Don't Go Breaking My Heart: The Effects of Ability-Based Training on the Health and Fitness Characteristics of Custody Assistant Recruits

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**ABSTRACT**

Custody Assistants (CAs) are responsible for security in detention facilities, where they may be required to complete high-intensity physical actions to ensure the personal safety of themselves, personnel, and inmates (3). Due to these job demands, and need for overall fitness, physical training (PT) programs are commonly implemented during academy (2). A paramilitary one-size-fits-all model, via modalities such as formation runs and bodyweight calisthenics, are a common form of PT. However, this type of training is typically not individualized for each individual CA recruit to make possible adaptations. The purpose of this study was to analyze an ability-based approach to PT in a CA academy compared to the traditional approach. Retrospective analysis was performed on data from two CA classes consisting of 39 (23 men, 16 women) and 36 (22 men, 14 women) recruits. Results in the first class reached 15 PT sessions in the traditional training (TT) model, while recruits were expected to complete all the same exercises and distance runs. Recruits in the ability-based training (ABT) group were subject to 15 PT sessions consisting of an ABT circuit and interval running workouts.

- Pre- and post-academy training, health and fitness assessments were performed, which included: resting heart rate (RHR); systolic and diastolic blood pressure (BP); push-ups and sit-ups in 60 s; and recovery heart rate from the YMCA step test. Changes in these assessments were compared using 2x2 factorial ANOVA for each measure, and a repeated measures ANOVA for each class (p < 0.05).
- Significant differences in performance in both classes for both the recovery heart rate from the YMCA step test.
- Pre-academy assessment was done on day 1 of the academy and post-assessment was done within the week of graduation.
- Changes in these assessments were compared using 2x2 factorial ANOVA for each measure, and a repeated measures ANOVA for each class (p < 0.05).

**METHODS**

**RESULTS**

- Retrospective analysis was performed on data from two CA classes consisting of 39 (23 men, 16 women) and 36 (22 men, 13 women) recruits (age range = 18-52 years).
- The control class received a traditional training program (TT) which was designed and implemented by the training staff of the academy and consisted of a large volume of steady-state running and body weight strength endurance exercise and calisthenics (e.g., push-ups and sit-ups completed for repetitions).
- Recruits in the ability-based training (ABT) group were given a specially designed program consisting of 15 sessions designed by the staff.
- The ability-based program scaled the exercise to the ability level of each recruit. For example, in the case of running this meant altering the sprint distance so that each recruit's distance more closely matched the desired training effort, based off their 1.5 mile run time. As shown in Figure 1, this meant fitter recruits completed a greater distance for a run than less fit recruits over an equivalent interval time.
- Pre- and post-academy training, health and fitness assessments were performed, which included: resting heart rate (RHR); systolic and diastolic blood pressure (BP); push-ups and sit-ups in 60 s; and recovery heart rate (HR) from the YMCA step test.
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**CONCLUSIONS**

- Although TT and ABT achieved similar changes in fitness as measured in this study, the ABT group was able to achieve these while also reducing RHR and maintaining diastolic BP.
- RHR can be a predictor of cardiovascular and all-cause mortality and BP is also a factor in predicting the development of coronary heart disease. Given these positive adaptations in heart rate and BP, CAs further research should be done to confirm these results and investigate the wider and systemic implementation of ABT in CA.

**INTRODUCTION**

- Custody Assistants (CAs) are responsible for security in detention facilities, where they may be required to complete high-intensity physical actions to ensure the personal safety of themselves, personnel, and inmates (3).
- Due to these job demands, and need for overall fitness, physical training (PT) programs are commonly implemented during academy (2). A paramilitary one-size-fits-all model, via modalities such as formation runs and bodyweight calisthenics, are a common form of PT. However, this type of training is typically not individualized for each individual CA recruit to make possible adaptations.
- Due to the large variance in training age, some recruits may not have the ability to complete all of the TT and so would not gain any positive adaptations. Others with a higher training age may not be challenged enough to elicit a training adaptation, and some may even decline.
- The purpose of this study was to analyze an ability-based approach to PT in a CA academy compared to the traditional approach.

**METHODS**

- Retrospective analysis was performed on data from two CA classes consisting of 39 (23 men, 16 women) and 36 (22 men, 13 women) recruits (age range = 18-52 years).
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**CONCLUSIONS**

- Although TT and ABT achieved similar changes in fitness as measured in this study, the ABT group was able to achieve these while also reducing RHR and maintaining diastolic BP.
- RHR can be a predictor of cardiovascular and all-cause mortality and BP is also a factor in predicting the development of coronary heart disease.
- The increases in diastolic BP for the TT group could be a maladaptation to the rigors of academy, including chronic stress and the physical training load [1,4].
- A possible explanation for the increase in BP is total stress of the academy; although mental stress was probably similar for both groups, the physical stress seemed to be more appropriate for the ABT.
- Given these positive adaptations in heart rate and BP for CAs, further research should be done to confirm these results and investigate the wider and systemic implementation of ABT in CA.