Relationships between the 1.5-mile Run and Multi-stage Fitness Test in Deputy Sheriff Recruits Post-Academy Training

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Published: 01/10/2018

Document Version: Peer reviewed version

Link to publication in Bond University research repository.

Recommended citation (APA):

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ABSTRACT

The most popular method for measuring aerobic fitness within US law enforcement agencies (LEA) is the 1.5 mile run (1.5 MR run). A limitation of the 1.5 MR run is that it is not a physiological test. The multi-stage fitness test (MSFT) is a progression of the 1.5 MR run across our programs. The MSFT and the 1.5 MR run are conducted in the first few weeks of the recruits (20-week academic training). Time was recorded for the 1.5 MR run while total shuttle were recorded for the MSFT estimated maximal aerobic capacity (VO2max) was calculated from both tests. Estimated from the aforementioned tests was compared with paired samples t-tests. Pearson's correlations and linear regression scatter plots calculated relationships between the 1.5 MR run and MSFT. Each was analyzed separately, with p-values set at 0.05. The results from the 20-week academic training (both male and female recruits) were consistent with the recruited aerobically trained (404 ml/kg/min) and those who were sedentary (201 ml/kg/min). The VO2max from the MSFT and the 1.5 MR run were significantly greater than those for the female recruits for both tests (47.04 vs. 40.88 ml/kg/min for VO2max; 37.02 vs. 34.58 ml/kg/min). The results from the 20-week academic training (both male and female recruits) were consistent with the recruited aerobically trained (404 ml/kg/min) and those who were sedentary (201 ml/kg/min). The VO2max from the MSFT and the 1.5 MR run were significantly greater than those for the female recruits for both tests (47.04 vs. 40.88 ml/kg/min for VO2max; 37.02 vs. 34.58 ml/kg/min).

RESULTS

The VO2max, calculated from the 1.5 MR run were significantly greater than those for the MSFT for both males (47.04 ml/kg/min vs. 40.88 ml/kg/min; Figure 1), and females (43.16 ml/kg/min vs. 37.02 ml/kg/min; Figure 2). The VO2max of the 1.5 MR run significantly correlated with the MSFT for males (r = -0.49) but not females (r = -0.31).

CONCLUSIONS

The results suggest that recruits performed relatively better in the 1.5 MR run compared to the MSFT. Their physical training program tended to emphasize calisthenics, interval running circuits that lacked evidence-based work: rest ratios, and distance running; this could have impacted these results. It may be that the weak relationships between the tests, especially for females, would suggest recruits still have limitations in high-intensity, externally paced running.

INTRODUCTION

• The most popular method for measuring aerobic fitness within US law enforcement agencies (LEA) is the 1.5 mile run (1.5 MR run). The 1.5 MR run relies on recruits' internal pacing is a limitation. Concerning tests of LEA recruits and officers, the more popular 20-m multi-stage fitness test (MSFT) is externally paced which does not allow the individual to perform at a pace they are comfortable with. Additionally, the MSFT has a high intensity running component that the 1.5 MR run does not.2

• While in the line of duty, the primary job tasks for a deputy sheriff are primarily sedentary (e.g., sitting in a patrol vehicle, office work). However, increases in movement intensity can be required during patrol that could ensure a deputy's safety, or the safety of the general population.3 Since the MSFT is externally paced, it more closely matches the demands of a deputy, as opposed to the 1.5 MR run. As a result, the MSFT could present itself as a more appropriate test of aerobic fitness.

• Academy training is used to prepare recruits for the rigors of duty and to enhance physical fitness. If training approaches are successful during academy, aerobic fitness as measured by the 1.5 MR run and the MSFT should be relatively similar, in that recruits should be aerobically fit and have the high-intensity running capacity to perform well in both tests.1,2

• The purpose of this study was to analyze the relationship between the 1.5 MR run and the MSFT of deputy sheriff recruits at the end of academy.

METHODS

• Retrospective analysis was conducted on five academy classes from LEA.

• This sample was comprised of 261 recruits (age: 26.59 ± 5.06 years; height: 1.74 ± 0.08 m; body mass: 83.18 ± 14.77 kg), which included 227 males (age: 26.63 ± 5.19 years; height: 1.76 ± 0.07 m; body mass: 83.40 ± 13.34 kg) and 34 females (age: 26.26 ± 4.12 years; height: 1.63 ± 0.07 m; body mass: 76.94 ± 16.90 kg).

• The 1.5 MR run and MSFT were conducted in the last few weeks of the recruits' 22-week academy. Time was recorded for the 1.5 MR run while total shuttle were recorded for the MSFT estimated maximal aerobic capacity (VO2max) was calculated from both tests.1,4

• Estimated VO2max from the aforementioned tests was compared with paired samples t-tests. Pearson's correlations and linear regression scatter plots calculated relationships between the 1.5 MR run and MSFT. Each sex was analyzed separately, with p<0.05 set for all analyses.

• In the last three weeks of the academy, recruits were provided a calendar with physical activity recommendations; aerobic fitness activities included calisthenics, interval running circuits that lacked evidence-based work: rest ratios, and distance running; this could have impacted these results. Given the weak relationships between the tests, especially for females, this would suggest recruits still have limitations in high-intensity, externally paced running.

• As previously mentioned, the 1.5 MR run may not accurately match the job demands of a deputy sheriff. The 1.5 MR run allows the recruit to set their own pace, and has limited high-intensity component.4 Considering the fact that the MSFT has external pacing and a more pronounced high-intensity component,3 this test may be a better fit to indicate career preparations for a deputy sheriff recruit.

• Since the job demands of a deputy sheriff are externally paced by nature, the outcomes shown from the data in this study is not ideal. Academy training programs should explore the use of evidenced-based high-intensity running programs.

REFERENCES


