Supplementary data

1. **Table S1.** Search criteria

MEDLINE and EMBASE search criteria

1. exp direct calorimetry/ or exp calorimetry/ or exp indirect calorimetry/ or Calorimetry.mp.
2. indirect calorimetry.mp. or exp calorimetry/ or exp energy metabolism/ or exp indirect calorimetry/ or exp energy expenditure/ or exp metabolism/
3. exp energy metabolism/ or direct calorimetry.mp. or exp calorimetry/ or exp direct calorimetry/ or exp energy expenditure/
4. resting energy expenditure.mp. or exp calorimetry/ or exp malnutrition/ or exp energy metabolism/ or exp metabolism/ or exp energy expenditure/ or exp resting energy expenditure/ or exp body composition/
5. exp body composition/ or resting metabolic rate.mp. or exp basal metabolic rate/ or exp body weight/ or exp energy expenditure/ or exp obesity/ or exp metabolic rate/ or exp metabolism/ or exp resting metabolic rate/
6. exp oxygen consumption/ or hypermetabolism.mp. or exp metabolism/ or exp hypermetabolism/
7. 1 or 2 or 3 or 4 or 5 or 6 or 7
8. exp liver cirrhosis/
9. exp chronic liver disease/ or End Stage Liver Disease.mp. or exp liver transplantation/ or exp liver cirrhosis/ or exp end stage liver disease/ or exp liver disease/ or exp liver failure/
10. chronic liver disease.mp. or exp liver disease/ or exp chronic liver disease/ or exp hepatitis/ or exp liver cirrhosis/
11. 9 or 10 or 11
12. exp metabolism/ or exp indirect calorimetry/ or exp calorimetry/ or exp energy expenditure/ or exp resting energy expenditure/ or Harris- Benedict.mp. or exp malnutrition/
13. exp basal metabolic rate/ or exp prediction/ or exp resting energy expenditure/ or Mifflin.mp. or exp energy expenditure/
14. exp caloric intake/ or exp resting energy expenditure/ or exp energy expenditure/ or exp calorimetry/ or exp metabolism/ or Schofield.mp. or exp prediction/
15. exp basal metabolic rate/ or exp energy expenditure/ or exp prediction/ or exp calorimetry/ or predictive equation.mp. or exp resting energy expenditure/
16. 13 or 14 or 15 or 16
17. 8 and 12 and 17
18. limit 18 to (human and English language)

Scopus Search

((TITLE-ABS-KEY (calorimetry) OR TITLE-ABS-
KEY (indirect AND calorimetry) OR TITLE ABS-
KEY (resting AND energy AND expenditure) OR TITLE-ABS
KEY (respiratory AND quotient) OR TITLE-ABS-
KEY (hypermetabolism))) AND ((TITLE ABS-
KEY (liver AND cirrhosis) OR TITLE-ABS-KEY (end
stage AND liver AND disease) OR TITLE-ABS-

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KEY (liver AND transplantation) OR TITLE ABS-
KEY (chronic AND liver AND disease))) AND ((TITLE-ABS-KEY (harris benedict) OR TITLE-ABS-KEY (mifflin) OR TITLE-ABS-
KEY (schofield) OR TITLE-ABS KEY (predictive AND equation)))

PubMed search – Dec. 15, 2017 was last searched day

("Calorimetry"[Mesh] OR "indirect calorimetry"[All Fields] OR "resting energy expenditure"[All Fields] OR "respiratory quotient"[All Fields] OR "hypermetabolism"[All Fields) AND ("Liver Cirrhosis"[Mesh] OR "End-stage liver disease"[MeSH] OR "end-stage liver"[All Fields] OR "liver transplantation"[All Fields] OR "chronic liver disease"[All Fields] OR "cirrhosis"[All Fields]) AND ("harris-benedict"[All Fields] OR "mifflin"[All Fields] OR "schofield"[All Fields] OR "predictive equation"[All Fields])AND ("english"[Filter]) AND ("humans"[Filter] OR "men"[All Fields] OR "women"[All Fields])

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Table S2. Research design areas

Research design domains assessed before rating the quality of a study [1,2]**:**

2. Well-defined research question, compared with the review question
3. Free of selection bias (using randomization or consecutive sampling)
4. Histological confirmation of liver cirrhosis
5. Explanation of exclusion criteria and withdrawal method
6. Clear description of measurements
7. Free of outcome reporting bias (indirect calorimetry measurement bias)
   - Machine calibration before each exam
   - Resting for at least 20-30 min prior to the procedure (15-min rest period if the first 5 min are discarded), No exercising for 4 hours prior to the measurement
   - Provision of a temperature-controlled room (22-24℃)
   - Steady status (Maintain a supine position throughout the measurement period)
   - Fasting time (overnight, or 5 to more hours)
   - Measurement length (10 - 30 min period)
8. Appropriate statistical analyses
9. Conclusion supported by findings
10. Free of funding bias

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Table S1. Predictive equations used to estimate resting energy expenditure

HB[3]	**M:** REE = 66.47 + (13.75 × wt) + (500.33 × ht) – (6.76 × age) **F:** REE = 655.10 + (9.56 × wt) + (184.96 × ht) – (4.68 × age)
Mifflin-St Jeor[4]	**M:** REE = (9.99 × wt) + (625 × ht) – (4.92 × age) + 5 **F:** REE = (9.99 × wt) + (625 × ht) – (4,92 × age) - 161
Schofield [5]	**M: (18-30 years)** REE = (15.06 × wt) + 692.2 **(30-60 years)** REE = (11.48 × wt) + 873.1 **(+60 years)** REE = (9.09 × wt) + 587.7 **F: (18-30 years)** REE = (14.82 × wt) + 486.6 **(30-60 years)** REE = (8.13 × wt) + 845.6 **(+60 years)** REE = (9.08 × wt) + 658.5
Owen[6]	REE = 169 + (24.1 × FFM)
Cunningham [7]	REE = 502 + (21.6 × FFM)
Muller [8]	REE = 1052 + (17.08 × FFM) – (4.6 × age)
FFM-based regression equation[9,10]	**(1)** REE = 16.85 × FFM + 725 **(2)** BCM_{BIA} = FFM × 0.29 × ln (α) **M:** REE = 28.76 × BCM + 727.07 **F:** REE = 25.82 × BCM + 784.96
BSA-based regression equation	BSA = $0.0235 \times H^{0.42246} \times W^{0.51456}$ (not published the final equation)
Equation based on Japanese DRI[11]	Not published
Abbreviations: *HB* Harris-Benedict; *M* Male; *F* Female; *REE* Resting Energy Expenditure; *IC* Indirect Calorimetry; *wt* weight; *ht* height; *FFM* fat free mass; ; *BCM* body cell mass; *BIA* bio-impedance analysis; *BSA* body surface area; *DRI* Dietary Reference Intakes	

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