

國立體育學院九十四學年度研究所碩士班入學考試試題
運動生理學 (本試題共一頁)

※注意:答案一律寫在答案卷上,否則不予計分

※注意:可用中文或英文作答,但必須橫寫

- (1) 身體活動對預防與治療冠心病 (coronary heart diseases) 有何重要之處。(50 分)
- (2) 說明解釋心跳率 (heart rate) 與攝氧率 (rate of oxygen uptake) 的關係以及此關係的具體應用價值。(50 分)
- (3) 撰寫一個完整的研究計劃,以探討身體柔軟度與健康之因果關係。(50 分)
- (4) Answer the following questions based on the abstract of a study provided.
 - (A) Explain whether the methods (including experimental design, instruments, and measurements) used are appropriate or not in answering the research question. (25 分)
 - (B) How do you apply the information obtained from this study? (25 分)

Purpose: To describe patterns of energy expenditure (EE) during pregnancy and to assess the convergent validity of three methods of estimating EE.

Methods: We administered heart rate (HR) telemetry, accelerometry, and a physical activity record (PAR) over two consecutive days at weeks 20 and 32 of pregnancy and 12 wk postpartum to 28 habitually active and 28 habitually sedentary women.

Results: Mean daily waking-time EE at 20 wk by HR telemetry was 1814 (SD 443) kcal in active women and 1738 (448) kcal in sedentary women ($P > 0.50$), and did not change over the period of study (for active women $P > 0.40$; for sedentary women $P > 0.70$). Compared with HR telemetry, accelerometry underestimated EE by $\sim 400 \text{ kcal}\cdot\text{d}^{-1}$, and the PAR overestimated EE by a similar amount, at all time periods in both active and sedentary women. EE, expressed per unit body weight, was consistently higher for active than for sedentary women during pregnancy. Pairwise correlations between methods ranged from 0.37 to 0.90 across time periods in both active and sedentary women. Correlations were lower (range 0.07-0.81) when adjusted for the length of the recording day.

Conclusions: All methods were sensitive to variation in both the rate of EE and the duration over which activity was monitored. Accelerometry and PAR are useful methods for categorizing EE in epidemiologic studies among pregnant women but absolute estimates are biased relative to HR.