

# Content

Preface .....	7
Introduction .....	9
<b>1. Sports Medicine P. Brandejský, Z. Vilikus .....</b>	<b>11</b>
1.1 Concept and Content of a Sports Medicine Department .....	11
1.2 The List of Examinations and Tests Performed in Sports Medicine .....	13
1.3 Instrumental Equipment .....	14
<b>2. Examination of a Sportsman P. Brandejský, Z. Vilikus .....</b>	<b>15</b>
2.1 Medical Examinations of a Sportsman .....	15
2.2 Basic Preventive Examination of a Sportsman .....	16
<b>3. Auxiliary Examination Methods Z. Vilikus .....</b>	<b>21</b>
3.1 Normal Electrocardiogram at Rest .....	21
3.2 Echocardiography .....	26
3.3 Heart Rate Variability (HRV) .....	28
3.4 Polycardiography, Thoracic Electrical Bioimpedance .....	31
<b>4. Medical Functional Anthropology Z. Vilikus .....</b>	<b>37</b>
4.1 Somatometry – Methods – Assessment .....	37
4.2 Somatotype .....	41
4.3 Body Composition .....	46
4.4 Body Keeping .....	52
4.5 Biological Age .....	53
<b>5. Functional Diagnostics in Sports Medicine Z. Vilikus .....</b>	<b>59</b>
5.1 Functional Examination of Lungs and Air-ways (Spirometry) .....	59
5.2 Ortho-clinostatic Test .....	62
5.3 Flack's Test .....	62
5.4 Handgrip Test .....	64
5.5 Step Test .....	65
5.6 Ergometry .....	66
5.7 Load ECG .....	72

5.8	Holter Monitoring ECG, Holter Monitoring of Blood Pressure .....	77
5.9	Spiroergometry .....	78
5.10	Anaerobic Threshold (AT, Stress Threshold, Lactate Threshold) .....	104
5.11	Diving Reflex .....	112
<b>6.</b>	<b>Field testing (FT) Z. Vilikus .....</b>	<b>119</b>
6.1	Introduction .....	119
6.2	Forms of Field Testing .....	119
<b>7.</b>	<b>Energetic Metabolism Z. Vilikus .....</b>	<b>127</b>
7.1	Introduction .....	127
7.2	Components of Energetic Metabolism .....	127
7.3	The Measurement of Energetic Metabolism .....	130
<b>8.</b>	<b>Influence of Training on the Human Organism P. Brandejský, Z. Vilikus .....</b>	<b>135</b>
8.1	Training process – General Principles .....	135
8.2	Neurohumoral Regulation during Exercise .....	135
8.3	Training – Aerobic and Anaerobic Metabolism .....	137
8.4	Adaptation to Training – Physical Fitness .....	139
8.5	Physical Fitness Components .....	141
8.6	Incorrectly Applied Sports Activity .....	143
8.7	The Physiological Benefits of Endurance Training .....	146
8.8	Health Benefits of Regular Physical Activity .....	147
8.9	Prescription of Exercise Activity .....	148
<b>9.</b>	<b>Sports Injuries P. Brandejský, Z. Vilikus .....</b>	<b>157</b>
9.1	Sports Accident Rate .....	157
9.2	The Most Frequent Injury Mechanisms .....	158
9.3	Reasons of Sports Injuries .....	158
<b>10.</b>	<b>Doping P. Brandejský, Z. Vilikus .....</b>	<b>161</b>
10.1	Introduction .....	161
10.2	Doping Drugs and Methods .....	161
10.3	Doping Prevention .....	165
10.4	Punishment for Doping .....	166
10.5	Notes for Medical Praxis .....	166
<b>11.</b>	<b>The Use of Table Processor in Sports Medicine Z. Vilikus .....</b>	<b>169</b>
11.1	Introduction .....	169
11.2	Assessment of Cardio-respiratory Fitness in MS Excel .....	170

11.3 Prescription of Exercise Intensity .....	172
11.4 The Somatotype and Exercise Disposals Assessment .....	173
11.5 Energetic Metabolism SW Model for the Assessment of Energy Output (EO) .....	176
11.6 Probability of CHD Assessed by Diamond and Forrester .....	177
<b>12. Exercise Prescription in Some Civilization Diseases Z. Vilikus .....</b>	<b>183</b>
12.1 Diabetes Mellitus .....	183
12.2 Obesity .....	185
12.3 Arterial Hypertension .....	186
<b>Appendix .....</b>	<b>189</b>
Supplement 1 Form for Quantitative Chronometry of an Exercise Unit .....	189
Supplement 2 Physiological Curve Test .....	190
Supplement 3 The Rules for Medical Aid at Sports Competitions .....	191
Supplement 4 Sports Evaluated by Riskiness .....	192
Supplement 5 Original Table for the Assessment of CHD Likelihood .....	194
Supplement 6 Software Application for CHD Likelihood Assessment .....	195
Supplement 7 Disability to Sports Activity .....	196
Supplement 8 Contraindications of Sports Activity .....	198
<b>List of Used Abbreviations .....</b>	<b>201</b>