

POSITIONAL COMPARISON OF TIME TO TAKEOFF FOR COLLEGIATE MALE LACROSSE ATHLETES DURING HEX-BAR JUMP SQUATS

T. Cruz¹, J. Kilian¹, J. Glauser¹, D. Wedge¹

Dept. of Allied Health Professions, Liberty University, Lynchburg, VA

PURPOSE

- To measure lacrosse athletes time to take off (TTT) with external load and assess for differences among field positions.

INTRODUCTION

- Time to takeoff (TTT) as measured by force plates is a useful metric to assess lower body rate of force development (RFD).
- RFD is highly correlated with field-based athletic performance (J., Hernández-Davó, R., Sabido, 2014).
- TTT is the total time taken from the initiation of movement to the instant of take-off.
- Lower TTT indicates a more powerful athlete, when force is held constant.
- Based on sport-specific demands, field position may correlate with TTT.
- Lower body RFD and field-sport player position have been assessed in numerous studies, but not collegiate club lacrosse (K., Chamari, et al., 2008; W., Robbins, 2011; B., Young, et al., 2005).

METHODS

- Division 1 male lacrosse athletes were assessed for TTT on a loaded hex-bar squat jump.
- 24 Athlete's consisting of 10 midfielders, 6 attackers, and 8 defensemen (height: 181.29±6.52 cm, weight: 83.47±10.60 kg).
- Athletes tested 1RM hex-bar deadlift on a separate day from the CMJ.
- Athletes performed two squat jumps at system loads of 20%, 40%, and 60% of their 1RM deadlift load.
- One-way ANOVA was used to compare field position and time to take off.
 - Independent Variable: Field position
 - Dependent variable: TTT
- Eta-squared was used to measure effect size.

RESULTS

- No significant differences were found among field positions (Table 1).
- While not significant, a moderate effect existed where defensemen had a slower TTT in 40% and 60% squat jumps.

%MAX	F-Value	P-Value	Eta Squared
20%	0.39	0.682	0.036
40%	1.575	0.23	0.13
60%	1.114	0.349	1.105

Table 1: ANOVA results, statistical significance, and effect size for each of the intensity levels used for hex-bar jump squat testing.

CONCLUSION

- While a valid performance metric, TTT may not differ among field positions in Men's D1 lacrosse.
- Hex-bar jumping on a force plate provides data to be used for an athlete's profile, which has implications for training, testing, and correlating with on-field performance metrics.

PRACTICAL APPLICATION

- Coaches can use TTT as a trackable performance metric related to RFD.
- Field position and TTT may not vary significantly in men's collegiate lacrosse, making position-specific testing and training less relevant for TTT and RFD.
- The relationship between TTT and field-based metrics should be examined in future research.

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