

## Laboratory Measurements of Division 1 College Baseball Players to Predict Field Base Performance

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### ABSTRACT

Cross-sectional area (CSA) of skeletal muscle has been commonly used as a predictor of force production. Peak force (PF) production during maximal contractions of the lower body can be a primary indicator of an athlete's potential to perform on the field. **PURPOSE:** The purpose of this study was to use CSA for the VL and RF and PF to predict 60-yard dash times. **METHODS:** Fifteen male athletes (20.64 yrs.  $\pm$ 1.54, 182.89 cm.  $\pm$ 5.74, 196.58 kg  $\pm$ 21.2.) participated in this investigation. Sixty-yard dash times were recorded from each athlete prior to laboratory testing. Skeletal muscle CSA were taken from the VL and RF of the right leg using ultrasonography. PF was obtained during a maximal voluntary contraction of the isometric knee extension exercise using a custom-built seat and an S-beam load-cell. A multiple regression analysis was used to determine the influence of muscle CSA for the VL and RF during peak force. 2 maximal isometric voluntary contractions (MVC) of the right knee extension exercise. **RESULTS:** This data was assessed using a forward stepwise multiple regression and found no statistical significance ( $p > 0.05$ ) for the prediction model of 60-yard dash times using the PF, VL and RF CSA. These variables were only able to account for 16.3% of the variance in 60 dash yard times. The resulting prediction equation was as follows: 60-yard dash time =  $7.453 + (-.001x \text{ PF}) + (-.014x \text{ RF}) + (.004x \text{ VL}$ ;  $R^2 0.163$ ). **CONCLUSION:** This is likely due to the low number of participants and potential error in familiarization of laboratory testing and measurement as it relates to field-based testing measures for specific populations.