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*For Richard
And
for Dan and Rebecca*



Preface

The subject matter of physiology is the foundation of the practice of medicine, and a firm grasp of its principles is essential for the physician. This book is intended to aid the student preparing for the United States Medical Licensing Examination (USMLE) Step 1. It is a concise review of key physiologic principles and is intended to help the student recall material taught during the first and second years of medical school. It is not intended to substitute for comprehensive textbooks or for course syllabi, although the student may find it a useful adjunct to physiology and pathophysiology courses.

The material is organized by organ system into seven chapters. The first chapter reviews general principles of cellular physiology. The remaining six chapters review the major organ systems—neurophysiology, cardiovascular, respiratory, renal and acid–base, gastrointestinal, and endocrine physiology.

Difficult concepts are explained stepwise, concisely, and clearly, with appropriate illustrative examples and sample problems. Numerous clinical correlations are included so that the student can understand physiology in relation to medicine. An integrative approach is used, when possible, to demonstrate how the organ systems work together to maintain homeostasis. More than 130 full-color illustrations and flow diagrams and more than 50 tables help the student visualize the material quickly and aid in long-term retention. The inside front cover contains “Key Physiology Topics for USMLE Step 1.” The inside back cover contains “Key Physiology Equations for USMLE Step 1.”

Questions reflecting the content and format of USMLE Step 1 are included at the end of each chapter and in a Comprehensive Examination at the end of the book. These questions, many with clinical relevance, require problem-solving skills rather than straight recall. Clear, concise explanations accompany the questions and guide the student through the correct steps of reasoning. The questions can be used as a pretest to identify areas of weakness or as a post test to determine mastery. Special attention should be given to the Comprehensive Examination, because its questions integrate several areas of physiology and related concepts of pathophysiology and pharmacology.

New to this edition:

- Addition of new full-color figures
- Updated organization and text
- Expanded coverage of cellular, respiratory, renal, gastrointestinal, and endocrine physiology
- Increased emphasis on pathophysiology

Best of luck in your preparation for USMLE Step 1!

Linda S. Costanzo, Ph.D.

