

# Studies on the combined effect of fatigue and lower extremity injuries on sensorimotor control

Sensorimotor abilities following injuries to the lower extremity

## SENSABLE



### Background

Ligamentous injuries to the knee and ankle joint are among the most common sports related injuries. The incidence is particularly high in team ball sports athletes. More than one third of the injured individuals sustain recurrent injuries and develop long term persistent impairments. These problems have been associated with deficits in sensorimotor control.

The risk of sustaining a lower extremity injury is further increased in a physically fatigued state, and temporary impairments in sensorimotor control have been shown.

### Purpose

Sensorimotor control is persistently impaired following lower extremity injuries and temporarily affected following fatiguing exercise. To date, only little research has focused on potential interactions between these effects. Thus, the aim of this project was to investigate the detrimental effects of fatiguing exercise on sensorimotor control in athletes with a history of lower extremity injury.

### Methods

A series of (cohort) studies was carried out assessing static and dynamic postural control before and immediately after acute, fatiguing exercise.

**Study #1:** Effects of localized and general fatigue on static and dynamic postural control in male team handball athletes.

**Study #2:** Fatigue-induced alterations of static and dynamic postural control in athletes with a history of ankle sprain.

**Study #3:** The effect of fatigue on sensorimotor control in athletes with chronic ankle instability and ankle sprain copers.



### Publications

Zech A, Steib S, Hentschke S, Eckhardt H, Pfeifer K. Effects of localized and general fatigue on postural control in male team handball athletes. *J Strength Cond Res.* 2012;26(4):1162-1168.

Steib S, Zech A, Hentschke C, Pfeifer K (2011). Fatigue induced alterations of static and dynamic postural control in athletes with a previous ankle injury. *Journal of Athletic Training.* 2013;48(2):203-208.

Steib S, Hentschke C, Welsch G, Pfeifer K, Zech A (2013). Effects of fatiguing treadmill running on sensorimotor control in athletes with and without functional ankle instability. (submitted)

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