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**NUTRITIONAL DETERMINANTS  
OF WEIGHT LOSS  
AMONG  
OLYMPIC TAEKWONDO COMPETITORS**

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OLSZTYN, 2016

## SUMMARY

The aim of this study was to determine the weight loss model with the highest potential risk of negative consequences for physical, mental performance and overall health of olympic taekwondo players and to analyze the nutritional determinants of engaging in pre-competition weight loss process.

**Material and methods:** This study was conducted on polish taekwondo players participating in tournaments of Polish Championships rank in 2011-2012. Pre-competition weight loss process and nutrition during training were evaluated using validated questionnaires. Weight loss models were determined by non-hierarchical k-means cluster analysis and food patterns were determined using multivariate factor analysis. Body size and composition were evaluated using anthropometrical methods. The assessment of bone tissue status was determined using dual energy X-ray absorptiometry.

**Results:** 281 taekwondo players, including 162 boys and 119 girls, were examined. Mean age of participants was  $16,9 \pm 2,4$  y.o. Nearly half of the competitors (48,5%) declared weight reduction before the tournament and almost 80% of the players had to deal with pre-competition weight loss at any time in their career. Three weight loss models were identified: "active" - which was characterized by the use of increased physical activity, often combined with a reduction of food intake, "passive" - food intake reduction, without increasing physical activity, "dehydration" - a combination of reduction of food and fluids intake and exercising in impermeable clothing. Weight-reducing competitors were characterized by lower values of "pro-inflammatory" dietary pattern than non-reducing ones. They had lower consumption of potatoes, yellow cheese, pork/beef, ham, eggs, butter, margarine, sweets, fast food meals and coca-cola like baverages. Weight-reducing competitors had significantly worse mood than non-reducing competitors. They had 6-times greater chance of feeling tired and more than 3-times greater chance of feeling reduced power/strength before the competition than non-reducing competitors. Competitors who reduced weight by "dehydration" model significantly more often declared a reduction of physical capacity, fatigue and decreased immunity/colds than competitors from "active" and "passive" models. "Dehydration" model was connected with significantly higher risk of serious dehydration than other models.

**Conclusions** "Dehydration" model has the highest potential risk of negative consequences for physical, mental performance and overall health of taekwondo players. Every 5th weight-reducing competitor has very high risk of feeling negative consequences of weight loss process, even health loss or death. Considering the dynamic development of the discipline, it is necessary to formulate recommendations for safe weight loss in olympic taekwondo, taking into account dietary recommendations, which will allow for reorientation of the players and coaches towards the enhancement of health.