

THE EFFECT OF WARMUP WITH WHOLE BODY VIBRATION VERSUS CYCLE ERGOMETRY

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PURPOSE: The purpose of this study was to compare the effects of warmup protocols utilizing either whole body vibration (WBV) or cycle ergometry (CY) on peak torque (PT) at three different isokinetic speeds in the knee extension exercise.

METHODS: 27 recreationally trained (age= 23.59 ± 3.87 years) males (n= 14) and females (n=13) were tested for PT at three different isokinetic speeds (60, 180, 300 deg/sec) in the knee extension exercise following either WBV or CY warmup. WBV consisted of intermittent bouts of thirty seconds of isometric squats at various degrees of hip and knee flexion (athletic position, quarter squat, parallel squat) on a vibration platform set at 25 Hz for a total of five minutes with 30 seconds of rest between bouts. CY consisted of 5 minutes of pedaling a cycle ergometer at 65-85% of age-predicted max heart rate. Subjects were tested under each warmup condition, the order of which was randomly selected, 5 days apart. Testing consisted of one set of three concentric repetitions at each speed. Comparisons between the warmup conditions were analyzed using repeated measures ANOVA.

RESULTS: No significant ($p > 0.05$) differences were discovered between warmup conditions at any speed. Means were virtually identical at 60 d/s (WBV= 142.14 ± 43.61 ft/lbs; CY= 140.64 ± 42.72 ft/lbs), 180 d/s (WBV= 93.88 ± 35.18 ft/lbs; CY= 96.36 ± 31.53 ft/lbs), and 300 d/s (WBV= 78.36 ± 26.04 ft/lbs; CY= 80.13 ± 26.08). This trend was seen among both males and females.

CONCLUSIONS: The warmup protocols in this study resulted in similar torque outputs at each speed. These data suggest that the more traditional 5 minute cycle ergometer warmup elicits results similar to a less common vibration warmup. A potential limitation to this study is that the vibration platform was only able to produce 25 Hz, potentially making the WBV warmup less vigorous than optimal. However, these data indicate that the protocols utilized were comparable.

PRACTICAL APPLICATIONS: Many studies which measure lower body strength or power utilize the cycle ergometer as a warmup. However, recent research has suggested that a warmup on a vibration platform may enhance one's performance on such tests. The findings of this study are that these modalities are extremely comparable under the tested conditions. Future research should examine various protocols, amplitudes, and durations for the vibration platforms as well as other performance outcomes.