香港疼痛學會
The Hong Kong Pain Society

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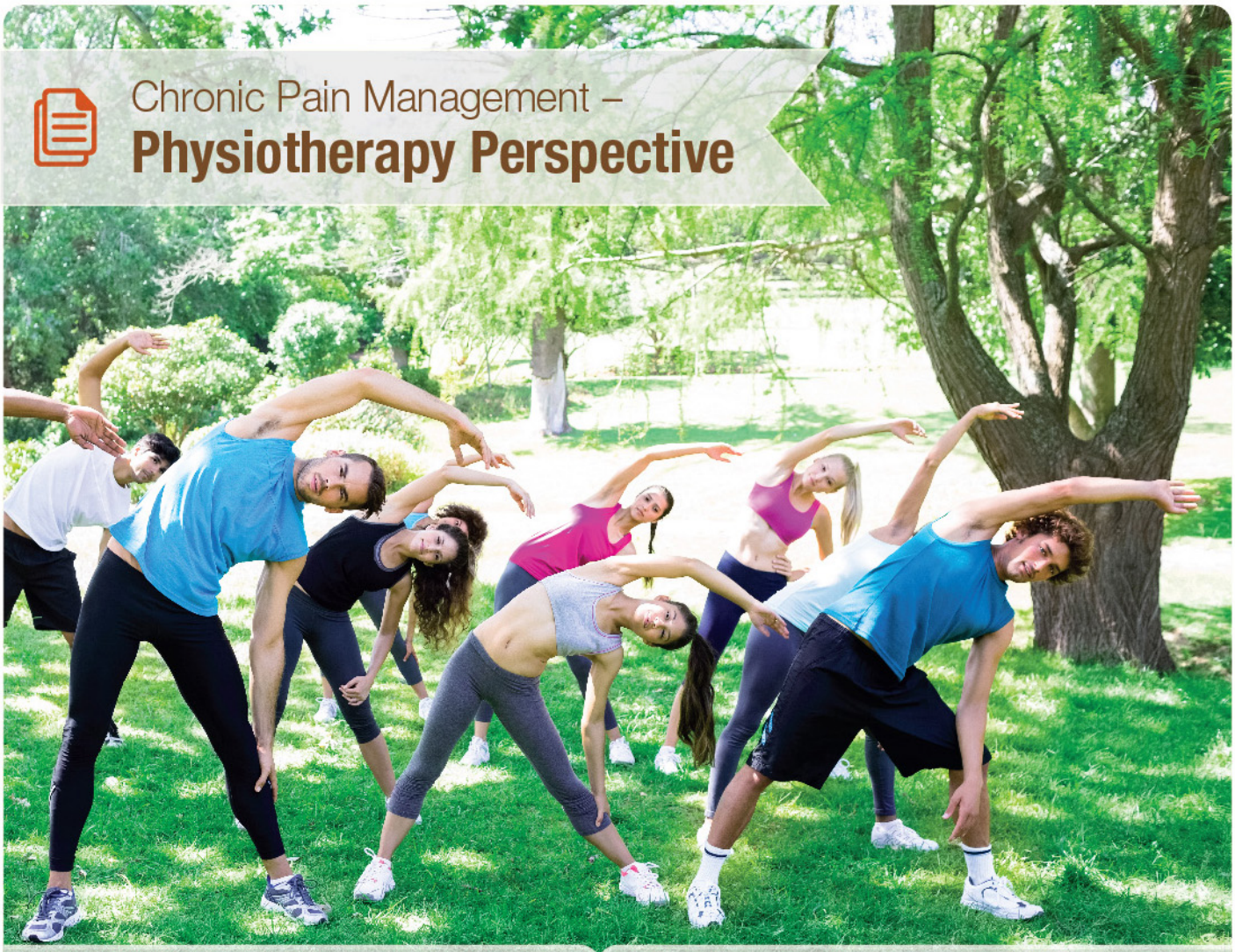

Chronic Pain Management – Physiotherapy Perspective

Activity Pacing Intervention to Patients with **Knee Osteoarthritis (OA)**

Psychotherapeutic Interventions in Pain Management

Editor's Message:

Pain management is being more and more addressed in local institutions after the recognition of pain as a fifth vital sign. Besides, International Classification of Diseases (ICD) of the World Health Organization (WHO) has included some diagnostic codes for chronic pain conditions and currently International Association for the Study of Pain (IASP) has established a Task Force for the Classification of Chronic Pain in the upcoming version . As healthcare providers, it's our obligation to ensure updated knowledge and promote awareness in pain management in acute pain setting as well as chronic pain conditions, which affect 20% people worldwide.

In this issue of newsletter, the focus is about non-pharmacological strategies in combating pain, from perspectives of physiotherapy, psychotherapy and occupational therapy. Overview and updates modalities are introduced so as to achieve multi-disciplinary approach in relieving pain.

Finally, I would like to thank the effort and contribution of HKPS council, newsletter editorial board, authors and healthcare industry for the support of newsletter.

Doris Leung
Editor, HKPS newsletter 2017

Announcements:

1. Annual Scientific Meeting 2017

Date: 30th Sep – 1st Oct 2017
http://www.hkpainsociety.org/events.html

2. Annual General Meeting

Date: 30th Sep 2017, 12:00
Venue: Ballroom A, 3/F,
Sheraton Hong Kong Hotel and Towers

3. Spine World Summit

Date: 26-27/1/2018
http://summit.spineworld.org/en/index.php

4. Conference Grant Invitation 2017 :

No applicant was approved

5. Joint Pain Day

Date: 2/12/2017
Venue: Belcher Bay Park, Hong Kong
Details to be announced

Welcome of new member: Ms. Sharon Tsang

Chronic Pain Management — Physiotherapy Perspective

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Introduction

Chronic pain is recognized as a multifaceted disorder, which poses significant burdens on the health care system, social security, and quality of life of those affected. The prevalence rate of chronic pain in Hong Kong population was reported as ranged from 10.8% to 28.6% (Ng, Tsui, & Chan, 2007; Fielding & Wong, 2012). Apart from the socioeconomic impact, chronic pain also denotes a huge demand on Hong Kong health care system. With more than 60% of patients in Out-patient Physiotherapy Department of Queen Elizabeth Hospital suffering from chronic musculoskeletal pain, we encounter a huge amount of patients with different form of chronic pain such as back pain, neck pain, or knee pain etc. Therefore, a comprehensive physiotherapy (PT) management plays an important role in chronic patients' management.

Biopsychosocial Model of Chronic Pain

There is a growing recognition that psychosocial factors, such as emotional stress, could impact the reporting of chronic pain symptoms, medical disorders, and response to treatment. The biopsychosocial approach is now widely accepted as the most empirical perspective to the understanding and treatment of chronic pain disorders (Gatchel, 2004). The biopsychosocial model considers pain as the result of the dynamic interaction among physiological, psychological, and social factors, which has a direct impact on extending and worsening the clinical presentations. In this biopsychosocial model, PT is one of the key components in managing patients with chronic pain.

Physiotherapy Management

Cognitive Behavioral Therapy (CBT) is a widely researched, time-limited psychotherapeutic approach that has been shown to be efficacious across a number of mental and behavioral conditions. In chronic pain management, physiotherapists integrate the Cognitive Behavior Approach (CBA) throughout the assessment and treatment, including encouragement of active participation, positive coping strategies, pacing techniques, and relaxation.

Encouragement of resuming active lifestyle and social activities, together with appropriate exercise and stretching could reverse the effects of deconditioning, improve strength, reduce risks associated with obesity, and decrease self-perceptions of disability. Exercise can also lead to increased stamina and increased engagement with rewarding or pleasurable activities. Pacing refers to the practice of engaging in an appropriate level of physical activity without significantly aggravating pain. By using calculated increases in activity, pacing can lead to greater endurance and a reduced frequency of intensely painful episodes. Relaxation techniques lead to decreased perceptions of pain and can contribute to feelings of self-efficacy to manage pain.

Evidence has shown that Physiotherapists can utilize a broad scope of practice to guide and support people with chronic pain towards a better quality of life. The goals of PT rehabilitation include pain modulation, physical conditioning, patient education and empowerment, and facilitating return to work.

Pain Modulation

Patients with chronic pain condition have significant pain that limits their physical capacity, making them difficult to exercise. Therefore, the use of electrophysical agents (EPA) to alleviate pain could enable these patients to participate in an exercise program at an earlier stage of recovery. EPA includes Extracorporeal Shock Wave Therapy (ESWT), Interferential Therapy (IFT) (Figure 1), Transcutaneous Electrical Nerve Stimulation (TENS), heat therapy, magnetic therapy, and Acupuncture. A recent systematic review concluded that when combined with other treatments, such as exercises and massage, IFT demonstrated advantages over placebo and non-treatment control groups in reducing the intensity of pain associated with musculoskeletal disorders (Fuentes, Armijo Olivo, Magee, & Gross, 2010).

Figure 1. Interferential therapy

ESWT (Figure 2) is a non-invasive method that applies mechanical energy to lesions for promoting revascularization and stimulating the healing process of connective tissues such as tendons and bones, thereby relieving pain and improving function. ESWT is widely used by physiotherapists and was shown to be effective in managing various musculoskeletal disorders including chronic low back pain (Han, Lee, Lee, Jeon, & Kim, 2015), plantar fasciitis (Schmitz, Csaszar, Rompe, Chaves, & Furia, 2013), shoulder tendonitis, lateral epicondylitis of elbow, chronic Achilles tendinopathy (Carulli, Tonelli, Innocenti, Gambardella, Muncibi, & Incocenti, 2015), and chronic myofascial pain (Ji, Kim, & Han, 2012) in previous studies.

Figure 2. ESWT

Acupuncture (Figure 3) is an adjunct widely used as a pain-relieving agent by Physiotherapists in managing different kinds of chronic musculoskeletal pain conditions, such as neck and back pain, knee pain, shoulder pain, and elbow pain. A meta-analysis suggested there is consistent evidence that acupuncture was effective for managing chronic osteoarthritis of knee and headache in both the short term and longer term. (Fuentes, Armijo Olivo, Magee, & Gross, 2010) Numerous studies also demonstrated that acupuncture was effective in controlling chronic back pain, neck pain and knee pain (Berman, Langevin, Witt, Dubner, 2010; Zhang, Yue, Zeng, Sun, & Golianu, 2016; White, Foster, Cummings, & Barlas, 2007).

Figure 3. Patient receiving Acupuncture

Various forms of manual therapy (Figure 4) are commonly used in managing patients with chronic spinal and peripheral joints pain. Physiotherapists use a range of treatment approaches including mobilization and manipulation to manage chronic pain, aiming at restoring joint mobility, releasing soft tissue tightness, mobilizing neural tissue, and improving joint microcirculation. A systematic review published in 2014 demonstrated that there was moderate to strong evidence in favour of manual therapy in improving pain, functions and overall-health for chronic pain patients (Hidalgo, Detrembleur, Hall, Mahaudens, & Nielens, 2013).

Figure 4. Patient receiving manual therapy

Physical Conditioning

With adequate pain modulation, patients with chronic pain are able to participate actively in their physical activity, as well as specific exercise program. Graded exercise therapy (Figure 5) with appropriate pacing, and exercise intensity could help to improve flexibility, muscle strength, endurance, and cardiovascular function, and to reduce the frequency of exacerbation of pain events. A study in 2001 demonstrated that exercise was effective for the management of chronic low back pain with post treatment effect lasted up to 1 year (Mior, 2001). Recent Cochrane Review suggested that physical activity and exercise were interventions with few adverse events that might improve pain severity, physical function and consequent quality of life (Geneen et al., 2017). Hydrotherapy is an alternate form of exercise that the patients perform specific exercise taught by physiotherapist in water. The beneficial effects of hydrotherapy on chronic musculoskeletal pain have been demonstrated in recent studies (Carpes, Reinehr, & Mota, 2008; Bressel, Dolny, & Gibbons, 2011).

Figure 5. Graded exercise therapy

Clinical Pilates is a system of exercise and movement re-education focuses on improving body awareness and movement through particular exercises. Clinical Pilates include exercises that focus on trunk flexion, trunk extension, abdominal and back strengthening, and motor control and stabilization. These exercises can be performed using specific equipment (equipment-based Pilates) (Figure 6) or without specific equipment (mat Pilates). Recent studies suggested that Clinical Pilates could reduce pain and disability, improve function and quality of life among patients with chronic low back pain (Wajswelner, Metcalf, & Bennell, 2012; Stieglitz, Vinson, & Hampton, 2015).

Figure 6. Equipment-based Pilates

Hong Kong is an integrated society and is deeply influenced by Traditional Chinese culture, in which Integrated Chinese Medicine is commonly practiced by elderly patients. Tradition Chinese qigong such as Ba Duan Jin (八段錦), Tai Chi (太極) and Yi Jin Jing (易筋經) are exercise forms with a combination of postures, meditation, and movements designed to improve holistic health and facilitate mind-body integration. It is considered as a low to moderate intensity aerobic exercise and is taught by our physiotherapists, who are the certified trainers, for patients with chronic musculoskeletal pain. Current studies have suggested that Tradition Chinese qigong appeared to have substantive benefits for older adult with physical disorders, such as spinal disorders, and osteoarthrosis etc. (An et al, 2013; Wang, Guo, Tang, Meng, & Hu, 2014).

Figure 7. Ba Duan Jin exercise class

Patient education and Empowerment

A key component of chronic pain management is guiding and motivating the patient to engage and actively manage their pain. The concept of self-management is to encourage patient participation in managing their condition during daily activities. Patient empowerment program plays an important role in educating patients about the knowledge of the nature of the pain and its effect, appropriate management, positive pain coping strategies as well as ergonomic advice etc. It would be sensible to include education along with other interventions, as the continuation of treatment during the rehabilitation journey (Geneen et al., 2015).

Facilitating Return to Work

Absence from duty not only contributes to socioeconomic burdens, but also hinders the rehabilitation of chronic pain patients. According to the biopsychosocial model, the social role of patient would have a significant effect in managing the patients' symptoms and maintaining their functions. Functional capacity evaluation (FCE) (Figure 8) provides objective information regarding both the physical capabilities of the patients such as physical tolerances and restrictions, accommodations and work modifications, as well as the psychosocial behaviour, such as effort, attitude and compliance. FCE is a useful clinical tool for making judgments of performance potential and readiness of clients for return to work. In addition, appropriate simulated work rehabilitation training can provide specific and tailor-made work-task training to enhance patients' ability and confidence in return to work.

Figure 8. Functional Capacity Evaluation

Conclusion

Chronic pain condition is a major physical and mental health care problem around the world and it definitely poses stress in our health care system. Biopsychosocial model considers chronic pain as a product of the interaction among physiological, psychological, and social factors. Physiotherapy management in managing chronic pain is evidence-based and plays an important role along the rehabilitation journey.

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Psychotherapeutic Interventions in Pain Management

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Pain has been a common symptom in daily psychiatric practice. Not many studies investigated the prevalence of pain in psychiatric patients. Deplaine et al. found that 38% of 227 psychiatric inpatients reported pain. (1) Chaturvedi identified pain in 18% of patients in a psychiatric department.(2) These studies showed that pain was more frequent amongst patients affected by neurosis, as compared with those suffering from psychotic disorders. Pharmacotherapy has been used to manage pain and its associated psychiatric problems. However, the role of psychotherapy in pain management has often been neglected.

The choice of psychotherapeutic interventions depends on the type of pain. For acute (pain for less than one month), continuous and chronic (pain for more than 6 months) pain, supportive psychotherapy could be considered. In supportive psychotherapy, the patient is allowed to express his/her worry and concern as a result of pain. The psychotherapist will offer comfort, reassurance and concrete coping strategies to the patient. In this way, the patient will feel that he/she is having support from others and is not suffering from pain alone. For continuous and chronic pain, cognitive behavioural therapy has been proven to be effective. (3)

In cognitive behavioural therapy, the patient is guided to understand the relationship between pain, thought, behaviour and feeling. Each of these components affects each other. The patient with chronic pain is educated to examine whether he/she has any automatic negative thought. Then, it is important to examine whether there are any thinking errors in these automatic thoughts. Examples of these errors include, 'my pain condition is so worse that it will never improve', 'nothing can help relieve my pain', 'the pain is getting much worse', 'it is my fault for not seeing a doctor earlier'. These automatic thoughts could lead to more pain and psychological distress. The patient would learn to restructure the negative cognition and appraise the pain condition in a realistic way. Apart from the cognitive aspect, relaxation training is another important part in cognitive behavioural therapy. This includes slow breathing exercise, progressive muscle relaxation and autogenic training such as guided imagery. The patient is assigned homework to practise his/her learnt skills in between the sessions and keep a record.

Furthermore, the level of activity may be restricted by pain. In patients with severe pain, they may become immobilized due to fear of aggravation of pain on movement. Finding an appropriate level of activity with advanced planning of rest periods is necessary. The patient should be advised to monitor the pain intensity during activity and have rest before pain becomes worse. Relapse prevention is also a component in cognitive behavioural therapy. The patient is educated to closely monitor the event which would increase the pain and lead to flare up of psychological distress. He/she is advised to carry out the techniques acquired in the psychotherapy.

Apart from cognitive behavioural therapy, there are other psychotherapeutic techniques which could be used in pain management. These include acceptance and commitment therapy, biofeedback, hypnotherapy and mindfulness. (4) Among these, acceptance and commitment therapy has been considered to be as effective as cognitive behavioural therapy for chronic pain. (5)

Acceptance and commitment therapy posits that pain reduction is not necessary for reduction in disability. The goal is to learn how to limit the control of pain it exerts over life and to accept and live with pain. This involves a shift of expectation from elimination of pain to living with pain. In face of negative experience associated with pain, the patient has to give up previous futile control-oriented strategies and adopt acceptance-oriented strategies. The patient is also encouraged to engage in valued activities which would bring satisfaction and meaning to life. A study showed that acceptance and commitment therapy resulted in reliable reduction of disability in chronic pain. (6)

In daily medical practice, some patients with pain are reluctant to accept a referral to a psychiatrist or a clinical psychologist for psychotherapy. They might be upset that the treating doctor thought the pain originates in their mind instead of being genuine physical pain. They also worry about being labelled as having psychological problem. Before a referral is made, the doctor has to explain the reason of referral in detail. The pain has to be acknowledged as something existing and real. Patients have to be educated that pain consists of several parts including attentional, cognitive, affective and social components. Patients have to keep an open mind in order to expect good outcome in psychotherapy.

A study was carried to compare different psychotherapy in chronic pain management. The result showed that psychotherapies have been effective and these included psycho-education, supportive therapy, behavior therapy, cognitive behavior therapy, acceptance and commitment therapy, biofeedback and relaxation therapy, hypnotherapy, guided imagery. (7) In patients with chronic pain, the role of psychotherapy shall not be neglected.

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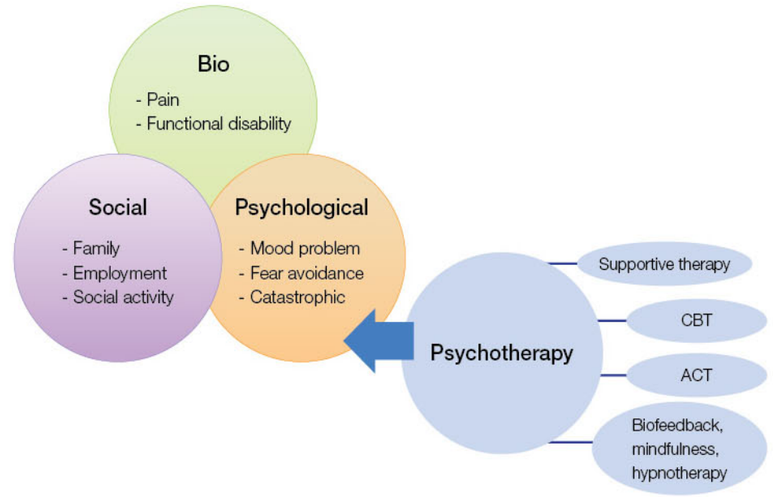

Activity Pacing Intervention to Patients with Knee Osteoarthritis (OA)

Terri Ng, Occupational Therapist (OT) I,
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Pain in OA

OA is the degenerative condition affecting the structure of the involved joints. The respective major symptoms of pain and joint stiffness inevitably hinder activity engagement. The nociceptive pain mechanism can be attributed to synovial inflammation, osteophytes development and bone marrow lesions (Felson et al 2001). The OA Patients with pain-related fear may develop avoidance behaviors and sedentary activity lifestyle. The undesirable effects of restricted physical activity pattern and inactive lifestyle aggravate the vicious cycle of pain experience and disability. OTs therefore aim to modify patients' passive and maladaptive coping in daily living.

Tailored Activity Pacing by Occupational Therapist (OT)

An OT-led activity-pacing program focused on facilitating engagement of purposeful and pleasurable activities. In clinical practices, the tailoring process begins with assessing the person's value system, the activity level and the environmental access. In order to empower patients' coping with the pain-related fear in activity participation, OTs introduce the four principles of activity pacing (taking breaks, scheduling breaks and activity, prioritization and preplanning). Activity pacing is a behavioral strategy that helps patients to break their cycle of disuse and disability over time (Murphy et al 2015). The effective application of activity pacing can be facilitated by specific goal-setting and feedback process. The use of the accelerometer and activity log sheet is crucial to understand the activity level of patients. OTs incorporate the concepts of activity pacing into the training which help patients adjust or re-schedule activities to lessen the impact of symptoms. The re-engagement of activity should satisfy the value system of patients and reduce the psychological fear from activity participation.

Example of OT management of an OA patient with sedentary lifestyle and avoidance behavior

A 52 year-old housewife have been suffering from OA knee pain for 2 years. She loved watching Korean TV programs and playing online Mahjong games. Data from the accelerometer showed she had low activity level. She spent the afternoon browsing IPAD for 3 to 4 hours daily. Before the onset of knee pain, she liked to go hiking and traveling with husband. However, she quitted the activities because of the fear of pain flare.

The case OT discussed the harmful effects of her prolonged inactivity, sedentary lifestyle and maladaptive coping behavior. At the same time, the case OT assessed her physical capacity and facilitated personal goal setting in each session. She was guided to schedule leisure walking with her husband in the evening to break the prolonged sitting pattern. The case OT analyzed her activities, in terms of the activity level, the duration and the frequency of activities. She began with 30 minutes for 2 days per week. She was advised to take breaks to minimize exacerbation of knee pain. She was monitored weekly for symptom flares. Her knee pain symptoms were fluctuating as expected during the intervention. But with the strategies learned during the OT sessions, she and her husband were able to adjust the goal each session. The patient's performance and achievement were recorded and seen in the accelerometer and retrieved each time.

At the end of the program, she reported that she gained the insight to the need of activity participation and was willing to apply the coping strategies in pleasurable activity, travel. The Scores in Pain Self-Efficacy Questionnaire (PSEQ) and Functional Assessment of Chronic Illness Therapy (FACIT) were improved after the program.

The Effectiveness of Tailored Activity Pacing on Patients with OA

In order to understand activity pacing, a study was conducted to look into its effectiveness. The aim of the study was to investigate the effectiveness of Tailored Activity Pacing (TAP) against General Activity Pacing (GAP) on symptom management in activity participation. GAP is an intervention that general pacing strategies were educated to the problematic activities in daily living. TAP is an intervention that case OT would intervene the activity through quantifying the frequency and duration of activities with goal setting in each session. Specific goal setting is the major difference between two pacing strategies. This goal setting involved the process of activity analysis, capacity evaluation, social and environmental consideration by the case OT.

Both groups of patients were reviewed on their symptoms and activities with accelerometer and activity log sheet during each session for four weeks. Patients with GAP would be educated on the pacing strategies to the identified symptom-induced activities or behavior. On the other hand, patients with TAP would undergo a process of goal setting and application of selected pacing strategies, with quantified duration and frequency, to activities or behavior. All Participants were recruited from the Comprehensive Osteoarthritis ManagEment Program (COME), which is a multidisciplinary rehabilitation program to patients with OA knee in MMRC.

Patients were randomly assigned to the group of GAP and TAP. The treatment effects were assessed by the change of PSEQ, and FACIT before and after the COME program. Wilcoxon Signed Ranks Test was used to analyze the outcome difference within two groups.

Among the 46 subjects recruited, there were 31 participants in TAP group and 12 participants in GAP. The results showed that there were significant improvements in PSEQ (Z=-3.21, p=0.001) and FACIT (Z=-3.88, p=0.000) of TAP after intervention. But these improvements were not seen in the group of GAP group. The study showed that the OT-led activity pacing strategies were effective to empower OA patients to manage the fatigue and pain symptom.

Implications for Occupational Therapy Practice

Activity pacing training is shown to be effective approach for activity engagement in the management of OA symptoms. OT–led activity-pacing intervention was effective in improving pain-efficacy and fatigue. It is recommended to investigate the long term effect of OT-led activity pacing in activity participation in the future study.

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EGZOTech DELTASON

Luna EMG

LunaEMG is an innovative rehabilitation device to fulfill the needs for neurological and orthopedic therapy.

Made in Poland

It can perform diagnostic tests (for EMG evaluation), assessments, exercises and games for isolated join or whole limb by force or EMG driven method.

Unique Features

Dynamic Resistance
Luna can dynamically change the resistance during training, allowing for isokinectic, isotonic and isometric exercises.

Reactive Electromyography (EMG)
With the 6 channel bio-electric amplifier, Luna can use EMG as a reactive signal for exercise.

Objective Diagnostics
With ROM, torque and biofeedback, Luna can be used an as assessment tools for patients, such as diagnostic EMG, spasticity test, force test, passive and active ROM and etc.

Magnetic Limbs Extensions
With the 4 included extensions, patients can exercise their shoulder/elbow/ wrist/ hip/ knee/ ankle with Luna.

Assessments and Interactive Training
Luna offers 6 diagnostic tests, including EMG evaluation and 10 rehabilitation programs.

Indications of Luna

- To increase muscle strength
- To increase the range of motion
- To increase coordination

Luna works perfectly for patients with

- Brain strokes or injuries,
- Incomplete spinal cord injuries, spina bifida,
- ALS, Multiple sclerosis,
- Duchenne's, Spinal muscular atrophy,
- Pelvic floor,
- Bone fractures,
- Early rehabilitation for post-surgical recovery, and more...

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