

STRING-MAN: Wire-robot technology for safe, flexible and human-friendly gait rehabilitation

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Abstract

The paper presents a novel concept of lightweight and inherently safe robotic systems for assisting the locomotion recovery therapy and training. This concept, referred to as STRING-MAN, is established a string-puppet idea and utilizes modular wire robot components and advanced artificial muscles drives. An overview of the system's fundamental components, such as mechanical structure, patient-machine interface, sensory systems, control algorithms, etc., is given in the paper. The results of initial experiments clearly demonstrate the benefits and potential of new concept. Finally further development of STRING-MAN idea towards practical and inherently safe robotic rehabilitation assistants has also been presented.