TUM

SPORT & TECHNOLOGY

SPGM

ADDITIVELY MANUFACTURED MOUTHGARDS

ESPORTS MEDICINE

CYCLISTS SAFETY

NEWS, NEWS, NEWS

News of the professorship

Sake-Sushi-Science: A Biomechanical Conference Summer

The "International Society of Biomechanics" celebrated its 20th anniversary this year and, after a forced break due to the pandemic, invited participants to attend in person once again. Our two colleagues, Kati Nispel and Tanja Lerchl, were part of it and took the opportunity to present their current research.

ON THE PROTECTIVENESS OF ADDITIVELY MANUFACTURED MOUTHGUARDS

by M. Lißner, T. Goldberg, D. Townsend, N. Petrinic, J. Bergmannl

Researchers are now subjecting mouthguards to high-impact energy tests, comparing traditional EVA mouthguards to those made with additive manufacturing. High-speed image analysis and drop tower impact experiments reveal that Arnitel® ID 2045 mouthguards produced additively perform better, with a 10% reduction in peak force and a 25% decrease in impulse, which reduces the risk of orodental injuries. This study highlights the importance of testing mouthguards at higher impact energies, especially for high-impact sports like field hockey, where additive manufacturing shows promise in mouthguard production.

Read the publication here

THE ESPORTS MEDICINE: PRE-PARTICIPATION SCREENING AND INJURIES MANAGEMENT—AN UPDATE

by Rossoni, A., Vecchiato, M., Brugin, E., Tranchita, E., Adami, P. E., Bartesaghi, M., Cavarretta, E., & Palermi, S.

Recently, eSports, a rapidly growing domain of new media, has gained prominence due to online gaming's widespread availability. Like traditional athletes, eAthletes train intensively, compete in tournaments, and follow established rules. However, eSports also carry injury risks, stemming from poor posture, repetitive movements, extended screen time, sedentary habits, and marathon gaming sessions. These factors can lead to musculoskeletal, ophthalmological, neurological, and metabolic issues, along with cardiovascular changes. This article explores potential injuries in professional eAthletes and advocates for pre-participation assessments and injury prevention measures for high-level gamers.

Read the publication here

A WEARABLE SENSOR NETWORK FOR CYCLISTS SAFETY IN MIXED TRAFFIC, A PILOT STUDY

by G. Sanseverino, M. Rothermel and S. Odenwald

The integration of autonomous vehicles with human traffic poses a significant challenge in road sharing. Traditional road coordination relies on human communication through gestures and body language. A new study is investigating the use of sensors on bicycles and clothing to improve cyclist safety. In a pilot study involving eight participants, the research successfully identified early indicators of a cyclist's intention to make a left turn, which is a potential risk in right-handed traffic. This innovative approach could enhance the interaction between autonomous vehicles and vulnerable road users, such as cyclists and pedestrians, by enabling better prediction of their intentions.

Read the publication here