

Equipment Considerations for Tactical Athletes: Implications for Prevention and Rehabilitation

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(K. Games and Z. Winkelmann)

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Objectives

Explain the various Personal Protective Equipment (PPE) requirements of tactical athletes

Explain how these PPE requirements decrease the mobility, movement quality, and balance in tactical athletes

Describe how prevention and rehabilitation programming can be modified to improve outcomes in tactical athletes and potentially reduce musculoskeletal injury risk due to slip, trips, falls, and jumps



Who Are Tactical Athletes

“Individuals in service professions (eg, military, firefighters, law enforcement, and emergency responders) who typically have significant physical fitness and performance requirements associated with their work.”

“...these individuals face stressful, rigorous, and demanding challenges, often under life-threatening conditions, while carrying heavy gear and equipment.”

Sefton and Burkhardt, 2016



Who Are Tactical Athletes

Diverse group of professionals and volunteers

- Most (54%) of firefighters are between 30-49 years of age
- 60% of enlisted military members are between 18-30 years of age
- Average age of law enforcement professional 39.3 years

NIOSH 2015



Who Are Tactical Athletes

Most face the same health issues as our population

- Over 70% of all firefighters are obese or overweight
- 80% of United States law enforcement officers are obese or overweight
- 8% of military members are overweight or obese (up from 1.6% in 2001)
- Many do not get regular physical activity

CDC, 2014; FBI, 2014



Who Are Tactical Athletes

No consistent physical fitness standards



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Common Injuries and Illnesses – Fire Service

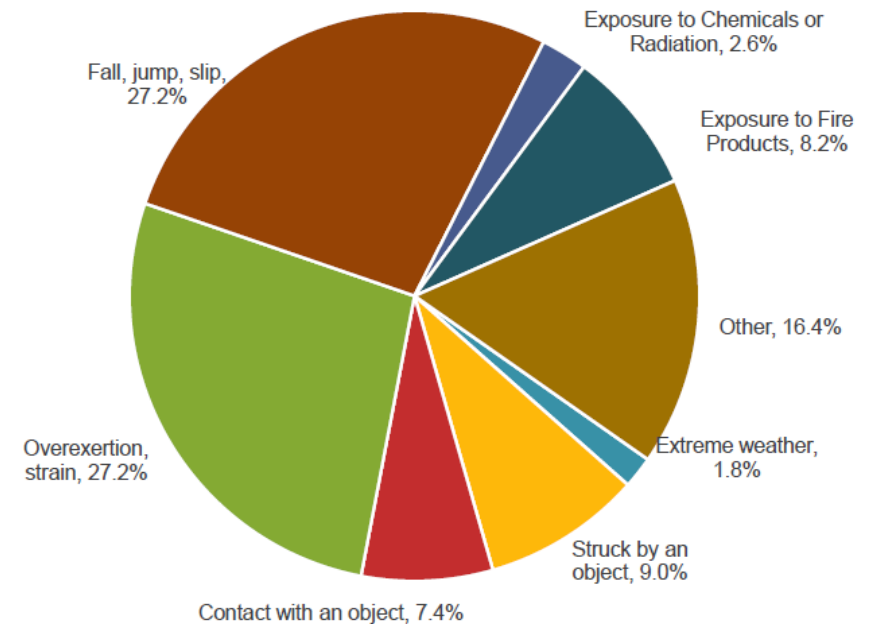
43% of injuries occur at fireground

- All others are considered non-fireground
 - Training, non-fire emergency, transit, etc

Sprains, Strains, Muscular Pain

Lower Extremity and Spine

Fireground Injury by Cause



NFPA 2015



Common Injuries and Illnesses – Law Enforcement

Abrasions, Sprains, Strains, Muscular Pain

Repetitive Motion Activities

Assault on Officer

Upper Extremity and Spine



BLS 2016



Common Injuries and Illnesses – Military

Military (United States Army, Navy, Air Force, Marine Corps)

- Sprains and strains account for 48% of all outpatient visits
- Lower extremity fractures most frequent acute injury resulting in hospitalization
- Most injuries occur in the lower extremity
- Injuries due to overuse account for a large majority
 - Pain, inflammation, and stress fractures
 - Overuse injuries alone accounted for 7,283,404 days of limited duty in 2004
 - Average days of limited duty = 14-16 per injury

DoD 2006



Role of Personal Protective Equipment

Protect the individual

- Physical injury (abrasions, burns, gunshots)
- Chemical injury (smoke, other hazardous chemicals)
- Environmental injury (heat, cold)

Enhance the individual

- Load (amount they can carry)
- Vision (night vision or thermal imaging)

And it works really well! ...but are there unintended injuries created?



PPE Examples



<http://media.gettyimages.com/photos/house-gov-george-w-bush-throws-out-the-first-ball-at-the-picture-id50724184>



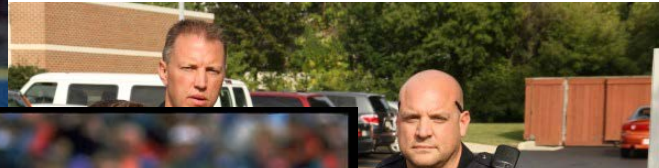
<http://media.gettyimages.com/photos/baseball-pres-bill-clinton-throws-out-first-pitch-at-orioles-vs-pirates-picture-id50724184>



<https://www.army.mil/e2/c/images/25691/original.jpg>



<http://images.fineartamerica.com/images-medium-large/1-a-uh-60-black-hawk-helicopter-crew-terry-moore.jpg>



https://usatftw.files.wordpress.com/2015/09/c01_bush_01_1434981.jpg?w=1000&h=1529



https://cdn-images-1.medium.com/max/313/0*FuZdUDCdwCyZCRE.jpg



PPE Example Fire



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Comparison Between Fire and Football



What Do Firefighters Do?

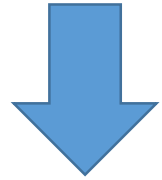


https://www.martin.fl.us/sites/default/files/services_listing/mcfrd_0.jpg

Effects of PPE on MQ, Balance, Mobility



Mobility (in line lunge, step over test)



Balance (unilateral stance/reach distance)



Vertical Jump Height



Triple Hop Distance



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Considerations in Testing



Athletic Training and Tactical Athletes



Modifying Activities



Education



Fire Service Joint Labor Management
Wellness-Fitness Task Force



PHLAME

Promoting Healthy Living: Assessing More Effects



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Wrap-up

Tactical Athletes are a diverse group

PPE is required, but may have negative effects on functional movement

Athletic Trainers can play a critical role in injury prevention and education to reduce incidence of injury



Thank You! Questions?



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