

Public Health
— in the —
21st Century Series

Treadmill Exercise and its Effects on Cardiovascular Fitness, Depression and Muscle Aerobic Function

Nuno Azóia
Pedra Dobreiro
Editors

NOVA

PUBLIC HEALTH IN THE 21ST CENTURY SERIES

**TREADMILL EXERCISE AND ITS
EFFECTS ON CARDIOVASCULAR
FITNESS, DEPRESSION AND
MUSCLE AEROBIC FUNCTION**

**NUNO AZÓIA
AND
PEDRA DOBREIRO
EDITORS**

Nova Science Publishers, Inc.
New York

Copyright © 2010 by Nova Science Publishers, Inc.

All rights reserved. No part of this book may be reproduced, stored in a retrieval system or transmitted in any form or by any means: electronic, electrostatic, magnetic, tape, mechanical photocopying, recording or otherwise without the written permission of the Publisher.

For permission to use material from this book please contact us:
Telephone 631-231-7269; Fax 631-231-8175
Web Site: <http://www.novapublishers.com>

NOTICE TO THE READER

The Publisher has taken reasonable care in the preparation of this book, but makes no expressed or implied warranty of any kind and assumes no responsibility for any errors or omissions. No liability is assumed for incidental or consequential damages in connection with or arising out of information contained in this book. The Publisher shall not be liable for any special, consequential, or exemplary damages resulting, in whole or in part, from the readers' use of, or reliance upon, this material.

Independent verification should be sought for any data, advice or recommendations contained in this book. In addition, no responsibility is assumed by the publisher for any injury and/or damage to persons or property arising from any methods, products, instructions, ideas or otherwise contained in this publication.

This publication is designed to provide accurate and authoritative information with regard to the subject matter covered herein. It is sold with the clear understanding that the Publisher is not engaged in rendering legal or any other professional services. If legal or any other expert assistance is required, the services of a competent person should be sought. FROM A DECLARATION OF PARTICIPANTS JOINTLY ADOPTED BY A COMMITTEE OF THE AMERICAN BAR ASSOCIATION AND A COMMITTEE OF PUBLISHERS.

LIBRARY OF CONGRESS CATALOGING-IN-PUBLICATION DATA

Treadmill exercise and its effects on cardiovascular fitness, depression, and muscle aerobic function / editors, Nuno Azóia and Pedra Dobreiro.

p. ; cm.

Includes bibliographical references and index.

ISBN 978-1-60876-857-8 (hardcover)

1. Heart--Diseases--Exercise therapy. 2. Treadmill exercise--Therapeutic use. 3. Treadmill exercise--Physiological effect. I. Azóia, Nuno. II. Dobreiro, Pedra.

[DNLM: 1. Exercise--physiology. 2. Running--physiology. 3. Cardiovascular System--physiology. 4. Depression--psychology. 5. Muscle, Skeletal--metabolism. 6. Self Care--instrumentation. QT 260.5.R9 T784 2009]

RC684.E9T74 2009

616.1'20642--dc22

2009044364

CONTENTS

Preface		ix
Chapter 1	Is Exercise at a Self-Selected Pace Able to Promote Benefits in Cardiorespiratory Fitness and Psychological Responses?	1
	<i>Laura Guidetti, Cosme Franklim Buzzachera, Sergio Gregorio Da Silva and Carlo Baldari</i>	
Chapter 2	Hemorheological Drugs as Means for Increasing Efficacy of Physical Exercise in Normal Conditions and under Ischemic Heart Disease	35
	<i>Mark B. Plotnikov, Oleg I. Aliev, Alexander S. Vasil'ev and Anna M. Anishchenko</i>	
Chapter 3	The Association between Peripheral Arterial Disease, Treadmill Exercise Test Parameters and Long-Term Outcome	71
	<i>Inge I. de Liefde, Ron T. van Domburg, Jeroen J. Bax, Hence J.M. Verhagen and Don Poldermans</i>	
Chapter 4	Change of Blood Flow in Common Carotid Artery during Physical Exercise Stress: Evaluation for Aerobic Exercise Intervention	99
	<i>Azran Azhim and Yohsuke Kinouchi</i>	

Chapter 5	Exercise-Induced Growth Hormone Responses in Horses	123
	<i>V. Borromeo, F. Ferrucci, A. Berrini and C. Secchi</i>	
Chapter 6	Effects of Training on Inflammatory Profile in Patients with Coronary Artery Disease	147
	<i>Paolo Calabrò, Enrica Golia, Giuseppe Limongelli, Giuseppe Pacileo, Valeria Maddaloni, Raffaella D'Alessandro, Lucia Riegler, Mario Caprile, Paolo Golino, Maria Giovanna Russo and Raffaele Calabrò</i>	
Chapter 7	Treadmill Exercise	165
	<i>Kenneth Tobin</i>	
Chapter 8	Redox Signaling Cardiovascular Adaptations to Exercise Training	173
	<i>A. Belló-Klein, M. Bertagnolli and A.S.R. Araujo</i>	
Chapter 9	Use of Cardiopulmonary Exercise Testing in Patients with Heart Failure	201
	<i>Refai Showkathali</i>	
Chapter 10	A Prescription to Decrease LV Function	209
	<i>Myrvin H. Ellestad</i>	
Index		215

Chapter 4

**CHANGE OF BLOOD FLOW IN COMMON
CAROTID ARTERY DURING PHYSICAL
EXERCISE STRESS: EVALUATION FOR
AEROBIC EXERCISE INTERVENTION**

Azran Azhim^{1} and Yohsuke Kinouchi²*

¹Frontier Research and Development Center, Tokyo Denki University,
Ishizaka, Hatoyama, Hiki, Saitama, 350-0394, Japan

²The Institute of Technology and Science, The University of Tokushima,
1-2 Minamijou Sanjima, Tokushima, 770-8506, Japan

ABSTRACT

Exercise training is able to alter cardiovascular fitness. Treadmill exercise testing currently is commonly used in the clinical method of evaluating a subject's functional capacity and aerobic fitness. In this chapter, a fundamental understanding of age-associated normohemodynamic state is described for comparison data and for an improved means of aerobic exercise fitness and performance. These data may contribute to effective and efficient prevention and treatment of cardiovascular disease in older persons. The change of blood flow velocity and parameters in the common carotid artery (CCA) during treadmill exercise is reviewed to describe the effect on significant

* Corresponding author: Tel: +81-49-296-1935, Fax: +81-49-296-2925, E-mail: azran@frontier.dendai.ac.jp, azran2020@gmail.com.

Treadmill Exercise and its Effects on Cardiovascular Fitness, Depression and Muscle Aerobic Function

Contributors

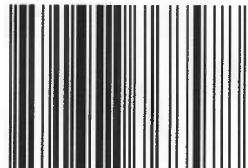
Laura Guidetti
Cosme Franklim Buzzachera
Sergio Gregorio Da Silva
Carlo Baldari
Mark B. Plotnikov
Oleg I. Aliev
Alexander S. Vasil'ev
Anna M. Anishchenko
Inge I. de Liefde
Ron T. van Domburg
Jeroen J. Bax
Hence J. M. Verhagen
Don Poldermans
Azran Azhim
Yohsuke Kinouchi
V. Borromeo
F. Ferrucci
A. Berrini

C. Secchi
Paolo Calabrò
Enrica Golia
Giuseppe Limongelli
Giuseppe Pacileo
Valeria Maddaloni
Raffaella D'Alessandro
Lucia Riegler
Mario Caprile
Paolo Golino
Maria Giovanna Russo
Raffaele Calabrò
Kenneth Tobin
A. Belló-Klein
M. Bertagnolli
A. S. R. Araujo
Refai Showkathali
Myrvin H. Ellestad

Nuno Azóia
Pedra Dobreiro
Editors

www.novapublishers.com

ISBN 978-1-60876-857-8



9 781608 768578