BIOMECHANICAL ANALYSIS OF TECHNICAL ACTIONS USED IN THE 2021 EUROPEAN JUDO CHAMPIONSHIP – BEHAVIORAL PATTERNS AND EFFECTIVENESS

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ABSTRACT

In Judo, each motor action depends greatly on the behavioural and technical variability of each judoka, which largely determines the options and the predominance of biomechanical actions inherent to the movements themselves. The objective was to biomechanically analyse the technical actions used in the 2021 European Judo Championships based on combat time and gold score and verify the effectiveness of these same technical actions both genders. The study sample focused on 400 combats of the European Judo Championship 2021. We used an observation system created for this purpose, according to the classification system proposed by Sacripanti. Cross-frequency tables were produced, where the association degree between variables was analysed using the Chi Square test, where the significance level was set at $p \leq 0.05$. We complemented the association analysis between variables by calculating the adjusted standardized residuals. In both genders and phases of combat, the use of binary techniques predominated over lever techniques, with the hierarchy of technical resources used by judokas being identical. In golden score, women showed a significant association with the use of trunk-leg binary techniques. Throughout the fights, women registered differences in the use of groups of techniques. The trunk-leg binary and minimum arm lever techniques revealed significant effectiveness in both phases of combat in both the male and female categories.

Keywords: *Judo, Biomechanics, Lever techniques, Binary techniques, Competitive performance analysis.*

INTRODUCTION

Judo is a dynamic, intermittent, high-intensity combat sport that requires complex skills and tactical excellence for success *(Franchini & Herrera-Valenzuela, 2017)*. In each combat, judokas must perform a high number of motor actions of a technical nature, making the physical demand high in each combat and consequently in each competition. Each motor action depends greatly on the behavioral and technical variability of each judoka, which largely marks the options and predominance of biomechanical actions inherent to the movements themselves *(Sterkowicz, Sacripanti, & Sterkowicz-Przybycien, 2013; Batista et al, 2022)*.

Batista et al. *(2022)* observed in international competitions, the combat phase the most used techniques by the female gender are the maximum arm lever class, unlike the male gender that are the variable arm lever and minimum arm lever techniques. There were significant differences between genders in this phase in the mentioned classes. It should be noted a high use of techniques of maximum arm lever by the male categories, but without evidence of statistical significance, as well as a reduced use of medium arm techniques by both genders. The same authors observed an application predominance in the male categories of variable arm lever techniques and arm/leg binary. The female categories showed a predominance of the use of maximum arm lever and variable arm lever techniques, as well as leg-arm binary. There is a significant association of minimum arm lever techniques scored with Wazari in the male categories, as well as a significantly higher use of medium arm techniques scored with Ippon.

The objective of this study was to biomechanically analyze the technical actions used in the 2021 European Judo Championships based on combat time and gold score and verify the effectiveness of these same technical actions both genders.