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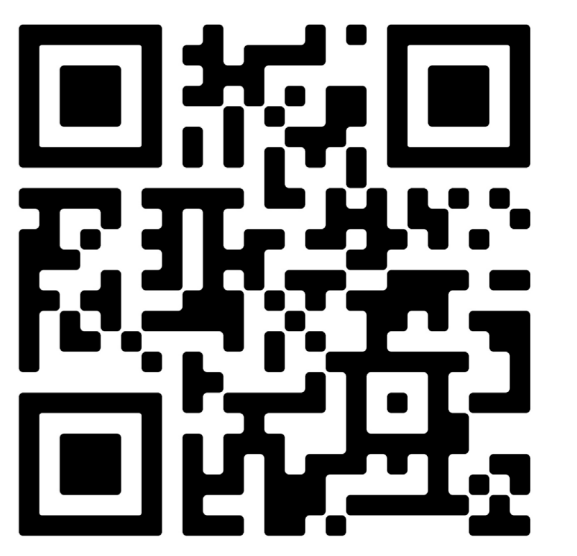
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Comparing an Occupational Specific Physical Assessment to Fitness Measures Specialist Tactical Response Police Candidates: A Retrospective Cohort Study

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Introduction

Specialist tactical response police are highly trained individuals.¹

Their tasks can include hostage rescue, barricades assaults, high-risk warrant executions, and response to terrorism.^{2,3,4}

As such these officers require a high level of muscular strength and aerobic and anaerobic fitness.⁵

Purpose

This study aimed to investigate the relationships between select measures of physical fitness and performance on an occupational specific physical assessment (OSPA).

Methods

A retrospective analysis of data from 18 male specialist tactical response police candidates (mean age = 32.1 ± 5.04 yrs; height = 183.72 ± 5.79 cm; mass = 89.44 ± 8.56 kg; Body Mass Index (BMI) = 26.45 ± 1.58 kg/m²) was conducted.

Data comprised of anthropometric measures, fitness measures (1 Repetition Maximum bench press, squat, deadlift, and shoulder press, grip strength, loaded pull ups, 7 stage sit ups, push ups in 60 secs and beep test) and an OSPA (repeated efforts of crawling, adopting kneeling firing positions 80 kg victim dragging, etc) with a 28.43 (±0.54) kg load.⁶

A stepwise linear regression determined the influence of measured fitness parameters on OSPA performance.

Results

- Descriptive results from the outcome measures are shown in Table 1
- The stepwise linear regression data featured both the 1RM military shoulder press (65.64 ± 9.07 kg) and grip strength of the non-dominant hand (60.17 ± 5.40 kg) as the most significant predictor of performance on the OSPA, accounting for 56.5% of the variance (p < 0.003) (Table 2).
- A separate model, exclusively using the 1RM military shoulder press predicted OSPA performance, accounting for 24.0% of the variance in performance.
- Although both the 1RM shoulder press and grip strength were featured in the regression, the only significant independent factor was the shoulder press (r = -0.533, p = 0.023).
- Apart from the 1RM shoulder press no correlations were found with other fitness measures and OSPA performance.



Table 1. Descriptive data for demographic, anthropometric, physical fitness and occupational task performance measures in specialist police candidates.

VARIABLE	MIN	MAX	MEAN ± SD
Age (years)	26	42	32.1 ± 5.04
Height (cm)	173	193	183.72 ± 5.79
Weight (kg)	71	110	89.44 ± 8.56
BMI (kg·m ⁻²)	23.18	29.53	26.45 ± 1.58
LBMI (kg with load·m ⁻²)	30.65	35.97	33.60 ± 1.61
Illinois Agility (sec)	15.44	16.91	15.93 ± 0.52
1RM bench press (kg)	97.5	130	114.31 ± 8.13
1RM back squat (kg)	100	160	132.72 ± 16.01
1RM military shoulder press (kg)	47.5	80	65.64 ± 9.07
1RM hex deadlift (kg)	134	185	166.39 ± 15.91
Grip strength: Dominant (kg)	50.3	72.9	61.95 ± 7.00
Grip strength: Non-dominant (kg)	47.2	66.7	60.17 ± 5.40
Loaded pull-ups + 17 kg plate carrier (reps)	3	10	6.39 ± 2.17
7 stage sit-up (reps)	5	7	6.78 ± 0.55
Push-ups: 60 sec (reps)	49	77	60.28 ± 7.63
Beep test (level)	10.1	13.1	11.48 ± 1.06
1.2 km run (min)	4.01	5.14	4.28 ± 0.26
OSPA (min)	01:36.8	02:07.5	01:51.73 ± 00:09.21
OSPA load weight (kg)	27.45	29.5	28.43 ± 0.54

Key: BMI = body mass index; LBMI = loaded body mass index; OSPA = occupational specific physical assessment

Table 2. Stepwise linear regression analysis between the 1RM military shoulder press or combined 1RM military shoulder press and non-dominant grip strength and the urban rush in specialist tactical response police candidates (n = 18).

Variable	r	r ²	Adjusted r ²	Significance
1RM military shoulder press	.533	.284	.240*	0.023
1RM military shoulder press	.785	.616	.565***	0.001
Grip strength: non-dominant				0.003

Correlation: *small, **moderate, *** large



Conclusion

- Given that the upper limbs are the leading site of injury in law enforcement personnel, these results emphasize the importance of optimal upper limb musculoskeletal strength on key occupational tasks in specialist tactical response police candidates.
- The lack of association between cardiovascular fitness and OSPA performance could be due the high level of cardiovascular fitness of the officers and a potential ceiling effect.

Operational Relevance:

Apart from the need for a generally high level of fitness, specific attention to strength in the upper limbs should inform the bases of strength and conditioning and reconditioning protocols for this population.

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