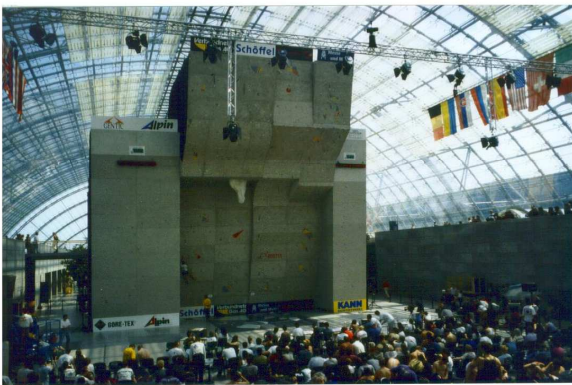


Injury-risk on indoor climbing walls

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In the past 10 years sportclimbing has developed from an extreme sport for individuals to a sparetime sport for people off all ages. Because of that the number of indoor climbing walls has increased in many countries. Germany alone has at least about 100 indoor climbing walls. The study wanted to explore the injury-risk in sportclimbing and if it needs to be considered as a high risk sport.



Sportclimbing World-Cup Leipzig 1999

During a period of 6 month the risk of significant injuries / trauma on 10 indoor climbing walls was surveyed. 8 of the 10 walls were designed for on lead climbing, 2 walls were only bouldering-walls. All the 8 major climbing walls were built under the European norm CEN/TC 136 WG9N29. The definition of a significant injury was an acute trauma which needed immediate medical care. This excluded all smaller but more common minor injuries such as finger tendon strains or pulley-injuries.

A total of 25163 visits were registered at the 10 walls, 74% male climbers and 26% female. Overall only 4 significant injuries were found, the injury-risk per visit was 0.016%.

Casualties:

- Ankle-Distorsion /Ligament Rupture: 2 m/f
Both jumped down while bouldering and twisted the ankle while hitting the mat.
- Fracture of the distal radius: m
By tying a bad knot the rope could not catch the falling climber, hitting the ground from the 6.5m top of the wall.
- Contusion of the lumbal spine: m
Climber losing feet on a boulder problem and hitting the ground beside the protection-mat.



World-Cup Leipzig 1999

In comparison with other so called high-risk sports such as motorcycle-racing or paragliding, the injury-risk in sportclimbing, especially in indoor-climbing, is much lower and the occuring injuries are off lower severity.

Conclusion:

Indoor climbing is not a "high-risk"-sport !

Footdeformations in Sportclimbers

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In extreme rockclimbing footholds are very tiny edges, requiring good foottechnique and specially designed climbing shoes. To get better performance athletes wear very small climbing shoes to get more pressure onto the foothold. In those shoes the toes are not erect anymore but continuously bent; over the years leading to foot problems.



Climbers foot inside the climbing shoe, X-ray, lateral view.



Climbers feet, with and without climbing shoe.

An evaluation of chronical foot-deformations was done in 30 high level male sportclimbers. Every climber was at least climbing the level 9 (average redpoint-level 10-, UIAA) and had been climbing for more than 5 years (average 12.8 years). 87% of the climbers were willingly enduring pain inside the climbing-shoes to get a better performance. The climbing shoes were in average 2.3 sizes smaller than normal shoes. All athletes had pressure marks and skin affections on the dorsal side of the toes; also subunqual haematoma, dystrophic nails and toe nail infections were found.

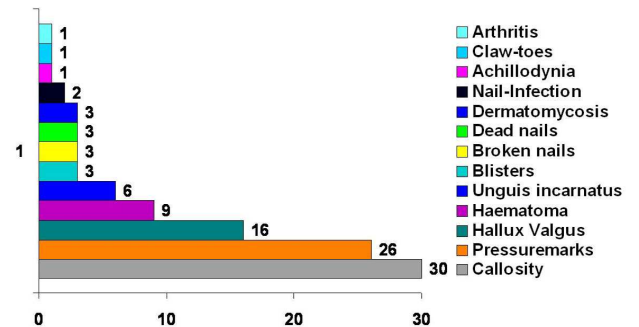


pressure marks



subunqual haematoma

Footdeformations (n=30)



Climbers foot without shoe



Climbers foot inside the climbing shoe

The climbing shoe presses the foot into a hallux valgus position inside the shoe, possibly leading to a permanent deformity.



hallux valgus deformity (male, 33y, climbing level 11-)

53% of the climbers suffered from a hallux valgus, 20% bilaterally. The incidence of a hallux valgus deformity is much higher within the group of sportclimbers (53%) than in the average of a general population within the same age (4.3%). The widely spread use of very tight climbing shoes generates the development of hallux valgus deformity.