Faculty of Engineering
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# Development of Human Support System Using Pneumatic Drive

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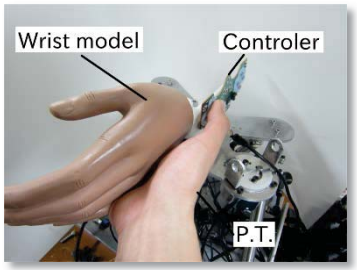
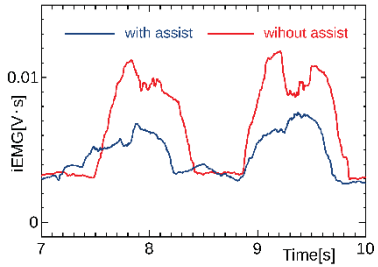
(a) Acquisition of PT's motion




(b) Patient simulator

Fig.1 Wrist rehabilitation using pneumatic manipulator

(a) Walking support shoes




(b) support efficiency comparison

Fig.2 Walking support shoes using wearer's weight

Fig.3 4-legs robot

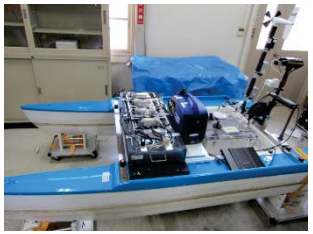


Fig.4 autonomous boat

We have been studying about the development of human support system based on pneumatic driving mechanism. Pneumatic actuator has a feature of low stiffness due to the air compressibility and back-drivability, which works as safe function.

Fig.1 shows a wrist rehabilitation equipment using pneumatic parallel manipulator. We proposed a strategy to acquire a P.T.'s motion and implement it for a patient. A patient simulator to train P.T. is also under the current investigation.

Pneumatic actuator has a feature of high power/weight ratio, that suitable for a wearable device. Fig.2 shows a walking support shoes for elderly person that can actively moves up their toe at the moment of swing phase. Energy autonomous drive based on wearer's weight is proposed.

Except for the above mentioned welfare-oriented equipment, a multiple legs robot (Fig.3) and an autonomous boat for preserving environment (Fig.4) are also developed.

Our purpose is to develop a mechanical system that contribute to both life and green innovation.

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