OVERVIEW

High Threat Extraction

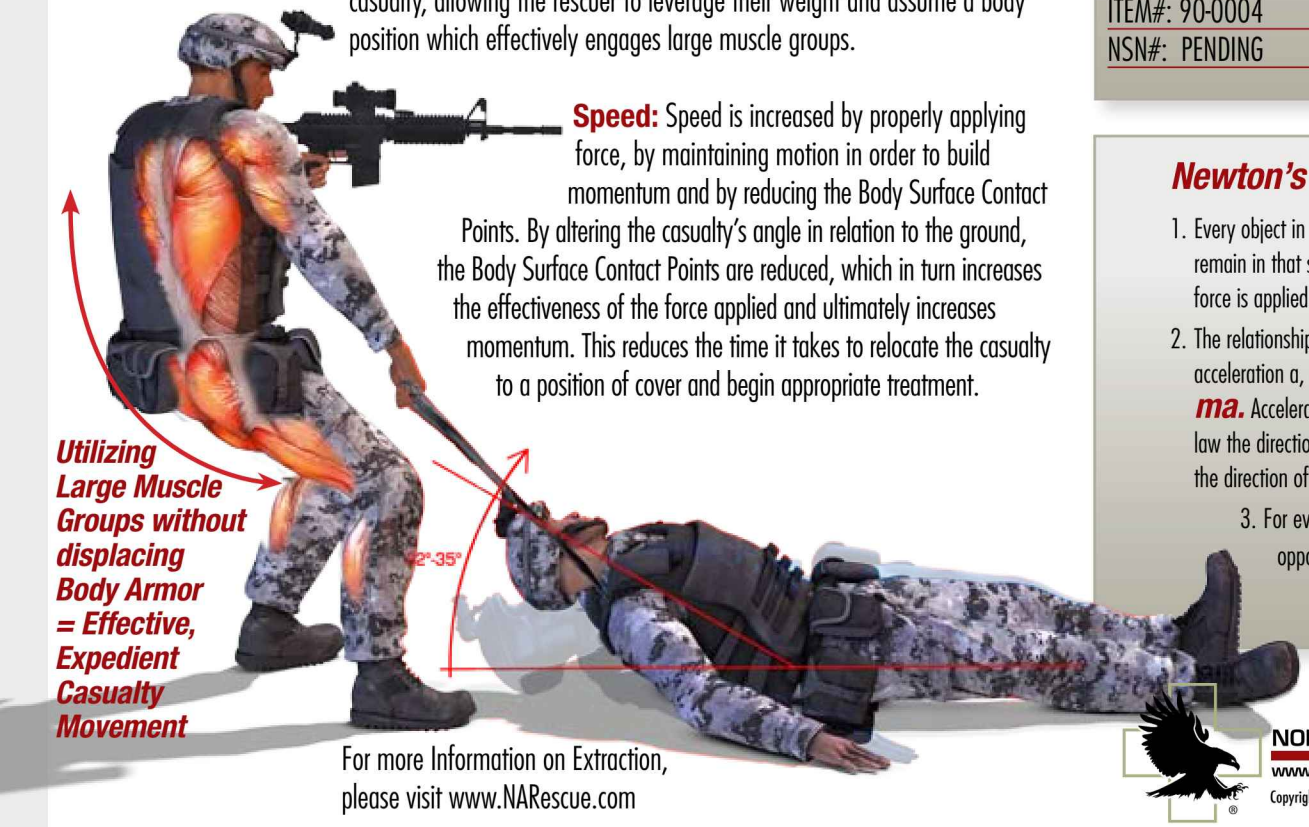
THE PHYSICS OF EXTRACTION

Traditionally, many rescuers attempt to "snatch and grab" a casualty in order to move them to a position of cover. Using this technique, a negative cascade of events is likely to occur. First, the rescuer utilizes small muscle groups (hands and forearms) to stay "attached" to the casualty. These muscles fatigue quickly. Second, the rescuer is too close to the casualty to gain leverage or to use their own body weight as a counter balance to the casualty's weight. This proximity also increases the likelihood of the rescuer tripping over the casualty. Third, rescuers typically employ "jerking" movements while attempting extraction. Momentum cannot be obtained using this technique, and the extraction time is greatly delayed. The stop-and-go movement further fatigues the small muscles, while body contortions increase the danger of additional injury to both the rescuer and casualty by displacing the body armor and exposing unprotected regions of both rescuer and casualty.

What Matters when Moving a Casualty?

Time: Ideally, time on the "X", or point of wounding, in an exposed area should be limited to four to six seconds. Irrefutable evidence shows that the rescuer is at his greatest vulnerability at this time as he himself can become the target of the adversary. This limited window of opportunity eliminates other, more time consuming options for extraction such as the use of a friction reducing litter device. There simply isn't time for securing the casualty. Utilizing a handle system or hands free extraction tether is a quick and expeditious method of initiating an extraction.

Force: Force is the energy expended to transition the casualty from a static position to motion and then to maintain that movement. The amount of force required to begin movement is greater than the force required to maintain motion and develop momentum. Utilizing a handle system or hands free extraction tether allows the rescuer to apply leverage to the casualty at an angle that reduces both gravitational pull and friction between the casualty and the ground... (22°-35° for head first and 10°-15° for feet first drags). Additionally, this creates distance from the casualty, allowing the rescuer to leverage their weight and assume a body position which effectively engages large muscle groups.



Utilizing Large Muscle Groups without displacing Body Armor = Effective, Expedient Casualty Movement

Speed: Speed is increased by properly applying force, by maintaining motion in order to build momentum and by reducing the Body Surface Contact Points. By altering the casualty's angle in relation to the ground, the Body Surface Contact Points are reduced, which in turn increases the effectiveness of the force applied and ultimately increases momentum. This reduces the time it takes to relocate the casualty to a position of cover and begin appropriate treatment.

For more Information on Extraction, please visit www.NARescue.com

n. **ex·tract·ol·o·gy®**

(ik-strākt ŏl´ə-jē)

The art, skill, practice, or study of removing one's self or injured personnel from high threat environments, defeating great impediments that are seemingly impossible to overcome.

VooDoo DRAGON™ HANDLE SYSTEM

- *Designed for Linear Personnel Recovery Drags*
- *Exponentially Faster Drag with Less Physical Exertion*
- *Keeps Victim Low Profile Decreasing the Likelihood of Additional Injuries*
- *Head First or Feet First Drag options*
- *Decreases Time on the "X"*

ITEM#: 90-0004

NSN#: PENDING

Newton's Laws of Motion

1. Every object in a state of uniform motion tends to remain in that state of motion unless an external force is applied to it.
2. The relationship between an object's mass m, its acceleration a, and the applied force F is ***F = ma.*** Acceleration and force are vectors; in this law the direction of the force vector is the same as the direction of the acceleration vector.
3. For every action there is an equal and opposite reaction.

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