

# Accurate coordinations in repeating *uchikomi*

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## Reports

Judo is often described as an activity which requires a lot of coordination. During a combat, throw duration is less than 0.3s; therefore, it is necessary to automate different actions using *uchikomi* (repeated entrance or first part of a throw). Software can follow or track a point on a video sequence. This technology can help us to observe, in a micro-analysis, a judo player's coordination in action. It is possible to analyze and/or to compare different *uchikomi*.

## Goal

Modeling this part of the judo activity. Observing precise coordinations of different parts of the body before and after artificial (behavior different from judo) or normal (behavior from judo) disturbances

## Methodology: video sequences with highlighted point on the body



Uke kept judogi on to facilitate grips; Tori removed judogi to better situate point(s) on his body. Tori is wearing a spotlight (for personal walking) on the head. Free softwares: i) are able to track point(s) on the video. The video sequence was recorded in a darkness situation to put in better evidence the highlighted point. ii) allows us to mark points on the screen manually.

## Data collection

### Subjects observed:

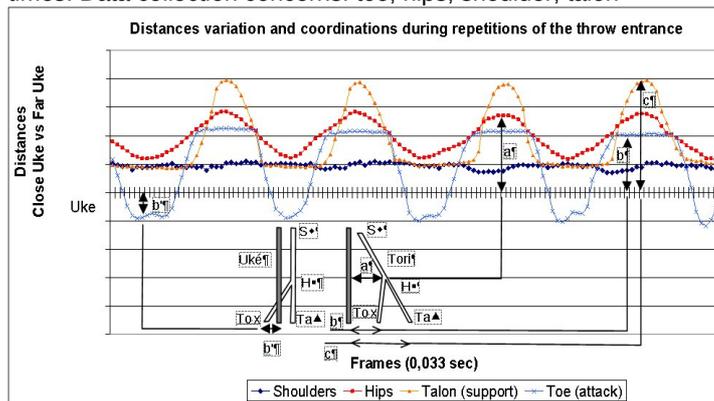
2 international university level (IUL), 2 national level (NL), 2 proficient level (PL)  
 At the beginning of the course after 3 minutes running and 2 minutes stretching.

Example 1: software used is Avimeca (manually collects data)  
 Example 2, 3a, 3b: software used is Kinovea (automatic tracking)

## Results

### EXAMPLE 1

*Uchikomi*: Tori (NL) practiced *Ouchi-gari* as fast as possible, 5 times. Data collection concerns: toe, hips, shoulder, talon



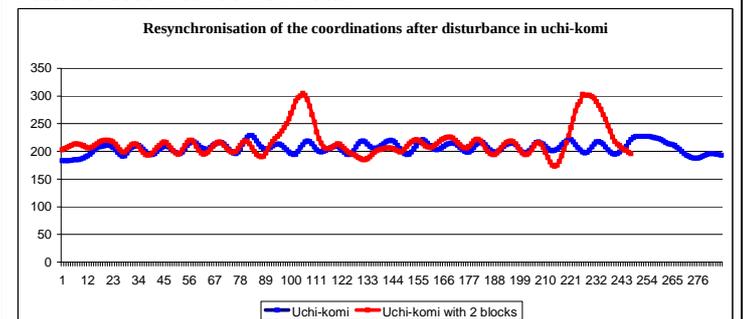
i) On specific *uchikomi* (i.e. practicing *Ouchi-gari*), the body of a judo player can be assimilated as a pendulum, on which the fixed point is located on the shoulder level. Coordinations are stable during all the repetitions (i.e. shoulder, talon, hips and toe always did the same movement and their trajectories on graphic crossed themselves at the same time).

### EXAMPLE 2

*Uchikomi*: Tori (PL) practiced *Osoto-gari* as fast as possible, 10 times

*Uchikomi* with two blocks: As Tori practices *uchikomi*, Uke can block (when desired) Tori twice. When Uke blocks, Tori has to apply *Harai-goshi* and continues again with *uchikomi*.

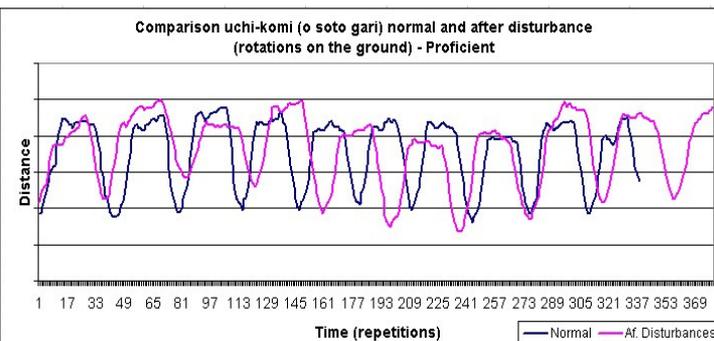
Data collection concerns : head



ia) After judo action disturbance, judo player (PL, black belt) recovered his regularity after 3 or 4 repetitions

### EXAMPLE 3a

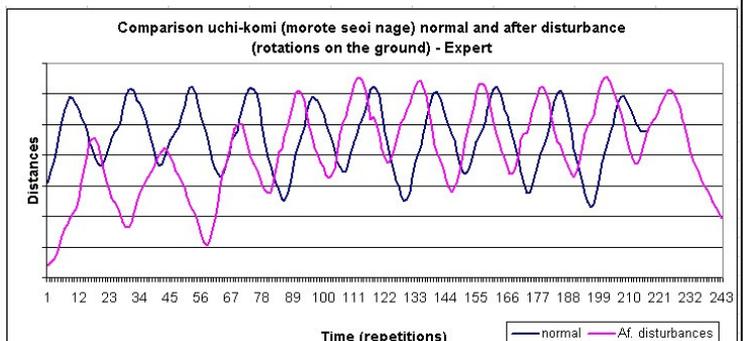
Tori (PL) practiced *Osoto-gari* as fast as possible 10 times; then tori made 12 rotations on the ground as fast as possible; and then practiced again *uchikomi*.



iib) After artificial disturbances on balance, judo player (PL, brown belt) didn't recover his regularity

### EXAMPLE 3b

Tori (IUL) practiced *Morote-seoi-nage* as fast as possible 10 times, then tori made 12 rotations on the ground as fast as possible, and then practiced again *uchikomi*.



iic) After artificial disturbances on balance, judo player (IUL) recovered his regularity after 3 or 4 repetitions

## Perspectives are:

- i) Concerning judo: to continue these analyses concerning artificial and judo disturbances and to observe how tiredness during training sessions disturb these coordinations.
- ii) Concerning physical adaptations of activities: to carry out some data concerning recovering personal balance.