

A Versatile Standing Cum Sitting Device for Rehabilitation and Standing Aid for Paraplegic Patients

Authors : Sasibhushan Yengala, Nelson Muthu, Subramani Kanagaraj

Abstract : The abstract reports on the design related to a modular and affordable standing cum sitting device to meet the requirements of paraplegic patients of the different physiques. Paraplegic patients need the assistance of an external arrangement to the lower limbs and trunk to help patients adopt the correct posture while standing abreast gravity. This support can be from a tilt table or a standing frame which the patient can use to stay in a vertical posture. Standing frames are devices fitting to support a person in a weight-bearing posture. Commonly, these devices support and lift the end-user in shifting from a sitting position to a standing position. The merits of standing for a paraplegic patient with a spinal injury are numerous. Even when there is limited control on muscles that ordinarily support the user using the standing frame in a vertical position, the standing stance improves the blood pressure, increases bone density, improves resilience and scope of motion, and improves the user's feelings of well-being by letting the patient stand. One limitation with standing frames is that these devices are typically function definitely; cannot be used for different purposes. Therefore, users are often compelled to purchase more than one of these devices, each being purposefully built for definite activities. Another concern frequent in standing frames is manoeuvrability; it is crucial to provide a convenient adjustment scope for all users. Thus, there is a need to provide a standing frame with multiple uses that can be economical for a larger population. There is also a need to equip added readjustment means in a standing frame to lessen the shear and to accommodate a broad range of users. The proposed Versatile Standing cum Sitting Device (VSD) is designed to change from standing to a comfortable sitting position using a series of mechanisms. First, a locking mechanism is provided to lock the VSD in a standing stance. Second, a dampening mechanism is provided to make sure that the VSD shifts from a standing to a sitting position gradually when the lock mechanism gets disengaged. An adjustment option is offered for the height of the headrest via the use of lock knobs. This device can be used in clinics for rehabilitation purposes irrespective of patient's anthropometric data due to its modular adjustments. It can facilitate the patient's daily life routine while in therapy and giving the patient the comfort to sit when tired. The device also provides the availability of rehabilitation to a common person.

Keywords : paraplegic, rehabilitation, spinal cord injury, standing frame

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