

Contents

Common and Differentiated Rhythmicities in Cardiorespiratory Efferents

Mechanical and Neural Interactions Between Positive Pressure,
Artificial Ventilation, and Cardiovascular Function in Anesthetized Dogs
A. Federici, M. Dambrosio, L. Nocera, A. Chiddo, T. Fiore, and P. Rizzon 3

Interrelations Between Slow and Fast Rhythms in Sympathetic Discharge
M. I. Cohen, R. Barnhardt, and C.-F. Shaw 9

Common and Specific Sources of Regional Sympathetic Outflows
in Cerebral Ischemia, Cushing Reaction, and Asphyxia
B. Kocsis, G. L. Gebber, and L. Fedina 16

Interrelationships Between the Respiratory and Sympathetic Rhythm
Generating Systems in Neonates as Revealed by Alterations
in Afferent Inputs
*P. M. Gootman, A. L. Sica, A. M. Steele, H. L. Cohen, B. W. Hundley,
G. Condemi, M. R. Gandhi, L. Eberle, and N. Gootman* 26

Identification of Postganglionic Thoracic Sympathetic Neurons:
Cardiac and Respiratory Discharge Patterns
P. Szulczyk and B. Kamosinska 33

Species-Dependent Respiratory and Autonomic Nerve Activities:
Respiratory-Sympathetic Synchronization and Autonomic Nerve
Responses to Hypoxia and Hypercapnia in the Rat
A. Trzebski 39

Discussion on Respiratory Related and Non-related Rhythms in
Sympathetic Efferents
Moderator: M. I. Cohen 49

Neurochemical Characterization of Cardiovascular and Respiratory Control Systems

CO₂-Induced Depolarization of Neurons in Nucleus Tractus Solitarii:
A Potential Substrate for Central Chemoreceptors
J. B. Dean and D. E. Millhorn 53

Organization of Respiratory Reflexes in the Caudal Region of the Nucleus of the Tractus Solitarius <i>G. D. Housley, S. Brew, D. de Castro, and J. D. Sinclair</i>	60
The Role of the Nucleus Raphe Magnus in the Control of Cold Shivering and Respiratory Evaporative Heat Loss <i>P. Hinckel</i>	71
Gene Expression for Neuropeptides in the Ganglia of the Vagus (Nodose) and Glossopharyngeal (Petrosal) Nerves <i>D. E. Millhorn, M. F. Czyzyk-Krzeska, D. A. Bayliss, and K. B. Seroogy</i> . .	77
Specificity and/or Non-Specificity in Brainstem Cardiorespiratory Networks	
The Rostral Ventrolateral Medulla: Anatomical Substrates of Cardiopulmonary Integration <i>D. A. Ruggiero, R. E. Gomez, S. L. Cravo, E. Mtui, M. Anwar, and D. J. Reis</i>	89
Descending Projections of Hypothalamic Sympathoexcitatory Neurons in the Cat <i>S. M. Barman</i>	103
Mechanism of the Modulatory Effect of Somatic Nerves Input on Abnormal Cardiovascular Function <i>P. Li</i>	111
On the Existence of a Common Cardiorespiratory Network <i>D. W. Richter, K. M. Spyer, M. P. Gilbey, E. E. Lawson, C. R. Bainton, and Z. Wilhelm</i>	118
Cooperativity in Distributed Respiratory and Cardiovascular-Related Brainstem Neural Assemblies: Insights from Many-Neuron Recordings <i>B. G. Lindsey, Y. M. Hernandez, and R. Shannon</i>	131
Polymorphic Nature of Central Networks Controlling Sympathetic Nerve Discharge <i>G. L. Gebber, B. Kocsis, S. M. Barman, and M. J. Kenney</i>	138
Interrelation and Superposition of Respiratory and Cardiovascular Rhythms in EEG and Brainstem Reticular Unit Activity as Studied by Quantitative Spectral Analyses <i>T. Hukuhara Jr., K. Takano, N. Kimura, and F. Kato</i>	147
Functional Organization of the Common Brainstem System to Different States at Different Times <i>F. Ebinger, M. Lambertz, and P. Langhorst</i>	158
Discussion on Coordinated Activity in Brainstem Reticular Networks <i>Moderator: G. L. Gebber</i>	175

Peripheral and Central Interrelations Between Cardiorespiratory and Motor Control

Somato-Vegetative Interaction at the Peripheral Level: Possible Effects on Motor Performance <i>M. Passatore and C. Grassi</i>	181
Muscular Activity and Cardiovascular Regulation <i>D. I. McCloskey and S. F. Hobbs</i>	188
Brainstem Mechanisms Involved in Reflex Cardiovascular Responses to Muscular Contraction <i>G. A. Iwamoto, T. G. Waldrop, and R. M. Bauer</i>	193
Simultaneous Suppression of Postural Tone and Respiration and its Functional Significance in the Respiratory-Motor Coordination <i>K. Kawahara, Y. Nakazono, Y. Yamauchi, Y. Miyamoto, and S. Kumagai</i>	200
Hypothalamic Modulation of Cardiovascular, Respiratory and Locomotor Activity During Exercise <i>T. G. Waldrop, R. M. Bauer, G. A. Iwamoto, and R. W. Stremel</i>	208

Approaches of Systems Theory to Cardiorespiratory and Motor Coordination

The Approach of Synergetics to the Study of Coordination of Rhythms <i>H. Haken</i>	217
Behavioral and Neural Pattern Generation: The Concept of Neurobehavioral Dynamical Systems <i>J. A. S. Kelso</i>	224
The Applicability of Chaos Theory to Rhythmic Breathing Patterns <i>C. L. Webber Jr. and J. P. Zbilut</i>	239
Discussion on the Theoretical and Neuronal Basis of Rhythm Coordination <i>C. L. Webber Jr.</i>	248

Analysis of Cardiorespiratory Variability and Rhythmicity in Humans: Physiological Basis and Clinical Application

Human Respiratory-Cardiovascular Interactions in Health and Disease <i>D. L. Eckberg</i>	253
Respiratory Heart Rate Variability in Fetal and Neonatal Lambs <i>T. Metsälä, J. Grönlund, A. Siimes, and I. Välimäki</i>	259
Disturbed Brainstem Interaction and Forebrain Influences in Cardiorespiratory Coordination: Experimental and Clinical Results <i>U. Zwiener, R. Bauer, M. Rother, G. Schwarz, H. Witte, G. Litscher, and M. Wohlfarth</i>	265

Low-Frequency Rhythms in the Respiratory and Cardiovascular Systems (With a Reference to Obstructive Sleep Apnea Syndrome) <i>J. M. Karemaker and J. G. van den Aardweg</i>	277
Thermal and Postural Influences on Cutaneous Microvascular Blood Cell Flux in Young Men <i>A. Lindqvist and I. Välimäki</i>	283
Power Spectral Analysis of Heart Rate and Arterial Pressure Variabilities as an Experimental and Clinical Tool <i>A. Malliani, M. Pagani, F. Lombardi, G. Baselli, and S. Cerutti</i>	291
Heart Rate Control and Metabolic Parameters After Fatiguing Exercise <i>E. Schubert, W. Dinter, and W. Rielke</i>	300
Cardiorespiratory Relations in Human Heart Rate Pattern <i>H.-H. Abel, D. Klüßendorf, R. Droh, and H. P. Koepchen</i>	307
 Concluding Lecture	
Thoughts Concerning the Essence of Life: Integrative Power and Governance of Function <i>C. McC. Brooks</i>	321
Subject Index	327