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Orr, Rob Marc; Pope, Rodney R; Stierli, Michael; Hinton, Benjamin

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A Functional Movement Screen profile of an Australian police force

Orr RM¹, Pope R¹, Stierli, M², Hinton B².

1 Bond University, Gold Coast

2 New South Wales Police, Sydney





Background

- Police officers are required to perform tasks that can include dynamic movements

(Blacker et al., 2013; Carlton et al., 2013)

- The results of these actions can lead to injury

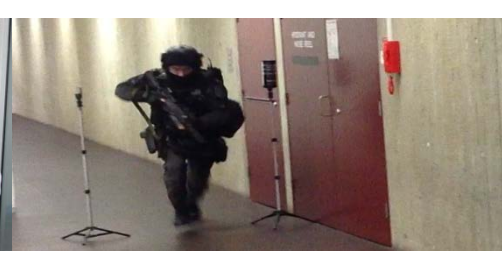
(Orr & Stierli 2013)





Background

- Poor execution of FMS elements is associated with an increased risk of musculoskeletal injury
(Cook et al., 2006)
- The FMS tool offers an approach to injury prevention and performance prediction by identifying an individual's functional limitations and / or asymmetries
(Gribble et al., 2013; Perry & Koehle, 2013; Kiesel., 2007; Cook et al., 2006)



Aims

- Aims:
 - To profile FMS movement patterns of NSW Police personnel
 - To determine whether differences existed between recruit and attested officers and within genders





Participants

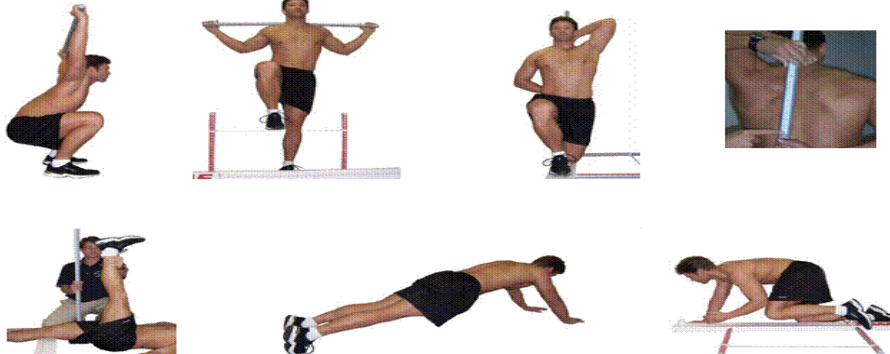
- A total of 1512 personnel
 - ♂n = 1155 (31.34±8.41 years): ♀ n= 357 (27.99±8.02 years)
- 823 police recruits
 - ♂n = 573 (25.78±5.57 years): ♀n = 250 (25.07±5.99 years)
- 689 attested officers
 - ♂n = 582 (34.84±8.00 years): ♀n = 107, (36.87±6.88 years)

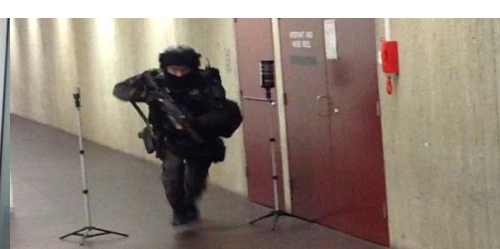


Methods

- FMS selected as the evaluation tool used to assess fundamental movement patterns
- Consists of seven movement patterns

(Cook et al., 2006)



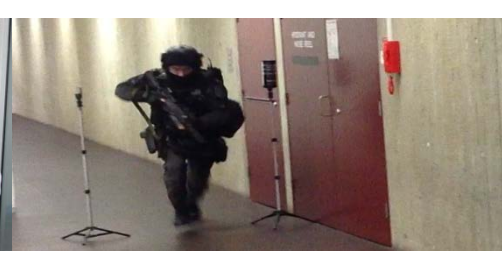
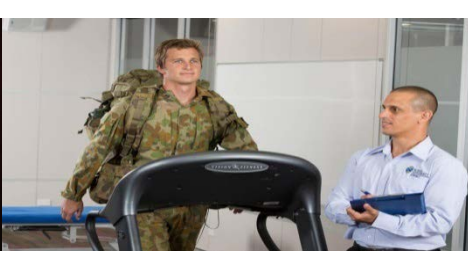


Methods

- Scored for 0-3 for a total of 21 points

(Cook et al., 2006)

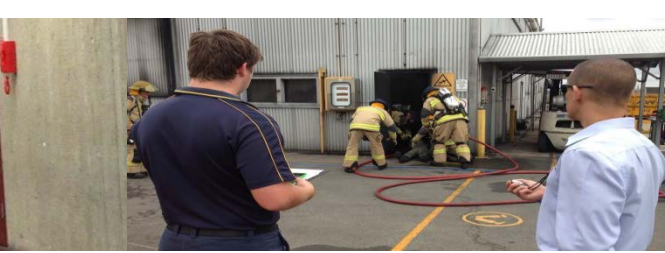
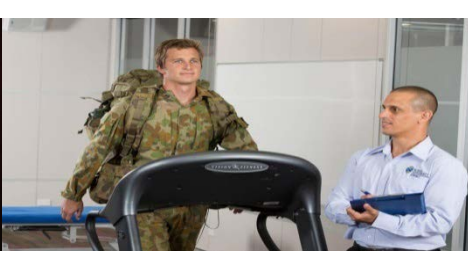
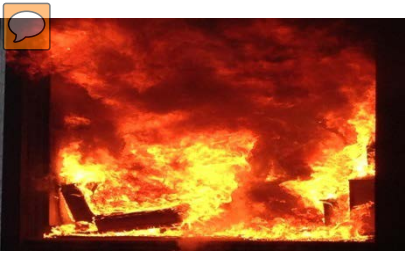
Frontal View			
Sagittal View			
Score	3	2	1
Criteria	<ul style="list-style-type: none"> • Hips, knees and ankles remain aligned in the sagittal plane • Minimal to no movement is noted in the lumbar spine • Dowel and hurdle remain parallel • Foot remains dorsiflexed 	<ul style="list-style-type: none"> • Alignment is lost between hips, knees and ankles • Movement is noted in lumbar spine • Dowel and hurdle do not remain parallel 	<ul style="list-style-type: none"> • Contact between foot and hurdle • Loss of balance is noted



Methods

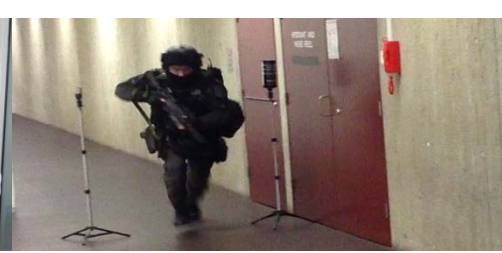
- Inclusion criteria were:
 - a) the participant completed all aspects of the FMS; and
 - b) the police recruit participants had not attempted the police training previously
- FMS completed at commencement of training for recruits and voluntary basis for officers
- Assessors were NSW Police PTI trained in FMS





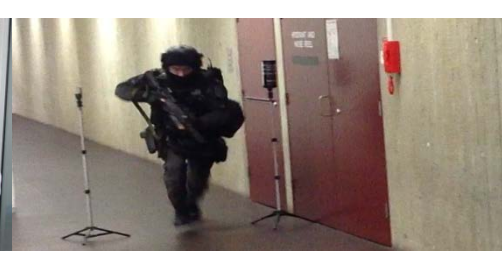
Methods

- Mann-Whitney Tests were performed to investigate differences in scoring distributions across qualification (trainees and attested officers) and gender.
- ANCOVA and subsequent independent t-tests with a Bonferroni correction to examine differences between pairs of groups
- Alpha was set at 0.05 *a priori*



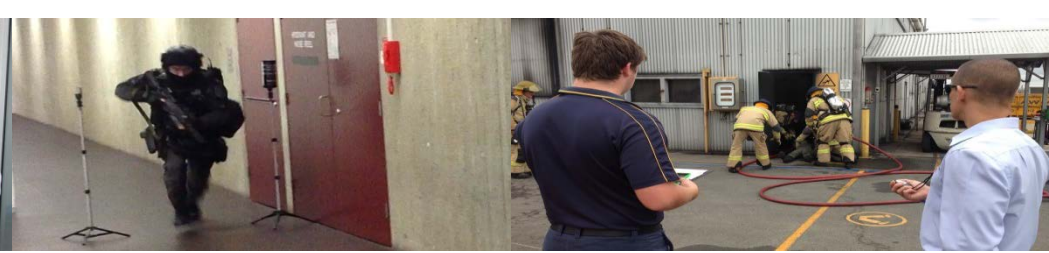
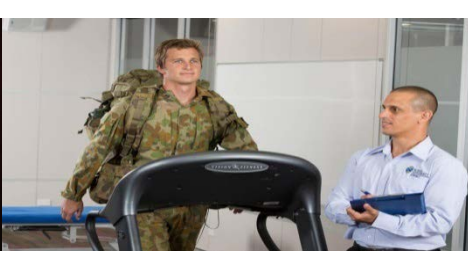
Results

- Significantly higher mean FMS scores were found
 - recruits (15.23 ± 2.01) v. attested officers (14.57 ± 2.96 ; $p < .001$)
 - females (15.24 ± 2.35) v. males (14.84 ± 2.55 ; $p = .008$).
- A FMS score of ≤ 14 points, predictive of higher injury risk, was observed in
 - 43% of male police officers & 41% of female officers
 - 36% of male recruits & 33% of female recruits.



Results

- An ANCOVA revealed that age was a significant factor accounting for the total FMS score differences between
 - male trainees (25.78 ± 5.57 years) when compared to male attested officers (34.84 ± 8.00 years, $F(2,1) = 17.417$, $p < .001$).
 - female trainees (25.07 ± 5.99 years) when compared to female attested officers (36.87 ± 6.88 years, $F(2,1) = 6.196$, $p = 0.013$).



Results

- The components of poorest performance, were
 - the hurdle step
 - rotary stability





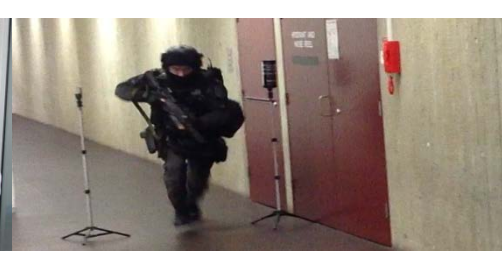
Discussion

- In our study, mean FMS scores (14.93 ± 2.51) were \downarrow than:
 - active duty service members (16.2 ± 2.2) (Teyhen, et al, 2014)
 - Emergency Task Force police officers (15.1 ± 2.1) (McGill, et al, 2013)
 - in an active younger population of between 18 and 30 years of age (15.7 ± 1.9) (Schneiders et al., 2011)



Discussion

- In our study, mean FMS scores (14.93 ± 2.51) were \uparrow than:
 - Canadian general population (14.14 ± 2.85) (Kiesel, et al., 2007)
 - fire fighters (13.6 ± 1.9) (McGill, et al, 2013)
 - football players (13.3 ± 1.9) (McGill, et al, 2013)

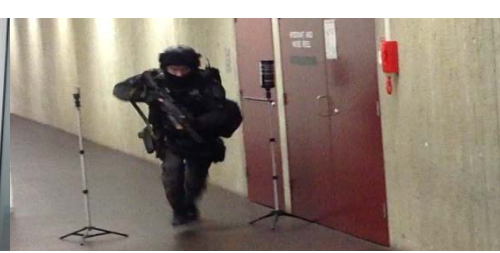


Discussion

- The components of poorest performance, being the hurdle step and rotary stability, correspond to the leading sites of injury in this population, being knee and back.

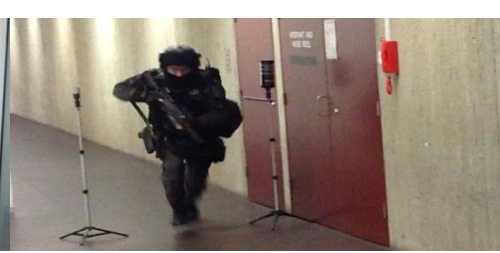
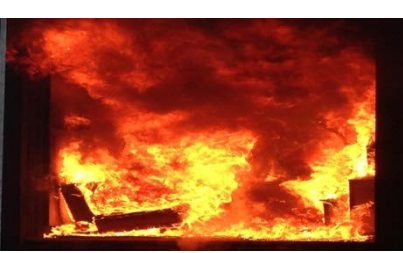


(Orr & Stierli 2013)



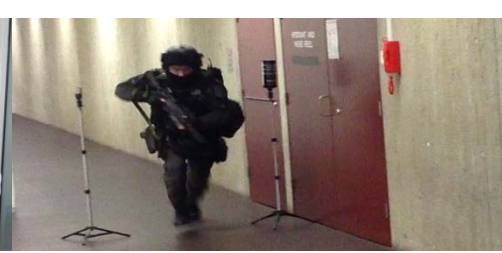
Conclusion / Take Home Message

- The FMS is a useful outcome measure for police officers.
- FMS movements with poorest performance correspond to injuries typically sustained in a police population.
- Specific conditioning programs to improve performance in movements identified with poorer performance may reduce injuries in police officers.



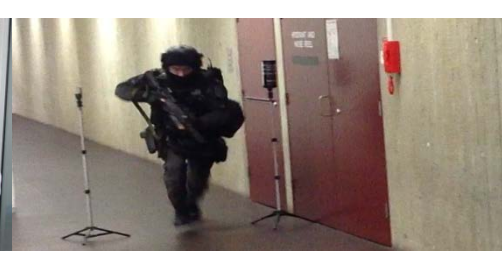
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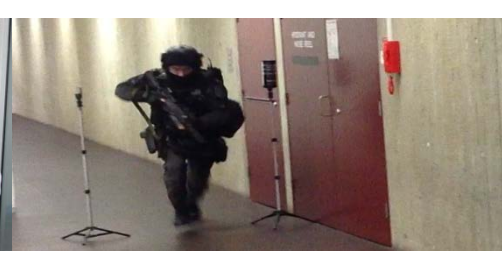
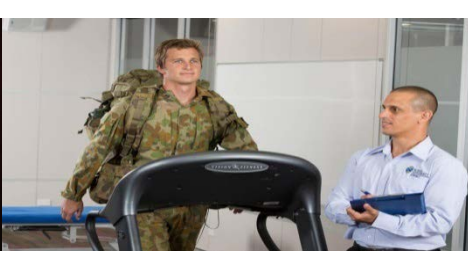
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