Here it’s NOT a Game:
Firefighter, Law Enforcement & Military Tactical Athletes

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Tactical Athlete
Special Interest Group

“Tactical Athletes”
Law Enforcement
Special Weapons & Tactics
Fire & Rescue
Military

“Combat Athletes”
Wrestlers
Mixed Martial Arts (MMA)
Grappling
Boxing

@SPTSTactical #SPTSTactical
Tactical Athlete Special Interest Group

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#SPTSTactical

Tactical Athlete Special Interest Group

www.facebook.com/SPTSTacticalAthleteSIG
Introduction

- MAJ Rich Westrick, PT, DPT, DSc, OCS, SCS
  - Deputy Chief, Military Performance Division, U.S. Army Research Institute of Environmental Medicine, Natick, MA

- LTC Mike Garrison, PT, DSc, OCS, SCS
  - Chief, Physical Therapy, Darnall Army Medical Center, Fort Hood, TX

- Firefighter Jacob Morrow, PT, ECS, OCS
  - Beverly Hills Fire Department, Beverly Hills, CA
  - U.S. Army Reserve Physical Therapist

- Kyle Sela, PT, DPT, OCS, SCS, CSCS
  - Sports Medicine Program Coordinator, St. Luke’s Health System, Boise, ID
  - U.S Army Veteran

- Tyler Christiansen, CSCS*D, USAW, RSCC
  - Director, Tactical Strength & Conditioning (TSAC) Program, NSCA, Colorado Springs, CO
  - U.S. Army Veteran

Learning Objectives

1. Describe the incidence and prevalence of injuries in tactical athlete populations.
2. Understand the physical demands of tactical athletes – similarities and differences between “traditional” athletes.
3. Understand the impact of musculoskeletal conditions on lost duty time in the tactical athlete population.
4. Appreciate the unique rehabilitation considerations for firefighters, law enforcement, and military tactical athletes.
5. Understand the benefit of working relationships with TSAC professionals.
Who is the “Tactical Athlete”?

A professional in an occupation involving planning and maneuvering to accomplish a purpose; who, as with the professional athlete, is obligated to maintain a certain level of Operational Physical Fitness in order to fulfill that purpose, AND who must maintain that level of fitness as a term of employment.
“Tactical Athlete”

- Scofield & Kardouni, JSCR, 2015

- General Physical Preparedness & fitness requirements
- Technical and Tactical Skills Strenuous Physical & Mental requirements
Tactical Athletes!

- Scofield & Kardouni, JSCR, 2015

Tactical vs Traditional Athletes

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Tactical vs Traditional Athletes

Scofield & Kardouni, JSCR, 2015

<table>
<thead>
<tr>
<th>Table 2: Distinction of the tactical athlete from the traditional athlete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational or athletic requirement</td>
</tr>
<tr>
<td>Capacity to execute physically demanding tasks</td>
</tr>
<tr>
<td>Requires year-round/continuous physical readiness</td>
</tr>
<tr>
<td>Mental resilience to endure stressful, life-threatening events</td>
</tr>
<tr>
<td>Compete against an opponent with predetermined event parameters</td>
</tr>
<tr>
<td>Exceed a minimum threshold for physical fitness standards</td>
</tr>
<tr>
<td>Require sport/occupation specific strength and conditioning programs</td>
</tr>
<tr>
<td>Must exceed minimal standards of fitness for advanced technical and tactical skill development</td>
</tr>
<tr>
<td>Extended periods of physical activity with unpredictable rest or recovery</td>
</tr>
</tbody>
</table>

This table serves to compare and contrast traditional and tactical athletes on representative fitness requirements. An “X” indicates that the representation applies to the category of athlete.

“Here It’s Not A Game”
Who Ya Gonna Call?

240 million

>650,000 911 calls per day

Tactical Athlete Special Interest Group

150K+ “Boots on the Ground”
Military in Foreign Countries

150,560

as of October 2015
OSD Defense Manpower Data Center
50,000 U.S. Army Soldiers Can’t Deploy

Musculoskeletal Injury Burden

Lost duty time due to musculoskeletal injury

Rand 2011
Musculoskeletal Injury Burden

>51%
Lost duty time due to musculoskeletal injury
Jahnke 2013

Tactical Physical Demands & Musculoskeletal Injury

Manageable
S. Dye '05

Excessive
Enhanced Tactical Athlete
Physical Health and Readiness

- Rehabilitation
- Tactical Strength & Conditioning
- Understanding the Population
- MSKI Decision Aids/Tools
- Screening for MSKI Risk

Enhanced Tactical Athlete Readiness

Team Approach

WHEN YOU WEAR DIFFERENT UNIFORMS
BUT PLAY FOR THE SAME TEAM

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Here it’s NOT a Game:
Firefighters, Law Enforcement & Military
Tactical Athletes

Physical Therapists working with Law Enforcement Tactical Athletes:
Here it’s not a game!

Kyle M. Sela, PT, DPT, SCS, OCS
Combined Sections Meeting
February 16th, 2017
San Antonio, TX
Objectives

1. Introduce the law enforcement tactical athlete.
2. Review common injuries, and injury rates in law enforcement tactical athletes.
3. Describe the unique physical and psychological demands required of law enforcement tactical athletes.
4. Understand sport-specific rehabilitation concerns for law enforcement tactical athletes.

Background Information

• Who is the law enforcement officer (LEO)?
  • Definition: personnel who carry firearm and badge, full arrest powers, paid by government from specific funds
  • Employers: City, County, State and Federal Agencies
  • Types of positions: Patrol officers, Investigative, Special Assignments, Administrative
  • Enter the profession through some type of training “academy”

• Numbers (Reeves 2015):
  • 477,000 sworn officers at local levels in 2013
  • 12.8% were female
  • NYC has the largest force
  • Washington DC has most officers per 10K residents
LEO: A Dangerous Profession

- Line of duty dangers (NLEOMF.com and FBI.gov):
  - Deaths in 2016:
    - 135 in line of duty
    - 64 firearm related
    - 41 in 2015
  - Officers assaulted in 2015: 50,212
    - 28% resulting in injuries
  - 9.9 assaults per 100
  - Mortality Rate for Patrol Officers (Teisman 2002):
    - 18 per 100,000 workers
    - 3.5 per 100,000 is national average
    - 7% of occupational deaths were heart attack
    - LEO may have higher rates of CV disease

Injury Data

- Incidence of non-fatal injury and illness 2014:
  - New injury reported: 10.6 per 100 officers
- 2800 injuries resulting in 24,000 lost days of work in 2008 (Zachary, 2008)
- MSK Injury Incidence in the last year (Nabeel 2007)
  - Back pain: 49%
  - Chronic pain: 26%
  - Acute injuries other than back pain: 20%
### Classification of the LEO

<table>
<thead>
<tr>
<th>Law Enforcement Officer (Nabeel 2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patrol Officers</strong></td>
</tr>
<tr>
<td><strong>Greatest number of officers</strong></td>
</tr>
<tr>
<td><strong>Lowest exercise frequency</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

- Association with fitness and health (Nabeel 2007)
  - BMI >35% = 3 x more likely to report back pain
  - Exercise ≥ 4x/week = 73% less likely to report back pain
  - “Fair” and “Poor” general health = 8x more likely to report chronic pain

### Specific Considerations when treating LEO

**• In-Vehicle Operations**
- Injuries are more repetitive/overuse
- Roughly 50% of work day (Mckinnon 2011)
- Occupational driving
  - Cumulative stress
  - Vibration
- Highly repetitive
- Poor ergonomic work station
  - Mobile Data Terminal
    - 13% of time in vehicle (Mckinnon 2011)
    - Consistent, long durations of typing in Right rotation
  - Seat breakdown
    - Roughly 5 degrees of tilt towards drivers door
Specific Considerations when treating LEO

• **Out of Vehicle Operations**
  - Injuries are more traumatic or acute in nature
  - Average of 4 pursuits per year (Kaminski 2007)
  - Foot Pursuits (Kaminski 2013)
    - 17% result in injury to officer
      - 65% less serious – contusion, sprain
      - 35% more serious – fracture, laceration
      - 42% resulted in suspect assaulting officer
  - Level of force used:
    - 72% “soft hand tactics”
    - 38% “hard hand tactics”
  - Duration of pursuit and resistance: 30-120 seconds (Hays 2009)

• **Uniform Considerations**
  - Duty Belt
    - Modifications available such as the “Back Defender” shoulder suspension system
  - Body Armor/Tactical Vest
    - Wear of vest associated with earlier onset to 1st time low back
Specific Considerations when treating LEO

**Mental Health**
- Shift work
  - Stress to young families
  - Higher injury incidence and injury duration
- Sleep disturbances
- Highly stressful situations
- Public perception
- Poor coping strategies?
  - Cultivates coping through “excess”

**Cardiovascular Disease in LEO**
- Increased rate of CVD in LEO is reported (Zimmerman 2012)
- Known risks for CVD include:
  - Obesity
  - Sedentary lifestyle/occupation
  - Sudden physical stress
  - Psychological stress
  - Shift work
  - Noise/Alarm Exposure
Case Study

• 38 yo male LEO with 4 months of lower back pain

Specific Treatment Recommendations

• Teach and develop lumbo-pelvic stability and neutral spine awareness
• Specifically evaluate and address thoracic mobility with focus on rotation
• Review strategies for “active” sitting
• Establish safe and efficient patterns and strategies during fundamental tasks
• Identify specific mobility limitations, motor control issues and true weaknesses to allow safe and efficient movement
• Educate on training principles:
  • Develop both aerobic and anaerobic capacity
  • Resistance training: Strength vs Power vs Muscular Endurance
• Encourage workup and continued monitoring for cardiovascular disease
Master Teaching the Basics

• Establish safe and efficient patterns and strategies during fundamental tasks
  • Hinge
  • Squat
  • Lunge
  • Push
  • Pull
  • Carry
  • Jump
  • Land
  • Cut
  • Run
  • Breathe

• Take advantage of your time as a movement expert in a 1:1 setting
• Prepare your tactical athlete to show up ready to train

Strength and Conditioning

• Needs Analysis and Program Design for Police Officers – Matthew Rhea, PhD, CSCS*D (Strength & Conditioning Journal 2015)
  • “At some point, any officer may face physical dangers or demands that require incredible feats of physical performance”

• READ THIS ARTICLE!
New Efforts to Better Manage LEO

• Put inspiration to action
  • Bailey Vail, SPT
    • Created the Center for Tactical Athlete Performance at Idaho State University
      • Will be employed by ISU to continue her efforts after graduation this year
      • Contact her at: livekait@isu.edu

• LEO Fitness Project at Florida Gulf Coast University
  • Dennis Hunt, EdD, CSCS
    • dhunt@fgcu.edu

Summary

• A career in law enforcement is dangerous
• Work related injury is common
• Rehabilitate to meet the demands of both:
  • In-vehicle operations
  • Out of vehicle operations
• Cardiovascular disease needs to be considered
• PT’s can aid in physical training by establishing patterns and strategies
• Lack of high quality evidence to best understand, train, and treat this deserving population
  • Huge opportunity for research
References

  http://itoa.org/fitness_articles/wellroundedfitnesspartone.pdf
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Physical Therapists Working with Military Tactical Athletes:
Here it’s not a game!

CSM 2017
LTC Michael Garrison, PT, DSc, OCS, SCS
Agenda

- Introduction
- Disclosures
- Army demographics
- Army units and formations
- Historical background for Army PT
- Injuries in combat zone
- Injury prevention and surveillance
- Human performance optimization
- Challenges facing Army PTs
- Conclusion and questions

Disclosures

- The Author is an employee of the federal gov’t and the views and opinions expressed in this presentation are those of the author and do not reflect the views or official policies of the Dept. of the Army, The Dept. of Defense, or the U.S. Government.
- Dept. of Rehab Services, Carl R. Darnall Army Medical Center, Fort Hood, TX 76544, USA
Introduction

Army Demographics

- 504,330 AD Army personnel (DOD 2012)
- 15-16% female
- 49.6% are under the age of 25
- 84% are enlisted soldiers
  – 92% with high school diploma and some college
- 84% of officers have at least a Bachelor’s
  – 39% of officers have advanced degree
Physical Therapist Integration

Division
15-20,000 Soldiers

Brigade
3500-4000 Soldiers

• 55,000 service members at Fort Hood
• 50,000 retirees and family members
• 1 PT per Brigade Combat Team (3500 soldiers)
• Fixed facilities
MSI in the Army

- Primary cause of ambulatory visits (Moore 2013)
- $548 million dollars annually
- Most are overuse injuries
  - #1 cause of lost duty days
  - Many are preventable
- Similar burden while deployed
  - 87% of all injuries
  - 7 times more frequent than combat injuries
  - 75% of all medical evacuations OIF / OEF

Historical Background

- 1997 – PT placed in 2/75 Ranger Regiment
- Increased deployable rate
- 75th Ranger Regiment gave up 3 slots for PT
- 2003 – USASOC requested PT support
- Since 2003 – 1 PT for each of the 5 SF Groups
- 2003 – PROFIS assignment of PTs to BCT
- 45 BCT PT authorizations in FY 2013
Brigade Combat Team

- Army structured around BCT
- Heavy, light, stryker, airborne
- Basic deployable unit
- Combat support and service support units
- Stand alone entity
- Full spectrum operations
- Provide continuous operations

PTs in Combat Units

- Treating soldiers as tactical athletes (Moore 2013)
  - Evaluate and treat at point of injury
  - Maximize recovery
  - Minimize lost duty time
- Access musculoskeletal experts immediately
- Maintains unit integrity
- Reduces medical evacuation
- Decreases load on other medical providers
PT Responsibilities

- Medical Care
  - Sports and orthopedic injuries
  - TBI and neurological injury
  - Inpatient services
- Human performance optimization
- Injury prevention
- Effective and efficient
- Advisor to CDR on MSI

Commonality While Deployed

60% of body weight
Train As You Fight

- Train with less weight
  - Cost and availability
  - Combat load is heavier (ammo, SAPI plates)
- APFT doesn’t replicate deployment demands
- APFT doesn’t assess fitness
- Job specific demands are different
- May operate outside MOS while deployed

Consequences

- What % of a unit is deployable
- 23% non-deployable – BDE CDR
  - MSI both overuse and traumatic
  - Postoperative orthopedic conditions
- Deploy at less than 100%
- Deploy soldiers with duty limitations
- Change mission requirements
- No practice squad of replacements
Military Physical Demands

What Leads to Most Injuries?
MEDEVAC OIF / OEF

• MSI is the number one cause (Cameron 2014)
• 50% of DNBI (Belmont 2010)
• Changing face of warfare (Cohen 2010)
  – Many personnel deployed aren’t fighting
  – Understanding injury risk is important
• Treat problems before they become severe
• Treat injuries in theatre
  – Prevents risk of evacuation
  – Those evacuated rarely return

Case Example

• 34 y/o male, MOS:11B, s/p L ACLR BTB
• Injury 18 months prior
  – Unit football, non-contact
  – During in-processing
• ACLR on the right in 2012
  – Jump landing injury off BFV
  – Stopped rehab after 5 months
• Intrinsic factors remain
• Unit football vs 11B requirements
Human Performance Optimization

High demand tasks in difficult environments

- Well designed fitness programs
  - Prepare soldiers for warfighting
  - Increase strength, endurance, mobility
- Break down mission essential tasks
- Increase readiness and unit cohesion
- Greater mental alertness and productivity
- Poorly designed fitness programs
  - Cause of many injuries
  - Degrades military readiness
Human Performance Program

- Mandated for USSOCOM operational personnel
  - CG directed
  - Includes data collection and reporting
- Preservation of the Force and Family Program
  - Strength and Conditioning
  - Sports Medicine
  - Performance Nutrition
  - Sport Psychology
- Operator Readiness Assessment (ORA)

ORA – Caving Ladder

- Hand over hand
- Heel to toe technique
- 20’ ladder
- Ascend / Descend
- More practical than rope climb
- Most practical scaling task while deployed
ORA – 5’ Walls - Up & Over

- 5 separate 5’ walls
- 10’ apart
- Ascend / Descend
- Under 29.5 seconds

- Most likely obstacle height scenario
- Navigate obstacles while wearing full kit

ORA – 4’ Box Depth Jump

- Realistic height
- Under load
- Absorb impact
- Controlled landing

- Repeated movements – 8 repetitions
- Demonstrates core and joint integrity
SPARTA Clinic

- Up to 70% of profiles in 1CD for MSI
- Central location to evaluate and treat MSI
- Mirrors civilian athletic team model
- 1CD and Fort Hood specific
- Early treatment and intervention
  - Reducing chronicity of injury
  - Reducing lost duty time
  - Ensuring accurate progression of restrictions

Challenges

- Different roles = different requirements
- Talent pool
- Staffing models
- Injury reporting (Smith 2016)
- “Paid” to treat not prevent
- Can we identify those at risk
- Targeted intervention programs (Whittaker 2016)
- Difficult to pool injury prevention data (Garrison 2015)
Conclusion

• Diverse demands in difficult environments
• Injuries affect mission accomplishment
• Sports medicine model of function
• Losing is not an option
• Keep starters on the field

Questions
References


The Firefighter Tactical Athlete
Here it is Not a Game

Jake Morrow
MPT, ECS, OCS
MAJ, SP, USAR, Evans Army Community Hospital
Firefighter/Paramedic Engine 3C
Beverly Hills Fire Department
“Tactical Athlete”

A person who is trained in or good at sports, games, or exercises that require physical skill and strength

Objectives

• Who is the tactical firefighter
• What do they do
• What challenges do they face
• How and why do they get hurt
• How do they return to duty
• Tactics to stay fit to fight
Who are Firefighters

- 1.2 million
- 30,052 US Departments
  - 30% (345,600) Career
  - 70% (786,150) Volunteer
- 73% of career firefighter work in areas with population >25,000

Who are Firefighters

Age
- 16-19 (3%)
- 20-29 (21%)
- 30-39 (28%)
- 40-49 (26%)
- 50-59 (16%)
- 60 and over (6%)

Demographics
- Male 95%
- Female 5%
- White 82%
- African American 8%
- Hispanic 10%
What We Do

- Medical Aid 68%
- Other 14%
- Hazardous Material 1%
- Other Hazardous Responses 2%
- False Alarms 7%
- Fire 4%
- Mutual Aid 4%

Other?

- Images of firefighters in various scenarios, including rescue operations and training exercises.
Occupational Challenges

- Positional challenges
- Turnouts
- Self contained breathing apparatus (SCBA)
- Environmental conditions

Physical Challenges

Turnouts – Coat, Pants, Helmet
- Average 30lbs
- Tools average 5-10lbs
- Withstands 500°F
- Modified movement patterns
- Now carry tools, hose, and ladders
Physical Challenges

Self Contained Breathing Apparatus

- Average 35lbs
- Positive pressure
- Increases ventilation rate, O2 consumption, and heart rate
- Reduces tidal volume

Clinical Effects

Lee et al, 2013
- Increased VO2 30%
- Rapid increase in HR
- Increased RPE
- Time to fatigue was 50% faster

Feaiheller, 2015
- Significant increase in BP
External Factors/Loads

• Throwing ladders - 42 - 127 lbs distributed over 14’-20’

External Factors/Loads

• Charged hose line
  • 100’ of 1.75” hose
  • 12.5 gallons of water
  • 104 lbs
• Nozzle Reaction force
  • 30-95 lbs
External Factors/Loads

- Tools and equipment aloft
- Rescues
- Search and evac

Physiologic Stresses
Cardiovascular and Thermal Strain

- Core body temperature increases 2.5°F in 20 min
- With sustained work to over 102°F
- Profuse sweating
- Prolonged periods of near maximum heart rate
Physiologic Stresses
Cardiovascular and Thermal Strain

- Stroke volume decreases
- High blood pressure that rapidly drops with cessation of work
- Decrease plasma volume (15% in 20 min)
- Hemoconcentration causes changes in blood electrolytes and platelet aggregability

Internal Risk Factors
You are most likely seeing this...
Internal Risk Factors

• 50% between age 30-50
• BMI – 80% overweight or obese
• CDC fitness recommendations <75%
• Monochromatic meal plans

Fitness Levels/Accountability
• Candidate Physical Ability Test
• Biddle
• Pack Test

There is no standards for career testing
Internal Risk Factors

Firefighter Deaths by Cause of Injury – 2015

- Structural collapse (9%)
- Fatal assault (1%)
- Struck (9%)
- Lost inside (1%)
- Crashes (12%)
- Caught underwater (1%)
- Fell (6%)
- Rapid fire progress/explosion (1%)
- Overexertion/stress/medical (59%)

60%
Fitness???
Injuries

- 68,085 in 2015, 65,350 in 2014
- 45% on fireground
- 19% Non-fire Emergency
- 18% Other on-duty
- 12% Training
- 5% Responding or returning

Costs

Direct
$2.8 billion

Indirect
$7.8 billion
Availability
Response Times
MAYDAY
Fireground Injuries

Over 50% from strain, overexertion, slips, and falls

“Sprains and Strains”

Poplin et al, 2015
- 76% from lifting

Taylor et al, 2015
- Knee
- Lumbar spine
- Shoulder
- Ankle
Modifiable Risk

Michaelides et al. 2011
- Abdominal strength (sit-ups)
- Upper body muscular endurance (push-ups)
- Resting heart rate
- BMI and Body Fat
- Age

Butler et al. 2013
- 108 recruits over 4 years
- Max performance test and FMS
- FMS <14
- Sit and Reach, Deep Squat, Push-up
Modifiable Risk

Popin et al. 2015
- 799 career firefighters over 4 years
- Hip/back flexibility
- Grip strength
- Body fat %
- Resting HR

Rehab Considerations

- Don’t put the cart before the horse
- Keep rehab simple
- Follow foundational principles
Sport Specific Rehab

- ROM, strength, balance, power
- Teach proper movement
- Have functional testing measures
- Use fire equipment when appropriate
- Use weighted vests or turnouts appropriately

Return to Duty

Functional Tests
- Stair test
- Hose pull
- Dummy Drag
- Ladder Throw
Fire Wellness Programs

• Consider comprehensive approach
• Consider all needs
  • Cardiovascular
  • Power
  • Muscular endurance
• Consider proper timing

Fire Wellness Programs

• Recreational
• Cardio
• Meathead
• Cross-fit
• Circuit-training
• Sitting
Fire Wellness Programs

- Abel et al. 2011 - Circuit Training
- Peterson et al. 2008 - Undulating training
- Rhea et al. 2004 - Non-linear training
- Jahnke et al. 2015 - High-intensity training (HIT)

Fireground specific functional outcomes

Can I Make a Difference?

Leffer et al, 2010
- Blood and fitness tests
- Education, individual goals, 30 min workouts
- Decrease in injuries by 40% and 60%
- Return on investment of 4.6:1
Fire Wellness Programs
Be part of A-Team

References

References

Disclaimer and Disclosure

• This information represents my professional opinions, they are not the official views of the NSCA, U.S. government, or DoD
• Employed by the National Strength and Conditioning Association (NSCA)
• I may talk in absolutes at times, but the answer is usually “it depends” based on a lot individual factors

Objectives

• Introduce the unique physical demands required of tactical professionals
• Describe the role of the strength coaches for tactical professionals
• Mimicking movement concerns for tactical professionals
Unique Physical Demands

What is the Tactical “Athlete”

• Sheepdog Theory
  – Sheep
  – Wolves
  – Sheepdog

• A dedicated servant of his or her country and/or community.

http://www.zengardner.com/author/freefall/
Are All Tactical Athletes in Fact “Athletes”? Tactical Professionals?

Wellness | Fitness | Performance
---|---|---
Programming more corrective in nature | Programming less corrective in nature

No Matter where you start, the goal is to continually push to the right

Medical Intervention

Tactical Performance Pyramid

- Gray Cook’s Performance Pyramid\(^2\)
- Ideal
- Tactical Performance Pyramid?
- Reality?

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Pic 1: https://www.movieposter.com/poster/MPW-101017/Paul_Blart_Mall_Cop_2.html

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Sitting is the New Smoking

- Fitness & Lifestyle Survey for Royal Canadian Mounted Police\(^8\)
  - 73% (76.3%) report sitting more than 5 hours per day at work
  - 31% (33.2%) report sitting more than 5 hours per day on days off

Lemelin, Syl. NSCA National Conference 2015

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Activity on a Police 10 Hour Shift\(^1\)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average Minutes/shift</th>
<th>Average hours/shift</th>
<th>HR ranges %/max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting</td>
<td>373</td>
<td>6 hrs 13 mins</td>
<td>30%</td>
</tr>
<tr>
<td>Standing</td>
<td>138</td>
<td>2 hrs 18 mins</td>
<td>30-40%</td>
</tr>
<tr>
<td>Walking</td>
<td>94</td>
<td>1 hr 34 mins</td>
<td>50-60%</td>
</tr>
<tr>
<td>Lifting/Carrying</td>
<td>10</td>
<td>10 mins</td>
<td>70-100%</td>
</tr>
<tr>
<td>Pulling/Pushing</td>
<td>7</td>
<td>7 mins</td>
<td>70-100%</td>
</tr>
<tr>
<td>Running</td>
<td>6</td>
<td>6 mins</td>
<td>70-100%</td>
</tr>
</tbody>
</table>

Other Considerations

- Stress and recovery
- Reactive job (shots fired)
- Typical age between 18-60 years old
- Age 16-19 (3%), Age 20-29 (20%), Age 30-39 (27%), Age 40-49 (25%), Age 50-59 (17%), Age 60 and over (7%) (7)
- Atypical schedule and duties

Jack of All Trades, Master of.....

- Special Operations Forces Operators:
  - Jack of all trades, master of none
  - S&C roles may be secondary/tertiary job for tactical professionals
- S&C Coach
  - Master of Strength and Conditioning
The Physical Profile of The Tactical Athlete

BLUF

- The Tactical Professional needs range from wellness to performance
  - Place them accordingly and continually push them to improve
- Sitting is a big part of tactical jobs may lead to problems
- Develop a balanced and well rounded physical profile
Role of the Strength Coaches

My Goals as a Coach

• To teach myself out of a job
  – Recognize good and bad form
  – Be able to progress and regress exercises
  – Make basic educated decisions on training
• Create a learning environment
• Create the desire to continue education at home/duty station
  – Create an environment of safety
Safety

• 5 hours a week (Not Deployed)
  – 5 out of 168 hours (~3%)

• 168 hours a week (Deployed)
  – 100% on own
Strength

• Strength is the ability to produce force (12)
• Squat over 2x bodyweight (bw) is associated with higher power outputs (4).
• Example: 90kg Athlete Squats 180kg = Relative lower body strength of 2x bw
  – Add 20kg to bw for protective equipment (110kg):
  – Relative Strength 1.63 x bw

Newton’s Laws

• 1st: At rest unless compelled to change by forces
• 2nd: There is an inverse relationship between mass and acceleration

http://www.london.k12.oh.us/newtons-laws-of-motion-resources-boydhiles/
Relative Strength Inverted “U” Theory

Newton’s 1st Law of Motion
http://fitandstrongdads.com/skinny-guys-how-to-build-muscle-get-stronger-have-to-buy-bigger-clothes/
https://www.pinterest.com/pin/77194581083280581/

Newton’s 2nd Law of Motion

The Physical Profile of The Tactical Athlete

Dietz xathlete.com (3)
Communicate with other Professionals

- Integration:
  - APTA: Physical Therapy
  - NATA: Prehab and Pre-Performance
  - NSCA: Performance and Fitness
  - If the system is broken we can have a higher risk of re-injury

Cross Discipline Communication

- Roles are defined as a team
- Use the same language
- Cross training for staff
- Track communication and training
- Tactical athlete education
- Leave “ego” at the door
  - Know your lane of expertise
Where is the line in the sand?

• Depends on:
  – Certification/Licensure
  – Education
  – Experience
  – Communication

BLUF

• Teach the tactical professional to self-sustain
  – Physical training will happen with or without input
  – As a team set up the tactical professional for success
  – Communication

“Give a man a fish and you feed him for a day. Teach a man how to fish and you feed him for a lifetime.”
Mimicking Tactical Related Movement

Does this make sense?
This is Marketing NOT Training

“Sport Specific” Training

- Is NOT
  - Mimicking sport movements in the weight room
  - Adding sport implements/equipment to exercises
- Is
  - Movement classifications
  - Energy systems
  - Strength qualities
  - Primary joint angles and force vectors
  - External stimuli
  - Common injuries
What is Tactical Strength and Conditioning?

<table>
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<th>Exercise</th>
<th>Set 1</th>
<th>Reps</th>
<th>Actual</th>
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BLUF

Movement Specificity and “Tactical” Marketing

BLUF

• Some “specific” exercises are great to relate back to the job and may be “fun” to use in ESD
• COACHES ARE NOT Tactical Skill specialists
• Develop a well balanced program
<table>
<thead>
<tr>
<th>Date</th>
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<th>Week 1</th>
<th>Week 2</th>
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Thank You!

- APTA and the PT’s who have influenced me:
  - Rick Westrick
  - Jason Mitchler
  - Virginia Dulla
  - Heather Lopez
  - Dana Terrell
  - Marc Oceguera
  - Nancy Teich
References

8. Lemelin, Syl. NSCA National Conference 2015