

## Do Legal Stops Impact Defensive Efficiency in Handball? Mixed Models Regression Analysis

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### ABSTRACT:

In a recent study on semi-professional handball, male winning teams fouled the opponent significantly more often than losing teams, but it was not the same for females (Laxdal & Ivarsson, 2023). One limitation is the outcome-based approach addressed by this research's methods. By analyzing the process minute by minute, a more direct relationship between stopping the play legally and defending successfully can be observed. The objective was to analyze how legal stops affect the team's defensive efficiency in the process of play without regard to the final outcome. The dependent variable was goals scored by the opponent, and the independent variable was legal stops committed by the team. The events of 1016 male and female Icelandic handball matches from five seasons of play were used in the analysis. The data was registered into HBStatz match statistics software by a trained technician live during the matches and scanned for quality purposes post-match. Legal stops and opposition scoring (goals conceded) were analyzed and reported for home and away teams. The events were analyzed in six 10-minute time slots from minute 0-60, with the halftime interval at minute 30. Five matches were removed due to 10-minute slots without goals or legal stops. Mixed model regression analyses were performed (home and away teams separately), including match as a random effect to model the number of goals conceded each legal stop could prevent. The home team's number of legal stops was a significant ( $p < .001$ ) predictor of goals conceded (4.449 - 0.148 legal fouls, 95% CI -0.169 to -0.126). Similarly, the away team's number of legal stops was also a significant predictor of ( $p < .001$ ) goals conceded (4.786 - 0.124 legal fouls, 95% CI -0.147 to -0.101). Therefore, each additional legal stop performed per 10-minute period reduces the number of goals conceded by 0.148 for the home team and by 0.124 for the away team. The results show the direct and weighted relationship between performing legal stops to prevent conceding goals. This should be looked into in more detail with specific regard to sex and if the number of legal stops performed is subject to diminishing returns beyond optimal values.

**KEYWORDS:** foul, offense, team handball, time-series

### Reference:

Laxdal, A., & Ivarsson, A. (2023). Breaking up the play: The relationship between legal stops and winning in team handball. *International Journal of Sports Science & Coaching*, 18(1), 240–244. <https://doi.org/10.1177/17479541211070787>