

The effect of additional load and maximal fatigue on perceived horizontal reach- and grasp-ability in a whole body reaching task

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Abstract

Affordance perception is a forward-looking act, reflecting the individual's capacity to act within their environment. This is exemplified by experienced outdoor rock climbers who must determine how to reach, grasp, and use a hold, when fatigued and carrying safety gear. The present study examined how carrying an additional load and maximal fatigue affects a person's ability to determine their maximum boundary of reach- and grasp-ability. Maximal boundary of reach and grasp was determined using a sliding assessment hold. 19 participants (10 climbers and 9 non-climbers) provided estimates while carrying 10% body weight (BW) around their hips, or shoulders. Participants then performed 12 isometric hangs, with no weight or carrying 10% BW around their hips, providing estimates after each hang. Results showed a significant difference between climbers and non-climbers when perceiving maximal reach- and grasp-ability, but fatigue, load, and load positions did not account for any variation in reach and grasp accuracy. Moreover, expertise did not contribute to perceptual accuracy. Collectively this study suggests how the perceiver planned to interact with the hold and not their expertise significantly affected the perception of action boundaries.

Keywords: Rock Climbing; Expertise; Perception