

**The Effect of Gripping Handles During Isokinetic Strength Tests at Various Speeds on Torque Production in Knee Flexion and Extension**

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**ABSTRACT**

Although the effect of gripping handles on concentric torque of knee extension/flexion has been examined, it is still needed to investigate how gripping handles affect torque production in different types of muscle contractions at various speeds. **PURPOSE:** To investigate the effect of gripping handles of an isokinetic dynamometer on knee extension/flexion torque during isokinetic tests at various speeds. **METHODS:** Fourteen healthy and active individuals were recruited for this study (10 females: Ht= 1.66 ± 0.06 m, BM= 69.52 ± 16.86 kg, Age=21.60 ± 1.17 yrs; 4 males: Ht = 1.81 ± 0.13 m, BM = 89.90 ± 23.92 kg, Age = 21.25 ± 0.96 yrs). To prevent the effect of fatigue on torques, the order of condition (grip vs. no grip) was counterbalanced across participants. A series of isokinetic strength tests for knee extension and flexion were performed in -90, -60, -30, 0, 60, 120, and 180 °·s<sup>-1</sup> on individuals' preferred limb. The order of the speeds were randomized. A 5-minute self-selected warm-up was provided. Submaximal practice trials were conducted for familiarization of each speed before the maximal voluntary contractions. The participants completed one testing condition in the randomized speed order, they repeated the same procedure in the other condition. The peak torques were averaged for each speed. After the series of tests were conducted, the participant was asked to complete a questionnaire to determine the perceived level of how gripping handle was helpful for the tests. One-way repeated measures MANOVAs for each knee extensor and flexor were performed to examine the effect of grip conditions (grip vs no grip) on peak torques in 7 speeds of isokinetic. If a significant main effect was found, paired t-tests were performed to determine what velocity had significant difference between grips conditions. Alpha level was set at .05 for all statistical analyses. **RESULTS:** The grip conditions did not have a significant effect on peak torques of both knee extension (F(7,7)= 0.859, p= 0.577) and flexion (F(7,7)= 0.831, p=0.593). **CONCLUSION:** Gripping handles did not affect the torque production of both knee extension and flexion in this research, unlike in previous studies. This finding suggests that gripping handles do not provide advantages and that other straps of the dynamometer seem to provide enough stability to produce maximal torques.