The Impact of Controlled Conditioning on Prusik Loop Strength

Prusik loops are an integral component in most technical rescue systems used by Wilderness SAR teams. They are used throughout the systems from simple extensions to “fail safe” belays. During field use, these simple – yet key life safety – cord loops are commonly exposed to harsh environmental conditioning. All too often, after the rescue, these prusik loops are readily incorporated back into the rescue gear with little thought.

It is well known that wet rope looses as much as 30% of its strength, yet little is known about the impact of the repeated conditioning on the prusik material that is nearly universal throughout technical rescue.

This study was designed to examine the impact environmental conditioning on 8 mm cord. Prusik loops were wetted in either water alone or in a water-soil mixture. The prusik loops were then further conditioned by 5 cycles of slow pulls (1000 pounds) and relaxation, the timing of which was designed to mimic the hauls in a technical rescue system. The prusik loops were air dried and stored at room temperature until the next cycling session. Prusik loops were exposed to 1, 2, 5, and 8 cycles. Treated prusik loops were then tested to failure under controlled parameters.

The data from this study is presented in its entirety and used to offer the Rescue Community guidance regarding a replacement schedule of prusik materials as well as soft goods in general.