Fakultät für Maschinenwesen

Autor(en) des Beitrags:
Lehner, Stefan; Geyer, Tobias; Michel, Frank I.; Schmitt, Kai-Uwe; Senner, Veit

Titel des Beitrags:
Wrist Injuries in Snowboarding -- Simulation of a Worst Case Scenario of Snowboard Falls

Abstract:
Snowboarding is one of the most popular winter sports, particularly among adolescents and younger adults. The risk of injuries while snowboarding is higher compared with alpine skiing, with the wrist as the dominant injury region. In contrast to increasing numbers regarding helmet usage, acceptance for wearing wrist protectors is decreasing. To date the market offers a variety of wrist protection products for snowboarding which feature different protective elements. However, there are no minimum performance standards for snowboarding wrist protectors worldwide. Currently a harmonized international standard is under preparation to provide guidelines for minimum safety performance for all wrist protectors used in snowboarding. In the course of this aim, a multi body system (MBS) was developed to acquire further knowledge about the functional requirements of wrist protectors. To evaluate a worst case scenario different falling scenarios of snowboarders were simulated to calculate the resulting loads in the upper extremity. The simulations were carried out using the multi body dynamics software package SIMPACK 9.0 (SIMPACK AG, Wessling, Germany). The comprehensive model contains a human model, a model of a ski slope and a model of a snowboard. The parameterized models adapt to the body height, the body weight and the shoe size of the snowboarder. In this study a model of a 50 percentile adult...
(1.80 m, 78.4 kg) was used. To evaluate a worst case scenario well-known falling situations of snowboarders were simulated. The backward fall on outstretched joints of the upper extremity can be evaluated as worst case scenario.

Stichworte: 
- wrist guards; snowboard; simulation

Zeitschriftentitel: 
- Procedia Engineering

Jahr: 
- 2014

Band: 
- 72

Seiten: 
- 255--260

Volltext / DOI: 
- doi:10.1016/j.proeng.2014.06.037

Occurences: 
- Einrichtungen > Fakultäten > Fakultät für Maschinenwesen > Institut für Produktionstechnik > Fachgebiet f. Sportgeräte u. -materialien (Prof. Senner) > 2014

Entries: