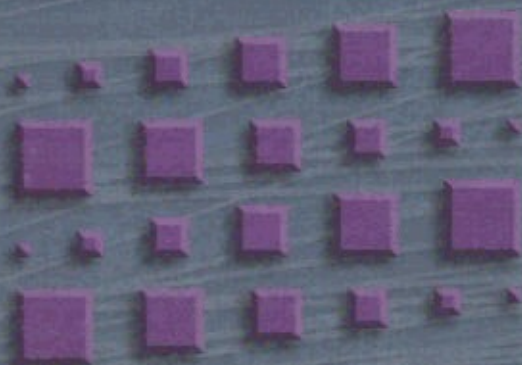


MEASUREMENT ISSUES IN AGING AND PHYSICAL ACTIVITY

**Proceedings of the
10th Measurement and Evaluation
Symposium**



**WEIMO ZHU
WOJTEK CHODZKO-ZAJKO
EDITORS**

Contents

Sponsors xi
Contributors xiii
Preface xv

Part I Critical Issues in Aging and Physical Activity Research

Chapter 1 Human Gene Map, Physical Activity, and Aging 3 *Tuomo Rankinen, PhD*

Genetics and Health-Related Fitness 3
Genetic Research Approaches: Candidate Genes Versus Genomic Linkage Scans 5
Genetics, Aging, and Health-Related Fitness 7
Summary and Conclusions 10

Chapter 2 Physical Activity and Older Adults: Impact on Physical Frailty and Disability 11 *Miriam E. Nelson, PhD, FACSM, and Rebecca Seguin, MS, CSCS*

Overview of the Health Benefits of Exercise and Older Adults 12
Initial Strength Training Research With Older Adults 13
Frailty and Falls 13
Bone and Joint Health 19
Endurance 20
Strength and Functional Performance 20
A Variety of Strength Training Prescriptions 21
The Potential of Power Training 22
Conclusion 22

Chapter 3 Exercise Dose-Response Effects in Older Adults . . . 23 *Roy J. Shephard*

Relative Versus Absolute Intensity of Effort 23
Experimental Evidence 24
Some Problems of Research Design 25
Is Aerobic Fitness Enough? 26
Moderate or Intense Physical Activity? A Public Policy Debate 26
Consensus Recommendations 27
Systematic Review of Dose-Response Issues 28
All-Cause and Cardiovascular Mortality 28
Research Priorities 33

Chapter 4 Control and Regulation of Movement in Elderly Adults 35

Caroline J. Ketcham and George E. Stelmach

Movement Characteristics	37
Coordination	42
Skill Learning	44
Visual Monitoring	45
Concluding Remarks	46

Chapter 5 Environment, Culture, and Physical Activity of Older Persons 49

Uriel Cohen, DArch, and Ruth Cohen, PhD

Culture: A Working Definition	49
Active Living: A Working Definition	50
Benefits of Active Living: Contributions to Physical and Mental Health	50
The Problem: Barriers to Active Living	51
The Premise: Cultural Heritage As a Catalyst for Active Living	51
The Context of the Case Study: History, Culture, Demographics, and Economy	52
Conclusions	54

Part II Measurement Challenges in Aging Research

Chapter 6 Physical Activity, Aging, and Quality of Life: Implications for Measurement 57

Edward McAuley and Steriani Elavsky

Conceptualizing and Defining Quality of Life	58
Measuring Quality of Life in Physical Activity Research	59
Can Physical Activity Improve Quality of Life in Older Adults?	60
Can Physical Activity Improve Quality of Life in Cancer Patients?	62
Is There a Dose-Response Relationship for Physical Activity Effects on Quality of Life?	63
Issues to Consider in the Physical Activity and Quality of Life Relationship	64
Concluding Remarks	68

Chapter 7 Assessment Issues Related to Physical Activity and Disability 69

James H. Rimmer, PhD

Defining Disability	70
Importance of Physical Activity in Improving Function	72
Impact of the Environment on Health and Wellness	73
Measurement Issues in Disability and Physical Activity	74
Conclusion	79

**Chapter 8 Measuring the Ever-Changing “Environments”
for Physical Activity in Older Adults 81**
James R. Morrow, Jr., PhD, and Dale P. Mood, PhD

Measurement Issues 85
 Statistical Analysis 86
 Sample Instrumentation Issues 86
 The Challenge 87
 Future Research 88

**Chapter 9 Translating Research to Practice:
Real-World Evaluation and Measurement Issues
in Moving From Efficacy to Effectiveness Research . . 89**

*Marcia Ory, PhD, MPH; Diane Dowdy, PhD; Brigid Sanner;
 Robin Mockenhaupt, PhD, MPH; Laura Leviton, PhD;
 Russell Glasgow, PhD; Abby King, PhD; Cynthia Castro, PhD;
 Michele Guerra, MS, CHES; and Sara Wilcox, PhD*

The Evolving Research Base 89
 Principles of Behavior Change Research 91
 Behavioral Change Consortium 92
 Active for Life®: Research to Practice 93
 Key Measurement/Methods Questions 98
 Furthering Translational Research 100

**Chapter 10 Qi, Aging, and Measurement:
History, Mystery, and Controversy 101**

Weimo Zhu, PhD

What Are Qi and Qi-Gong? 101
 A Brief History of Qi-Gong 102
 Qi-Gong and the World 105
 Qi-Gong Schools and Classification 106
 Mystery and Controversy Surrounding Qi-Gong 107
 Qi-Gong and Health 109
 Qi-Gong and Aging 110
 Qi Measurement and Challenges 111
 Future Research Directions 112

**Part III New Measurement Methods
and Techniques**

Chapter 11 Common Shape Models for Trend Curves 115
Roderick P. McDonald

Common Shape Models 120
 Conclusions 124

Chapter 12	Emergent Technologies and Remote Clinical Assessment	125
	<i>Leigh W. Jerome, PhD</i>	

Part IV Measurement in Kinesiology: Past, Present, and Future

Chapter 13	Measurement and Evaluation Council: Past, Present, and Future	137
	<i>Ted A. Baumgartner</i>	

Structure	. . . . .	137
Past	. . . . .	137
Present	. . . . .	138
Future	. . . . .	140

Chapter 14	The Changing Face of the Measurement Specialist in Kinesiology	145
	<i>Stephen Silverman, EdD</i>	

Coming Clean	. . . . .	146
Changes in the Measurement and Evaluation Field	. . . . .	146
Issues and Questions for the Future	. . . . .	148
Conclusion	. . . . .	152

Appendix: The 10 th Measurement and Evaluation Symposium Program	153
--	------------

References	163
About the Editors	189