



BLOOD PRESSURE IS ASSOCIATED WITH RESTING ENERGY EXPENDITURE AND BODY COMPOSITION IN NON-OBESE 18-39 YEAR-OLDS: RESULTS OF THE IC-BASAROT PROJECT

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Rationale

The influence of blood pressure (RR) on resting energy expenditure (REE) constitutes prolonged discussions and results are inconsistent, although few studies reported positive correlations regardless of gender, age, and body weight. The aim was to correlate RR and REE including body composition in healthy younger men and women.

Methods

The investigation was part of the IC-BASAROT project (ClinicalTrials.gov: NCT02682537). A total of 356 non-obese, healthy women and 148 men were investigated in 4 German study centers (2x Neubrandenburg, Munich, Fulda). Blood pressure and pulse were determined under standardized conditions. REE was measured by indirect calorimetry (Quark RMR, Cosmed, Rome, Italy).

Table 1: Subject characteristics (n=504)

	Women (n=356)	Men (n=148)	p
Age (years)	26.4 ± 4.6	27.4 ± 5.0	0.049 ¹
BMI (kg/m ²)	22.5 ± 2.6	23.7 ± 2.6	< 0.001 ¹
Fat mass (kg)	18.0 ± 6.0	12.3 ± 6.0	< 0.001 ¹
Fat mass (%)	27.6 ± 6.1	15.4 ± 6.4	< 0.001 ²
Free fat mass (kg)	46.0 ± 4.5	66.0 ± 7.7	< 0.001 ²
Free fat mass (%)	72.4 ± 6.2	84.6 ± 6.4	< 0.001 ²
Systolic RR (mmHg)	110 ± 12	122 ± 12	< 0.001 ¹
Diastolic RR (mmHg)	69 ± 9	72 ± 10	0.001 ¹
Pulse (bpm)	60 ± 9	60 ± 10	0.241 ¹

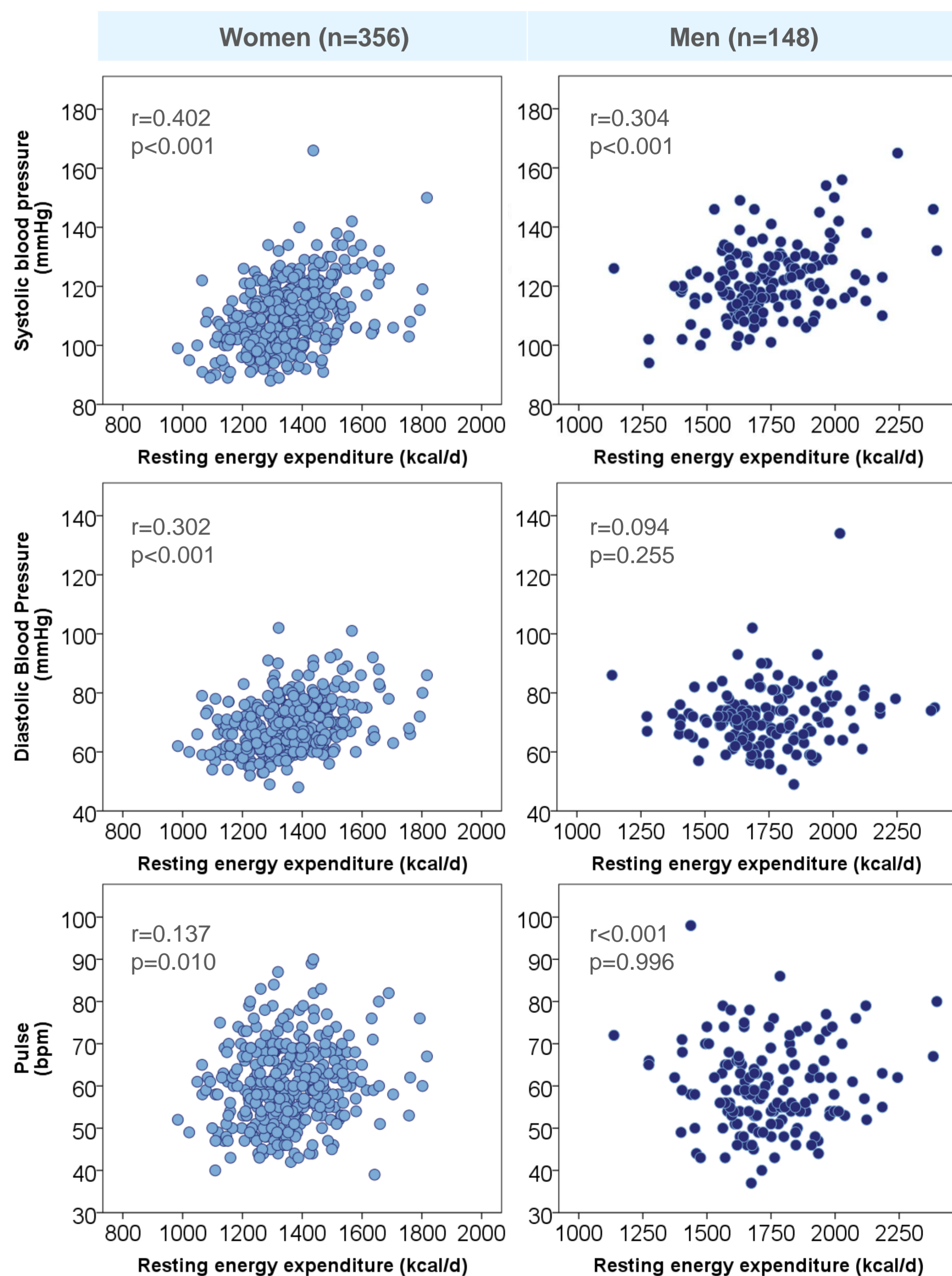
¹ Mann-Whitney U test, ² unpaired T-test
RR = blood pressure

Conclusion

Blood pressure is associated with REE and fat free mass/fat mass (%) in healthy, non-obese humans. It is unclear, whether increased cardiovascular risk conditions in higher age or analysis adjusted to body composition will disrupt these associations.

Results

Correlations between REE, systolic and diastolic blood pressure and pulse



Correlations with systolic blood pressure	Women (n=356)	Men (n=148)
BMI (kg/m ²)	r = 0.264 (p < 0.001)	r = 0.190 (p = 0.021)
Fett mass (%)	r = 0.315 (p < 0.001)	r = 0.157 (p = 0.057)
Free fat mass (%)	r = -0.322 (p < 0.001)	r = -0.157 (p = 0.056)
Total body water (l)	r = 0.207 (p = 0.026)	r = 0.261 (p = 0.032)
Correlations with diastolic blood pressure	Women (n=356)	Men (n=148)
BMI (kg/m ²)	r = 0.235 (p < 0.001)	r = 0.109 (p = 0.188)
Fat mass (%)	r = 0.328 (p < 0.001)	r = 0.235 (p = 0.004)
Free fat mass (%)	r = -0.341 (p < 0.001)	r = -0.234 (p = 0.004)
Total body water (l)	r = 0.054 (p = 0.564)	r = 0,032 (p = 0.794)