

The Relationship between Carbohydrate Intake and Sleep Quality on Cardiorespiratory Fitness in Taekwondo Athletes in Jember

Nadia Izza Afkarina

Clinical Nutrition Study Program

Health Department

ABSTRACT

Cardiorespiratory fitness is a crucial component in determining athlete performance and achievement, particularly in taekwondo, a sport that demands high-intensity physical activity. Cardiorespiratory fitness can be measured through VO₂Max values. Various factors can influence cardiorespiratory fitness, including carbohydrate intake and sleep quality. Carbohydrates serve as the primary energy source supporting training and competition activities, while sleep quality plays a role in physical recovery, energy metabolism, and tissue regeneration. This study aimed to analyze the relationship between carbohydrate intake and sleep quality on cardiorespiratory fitness in taekwondo athletes in Jember. The study used an observational analytical approach with a cross-sectional design. The study population consisted of 71 active taekwondo athletes aged 12–18 years who were preparing to participate in the POPDA and PORPROV competitions using a simple random sampling technique. Carbohydrate intake data were collected using the Semi-Quantitative Food Frequency Questionnaire (SQ-FFQ), sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI), and cardiorespiratory fitness was measured using the Multistage Fitness Test (Bleep Test) to obtain VO₂Max values. The results of the study using the Spearman - Rho test showed that there was a significant relationship between carbohydrate intake (p-value = 0.015 with $r = 0.287$) on cardiorespiratory fitness that can be measured through VO₂Max and there was no significant relationship between sleep quality (p-value = 0.061 with $r = -0.223$) on cardiorespiratory fitness that can be measured through VO₂Max. Therefore, this study is expected to be a reference for coaches in developing a more structured, measurable, and aligned coaching strategy with national sports policies as a reference in developing a more effective strategy for regulating nutrition and sleep quality so that athletes can train and compete in a more optimal physical condition.

Keywords: *Carbohydrate Intake, Sleep Quality, Cardiorespiratory Fitness, VO₂Max, Taekwondo Athletes*