DIN EN ISO 8996:2022-10 (E)

Ergonomics of the thermal environment - Determination of metabolic rate (ISO 8996:2021)

Contents

Page

European foreword 3

Foreword 4

Introduction 5

1 Scope 6

2 Normative references 6

3 Termsanddefinitions 6

4 The units 6

5 The four levels of methods for estimating the metabolic rate 6

6 Level1,Screening:classificationofmetabolicratebycategories 8

7 Level 2, Observation 8
7.1 Evaluation of metabolic rate for a given activity 8
7.2 Evaluation of the mean metabolic rate over a given period of time 9
7.3 Accuracy 9

8 Level3,Analysis 9
8.1 Evaluation of metabolic rate using heart rate 9
8.1.1 Principle of the method 9
8.1.2 Determination of the (HR-M) relationship for purely dynamic muscular work 10
8.1.3 Evaluation of the metabolic rate as a function of HR in real situations 11
8.2 Evaluation of metabolic rate by accelerometry 12

9 Level 4, Expertise 13
9.1 Evaluation of metabolic rate by measurement of oxygen consumption rate 13
9.1.1 Partial and integral method 13
9.1.2 Evaluation of metabolic rate from oxygen consumption rate 15
9.1.3 Evaluation of oxygen uptake 16
9.1.4 Calculation of metabolic rate 18
9.2 Evaluation of metabolic rate by the doubly labelled water method for long term measurements 18
9.3 Evaluation of metabolic rate by direct calorimetry -- Principle 19

Annex A (informative) Evaluation of the metabolic rate at level 1, Screening 20

Annex B (informative) Evaluation of the metabolic rate at level 2, Observation 22

Annex C (informative)Evaluationofthemetabolicrateatlevel3,Analysis 26

Annex D (informative) Evaluation of the metabolic rate at level 4, Expertise 28

Annex E (normative)Correction of the heart rate measurements for thermal effects 30

Bibliography 32