

Walking Progression in Ambulatory Individuals with Spinal Cord Injury Who Daily Walked with a Walking Device

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Abstract : Many individuals with spinal cord injury (SCI) need an ambulatory assistive device (AAD) to promote their independence and experience of task-specific walking practice. Without a periodic follow-up for their walking progression, however, many individuals may use the same AAD even though up to 66% of them had the potential to progress walking ability. This may distort their optimal ability and increase the possibility of having negative impacts due to the long-lasting used of an AAD. However, these findings were cross-sectionally collected without data confirmation for the benefit or negative impacts of those who changed the types of AAD used. Therefore, this study prospectively assessed the proportion of ambulatory individuals with SCI who were able to progress their walking ability as determined using a type of AAD, and the changes of their functional ability as well as the incidence of falls over 6 months. Twenty-four subjects with SCI who daily walked with an AAD were involved in the study for 2 visits over 6 months. At the first visit (baseline assessments), the subjects were assessed for their spatiotemporal variables (i.e., cadence, step length, stride length, and step symmetry) and walking ability using the 10-meter walk test (10MWT). Then, they were assessed for the possibility of their walking progression as determined using the ability of walking with the least support AAD with no more than contact guarding assist. Those who were capable of changing an AAD were trained for the ability to walk with a new AAD. Thereafter, all subjects were monthly monitored for incidence of fall over 6 months. At the second visit (after 6 months followed-up), subjects were reassessed for their spatiotemporal variables and 10MWT. The findings indicated that, of all 24 subjects, 8 subjects (33.3%) were able to walk with less support AAD than their usual one. The walking cadence, step length symmetry, and walking ability of these subjects improved significantly greater than those who walked with the same AAD ($p < 0.05$). Among these subjects, one subject (12.5%) reported fell (3 times) during the follow-up period, whereas 5 subjects (31.3%) who walked with the same AAD experienced at least one fall (range 1 - 16 times). The findings indicated that a large proportion of ambulatory individuals with SCI who daily walked with an AAD could progress their walking ability, whereby their walking ability and safety also significantly improved after they walked with an optimal AAD. The findings suggest the need for a periodic follow-up for an appropriate AAD used for these individuals.

Keywords : walking device, walker, crutches, cane, rehabilitation

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