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Heart rate and lactate responses to taekwondo fight in elite women performers

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The purpose of this study was to examine heart rate (HR) and blood lactate (LA) concentration before, during and after a competitive Tae kwon do (TKD) fight performed by elite women performers. Specifically, we were interested to see whether HR and LA responses to competitive fight were greater than to TKD or karate exercises published in scientific literature. Seven international-standard women TKD fighters participated in the study. HR was recorded continuously throughout the fight using Polar Vantage telemetric HR monitors. LA samples were taken before and 3 min after the fight and analysed using an Accusport portable lactate analyzer. At the beginning of the fight, HR significantly increased ($p < 0.01$) from pre-fight values of 91.6 ± 9.9 beats min^{-1} to 144.1 ± 13.6 beats min^{-1} . During the whole fight the HRmean was 186.6 ± 2.5 beats min^{-1} and remained significantly elevated ($p < 0.01$) at 3 min into recovery. HR values expressed as a percentage of HRmax averaged during the whole fight at $91.7 \pm 2.6\%$, respectively. LA concentration significantly increased ($p < 0.01$) 3 min after the fight and averaged 82% of LApeak values measured after the VO₂max test. Results of the present study indicate that physiological demands of competitive TKD fight in women, measured by HR and LA responses, are considerably higher than the physiological demands of TKD or karate training exercises. The observed HR and LA responses suggest to us that conditioning for TKD should generally emphasise high-intensity anaerobic exercise.

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