Exoskeletons for the elderly

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The concept of a powered exoskeleton has been discussed widely in the

context of science fiction and in industry where a human operator exploits robotic components that allow them to wield much greater strength in lifting and moving objects than is normally humanly possible. However, a robotic exoskeleton might be just as useful for the infirm who struggle with everyday mobility.

Writing in the International Journal Advanced Mechatronic Systems a research team from India discusses the design and potential of a lower-limb robotic exoskeleton for otherwise immobile older people. The system could help overcome one of the more common problems—rising from a seated position to standing from a chair.

Vishnu Vardhan Dadi, P.V.N.S. Sathwik, D. Mahesh, Dala Jaswanth, Karthik Kumar, M.M. Ramya, and D. Dinakaran of the Hindustan Institute of Technology and Science, Chennai, have designed their exoskeleton so that it can be adapted to varying body shapes, height, weight, and waist circumference. Modeling in Ansys workbench predicts the maximum loads, and static characteristics of the design as well as revealing the vibrational properties of the system. The design can bear 350 kilograms, which is well beyond the 100 kg person for which it was initially designed. Follow-up studies will investigate dynamic characteristics and responses of the design.

More information: Vishnu Vardhan Dadi et al. Structural design and analysis of a lower limb exoskeleton for elderly, *International Journal of Advanced Mechatronic Systems* (2020). DOI: 10.1504/IJAMECHS.2020.111302

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