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# Loss of Fitness in Serving Law Enforcement Officers: A Critical Review

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### Background

Tactical personnel may include personnel working in occupations such as law enforcement, the military or firefighting. For these personnel, the nature of their work can place them under immense physical stress<sup>1</sup>. Duties for law enforcement personnel can vary from routine paperwork and riding in patrol cars, to pursuing and subduing suspects<sup>1</sup>.  
Research suggests that officers lose fitness due to work factors such as shift work and stress.

### Purpose

The aim of this critical review was to:  
1) compare fitness levels of incumbent police and police recruits, and  
2) determine if changes in police fitness can be attributed to age or occupational factors.



### Methods

Article selection for the critical review involved a comprehensive search of databases: PubMed, EMBASE, CINAHL and SPORTDiscus. Key search terms were developed specific to each database. Inclusion criteria were 1) human subjects, 2) adults over 18 years of age, 3) tactical population and 4) data provided from at least two time points (see Figure 1). Three authors (K.G., C.M. & C.Z.) independently applied the Downs and Black Critical Appraisal tool<sup>2</sup>. Each author then synthesized and extracted data from the included articles.

### Results

The Kennelly grading system was used to grade the **quality of each article**, where the mean grade was 72.16%. Of the articles included in this critical review, eight were graded as 'good' and four were graded as 'fair'.

**Body fat** percent was reported in two articles. Boyce et al. (2008 & 2012) showed an average increase in body fat percent of 5.1% and 4.6% in female and male incumbent officers, over a 12.5 year period.

Evaluating **aerobic capacity**, Sorensen et al. (2000) showed there was an average decrease in male incumbent officers' VO<sub>2</sub>max of 4.4ml/min/kg. While, Orr et al. (2017) measured the 1.5-mile run showing that on average, female and male recruits were 1.7minutes and 0.47minutes faster than their gender matched incumbent counterparts.

Evaluating **anaerobic capacity**, Orr et al. (2017) also showed female incumbent officers were on average 2.7seconds faster at the 300-meter run than female recruits, while male incumbent officers were on average 7.7seconds slower than male recruits.

**Bench press strength** was reported by three articles. Boyce et al. (2009 & 2014) showed that when comparing male and female recruits to incumbent officers, female incumbent officers averaged 4.8kg more and males averaged 13.6kg more than recruits on 1-repetition max bench press (1RM bench press). While, Orr et al. (2017) showed that female incumbent officers averaged 12.4kg less and male incumbent officers averaged 2.9kg less than recruits at 1RM bench press.

**Sit-up repetitions** were reported by two articles. Sorensen et al. (2000) showed an average decrease of 3.4reps among incumbent officers over a 15-year period. Orr et al. (2017) showed that female incumbent officers averaged 6.9reps less and males averaged 7.1reps less when compared to recruits.

**Push-up repetitions** were reported by two articles. Sorensen et al. (2000) showed an average decrease of 3.4reps among incumbent officers. Orr et al. (2017) showed an average decrease of 18.4reps for females and 12.5reps for males when comparing recruits and incumbent officers.

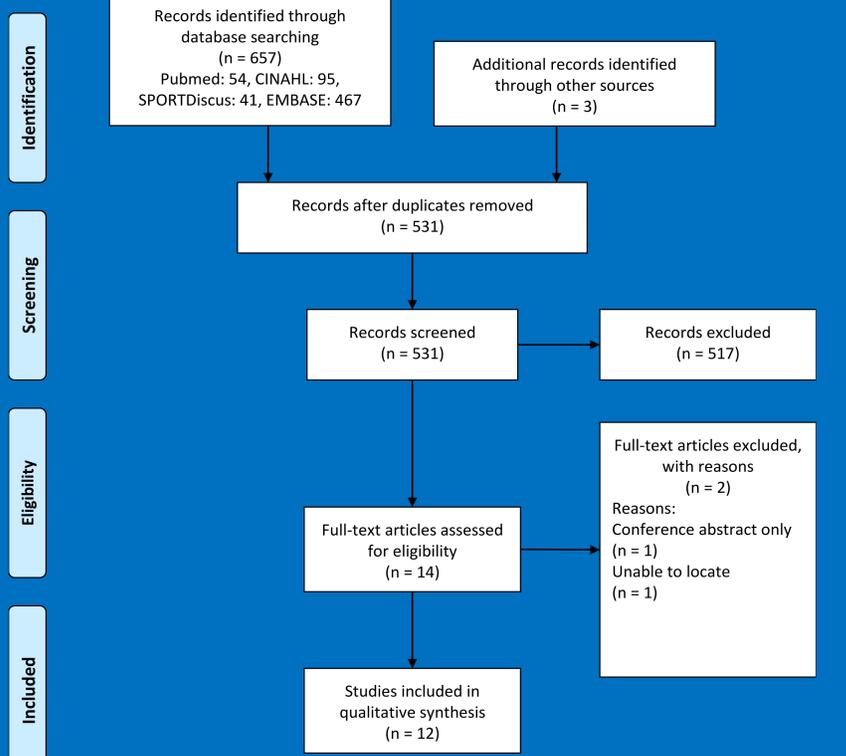


Figure 1. PRISMA process of literature search and selection

### Discussion

Many studies provided retrospective data and were unable to randomize participants. Therefore decreasing the quality of the scores. The researchers believe this may have skewed the appraisal scores.

Studies included in this critical narrative review varied greatly in their use of fitness measures. This made it difficult to infer conclusions when comparing results between studies. Many studies provided data from two time points monitoring the change in fitness after completion of a physical fitness program.

According to current literature, it appears incumbent police officers increase body fat and bench press strength, while showing a decrease in aerobic capacity, sit-up and push-up repetitions.

There is limited research specifically evaluating the changes in fitness characteristics amongst incumbent police officers, throughout their serving career. The evidence base that exists, includes conflicting results.

### Conclusions

Incumbent police officers appear to lose fitness throughout their careers. Fitness measure, including sit-ups and push-ups were found to decrease while body fat percentage was found to increase. This loss of fitness may be independent of age.

Police recruit training appears to have a positive effect on multiple fitness measures including an increase in sit-up repetition and decrease in body fat percentage.

In general, police recruits were shown to perform better across most fitness measures when compared to incumbent police, regardless of gender.



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