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Using performance analysis to characterise world-class taekwondo fights

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World Taekwondo introduced rule changes after the Tokyo Olympics, most notably the introduction of a new fight structure. Whereas previously all fights lasted three rounds, a fight can now be won in two. The impact of this rule change on the characteristics of fights (e.g., round duration, fight duration, work:rest ratio) are unknown. The aim was to characterise world-class taekwondo fights using performance analysis. In total, 110 taekwondo fighters (female: $n = 59$; male: $n = 51$) across eight weight categories (female: -49kg, -57kg, -67kg, +67kg; male: -58kg, -68kg, -80kg, +80kg) competed in 107 (female = 57; male = 50) fights at the 2023 Grand Prix Final. The Grand Prix Final hosts the top 16 fighters in the world from each weight category. Video footage of all fights was freely available and downloaded from the World Taekwondo YouTube channel (<https://www.youtube.com/user/worldtaekwondo>) before being imported to Dartfish (Dartfish Pro S 2024, Switzerland) for analysis. Round and fight duration were quantified using descriptive statistics and presented as mean (standard deviation). A sport specific work:rest ratio of engaged (i.e., fighters engaged in kicking): not engaged (i.e., fighters not engaged in kicking): clock stopped (i.e., when the referee stopped the clock mid round) ratio was calculated for each fight. *Data presented below are from male fights only. Additional analysis is ongoing to include female fights and further variables, which are expected to be presented at the conference.* Round duration increased from round one (02:56 (00:56) mins) to round two (03:47 (01:43) mins), and round three (04:09 (01:05) mins). Fight duration for two-round fights ($n = 34$) was 06:12 (02:17) mins and for three-round fights ($n = 16$) was 11:35 (02:31) mins. The engaged: not engaged: clock stopped ratio for round one was 1:1.2:1, round two was 1:1.1:1.7, and round three was 1:0.9:1.9. The engaged: not engaged: clock stopped ratio for two-round fights was 1:1:1.5 and for three-round fights was 1:1.1:1.4. Round duration increased as the rounds progressed, and fight duration increased substantially when fights lasted three rounds. As the rounds progress, non-engagement decreased while time spent with the clock off increased. The engaged: not engaged: clock stopped ratio was similar between two- and three-round fights. Practitioners working with world-class taekwondo fighters can use this information to provide specific conditioning training.