Characteristics of Service Members with Concussion Referred to Physical Therapy Who Seek to Return to Active Military Duty

Larysa M. Petrenko, SPT[1], Julianna H. Prim, MS[1], Amy S. Cecchini, PT, DPT[2] , Karen L. McCulloch, PT, PhD NCS[1]

[1] Division of Physical Therapy, Department of Allied Health Sciences, School of Medicine, UNC-Chapel Hill, Chapel Hill, NC
[2] Geneva Foundation at Intrepid Spirit Center Fort Bragg, Fayetteville, NC

Introduction

Concussion in military service is prevalent, with acute treatment provided by primary care. Rehabilitation is sought only if symptoms are persistent.

Self-reported concussion symptoms have been described, but specific patient presentations seen by physical therapists in military treatment facilities are not well studied.

Purpose/Objective

To describe the characteristics of active duty service members who target return to active duty who are referred for physical therapy. These participants were participating in a study of a performance-based test of tactical agility, the POWAR-TOTAL.

Methods

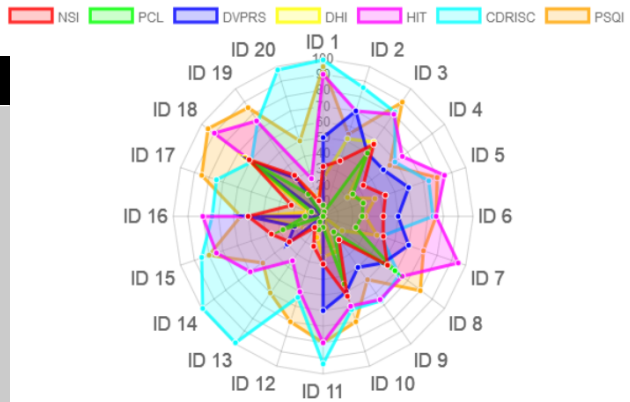
As a part of the POWAR study, we collected demographic data for 23 male participants who were receiving post-concussion care at one of two military treatment facilities.

Characteristic	Mean (SD)
Age	28.6yrs (6.9)
Years of Military Service	7.8yrs (6.1)
Deployments	3.4 tours (2.4)
Self-Reported Number of Concussions	*Median:* 3 *Range:* 1-40
Chronicity of injury	Mean: 5.1mos Range: 1-15mos

This work was funded by the Department of Defense, W81XWH-17-2-0046

Results

Outcome measures		Mean (SD)	Interpretation
Neuro-behavioral Symptom Inventory (NSI)	*Total score (of 80)*	35.2 (14.9)	20% possible overreporting
	Somatosensory (of 28)	10.0 (5.3)	
	Affective (of 24)	10.8 (5.4)	
	Cognitive (of 16)	7.9 (3.6)	
	Vestibular (of 12)	4.4 (2.0)	
	Validity-10	12.7 (6.1)	
Post-Traumatic Stress Disorder Checklist (PCL-5) of 85		21.3 (18.1)	22% red flag level (>33)
Defense and Veterans Pain Rating – Pain Interference Score (DVPRS)		4.4 (2.3)	Impact on activity, sleep, and stress (65% >4)
Headache Impact Test (HIT-6) of 78		58.9 (7.8)	61% indicated severe impact
Pittsburgh Quality Sleep Index (PSQI) of 21		14.1 (3.1)	100% > indicator for referral (>5)
Connor-Davidson Resilience Scale (CD-RSC) of 100		76.2 (17.7)	
Dizziness Handicap Inventory (DHI)	*Function of 28*	9.5 (2.8)	39% consistent with mild disability, 30% rating mod-severe disability
	Physical of 28	9.4 (5.0)	
	Emotion of 36	7.9 (6.0)	
	Total Score:	26.8 (16.8)	
Dynamic Visual Acuity (DVA) (lines lost)		*Mean:* 3 *Range:* 1-7	30% > indicated significant deficit
Sensory Organization Test (SOT)		72.5 (11.3)	43% below age related norm
Head Shake - Sensory Organization Test (HS-SOT)		45% unable to complete	



These radar plots illustrate the relationship of various self-report measures to each other.

Conclusions

- Service members demonstrated multiple somatic, vestibular, and balance related signs and symptoms **inconsistent** with active duty military service.
- A high prevalence of headache, pain and sleep dysfunction requires intervention.
- The chronicity of injury (> 5 months), is a target for change, as balance and vestibular impairments often respond to rehabilitation.
- Service members may manage symptoms and avoid seeking care as a result of military cultural norms and/or perceptions of and value on resilience.