

Detection of behavioral patterns in taekwondo

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Introduction

The relationship between athletes' behaviors is relevant for developing defensive and offensive strategies. Traditionally, sequential analysis has been conducted to assess relationships between two behaviors (one focal and another one conditioned). The aim of the study is to analyze sequential analysis of offensive and defensive actions in Olympic taekwondo (TKD) bouts.

Methods

Seventy-five male matches of the London Olympic Games in 2012 were studied to analyze tactical actions as follow: direct and indirect attacks (DA and IA, respectively), anticipatory, simultaneous and posterior counterattacks (AC, SC, and PC), dodges (DO), and openings (OPE). Tactical actions (DA, IA, AC, SC, and PC) were used as focal behavior while every tactical action was used as conditioned ones. Five sequential analyses of 1 lag (i.e., action) anterior and posterior were conducted to the respective focal behavior. Significant patterns were determined with positive adjusted residual (AR) > 1.96 (López-López, Menescardi, Estevan, Falco, & Hernández-Mendo, 2015).

Results

DO (AR=5.63), and SC (AR=5.15) preceded DA while SC (AR=7.33) occurred later. Similarly, DO (AR=5.26), and SC (AR=4.70) preceded IA while SC (AR=4.80) and PC (AR=4.84) occurred later. No significant pattern was found for AC. DA (AR=8.22) and IA (AR=5.65) preceded SC while OPE (AR=4.67), DA (AR=5.80) and IA (AR = 6.36) occurred later. Finally, IA (AR=4.19) preceded PC while DO (AR=4.11) occurred later.

Discussion & Conclusion

This is the first study that performs a sequential analysis in Olympics in TKD. The results showed that DO and SC seem to occur before attacking actions (DA or IA) while SC also occurred after them. In addition, PC could occur after IA. The relationship DA-IA-SC reflects a clench situation where both athletes are continuously kicking the opponent. On the other hand, it seems that SC is the preferred action to counterattack after both types of attack (DA and IA) that could be due to the easier performance of SC in comparison with AC or PC, and the necessity of reacting as soon as possible to the counterpart's action. Clench situation makes reasonable the existence of attacks preceded and followed by SC. In the same line, the performance of OPE after SC imply a new sequence where attackers act as a way of luring opponents for kicking them (counterattack) so that attackers perform a counter-counterattack in an attempt to score. Finally, IA occurred before PC frequently. This could be due to the major time to recognize the attacking action in IA; it may allow the athlete to perform a step backward to avoid being scored and counterattack (PC). Sequential analyses in taekwondo can provide an insight for athletes' patterns. Future studies should be carried out not only with a lag but longer structures of involved action (two or more lags) so that training can be based on empirical data.

References

López-López, J.A., Menescardi, C., Estevan, I., Falco, C., & Hernández-Mendo, A. (2015). 'Análisis técnico-táctico en Taekwondo con coordenadas polares a través del software HOISAN', *Cuadernos de Psicología del Deporte*, 15, pp. 131-142.