

## Defensive actions in Taekwondo

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### 1. Introduction

Defensive gestures in taekwondo (TKD) are based on cope the attack of the opponent (i.e., cut and block) or dodge it with a defensive displacement (Gonzalez, Iglesias, Miralla, & Esparza, 2011). Only a study (González, Iglesias, & Anguera, 2011) has analyzed defensive actions used to stop the opposing offensive ones. This research showed that defensive gestures represent the 21.19% of total actions, being 41.58% dodges, 42.83% blocks, and 57.17% cuts. To date, there is no study which compares results based on competitors' characteristics (i.e., weight categories). Therefore, the aim of this study is to analyze defensive behavior in a University Taekwondo Championship (2011), based on: *i*) cuts, *ii*) blocks, and *iii*) dodges according to the competition categories (fin, fly, bantam, feather, light, welter, medium, and heavy), so athletes and coaches could raise training and strategies for future combats.

### 2. Methodology

356 performances of 178 bouts were analyzed of the National University Taekwondo Championship (Spain 2011), according to the competition categories: fin ( $n = 16$ ), fly ( $n = 34$ ), bantam ( $n = 66$ ), feather ( $n = 60$ ), light ( $n = 66$ ), welter ( $n = 60$ ), medium ( $n = 26$ ) and heavy ( $n = 28$ ). Descriptive statistics were used, and data is presented in mean  $\pm$  standard deviation. Kruskal Wallis test followed by Mann Whitney U test were used for categories comparisons and pair wise comparisons, respectively. A level of significance of  $p < 0.05$  was settled.

### 3. Results

Kruskal Wallis test showed significant differences ( $p < 0.05$ ) in dodges ( $\chi^2_{[7]} = 33.61$ ;  $p = 0.01$ ), where fin ( $2.38 \pm 3.48$ ) competitors performed fewer dodges than fly ( $6.59 \pm 6.78$ ) ( $U = 170.00$ ;  $p = 0.03$ ), bantam ( $8.35 \pm 6.22$ ) ( $U = 222.50$ ;  $p = 0.01$ ), feather ( $9.30 \pm 7.45$ ) ( $U = 182.50$ ;  $p = 0.01$ ), light ( $6.15 \pm 5.97$ ) ( $U = 303.50$ ;  $p = 0.01$ ), and welter ( $7.63 \pm 7.29$ ) ( $U = 246.50$ ;  $p = 0.01$ ). Also, bantam and feather performed more dodges than light ( $6.15 \pm 5.97$ ) ( $[U = 1721.50$ ;  $p = 0.04]$  and  $[U = 1463.00$ ;  $p = 0.01]$ , respectively), medium ( $3.07 \pm 3.72$ ) ( $[U = 632.00$ ;  $p = 0.04]$  and  $[U = 534.00$ ;  $p = 0.02]$ , respectively) and heavy ( $6.38 \pm 8.89$ ) ( $[U = 460.00$ ;  $p = 0.01]$  and  $[U = 389.50$ ;  $p = 0.01]$ , respectively). In addition, welter performed more dodges than heavy ( $U = 509.00$ ;  $p = 0.01$ ). No significant differences in cut neither block were found ( $p > 0.05$ )

### 4. Discussion and conclusion

The aim of this study was to analyze defensive behavior in a University Taekwondo Championship. The results of our study showed different number of dodges performed according to the weight categories. Our results are in line with previous studies (Branco, 1979; Falco, Landeo, Menescardi,

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Bermejo, & Estevan, 2012; Menescardi, et al, 2012) which suggested different behaviors depending on weight categories. In this case, fin competitors performed less dodges than other categories (i.e., fly, bantam, feather, light, and welter). While bantam and feather performed more dodges than light, medium and heavy. These results could be because lighter categories, except fin, had less body mass and could react quickly to the opponents' attack and dodge it. The lack of differences in cuts and blocks between weight categories could be because those actions do not require displacements and are less explosive, and consequently less influenced by competitor's body mass. These results allow researchers to know the competitors' behavior according to their weight category to modify their training plan trying to fulfill the requirements of the competition in order to improve their defensive strategy, looking for a better result.

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