

Title:

The measurement of loading forces acting on sole of the foot in ice-hockey skates and their casuistic signification

Abstract

This thesis describe a new construction of measuring device, which is able to detect the loading forces acting on the skates during ice-hockey. This device was calibrated and validated for detection of loading force vector, bending force vector and point of force action on the skate blade. For some cases was described a casuistic mean of measurement by new measuring device „measuring skates“ and former device Footscan Insole®. The measurement of loading forces during ice-hockey may be used in practise of skating technique, predictive or protective biomechanics. Future use is also research of discomfort in ice-hockey boots or sportsengineering.

Aim of a study:

Aim of a study is projected, calibrated and validated a measuring device able to detect interaction in system foot-skates-surface. After validation is necessary to prove the practical benefit of this device. This device should make possible to find out the origin of discomfort during ice-hockey skates use.

Methods: After a critical review the prototype of measuring skate was constructed. The measuring skate was calibrated and validated. In content of pilot study was done the experiment to proof the casuistic mean of data measured by measuring skate. The proof was estimated by Kendal correlation product in content of significancy level p .

Results:

As a result of this work was created equipment capable of verifiable, calibrated and validated measurement of the loading forces exerted on the skate and sole of the foot during ice hockey skating. The casuistic mean of measured data was proven in pilot study. This equipment makes it possible to record the loading forces on the sole of foot and evaluate them with other measuring systems.

Keywords:

Ice-hockey, skates, loading forces measurement, sport-engineering