Introduction

The current threat of terrorism in the UK has required an upskill of more police officers as Authorised Firearms Officers (AFO). We report one experiment that measured the physiological and psychological responses during a regular bi-annual qualification; comparing 48 new AFOs who recently passed their initial training with 80 more skilled and experienced Armed Response Vehicle officers (ARV). All officers completed the National Handgun Qualification Shoot where failure can lead to withdrawal of their firearms permit.

Method

We investigated the impact of stress on shot accuracy by comparing performance on the qualification shoot. We hypothesised that, in comparison to the ARV officers, AFOs undertaking the qualification shoot would show greater evidence of stress. As Hope et al., (2016) identified, heightened stress may effect performance and lack of experience may increase that stress. The experiment ran during the AFO or ARV officers’ regular training rotation. During the training all participants undertook a development shoot and then the qualification shoot. One way to measure this stress was to monitor heart rate. Therefore, each officer was fitted with a Polar® Heart rate monitor linked by Bluetooth to a tablet that recorded the beats per minute (bpm) constantly during both shoots without interfering with their performance (see figure 2). Prior to the qualification each participant was given a Short STAI questionnaire (Spielberger, 1983) with a α of .78, to complete. The scores from the shoots were recorded and then compared.

Results

Based on a t-test there was no significant difference between the mean scores of the AFOs (M = 13.40, SD 1.68, SD 1.98) compared to the ARV officers (M = 13) on the self reporting anxiety test. p = .23 A one way ANOVA examined whether there was a difference between the groups’ heart rates and accuracy. The results show during the development a significant difference in heart rate F(1,125) = 12.43, p < .001 eta squared 0.09 and accuracy F(1,125) = 68, p < .001 eta squared 0.35. According to Cohen the heart rates had a small effect whereas the accuracy was a large effect. During the qualification there was a significant difference in heart rate F(1,125) = 44.86, p < .001 eta squared 0.26 and significant difference in accuracy F(1,125) = 183.5, p < .001 eta squared 0.59. According to Cohen both large effects.

Conclusion

We examined whether stress has an effect on inner ring accuracy during a bi-annual qualification shoot. The results suggest that AFOs are significantly less accurate than their more experienced colleagues. Their heart rates were significantly higher, suggesting that the stress of the shoot may have influenced their shooting accuracy. Whilst the heart rates of the ARV officers were raised, the results suggest that they better manage stress than the less experienced AFOs.

Figure 1 Police Shooting Target. Officers are expected to aim for ‘centre mass’ as indicated by the area inside the smaller circle.

Figure 2 shows two performances from the experiment.

Figure 3 Glock Handgun used by the Firearms Officers

Figure 3 Glock 17 retrieved from https://www.us.glock.com 17/06/2017

Figure 4 ARV and AFO average heart rates during development and qualification.

A Pearson’s correlation was run to assess the relationship between the heart rate and inner ring accuracy during the qualification. There was a strong negative correlation between the two variables r = -.70, n = 127, p < .001. A Multiple regression was used to assess the ability of Heart rate or group to predict the inner ring accuracy during the qualification. Both heart rate and group added statistically significantly to the prediction F(3,123) = 72.12, p < .001, R² = .63

Figure 4 shows the average heart rates of each group during development and qualification.

Figure 5 shows a comparison of shot accuracy for both development and qualification.

Figure 5 shows the average heart rates of ARV and AFO average heart rates during development and qualification.

Figure 5 shows a comparison of shot accuracy for both development and qualification.

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Bibliography


