

# Pneumatic Power Assist Robot

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Many kinds of power assist device have been developed. These are constructed with an exoskeleton, which is driven with actuator such as an electric motor, a hydraulic cylinder and so on. An assistance performance can be improved to install a high generated torque actuator on exoskeleton. On the other hand, a realization of exoskeleton, which has the same D.O.F of a human, is not easy from considerations about a size and strength of device. The purpose of this study is to develop power assist device constructed with low-restriction mechanisms, flexible materials and pneumatic soft actuators.

## •Wearable Power Assist Robot for Shoulder Using Brake Mechanism

The purpose of this study is to develop a wearable power assist robot to decrease a shoulder burden. The developed device is constructed with exoskeleton, brake mechanism and pneumatic artificial rubber muscles, which drive brake mechanism. This exoskeleton is constructed with multi-link mechanism and rotational joint for shoulder flexion / extension. Brake mechanism is installed on rotational joint of exoskeleton. Pneumatic artificial rubber muscles apply driving force for this brake mechanism. By driving brake mechanism, this device can apply shoulder flexion torque to human.



## •Power Assist Glove

The purpose of this study is to develop a wearable power assist device. This glove is driven with extended curved type pneumatic rubber artificial muscles as actuators. By using this muscle which can bend itself, the glove can assist grasp-motion without an exoskeleton.

