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Content

Editorial

Dream Works – Make the Impossible Possible by Advanced Technology and Innovations

Ms. Eva Yee Wah CHUN and Dr. Tiffany Ching Man CHOI

In the old days, robots would mostly be seen in Western movies in the big screen, and audience was always amazed by how imaginations and creativity could bring upon excitement and entertainment. Good news that we finally have our own Hong Kong very first science fiction action movie coming up, seeing those high-tech metallic armours running in the battlefield in the trailer, would make us thinking of the development of robotic therapy in the neuro-rehabilitation for our patients. It is as encouraging to see our neurological patients be able to walk again with exoskeletons, which originated from inspirations and innovations too.

In this issue, one of the main theme articles is about exoskeletons in assisting stroke patients to normalize their gaits, while the other is about how exoskeletons assist individuals with spinal cord injury by adding meaningful walking exercises to paraplegic patients from hospital setting to the community. Other than exoskeletons, other innovative and interactive equipment of advanced technology are introduced under the NGO Corner.

In People's Corner, Mr. Danny CHAN, the very first physiotherapist who explored the possibilities of integrating acupuncture into physiotherapy, would like to tell our new generations of physiotherapists to think out of the box, and be open minded to different possible treatment options for our patients.

And there are PA diaries to leave the footprints on how our fellow physiotherapists are working hard to strengthen our profession, in various areas like continue fighting for the direct access, fostering the status of Hong Kong physiotherapy by organizing the World Physiotherapy AWP Congress, building up connections with other medical professionals via various meetings, educating public on physiotherapy knowledge via social media , and many more.

Hope our fellow physiotherapists would be inspired by all the stories in this issue, to continue to make our dreams work, to make the impossible possible through the ever-advancing technology and innovations.

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Modernizing Gait Training Using Overground Exoskeleton

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Introduction

Stroke in Hong Kong is one of the leading causes of disability with the prevalence growing each year. Many of these patients are left with deficits in their mobility and decreased independence in their daily activities. The good news is that the brain can heal itself through neuroplasticity. Neuroplasticity is the ability of the brain to form and reorganize synaptic connections, especially in response to learning or experiences following injury like a stroke. Physiotherapy aids in the process of neuroplasticity, and encourages patients to regain function by motor relearning, thus improving patients' overall functional mobility.

Physiotherapists face many challenges in gait training patients after they have suffered a stroke. Patients lack the motor planning skills to create the necessary changes to normalize gait patterns. Multiple skilled therapists may be needed to safely mobilize a patient. Verbal cueing often does not lead to successful changes, and often what happens is compensations that have been created by the patient are simply reinforced. New tools are needed in conjunction with traditional physiotherapy to further improve a patient's gait.

Overview of the Gait Cycle

Gait is an extraordinarily complex skill for a physiotherapist to train and for a patient to learn. There are two phases of gait: stance and swing, where stance phase is 60% of the gait cycle and swing phase is 40%. Stance phase is critical in setting the limb up into a trailing limb position so that it can perform a successful, normalized swing phase. A good swing phase can only come from a normalized stance phase that occurs first. There are 8 subphases of gait. At each subphase of gait, there are very specific requirements for muscle activation, range of motion and positioning of each joint.[1] A physiotherapist needs to know which muscle is supposed to be activated at each subphase and the exact type of contraction that is needed (eccentric vs. concentric vs. isometric). We need to know the amplitude and timing of this activation as well as the appropriate range of motion at each joint line to produce normal movements at each subphase. When attempting to replicate this with a patient that has weakness, spasticity, sensory deficits, proprioception deficits, cognitive deficits, etc., this makes producing normal movements with traditional physiotherapy either extremely difficult or impossible. Physiotherapists only have their voices and hands traditionally to get the perfect combination of all the needed components for gait training, and often it leads to frustration for a lack of results. This is where I found, introducing an overground exoskeleton so beneficial to producing a normal, reciprocal gait pattern that requires patient engagement so that they can learn this skill and begin to reproduce once they take the device off and attempt to walk on their own. I would like to give an example of a typical gait presentation of a post-stroke patient and how I successfully provided gait training for this patient.

In my case study, Ekso NR was the overground exoskeleton used in treating this patient. Ekso NR is currently the world leading exoskeleton with over 700 units deployed globally across leading rehab facilities in the US, Europe, and Asia. It is the only exoskeleton in the world indicated for spinal cord injury, stroke, acquired brain injury and multiple sclerosis.

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Patient: S/p Stroke with right hemiparesis

The patient presented with right hemiparesis status post CVA. Her gait deficits were: over weight shifting left, poor weight shifting right, poor stability during stance phase at the right hip and knee, asymmetrical stepping (step to gait pattern), foot drop, and no push off at toe off, just to name a few key issues. It can be overwhelming where to begin gait training a patient with a long list of impairments. What I found with using an overground exoskeleton was that I could layer in the education in a very safe and effective manner. I could break down each phase of gait by using different software features.

Remembering that stance phase is 60% of the gait cycle, therefore the majority of gait, and a good stance phase is what sets up the swinging leg to a successful position in order to perform a normal swing phase. I knew that training stance phase was where I needed to begin.

Pre Gait

Using a weight shift program, I was able to train two things: 1. How to find and maintain midline positioning. This was important because before I could train the patient how to shift her weight appropriately and symmetrically right and left, she must first know the midline positioning. 2. A proper lateral weight shift using visual and auditory cueing. This was the patient's most important job as she began to learn an appropriate stance phase on each leg. This patient outside of the device tended to shift her weight to her strong side and away from the hemiparetic side, so I used this tool to teach her how to correct this. I then progressed the patient, giving her the ability to move her legs (such as marching) while performing a weight shift. It is important that a patient can shift her weight appropriately but what is even more important is that the patient can hold an appropriate weight shift while swinging the contralateral leg. This will mimic walking and significantly improve her balance by being able to not only reach a weight shift but also to hold the weight shift while the contralateral lower extremity is performing a swing phase. If the patient is unable to hold this stance phase weight shift appropriately, the contralateral lower extremity will not have the time or space to create a normal swing phase. Once she has learned an appropriate static and dynamic weight shift (stance), then I was ready to progress to walking.

Gait Training using an Overground Exoskeleton

As an introduction to walking in Ekso NR, I used a mode that allowed me to have complete control of exactly when a patient was allowed to take a step. This mode gives the therapist and the patient as much time as needed to get to and maintain her balance point before being allowed to swing the contralateral lower extremity. The therapist pushes a button to initiate a step for the patient. With this mode, I was able to really slow down her walking and use this as an educational tool to show her what a balanced stance phase would feel like before moving to the swing phase with the other leg. As this patient tended to shift her weight to her strong side outside of the device, I used this mode to correct her errors. Once the patient could prove to me that she was well balanced and knew how to interact with the device, I then moved on to allow the patient to initiate steps on her own.

The next mode was a true gait training mode. The patient was allowed to start walking, only when she had appropriately shifted her weight onto her stance leg and the device would only assist with the portions of swing phase that she could not successfully perform on her own. It encouraged her to engage with the device and helped her perform all the portions of gait that she was unable to create. It forced a normal, reciprocal gait pattern on each and every step, allowing her to feel what a normalized gait pattern was like, so that she could start replicating that on her own.

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Once I saw that she was beginning to learn the gait pattern and could begin to replicate it with decreased reliance of the device, I then moved to a strength training mode. Here I turned down the motor power and gave her proprioceptive input on any errors she was making while trying to replicate this swing phase. If she made an error, the device froze the patient at that exact moment and gave her the opportunity to correct her own mistake. I found this mode extremely helpful, as she felt the exact moment she was making her mistake and the precise movement she needed to perform to correct her mistake.

Lastly, I moved to a mode that asked for carry over. The entire reason I put her in Ekso to begin with was that when she took it off, she had already learned how to walk normally and was able to reproduce this technique and use it in her everyday life. I think of this mode as a "bridge" between walking in an exoskeleton and what will happen when I take the device off and ask her to replicate the same walking. It removed the requirement of a specific swing phase that must be followed and gave her the opportunity to show me if she had learned how to create the same movement patterns all on her own, while still having safety features from Ekso and the ability to add in some assistance if she was too weak to create the gait completely on her own.

In conclusion, in one single session I was able to accomplish many goals with this patient: using pregait features to practise static and dynamic weight shifting, gait training to teach her how to interact with a normal, reciprocal gait pattern, strength training to challenge her within this normal gait pattern and a carry over mode in preparation of taking the device off and walking on her own.

Research

Looking at research for this device with the stroke population, it has proven to improve neuroplasticity and outcome measures within the stroke population. In a study by Calabro, they were able to find some exciting results demonstrating improved neuroplasticity using Ekso compared to overground gait (OGT) training. Both groups received traditional therapy, with the only difference being increased OGT time vs. Ekso gait training. They studied a group of functional outcome measures for gait as well as those related to neuroplasticity: EMG muscle activation pattern and EEG changes in connectivity of the brain. What they were able to show was that the Ekso group was able to induce a rebalance and reshape of the affected and unaffected hemispheres connectivity. The OGT acted more on the unaffected hemisphere than the affected hemisphere. The black lines are baseline averages of all participants. I It shows mostly posterior lobe connections when thinking about walking. The red lines show improvements in each group regarding strength of improved connectivity between different areas of the brain. The thickness of the lines shows the strength or amount of change in connectivity. I think it is important to note the decreased dependence on posterior areas, shifting EEG activity anteriorly where motor planning occurs.

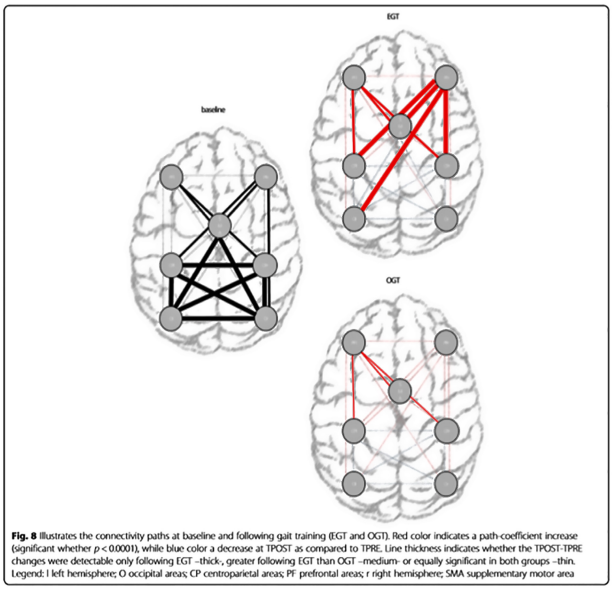

Fig. 8 Illustrates the connectivity paths at baseline and following gait training (EGT and OGT). Red color indicates a path-coefficient increase (significant whether $p < 0.0001$), while blue color a decrease at TPOST as compared to TPRE. Line thickness indicates whether the TPOST-TPRE changes were detectable only following EGT –thick–, greater following EGT than OGT –medium– or equally significant in both groups –thin. Legend: l left hemisphere; O occipital areas; CP centroparietal areas; PF prefrontal areas; r right hemisphere; SMA supplementary motor area

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In addition, the Ekso group was proven to show higher prevalence of muscle activation using EMG in the paretic muscles compared to OGT that led to improved gait quality. This also carried over into the Ekso group meeting MCID in all functional outcome measures, 10MWT, TUG, RMI, and OGT did not, meaning only the Ekso group made clinically meaningful improvements to the patient.[2]

Conclusion

Including Ekso NR into my daily practice has allowed me to finally give this patient the correct tool to learn normal gait kinematics. By holding her up in an upright posture, it allowed her to learn a normal weight shift and stance phase, which improved her balance which then gave her the opportunity to engage with a normal swing phase. The combination of each of these factors helped create a normal, reciprocal gait pattern with high repetitions for her practice. Ekso has allowed me to teach the patient in a structured and logical manner, yielding improved results that are clinically proven with increased neuroplasticity and functional outcome measures.

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CPD News

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http://www.hongkongpa.com.hk/cpd/doc/CPD%20All.xls

Exoskeleton Walking for Individuals with Spinal Cord Injury
A Glimmer of Hope

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Introduction

To most people, spinal cord injury (SCI) is most commonly associated with the loss of ability to ambulate, experience external stimuli, or perhaps the loss of bowel and urinary functions. In reality, there are a multitude of secondary health problems that can manifest as a result of chronic SCI – including cardiovascular disease, increased risk of osteoporosis and fractures, urinary tract problems, bowel complications, pressure injuries, painful spasticity, joint contractures, and neuropathic pain.[1,2] In daily life these comorbidities significantly reduce the quality of life (QOL) and increase risks of premature mortality for individuals with SCI.

What we now understand from various studies is that an increase in time spent upright, whether by standing or walking, is beneficial for the prevention and treatment of secondary health complications of SCI.[3-6] In the past, clinicians attempted to solve this problem by getting patients out of bed with leg braces, suspension systems, and various orthoses used to assist standing and walking.[3-5]

Although these devices did manage to mobilize patients to a certain extent, their actual clinical applications were hindered by the significantly increased energy expenditure required from truncal and upper limb muscles, improper gait pattern, undesirable compensatory habits, slow ambulation speed, as well as safety concerns. All these pitfalls have discouraged paraplegic individuals from converting from wheelchairs to leg braces.[3] In the past decade, medical and rehabilitation exoskeletons have been developed for individuals with SCI as an alternative for assisting ambulation – both for purposes of rehabilitation and long-term health maintenance.

Definition of exoskeletons

The term exoskeleton encompasses a wide range of devices with differing applications. In its original definition, an exoskeleton is a device that augments the performance of an able-bodied weare.[7] For the purposes of SCI individuals, exoskeletons provided two main functions – to facilitate early rehabilitation, and also to assist ambulation. The first exoskeleton to be designed for SCI was the Lokomat.[8] The Lokomat was one of a categories of exoskeletons collectively known as residential exoskeletons, indicating that it could only be used within fixed spaces, such as on a treadmill. These early exoskeletons have since been referred to as a driven gait orthosis, and the type of rehabilitation and gait training involving the use of these devices are collectively known as body-weight-supported treadmill training (BWSTT). Some of the downsides of these types of exoskeletons include cumbersome set up, reduced patient volitional activity, and generally poor user-experience.

Over time, newer generations of exoskeletons were designed with increased mobility and portability. These devices, known as overground exoskeletons, are designed with portable systems that allow the user to ambulate freely indoors and outdoors, and have provided clinicians and patients with a useful tool to increase the life-long over-ground walking capacity of individuals with SCI. Modern medical exoskeletons are devices comprising an external, powered, motorized orthosis that is placed over a person's paralyzed or weakened limbs for the purpose of facilitating standing, walking, and performing activities of daily living. Exoskeletons can allow individuals with paraplegia both to rehabilitate in hospital settings, and / or ambulate in home and community settings. Currently, exoskeletons can be broadly subdivided into assistive devices to be used in the community, or devices designed for rehabilitation with a therapeutic intent.[7]

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Different categories of exoskeletons			
Therapeutic exoskeletons	Designated for use in hospital / institutional settings, where a targeted training regimen is usually prescribed by the attending physician for rehabilitation of a specific neurological condition. Patients who are indicated to use this category of exoskeleton are generally those with potential for improvement in their neurological condition or gait pattern, and can benefit from the various therapeutic functions of these devices.	**Assistive exoskeletons**	Designed for personal use in home or community settings. Patients who are indicated to use this category of exoskeleton are typically chronic paraplegic patients who desire to increase their over-ground walking capacity, but are not expected to gain neurological recovery from the exercise. Due to safety reasons, patients and their carers are usually required to undergo a period of training and certification, before they can use the device outside of an institution setting.

Proposed benefits of exoskeleton use

Beyond the benefits related to physical and biological functions, exoskeletons have been suggested to improve SCI individuals' QOL by enabling their participation in day-to-day activities.[9,10] In a recent survey amongst individuals with SCI, the restoration of walking function was seen as the highest priority;[11] another study had previously commented that other functions, such as improved bladder and bowel function, and the elimination of autonomic dysreflexia, were found to be of greater priority than walking in another group of individuals of SCI.[12] Lam and Koljonen *et al*[14] recently reported in a study that the health priorities of SCI individuals were likely to be culturally-dependent, and results of studies on this may very well vary according to study design and outcome metrics chosen. Furthermore, a meta-analysis on the clinical effectiveness and safety of exoskeletons has suggested that the potential benefits provided by exoskeletons use may offset the costs associated with management of secondary ailments resulting from SCI, thereby resulting in a net reduction in costs to the healthcare systems.[13]

Yip et al has demonstrated in a robust scoping review that exoskeletons provide noticeable benefits across different types of secondary health complications due to prolonged immobilization, as well as a positive response by individuals with SCI for the potential chance to regain their previous roles in the community.[15]

Hong Kong's first Exoskeleton Paraplegic Walkathon

For the 60th Anniversary Celebration of the Department of Orthopaedics and Traumatology at the University of Hong Kong (HKU), their Spinal Cord Injury Rehabilitation team hosted Hong Kong's first Exoskeleton Paraplegic Walkathon. The event aimed not only at fund-raising for spinal cord injury research and clinical services in Hong Kong, but also aspired to bring the SCI community together. Researchers, clinicians, medical students, non-governmental organizations and territory-wide patient groups all participated in this marvelous event. The Exoskeleton Walkathon also raised awareness on the physical and social needs for spinal cord injury individuals living in Hong Kong.

Dr. Paul KOLJONEN, Professor Kenneth CHEUNG and Dr. Chor Yin LAM accompany four paraplegic individuals in preparation for the historic event

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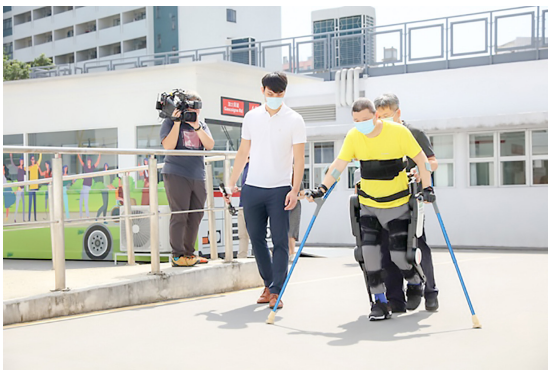
The 60-minute relay race featured four paraplegic individuals completing a live-broadcasted virtual relay across four sites in different parts of Hong Kong. The thoughtful choice of relay locations reflected not only our patients' long journey towards recovery, but also highlighted the journey of robotic exoskeleton development over the past decade.

Patient ambassador Mr. Lai Chi Wai successfully completed the last leg of the relay race



The FreeWalk exoskeleton was featured in the HA Community Rehabilitation Support Services Centre

The Indego exoskeleton being used in Sandy Bay outside the HKU Stanley Ho Sports Ground

For the first time, we were able to compare the wide range of technical capabilities of different robotic exoskeletons, as shown here in the setting of their everyday applications. During the relay, four unique brands of robots were utilized for this event – The University Campus leg showcasing the novel, lightweight personal-use *SuitX Phoenix*; the Rehabilitation hospital using the robust therapeutic *EksoNR* from Eksobionics; the community rehabilitation center featuring the reliable *FreeWalk* from FreeBionics, and finally the sports center using the agile and modular-designed *Indego*. This real-life demonstration of the functionalities of various exoskeletons highlighted the expertise required of the rehabilitation trainers, as well as the paramount importance of good case selection.

In the spirit of academia and innovation, the first leg of the relay took place at the University of Hong Kong Centennial Campus, followed by the second leg at the at Maclehose Medical Rehabilitation Centre where the SCI patients spent their early post-injury days undergoing rigorous physical and functional training. The third leg of the relay was taken to the outpatient rehabilitation facility of Hospital Authority's Community Rehabilitation Support Services Centre – an important bridge between the patients' hospitalization and community reintegration, and then finally concluded at the HKU Sports Ground, a destination symbolizing patients' final return to independence and gainful living.

The full support team from HKU Department of Orthopaedics and Traumatology celebrated the successful completion of the walkathon by the four champion paraplegic individuals.

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The HKU Get Up and Walk Campaign

Since 2018, the HKU team has launched the Get up and Walk Campaign, a multidisciplinary platform providing direct services and also fund-raising opportunities to support individuals with spinal cord injury. The campaign has so far raised over HKD$10M to introduce exoskeleton paraplegic training into public hospitals, provide diaphragmatic pacing surgeries for high cord injury patients, as well as support basic and clinical research for adjuvant treatments for SCI recovery. The HKU team hopes that through breaking frontiers in treatment, and raising awareness in society, we can empower individuals with spinal cord injury to live their lives to the fullest, and at the same time improve the support we can collectively provide. Learn more about this campaign at www.sci.ortho.hku.hk.

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Application of Innovative and Interactive Equipment in Community Geriatric Rehabilitation

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Introduction of Elderly and Community Support Services

The position of Elderly and Community Support Services in Hong Kong Family Welfare Society (HKFWS) is to support Hong Kong families to care for elders in the community. We have been expanding our service to address the rapid growth of the aging population. Specifically, we are providing an array of services including Integrated Home Care Service (IHCS), Enhanced Home and Community Care Service (EHCCS), Neighborhood Elderly Centre (NEC), Community Care Service Voucher (CCSV) for the Elderly, Pilot Scheme on Home Care and Support for Elderly Persons with Mild Impairment, Self-financing Elderly Service and other special projects.

In our multi-disciplinary team, physiotherapists (PTs) are responsible for assessing the targeted clients and prescribing tailor-made interventions (e.g. rehabilitation exercise, pain management, manual therapy) in daycare center and home settings. Onsite caregiver training is provided for service users' caregivers. Our trained supporting staff also provide PT-prescribed rehabilitation exercise to clients regularly in different districts, with an aim to optimize their rehabilitation potential and to alleviate heavy burden of their caregivers.

Innovation and Technology Fund for Application in Elderly and Rehabilitation Care[1]

In 2018, the Hong Kong Government set up the "Innovation and Technology Fund for Application in Elderly and Rehabilitation Care" to subsidize elderly and rehabilitation service units to procure, rent and trial-use technology products. The aim is to improve the service users' quality of life and to alleviate burden and pressure of care staff and caregivers.

CUHK Jockey Club HOPE 4 Care Programme (中大賽馬會凝聚希望計劃)[2]

We are pleased to have joined "CUHK Jockey Club HOPE 4 Care Programme" since 2021. Our PTs utilize and apply the "Hand of Hope" (希望之手) and "Ankle Robot" (中風機械腳托) to selected service users suffering from stroke, with an intention of optimizing their rehabilitation potential in addition to conventional rehabilitation.

Hand of Hope - Exoskeleton Robotic Hand for Stroke Rehabilitation (希望之手)[2,3]

The interactive intention-driven hand training robotic device is designed for neuromuscular rehabilitation of both hand and forearm of patients suffering from stroke, spinal cord injury, hand or finger injuries, etc. The training modes are consisted of "Continuous Passive Motion" and "EMG Biofeedback Training." The biofeedback device surfacing electromyography (EMG) sensors captures the users' muscle signals for activation of paretic hand movement. Processed EMG signals could be visualized as visual feedback to encourage the user to actively participate in training. The device is not normally suitable for patients with extensor or flexor digitorum with Modified Ashworth Scale (MAS) greater than 3. Our clients have received training for over 6 months with satisfactory outcomes (e.g., improved active control of paretic hand).

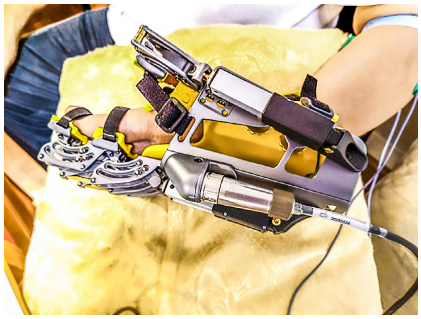

Fig 1. The stroke client wore the device in home setting

Fig 2. Different kinds of hand training in software

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Fig 3. Measurement of EMG before training

Fig 4. Post treatment evaluation (after 3 months)

Exoskeleton Ankle Robot for Stroke Rehabilitation（中風機械腳托）[2]

The ankle robot is a lightweight and portable exoskeleton robot-assisted Ankle-Foot-Orthosis (AFO) for correcting drop-foot during gait in stroke patients. It is integrated with force and motion sensors to identify gait phase and classify walking intention by machine learning control algorithm. On the other hand, the installed electric motor is used to actively-assist ankle dorsiflexion during swing phase on stairs. The sensory feedback could let the user "relearn" how to walk for correction of gait pattern.

This device distinguishes itself from other existing ankle robots as it provides solely mechanical support instead of emitting electrical signals, making this device available to patients with sensation deficit or contraindications of electrical stimulation. "Up-stairs" and "down-stairs" modes could be selected by the portable handheld remote control. Our PTs have incorporated the device into rehabilitation regime in home setting with satisfactory patient experience and evaluation outcomes.

Fig 5. The stroke client wore an ankle robot during gait training

Path Finder-Parkinson's Walking Aid（帕金遜鞋）[4]

Path Finder is a shoe attachment providing visual cues to train patients with unsteady and irregular gait, especially for those suffering from neurodegenerative diseases such as Parkinson's disease or stroke. Shuffling gait or freezing of gait (FOG) is a common feature of Parkinson's disease due to dysfunction of basal ganglia.

The device is designed to normalize patient's walking pattern by improving stride length and gait speed. Green laser lines are projected on ground as visual cues to initiate movement. It relies on visual information for gait control to compensate the reduced kinesthetic feedback from lower limbs.

Clients enjoyed participating in the interactive training with technology and were pleased to see the improvement of walking pattern and stability. The visual-cued gait training could be applied conveniently and simply in community setting.

Fig 6. The whole set device

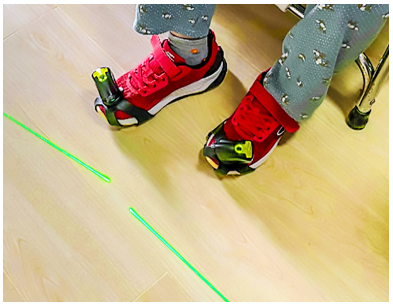

Fig 7. Laser lines projected on ground as visual cues

Fig 8 & 9. Gait performance before and after application of the device

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TANO 多元化互動運動及復康訓練系統[5]

TANO is a motion training software that was innovated in Japan. It contains more than 70 games that can be played to train four limbs, whole body movement, coordination, cognition and speech, etc. The Kinect motion sensor enables the users to play the games without using the hand-held sensor in sitting, standing or moving positions.

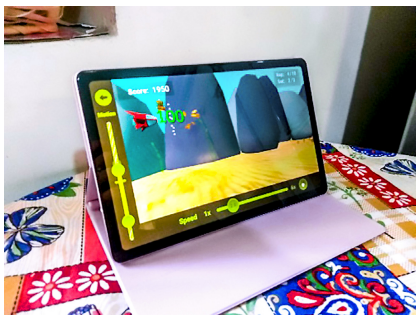
The installed assessment tools (e.g. functional reach test, timed up and go test, postural analysis) save the manual preparation work of therapist for particular assessment. An array of included games provide sensory stimulation and simultaneous visual and auditory feedback for the users. Their exercise motivation and compliance could be facilitated. Furthermore, the "multiple-player mode" enables the users to have social interaction with one another through group interactive training.

Fig 10. Installed VR training of various body parts in software

Fig 11 & 12. The MPT students led the clients to participate in upper limb and lower limb interactive training in our daycare centre.

Bobo Motion 多功能訓練系統[6]

Bobo motion is a non-immersive virtual reality (VR) rehabilitation system enabling real-time joint motion measurement through the wearable motion sensor. The attached motion sensor accurately captures the joint range of motion (ROM) and allows exercise training of body's specific parts, such as elbow flexors and knee extensors. The innovative equipment provides a gamified and interactive experience to the users in both home and centre settings. The installed games target upper limb, lower limb and trunk movement specifically. The exercise parameters (e.g. number of sets and rest period) could be modified according to the user's conditions. The visual biofeedback could motivate the users to perform exercise with an intention of improving mobility, coordination and control of movement. Therapists could challenge the users through performing exercise in combination with using resistance band or exercise ball. In addition to exercise training, the device allows assessment of ROM, which helps therapists to keep track of the progress of the clients over time.



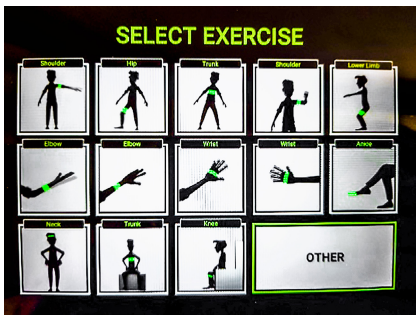


Fig 13, 14 & 15. Our client's participation in the training targeting different body joints.

(Continued on Page 13)

Aspire Balance 登峰智能平衡系統 [7]

"Aspire Balance" is a wearable device which aims at monitoring and improving individual's balance abilities. The balance tests include "feet together", "tandem stance", "single leg" and "single leg side raise." The result will be shown immediately after completion of each assessment lasting 20 seconds. It is useful for the PTs to keep track of progress of the clients regularly according to the results taken despite persistent physiotherapy manpower shortage in NGO settings.

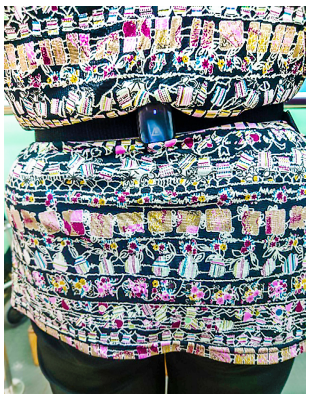


Fig 16 &17. The client wore the device and performed "single leg" balance test.

Fig 18. Four different balance tests

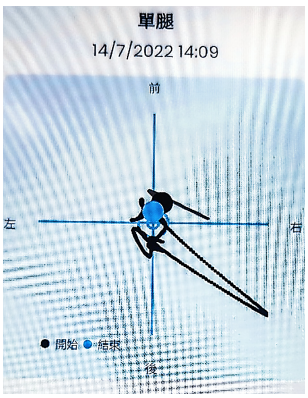


Fig 19. Result of "single leg" balance test

Conclusion

Apart from being fun and vita, exercise is the "medicine" in geriatric community rehabilitation. Application of innovative and interactive equipment does not only improve elder's exercise compliance but also optimizes their rehabilitation potential in community. With an improved quality of life, the elders are able to live actively in community and the heavy burden of caregivers could be alleviated in the primary care home model.

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An Interview with Mr. Danny CHAN

Date : 21 June 2022
Venue : Online Meeting
Interviewee : Mr. Danny CHAN
Interviewers : Ms. Laura CHONG, Ms. Abu CHAN

The reason why he joined his field

Q1

As a physiotherapist, we have different possible career paths, why did you choose the field of acupuncture? Why was it attractive to you?

A1

Being professional physiotherapists, we should always strive for excellence and the best for our patients. For me, I believe that we can provide more comprehensive healthcare services to patients by combining both Chinese medicine (Acupuncture) and Western medicine (Physiotherapy).

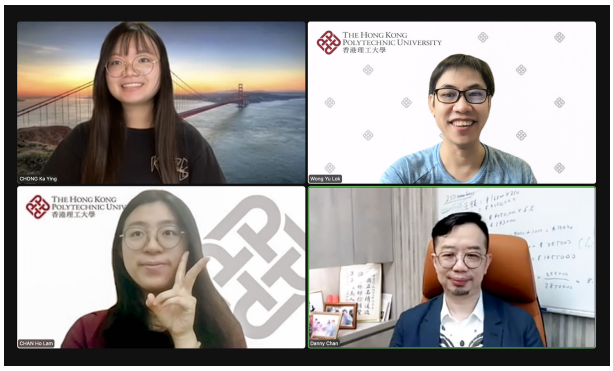
In the scope of Western medicine, we mainly focus on the pathologies and especially biomechanical issues for Physiotherapy. However, Chinese medicine will consider factors that are neglected by Western medicine such as the external environment (Eg. the humidity of the district where the patient is living in).

Therefore, I'm eager to integrate both Physiotherapy and Acupuncture to make a breakthrough in the existing practice which is relatively restricted.

Integration of western and eastern medicine

Q2

Knowing that you have spared no efforts in fostering the integration of western and eastern medicine, what are the challenges you have faced throughout the journey as the first person to do so in Hong Kong?



Upper left and right corner:
Ms. Laura CHONG and Dr. Arnold WONG;
Lower left and right corner:
Ms. Abu CHAN and Mr. Danny CHAN

A2

In the beginning, the lack of resources for developing Chinese medicine was one of the obstacles. When I was working in the hospital, I had to buy needles for acupuncture myself. As there was a lack of manpower for acupuncture, sometimes I had to take care of 10 patients at the same time. It was a bit challenging but I was glad to help patients getting rid of their pain.

Also, using acupuncture as one of the physiotherapy modalities was being criticized. Due to a lack of understanding of Chinese medicine, some patients or healthcare professionals might doubt the effectiveness of acupuncture for pain control. The acceptance of eastern medicine might not be as high at that time.

For me, it was difficult to maintain the work-life balance when I was enthusiastically widening my horizons in the aspect of eastern medicine and expanding my business. I decided to study Chinese medicine in mainland China. At that time, it was costly and I could not look after my

(Continued on Page 15)

family. Luckily, I was supported by my wife, so I could unleash my full potential in the integration of western and eastern medicine. In 3 years, I successfully opened 5 clinics and provided more opportunities for the physiotherapists who were interested in this field.

Q3

From your point of view, how can Western medicine (especially Physiotherapy) and Chinese medicine be further integrated in the coming 20 years?

A3

For Western medicine and Chinese medicine, it was hard to work together, but we could help each other. Physiotherapy can act as a bridge for utilizing and explaining the concepts of traditional Chinese medicine (TCM). If it is workable for physiotherapists to treat patients by using the TCM method, the clinicians may notice that and try to apply the concepts in treatments in the future. For instance, for some diseases like strokes, physiotherapists may use acupuncture to provide care for the patients.

I believe that it is wonderful for physiotherapists to move forward and promote the TCM concepts without limitations. By exploring the possibilities of integration, we may see the changes soon.

Future advice

Q4

For the new generation of physiotherapists, what is your advice to them?

A4

My advice to our next generation of physiotherapists can be classified into the following few points:

1. **Your professional look**

   No matter if you are now going for a job interview or treating your patients, always look confident and be professional about what you do.

2. **Your professional attitude**

   As a healthcare practitioner, I believe that we are not just curing the health problems, but the patients who are suffering from them (醫人而非只醫病).

   Therefore, being patient-oriented is important. Sometimes, encouragement or comfort means a lot to the patients. It may help them to be motivated again to exercise more and have a better progress.

3. **Your professional mindset (Specific to those who are interested in Acupuncture)**

   From my perspective, thinking out of the box is one of the crucial elements in practicing Physiotherapy with Acupuncture. To strive for excellence, we should always be open-minded to different possible treatment options for the sake of the patients (切忌默守成規，固步自封). Then you would be able to manipulate acupuncture in assisting your physiotherapy treatment creatively.

Recruit Magazine: Report on physiotherapist manpower issue

Date : 3 June 2022
Physiotherapist : Mr. Wing Hong YAN

This report was published in Recruit Magazine following our press conference held on 17 May, 2022, highlighting the severity of attrition of physiotherapists in Hong Kong.


Recruit Find Jobs Career Advice Recruit Magazine Learning Guide

Home > Recruit Magazine > Focus > 物理治療師 料未來5年流失嚴重

物理治療師 料未來5年流失嚴重

Post Date: 2022-06-03

又係移民潮? 物理治療師料流失嚴重

本港人口老化，對醫療服務需求有增無減，但醫療人手卻極為不足，除了醫生護士缺人，物理治療師亦陷「人手荒」。根據食物及衞生局醫療人力規劃和專業發展策略檢討報告指出，本港於2040年將欠缺約500名物理治療師。香港物理治療學會早前公布人力調查則顯示，本港於5年內或將流失兩至三成物理治療師，急需設法挽留人手。香港物理治療學會早前公布人力調查研究報告，該調查於去年10月至今年4月進行。

Grand Opening Ceremony for District Health Centres (DHC)

Date : 15 June 2022
Venue : KITEC, Kowloon Bay
Physiotherapist : Prof. Marco PANG

Prof. PANG was invited to attend the Grand Ceremony for District Health Centre. During the ceremony, he gave a pre-recorded congratulatory message.

International Scoliosis Awareness Day

Date : 25 June 2022
Venue : The Hong Kong Polytechnic University
Physiotherapist : Ms. Mandy Wai-man LUI

The International Scoliosis Awareness Day falls on the last Saturday of June every year. The event this year was successfully held at The Hong Kong Polytechnic University on June 25, 2022. This event was jointly organized by The Hong Kong Polytechnic University, Department of Orthopaedics and Traumatology of The University of Hong Kong, The Chinese University of Hong Kong, Hong Kong University, the Hong Kong Scoliosis Society and Active Biotechnology Limited Company.

A total of over 130 registrants attended the half-day programme. Professor Kenneth Man Chee CHEUNG from the Department of Orthopaedics & Traumatology, The University of Hong Kong, Dr. Liu King Lok from the Hong Kong College of Orthopaedic Surgeons, Professor Mei-chun CHEUNG from the Chinese University of Hong Kong, Mr. Ho-man KEE from the Hong Kong Society of Certified Prosthetist-Orthotists, Ms. Mandy Wai-man LUI from the Hong Kong Physiotherapy Association and Ms. Irving CHEUNG from the Hong Kong Scoliosis Society have been invited as speakers in the event.

Ms. Mandy LUI represented HKPA to present a talk about the effectiveness of Schroth Method for scoliosis patients.

World Physiotherapy Asia Western Pacific Regional Congress cum Hong Kong Physiotherapy Association Conference

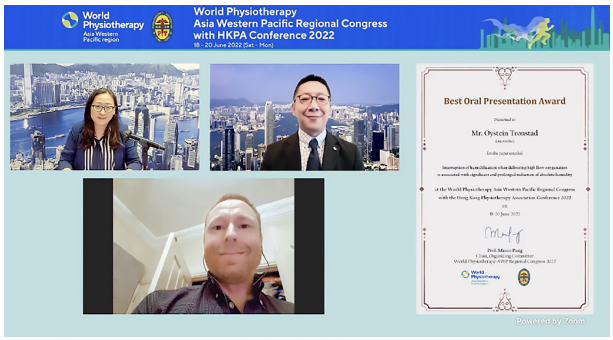
Date : 18-20 June 2022
Venue : Online

The congress was held in virtual format due to the influence of pandemic. Despite this, the congress was held in a great success with 545 registrants from 32 countries/ regions.

Regarding the scientific programme, there were 41 sessions run in 2 parallel tracks with six keynote speakers from Australia, Canada, Hong Kong, Japan and USA and 33 local/ overseas speakers delivering 6 keynote lectures and 8 focused/ special symposia, respectively.

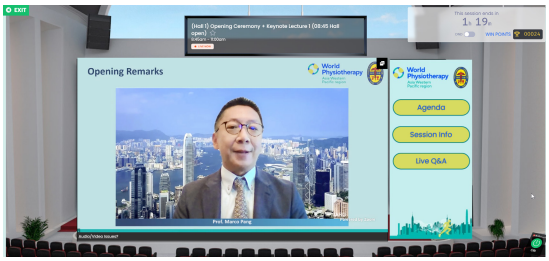
As for scientific presentation, there were 265 accepted abstracts. Of these, 97 were oral presentation (32 traditional presentation and 65 rapid-5 presentation) and 168 were poster presentation. Six research awards were granted to the following researchers:

- Best oral presentation
  - *Mr. Oystein TRONSTAD (Australia)*
  - *Dr. Derek YAU (Hong Kong SAR)*
  - *Mr. Shawn Leng Hsien SOH (United Kingdom)*
  - *Mr. Tsun Chai LEE (Hong Kong SAR)*
  - *Mr. King Yin LAI (Hong Kong SAR)*
  - *Ms. Yin Faye CHAN (Hong Kong SAR)*
  - *Ms. Wing Yi LAM (Hong Kong SAR)*
  - *Ms. Tsz Yin YUNG (Hong Kong SAR)*
- Best poster presentation
  - *Prof. Hui-Yi WANG (Taiwan)*
  - *Ms Eun Bi PARK (Korea)*

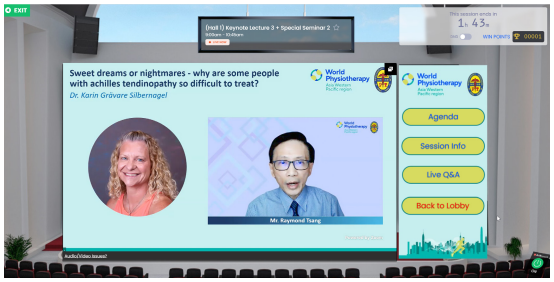


We are thankful for the support and efforts of session chairs/ judges, abstract reviewers, members of different sub-committee members organizing committee of the congress, co-organizer, supporting organizations and sponsors to make the congress a great success. We look forward to seeing you in our next HKPA conference in 2023.

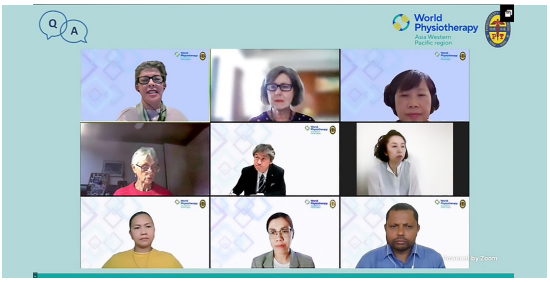
Congress virtual platform



Opening remarks – Prof. Marco PANG (President of Hong Kong Physiotherapy Association)



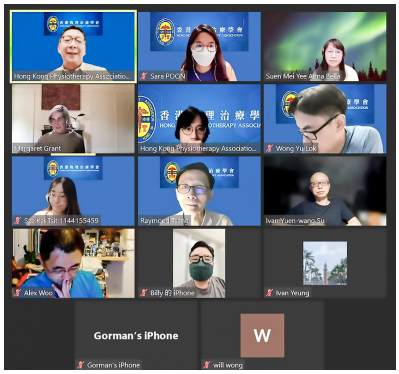
Keynote presentation – Dr. Karin Grävare SILBERNAGEL; Session Chair: Mr. Raymond TSANG (Vice-President, Hong Kong Physiotherapy Association)



AWP Symposium – Chaired by Prof. Suh-Fang JENG (President of World Physiotherapy Asia Western Pacific Region)

M & A Review: Online Engagement Sessions

Date : 29 June 2022, 13 July 2022
Physiotherapists : Prof. Marco PANG,
Mr. Raymond TSANG



As part of the HKPA M & A consultation, a number of engagement sessions were held to allow the consultant Ms. Margaret GRANT to present the draft of the revised Articles and discussion paper, and to obtain feedback from the participants.

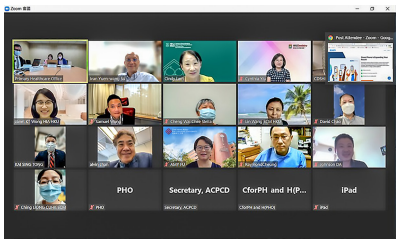
香港醫療衛生界七一專題研討會

Date : 3 July 2022
Delivery mode : Zoom
Physiotherapist : Dr. Arnold WONG

Legislative Council member, Dr. the Honourable David LAM, organized this symposium. Dr. WONG represented HKPA to attend the symposium and shared his opinions regarding the importance of physiotherapy direct access in the primary care setting.

Second Meeting of the Advisory Committee on Primary Care Directory

Date : 6 July 2022
Venus : Zoom Meeting
Physiotherapist : Dr Ivan SU



Dr SU was appointed by the Health Bureau, as representative of the Hong Kong Physiotherapy Association at the captioned Advisory Committee, for offering advice on the continual development and maintenance of the Primary Care Directory (PCD). The progress on the enhancement of PCD was updated in the second meeting. Views on stating only the accredited titles without the arbitrary-defined categories of service for individual practitioners on PCD in different disciplines were exchanged. The proposed item list to be displayed on the Physiotherapists Sub-directory has been submitted to the Physiotherapists Board for approval, and the result is pending.

7th meeting Working Group on Implementation of Modified Referral System for PT Services, PT Board

Date : 12 July 2022
Physiotherapist : Prof. Marco PANG

This meeting was intended to discuss the direct access model. It is anticipated that the proposal will be submitted to PT Board and then SMPC by August 2022.

Tung Wah College Celebration Reception: Professional Accreditation of Physiotherapy Programme

Date : 12 July 2022
Venus : Tung Wah College
Physiotherapist : Mr. Raymond TSANG

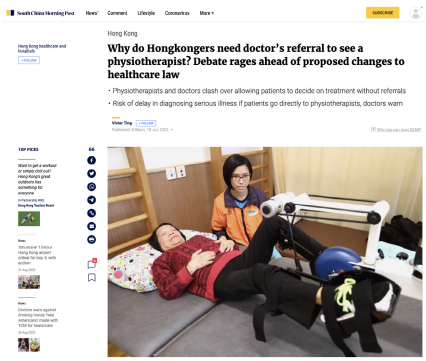
Mr. TSANG attended the celebration ceremony of the professional accreditation of the Physiotherapy programme of Tung Wah College on behalf of HKPA.

Newspaper Reports on Direct Access

Date : 18 July 2022
Physiotherapist : Prof. Marco PANG

Prof. Marco PANG was interviewed by Ming Pao and South China Morning Post to give his views on direct access. A related report was also published in Hong Kong 01.


港聞
物理治療免轉介 最快明年推 政府工作組成員彭鴻昌：草案擬10月遞立會


Hong Kong
Why do Hongkongers need doctor's referral to see a physiotherapist? Debate rages ahead of proposed changes to healthcare law


觀點 / 01觀點
物理治療若免轉介　裨益病人及醫學界
政府研今年修例
病人求診物理治療師
有望免轉介
撰文：湯文詩
出版：2022-07-18 18:10　更新：2022-07-18 22:32

Announcement

Code of Practice Seminar 2

Date : 30 July 2022
Delivery mode : Zoom
Physiotherapist : Mr. Bronco BUT

Our Honorary Legal Advisor, Mr. BUT gave a webinar to our members on 30 July 2022. The major take-home messages are shown below:

(1) 宣傳時，應盡量使用『註冊物理治療師』/ 獲物理治療師管理委員會認可的資格的中英文名稱，避免將公職放於宣傳中，例如 xxx會健康顧問。

(2) 假如對任何由公司準備的宣傳物件有異議，應立即提出反對意見，並以書面通知公司負責人及將會保留追究權利，儘量保留書面記錄，以保障自身權益。

(3) 鑑於現時較多物理治療師於網上宣傳，畢律師呼籲各位須小心言行以避免觸犯有關包攬生意等相關的專業守則

(4) 畢律師表示應儘量避免以物理治療師的個人名義對某些產品背書

Announcement

HKPA

Mr. KWAN will resign from his position as an Executive Committee Member of Hong Kong Physiotherapy Association with effective on 1 September, 2022. We thank his contributions to our Association during his term. All the best to his future endeavors.

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