

UNIVERSITY COLLEGE LONDON

UNIVERSITY OF LONDON

EXAMINATION FOR INTERNAL STUDENTS

FOR THE FOLLOWING QUALIFICATIONS:

B.Sc. (*Intercal*)

Orthopaedics 3004: Research Methodologies and Transferable Skills

COURSE CODE	:	ORTH 3004
UNIT VALUE	:	0.50
DATE	:	11-May-06
TIME	:	10.00
TIME ALLOWED	:	2 Hours

Answer **THREE** questions out of the following **FOUR** questions. **All questions carry an equal number of marks**

Answer each question in a **SEPARATE** book

- Q1 (a) List and briefly describe three common errors when designing research studies in medicine. Discuss how they invalidate conclusions that may be drawn following statistical analysis of the results.
- (b) Discuss the use of power analysis when planning a study. What factors influence the number of subjects that may need to be recruited when conducting a well designed study?

Q2 You are planning a clinical study to determine whether muscle-derived stem cells (MDSCs), genetically engineered to generate a therapeutic protein, are effective in repairing damage to cartilage in the knee.

- Provide an outline for a proposed study design.
- Briefly summarise the requirements you would have to meet:
 - a. In relation to research governance
 - b. With regard to ethics approval
 - c. To comply with the Data Protection Act

Q3 Describe the measurement systems that are used in a typical gait analysis laboratory to:

- Collect kinetic information
- Collect kinematic information
- Collect electromyographic information

Discuss the sources of errors that may occur when estimating the forces generated at the hip during take-off by an elite high-jumper.

Q4 **Results of Preoperative Pulmonary Function Testing of Adolescents with Idiopathic Scoliosis. A Study of Six Hundred and Thirty-one Patients.** *The Journal of Bone and Joint Surgery (American)*. 2005;87:1937-1946. Peter O. Newton, MD, Frances D. Faro, MD, Sohrab Gollogly, MD, Randal R. Betz, MD, Lawrence G. Lenke, MD and Thomas G. Lowe, MD

You have been chosen to present this paper to your journal club. Write a summary of the paper (200 words). Indicate the strengths and weaknesses of the study as bullet points by writing down two lists. Each list should contain five to ten points.

In about 100 words indicate how the results of this study inform spinal surgeons treating individual patients in their practice.