Humanly Operable Programmed Exerciser

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HOPE: Closing the Divide in Rehabilitation through Technology. India’s physically challenged citizens experience a significant lack of accessible physiotherapy. Hope, a wearable gadget, stimulates the user's muscles and joints, causing their limbs to move by contracting and relaxing. However, the actual ingenuity of HOPE becomes seen in its ability to adapt. Users can easily adjust the gadget to fit individual limb shape, ensuring optimal comfort and effectiveness. HOPE distinguishes itself in the field of rehabilitation by its individualised approach. Preliminary trials with the prototype validated its capacity to assist motor function, while also exposing deficiencies in user feedback and safety measures. To rectify these deficiencies, integrated mobile application and a pivotal force sensor were implemented. The application simplifies physiotherapy that is based on data analysis. Initial experiments with the prototype confirmed its potential to aid motor function, but also revealed limitations in user feedback and safety. Addressing these shortcomings, integrated mobile app and a crucial force sensor were introduced. The app empowers users and facilitates data-driven physiotherapy, while the force sensor safeguards against excessive torque, making HOPE accessible to users of varying abilities. Machine learning algorithms will enhance the personalisation of workout programmes, leading to the optimisation of rehabilitation and muscle function. This device is not merely an object; it serves as a symbol of optimism for a future that prioritises well-being and inclusivity, ensuring that everyone has the opportunity to achieve healing. My dedication is to ensure that "H.O.P.E" reaches individuals who can derive advantages from its revolutionary qualities.