

## New Coaching Information and Potential Tools

by George Weers, USJA Coaching Education Committee

How often do attacks occur during a match? Is Judo aerobic activity, anaerobic activity or does it utilize a combination of aerobic/anaerobic energy demands? Is a Judo match conducted as a single period of exertion or in distinct periods of activity? If a match is fought through periods of activity then, for how long do those periods extend?

To me the only way to address the above stated questions was through 'real time' analysis. Real time analysis requires software and full length matches<sup>1</sup>. I wrote the software and found full length matches on line. The next step was to watch a lot of Judo and try to understand what the numbers suggested.

Analysis of 134 international matches included recording match time, attacks and administrative interruptions (Matte periods). Only attacks against which the opponent was required to *vigorously* defend or which earned a score were recorded. The rationale for excluding attacks which required no defense lies in the belief that attacks that need not be defended are false attacks. My software was written so that the act of recording an attack or administrative event time-stamped the event and allowed time-based relational analysis.

This analysis resulted in the following statistical indicators and conclusions:

- I. Five-minute contests do *not* last for five minutes! The majority of matches observed utilized most of the scheduled time period, which means that the competitors competed for significantly longer than the scheduled five minutes.

This research revealed that match duration is extended by 25% to 30% through administrative events. Five minute matches may become 10 minutes or more of hard fighting, and competitors had to be prepared for that extended exertion.

- II. Judo matches are conducted at a work-to-rest ratio of approximately 2 to 1. The work/rest periods fell into a range of 20 to 30 seconds Work and 10 to 15 seconds rest. Rest periods result from administrative breaks.
- III. Individual player Attack Ratios can be discerned and are reliable predictors of match outcome. The attack ratio was calculated by summarizing each players '*legitimate*' attacks against his/her opponent's attacks and normalizing the sums to a ratio of X:1.

X represents the number of attacks performed by the dominant, or winning, player compared to one attack from the non-dominant player.

### Conclusions

#### **Training Impact:**

- a. A scheduled match duration of 5 minutes can extend to a hard-fought 10-minute match. If you're not conditioning your players to compete for the entire match duration then they won't have the necessary energy reserve.
- b. Matches are conducted at short intervals of two times as much work as rest! This work/rest ratio requires a heavy emphasis on anaerobic recovery. If your players are

---

<sup>1</sup> Edited matches eliminate fundamental relationships between discrete activities and correlation to the whole.

to meet the energy demands of the game then they MUST train under the same energy demands!

### Attack Ratio and Match Outcome

Outcome is nothing more than the numbers on the scoreboard at the end of the match. It stands to reason that the person who makes the most attacks will have the best score. However, outcome is also influenced by factors which are outside the player's control. Those factors may include, but are not limited to, the defender's ability to prevent a scoring surface from touching the mat or the experience level of the referees.

More importantly, an Attack Ratio, based on attacking actions against which the opponent must vigorously defend, indicates the player's application of PERFORMANCE-BASED ACTION.

Performance Based Actions are insulated<sup>2</sup> from external influence. Performance Based Actions are process-oriented and require preparation prior to execution. Performance Based Actions include, but are not limited to;

- Securing a functional grip
- Placement of the driving leg
- Efficient attack configuration
- Etcetera

Please note that a 'legitimate' attack is not included in the preceding list. It is not listed because a 'legitimate attack' is the outcome of the process. In other words you can never be certain that outside influence won't interrupt your process, at which point your process begins anew.

Simply stated, *the Player who most frequently and faithfully follows his/her process has the best chance of winning the match.*

### Practical Application:

This research suggests the need for focused conditioning methods. The research also identified Attack Ratio as an import criterion by which we can measure performance. However, initial 'real time' match data, from which the Attack Ratio was extrapolated, had been collected through a computer and software, which may not be practical for mat-side use. A practical method of discerning Attack Ratios was needed.

After much thought a very simple, low-tech solution was found: manual tally counters. A tally counter is a small hand-held device which increments the display on each depression of the plunger (*see photo*).

My process is simple. I place a tally counter in each hand, click the right-hand counter when my player makes a legitimate attack and the left counter when the opponent attacks my player. At the end of the match I record the result. Ratios are calculated for each match, summarized for the event and included in a Performance Review. (*I identify the counters through use of colored lanyards. Red is always used for my players.*)



---

<sup>2</sup> Please note that the term *Insulated* is being used as opposed to *Isolated*. All actions are subject to the reaction and skills of the opponent. However, proper preparation affords the performer a much higher degree of control over the situation.

During a regional judo tournament in St. Louis, I used the tally counters for the first time and was very pleased with the ease of tracking the match while still being able to coach.

The reaction to collecting Attack Ratio data was *very* interesting. By the end of the tournament my players wanted to know their Attack Ratio first and then my analysis of their performance. (I had explained and emphasized the importance of the Attack Ratio prior to the event.)

Even more interesting was the reaction from other coaches and players. Coaches wanted to know what I was doing and why. A few of them began questioning me about the Attack Ratio at the end of matches. Opponents of my players also began to inquire after the Attack Ratio. Players wanted to know "What were my numbers?"

### **Reinforcement and Feedback:**

Clearly the concept of an Attack Ratio resonated with both players and coaches. Attack Ratios provide a clearly defined picture of performance. Attack Ratios also show a clear tactical path to victory. After all, research shows that the person who attacks most frequently increases his/her chances of success.

An objective of attacking the opponent, more than he attacks you, is not a bad plan.

However...

History shows that preponderance of numbers does not ensure success. Basing your strategy on a preponderance of attacks is tantamount to mounting siege and siege should be the warrior's last resort.

Sun Tzu admonished that siege is the least effective form of war. Siege is ineffective because the opponent knows your strategy and knows how to deal with it.

Sun Tzu reminds us that, "when the enemy does not know from where your attack will come he must defend everywhere" and diversification of defense equates to a weakened defense.

Weight of numbers from your attacks is good! Weight of numbers is intimidating. Weight of numbers without variety meets the definition of insanity.

Repeatedly performing the same action, under the same conditions, and expecting different results.

You **MUST** provide your players with sufficient stamina to achieve superior Attack Ratios. You **MUST** teach your players to understand that the person who attacks most frequently, is, most frequently, awarded the match. You **MUST** train your players to utilize variety in achieving a superior Attack Ratio.

### **What does the Attack Ratio tell the Coach?**

Attack Ratio indicates frequency of 'effective' attacks as compared to the opponent's rate of 'effective' attacks. The obvious question becomes "What is a good Attack Ratio?"

An Attack Ratio less than 1 indicates that the player is being attacked more than attacking. On the other hand a ratio of 2 or higher could suggest an over-matched opponent. Observation of 134 international matches, used in this research, suggested a correlation between Attack Ratio and the skill/experience of the contestants. During elimination matches Attack Ratios could be 2 or higher. As the more experienced players met Ratios became closer.

The point is that although the Attack Ratio may be motivational, it may be highly variable in accordance with circumstance, so it should not be used as the ultimate objective.

More importantly, Attack Ratio can be used as a Coaching tool because Attack Ratio is a reliable indicator of a player's ability to manage the tactics and mechanical aspect of contests.

If a player fails to achieve effective power hand placement, the opponent's back cannot be turned toward the mat. If a player fails to manage the Attack Space<sup>3</sup> then the path to attack configuration, and effective attack, is unreliable. If a player allows the opponent to manage the Attack Space then he/she is vulnerable to effective attack. Where the players' Transitions<sup>4</sup> are not focused Effective Ground Play is unlikely.

A low or, widely, variable Attack Ratio should trigger review of tactical and mechanical variables.

**Bottom Line:**

'Real Time' match analysis revealed useful information regarding match duration and conditioning for competition.

The real surprise of the research was Attack Ratio and its potential application to player development. Attack Ratio is easy to understand, highly motivational, indicates developmental progress, suggests areas of improvement and is easy to generate.

This is my kind of coaching tool

---

<sup>3</sup> The space between him/herself and the opponent was designated as the Attacking Space by Geoff Gleeson.

<sup>4</sup> Transition is the ability to, maximally, influence the action of get from throwing action to ground play. Whether attacker or defender you want to influence the situation to your advantage on landing.