

1. Record Nr.	UNINA9910794269503321
Autore	Sietsema Kathy E
Titolo	Wasserman & Whipp's Principles of exercise testing and interpretation [[electronic resource] /] / Kathy E. Sietsema ... [et al.]
Pubbl/distr/stampa	Philadelphia, : Wolters Kluwer, 2021
ISBN	1-9751-3646-2 1-9751-3645-4
Edizione	[6th ed.]
Descrizione fisica	1 online resource (1183 pages)
Disciplina	616.120754
Soggetti	Exercise Test Physical Exertion - physiology Exercise tests Heart function tests Pulmonary function tests
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- Preface -- Acknowledgments -- Contributors -- 1 Exercise Testing and Interpretation -- WHAT IS CARDIOPULMONARY EXERCISE TESTING? -- CELL RESPIRATION AND BIOENERGETICS -- NORMAL COUPLING OF EXTERNAL TO CELLULAR RESPIRATION -- WHY MEASURE GAS EXCHANGE TO EVALUATE CARDIORESPIRATORY FUNCTION AND CELLULAR RESPIRATION? -- CARDIAC STRESS TESTS AND PULMONARY STRESS TESTS -- PATTERNS OF CHANGE IN EXTERNAL RESPIRATION (VO ₂ AND VCO ₂) AS RELATED TO FUNCTION, FITNESS, AND DISEASE -- FACTORS LIMITING EXERCISE -- Fatigue -- Dyspnea -- Pain -- EVIDENCE OF SYSTEMIC DYSFUNCTION UNIQUELY REVEALED BY INTEGRATIVE CARDIOPULMONARY EXERCISE TESTING -- Diagnosis of Exercise Intolerance, Especially Exertional Dyspnea and Myocardial Ischemia -- Cardiopulmonary Exercise Testing and Prognosis in Patients With Known Disorders -- Cardiopulmonary Exercise Testing and Preoperative Assessment -- SUMMARY -- 2 Physiology of Exercise -- SKELETAL MUSCLE: MECHANICAL PROPERTIES AND FIBER TYPES -- BIOENERGETICS -- Sources of High-Energy Phosphate and Cellular Respiration -- Phosphocreatine Breakdown -- Substrate

Utilization -- Carbohydrates -- Lipids -- Amino Acids -- OXYGEN
 COST OF WORK -- VO₂ Steady State and Work Efficiency -- VO₂
 Nonsteady State -- ARTERIAL LACTATE INCREASE -- Arterial Lactate
 Increase as a Function of Work Rate -- Arterial Lactate Increase as a
 Function of Time -- Mechanisms of Arterial Lactate Increase --
 Increasing Glycolytic Flux and Exercise Intensity -- Sequential
 Recruitment of Type II Muscle Fibers -- Pyruvate Dehydrogenase
 Activity -- Change in Cytosolic Redox State Limiting Mitochondrial
 Proton Shuttles -- Lactate Production and Clearance -- Oxygen Supply
 and Critical Capillary PO₂ -- pH Change and Oxyhemoglobin
 Dissociation Above the Anaerobic Threshold -- BUFFERING THE
 EXERCISE-INDUCED LACTIC ACIDOSIS.
 CARDIOVASCULAR RESPONSES TO EXERCISE -- Cardiac Output --
 Oxygen Pulse -- Distribution of Peripheral Blood Flow -- Arterial PO₂
 -- Oxyhemoglobin Dissociation -- Hemoglobin Concentration --
 Arterial Oxygen Content -- GAS EXCHANGE KINETICS -- Oxygen
 Uptake Kinetics -- Moderate Exercise -- Supra-AT Exercise -- Mean
 Response Time -- Oxygen Deficit -- Oxygen Debt -- Carbon Dioxide
 Output Kinetics -- Moderate Exercise -- Supra-AT Exercise -- Power-
 Duration Curve and Critical Power -- VENTILATORY RESPONSES TO
 EXERCISE -- Arterial and Venous PCO₂ and Carbon Dioxide Content --
 Ventilatory Determinants -- Carbon Dioxide and H⁺ Elimination --
 Alveolar Ventilation -- Dead Space Ventilation -- Total (or Expired)
 Ventilation -- Breathing Pattern -- Ventilatory Control -- Moderate
 Exercise -- Supra-AT Exercise -- SUMMARY -- 3 Measurements
 During Integrative Cardiopulmonary Exercise Testing -- measurements
 -- Electrocardiographic Changes With Exercise -- Maximal and Peak
 Oxygen Uptake -- Oxygen Uptake and Work Rate -- Normal Subjects
 -- Upward Displacement of VO₂ as a Function of Work Rate in Obesity
 -- Slope of VO₂ as a Function of Work Rate (VO₂/WR) -- Linearity of
 VO₂ as a Function of Work Rate -- Can VO₂ or METs Be Predicted From
 the Work Rate? -- Cardiac Output and Stroke Volume -- Cardiac Output
 Measurement -- Indirect Fick Method Using VCO₂ and Estimated
 CVCO₂ -- Direct Fick Method -- Noninvasive Cardiac Output and
 Stroke Volume by the Fick Principle -- Oxygen Pulse and Stroke Volume
 -- Anaerobic (Lactate, Lactic Acidosis) Threshold -- Methods of
 Measurement -- V-Slope Method -- Ventilatory Equivalent Method --
 Improving Estimation of the Anaerobic Threshold -- False Positives --
 Heart Rate-Oxygen Uptake Relationship and Heart Rate Reserve --
 Arterial Blood Pressure -- Breathing Reserve -- Expiratory Flow Pattern
 -- Inspiratory Capacity.
 Tests of Uneven VA/Q -- Wasted Ventilation and Dead Space-Tidal
 Volume Ratio -- Arterial PO₂ and Alveolar-Arterial PO₂ Difference --
 Arterial-End-Tidal PCO₂ Difference -- Ventilatory Equivalents as
 Indices of Uneven VA/Q -- Differentiating Uneven Ventilation From
 Uneven Perfusion as the Cause of Uneven VA/Q -- Other Measures of
 Uneven VA/Q -- Arterial Bicarbonate and Acid-Base Response -- Tidal
 Volume/Inspiratory Capacity Ratio -- Measurements Unique to
 Constant Work Rate Exercise Testing -- VO₂ Response in Phase I --
 VO₂ Response in Phase II -- VO₂ Response Above the Anaerobic
 Threshold -- The Power-Duration Relationship and Endurance Time --
 Noninvasive Estimation of Metabolic Acidosis Buffering -- Carotid Body
 Contribution to Ventilation -- Detecting Exercise-Induced
 Bronchospasm -- SUMMARY -- 4 Pathophysiology of Disorders
 Limiting Exercise -- OBESITY -- PATTERNS OF EXERCISE GAS EXCHANGE
 COMMON TO CARDIOVASCULAR DISEASES -- VO₂ Response to
 Increasing Work Rate (VO₂/WR) in Patients With Cardiovascular
 Abnormalities -- Why Do Cardiovascular Disorders Impair Gas

Transport? -- HEART DISEASES -- Coronary Artery Disease --
Myopathic Heart Disease (Heart Failure) -- Valvular Heart Disease --
Congenital Heart Disease -- PULMONARY VASCULAR DISEASES --
Causes of Increased Ventilation -- Exercise Arterial Hypoxemia --
Effect on Systemic Hemodynamics -- PERIPHERAL ARTERIAL DISEASES
-- VENTILATORY DISORDERS -- Obstructive Lung Diseases --
Ventilatory Capacity-Ventilatory Requirement Imbalance -- Oxygen
Transport-Oxygen Requirement Imbalance -- Physiological Markers of
Inadequate Oxygen Transport -- Restrictive Lung Diseases -- Chest
Wall (Respiratory Pump) Disorders -- DEFECTS IN HEMOGLOBIN
CONTENT AND QUALITY -- Anemia -- Left-Shifted Oxyhemoglobin
Dissociation Curve -- Carboxyhemoglobinemia and Cigarette Smoking
-- CHRONIC METABOLIC ACIDOSIS.
METABOLIC MUSCLE DISORDERS -- Disorders of Carbohydrate
Metabolism -- Disorders of Lipid Metabolism -- Disorders of
Mitochondrial Electron Transport Chain -- Toxin- or Drug-Induced
Muscle Impairment -- Endocrine Disorders -- NONMETABOLIC CAUSES
OF EXERCISE LIMITATION AND DYSPNEA -- Anxiety Reactions -- Poor
Effort and Manipulated Exercise Performance -- COMBINATIONS OF
DEFECTS -- SUMMARY -- 5 Performance of Clinical Cardiopulmonary
Exercise Testing -- EXERCISE LABORATORY AND EQUIPMENT -- General
Laboratory Environment -- Gas Exchange Measurement -- Mixing
Chambers -- Breath-by-Breath Systems -- Measurement of Volume,
Flow Rate, and Ventilation -- Breathing Valves, Mouthpieces, and Masks
-- Gas Analyzers -- Elevated Inspired Fractional Oxygen Concentration
-- Ergometers: Treadmills and Cycles -- Treadmill -- Cycle Ergometer
-- Cycle Versus Treadmill -- Work and Work Rate (Power) --
Electrocardiogram and Systemic Blood Pressure -- Exercise
Electrocardiogram -- Systemic Blood Pressure -- Oximetry, Blood
Sampling, and Arterial Catheters -- Pulse Oximetry -- Single Samples
of Arterial Blood by Puncture -- Multiple Samples of Arterial Blood by
Catheterization -- Free-Flowing Ear Capillary Blood -- Invasive
Cardiopulmonary Exercise Testing With Pulmonary Artery Catheter --
Data Sampling and Computation -- Quality Control, Validation, and
Maintenance -- PREPARING FOR THE EXERCISE TEST -- Requesting the
Test and Notifying the Patient -- The Patient in the Exercise Laboratory
-- Preliminary Tests -- Physician Evaluation -- Equipment
Familiarization -- Ending the Exercise -- Arterial Blood Sampling and
Use of Catheter -- PERFORMING THE EXERCISE TEST -- Incremental
Exercise Test to Symptom-Limited Maximum -- Selecting the Rate of
Work Rate Increase -- Resting Measures -- Unloaded Exercise and
Cycling Rate -- Incremental Exercise -- Recovery.
Postexercise Questioning and Review -- Incremental Tests -- Constant
Work Rate Exercise Tests -- Treadmill Test for Detecting Myocardial
Ischemia -- Comment -- Treadmill Tests With Even Increments in Work
Rate -- Arm Ergometry -- Critique -- Other Tests Suitable for Fitness
or Serial Evaluations -- Harvard Step Test and Modifications -- 600-
Yard Run-Walk -- 12-Minute Field Test -- 12-Minute Walk Test -- 6-
Minute Walk Test -- Incremental Shuttle Walk Test and Endurance
Shuttle Walk Tests -- SUMMARY -- 6 Approaches to Data Summary
and Interpretation -- CONSIDERATIONS IN FORMATTING AND
SUMMARIZING DATA -- Averaging Breath-by-Breath Data --
Formatting Data for Viewing During and After Testing -- Quantifying
Peak Values -- Characterizing Submaximal Exercise Patterns --
ORGANIZING DATA: APPROACH TO REVIEW OF A NINE-PANEL
GRAPHICAL DISPLAY -- Data Reflecting Cardiovascular and Metabolic
Responses -- Cardiovascular and Metabolic Variables: Summary --
Data Reflecting Ventilation Responses to Exercise -- Ventilatory

Variables: Summary -- Data Reflecting Efficiency of Pulmonary Gas Exchange -- Pulmonary Gas Exchange Efficiency: Summary -- Graphing Strategies to Facilitate Data Analysis -- Summarizing Key Variables -- EXAMPLES OF FINDINGS IN THE NINE-PANEL DISPLAY IN SELECTED CARDIORESPIRATORY DISORDERS -- Panel 1: VO_2 , VCO_2 , and Work Rate as Related to Time -- Panel 3: Heart Rate and Carbon Dioxide Output as a Function of Oxygen Uptake -- Panel 2: Heart Rate and Oxygen Pulse as a Function of Time -- Panel 9: Tidal Volume as a Function of Exercise Minute Ventilation -- Panel 6: Exercise Minute Ventilation as a Function of Carbon Dioxide Output -- Panel 4: Ventilatory Equivalents for Oxygen and Carbon Dioxide Versus Time -- Panel 7: End-Tidal Oxygen and Carbon Dioxide Tensions Versus Time -- Panel 5: Minute Ventilation as a Function of Time. Panel 8: Respiratory Exchange Ratio at Rest, Increasing Work Rate Exercise, and Recovery.
