Fitness Levels Explain Differences In Performance On A Patrol Officer Specific Physical Ability Test

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Fitness Levels Explain Differences in Performance on a Patrol Officer Specific Physical Ability Test

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Health and Human Performance

Abstract

Law enforcement officers (LEOs) are often called upon to perform physically demanding tasks as part of their normal job duties. Physical ability tests (PATs) are frequently used by employers within physically demanding occupations to determine an individual's ability to perform essential occupational tasks. Trainees and qualified officers need to understand the physical fitness demands associated with successful performance in each component in order to be physically prepared to perform PATs and related occupational tasks. **PURPOSE:** The purpose of this study was to determine whether significant differences existed between high, average, and low performers on an occupationally specific PAT based on fitness, sex, and anthropometric characteristics among state patrol officers. **METHODS:** A retrospective analysis was conducted of 275 LEOs (age = 38.0 ± 7.6 yr; females, n = 19; males, n = 256; body mass = 91.1 ± 15.0 kg). Physical fitness measures, included: body fat % (BF), vertical jump (VJ), sit-and-reach test (SR), 1-minute sit-up (SU), 1-minute push-up (PU), and 2.4 km run time (2.4R). The PAT consisted of several tasks, such as a simulated pursuit, victim drag, vehicle push, traversing an embankment, low crawl, and barrier jump. A principal component analysis was utilized to determine differences in performance between high, moderate and low performers on the PAT. Where possible, the data were also analyzed by sex.
RESULTS: The statistical analysis revealed that lower dynamic fitness and BF explained 50% of the variance in PAT performance between groups, with flexibility explaining an additional 15% of the variance. PAT performance was also predicted by 2.4R in both sexes, and by 2.4R, SR, SU, and age in men.
CONCLUSION: Physical fitness relates to several occupational demands in law enforcement. When designing programs to assist LEO with improving their performance on PAT and occupational tasks, strength and conditioning professionals should focus on developing aerobic capacity, trunk muscular endurance, and whole-body anaerobic power.

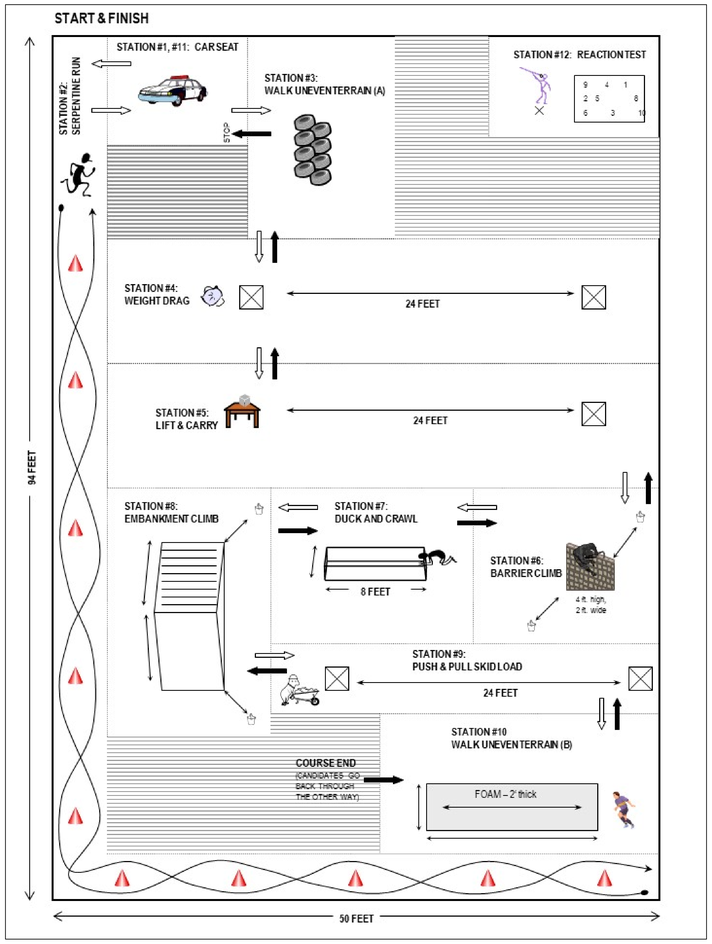
Introduction

Physical ability tests (PATs) are frequently used by organizations with physically demanding occupations to determine the level of an individual's ability to perform essential occupational tasks (Arvey et al. 1992; Stanish, 1996; Dawes et al., 2015; Dawes et al., 2017). Many agencies have developed their own PATs to evaluate job performance of sworn officers. Understanding the physical fitness components associated with successful performance in each component is vital if trainees and qualified officers are to be physically prepared to perform these PATs and the related occupational tasks. Although several studies have investigated the relationship between physical fitness and PAT performance among LEOs (Stanish, 1996; Dawes et al., 2015; Dawes et al., 2017), differences in the physical fitness and anthropometric characteristics between high, average and low performers by sex in a PAT has not been specifically investigated in LEO. Therefore, the purpose of this study was to determine whether significant differences existed between high, average, and low performers on an occupationally specific PAT based on fitness, sex, and anthropometric characteristics among patrol officers.

Methods

- 275 LEOs (age = 38.0 ± 7.6 yr; females, n = 19; males, n = 256; body mass = 91.1 ± 15.0 kg) volunteered to participate.
- Physical fitness measures, included: body fat % (BF), vertical jump (VJ), sit-and-reach test (SR), 1-minute sit-up (SU), 1-minute push-up (PU), and 2.4 km run time (2.4R).
- The PAT consisted of several consecutive job-related tasks that the participants were required to complete with little to no rest.

1. Chasing scenario: run in a serpentine pattern around a set of cones, which simulated a chasing scenario
2. Agility maneuver: traverse a set of 10 rings placed flat on the ground
3. Simulated victim rescue: drag a 54.6 kg bag for 6.1 m
4. Essential job function (lifting) task: 18.2 kg crate carry
5. Traverse a simulated interstate
6. Low crawl
7. Simulate traversing an embankment: sprint up and down a ramp 5 times while retrieving and returning a ball to a bucket at the base of a ramp
8. Simulated car push using a weighted sled
9. The participants then had to repeat each task, in reverse order, to complete the course.



Results

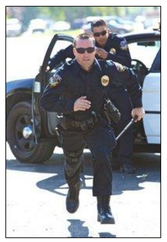
The statistical analysis revealed that lower dynamic fitness and BF explained 50% of the variance in PAT performance between groups, with flexibility explaining an additional 15% of the variance. PAT performance was also predicted by 2.4R in both sexes, and by 2.4R, SR, SU, and age in men.

Table 1: Correlation matrices for entire sample, women, and men

Entire Sample (n = 275)	2.4R	PAT	BF	SU	PU	VJ
2.4R						
PAT	.71**					
BF	.63**	.55**				
SU	-.57**	-.49**	-.47**			
PU	-.5**	-.46**	-.48**	.52**		
VJ	-.41**	-.47**	-.41**	.39**	.41**	
SR	-	-	-	.12*	-	-
Women (n = 19)	2.4R	PAT	BF	SU	PU	VJ
2.4R	-					
PAT	-.75**					
BF	-	-				
SU	-.5*	-	-			
PU	-	-	-	-		
VJ	-.54*	-.49*	-	.58**	-	
SR	-	-	-	-	-	-
Men (n = 256)	2.4R	PAT	BF	SU	PU	VJ
2.4R						
PAT	.67**					
BF	.62**	.52**				
SU	-.55**	-.47**	-.45**			
PU	-.45**	-.36**	-.44**	.52**		
VJ	-.31**	-.32**	-.35**	.35**	.27**	
SR	-.16*	-.2**	-.14*	.16**	0.13	

Note: * p = .05; ** p = .01.

Discussion



Physical fitness relates to several occupational demands in law enforcement. When designing programs to assist LEO with improving their performance on PAT and occupational tasks, strength and conditioning professionals should focus on developing aerobic capacity, trunk muscular endurance, and whole-body anaerobic power.

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