Fat oxidation at rest predicts peak fat oxidation during exercise and metabolic phenotype in overweight men. - DTU Orbit (05/12/2018)

Objective:
To elucidate if fat oxidation at rest predicts peak fat oxidation during exercise and/or metabolic phenotype in moderately overweight, sedentary men.

Design:
Cross-sectional study.

Subjects:
We measured respiratory exchange ratio (RER) at rest in 44 moderately overweight, normotensive and normoglycemic men and selected 8 subjects with a low RER (L-RER, body mass index (BMI): 27.9±0.9 kg m−2, RER: 0.76±0.02) and 8 with a high RER (H-RER; BMI 28.1±1.1 kg m−2, RER: 0.89±0.02). After an overnight fast, a venous blood sample was obtained and a graded exercise test was performed. Fat oxidation during exercise was quantified using indirect calorimetry.

Results:
Peak fat oxidation during exercise was higher in L-RER than in H-RER (0.333±0.096 vs 0.169±0.028 g min−1; P<0.01) and occurred at a higher relative intensity (36.2±6.6 vs 28.2±3.1% VO2max, P<0.05). Using the International Diabetes Federation criteria, we found that there was a lower accumulation of metabolic risk factors in L-RER than in H-RER (1.6 vs 3.5, P=0.028), and no subjects in L-RER and four of eight subjects in H-RER had the metabolic syndrome. Resting RER was positively correlated with plasma triglycerides (P<0.01) and negatively with plasma free fatty acids (P<0.05), and peak fat oxidation during exercise was positively correlated with plasma free fatty acid concentration at rest (P<0.05).

Conclusion:
A low RER at rest predicts a high peak fat oxidation during exercise and a healthy metabolic phenotype in moderately overweight, sedentary men.

General information
State: Published
Organisations: University of Copenhagen
Pages: 871-877
Publication date: 2010
Peer-reviewed: Yes

Publication information
Journal: International Journal of Obesity
Volume: 34
Issue number: 5
ISSN (Print): 0307-0565
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 4.94 SJR 2.65 SNIP 1.545
Web of Science (2017): Impact factor 5.151
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 5.18 SJR 2.94 SNIP 1.618
Web of Science (2016): Impact factor 5.487
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 4.93 SJR 2.958 SNIP 1.662
Web of Science (2015): Impact factor 5.337
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 4.72 SJR 2.81 SNIP 1.762
Web of Science (2014): Impact factor 5.004
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 4.81 SJR 2.502 SNIP 1.719