

# Vertebra Compression MGP\_CTV\_001

## Purpose

To assess the mechanical force that vertebrae can withstand.

## Experimental Design

- **Minimum number of animals** : 1M or 1F
- **Age at test**: Week 16

## Equipment

- Instron 5543 Materials testing frame
- Compression analysis load cell (500N)
- Bluehill 2 software
- Faxitron Machine
- Scalpel
- Small petri dish
- 70% Ethanol
- Superglue
- Forceps

## Procedure

1. Set up and calibrate the Instron and Faxitron machines.
2. Take an x-ray image of the tail and identify caudal vertebrae 6 and 7 (Ca6 and Ca7) counting from caudal vertebrae 4. Cut out Ca6 and Ca7 using a sharp scalpel placing them in petri dish with 70 % ethanol.
3. Select one of the vertebrae and place on a small drop of superglue at the centre of the base of the load area of Instron ensuring it is straight and upright. Push lightly on the top of the vertebrae using forceps to straighten and secure it.
4. Start the compression keeping an eye on the graph being generated and stop the test once 1 mm compression is reached.
5. Repeat for the remaining vertebra.

## Notes

Data analysis

1. Plot load-displacement curves and determine yield and maximum loads.
2. Calculate stiffness from the linear part of the load displacement curve by the least squares method.
3. Repeat for both of the vertebrae and record the average.

## Parameters and Metadata

### Vertebra Yield Load MGP\_CTV\_001\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: N

Description: vertebra\_yield\_load

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### Vertebra Max Load MGP\_CTV\_002\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Unit Measured: N

Description: vertebra\_max\_load

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### Vertebra Stiffness MGP\_CTV\_003\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Unit Measured:** N/mm

**Description:** vertebra\_stiffness

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## **Equipment manufacturer** MGP\_CTV\_004\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** false

**Is Annotated:** false

**Description:** equipment\_manufacturer

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## **Equipment model** MGP\_CTV\_005\_001 | v1.0

procedureMetadata

**Req. Analysis:** true

**Req. Upload:** false

**Is Annotated:** false

**Description:** equipment\_model

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