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Profiling	Injuries	in	<b>Tactical</b>	Personnel
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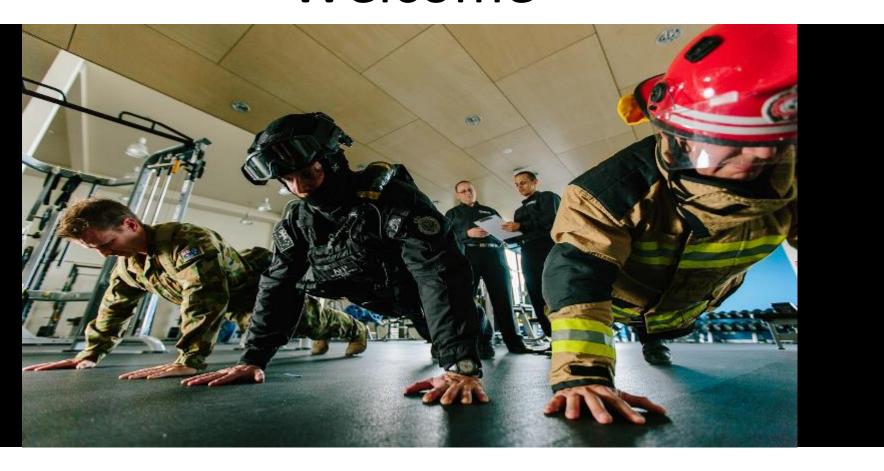
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# Welcome



Tactical Research Unit Rapid Fire Mini Symposium



# ENGAGE INFLUENCE

RESEARCH MA-18 OCTOBER 2019

# **Profiling Injuries in Tactical Personnel**



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### INTRODUCTION

- Injuries in Tactical personnel impact on team, partner, mission, public.
- High costs financial, resource, personnel
- Profiling injuries informs injury reduction programs













169.3 (ARA) 301.9 (ARES) / 1000 personnel / year



410 / 1000 personnel / year



177 / 1000 personnel / year

# Populations studied

Trades 72/1000 employees/year; Community and Personal Service 69/1000 employees/year; Machinery operators 57/1000 employees/year















# Injuries in Defence



- Risk factor for future injury = prior injury<sup>1</sup>
- Injuries in basic training = career full of injuries
- Injuries during basic training 3x higher than rest of career <sup>2</sup>
- Incidence from 20-59% <sup>3</sup>
- Medical discharge estimated at 8% <sup>3</sup>









# Location of Injuries

	ARA		ARES		Combined
Location	MPI	SPI	MPI	SPI	Combined
Knee	159 (13.4%)	7 (16.3%)	22 (15%)	0	188 (13.6%)
Ankle	137 (11.5%)	0	12 (8.2%)	0	147 (10.6%)
Lower Leg	123 (10.3%)	0	17 (11.6%)	0	140 (10.1%)
Foot	121 (10.2%)	4 (9.3%)	7 (4.8%)	0	132 (9.5%)
Shoulder	84 (7.1%)	3 (7.0%)	11 (7.5%)	1 (33.3%)	99 (7.2%)
Total	~45%	14 (of 43)	~40%	1 (of 3)	7~44%









# Activities causing injury

		ARA		ARES		
	Activity	MPI	SPI	MPI	SPI	Combined
	Physical Training (PT)	502 (42.1%)	10 (23.3%)	47 (32%)	1 (33.3%)	560 (40.4%)
	Combat Training	247 (20.7%)	7 (16.3%)	40 (27.2%)	0	294 (21.2%)
	Marching	117 (9.8%)	3 (7.0%)	16 (10.9%)	0	136 (9.8%)
	Unknown	112 (9.4%)	13 (30.2%)	17 (11.6%)	2 (66.6%)	144 (10.4%)
	Walking	54 (4.5%)	3 (7.0%)	6 (4.1%)	0	63 (4.6%)
1	Total	1032 (of 1192)	36 (of 43)	126 (of 147)	3 (of 3)	1197 (of 1385)

11/9/2019













# Populations studied















#### **Location of Injury**

Shoulder 20.0% 13.3% Leg Knee 11.2% Back 10.8% Arm 7.8% Ankle 7.3% Wrist 7.3% Neck 5.5%



#### Nature of Injury

Sprain/Strain 50.9%

Muscle/Tendon/Nerve 32.2%

Bruise/Graze 4.1%

Other/unknown 3.7%

Fracture/dislocation 3.0%

11/9/2019







#### Mechanism of Injury

Muscle stress with physical exercise 31.0%
Repetitive stress or forceful movements to muscle or joints 15.1%
Muscle stress – lifting or handling people or objects 12.2%
Hitting an object, animal or person 11.5%
Slip, trip or fall from same height 7.6%
Unknown/other 7.1%





#### Activity

Unknown/other	256 (45.4%)
Police training	215 (38.1%)
Physical competency test	29 (5.1%)
Walking/running	29 (5.1%)















# Populations studied















Unpredictable Environment with poor visibility

Exposure to environmental heat

Wearing occupational load

Victim rescue

**Confined Spaces** 





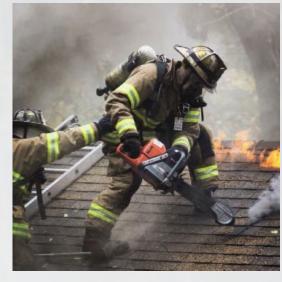


Location – Lower extremity and back

Nature – Sprains and Strains

Mechanism – Slips, Trips and Falls

Activity - General activities around fire station











# Reduction of Injuries

- Reducing injuries comes from understanding injuries and high risk activities <sup>8</sup>
- Exposure to chronic conditioning
- Ability to train specificity
- Optimising fitness, strength and body composition (\$\$\$)
- Full rehabilitation of previous injury
- Notion of the 'Tactical Athlete'
- Shift work, minimal rest time, no offseason, task focussed, load carriage, nutrition.







Tactical Athlete
Special Interest Group











### **SUMMARY**

- Injury reduction programs vital for tactical personnel
- Job tasks unique in each occupation
- Each domain unique in its injury profile
- Profiling is a vital first step!
- Tactical organisations need research and funding







# Current Projects







# Future Projects

- Female vs Male Injuries
- Anatomical, biomechanical & anthropometrics
- Equipment fitting









#### REFERENCES

- Lyons, K., Radburn, C., Orr, R., & Pope, R. (2017). A profile of injuries sustained by law enforcement officers: a critical review. International journal of environmental research and public health, 14(2), 142
- Orr, R. & Pope, R. Gender Differences in Load Carriage Injuries of Australian Army Soldiers, BMC Musculoskeletal Disorders, 17 (488), pp. 1-8. DOI 10.1186/s12891-016-1340-0
- Schram, B.; Hinton, B.; Orr, R.; Pope, R.; Norris, G. The perceived effects and comfort of various body armour systems on police officers while performing occupational tasks. *Ann Occup Environ Med* **2018**, *30*.
- Schram, B.; Orr, R.; Pope, R. A profile of knee injuries suffered by Australian army reserve soldiers. *International Journal of Environmental Research and Public Health* **2019**, *16*.
- Schram, B. Injuries in Australian army full-time and part-time personnel undertaking basic training. *BMC Musculoskeletal Disorders vol.20 (2019) date: 2019-01-05 nr.1 [ISSN 1471-2474]* **2019**.
- Orr, R.; Schram, B.; Pope, R. A comparison of military and law enforcement body armour. International Journal of Environmental Research and Public Health 2018, 15.









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