Vehicle Safety Insitute

Investigation of sledging accidents using Human Body Models

Background

Sledging is a popular pastime in Austria. About **2,200 people** involved in sledging accidents suffer from injuries that require **emergency room treatment.** Patient frequently suffer from injuries to the **head, thorax and upper/lower extremities**. Up to now, there is only a limited amount literature available on sledging accidents. Existing literature mainly focuses on analyzing data from Emergency Care Units to identify accident circumstances and injury mechanisms. However, no existing study investigated sledging accidents using human body models.

Your goal in this thesis is to **analyze accident circumstances** to derive relevant accident scenarios in sledging accidents. You will then use **finite element human body models** to investigate injuries related to sledging accidents. In addition, you will include **different protective items** (e.g. helmets) and verify their **potential to reduce injury severity**.

Tasks

- **Get familiar** with typical impact configurations and injury mechanisms in sledging accidents
- **Understand** the use of Human Body Models for analyzing these impacts
- **Develop** strategies to reduce injury severity
- **Implement your ideas** to assess the injury outcome in sledding accidents
- **Build Skills** in the fields of accident analysis, injury prevention and finite element analysis

Literature

- Voaklander, D. C., Kelly, K. D., Sukrani, N., Sher, A. u. Rowe, B. H.: Sledding injuries in patients presenting to the emergency department in a northern city. Academic emergency medicine : official journal of the Society for Academic Emergency Medicine 8 (2001) 6, S. 629–635
- Corra, S. u. Giorgi, F. de: Sledding injuries: is safety in this winter pastime overlooked? A three-year survey in South-Tyrol. Journal of Trauma Management & Outcomes 1 (2007) 1, S. 5

Recommended as

- Master thesis for Mechanical Engineers

Organizational

- Start: anytime
- Scholarship: min. € 2.500,- for successful completion of the thesis
- Contact:

Corina Klug corina.klug@tugraz.at
Stefan Smit stefan.smit@tugraz.at