Changes in symmetry during gait in adults with Prader-Willi syndrome.

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Most studies on locomotion of individuals with the Prader-Willi Syndrome (PWS) have been performed in a laboratory setting using quantitative motion analysis. Recently, wireless inertial sensors have been successfully employed for gait analysis in different pathological states with the advantages of reproducing a testing condition very close to those encountered in daily living. Using such devices, it is possible not only to characterize the conventional spatio-temporal parameters, but also extract information on further less conventional metrics, such as the harmonic ratio (HR), a measure of step-to-step symmetry based on trunk acceleration processing. In the present study, this technique was used to quantify gait parameters during level walking in 20 adults with PWS who were compared to 20 unaffected individuals. While no differences between the two groups were found in terms of spatio-temporal parameters, individuals with PWS exhibited significantly reduced values of HR in the antero-posterior and vertical directions. Such results, which indicate a poorer gait symmetry in PWS, suggest that upper body accelerations, as well as HR, provide novel information on gait in people with PWS that could not be extracted from spatio-temporal parameters only.