

Evaluation of efficacy and efficiency in implementing Knee Ankle Foot Orthosis (KAFO) as a functionally assistive indoor ambulatory device for motor complete thoracic level (T10 –T12) spinal cord injury in males



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Abstract

The objective of this study was to evaluate the walking velocity, walking endurance, energy expenditure & risk of fall in use of KAFOs (Knee Ankle Foot Orthosis) over the alternative Aluminum Back Slab & Toe Raising Straps (ABS & TRS) on paraplegic (T10 –T12) ambulation which has not been performed among Sri Lankan patients. This was a case cross over study where fifteen, T10 – T12 motor complete paraplegic males who were using indoor ambulation with ABS & TRS and recommended to use KAFOs were recruited. A two weeks standardized ambulatory training was provided with either device prior to test. The 10 meter walk test, 6-minute walk test, physiological cost index (PCI) & time up & go test (TUG) were used to assess walking velocity, walking endurance, energy expenditure & risk of fall respectively. Testing was done 6 weeks apart. A statistically significant difference was seen in walking velocity ($z = -3.30, p = 0.001$), with ABS & TRS having faster velocity. The walking endurance with 6-minute walk test was significantly less with KAFOs ($z = -3.41, p = 0.001$). A statistical significant difference was seen in energy expenditure ($z = -3.41, p = 0.001$), with KAFOs having a higher energy expenditure. There was statistical significant difference in risk of fall ($z = -3.29, p = 0.001$), where it was higher with KAFOs. The results are closely compatible with previous studies, but remarkably differed with values of healthy individuals in normal ambulation. The walking velocity & the walking endurance of participants were relatively greater with less energy expenditure during ambulation with ABS & TRS. Therefore, it is concluded that KAFOs have less efficacy & efficiency as a functional indoor ambulatory device over ABS & TRS in rehabilitation of T10 –T12 paraplegic males.

Biography

Gamage Nuwani has completed her Higher Diploma in Physiotherapy at the age of 24 years from the School of Physiotherapy & Occupational Therapy, Sri Lanka. She has completed 12+ years of her career as a Physiotherapist in Rheumatology and Rehabilitation Hospital, Ragama, Sri Lanka. During the career of 12+ years she has been covered Physiotherapy in MSK, Neurology, Paediatric, Rehabilitation and Amputee management. Currently she is following her BSc degree in Physiotherapy as an undergraduate student of Faculty of Medicine, University of Kelaniya, Sri Lanka.



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