasis	пухлина, вузли, метастази
TPN	total parenteral nutrition	повне парентеральне живлення
TPR	temperature, pulse, and respiration	температура, пульс, дихання
tr., tinct.	tincture	настоянка
TTH	thyrotrophic hormone	тиреотропний гормон
UA	urinalysis	аналіз сечі
ung	ointment	мазь
URI	upper respiratory infection	інфекція верхніх дихальних шляхів
UTI	urinary tract infection	інфекція сечовивідних шляхів
UV	ultraviolet	ультрафіолетове випромінювання
VA	visual acuity	гострота зору
VC	vital capacity	життєва місткість легенів
VD	venereal disease	венеричне захворювання
VF	visual field	поле зору
VHD	ventricular heart disease	шлуночковий порок серця
VLDL	very-low-density lipoprotein	ліпопротеїн дуже низької щільності
VSD	ventricular septal defect	дефект міжшлуночкової перегородки
WBC	white blood cell; wbite blood count	лейкоцит; лейкоцитарний аналіз крові
WT	Wassermann test	реакція Вассермана
wt	weight	вага
w / v	weight by volume	об'ємна вага
XX	female sex chromosomes	жіноча хромосома
XY	male sex chromosomes	чоловіча хромосома

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Навчальне видання

Гошовська Л. М.

Професійна англійська мова для студентів спеціальності «Фізична реабілітація»

Підписано до друку 23.08.2016 р.
Формат 60x84 1/16. Папір офсетний.
Гарнітура «Times New Roman». Друк на різографі.
Умовн. друк. арк. 11,63. Обл.-вид. арк. 10,56.
Наклад 300 прим. Зам. № 2030.

Друк: ТзОВ «Компанія "Манускрипт"»
вул. Руська, 16/3, м. Львів, 79008
тел./факс: (032) 235-51-40

Свідоцтво про внесення суб'єкта видавничої справи
до державного реєстру видавців, виготівників і розповсюджувачів
видавничої продукції серія ДК № 3628 від 19.11.2009 р.

ПРОФЕСІЙНА АНГЛІЙСЬКА МОВА
для студентів спеціальності «фізична реабілітація»