

Continue Learning with FirstHope

Complete Notes on the FirstHope App

Complete subject and semesters are available on FirstHope app only.

- Get complete subject and semester notes in the FirstHope app.
- Available for B.Pharm, D.Pharm, M.Pharm and Pharm.D students.

[Click here to get the FirstHope app](#)

Join the FirstHope Telegram Channel

Join FirstHope Notes and keep up with channel updates.

[Click here to join Telegram](#)

Instagram

@firsthope.official

[Click here to follow Instagram](#)

YouTube Channel

FirstHope-Pharmacy / Live streams

[Click here to watch the YouTube channel](#)

WhatsApp Channel

Follow FirstHope on WhatsApp.

[Click here to join the WhatsApp channel](#)

FirstHope Website

firsthopenotes.com

[Click here to visit the website](#)

Cardiovascular and Integumentary Systems

Experiment 16 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To identify major cardiovascular and skin structures and relate their arrangement to circulation, protection and temperature regulation.

Principle

The heart drives pulmonary and systemic circulation. Valves favour forward flow, while vessels distribute and return blood. The integumentary system includes skin and its appendages; the epidermal barrier, dermal structures and subcutaneous tissue have distinct roles.

Requirements

- Heart, vessel and skin models; approved charts or prepared tissue slides.
- Notebook and label checklist.

Procedure

1. Orient the heart

Identify right and left sides, atria, ventricles, septa and the major vessels. Use anatomical orientation rather than the viewer's left and right.

2. Trace circulation

Trace blood from systemic veins through the right heart, lungs, left heart and aorta. Identify all four valves in order.

3. Compare vessels

Identify lumen and wall on a chart or slide. Relate arterial wall structure, venous return and thin capillary exchange surfaces to function.

4. Study skin

Identify epidermis and dermis. Locate hair follicles, sweat glands, sensory structures and blood vessels; distinguish hypodermis below the skin.

Human Anatomy, Physiology and Pathophysiology I

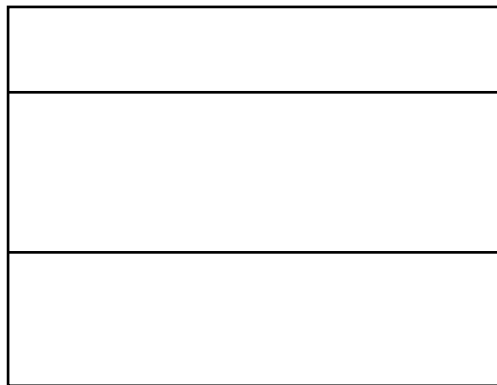
5. Relate function

Explain barrier protection, sensation, heat loss and the link between dermal blood flow and thermoregulation. Record a labelled flow sequence and a skin-layer sketch.

Blood-flow Pathway

Venae cavae → right atrium → tricuspid valve → right ventricle → pulmonary valve → pulmonary arteries → lungs → pulmonary veins → left atrium → mitral valve → left ventricle → aortic valve → aorta → systemic tissues.

Skin Layers



Epidermis - avascular outer barrier

Dermis - vessels, nerves and glands

Hypodermis - adipose tissue below skin

Simplified layers; not to scale.

Region	Structures / features	Function
Epidermis	Keratinising epithelium; no vessels	Barrier protection
Dermis	Connective tissue, vessels, nerves and appendages	Support, sensation and heat exchange
Hypodermis	Adipose and connective tissue below skin	Cushioning and insulation

Human Anatomy, Physiology and Pathophysiology I

Observations and Record

Structure	Identification	Function
Heart / valve	_____	_____
Vessel	_____	_____
Skin layer / appendage	_____	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Teaching cardiac-output calculation: heart rate 72/min $\times$ stroke volume 70 mL/beat = 5040 mL/min = 5.04 L/min. These assumed values are not measurements.
- Structural comparison: the epidermis has no blood vessels; nutrients reach it from the underlying dermal circulation.

Result

The blood-flow pathway and major valves were identified. The skin sketch labels epidermis, dermis and relevant appendages.

Precautions

- Arteries are defined by flow away from the heart, not by oxygen content.
- Do not confuse the pulmonary artery with an oxygen-rich systemic artery.
- The hypodermis is below the skin proper; use the terminology specified by the instructor.

Viva Questions and Answers**1. Which side pumps to the lungs?**

The right ventricle sends blood through the pulmonary artery.

2. Which valve lies between left atrium and ventricle?

The mitral, or bicuspid, valve.

3. How can skin participate in temperature control?

Sweating and changes in dermal blood flow influence heat exchange.

Continue Learning with FirstHope

Complete Notes on the FirstHope App

Complete subject and semesters are available on FirstHope app only.

- Get complete subject and semester notes in the FirstHope app.
- Available for B.Pharm, D.Pharm, M.Pharm and Pharm.D students.

[Click here to get the FirstHope app](#)

Join the FirstHope Telegram Channel

Join FirstHope Notes and keep up with channel updates.

[Click here to join Telegram](#)

Instagram

@firsthope.official

[Click here to follow Instagram](#)

YouTube Channel

FirstHope-Pharmacy / Live streams

[Click here to watch the YouTube channel](#)

WhatsApp Channel

Follow FirstHope on WhatsApp.

[Click here to join the WhatsApp channel](#)

FirstHope Website

firsthopenotes.com

[Click here to visit the website](#)