

Imposing a perturbation can induce an unstable condition during gait. Measuring the compensatory responses may be an accurate indicator of the ability to control stability. Responses to a perturbation can be quantified through the perturbed walking pattern deviations from an unperturbed condition. The aim of this study was to determine the effect of perturbation magnitude or speed of walking on compensatory responses to lateral perturbations during walking. Twenty healthy young participants recruited to this study and they were perturbed with the medium magnitude of perturbation, while walking on the treadmill at three different speeds (slow, preferred, and fast). They also walked on the treadmill at their preferred speed while perturbed with three different magnitudes of perturbation (small, medium, large). All perturbations were delivered toward the walker's right side at the right heel contact. According to the results, there was a significant effect of speed of walking on the maximum deviation from unperturbed condition, indicating less deviation in faster speeds of walking. Moreover, increasing the magnitude of perturbation led to increased deviation from the unperturbed pattern. According to these results, walking with faster speed, and increasing the body momentum could be useful for maintaining stable in a perturbed condition.