Rapid Fire Presentation: Tactical Load Carriage

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Contents:

- Historical context of Tactical Load Carriage
- Scientific context of Tactical Load Carriage
- Risks associated with Tactical Load Carriage
- Tactical Load Carriage Conditioning
MILITARY CONTEXT

http://img266.imageshack.us/img266/9808/diggerssmg28.jpg
http://4.bp.blogspot.com/_BZQXUhgZR3A/S9Tzq_w6uOI/AAAAAAAAABE/HGGoRbjiadU/s1600/vietnam-peter-b.jpg
http://upload.wikimedia.org/wikipedia/commons/5/5a/Australian_soldier_Afghanistan_Aug_2008.jpg
FIREFIGHTER CONTEXT

- Context and scope of practice has changed

1770

1879

2012
LAW ENFORCEMENT CONTEXT

1890s

http://2.bp.blogspot.com/-xHtSiLRFIMQ/UfewLRnEgAI/AAAAAAAAIpc/54yapn_ibtE/s1600/Curious+Black+%26+White+Photographs+of+The+Police+Officers+from+1890–1930+(28).jpg


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1970s


2010


SCIENTIFIC CONTEXT

SCIENTIFIC CONTEXT

• ↑ in load weight = ↑ in the energy cost of standing, walking (forwards and backwards, up and down stairs) and running

• ↑ in speed of load carriage = ↑ in the energy cost of carrying given load (more than weight)?
  ↑ 0.5km/h= ↑10kg
SCIENTIFIC CONTEXT

• ↑ in gradient of load carriage = ↑ in the energy cost of carrying given load (more than weight)?
  ↑ 1% = ↑10kg

• Different terrains types will elicit different energy cost requirements

*road-light brush-heavy brush-sand*
Differences in load placement will elicit differences in energy cost.

- Weight on the feet more costly than the back
- Thigh more costly than back (0.5kg increases cost by 3.5%)
- Waist less costly than back (use of waist belts on packs)
- Shoulder more costly than back
RISKS ASSOCIATED WITH LOAD CARRIAGE

- Injuries: Associated with a variety of injuries (from skin blistering to muscle, ligament, tendon, bone and nervous system injuries)
RISKS ASSOCIATED WITH LOAD CARRIAGE

The bar chart illustrates the percentage of injuries at various sites for both male and female individuals. The sites include:

- Head
- Neck and Shoulder
- Upper Limb
- Hand
- Upper Torso
- Abdomen
- Back
- Trunk and limbs
- Lower limb - unspecified locations
- Hip
- Thigh
- Knee
- Ankle
- Shin
- Gastrosoleus
- Foot
- Systemic
- Other specified multiple locations

The chart indicates that the back is the most common site of injury, with a significant difference between male and female populations.
RISKS ASSOCIATED WITH LOAD CARRIAGE

- Once injured – more likely to be reinjured
RISKS ASSOCIATED WITH LOAD CARRIAGE

• Decrements in performance:
  – ↓ Mobility
  – Impeded missions & mission success
RISKS ASSOCIATED WITH LOAD CARRIAGE

- Decrements in performance:
  - ↓ Lethality
  - Marksmanship
RISKS ASSOCIATED WITH LOAD CARRIAGE

- Decrements in performance:
  - ↓ Lethality
  - ↓ Grenade throw distance
RISKS ASSOCIATED WITH LOAD CARRIAGE

- Decrements in performance:
  - ↓ Mobility + ↓ Lethality
RISKS ASSOCIATED WITH LOAD CARRIAGE

- Alertness: Attention to task: Response to stimuli
  - Reaction time in visually detecting enemy slower when tactically loaded
LOAD CARRIAGE CONDITIONING

• Concept is not new (*Flavius Vegetius Renatus* - *Epitoma rei militaris*)
LOAD CARRIAGE CONDITIONING

F.I.T.T Formula (Frequency, Intensity, Time & Type)

- F. 7-14 days per load carriage session
- I. To loads required at the speeds and over the terrains required
- T. Duration of load carriage operations
- T. Load carriage preferable, but combined resistance and cardio may be of some benefit
LOAD CARRIAGE CONDITIONING

Considering Type - Specificity
LOAD CARRIAGE CONDITIONING

Considering Type - Specificity
• Relevance
  – All tactical personnel carry loads
  – These loads are getting heavier
  – But the context in which they are carried must be considered
  – Those who have served for a long period are carrying progressively increasing loads on a overused system
• Relevance
  – Injuries while often to the lower leg and back are not limited to the lower leg and back
  – Once injured – rehab and recond is vital
  – There are other impacts apart from injury
• Relevance
  – A specific load carriage reconditioning program must be included in any tactical conditioning plan
  – This program would include specific LC events, preferably every 7-14 days, progressing to meet with occupational requirements while considering other elements of workplace requirements.
REFERENCES

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https://bond.edu.au/tru
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