

Armstrong MJ, Rutland MD, Baker KN, Ball AE, Dees EE, Ivey JM. *Lower Abdominal Muscle Strength: Correlation of Double Limb Lowering Test and Prone Plank Test (poster)*. APTA Next Annual Convention. Chicago, IL. 6-13-19

**Purpose:** To determine if a correlation exists between the double limb lowering test (DLLT) and the prone plank test (PPT). **Background/Significance:** Core strength is important in the rehabilitation and athletic settings. Core musculature is responsible for lumbopelvic stabilization during static posture and dynamic activity, however the literature does not agree with the best way to assess core strength. A common core exercise is the prone plank test (PPT), which assess one's ability to hold an isometric contraction. The Double Limb Lowering Test (DLLT) is another assessment used to quantify core strength by assessing the core's ability to maintain the position of the pelvis during dynamic leg lowering. The purpose of this study is to determine if there is a correlation between the PPT and DLLT. **Methods/Materials:** *Subjects:* A convenience sample of 75 healthy individuals were recruited by convenience to perform a DLLT and PPT. Subjects completed a healthy history and health screen prior to participation. *Procedures:* The order of tests performed was randomized for each subject. The subject's DLLT percentage score and PPT time were recorded. **Analyses:** Statistics were analyzed using the SPSS software system, including descriptive statistics and point biserial correlations. **Results:** 42 females and 33 males participated in the study. No significant correlation was found between the DLLT (80.67 +/- 10.82) and PPT (71.04 +/- 35.85) ( $p < 0.05$ ). However, there was a significant correlation ( $r = .372$ ,  $p < 0.05$ ) found between the DLLT and PPT in females (DLLT = 81.43 +/- 11.39; PPT = 56.23 +/- 25.6 seconds). There was a significant moderate correlation ( $r = -0.416$ ,  $p < 0.05$ ) between BMI (25.04 +/- 3.97) and males in the DLLT (79.7 +/- 10.15). No other significant correlations existed between DLLT and PPT and BMI. The mean plank time for males was 89.89 +/- 38.4 seconds. **Discussion:** A weak correlation exists between the DLLT and PPT ( $r = .212$ ). The findings suggest the DLLT and prone plank test assess different muscular mechanisms. Therefore, both tests may be beneficial for assessing one's core strength; however they cannot be used interchangeably. A significant negative correlation between BMI and male DLLT scores. This may indicate a lower BMI is associated with a healthier, body composition. However, no significant correlations were present between BMI and the prone plank time for either sex or between BMI and female DLLT scores. **Conclusion:** Overall, both the DLLT and prone plank test may be beneficial clinically; however, they cannot be used interchangeably. The DLLT is an eccentric contraction test compared to an isometric contraction of the prone plank and thus different forces may exist with testing thus showing differences in testing. Both may be clinically used to assess the core musculature.