

## Predicting Rowing Performance in Male and Female Collegiate Rowers Using Selected Measures of Lower Body Power and Lower Leg Passive Stiffness

LAURA L. CASTLEBERRY and JASON D. MILLER

Human Performance Lab, Department of Exercise of Sport Science, Oklahoma City University, Oklahoma City, OK

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### ABSTRACT

Lower body power (LBP) is an important variable in rowing performance. Possible indices of LBP in rowing are squat jump (SJ), vertical jump (VJ), and passive ankle dorsiflexion (PAD). This study examines the relationship of selected indices of LBP for male and female rowers with the athlete's respective coaches' rating (CR) of rowing performance. Six male and female collegiate rowers (age=20±2yrs, height=73.9±2.3in, weight=182±23lbs; and age=20±1yrs, height=67±3in, weight=152±25lbs, respectively) volunteered for the study. Proceeding the assessment session, a standardized warm up on a cycle-ergometer and low volume/intensity battery of jumps were performed. Order of assessment: SJ, VJ, and right (RDF) and left (LDF) PAD. SJ: hands on hips, achieved/held a parallel squat for 4 second before jumping. VJ: no hold, but permitted to use a countermovement and arm swing. Athletes performed as many jumps as necessary until two successive jumps were no longer higher than the best recorded score. A 30sec rest was observed between all jump assessments/attempts. All jump assessments were conducted on a contact mat (Just Jump, Probotics, Huntsville, AL). PAD was conducted after jump assessments utilizing a tape measure placed on the floor perpendicular to a wall. With shoes removed, athletes placed the knee of the selected leg against the wall while sliding the heel away from the wall. The distance from the posterior side of the heel to the wall was measured and recorded for both legs, and normalized to the athletes' height. The difference between PAD scores for the right and left leg was calculated to assess asymmetry. CR of the athletes' rowing ability was provided by the athlete's coach in response to a standardized question which quantified rowing performance using a 10pt scale (10=superior, 1=inferior). SJ, VJ and PAD scores were correlated with the CR using a Spearman's rank correlation ( $\rho$ ). Moderate strength correlations existed between CR and the SJ for both Males ( $\rho = 0.62$ ) and Females ( $\rho=0.46$ ), VJ for Males ( $\rho = 0.46$ ) and the difference between LDF and RDF PAD for Males ( $\rho = -0.32$ ). SJ is an important predictor for rowing performance due to the specificity of the SJ to the long eccentric-concentric transition of a rowing stroke. Rowing performance among male rowers might benefit from plyometric training designed increase VJ performance. Improved rowing performance with PAD asymmetry among male rowers might indicate superior performance developed from rowing on the same side of the boat for an extended period of time.