

Life Sciences 生命科學

“Remind to move” wristwatch boosts motor recovery

手錶提醒治療法 助恢復運動功能



With the help of the device, patients can perform in-home practice tasks to restore arm functions.
患者可利用這個儀器在家中進行動作訓練，幫助恢復手部的功能。

A novel sensory cueing wristwatch developed by rehabilitation sciences experts at PolyU speeds up recovery in the hemiplegic arms of stroke patients.

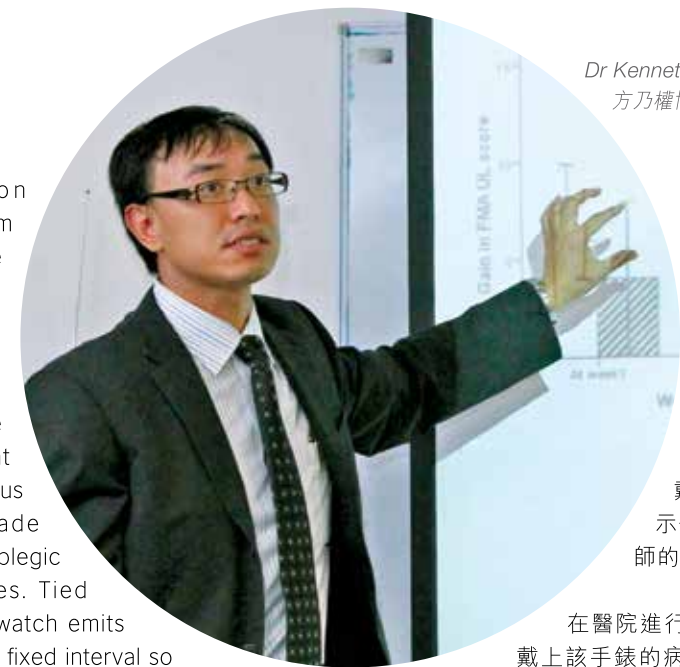
康復治療科學專家研發出嶄新的「感知提示手錶儀器」，有助加快腦中風病人患手的康復進度。

One of the common problems with arm recovery after stroke or in children with cerebral palsy is the “learned non-use” of impaired arms due to the suppression of movement. Dr Kenneth N.K. Fong, Associate Professor at the Department of Rehabilitation Sciences, thus developed a specially made wristwatch to stimulate hemiplegic arms through sensory cues. Tied to the upper limb, the wristwatch emits pertinent sensory signals at a fixed interval so as to remind patients to move their arms as instructed by the therapist.

Three randomized controlled clinical trials conducted in hospitals suggested that wearing this wristwatch was better than using a placebo device in improving arm functioning. In community settings, people with chronic stroke were asked to wear the device on their affected arms for three hours a day and engage in repetitive task practice for two weeks. Children with unilateral cerebral palsy wore the device for five hours a day over a three-week period to remind themselves to perform a set of pre-determined arm exercises. All of these subjects experienced significant improvements in strength, coordination and arm functioning.

The wristwatch is now being used in the occupational therapy departments of five public hospitals. It has a slim and ergonomic design, with user-friendly programmable cueing pattern and frequency and powerful analysis software. Patients can also use it at home in the absence of therapists’ supervision. The research team is now seeking business and industry partners to further develop the device with a better design and an activity monitoring system.

Not only have the researchers published the results in leading international rehabilitation journals, but they have also obtained patents for the wristwatch in the United States and the Chinese mainland.



Dr Kenneth Fong
方乃權博士

腦 中風病人及患大腦麻痺的兒童常出現手部「習慣性廢用」的情況，由於患手活動不理想，久而久之患者就會忽略偏癱的一側。康復治療科學系副教授方乃權博士於是研發出特製的「感知提示手錶儀器」，它可發出感知提示信號，刺激患手。病人在患手上肢戴上這預先設定時間並發出感知提示信號的儀器，可提醒患者根據治療師的指示運動患手。

在醫院進行的三項隨機對照臨床研究顯示，戴上該手錶的病人能更有效地改善患手活動。在社區進行的研究指出，慢性中風患者每天在患手戴上這儀器三小時，再配合兩星期的密集式動作訓練；而患有大腦麻痺和半側偏癱的兒童每天戴上該手錶五小時，並按照指示進行訓練動作，為期三個星期，治療期過後，所有患者手部的力度、協調和活動能力都有明顯改善。

現時，五間公立醫院的職業治療部已採用這手錶儀器。它的設計輕巧，符合人體工程學，更可配合簡易的可編程提示模式和頻率，以及有效的分析軟件。患者無需治療人員監督下，也可自行在家中練習。研究團隊正尋求工商界合作夥伴，共同開發新一代「感知提示手錶」，改善其設計，並加入活動監察系統。

有關的研究結果已刊載於國際康復期刊，而該手錶儀器亦在美國及中國內地取得專利。