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Change-of-direction Speed and Aerobic Fitness Could Influence Academy Graduation in Law Enforcement Recruits

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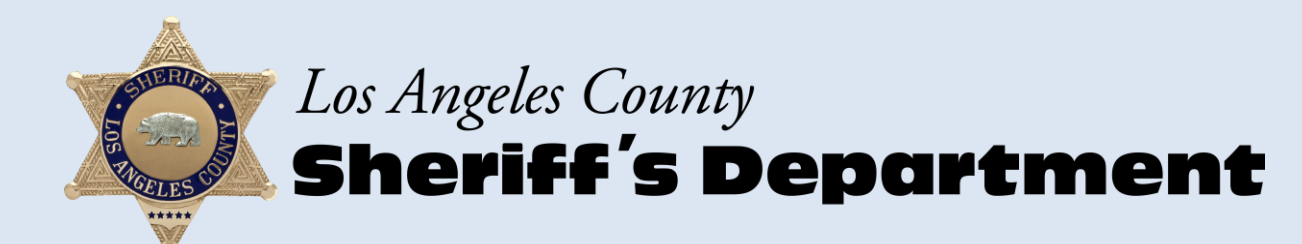
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INTRODUCTION

- Law enforcement can be a physically demanding profession, where on-duty officers may be required to carry, push, or pull objects or people, and sustain pursuit of a suspect at any time during their shift.² Law enforcement agency (LEA) recruits are required to complete academy training, which is used to physically prepare recruits to tolerate the rigors of the job, and teach proper procedural and legal requirements.
- Recruits may separate from academy (i.e., they do not graduate) for many reasons. This can include personal reasons (e.g., they no longer want to work in law enforcement), physical training session failures, injury, or failure in academics or scenario-based training. Recruits that separate create a financial burden to the agency.
- The physical fitness of a recruit before academy could influence whether they are capable of successfully graduating academy,⁴ and what the reason for separation may be. The purpose of this study was to analyse the effects physical fitness may have on academy graduation.

METHODS

- Retrospective analysis was conducted on five classes from one LEA, encompassing 401 recruits, which included 333 males and 68 females.
- The five classes had 330 recruits (277 males, 53 females) who graduated (GRAD), and 71 recruits who separated at various time points during academy. Of these, 28 recruits (22 males, 6 females) separated for personal reasons (SEPPR); 18 recruits (11 males, 7 females) separated due to physical training failures (i.e. poor fitness) or injury (SEPMI); and 25 recruits (23 males, 2 females) separated due to academic or scenario failures (SEPAS).
- Fitness testing occurred prior to the start of academy, and included: push-ups and sit-ups in 60 s to measure muscular endurance; a 75-yard pursuit run (75PR), which was a simulated foot pursuit involving sprinting and direction changes about a grid; seated medicine ball throw (MBT) and vertical jump (VJ) as measures of upper- and lower-body power, respectively; and number of shuttles in the multistage fitness test (MSFT) to assess maximal aerobic fitness.
- Data was combined for males and females in each of the groups. A one-way ANOVA with Bonferroni post hoc compared performance in the fitness tests between the four groups, with significance set at $p \leq 0.05$.

RESULTS

- Table 1 displays the descriptive data for each group. The GRAD group was younger than the SEPAS ($p < 0.01$) group. The SEPMI group was significantly shorter than all other groups ($p \leq 0.03$). There were no significant between-group differences in body mass.
- The GRAD group was significantly faster in the 75PR when compared to the SEPMI ($p = 0.02$) and SEPAS ($p = 0.05$) groups. The GRAD group also completed significantly more MSFT shuttles than the SEPPR and SEPMI groups ($p = 0.01$).
- There were no significant differences between the groups for push-ups and sit-ups in 60 s, MBT distance, and VJ height.

Table 1. Descriptive data (mean \pm SD) for age, height, body mass, and fitness test performance data for LEA recruits who graduated (GRAD) or separated (SEPPR, SEPMI, and SEPAS) from academy training.

	GRAD (n = 330)	SEPPR (n = 28)	SEPMI (n = 18)	SEPAS (n = 25)
Age (years)	26.67 \pm 5.19	29.35 \pm 8.02	29.59 \pm 6.88	32.70 \pm 9.01*
Height (m)	1.75 \pm 0.09	1.74 \pm 0.10	1.63 \pm 0.04§	1.74 \pm 0.08
Body Mass (kg)	80.69 \pm 14.38	74.57 \pm 14.52	79.50 \pm 16.27	80.00 \pm 12.54
Push-ups (no.)	42.48 \pm 15.09	39.48 \pm 14.01	34.63 \pm 16.44	40.38 \pm 12.24
Sit-ups (no.)	36.19 \pm 9.04	35.78 \pm 8.72	33.13 \pm 7.59	34.29 \pm 10.39
75PR (s)	16.97 \pm 1.32	17.60 \pm 1.21	17.94 \pm 1.37*	17.69 \pm 1.28*
MBT (m)	5.84 \pm 1.22	5.52 \pm 1.35	5.73 \pm 1.29	5.96 \pm 1.01
VJ (cm)	53.60 \pm 12.53	51.58 \pm 13.43	47.94 \pm 11.69	53.34 \pm 11.83
MSFT shuttles (no.)	52.75 \pm 16.69	41.54 \pm 10.74*	39.94 \pm 13.03*	46.08 \pm 11.19

* Significantly ($p < 0.05$) different from the GRAD group.

§ Significantly ($p < 0.05$) different from the GRAD, SEPPR, and SEPAS groups.

DISCUSSION

- Younger recruits may have a better chance of graduating academy training. Previous research has indicated that younger LEA recruits tend to display superior physical fitness prior to academy compared to older recruits,³ which may influence their ability to successfully complete physical training.
- Change-of-direction (COD) speed measured by the 75PR and aerobic fitness measured by the MSFT could positively contribute to academy graduation, especially considering the SEPMI group results. Academy training often features high volumes of interval and distance running,¹ and recruits lacking in these qualities may find academy training more challenging.
- However, another factor that could also influence whether a recruit separates for personal reasons is the inappropriate application of physical training. As noted, traditional LEA training can often involve high volumes of running, with no clear use of evidence-based practice when applying volume and intensity.¹ Recruits in the SEPPR group may have found the training adopted by the LEA staff beyond their current physical capacity, contributing to their decision to separate.

PRACTICAL APPLICATIONS

- LEA recruits should enhance their COD speed (including strength, power, and sprint ability) and aerobic fitness prior to academy to enhance their chances of successful graduation. This is especially important for older recruits.
- Training staff should consider the training load they impose during academy to ensure it is not beyond the physical capabilities of some recruits, which could contribute to injuries or negatively affect a recruit's motivation to graduate.

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