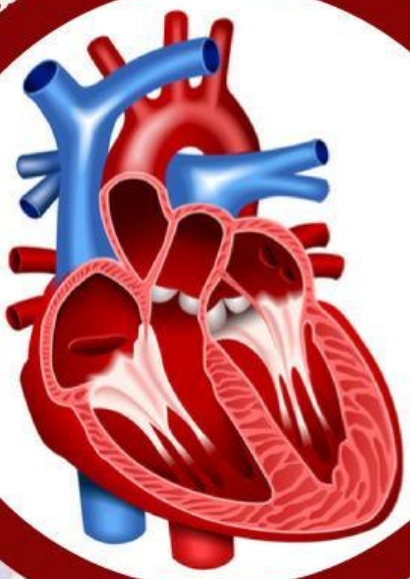
# STUDENT WORKSHEETS

## Blood Circulation System

## Live Worksheets

LECTURER:
Prof.Dr. Wahono Widodo, M.Si.

OWNER:
Wahyu Satriyo Wibowo



For grade 8 semester 1

Name

# LEARNING OUTCOMES

Students are able to conduct analysis to find the relationship between organ systems and their functions as well as abnormalities and disorders that arise in certain organ systems (digestive system, circulatory system, respiratory system, and reproductive system).

# LEARNING OBJECTIVES

1. Students are able to describe the circulatory system
2. Students are able to identify organs in the circulatory system
3. Students are able to identify the type of blood circulation
4. Students are able to analyze diseases of the circulatory system
5. Students are able to count a person's pulse
6. Students are able to analyze the influence of factors that affect the frequency of a person's pulse

# STUDY INSTRUCTIONS

1. Students pray before working on the circulatory system students worksheet
2. Students read the circulatory system students worksheet work instructions
3. Students write their identity on the first page of the circulatory system students worksheet
4. Students read the identification of phenomena in the Pulse Frequency students worksheet
5. Students read material on circulatory system students worksheet learners write down their experiences related to the circulatory system
6. Students fill in the questions available on the circulatory system students worksheet

- Students read practicum procedures on Pulse Frequency Students Worksheet
- Students do practicum on Pulse Frequency in groups Students Worksheet
- Students fill in the data and analyze the data generated in the Pulse Frequency practicum
- Participants were educated to fill in the enrichment available in the Pulse Frequency Students Worksheet
- Students ask the teacher if they have difficulty filling in the Students worksheet

## DESCRIPTION OF LEARNING ACTIVITIES

Learning activities 1 ( 2CH = 80 minutes)

## INTRODUCTION

1. The teacher opens the learning activity by saying greetings and praying
2. The teacher conducts attendance by calling the students' names one by one
3. The teacher asks students to observe events related to the circulatory system at the introduction of the students worksheet

## CORE ACTIVITIES

1. The teacher asks students to form a group of 4
2. Students work on students worksheet in groups for 60 minutes and followed by delivering answers for 20 minutes.
3. Student representatives from each group read the results of the answers from the students worksheet that had been done

## CONCLUDING

1. The teacher asks students to sum up the material learned today.
2. The teacher delivered an evaluation related to today's learning
3. Teachers appreciate their students
4. The teacher closes the teaching and learning activities with prayers and greetings

---

# STUDENT WORKSHEETS 1
# CIRCULATION SYSTEM

## INTRODUCTION

In 2012, another footballer, Fabrice Muamba, collapsed on the pitch and his heart stopped beating for 78 minutes. Marc-Vivien Foe died while playing for Cameroon at the age of 28. Former England defender Ugo Ehiogu died in 2017 at the age of 44. Extreme exercise puts athletes at increased risk because their activity puts pressure on their hearts to work harder - and that is more likely to trigger problems," said Dr Zafar Iqbal, head of sports medicine at Crystal Palace Football Club. "But this is a very rare incident," he added.
Source : BBC.com

# STUDENT WORKSHEETS 1
# CIRCULATION SYSTEM

## MATERIAL

- **Circulatory System**

  The circulatory system is a collection of several organs that have the same function that form an organ system whose function is to circulate blood and other important substances throughout the body.

- **Blood**

  Blood is a substance that is flowed by blood vessels to the part of the body through which it passes. Blood serves to deliver oxygen, nutrients, hormones, and metabolic results throughout the body. Blood consists of 4 main components, namely

  - Blood plasma which is composed of 90% water and other solutes.
  - Erythrocytes (red blood cells) and function to circulate oxygen throughout the body,
  - Leukocytes (white blood cells) function to fight germs that enter the body,
  - Platelets (pieces of blood) which function to stop bleeding by producing fibrin protein.

- **Organs in the circulatory system**

The heart and blood vessels are organs in the circulatory system. Blood vessels serve as circulatory channels. The heart is an organ that has a very important role in the human circulatory system. The heart functions to pump blood to flow throughout the body and receive blood from the lungs to flow again.

# STUDENT WORKSHEETS 1
# CIRCULATION SYSTEM

- **Types of blood circulation**

  Blood circulation is divided into two, namely small blood circulation and large blood circulation.
  - Blood flow on small blood circulation through the heart to the lungs and back to the heart.
  - Blood flow in large blood circulation is going from the heart to the whole body except the lungs and back to the heart

- **Diseases of blood circulation**

  As in other organ systems in the body, the circulatory system is also likely to experience interference. The disorder can be caused by a person's lifestyle or heredity

- **Diseases of blood circulation**

  A person's pulse frequency can be influenced by several factors such as:

  1. Age
  2. Gender
  3. Physical Activity

## ACTIVITY 1

**Observing differences in blood vessels**

The circulatory system in the human body needs channels that are used to circulate blood throughout the body. Channels in the circulatory system are called blood vessels. Blood vessels are generally divided into 2, namely arteries and veins. What is the difference between these two blood vessels? Watch the video to answer the questions below!

# STUDENT WORKSHEETS 1
# CIRCULATION SYSTEM

Drag your answer here

| Difference | Artery | Veins |
|---|---|---|
| Location | | |
| Walls | | |
| Direction of flow | | |
| Flowed blood content | | |
| Blood pressure | | |

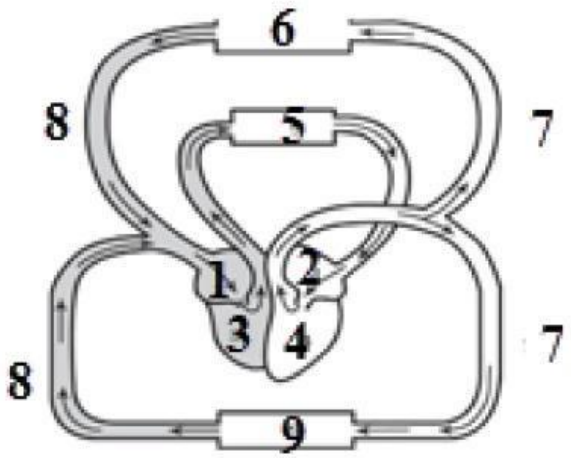
| | | | |
|---|---|---|---|
| Located on the inside of the body | Thin and less elastic walls | Blood contains O2 | Strong |
| To the heart | Blood contains CO2 | Leaving the heart | Located near the surface of the body |
| Thick and elastic walls | weak | | |

# STUDENT WORKSHEETS 1
# CIRCULATION SYSTEM

## ACTIVITY 2

Identify the type of blood circulation

The circulatory system in the human body is divided into two, namely small blood circulation and large blood circulation.




Based on the above human circulatory scheme, explain what is meant by a large circulatory system and a small circulatory system. Determine the order of the small circulatory system and the large circulatory system

Definition of large and a small circulatory system

the order of the small circulatory system

the order of the large circulatory system

# STUDENT WORKSHEETS 1
# CIRCULATION SYSTEM

## ACTIVITY 3

Analyze diseases of the circulatory system

After knowing the various organs in the circulatory system, it is necessary to know that the circulatory system can also experience ill conditions. Correctly relate the name of the disease in the circulatory system to the factor that caused the appearance of the disease.

| | |
|---|---|
| Hipotensi | Blood pressure is much lower than it should be |
| Stroke | Blood pressure is much higher than it should be |
| Anemia | The body lacks red blood cells |
| Heart Attack | Blood flow that carries a lot of oxygen cannot flow to the heart |
| Hypertensive | Brain does not get enough oxygen supply from blood vessels |

# STUDENT WORKSHEETS 1
# CIRCULATION SYSTEM

## ACTIVITY 4

count a person's pulse

- **Formulation of Problem**
  1. How does the type of activity affect the frequency of a person's pulse?
  2. How does gender affect the frequency of a person's pulse?
- **Variables**
  1. Manipulation variables
  2. Control variables
  3. Response variables
- **Tools and material**
  1. Stopwatch 1 pcs
  2. Stationery 1 pcs
- **Work procedure**

  *Measurement of pulse in a state of rest*
  1. Preparing tools and materials
  2. Condition each group member to sit in a relaxed position
  3. Condition all group members to attach the fingers of the right hand to the left wrist
  4. Turn on the stopwatch and start calculating the pulse frequency for one minute
  5. Write the results of observations on the table provided on the student worksheet

  *Normal activities and strenuous activities*
  1. preparing tools and materials
  2. Each group member goes up and down stairs for 3 minutes
  3. Condition all group members to attach the fingers of the right hand to the left wrist
  4. Turn on the stopwatch and start calculating the pulse frequency for one minute
  5. Write the results of observations on the table provided on the student worksheet

# STUDENT WORKSHEETS 1
# CIRCULATION SYSTEM

## DATA

Write down the data on the results of the experiments that have been carried out

| *No* | *Name* | *Pulse frequency per minute* | | |
|---|---|---|---|---|
| | | *Resting state* | *Normal activity state* | *Heavy activity state* |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

## ANALYSIS

Analysis of the data that has been obtained

## CONCLUTION

Write your conclution here

# STUDENT WORKSHEETS 1
# CIRCULATION SYSTEM

## ACTIVITY 5

Do the following questions carefully and thoroughly!

1) Blood is an important component of the circulatory system, following the characteristic features of blood cells:
   1.Biconcave form
   2.Every 1 mm3 contains 200,000-400,000
   3.Contains hemogobin
   4.Amoeboid moving
   5.Non-core
   What is characteristic of red blood cells is...

2) Blood flow in the small blood circulation through.

3) We can feel the pulse in our hands which causes the pulse to occur

4) The following are factors that cause changes in a person's pulse except?