

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	Terms and definitions	6
4	The units	6
5	The four levels of methods for estimating the metabolic rate	6
6	Level 1, Screening: classification of metabolic rate by categories	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	Level 3, 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) Evaluation of the metabolic rate at level 3, 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