

Effects of Footwear on Deadlift Performance between a Hex Bar and Traditional Bar

CHRISTIAN ROGACION¹, HUNTER J. BENNETT², & KEVIN A. VALENZUELA¹

¹Movement Science Lab; Department of Kinesiology; California State University, Long Beach; Long Beach, CA

²Neuromechanics Lab; Department of Human Movement Science; Old Dominion University; Norfolk VA

Category: Masters

Advisor / Mentor: Valenzuela, Kevin (Kevin.Valenzuela@csulb.edu)

ABSTRACT

The conventional deadlift is mainly performed using a straight (traditional) bar, however variations of the deadlift can use other types of bar such as the hexagonal (hex) bar which shifts the loading to a lateral position on the body. Despite the limited research available, training barefoot has become an uprising training modality that anecdotally suggests improved performance. **PURPOSE:** To observe the performance differences between a hex bar deadlift (HEX) and the traditional bar deadlift (TRAD) in barefoot and shod conditions. **METHODS:** On day one, one-repetition maximums (1RM) were assessed for thirteen resistance-trained male and female subjects in only the TRAD condition. At least 72hr later, subjects performed five repetitions in four different conditions (barefoot and shod for both HEX and TRAD) at 70% 1RM. A 2 x 2 (footwear x bar) ANOVA was used to assess differences in barbell vertical displacement (DISP), peak vertical velocity (PV), peak vertical ground reaction force (VGRF), total mechanical work (WORK), and lift time (TIME) during the concentric phase. **RESULTS:** It was observed that there was no significant interaction between the footwear and bar conditions ($p > 0.05$), however there were significant main effects within the footwear condition ($p < 0.001$) and the bar condition ($p = 0.024$). The shod condition was observed to have significantly greater DISP (0.522m vs 0.491m) and WORK (473.5J vs 451.9J) compared to the barefoot condition. The HEX condition was observed to have significantly greater PV (0.847m/s vs 0.784m/s) and WORK (474.0J vs 451.3J) compared to the TRAD condition. **CONCLUSION:** Despite contrary belief, this study suggests that there is no improvement in deadlift performance when lifting barefoot compared to lifting with shoes. However, the shoe does provide an increase in DISP and WORK performed during the deadlift, which implies an increase in the total mechanical load is applied during the shod condition at a given weight. Deadlifting with a hexagonal bar does elicit greater PV and WORK, which can be taken into consideration when being implemented in training programs as mechanical work is related to the volume of work in a training program.