

國立臺中教育大學 110 學年度研究所碩士班招生考試

運動科學概論試題

(含運動生物力學及運動生理學)

適用系所：體育學系碩士班（運動科學公費生組、運動科學自費生組）

一、請寫出下列英文專有名詞之中文名稱，並簡易解釋之（每題 3%，共 30%）

1. anaerobic threshold
2. metabolic Equivalent
3. motor unit
4. sliding filament theory
5. Ergogenic aids
6. Respiratory exchange ratio
7. Maximal oxygen uptake
8. Branched-chain amino acids
9. Exercise economy
10. Creatine kinase

二、請繪圖並以文字簡易說明克立循環(Cori cycle)？(20%)

三、運動生物力學為運動科學領域重要科目，請詳述力的定義(7%)及種類。(18%)

四、詳讀下文，回答問題（共 25%）

Role of arm motion in the standing long jump

The role of arm motion on the performance of the standing long jump was investigated. Three males performed a series of jumps with free (JFA) and with restricted (JRA) arm motion to determine if arm swing improves jumping distance. The subjects jumped off a force platform and the motion of the body segments were recorded with a four-camera, passive motion-capture system. Jumping performance was defined as the horizontal displacement of the toe between the initial and landing (TD) positions. The subjects jumped 21.2% further on an average with arm movement (2.09 ± 0.03 m) than without (1.72 ± 0.03 m). Seventy-one percent of the increase in performance in JFA was attributable to a 12.7% increase in the take-off (TO) velocity of the center of gravity (CG). Increases in the horizontal displacement of the CG before TO and in the horizontal position of the toe with respect to the CG at TD

accounted for the remaining 29% of the improvement in jumping distance. The added balance and control provided by the arms throughout the jumping motion contributed to performance improvement in JFA. The subjects were able to remedy excessive forward rotation about the CG by swinging the arms backwards during the flight phase. Without the freedom to swing the arms during flight, the subjects had to eliminate any excessive forward rotation while still in contact with the ground. This tendency in JRA was manifest in the premature decline in the vertical ground reaction force (VGRF) and the development of a counterproductive backward-rotating moment about the CG just before TO.

Keywords: Standing long jump; Arms; Kinematics; Upper body; Stability

1. 寫出上述期刊論文中文題目？(5%)
2. 寫出期刊論文的研究目的？(5%)
3. 詳述期刊論文研究結果？(15%)

國立臺中教育大學 110 學年度研究所碩士班招生考試 體育概論（含體育學原理及體育行政管理）試題

適用系所：體育學系碩士班（運動人文社會自費生組）

- 一、體育學原理為人文社會科學領域重要科目，請論述其主要研究範疇。(25%)
- 二、運動與政治之間的關係微妙，無法切割彼此。基於前述，請綜整各國政府推動體育運動發展的考量因素。(25%)
- 三、何謂體育(5%)？何謂運動(5%)？請闡述體育活動的意義與功能為何？(15%)
- 四、109 年 12 月 14 日立法院第 10 屆第 2 會期教育及文化委員會第 13 次全體委員會議，多位立法委員提出我國體育班學生學業成績低落之問題，請闡述如何改善國民中學體育班學生學業成績低落之策略。(25%)