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Ground Reaction Forces and Loading Rates Associated with Parkour and Traditional Drop Landing Techniques

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ABSTRACT

Due to the relative infancy of Parkour there is currently a lack of empirical evidence on which to base specific technique instruction upon. The purpose of this study was to compare the ground reaction forces and loading rates involved in two Parkour landing techniques encouraged by local Parkour instructors and a traditional landing technique recommended in the literature. Ten male participants performed three different drop landing techniques (Parkour precision, Parkour roll, and traditional) onto a force plate. Compared to the traditional technique the Parkour precision technique demonstrated significantly less maximal vertical landing force (38%, $p < 0.01$, ES = 1.76) and landing loading rate (54%, $p < 0.01$, ES = 1.22). Similarly, less maximal vertical landing force (43%, $p < 0.01$, ES = 2.04) and landing loading rate (63%, $p < 0.01$, ES = 1.54) were observed in the Parkour roll technique compared to the traditional technique. It is unclear whether or not the Parkour precision technique produced lower landing forces and loading rates than the Parkour roll technique as no significant differences were found. The landing techniques encouraged by local Parkour instructors such as the precision and roll appear to be more appropriate for Parkour practitioners to perform than a traditional landing technique due to the lower landing forces and loading rates experienced.

Key words: Kinetics, absorption, forefoot, roll.

Key Points

- Parkour precision and Parkour roll landings were found to be safer than a traditional landing technique, resulting in lower maximal vertical forces, slower times to maximal vertical force and ultimately lesser loading rates.
- Parkour roll may be more appropriate (safer) to utilize than the Parkour precision during Parkour landing scenarios.
- The Parkour landing techniques investigated n this study may be beneficial for landing by non-Parkour practitioners in everyday life.