Abstract

Title:

Analysis of static strength of friction knots used in military climbing.

Objectives:

Strength determination of selected knots on static ropes under static load.

Methods:

This bachelor thesis shows a laboratory experiment, where the influence of friction knots on the strength of the Reep cord tied to a static rope under static load was determined. For the purposes, a 6mm Reep cord and 10.5mm rope and friction knots used in military climbing techniques were selected. The experiment was run on a vertical test rig. Each of the selected knots was tested 10 times. Every knot was compared among the others in the first slip, slip length, maximum strength, nominal strength drop and the point of failure.

Results:

The highest average values of the first slip and the maximum strength were achieved by the Twist prusik. The lowest value of the slip length was measured at the Blake friction knot. Compared to other of the selected knots, the lowest decrease in nominal strength by 14 % was found on the Blake knot, while the highest decrease in nominal strength is found in the Twist prusik. The Reep Cord failed in 81 % of all attempts.

Keywords:

military climbing, friction knot, knot strength, slip, point of failure, nominal strength