

UNIVERSITI TEKNOLOGI MARA

**HEART RATE, POSTURAL SWAY AND
PERFORMANCE: AN INVESTIGATION ON
PHYSIOLOGICAL STATE OF VARSITY ARCHERS IN
MALAYSIA DURING TRAINING AND COMPETITION**

By

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ABSTRACT

This field study examined the comparison and correlation of the physiological responses and performance of skilled archers during training and competition. Eight subjects (N=8) varsity recurve archers participated in the study. All participants shot 6 arrows at 30 meter target while wearing Bio-Harness to quantify their heart rate and postural sway during training and competition. Their shooting score was used as performance measurement. Heart rate reading was in beat per minute (bpm) and postural sway reading was in degree (°), positive value indicates sway to the posterior and negative value indicates sway to anterior side. The Friedman test was used to seek significant ($p < 0.05$) different in all three phases during training and competition. From the result obtained, it was recorded that there was no significant different between set up, aiming and release phase in heart rate value during training ($\chi^2 (2, n = 48) = 16.27, p < .005$) and competition ($\chi^2 (2, n = 48) = 8.01, p = 0.18$). In contrast, there is significant difference ($p < 0.05$) in postural sway during set up, aiming and release phase for training $\chi^2 (2, n = 48) = 6.027, p = .049$ and no significant different during competition $\chi^2 (2, n = 48) = 0.273, p = .873$). The Wilcoxon Signed Rank test also used to seek significant ($p < 0.05$) different between the heart rate and postural sway characteristic while set up, aiming and release phase during training and competition. For heart rate, there is no significant different between both group in all three phases. Quite the opposite, there is significant difference in both group for postural sway in set up phase ($z = -1.972, p = 0.49, r = 0.2$) and release phase ($z = -2.396, p = 0.17, r = 0.35$) except for aiming phase. As for correlation, there is no significant correlation between heart rate and postural sway during training and competition. In addition, there is significant correlation for postural sway during aiming phase towards performance ($r = -.409, p < 0.05$) for training and for competition, significant correlation for postural sway during aiming phase ($r = -4.65, p < 0.05$) and release phase ($r = -.667, p < 0.05$).