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## COMPARATIVE BIOMECHANICAL ANALYSIS BETWEEN PROFESSIONAL FEMALE SOCCER PLAYERS

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### INTRODUCTION:

A biomechanical and epidemiological study by Hewett et al. (2005) showed that knee abduction moments and angles were significant predictors of future ACL injury risk and an increase valgus and varus moments at the knee joint during the impact phase of jumping and landing tasks are key predictors of increased ACL injury potential in women (1). There is some controversy regarding whether jumps are a reliable test to measure these variables, thus, Krosshaug et al. (2016) established that vertical drop jump tests cannot predict anterior cruciate ligament injuries in elite handball and soccer players. The aim of this study is to evaluate the kinetic and kinematic variables of the knee during drop jumps in relation to the risk of injury, specifically the biomechanical variables related to the knee risk factors such as valgus, knee and ankle flexion and moment of force in the sagittal and frontal plane in the first landing after a deep drop jump in comparison between football players surgically operated and football players not operated.

### METHODS:

: Longitudinal descriptive observational study. Population: 11 female soccer players from the squad of a team belonging to the Feminine League (Spanish First Division of Womens Soccer) suffered an ACL and were compared to 11 female soccer players from a team belonging to the Feminine League (Spanish First Division of Womens Soccer) not operated. Methods: The evaluations of the jumps were performed using Go5D technology, reflective markers, BTS SMART DX cameras, dynamometric force platforms and a 30 cm box. Drop Jump starts with the participant climbing on a 30 cm box and arms at the waist, then she will step forward one foot and land on both feet on the force platform. Then a monopodal deep jump test was performed and the athletes were asked to land on one foot only and jump as high as possible.

### RESULTS:

The results after the statistical analysis for each of the players in the jumping tests reveal the presence of significant differences between the injured and non-injured group in the monopodal jump with the dominant leg in the variables of ankle angle, knee flexion angle, knee valgus and ground reaction force. It was found that in the monopodal jump with the non-dominant leg there were statistically significant differences in knee valgus and GRF

### CONCLUSION:

The result follows the same line of studies that looked for the same differences previously where increased knee valgus and decreased ankle flexion turn out to be risk factors for ACL rupture, so that preventive work should consider these two variables to reduce the risk of injury. Although the present study agrees with the findings of other studies, it is necessary to measure the different variables to obtain greater reliability in the results, the type of longitudinal study limits the values obtained as the indicator of the limitations in only one moment in time, which makes it impossible to detect the adaptive changes that the players will present over time, therefore a prospective study would be necessary to follow up the players in their process of recovery, rehabilitation and return to play after undergoing ACL surgery.

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