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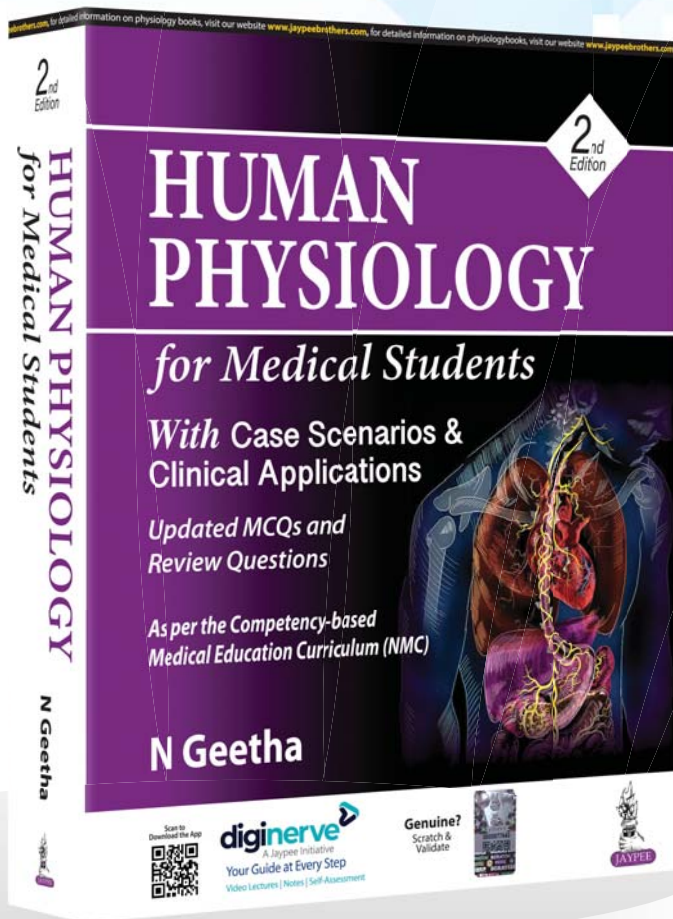
HUMAN PHYSIOLOGY

for Medical Students

*With Case Scenarios &
Clinical Applications*

Updated MCQs and Review Questions

*As per the Revised Competency-Based Medical
Education Curriculum (NMC)*



2nd
Edition

N Geetha



TOC & Sample Chapter



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Why to Buy this Book ?

- The book is based on a new competency-based medical education (CBME) syllabus.
- As the questions are more clinically oriented, the answers are relevant, pointwise, and easily understandable.
- The book includes questions and answers on all aspects of anatomy with simple and easy-to-reproduce figures, tables, and flowcharts.
- Case-based presentations in the book help in understanding of complex topics and facilitate easy retention, application to clinical cases, and easy reproducibility in examination.

FILL IN THE BLANKS/GIVE THE NORMAL VALUES/NAME THE FOLLOWING

- 1. Ion channels are transmembrane proteins that allow selective entry of various ions.
2. Proteins that form water channels in the cell membrane: Aquaporins.
3. The major protein of RBC membrane: Spectrin.
4. Part of cell membrane that mediate cellular attachment to the extracellular matrix: Integrins.
5. Molecular motors are ATPases that moves proteins, organelles and other cell parts to all parts of the cell.
6. Molecular motors that produce motion along microtubules: Dyneins and kinesins.
7. Molecular motors that produce motion along actin: Myosin molecules.
8. Molecular motor involved in the movement of cilia and flagella: Dynein.
9. During cell division, mitotic spindle is formed by microtubules.
10. Organelle where protein synthesis occur: Rough endoplasmic reticulum.
11. Organelle concerned with steroid synthesis, synthesis of fatty acids and detoxification of substances: Smooth endoplasmic reticulum.
12. The power houses of cells: Mitochondria.
13. Enzymes involved in citric acid cycle and oxidative phosphorylation are present in mitochondria.
14. DNA synthesis occurs in which phase of cell cycle? S phase.
15. Percentage of body weight constituted by water of body weight: 60%.
16. Percentage of ECF constituted by plasma: 25%.
17. Percentage of body weight constituted by intracellular fluid: 40%.
18. The percentage of body weight constituted by proteins in an average young adult: 10%.
19. ECF volume is measured using inulin.
20. Plasma volume is measured using Evan's blue (T-1824).
21. Most abundant anion in the ICF: protein.
22. Most abundant anion in ECF: Cl-.
23. The potential difference across the inside and outside of cell membrane under resting condition is called resting membrane potential (RMP).
24. Ions responsible for the development of RMP: K+.
25. RMP of a nerve fiber: 70 mV.
26. Activity of Na+K+ pump is stimulated by increased intracellular Na+ concentration and inhibited by ouabain and digoxin.

Fill in the blanks/Give the normal values/ Name the following are given at the end of each section.

Clinical Case Scenarios are given to highlight the complexity of case-based learning.



CLINICAL CASE SCENARIO

1. A 35-year-old lady complains of muscle fatigue on exertion, generalized skeletal muscle weakness especially of the extremities and drooping of eyelids. There is improvement of symptoms after a period of rest. The symptoms worsen towards evening. She gives a history of autoimmune disorder in the family. To confirm the diagnosis, the physician treats her with an anticholinesterase inhibitor. She reports that there is considerable relief in her symptoms.
a. What is your probable diagnosis?
b. Explain the pathophysiology of the condition.
c. Name the drugs used for the treatment of the above condition stating their mechanism of action.
d. With the help of a diagram, explain the mechanism of transmission of impulse at the neuromuscular junction.

Platelet Defects

Quantitative defect or thrombocytopenia: In thrombocytopenia, bleeding time is prolonged when platelet count is less than 1 lakh/mm³ of blood, easy bruising occurs when the platelet count is less than 50,000/mm³ and spontaneous bleeding occur when the count is less than 20,000/mm³ of blood.
Primary thrombocytopenic purpura or idiopathic thrombocytopenic purpura (ITP) may be due to autoimmunity



Fig. 18.9: Purpura.

Clinical Photographs and Hand-drawn diagrams are included to enhance visual learning.

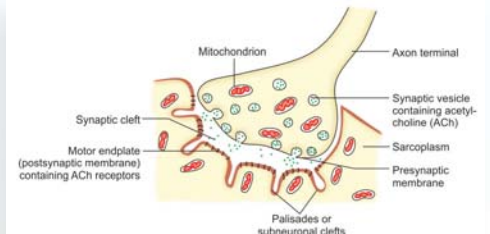


Fig. 8.1: Structure of neuromuscular junction.

Key information is highlighted using Tables.

Table 18.2: Differences between skeletal muscle and visceral smooth muscle. Table 18.3: Differences between cardiac and visceral smooth muscle.

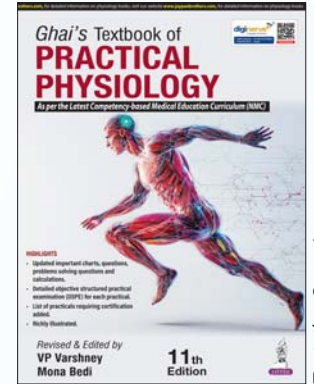
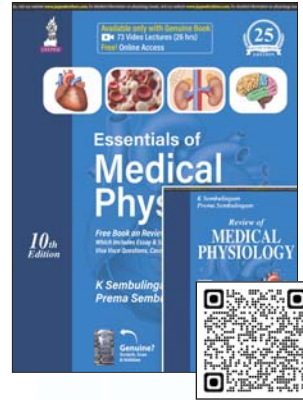
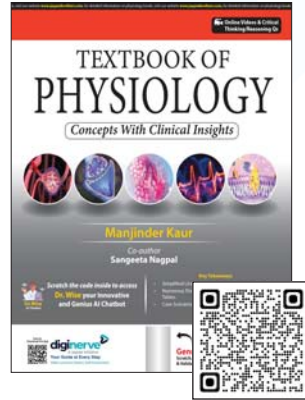
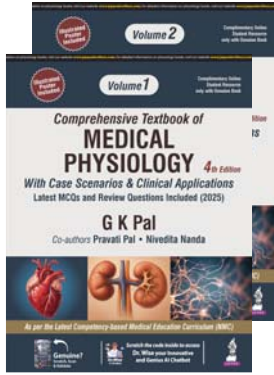
Important Questions section with multiple-choice and short-answer questions related to physiology and hematology.

GIVE THE PHYSIOLOGICAL BASIS

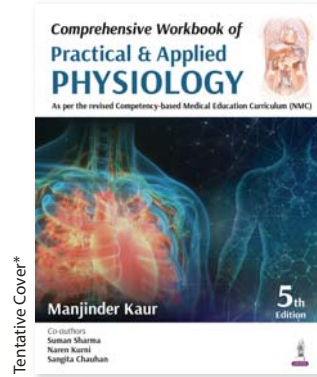
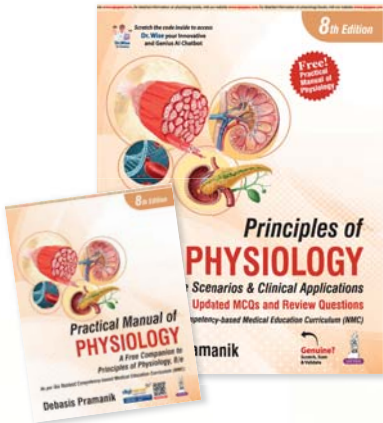
IMPORTANT DIAGRAMS

Special Sections are given at the end of the book for -
- Review Questions
- Physiological Basis
- Important Diagrams

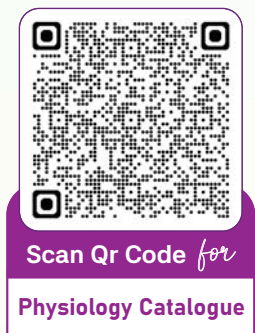
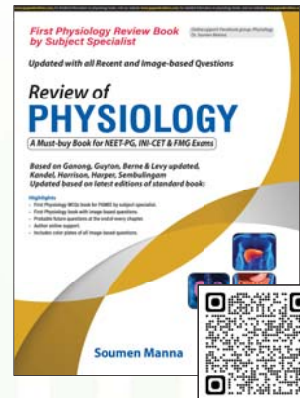
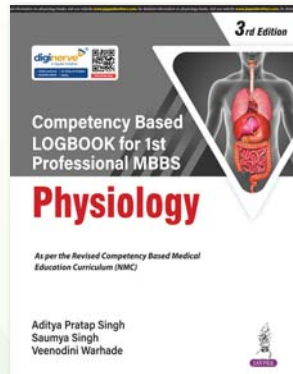
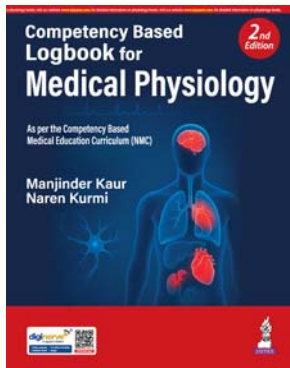
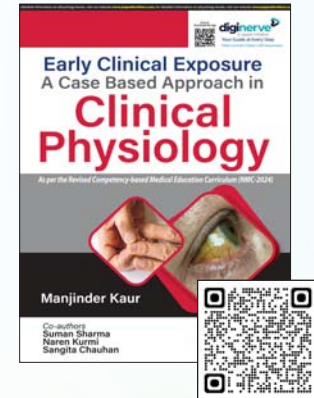
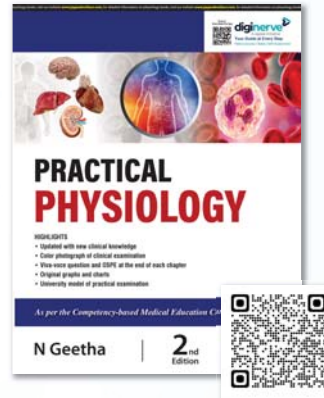
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