

# BIOMECHANICAL ANALYSIS OF THE JUMP SMASH OF GERMAN ELITE BADMINTON PLAYERS

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**KEY WORDS:** kinematics, smash, Badminton

**INTRODUCTION:** The smash is one of the key techniques to gain success in Badminton. For elite athletes, ball velocities up to 68m/s have been reported for the jump smash (Tsai & Chang, 1998). Differences between the jump smash and the smash without jumping where up to 5m/s. In earlier analyses of German badminton players (Kollath, Bochow, & Westermann, 1986), no differences between both techniques according to ball velocities have been reported. Compared to the international elite players, German Badminton players were ranked in midfield or on even lower positions during the last years, but especially for the female athlete increased performance can be stated in recent championships. To analyze the smashing technique of these athletes, jump smashes of female as well as male Badminton players were analyzed.

**METHOD:** Seven female and four male players of the national team performed two series of five jump smashes. The smashing performances was filmed with two high speed video cameras at 250 Hz. The fourth and fifth jump smash of each series was analyzed three dimensionally. Additionally, the net clearance of the ball as well as the ground contact were filmed with two video cameras (60 Hz). Up to now, the ball velocities, take off angle height of ball contact and height of net clearance were determined for the male athletes only. Detailed biomechanical analyses for the female as well for the male subjects are in progress.

**RESULTS:** Ball velocities, take off angles, height of ball contact, height of net clearance of the male athletes are shown in table 1:

**Table 1: Biomechanical parameters of the male athletes**

	Mean	Std. dev.	Maximum	Minimum
Ball velocities (m/s)	65.0	3.34	70.7	59.7
Take off angles (°)	20.3	4.36	26.8	11.1
Height of ball contact	2.88	0.09	3.04	2.70
Height of net clearance (m)	0.23	0.12	0.64	0.03

**DISCUSSION:** So far, mean values of ball velocities are in the range of the values reported in literature. If single performances are considered, a great variation of all parameters between subjects as well as within individuals can be observed. The results indicate that German Badminton players are able to achieve a similar performance as international athletes with their best trials but cannot repeat this performance with high stability.

## REFERENCES:

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*Acknowledgment:* This study was funded by the Federal Institute for Sports Science, Germany.