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Self-Rescue Part II – Mechanical Advantage Systems

Pre/Co-requisites

Part II does not require completion of Part I, although to participate in a field session students must have completed both or be able to demonstrate an equivalent level of proficiency. A previous introduction to the standard “C” and “Z” pulley systems (and/or the “Canadian Drop Loop” system) will be beneficial but are not essential. To utilize the skills in this course it is essential to be able to construct sound anchor systems. While the class may be taken without that ability it will be necessary to implement any of what is covered.

Objectives

Analysis of Loads and Mechanical Advantages

- Understand how free-body diagrams can be used to analyze mechanical systems
- Be able to use the T-method as a shortcut to free-body diagrams when analyzing and troubleshooting pulley systems
- Be able to use the above skills to explain why loads are *not* magnified when typical pulley systems are used

Types of Pulley Systems

- Know the differences between simple, compound and complex systems
- Be able to construct simple and complex systems according to various specifications, and be able to change or build one system into another without beginning from scratch
- Be able to identify the advantages and disadvantages as well as the rigging requirements (such as available rope, etc) for different starting points and progressions

Practical Issues

- Understand the role and implications of efficiencies in system components and system construction
- Be able to implement some form of “ratcheting” (or “progress capturing”) as needed
- Be able to reverse a system if necessary