

## Focus on IFA's work

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# Use of the BGHW warehouse simulator to raise awareness of fall hazards

### Problem

The German Social Accident Insurance Institution for the Trade and Logistics Industry (BGHW) already supports the promotion of safety for pedestrians and cyclists in companies by means of a truck (the “mobil”) equipped with a range of simulators and exhibits used for demonstrations and training. For its part, the IFA possesses extensive experience in simulating hazard spots in virtual reality (VR) and thus making it possible for people to experience risks vividly and directly without actually being in danger.

The idea thus arose for a new exhibit to be developed for the “mobil”: a simulator for virtual simulation of typical hazard spots in warehouses that increase the risk of tripping, slipping or misstepping.

The employees should experience their active role in accident prevention, should made aware of typical hazards and, with the help of the exhibit, return to their day-to-day work with the benefit of this new experience.

### Activities

The exhibit, featuring a head-mounted display (HMD) and an omnidirectional treadmill, was developed to address and solve the problem of the limited scope for movement in VR environments. The treadmill allows workers to move in all directions without actually having to walk across the room.

The simulation of a warehouse by a VR application includes many different hazard points to be identified by the workers, such as unsecured cables on the ground and containers that have tipped over. The related hazards can



BGHW warehouse simulator in the “mobil”

then be eliminated with the help of suitable preventive measures. The predefined alternatives make it clear to employees that they are always able to take action themselves, i.e. eliminate the hazard points themselves or arrange for further measures to be taken.

### Results and use

The “BGHW warehouse simulator” exhibit was mounted onto the BGHW’s “mobil” truck. Companies have been able to book the “mobil”, for example for health or road



Identification of a danger point (top) and menu for selection of measures (bottom)

safety days, since 2019. Initial deployments of the BGHW mobil under the guidance of trainers, e.g. at the BGHW symposium, have shown that the goal of using new technologies to make as many age groups as possible aware of slipping, tripping and misstepping risks and solutions to them has been achieved very well.

The programs and VR technologies used can also be transferred to other sectors and extended with additional scenarios.

### User group

Companies where tripping, slipping and falling accidents may occur.

### Technical enquiries

- IFA, Department “Accident Prevention – Digitalisation – Technologies”
- German Social Accident Insurance Institution for the Trade and Logistics Industry (BGHW)

### Literature enquiries

- IFA, Department “Interdisciplinary Services”

### Further information

- Wetzel, C.; Lungfiel, A.; Nickel, P.: BGHW Warehouse Simulation – Virtual Reality Supports Prevention of Slip, Trip and Fall (STF) Accidents. In: Duffy, V.G. (eds) Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management. HCII 2023. Lecture Notes in Computer Science, vol 14028. Springer, Cham.  
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