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## **Effects of Wearing Robot on Stroke Patients with Hemiplegic Elbow Movement**

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### **Objective**

This experiment was performed to evaluate the efficacy of the robot therapy with minimizing the reflex contribution by providing game training of the wearable robot to stroke patients with hemiplegic elbow.

### **Methods**

Twenty patients with subacute stroke within 6 month of onset randomly assigned to two group. The Medical Research Council (MRC) Scale is from 1 to 4. The experimental group(EG) applied intelligent stretcher robot therapy with game. The sham group(SG) used the robotic device with pseudo-exercise. Training performed 16 sessions 5 times a week for four weeks. The Outcomes were measured three times (before and after, and 4 weeks follow up) by Fugl Meyer score of Upper extremity, PROM, MMT, Motricity index, MAS, K-MBI, Block and box test, Jebson hand function test, Brunnstrom stage, FAC, and dynamometer.

### **Results**

Both groups showed improvement after management, except PROM. The improvement of MMT is better in EG compare to SG after management after management ( $p<0.05$ ). The Jebson hand function and K-MBI are greater in the EG than SG after 4 weeks follow up. ( $p<0.05$ ).

### **Conclusion**

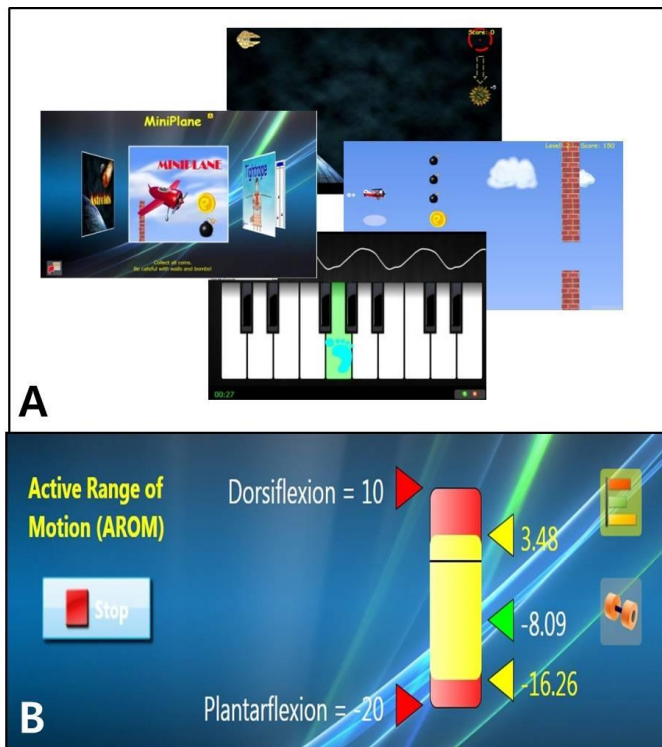
The wearable robot for elbow control to subacute hemiplegic patients seems to have a beneficial effect on motor and ADL.



The robot-guided training is including demonstration, initiation, proprioceptive training with visual feedback, and guided motion. The patient on the bed has active assistive strengthening and range of motion trainings using the game interface on the monitor. The affected limb is at full extension and the elbow center of rotation is lined up with the rotation axis of the motor.



The layout of robotic device. Experimental setup using the portable rehabilitation robot with wearable robotic arm.



Screenshot of biofeedback active training games (A) and testing of active ROM with visual feedback (B) with the yellow bar representing the ankle active ROM.