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The physiological effects of a five-day specialist police tactical team selection course

Ben Schram1, Jeremy Robinson2, Robin M Orr1, Elisa Canetti1

1Tactical Research Unit, Bond University, Queensland, Australia, Australian Federal Police, 2 Specialist Response Group, Canberra, Australia.

Background
Selection courses for entry into specialist police units are physiologically and psychologically demanding, designed to match the operational requirement of this job role [1]. Selection courses typically consist of extreme physical challenges under constant individual and team pressure, often with both sleep and nutritional deprivation [2]. In order to maximize candidate preparation, reduce the number of failures and better design selection courses, it is important to understand not only the physical requirements of these courses but also the physical effects of participation on these courses. Greater insight into the effects of a course can enable agencies to better plan courses, provide information to potential candidates and ensure injury risk is minimized. The aim of this investigation was to examine the physiological effects of a one-week specialist tactical police selection course on candidates attempting selection.

Methods
A prospective cohort study was designed where data pertaining to 18 candidates was obtained during a five-day selection course for specialist police selection. Daily measures of weight, grip strength, sit and reach flexibility, vertical jump height and vertical jump power output were performed. Changes in these measures over the course were analysed with a repeated measures ANOVA.

Results
From an initial 18 candidates, 11 completed the selection week with two self-withdrawing and five medically withdrawn. Demographics and initial measures of those who did and did not complete the week, the differences were not significant.

Over the course of the week there were significant (p=0.006) decreases in body weight of 2.05kg [95% CI=3.65-0.45] (Figure 1). Significant (p=0.013) decreases in grip strength of 14.48kg [95% CI=21.32-7.64] on the right and 14.27kg [95% CI=21.89-6.66] on the left (Figure 2) and a significant (p=0.001) decrease of 40cm in sit and reach flexibility of 6.64cm [95% CI=9.94-3.33] (Figure 3). Non-significant decreases in power output and peak jump velocity of 669.77W [95% CI=1942.92 to 603.39] and 0.28m/s [95% CI=0.69-0.14], (Figure 4) were also found with an overall increase in vertical jump height 6.09cm [95% CI=18.79 to 6.08] (Figure 5)

Conclusions: Overall, successful candidates were younger, shorter and lighter than unsuccessful candidates. Through the course over a period of one week, declines were seen in body mass, grip strength, flexibility, and power output. Given that there are documented declines in these measures, strength and conditioning coaches who are working with candidates should ensure they train strength, flexibility and power for as much redundancy as possible and where able, expose themselves to periods of sleep and nutritional deficit and understand how their performance is affected under prolonged periods of stress. Likewise, agencies should be aware than when they put candidates under the required level of fatigue, sleep and nutritional deprivation, they may be concurrently increasing injury risk. Agencies should plan for adequate breaks post selection course for recovery of these parameters before launching into any reinforcement or tactical skills validation cycles of continuing training.

Operational Relevance: This study highlights the declines in performance may be associated with an increased risk of injury during a five-day selection course. Health professionals working with police who are planning on attending selection courses should plan for these decreases and build redundancy in these areas to minimize their effect, to decrease injury risk and maximize chances of success.

References: