

Modeling of grasps in judo contests

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Abstract

In judo, the two contestants get close to each other, perform their grasps, move on the mat and attack. The approaches and kumi-kata (grip technique) give way to specific behaviors between the two contestants. The briefness and the capacity of simultaneous actions, the multiple interactions and the result at stake result in a complex system that is most of the time clarified by the coach to the contestant. A computerized observation may help to highlight some actions associated to success from that complex system. The winners of 35 contests were analyzed (9 beginners, 16 intermediate levels, and 10 experts) through their behaviors (approaches and kumi-kata) and positions. The results enable experts to assume lengths ($15.8 \pm 9.5s$) and amount (9 ± 6) of the combat phases (lapse of time between beginning and stop, announced by the referee) similar to the other two groups. Beginners approach each other with much care and precision, mainly holding their opponents with both hands for the projection. The percentage of total time spent by beginners and experts grabbing the opponent's judogi with both hands, attack and throw was 86% and 24%, respectively, indicating a much lower time spent between grip contact and technique application in experts compared to beginners.

Keywords: competition, technique, tactics

1. Introduction

During a judo combat, athletes aim to project their opponent to the ground or to obtain control during groundwork. For instance, technical and tactical behaviors are substantial for attacks with combinations of tasks in different situations, something which is necessary for an effective application of techniques (Franchini *et al.*, 2008). In this way, we may regard competition in combat sports as a set of action sequences between competitors. These combats represent "complex systems with very different forms but that may be studied with similar methods" (Zwirn, 2003; p.28). During competition combats, the shortness of actions, the possibility of simultaneous actions and multiple interactions lead to a long, difficult and close analysis. Yet, most of the time, the coach guides the contestant through various parts of that complexity, although computerized observation is better suited to highlight those "rationality islands" (Fourez, 1997) due to its precision. Competition brings forward the technical-tactical uncertainty of the opponent's behavior. The result at stake requires skills that coaches and competitors