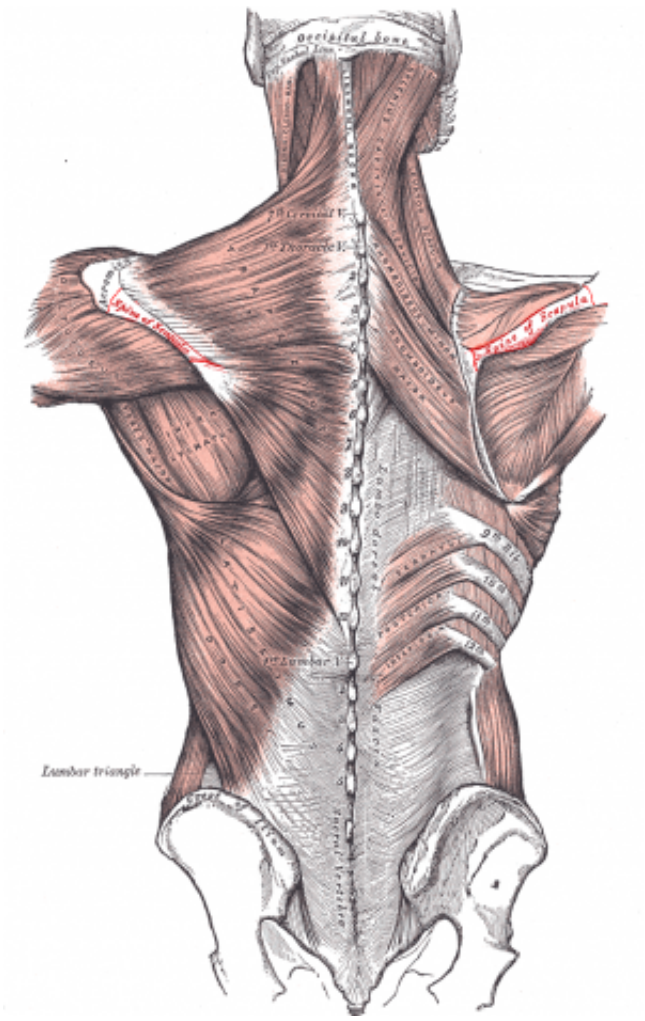
Medical Xpress

A good night's sleep rests on your spine's biomechanics

May 22 2017, by Niki Widdowson



Credit: public domain

A three-year study by QUT biomedical researchers in the Paediatric

Spine Research Group (PSRG) aims to deepen our understanding of the concepts of comfort by using new techniques to look at how the spine reacts in different lying positions.

Dr Paige Little said a QUT team of scientists in the PSRG (a collaboration between QUT and spinal orthopaedic surgeons at Mater hospitals) was getting back to basics to investigate the distribution of body weight in different positions on firm and soft mattresses.

"We have partnered with mattress manufacturer Sealy of Australia for possibly the first study to look at what is happening on the outside of the body with 3-D surface scanning and on the inside with MRI," Dr Little said.

"We will ask healthy, young adults to take part in the study so we can map the distribution of body 'load' across a soft and firm surface mattress and then ask them to rate the comfort level."

Dr Little said the findings could have a bearing on promoting general health through comfortable sleep.

"We know that the cartilage in the spine expels fluid during the day and reabsorbs it during sleep at night.

"This is an important process and our back needs to feel comfortable when we lie down so that we can rest properly and facilitate the process. This is where our findings on understanding the science of comfort will play a part."

QUT biomedical engineer Dr Caroline Grant will use her skills in 3-D simulation, computer visualisation and computational analysis of the spine to develop simulation techniques to better understand critical anatomical structures.

"In this project I will apply these techniques to create virtual replicas of physical bodies in order to study different sleeping postures," Dr Grant said.

Sealy of Australia R&D manager Daniel Green said the aim of the three-year study was the development of a new era of bedding products tailored to individuals' comfort requirements.

Provided by Queensland University of Technology