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# Mechanisms of cervical spine injuries

Spinal Research Group, Adelaide Medical School & School of Mechanical Engineering

## Project description

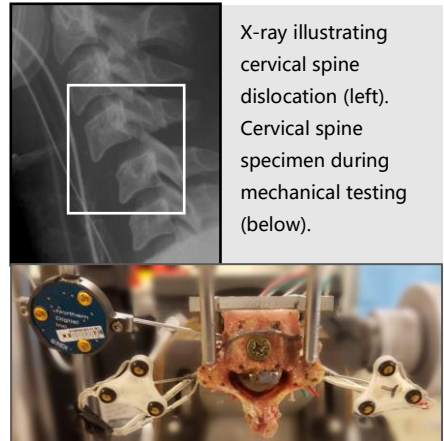
Traumatic cervical spine (neck) injuries are often associated with devastating spinal cord injury. Facet fracture and dislocation are common spinal injuries, and their mechanisms are not well understood. This project seeks to understand the complex mechanisms by which facet dislocation and fracture occur in the cervical spine (neck). The study will include cadaveric biomechanical modelling and design of custom testing apparatus. It may also include analysis of data from US automotive injury databases.

## Primary aim

The aim of this project is to better understand the complex mechanisms of cervical spine facet dislocation and fracture. Improving understanding of the mechanics surrounding this injury will enable us to better design anthropometric test devices (crash test dummies), devise more accurate injury criteria, and improve prevention and treatment of the injury.

## Student attributes

This project is suited to students with an Undergraduate or Masters degree in Mechanical, Mechatronic or Biomedical Engineering, and a strong interest in musculoskeletal injury and orthopaedics. The student should be willing to work with human and animal cadaveric specimens. Experience with materials testing, kinematic analysis, data acquisition (LabView), and sensors such as strain gauges, LVDTs and load cells, is advantageous but not essential.



X-ray illustrating cervical spine dislocation (left). Cervical spine specimen during mechanical testing (below).

## The Spinal Research Group

Student(s) will work within a dynamic multidisciplinary team of scientists, engineers and clinicians. Investigators associated with this study include: Dr Claire Jones and Professor Brian Freeman, members of the Spinal Research Group in the Centre for Orthopaedics and Trauma Research. This project will be executed in the state-of-the-art Biomechanics Laboratory at the Adelaide Health and Medical Sciences Building. Students can be enrolled in School of Mechanical Engineering or Adelaide Medical School.

## For further enquiries

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