

KNES 441/443/445 – PRACTICUM COURSE

Practicum Position Title: Biomechanics Research Assistant

of Positions Available: 2 per term

Industry/Company Description: University of Calgary – Department of Clinical Neurosciences

Dr. Ranita Manocha is a physiatrist – a physician specializing in Physical Medicine and Rehabilitation. The patients Dr. Manocha typically works with have acute injuries or chronic disabilities, such as a sports injury, motor vehicle accident, orthopedic trauma, brain injury, spinal cord injury, amputation or peripheral nerve injury. Dr. Manocha is looking for enthusiastic and motivated students interested in gaining hands-on experience in biomechanics research or exercise delivery.

Locations: McCaig Institute at HRIC (University of Calgary – Foothills Campus)

Required Hours: 60-72 hours per term – evenly dispersed throughout term:

- 5-6 hours per week during fall or winter terms (13 weeks)

Academic Session: Fall or winter

Specified Schedule: Negotiable

Duties/Responsibilities: Under strict supervision, the student will work with Dr. Manocha, and an interdisciplinary and collaborative research team, to study the effect of crutches on human movement. During the interview process, the student's interest will be matched with a specific research project.

Examples of research projects may include:

- Analyzing upper extremity kinematics and kinetics during crutch-assisted gait using optical tracking system and surface electromyography
- Assessing the impact of shoulder strengthening exercises on crutch-assisted gait kinematics
- Questionnaire-based research from people prescribed crutches in emergency departments

The student will:

- Assist with contacting and scheduling of study participants.
- Help the participants to complete questionnaires assessing their upper or lower extremity function and quality of life.
- Assist with collecting participant height and weight. Under supervision, perform bedside assessments of upper extremity strength and motion.
- Under supervision, properly fit a brace or gait aid to a participant.
- Under supervision, demonstrate upper extremity stretching and strengthening techniques to research subjects who have been assigned to a home exercise program.
- Under supervision, collect 3-dimensional kinematic and kinetic data during crutch-assisted gait by setting up markers on participants and their devices, calibrating software, and collecting data into software.
- Use Microsoft Excel for basic data entry and analysis.
- If the student is interested, they may assist in writing and presenting research.

Student Qualifications:

- **Required**
 - KNES 213 – Introduction to Research in Kinesiology
 - KNES 259/260 – Human Anatomy/Physiology – good recall of subject matter
 - KNES 263 – Quantitative Biomechanics
 - Interest in biomechanics and clinical applications
 - Personable and enthusiastic
 - Computer skills – knowledge of Microsoft Word and Excel
- The following are not required, but could be an asset:
 - Experience in delivering exercise-based interventions
 - Previous research experience
 - Courses in Epidemiology, Public Health, Research Methods, and Statistics

On-Site Supervisor: Dr. Ranita Manocha, MD, MSc, FRCPC, CSCN(EMG). Research Supervisor. Please email directly for an interview: ranita.manocha@ucalgary.ca. Please provide your resume and transcript. Phone: (403) 944-4224.