Leg-e-vator: An Answer for Lower Leg Edema, Immobility and Venous Insufficiency

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The Leg-e-vator is a lightweight mechanical elevating device that attaches to the lower leg. Patients suffering lower leg injuries and conditions can elevate the affected leg, reducing edema and pain while engaged in daily activities. This promotes positive behavioral outcomes by allowing for movement and exercise of the leg as well as elevation. The Leg-e-vator is a versatile device that can be attached to the leg, cast or CAM boot. Retractable, telescopic legs can be adjusted to suit various seat heights and levels of elevation, and then retracted to allow the patient to walk. The position and design of the attachment points reduces pressure on problematic areas of the leg. These features allow the Leg-e-vator to be either used in rehabilitation or as a proactive preventative for subjects susceptible to venous insufficiency. A literature survey was undertaken, examining the benefits of elevation within treatment and rehabilitation protocols. The combined use of exercise and elevation was highlighted as providing effective edema reduction and pain relief, as well as improving recovery rates. Elevation is also regarded as a preventative measure for conditions arising from venous insufficiency. A survey was conducted to determine whether subjects with lower leg injuries and conditions found elevation reduced swelling and pain. The data collected indicated difficulty in maintaining elevation during daily activities and highlighted the need for a mobile elevation device. Prototypes were constructed and assessed by healthcare professionals. There is scope for adding technology to assist both the device operation and monitoring of leg condition.