Hip joint elastic solar container

What is passive energy storage walking assist hip exoskeleton?
Aiming at the present passive energy storage walking assist exoskeleton adopts fixed stiffness joint,a passive variable stiffness energy storage walking assist hip exoskeleton is designed,on the base of joint energy flow characteristics in the process of people walking and the change of stiffness characteristics.

Can a wearable hip joint power-assisted exoskeleton reduce metabolic burden?
Conclusions This article presents a new design of a wearable hip joint power-assisted exoskeleton and verifies that the exoskeleton can reduce the metabolic burdenborne by the wearer without changing the wearer's original gait characteristics by using a method of assessment of both joint synergies and assisting effects.

Does a wearable hip joint power-assisted exoskeleton fit a curved thigh frame?
This paper introduces a wearable hip joint power-assisted exoskeleton and an experimental evaluation method that is specifically tailored to assess the device's structure and functionality. The curved configuration of the thigh frame in this exoskeleton is intended to conform as closely as possible to the current position of the leg.

What is a biomimetic variable stiffness hip joint exoskeleton?
Conclusions This article presents a biomimetic variable stiffness hip joint exoskeleton (BVS-HJE). By arranging the variable stiffness mechanisms antagonistically on the hip flexion and extension sides,the exoskeleton was able to simultaneously control joint stiffness and torque,similar to the human body.

What types of sensors are used in a hip exoskeleton?
Sensors include encodersand tension sensors. Both the variable stiffness actuator and the hip exoskeleton are equipped with encoders,which are used to measure the rotation angles of the variable stiffness mechanism and the human hip joint,respectively.

What is a bionic variable stiffness hip joint exoskeleton?
This antagonistic arrangement of muscles enables the human body to independently control joint movement and joint stiffness . We aimed to develop a bionic variable stiffness hip joint exoskeleton (BVS-HJE) and conduct feasibility experiments on a prototype.

Rational distribution of clearance size may provide a way to balance wear degree between joints. This paper numerically analyzes action of journal at clearance joint and interaction of ...

This study introduces a developed control approach for an exoskeleton-type gait rehabilitation robot driven by a series elastic actuator (SEA). The development of the controller is ...

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Definition Lubrication modeling of artificial hip joints generally refers to the investigation of the lubrication regime and associated lubrication characteristics such as film thickness and pressure of artificial hip ...

This paper introduces the analysis, design and preliminary evaluation of a self-integrated parallel elastic actuator (PEA) with an electric motor and a flat spiral spring in parallel to ...

Passive energy storage walking assist exoskeleton makes full use of the human"s own energy, reducing energy consumption when walking.

Actuation transparency and safety are important requirements in the design and control of assistive exoskeletons for individuals who suffer lower limb deficits but still maintain a certain level ...

This paper proposes a compact flexible actuator incorporating two elastic elements named Adjustable Energy Storage Series Elastic Actuator (AES-SEA), which combining an ...

Wear of the bearing surfaces of an artificial hip joint (AHJ) is one of the major causes to the premature failure of the prosthesis. Any design aiming...

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Fig. 4. Configuration of the elastic element. Internal concave profile guides are shown in red, which are mounted on HD output. The black ...

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To obtain quantitative information about this passive elastic coupling between lower limb joints, we examined the passive elastic joint properties of the hip, knee, and ankle joint of ten healthy ...

PDF | On Dec 14, 2021, Rana Alserhani and others published Metallic Materials for Artificial Hip Joints | Find, read and cite all the research you need on ...

Abstract Based on the Hill muscle model (HMM), a biomechanical model of human hip muscle tendon assisted by elastic external tendon (EET) was preliminarily established to investigate ...

Aiming at the present passive energy storage walking assist exoskeleton adopts fixed stiffness joint, a passive variable stiffness energy storage walking assist hip exoskeleton is designed, on the base of ...

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An elastic element in parallel can reduce the technical specifications of the actuator. However, such elastic elements are heavy with a large footprint. We present an innovative Parallel Elastic Actuator ...

Mounted on this frame is the innovative PV rail system and the clever folding mechanism of the solar panels, which enable the transport dimensions and lifting ...

The hip joint is classified as a ball socket joint. It is formed by the articulation of the femoral head and the acetabulum through a synovial joint, whilst ligaments and muscles stabilise and ...

In order to ensure the safety of maintenance personnel during tower climbing and improve the efficiency of power maintenance work, this study ...

Interval type-2 fuzzy-logic-based impedance control of a hip joint rehabilitation robot driven by a high-order sliding-mode-controlled series elastic actuator

Therefore, it is important to predict the lubricating film thickness in current UHMWPE cups used for total hip joint replacements. The purpose of this study was to analyse the extent of ...

To address this problem, a novel nonlinear SEA (nSEA) is presented in this article. The optimized nonlinear series elastic element coupled with a quasi-direct drive motor creates the nSEA ...

Abstract--Parallel elastic actuation utilizing an elastic spring to reduce the required actuator torque is one energy-efficient strategy suitable for various mechatronic applications relating to ...