

Contents

Preface

Part I

Purpose of Biochemical Monitoring of Training

Chapter 1 Introduction: Necessity and Opportunity

Historical Remarks

Principles and Design of Training Monitoring

Summary

Chapter 2 Metabolic Adaptation in Training

Role of Cellular Adaptation in Training-Induced Changes

Adaptive Protein Synthesis

Metabolic Control

Acute and Long-Term Adaptation

Improved Metabolic Control

Summary

Part II

Tools for Biochemical Monitoring of Training

Chapter 3 Metabolites and Substrates

Muscle Biopsy

Blood Metabolites

Oxidative Substrates in Blood

Microdialysis

General Remarks

Summary

Chapter 4 Methodology of Hormone Studies

General Methodological Considerations

Interpreting Results

Summary

Chapter 5 Hormones As Tools for Training Monitoring

Sympathoadrenal System

Pituitary-Adrenocortical system

Pancreatic Hormones

Growth Hormone and Growth Factors

Thyroid Hormones

Hormones Regulating Water and Electrolyte Balance

Sex Hormones

Endogenous Opioid Peptides
Summary

Chapter 6 Hematological and Immunological Indexes and Water- Electrolyte Balance

Hematological Indexes
Immunological Indexes
Water and Electrolyte Equilibrium
Summary
General Conclusion to Part II

Part III

Actualization of Biochemical Monitoring of Training

Chapter 7 Feedback From Training-Induced Effects

Muscle Energetics and Exercise Classification
Anaerobic Energetics
Aerobic Energetics
Monitoring Energy Production Mechanisms
Assessing Other Training Effects
Summary

Chapter 8 Evaluating Training Workloads

Training Session Workout
Training Microcycles
Summary

Chapter 9 Assessing Changes in Adaptivity for Optimizing Training Strategies

Changes in Adaptivity in Training
Hormonal and Metabolic Changes During a Training Year
Altering Immune Activities During a Training Year
Special Phenomena of Top-Level Sport
Summary
General Conclusion to Part III

Concluding Remarks

References
Index
About the Authors