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Percentile Ranks of Physical Fitness Levels for Female Law Enforcement Recruits In The USA

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ABSTRACT

INTRODUCTION: Law enforcement agencies (LEAs) throughout the USA have varying physical fitness requirements which must be met before a recruit may join their respective law enforcement academy. It is expected that law enforcement officer (LEO) recruits will obtain an adequate level of physical fitness before they start academy training. When looking at the effect of sex on physical fitness, female recruits generally present with lower strength, endurance, and aerobic fitness when compared to male recruits. However, differences in physical fitness levels between female LEO recruits is less well known with law enforcement research tending to feature low female sample sizes. More detailed analyses of female LEO recruits is required. **PURPOSE:** To detail the percentile ranks of female LEO recruits' physical fitness performance in the number of push-ups (PU), sit-ups (SU), multi-stage fitness test (MSFT) shuttles completed, and maximal aerobic capacity (VO2max). **METHODS:** Retrospective analysis on females from 14 LEO recruit classes from LEAs in different American states was conducted. Although there may be some variation in fitness between states, data was combined to provide an overview of higher and lower standards specific to female recruits. All females were tested prior to their respective LEA training academy and all available data were used. Maximum numbers of PU and SU in 60 s were recorded. VO_2max was derived from MSFT shuttles completed. Percentile rankings were calculated using Microsoft Excel's "Rank and Percentile" tool within the Data Analysis ToolPak. **RESULTS:** Percentile rankings are shown in Table 1. Female recruits with 43-61 PU were in the 90th percentile, those with 27-29 were in the 50th percentile, and those with 1-14 were in the 10th percentile. Recruits with 45-76 SU were in the 90th percentile, those with 34-35 were in the 50th percentile, and those with 5-23 were in 10th percentile. Recruits with 67-100 MSFT shuttles were in the 90th percentile, those with 42-45 shuttles were in the 50th percentile, and those with 8-26 shuttles were in the 10th percentile. Recruits with a VO_2max of 42.1-50.2 ml/kg/min were in the 90th percentile, those with 33.1-34.4 ml/kg/min were in the 50th percentile, and those with 26.1-27.5 ml/kg/min were in the 10th percentile. **CONCLUSIONS:** The data presented here details characteristics of typical female LEO recruits from the USA. When compared to normative data from ACSM, female recruits tended to score superior or similar to general population norms in PU and SU, and tended to perform poorer in aerobic capacity. LEA training staff can use this data to profile their female recruits and highlight strengths and areas for improvement. **PRACTICAL APPLICATIONS:** Female LEO recruits should strive to better their aerobic capacity to better match normative VO_2max values in women. By doing so, and further developing strength, power, and endurance, females will be more prepared to complete academy training, perform job-specific tasks, and raise the expectations and overall fitness for females as a sex group.

INTRODUCTION

- Law enforcement agencies (LEAs) throughout the USA have varying physical fitness requirements which must be met before a recruit may join their respective law enforcement academy. For most agencies, all recruits, regardless of sex, are expected to meet the same minimum fitness requirements designated by their agency.
- To ensure the largest pool of qualified candidates and avoid a disproportionate impact on female applicants, some LEAs have developed sex-norming procedures in certain tests to control for the physiological differences between men and women.[1,3] However, it is important to note that tasks of female officers do not differ from those of a male. Any call for help of an ongoing crime or breach of peace is expected to be handled by whoever is on-duty.
- Female recruits generally present with lower strength, endurance, and aerobic fitness when compared to male recruits.[2,3] Differences in physical fitness levels between female LEO recruits is less well known with law enforcement research tending to feature low female sample sizes.[3] More detailed analyses of female LEO recruits is required.
- Thus, the purpose of this study is to detail the percentile ranks of female LEO recruits' physical fitness performance in the number of push-ups, sit-ups, multi-stage fitness test (MSFT) shuttles completed, and estimated maximal aerobic capacity (VO_2max).

METHODS

- Retrospective analysis on 200 females from 14 LEO recruit classes from three LEAs in different American states was conducted. Ages ranged from 20 – 49 years of age, with mean age being 27.18 ± 5.21years of age. Mean height was 162.27 ± 6.81 cm, and mean body mass was 65.43 ± 10.50 kg.
- Although there may be some variation in fitness between states, data was combined to provide an overview of higher and lower standards specific to female recruits.
- All females were tested prior to their respective LEA training academy and all available data were used. Maximum number of push-ups and sit-ups in 60 s were recorded. The number of MSFT shuttles was recorded by each LEA, and VO_2max was derived from the MSFT shuttles completed.
- Percentile rankings were calculated using Microsoft Excel's "Rank and Percentile" tool within the Data Analysis ToolPak.

RESULTS

- Percentile rankings are shown in Table 1. The number of recruits included for each fitness test, and the number of recruits within each percentile band, is indicated.

Table 1. Percentile rankings for female law enforcement recruits.

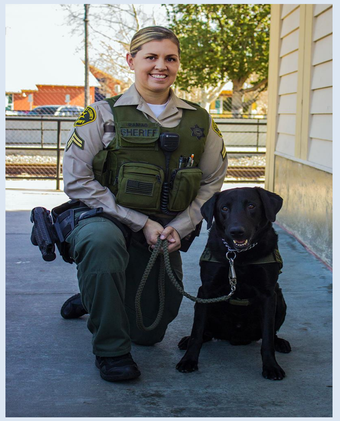
Percentile Rank	Push-up Reps	Recruit No. (n=196)	Sit-up Reps	Recruit No. (n=197)	MSFT Shuttles	Recruit No. (n=200)	VO_2Max	Recruit No. (n=200)
90-100	43-56	18	44-58	18	68-100	20	41.1-50.2	19
80-89	36-42	21	39-43	21	60-67	20	37.7-41	21
70-79	32-35	20	37-38	13	54-59	17	35.5-37.8	20
60-69	30-31	16	35-36	22	47-53	22	34-35.4	16
50-59	27-29	23	33-34	22	43-46	20	32.8-34.1	24
40-49	25-26	19	31-32	20	39-42	21	31.2-32.7	17
30-39	22-24	19	29-30	14	38	10	30.6-31.1	14
20-29	18-21	21	27-28	23	35-37	24	29.1-30.5	23
10-19	16-17	17	24-26	22	30-34	22	27.5-29	22
<10	2-14	22	5-23	22	8-28	24	26.8-27.4	27

CONCLUSION

- The data presented here details characteristics of typical female LEO recruits from the USA.
- When compared to normative data from ACSM,[4] female recruits tended to be superior or similar to general population norms in push-ups and sit-ups, although they tended to perform poorer in aerobic capacity.
- Females from ages 20 – 49 need 11-15 PU to be considered in good health, and 25-27 SU to have an average level of fitness level in the general population norms.[4] The majority of recruits were above these standards.
- Females from ages 20 – 49 also needed a VO_2Max of 32.8 – 36.1 ml/kg/min to have a "fair" aerobic capacity level within general population norms.[4] Only recruits in or above the 50-59 percentile were attained this standard.
- With the percentile ranks shown, LEA training staff can use this data to profile their female recruits and highlight both their strengths, and areas for needed improvement.

PRACTICAL APPLICATIONS

- For females considering law enforcement as a potential career, they should strive to better their aerobic capacity to better match higher normative VO_2max values in females.
- Since research has shown push-ups and sit-ups measure different physical qualities (upper-body pushing vs. abdominal endurance),[2] these two exercises should be fundamental exercises included in a female recruit's strength and conditioning program to better their overall physical fitness.
- By doing so, and further developing strength, power, and endurance, females will be more prepared to complete academy training,[5] perform job-specific tasks, and raise the expectations and overall fitness for females as a sex group.



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