

METHOD TO DEFINE DESIRED MOTION TRAJECTORIES OF EXOSKELETON FOR
MOVEMENT OF A USER WITH FUNCTIONAL IMPAIRMENT OF THE SUPPORT-
MOTOR APPARATUS, WALKING ASSISTANCE DEVICE FOR THIS USER AND
CONTROL METHOD FOR THIS DEVICE

5

Abstract

Method to define the desired exoskeleton motion trajectories for movement of users with support-motor apparatus functional impairment, walking assistance device of this user and method for control of this device provide the possibility of walking in pre-determined in advance motion modes of users with limited excursion or complete non-motility of the lower extremities at normal functioning of the upper extremities and upper body part. The invention provides the possibility of movement of such users with walking pattern close to the walking pattern of a person without support-motor apparatus functional impairment, wherein providing the users with possibility to independently change the motion mode and such walking parameters as step length, leg rise height and walking rhythm using control panel 32. The invention comprises user wearable part including motorized exoskeleton 1 of lower extremities, equipped with control device 35 implemented in the exoskeleton 1 on-board controller 85, and non-wearable part including external computer 86 of assistant-specialist and the exoskeleton 1 desired Cartesian trajectories parameters determination system 43. Wherein control signals to the exoskeleton 1 drives are generated taking into account mass-inertial characteristics of the user body segments and exoskeleton 1 elements and requirements to the control quality. 3 independent claims and 6 dependent claims, 9 drawings

Fig. 3