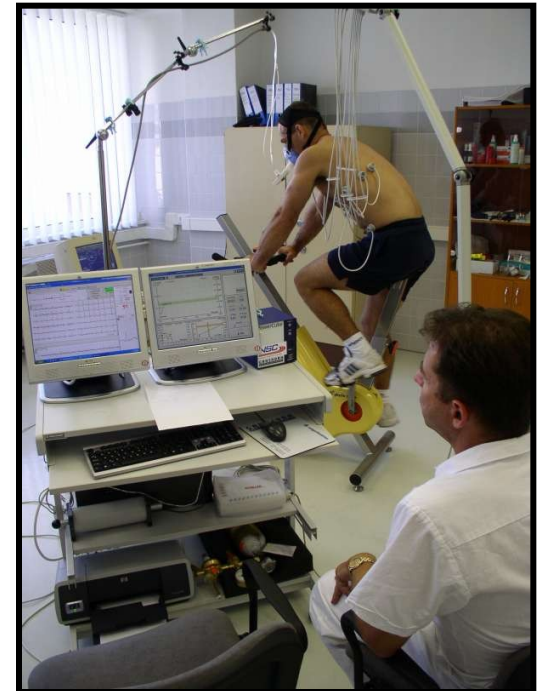

Spiroergometry



- Functional laboratory diagnostics following multiple physiologic parameters throughout time
- Typically performed on bicycle ergometer
- Gas analyser, sporttester, ECG, lactate level analyser

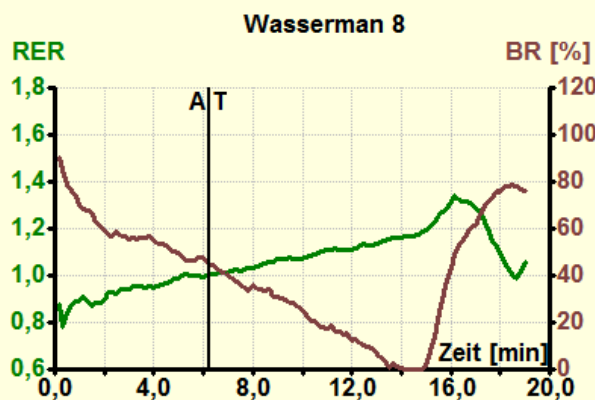
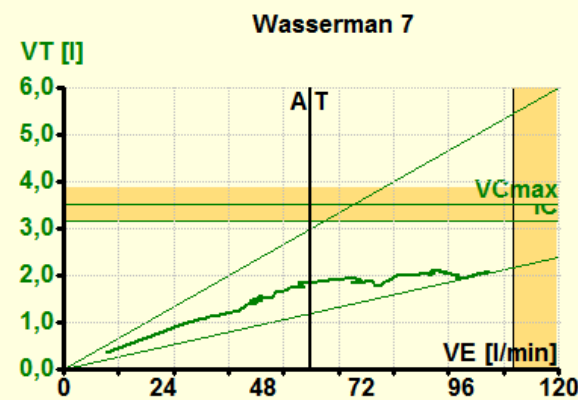
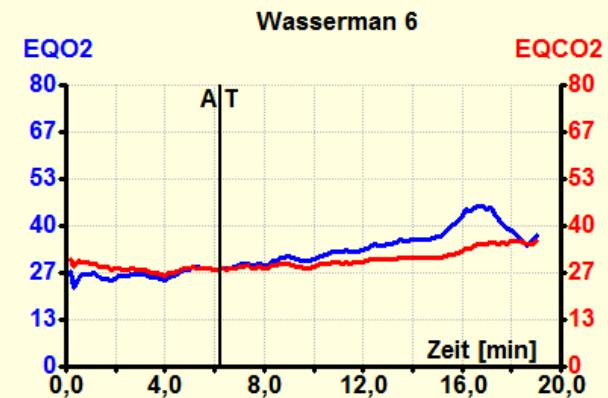
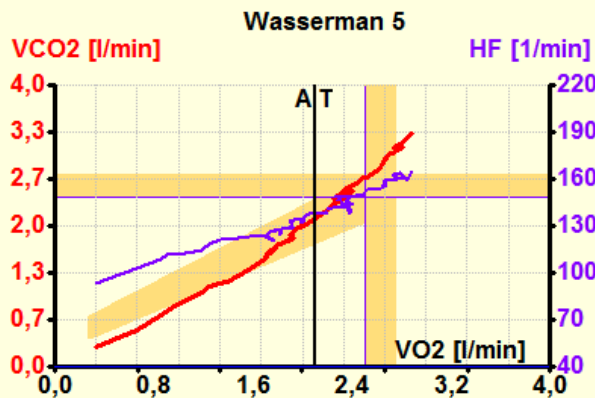
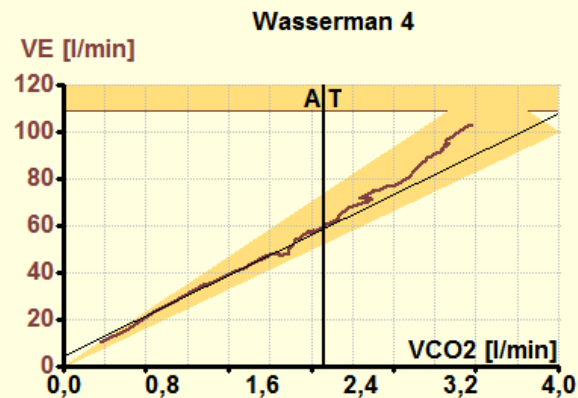
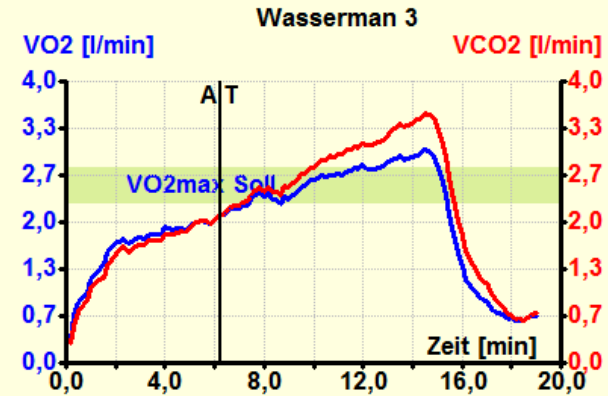
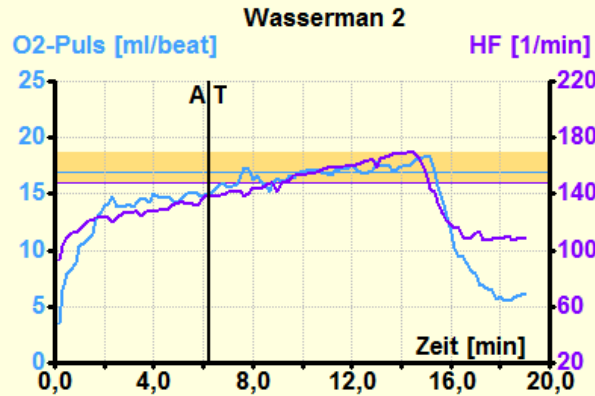
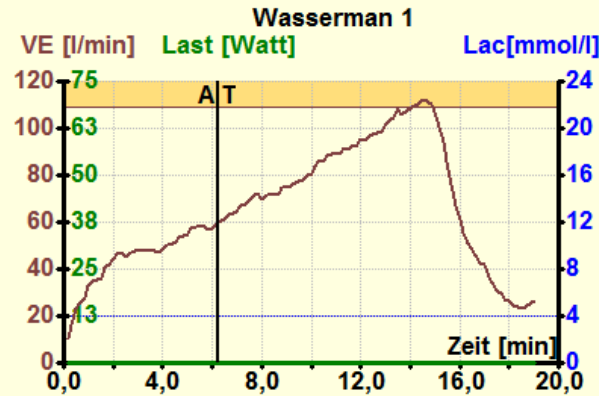


Spiroergometric parameters

- Ventilatory: breathing frequency, breath volume, minute ventilation
- Circulatory parameters: HR, blood pressure, ECG
- (Metabolic parameters: lactate level, pH)

Calculated parameters

- Ventilatory equivalents: V_E/V_{O_2} , V_E/V_{CO_2}
- RQ – respiration quotient (CO_2/O_2)
- Pulse oxygen



Zeit	Last	VO2	VO2/kg	RER	VE	VT	BR	HF	O2-Puls	VO2%max	AT speichern
06:10	-	2,09	26,13	1,00	59,49	1,83	45	139	15,04	71 %	✓
											✗ Abbruch

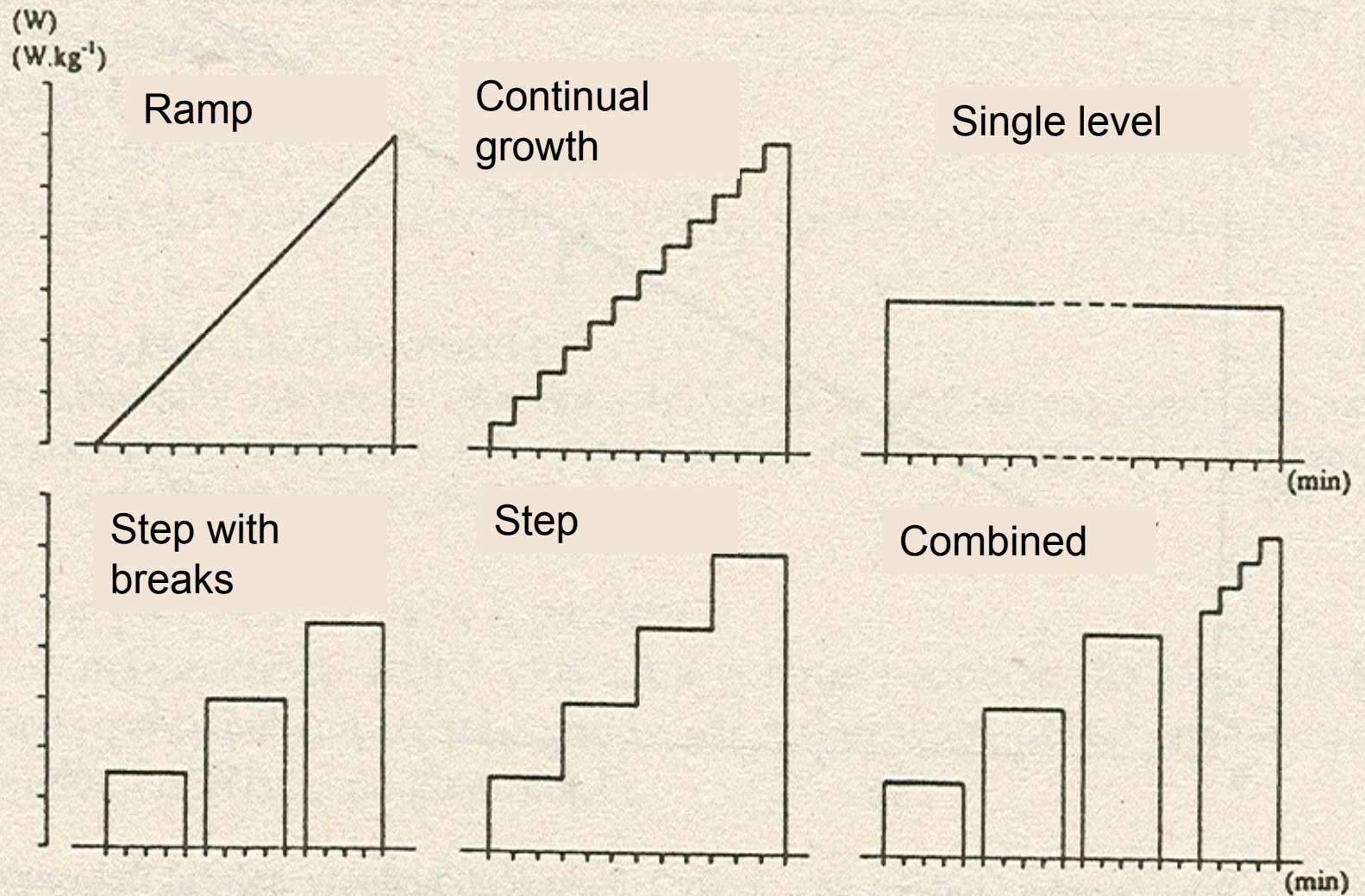
BR = breath reserve; VT = ventilatory threshold

http://www.bartels.de/spowi/spiroergometrie_en.htm

What is spiroergometry good for

- Clinical diagnostics of respiratory or circulatory problems
- Performance of a sportsman
- Anaerobic threshold and VO_2max

The test protocols



Obr. 4.10 Bicycle ergometry protocols

VO_2max – maximal oxygen consumption

- = maximal aerobic capacity
- The highest possible minute oxygen consumption at the highest output
- Relates to the endurance performance
- For interindividual comparison should be relativised ($\text{VO}_2\text{max/kg}$)

VO₂max

- The highest levels around 18th year:
 - men 46.5 ml/kg/min
 - women 37 ml/kg/min
- Decreases with age
- Dependency on: ventilation, alveolar-capillary and tissue diffusion, cardiovascular system, cellular oxidation

