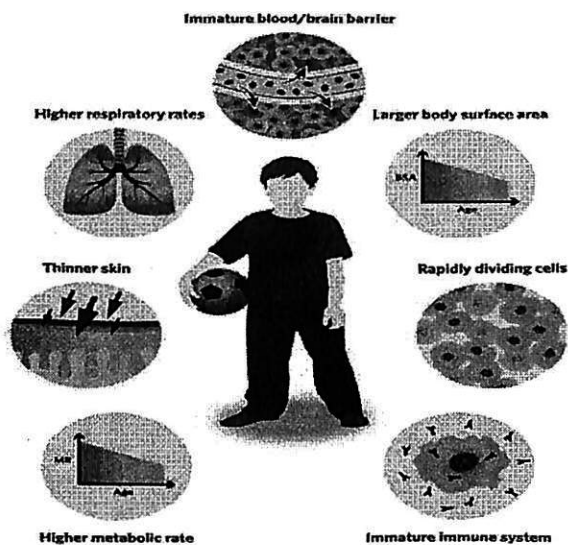


88
L-96

MINISTRY OF EDUCATION AND SCIENCE OF THE
REPUBLIC OF KAZAKHSTAN

SULEYMAN DEMIREL UNIVERSITY



S.LUKASHOVA

**PRACTICUM IN DEVELOPMENTAL PHYSIOLOGY AND
SCHOOL HYGIENE**

STUDENTS ACTIVITY BOOK

Almaty

2016

Reviewer:

K.A. Syzdykov – assistant professor of Suleyman Demirel University, cand. of pedagogical sciences

S.Lukashova

Practicum in Developmental Physiology and School Hygiene: students activity book /Almaty: Suleyman Demirel University, 2016. – 35p.

This practicum consists of specially designed exercises for students individual work and aims at training students skills and habits in understanding and implementing the knowledge in real life personally and professionally. The topics covered reflect the course lectures such as physiological characteristics of schoolchildren/adolescents and hygiene rules of blood , circulation, nervous system, respiration, digestion , excretion , muscular-skeletal , immune and reproduction systems.

This students activity book is intended for all the students at pedagogical faculties of higher education institutions .

Оқу құралы Сулейман Демірел атындағы университеттің оқу әдістемелік Кеңесінің №1 хаттамасы, 25.08.2015 жылғы отырысында баспаға ұсынылған.

кашова С.П., 2016

ы университет, 2016

CONTENT

1. Introduction into Developmental Physiology and School Hygiene. General view of the body. The body organization.....4
2. The blood. Developmental aspects and school hygiene.....7
3. The Circulation . Developmental aspects and school hygiene.....9
4. The Nervous system . Developmental aspects and school hygiene.....12
5. The Sensory system. Developmental aspects and school hygiene.....16
6. The Respiration. Developmental aspects and school hygiene.....19
7. The Digestion. Developmental aspects and school hygiene.....21
8. Energy supply of the body. Developmental aspects and school hygiene of nuitrition24
9. The Excretion . Developmental aspects and school hygiene.....26
- 10.The Musculoskeletal System. Developmental aspects and school hygiene.29
- 11.Microbes and Disease .The Immune System.....32
- 12.The Reproductive System. Developmental aspects and school hygiene.....34

ности на ц...					
учебный год.					
риат					
КОЛИЧЕСТВО БАЗОВЫХ И				Учебная литература	
профилирующих					
Б-базовая	II-профилирующая	Всего	Обеспечен		
			ность		
			дисциплин		
			Количество		
			дисциплин		
			%		

Activities on Lecture 1. Introduction into Developmental Physiology and School Hygiene. General view of the body. The body organization

Physiology Study Resources:

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/introduction-to-human-anatomy-and-physiology-1/overview-of-anatomy-and-physiology-30/defining-physiology-281-5972/>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/introduction-to-human-anatomy-and-physiology-1/life-31/survival-needs-283-5203/>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/cellular-structure-and-function-3/organelles-45/>

Exercise 1.

A) Complete the following chart:

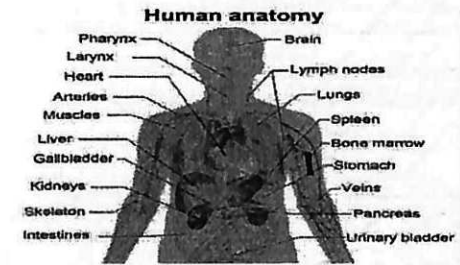
Name of the organ system of the body	Chief organ(s) it represents	Short characteristics of functions of these organs
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		

B) Identify the eight minimal physiological requirements for survival:

- 1) Air: Consisting of oxygen within a particular range of pressure, concentration, and purity is vital to survival.
- 2) _____
- 3) _____
- 4) _____
- 5) _____

- 6) _____
- 7) _____
- 8) _____

DIAGRAM 1 External divisions and internal organs

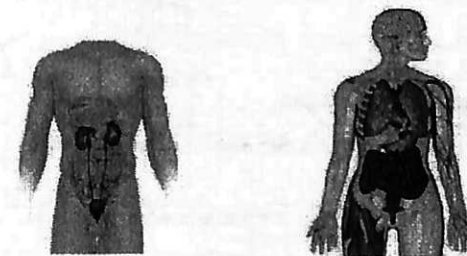


C) Use diagram 1 below and name and locate the chief external/internal divisions of the body.

Name and locate the internal organs :

Male

Female



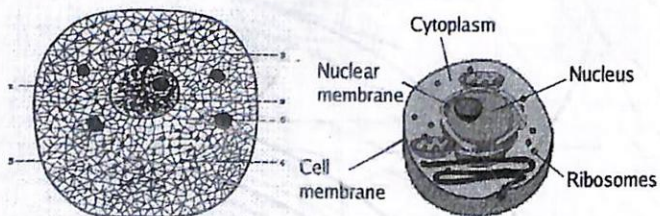
D) Complete the following chart:

Cell parts	Functions
1. Protoplasm 2. Cytoplasm 3. nucleus 4. attraction sphere	
5. organelles: cell membrane endoplasmic reticulum golgi apparatus lysosomes	

peroxisomes mitochondria	
6.lymph	
7.intercellular material	
Name of the process	importance
1.cell division	
2.absorption	
3.assimilation	
4.excretion	
Maintenance of life	Requirements:
Main physiological problems	description
1.internal	
2.external	

DIAGRAM 2 .Diagram of a typical cell (after Wilson).

E) Use diagram 2 below and name and locate the chief distinct parts of the cell.(1-6)



Activities on Lecture 2. The blood. Developmental aspects and school hygiene

Physiology Study Resources:

<https://www.boundless.com/physiology/>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/blood-17/overview-of-blood-164/physical-characteristics-and-volume-825-1945/>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/blood-17/overview-of-blood-164/functions-of-blood-826-1308/>

Exercise 2

A)Complete the following chart:

Composition of the blood	Functions
1. Blood vessels	
2. A)The plasma B)water	
3. the red corpuscles/cells (Erythrocytes)	
4. white corpuscles/cells (leucocytes)	
5.platelets(Thrombocyte)	
Name of the process	purpose
coagulation	
quantity of the blood	Adults- Adolescents- Children-
Functions of the blood	1. 2. 3. 4. 5.
Changes of the blood:	Adult man /woman 1. 2. 3. Adolescents 1. 2. 3. Children 1. 2. 3.
Blood diseases	

Hygiene of blood	

DIAGRAM 2.

COMPOSITION OF THE BLOOD



Reflection page

What I have known about circulation:

1. _____
2. _____
3. _____

What I have learned about circulation:

1. _____
2. _____
3. _____
4. _____
5. _____

My Short/long-term objectives: strategies to maintain blood healthy.

1. _____
2. _____
3. _____
4. _____
5. _____

Activities on Lecture 3. The Circulation . Developmental aspects and school hygiene.

Physiology Study Resources:

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/the-cardiovascular-system-blood-vessels-19/>

<https://www.boundless.com/physiology/cardiovascular-system/heart/heart-anatomy/>

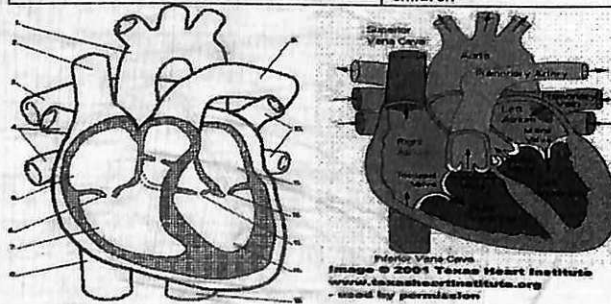
<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/the-cardiovascular-system-blood-vessels-19/development-of-blood-vessels-188/aging-and-the-cardiovascular-system-935-11117/>

Exercise 3.

A) Complete the following chart:

Organs of the circulation	Functions
1. The heart	
2. The arteries	
5. the veins	
6. the capillaries	
Structure of the heart	purposes
Auricles (atriums)	
ventricles	
valves	
Layers of the heart	purposes
endocardium	
myocardium	
epicardium	
pericardium.	
Hygiene of the heart	Requirements

Heart diseases	Hygiene requirements
Hypertension	
hypotension	
Arrhythmias	
atherosclerosis	
INFARCT DEVELOPMENT	
Heart growth / weight	Adults- Adolescents- Children-
Heart pulse according to age	Adults- Adolescents- Children-
Blood pressure according to age	Adults- Adolescents- Children-



B) Using diagram 4 below locate all constituent parts of the heart

- | | |
|----|-----|
| 1) | 9) |
| 2) | 10) |
| 3) | 11) |
| 4) | 12) |
| 5) | 13) |
| 6) | 14) |
| 7) | 15) |
| 8) | |

Reflection page

What I have known about circulation:

1. _____
2. _____
3. _____

What I have learned about circulation :

1. _____
2. _____
3. _____
4. _____
5. _____

My Short/long-term objectives: strategies to maintain heart, blood vessels, and healthy circulation.

1. _____
2. _____
3. _____
4. _____
5. _____

School hygiene

<i>Recommendations for schoolchildren</i>	<i>Recommendations for adolescents</i>

Activities on Lectures 4-5. The nervous system . Developmental aspects and school hygiene.

Physiology Study Resources:

<https://www.boundless.com/physiology/http://>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/the-central-nervous-system-cns-12/>

www.enchantedlearning.com/subjects/anatomy/brain/label/lateralbrain/label.shtml

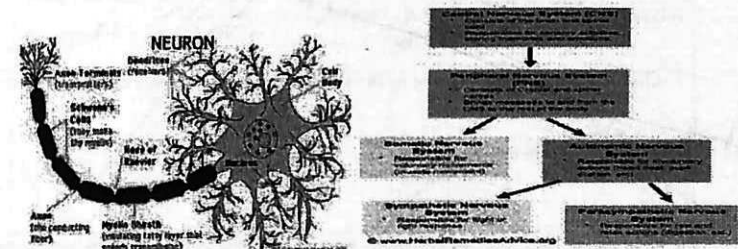
Exercise 4

A) Complete the following chart:

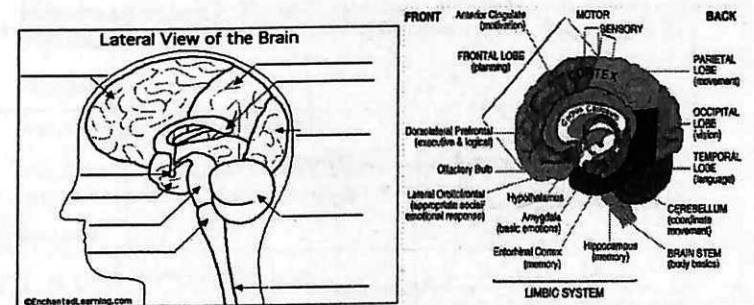
Parts of nervous system	Their main functions
1.	
2.	
3.	
4.	
Parts of a neuron	Main functions
Divisions of nervous system	Parts belonging to these divisions and location
1. CNS	
2. PNS	
Brain parts (forebrain)	Functions
1.	
2.	
3.	
4.	
Cerebral cortex lobes	Functions
1.	
2.	
3.	
4.	
PNS divisions	Functions
1.	
2.	
ANS divisions	Functions

1.	
2.	
Developmental characteristics of Nervous system in : Children Adolescence adults	
Brain disorders	Attention deficit hyperactivity disorder- Brain tumor- Aphasia- Amnesia- Alzheimer's disease

DIAGRAM 4. The structure of neuron and nervous system



B) Complete the lateral view of the brain:



Exercise 5.

C) Complete the following chart:

1. In what respect is the hygiene of the nervous system the hygiene of the entire body?
2. Of what value in the hygiene of the nervous system is the power of self-control? How is the habit of self-control formed?
3. Name several forms of activity that waste the nervous energy.
4. Name several influences that react unfavorably on the nervous systems of children.
5. How may too much reading prove injurious to the nervous system?
6. What forms of physical exercise are beneficial to the brain worker?
7. Why is the use of alcohol even in small quantities to be regarded as a dangerous practice?
8. Name several causes of nervousness.
9. What are the unanswerable arguments for preventing the use of tobacco by the young?
10. Why do cigarettes have a more harmful effect upon the body than other forms of tobacco?

Reflection page

What I have known about nervous system:

1. _____
2. _____
3. _____

What I have learned about nervous system:

1. _____
 2. _____
 3. _____
 4. _____
 5. _____
- My Short/long-term objectives: strategies to maintain healthy nervous system.*
1. _____
 2. _____
 3. _____
 4. _____
 5. _____

School hygiene

<i>Recommendations for schoolchildren</i>	<i>Recommendations for adolescents</i>

Activities on Lecture 6. The Sensory system. Developmental aspects and school hygiene.

Physiology Study Resources:

<https://www.boundless.com/physiology/>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/special-senses-vision-hearing-taste-and-smell-15/>

Exercise 6

A) Complete the following chart:

Sensory receptors	Their main functions

5. _____

Short/long-term objectives: strategies to maintain sensory system.

1. _____

2. _____

3. _____

4. _____

5. _____

School hygiene

Recommendations for schoolchildren	Recommendations for adolescents

3.pharynx	
4.larynx	
5.trachea	
6.bronchi/bronhial tubes	
7.alveoll	
processes	Purpose
1.External Respiration: a)Inspiration b)Expiration 2.Internal respiration 3. Interchange of gases in the lungs	
Developmental aspects: growth and capacity	

Activities on Lecture 7. The Respiration. Developmental aspects and school hygiene.

Physiology Study Resources:

<https://www.boundless.com/physiology/>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/the-respiratory-system-22/>

Exercise 7.

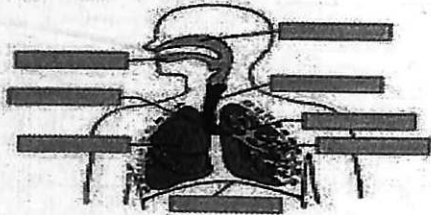
A) Complete the following chart:

Composition of the respiratory organs	Functions
1.lungs:	
2.nostrils	

Respiration diseases	Hygiene requirements
asthma	
tuberculosis	
Lung cancer	
Hygiene of respiration	Requirements:
pneumonia	

B) Using diagram 1 below locate all constituent parts of the lungs.

DIAGRAM 1.



Reflection page

What I have known about respiration:

1. _____
2. _____
3. _____

What I have learned about respiration:

1. _____
2. _____
3. _____
4. _____
5. _____

Short/long-term objectives: strategies to maintain respiratory organ system.

1. _____
2. _____
3. _____
4. _____
5. _____

School hygiene

Recommendations for schoolchildren	Recommendations for adolescents

--	--

Activities on Lecture 8. The Digestion. Developmental aspects and school hygiene.

Physiology Study Resources:

<https://www.boundless.com/physiology/>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/the-digestive-system-23/>

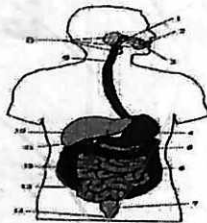
Exercise 8.

A) Complete the following chart:

Nutrients	Foods they are found and purposes
1. Proteids	
2. carbohydrates	
3. fats	
4. mineral salts	
5. water	
Nutrients that do not dissolve in water	Digestive fluids (ferments) that do this job
1.	1.
2.	2.
3.	3.
	4.
	5.
Digestive processes	Digestive organs involved and Purposes
1. Mastication	
2. Insalivation	

3. Deglutition	
4. Stomach digestion	
5. Intestinal digestion	
Developmental aspects	1.Schoolchildren and 2.adolescents
Teeth	1. 2.
Stomach	
Pancreas	
Liver	
Digestive system diseases	Description/Hygiene rules
1. Hepatitis	
2. Appendicitis	
3. Lactose intolerance	
4. Gallstones	
5. Peritinitis	

B) Using diagram 6 below and locate all constituent parts of the digestion.



Reflection page

What I have known about digestion:

1. _____
2. _____

3. _____

What I have learned about digestion:

1. _____
2. _____
3. _____

Short/long-term objectives: strategies to maintain digestive system.

1. _____
2. _____
3. _____
4. _____
5. _____

School hygiene

Recommendations for schoolchildren	Recommendations for adolescents

Activities on Lecture 9. Energy supply of the body. Developmental aspects and school hygiene of nutrition .

<https://www.boundless.com/physiology/>


<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/nutrition-metabolism-and-temperature-regulation-24/>

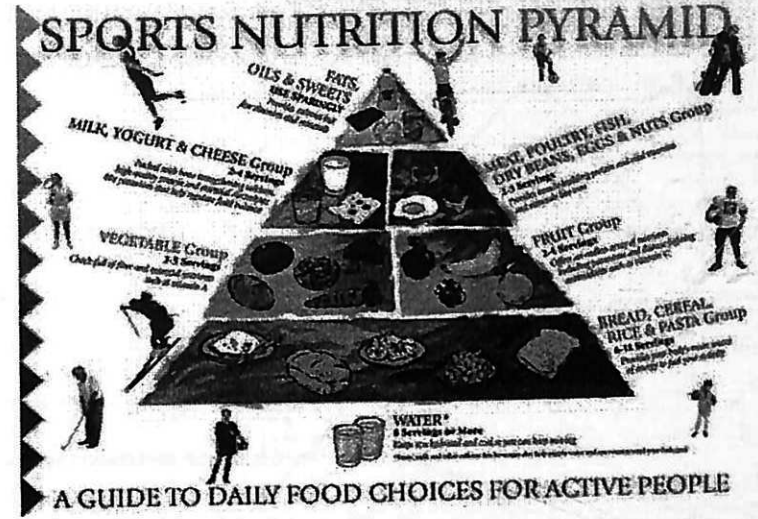
Exercise 9.

A) Complete the following chart:

Types of energy	Description

Kinds of bodily energy	Description
Principles of energy storage	Description
Hygiene of energy supply	Requirements

Vitamin	Functions	Sources
A	Healthy teeth, skin, and eyes	Eggs, meat, milk, cheese, dark green leafy vegetables, squash, carrots
B	Helps body use food energy, digest proteins, function of central nervous system, digestion and metabolism	Lean meats, eggs, fish, dairy products, soybeans, yeast, broccoli, lean beef, cabbage, whole grains *note there are a variety of B vitamins; this is a summary
C	Helps immune system, helps wound healing, helps absorb iron	Citrus fruits, green peppers, strawberries, tomatoes, broccoli, sweet and white potatoes, cantaloupe
D	"sunshine vitamin" - helps absorb calcium (for healthy bones and teeth)	Dairy products, fish, oysters, sunshine 
E	Protects body against damage from free radicals, helps form red blood cells (to carry oxygen)	Wheat germ, corn, nuts, seeds, olives, spinach, green leafy vegetables, vegetable oils (sunflower oil, soybean oil)
K	Blood clotting, strong bones	Cabbage, cauliflower, spinach, soybeans



Reflection page

What I have known about energy supply

1. _____
2. _____
3. _____

What I have learned about energy supply :

1. _____
2. _____
3. _____
4. _____
5. _____

My Short/long-term objectives: strategies to maintain energy:

1. _____
2. _____
3. _____

4. _____

5. _____

School hygiene of nutrition

<i>Nutritional tips for schoolchildren</i>	<i>Nutritional tips for adolescents</i>

Activities on Lecture 10. The Excretion . Developmental aspects and school hygiene.

Physiology Study Resources:

<https://www.boundless.com/physiology/>

<http://www.docstoc.com/docs/77140702/Excretion-vs-Elimination>

<http://www.docstoc.com/docs/476548/The-Human-Excretory-System--PowerPoint>

Exercise 10

B) Using diagram 8 below locate all constituent parts of the kidney

C) Complete the following chart:

Excretory system organs	Their main functions
2. Kidneys	
2.lungs	
3.skin	
4.large intestine	
Secondary organ of excretion	Its importance for excretion
1.liver	
2.liver	
3.liver	
4.liver	
Primary organ of excretion	Anatomy :Three sections
kidney	1.

	2. 3.
Urinary system	Their functions
Renal artery	
Renal vein	
Nephron	
ureter	
Urinary bladder	
urethra	
Urinary system common diseases	Short description/danger
Developmental differences	Kidneys in children Kidneys in adolescents
Hygiene of excretory system	Requirements

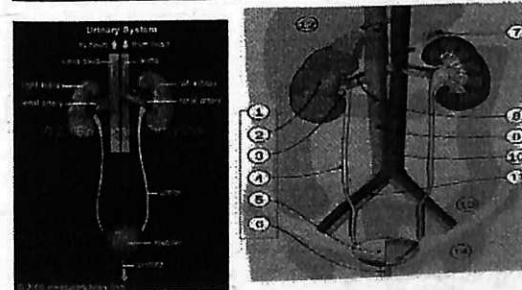


DIAGRAM 1 . Label the urinary system.

Reflection page

What I have known about excretion and elimination :

1. _____
2. _____
3. _____

What I have learned about excretion and elimination :

1. _____
2. _____
3. _____
4. _____
5. _____

Short/long-term objectives: strategies to maintain excretory organ system.

1. _____
2. _____
3. _____
4. _____
5. _____

School hygiene

<i>Recommendations for schoolchildren</i>	<i>Recommendations for adolescents</i>

Activities on Lecture 11. The Musculoskeletal System. Developmental aspects and school hygiene.

Physiology Study Resources:

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/the-skeletal-system-7/>

<https://www.boundless.com/physiology/>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/the-muscular-system-10/>

Exercise 11

A) Complete the following chart:

Parts of skeletal system	Their main functions
1.	
2.	
3.	
4.	
Divisions of skeletal system	Parts of skeleton belonging to these divisions
1. axial skeleton	
2. appendicular skeleton	
Types and classification of bones	Functions of bones
Types of muscles	Functions
Musculoskeletal system diseases	Short description/danger

Developmental differences 1. Schoolchildren 2. Adolescents	
Hygiene of Musculoskeletal system	Requirements

DIAGRAM 1.

HOW THE BODY WORKS

Skeleton
 Description: Pits out and label the parts of the skeleton.

The three types of muscle tissue

Skeletal Muscle, Tendon
 Skeletal muscle tissue contractions move the body by pulling on bones of the skeleton, making it possible for us to walk, dance, tie an apple, or play the ukulele.

Cardiac Muscle Tissue
 Cardiac muscle tissue contractions in the heart propel blood through the blood vessels.

Smooth Muscle Tissue
 Smooth muscle tissue contractions move fluids and acids along the digestive tract and regulate the diameter of small arteries, among other functions.

WORD BANK
 Iliac Skull Radius Ulna
 Tibia Cervical Spinal column Sternum
 Skull Femur

Reflection page

What I have known about Musculoskeletal System :

- _____
- _____

3. _____

What I have learned about Musculoskeletal System :

- _____
- _____
- _____
- _____
- _____

Short/long-term objectives: strategies to maintain Musculoskeletal System

- _____
- _____
- _____
- _____
- _____

School hygiene of physical activity

Recommendations for schoolchildren	Recommendations for adolescents

Activities on Lecture 12. Microbes and Disease .The Immune System.

Physiology Study Resources:

<https://www.boundless.com/physiology/>

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/the-immune-system-21/>

<http://www.innerbody.com/image/lympov.html>

Exercise 12

A) Complete the following chart:

Types of microbes	Short definition
1.	
2.	
3.	
Ways microbes spread (transmission)	Short description
1.	
2.	
3.	
4.	
Ways to prevent (stop) the disease	1. 2. 3.
Definition of immune system	Three lines of defense by immune system (just name)
White blood cells jobs	1. 2.
Two types of immunity	Explanation
1. active	
2. passive	
Hygienic living	Tips for school teachers

DIAGRAM 1.



Reflection page

What I have known about immune system:

1. _____
2. _____

What I have learned about immune system :

1. _____
2. _____
3. _____
4. _____

Short/long-term objectives: strategies to maintain immune system.

1. _____
2. _____
3. _____
4. _____

School hygiene

Recommendations for schoolchildren	Recommendations for adolescents



Activities on Lecture 13. The reproductive system. Developmental aspects and school hygiene.

Physiology Study Resources:

<https://www.boundless.com/physiology/textbooks/boundless-anatomy-and-physiology-textbook/the-reproductive-system-27/>

<http://www.engenderhealth.org/res/onc/sti/under/sti2p4.html>

Exercise 13

A) Complete the following chart:

Female Internal Reproductive Organs	Functions
1. vagina	
2. uterus	
3. ovaries	
male reproductive system	Functions
1. the testicles	
2. the penis	
3. the duct system	
4. the accessory glands	
Connection with other systems	1. circulatory system 2. nervous system 3. endocrine system
Puberty: developmental aspects	description
Time , hormones , changes	Girls Boys
Disorders of the reproductive system	examples
1. cancers	
2. infections	
3. environmental factors/ congenital abnormalities	
Hygienic living	Tips for school teachers
1.	
2.	
3.	
4.	

5.	
6.	
7.	
8.	

DIAGRAM 1.

DIAGRAM 2. Male reproductive system

Female Reproductive System

