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# Smart walker solutions for physical rehabilitation

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**Abstract:**  
In the last decade, the clinical reasoning in physical therapy has been to develop systems for physiotherapists to make clinical decisions rapidly, effectively and efficiently, in response to the increasingly complex needs of health and rehabilitation units [1]-[3]. Some studies show the importance of walking aids during rehabilitation from some diseases, and after surgery for arthroplasty in the elderly population [4], and in elderly patients with balance disorders, muscle weakness [5] or in people with diabetes mellitus [6]. Walkers are important devices that aid the rehabilitation process. The use of a walker is recommended for gait changes and imbalance due to various factors, such as surgery of the lower limbs or neurodegenerative changes, especially in the early recovery period [7].

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#### Aging, Walkers, and Physiotherapy

To improve the quality of life of people affected by motor limitations as they age, a challenging task is to develop new architectures like instrumented smart walkers using software that assist users increase their balance, and diminish falling [8]–[10], which are major causes of

morbidity for the elderly [9]. At the same time, the use of smart equipment with communication capabilities and software associated with electronic health records [12] will allow objective evaluation of physical rehabilitation programs. Various research groups and industries are developing new devices that help users stay balanced by giving a wide base of support.

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