

**Problem:**

In studies analysing judo competitions a differentiation between successful and less successful athletes with respect to their level of performance in attacking rate, in effectiveness of combative actions and/or in technical diversity has been shown by many authors (Sterkowicz et al., 2007; Francini et al., 2008; Heinisch, 2008; Wicks, 2009; Elmore, 2009). The purpose of this study has been to improve the understanding of relevant criteria of success in technical-tactical actions, as for example the role of differentiated classes of situations for throwing techniques, because more than 85 % of the total potential of technique-scores in high ranking competitions is represented by Nage-waza (Kajmovic et al., 2007; Heinisch, 2010). The resolution of combat situations in Judo based on a complex of combat operations as represented in Fig. 1. The relevance of two of this operations we have included in our study. The approach is based on the hypothesis (1) that Tori performs with greater success in attacking situations that he created by himself, compared to situations (2) when he transferred the primary action of his opponent resp. when he absorbed or blocked that primary action. In addition we have studied what kind of Tori's attacks is more effectively (direct or indirect). A comparison of successful athletes with athletes of lower level of performance was made to specify the initial findings.

**Procedure:**

591 video recorded score producing (successful) throwing actions during the 2010 Judo World Championship (men) were analysed (with four-time slow motion) for their affiliation to two different situational classes (Klocke, 1997; see Tab.1): 1. Who is the initiator (active judo player) of the attack? A: Uke, B: Tori (with four categories each, see Tab. 1) or C: no one of the two opponents (open situation)? 2. Which behaviour of Tori was likely to result in success? A: Tori took over or blocked resp. neutralised a situation, which's initialized by Uke. B: Tori directly or indirectly could make use of a situation that was created by him. C: By being the first to make use of a neutral combative situation. The hypotheses were checked with the Chi-Square test.

**Results and discussion:**

(1) 53.1 % of the judo throwing actions analysed were initiated by Tori, only 41.1 % by Uke (Fig. 2/left). On the basis of current tendencies in combat control (increasing hardness, intransigence, dynamics and muscle activation in the confrontation with the opponent) as well as of the applied interpretation of the rules regarding passivity and/or inactivity, a proportional share of 55 : 35 % was held out in prospect hypothetically (rest = open situations). The verification of this assumption could not be confirmed, i. e. the success of throwing techniques does not stringently depend on the fact that Tori is the initiator of the action; ( $\chi^2 [N=591, df=2] = .53; p = .47, w = .16$ ). The fact, that "open" situations had a significantly lower amount (3.9 %), illustrates the high dynamics of the bout, which shows itself in permanent actions of Uke and/or Tori.

(2) Tori created and used 58,9 % of the situations (including open situations), while in 41,1 % of the actions Tori made use of situations that Uke initiated by taking over or neutralising his opponent's actions (Fig. 2/right). In the case of situations that Tori initiated by himself we found a relatively balanced relation (52 vs. 48 %) between direct resp. indirect reactions, i. e., both categories of action do not distinguish from each other ( $\chi^2 [N=317, df=1] = .53; p = .47$ ). When analysing situations in which Uke was the initially active judo player Tori's behaviour is significantly characterized by actions to take over his opponent's actions ( $n > 70 %$ ) compared to actions to neutralise resp. block Uke's actions (Fig. 3). This result shows that dynamic activity is the main basis of successful fighting actions after an initial action of Uke ( $\chi^2 [N=240, df=1] = 10.85; p = .001, w = .40$ ), and it underlines the importance of kinesthetic analysis via the proprioceptors (Sertic et al., 2009) as well as of the anticipation of the opponent's behaviour.

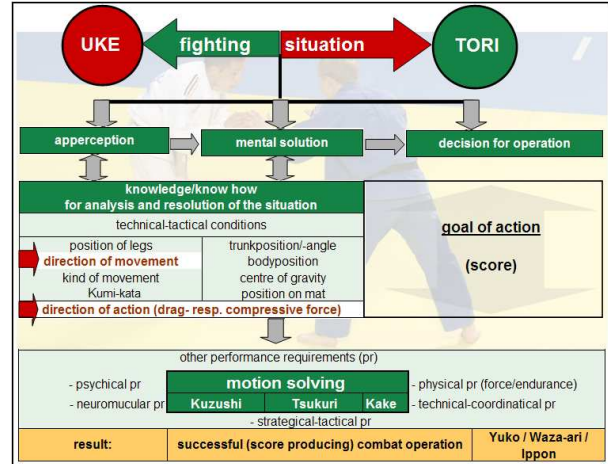


Fig. 1. Schematically representation of a combat operation in Judo (cf. Heilemann & Müller, 1993, p. 14 f; Pöhlmann, 1985, p. 21)

Table 1. Classes of situation direct before the attack and classes of Tori's operation

Initiator of the attack	Situation immediately before the attack	
Uke (attacks at the first)	Uke pushed and/or moved forward	↑
	Uke pulled and/or moved backward	↓
	Uke moved sideward or in acircle (pulled Tori on his way)	↔
Tori (attacks at the first)	Uke moves after an attack the same way of Tsukuri back, or he remains in a fixed position or he stands up (in front of Tori)	○
	Tori pulled and/or moved backward	↓
Nobody	Tori pushed and/or moved forward	↑
	Tori moved sideward or in acircle (pulled Tori on his way)	↔
Nobody	"Open" situation (the relation between push or pull is in balance)	⊕
Basic classes of Toris operation		Specific classes of Toris operation
Tori is capitalizing a situation, who is initiated by Uke	Tori takes over the movement of Uke resp. whose push or pull action	↕
	Tori blocks or absorbs the movement of Uke and/or attacks against whose movement resp. push or pull attack	⊕
Tori is capitalizing his own attack or an "open" situation	Tori self creates the situation and utilizes these directly	⊕
	Tori self creates the situation and utilizes these indirectly	⊕
	Tori takes over the "open" situation (at the first)	⊕

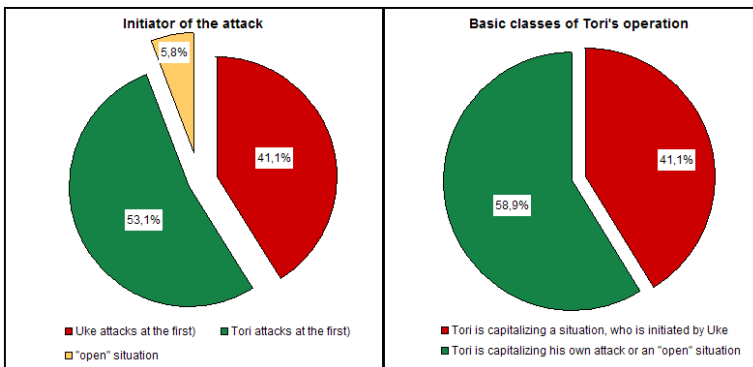


Fig. 2. Proportion of the classes of situation before the attack and classes of Tori's operation

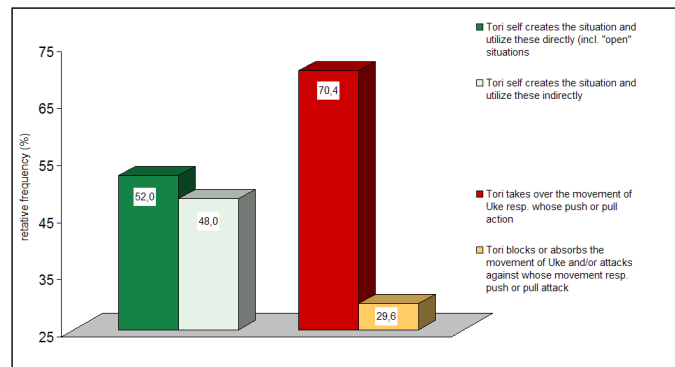


Fig. 3. Relation of generally and specifically classes of operation (Tori)

**Practical implications:**

Fighting actions with throwing techniques are always connected to (strategic)-tactical situations. The combination of both components in *technique application training* (Martin et al., 1997) must be begun as early as possible. The earlier the judoka is confronted with the integration of situational marginal conditions when learning the sequence of movements, the better he will be able to variably apply throwing techniques so that they have an impact on the competition. In this training, the undermentioned aspects have to be considered in particular:

- The choice of the tactically right moment and of other situations, taking into account the opponent's behaviour (see fig. 1)
- The situation from Tori's point of view (What do I have to do when, since it is mostly effective?)