Police Cadet Performance Changes Over the Course of Training

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INTRODUCTION

- Police cadets have limited time to develop all of the necessary skills for the demands of law enforcement. From understanding of the law, defensive tactics, driving, SOP, and more the requirements to be an effective LEO is daunting.
- Physical fitness is an important facet of being an effective police officer, with required physical fitness tests that must be passed in order to graduate. The entrance requirements for these test are often lower than the graduation requirements assuming improvement over training. However, how much the performance improves over the course of their training has not been established.
- How much physical fitness performance changes based upon starting scores and age to influence those changes in performance.

PURPOSE

- To analyze the changes in physical performance testing over cadet training.

METHODS

- 484 cadets successfully completed all testing visits. Participants in this study performed a physical fitness testing battery at the beginning of training (week 1), midpoint (week 10) and final week of training (week 20).
- Physical fitness was evaluated by the following tests in the order listed:
- Bench press 1 repetition maximum (1RM), cadets were required to touch the bar to the chest which had a 5cm sponge attached to the bottom of it and were not allowed to bounce the bar off of their sternum. Rest periods between attempts were at least 1 minute. Cadets were given multiple attempts to achieve their maximum.
- Sit ups to fatigue (in 2 minutes) for maximum repetitions with fingers interlaced behind the head and the elbows required to touch the knees in the top position and shoulder blades required to touch the ground in the bottom each time. Cadets were given one attempt on this test and all of the following tests.
- Push ups to fatigue (in 2 minutes) where their chest was required to touch the ground with each repetition and their arms were required to be locked out at the top.
- 300m run on an indoor track for time
- 2.4km run on an indoor track for time
- Testing was always performed in the order listed previously at each visit and they were given at least 5 minutes between each test.
- All tests were performed with minimum requirements for staying in the program and cadets were encouraged to perform to their maximum as well as higher scoring cadets would graduate with the “Fit for Duty” accolade.
- Data was analyzed for average performance and changes in performance over training. ANOVA with LSD post hoc testing was performed with the data set, significance was set at p <.05.

RESULTS

- Overall performance in all metrics improved over cadet training.
- The bench press increased by 9kg over the course of training compared to baseline.
- Sit up and push ups number both increased from one testing visit to the next with an average gain of 6 sit ups and 15 push ups.
- 300m sprint decreased by 4 seconds over training and the 2.4km run time decreased by 115 seconds.
- All metrics significantly improved from one test to the next except for there was not a significant difference in performance from the midpoint to the exit test in the bench press.
- The greatest response to training for each movement was 27.7kg on the bench press, 29 sit ups, 30 push ups, 17 seconds on the 300m, and 5 minutes on the run.
- The median response to training was 9kg on the bench press, 7 sit ups, 14 push ups, 3 seconds on the 300m, and 1.9 minutes on the 2.4km run.

Figure 1 - track utilized for performing the 300m sprint and the 1.5 mile run

Change from Baseline to Exit Exam	Bench Press Change (Kg)	Sit up Change	Push Up Change	300m Sprint Time Change (sec)	1.5 Mile Run Change (min)
Average	8.6	6.7	14.3	-3.6	-1.9
SD	11.1	5.0	12.6	3.0	1.1
Max	47.3	29	58	7	1.4
Min	-62.3	-21	-48	-17	-5.0
Median	9.1	7	14	-3	-1.9

	Bench Press (kg)	Sit Ups	Push Ups	300m Time (sec)	2.4km Run (min)
Entrance	88.0±32.6	35.2±8.6	38.1±18.2	55.1±10.4	14.3±2.9
Midpoint	97.7±36.4*	40.3±6.3*	49.9±15.0*	51.1±4.77*	12.7±1.6*
Exit	100.8±24.3*	41.9±5.8*†	55.2±14.4*†	50.5±4.5*†	12.1±1.4*†

* significant to entrance, † significant to midpoint, all data mean ± SD

DISCUSSION

- Overall cadet performance increases over training showing the effectiveness of their physical fitness programming.
- The greatest improvements observed with
- More research is needed to identify high and low responders to training and then assess what can be done to help increase their fitness more effectively.
- Injury status and previous training status were not accounted for in this study so extrapolations being made based on this data should be done conservatively.

PRACTICAL APPLICATIONS

- Police cadets increase their fitness levels over the course of training to a significant degree.
- However, when adjusted for the length of training and the variety of responses it is important for cadets to start training at an appropriate level of fitness in order to reach the requirements for their graduation and fit for duty classification.
- Given the average and greatest response to training it is important to note what is expected changes and outlier performance changes over training.

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ACKNOWLEDGEMENTS

The authors are grateful for the DOCJT for their collaboration on this project as well as all of the cadets who participated. Specifically Joseph Jumper, Eric Short, Eddie Brock, and Josh Ernst.