ABSTRACT

TITLE:	Strength Comparisons of Knotted and Un-Knotted Dyneema
AUTHOR(S):	Keisling, Hayden
PRESENTED AT:	8th Annual Natural & Behavioral Sciences Undergraduate Research Symposium Program, Fort Lewis College, 2013

ABSTRACT: Because of the alleged safety hazards associated with knotted Dyneema, the purpose of this study is to compare the strength of knotted and un-knotted Dyneema slings, with the intention of finding a strength gain or reduction in the knotted material. Previous studies have limited their focus to knots joining two separate pieces of Dyneema and to the use of dynamic testing methods. This study will address the problem of the lack of research regarding the strength of sewn Dyneema slings that are subjected to static testing. With the use of a tensile machine, 10 knotted and 10 un-knotted Mammut Dyneema slings were tested until failure. Each individual failure, recorded in kN, was placed into a table and then statistically analyzed using an independent t-test. The results of this study show that a significant difference can be found between knotted and un-knotted Dyneema slings ($p<.05$), reporting a strength reduction of 46.23% in the knotted Dyneema.