The Impact of Horizontal Velocity on the Effectiveness of Parkour Landings

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Parkour is the utilization of complex body movements -such as jumps, landings, and vaults- in an urban environment to move from one place to another as efficiently as possible. Much of the sport involves landings from large heights and the effective dispersion of forces. Parkour practitioners have devised various landing techniques to minimize injury. This study assessed the effectiveness of three parkour landings -parkour precision, four-point landing, and the parkour roll- from a set height and varying horizontal velocities facilitated by three different horizontal landing distances -0.3, 0.9, and 1.5 meters- through force plates. The maximal vertical ground reaction forces (mGRF), time to mGRF, and loading rates of the landings were utilized to generate conclusions. It was found that at slow horizontal velocities (0.3m landing distance), the mGRF, time to mGRF, and loading rates are similar for each of the three landing techniques. However, as horizontal velocity increases (1.5m distance), the roll demonstrated 25% less mGRF, 15% higher time to mGRF, and 30% lower loading rate in comparison to the precision technique. Additionally, the roll demonstrated 21% less mGRF, 24% higher time to mGRF, and 35% lower loading rate in comparison to the four-point technique. Thus, the roll is the safest technique at higher horizontal velocities. These results could aid in the instruction of safe landing techniques in parkour and general physical education classes. Further research could explore the efficacy of variations in the roll technique across horizontal velocity.

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