

accessibility of care; (2) to prevent acute back pain from developing into chronic pain and disability; (3) to employ a tailored-made early intervention programme to acute back patients with high risk of developing chronicity to prevent the development of chronic disability; and (4) to facilitate an early return-to-work for work-related injury patients.

Methods: A "pre-test" versus "post-test" design was employed. Inclusion criteria were as follows: (1) patients aged 18–65 years; (2) back pain for less than 8 weeks; (3) injury on duty; and (4) motivated to participate in the programme. Patients with high fear avoidance beliefs [Fear-Avoidance Beliefs Questionnaire (FABQ)-Physical Activity ≥ 14 and FABQ-Work ≥ 34] were invited to join the cognitive behavioural-based physiotherapy programme (CBT). Outcome measures were as follows: (1) Numerical Global Rating of Change Scale (NGRS) for subjective reported improvement; (2) Numeric Pain Rating Scale (NPRS) for intensity of pain; (3) Roland Morris Disability Questionnaire (RMDQ) for functional disability; (4) Hospital Anxiety and Depression Scale (HADS-Anxiety and HADS-Depression) for screening of anxiety and depression; and (5) FABQ-Physical Activity and FABQ-Work for fear-avoidance belief. SPSS software version 11 was used to analyse the data.

Results: From 13 August 2007 to 18 January 2013, a total of 566 patients (mean age 41.7 ± 23.9 years, 251 females and 315 males) with high fear avoidance beliefs were recruited. Out of them, 448 patients completed the CBT programme. All the outcome measures, including subjective reported improvement, intensity of pain, functional disability, anxiety and depression mood, and fear avoidance belief, were improved significantly. The mean value of NGRS was 6.9 ± 3.0 . The postprogramme evaluation of NPRS (from a mean value of 7 ± 1.7 to 4 ± 2.1 , $p < 0.001$), RMDQ (from a mean value of 15 ± 4.8 to 11 ± 6.5 , $p < 0.001$), HADS-Anxiety (from a mean value of 12 ± 4.4 to 11 ± 4.6 , $p < 0.001$), HADS-Depression (from a mean value of 12 ± 4.6 to 10 ± 4.6 , $p < 0.001$), FABQ-Physical Activity (from a mean value of 23 ± 3.1 to 18 ± 5.7 , $p < 0.001$), and FABQ-Work (from a mean value of 37 ± 2.5 to 29 ± 5.5 , $p < 0.001$) showed that these values were improved significantly. The return-to-work rate was found to be 55.1%.

Conclusion: The outcome of our study was found to be comparable with a similar study (Johnson et al, 2007), which demonstrated a change of 1.7 in the NPRS score and 3.2 in the RMDQ score in their intervention group using a cognitive behavioural approach to encourage self-management of back pain as well as a paced activity home programme. Therefore, it showed that a CBT programme with physiotherapy treatment is more effective than a pure CBT programme in terms of decreasing back pain, functional disability, fear-avoidance behaviours, anxiety, and depression mood in patients with work-related injury.

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Evaluation of a comprehensive empowering preoperative and postoperative physiotherapy management programme for patients with lumbar spine pathologies

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Background and purpose: Previous studies have revealed that pain was influenced by biological, psychological, and social factors. In particular, the psychological factor was found to have a significant impact on the outcome of elective spine surgery. Thus, a comprehensive empowering management programme was established for patients with lumbar spine pathologies in order to enhance their function after lumbar spine surgery with a physical conditioning programme, optimisation of their psychological preparation, and expectation management of the surgical outcomes.

The programme included preoperative physical assessment, education on the postoperative management, alignment of surgical outcomes by having a sharing session with the previously operated patients and a structured postoperative conditioning programme with reference to patients' psychological factors in terms of their level of anxiety and fear-avoidance beliefs. The objective of this study was to evaluate the effectiveness of implementing the comprehensive empowering programme in improving back pain, restoring functional activities, resuming work duties, and alleviating the psychological factors in anxiety and fear-avoidance beliefs for patients who underwent lumbar spine surgery.

Methods: Patients with lumbar spine pathologies including lumbar stenosis, spondylolisthesis, and prolapsed intervertebral disc (excluding those

with spinal cord injury), who had undergone a lumbar spine surgery, were recruited. The comprehensive empowering programme consisted of a preoperative education session and an intensive postoperative physiotherapy training session, which included pain relief, muscle strengthening, and cardiovascular and functional training. In the educational session, patients were educated on the expected outcome after surgery and the postoperative training programme in the acute and ambulatory phases. Regular meetings and follow-ups involving patients, surgeons, and physiotherapists were conducted to evaluate the patient's progress and to adjust the treatment plan accordingly. Outcome measures included the following: (1) Numerical Global Rating of Change Scale (NGRCS) for subjective improvement; (2) Numeric Pain Rating Scale (NPRS) for pain level; (3) Roland Morris Disability Questionnaire (RMDQ) for level of functional limitation due to back pain; (4) Fear-Avoidance Beliefs Questionnaire (FABQ) for fear-avoidance beliefs; and (5) Hospital Anxiety and Depression Scale (HADS) for anxiety and depression. Data were collected preoperatively, at the first postoperative session, and at the final physiotherapy session.

Results: From July 2008 to January 2013, 258 patients (151 males and 107 females; mean age 53.9 ± 12.3 years) with lumbar spine operation completed the programme. The mean number of physiotherapy sessions was 21 ± 11 , with an average duration of postoperative physiotherapy of 123 ± 71 days. The NPRS (from 6.1 ± 2.0 to 3.1 ± 2.1), RMDQ (from 13 ± 2.9 to 10 ± 5.3), FABQ-Physical Activity (from 19 ± 3.3 to 13 ± 3.2), FABQ-Work (from 26 ± 3.2 to 21 ± 3.1), and HADS-Anxiety (from 10 ± 4.6 to 5 ± 4.3) scores were improved significantly ($p < 0.05$) from the preoperative to the final physiotherapy session. Furthermore, the NPRS (from 4.2 ± 1.9 to 2.9 ± 2.0), RMDQ (from 14 ± 2.6 to 7 ± 3.8), FABQ-Physical Activity (from 17 ± 3.1 to 12 ± 5.5), and FABQ-Work (from 25 ± 3.1 to 19 ± 3.0) scores were also improved significantly ($p < 0.05$) from the first postoperative to the final physiotherapy session. In addition, the work status was improved significantly, as demonstrated by an increase in the percentage of working population from 21.3% to 48.1% due to improvement in pain and functional capacity. Subjective improvement, as measured by the NGRCS, was increased significantly ($p < 0.05$) from 4.9 ± 2.5 to 7.1 ± 2.1 from the first postoperative to the final physiotherapy session.

Conclusion: A comprehensive empowering pre- and postoperative physiotherapy management programme was found to be effective in improving back pain, restoring functional activities, resuming work duties, and alleviating the psychological factors in anxiety and fear-avoidance beliefs for patients undergoing lumbar spine surgery.

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Initiation of an early mobilisation programme in intensive care units—A preliminary report

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Background and purpose: Immobility is one of the causes for significant long-term impairment in critically ill patients. Several studies indicated that early mobilisation in intensive care units (ICUs) was safe and improved functional status upon hospital discharge. Structured mobility protocols with an early physiotherapy intervention have demonstrated a reduction of length of stay (LOS) in ICUs.

However, staff in local ICUs believed that mobilising the patients is clinically unsafe. This will probably delay the rehabilitation process and subsequently prolong the length of hospitalisation. Therefore, a programme of early mobilisation was implemented in local ICUs to demonstrate the effectiveness of early mobilisation on the length of hospitalisation and patients' functional status. The objective of this programme was to study the practicability of an early mobilisation programme in ICUs.

Methods: The target patient population of the first phase of this programme was patients who underwent open hepatobiliary surgeries (HBS) and required postoperative ICU care. Patients with unstable haemodynamics, frequent desaturation, recent acute myocardial injury or arrhythmia, and recent administration of inotropic agents were excluded. A four-level exercise protocol was established based on patients' conscious level and strength of large muscle groups. The protocol embraced a progressive regime, which ranged from a passive range of motion therapy, neuromuscular electrical stimulation, muscle-strengthening exercise to upright activities such as sitting at bedside, standing exercise, and ambulatory training. Upon discharge from the ICU, the progress of patients was followed in the general wards. The LOS in ICU,

postoperative LOS, modified functional ambulation category (MFAC) upon discharge, and discharge destination were documented.

Results: Over the 6-month period, nine eligible patients were recruited in the programme. This cohort was composed of five males and four females, with a mean age of 64 ± 3.7 years. Fifty-five per cent of patients started ambulation training at postoperative Day 3. The median LOS in ICU was 3 days. The median postoperative LOS was 8 days, which was shorter than the reported LOS of 9 days in the Surgical Outcome Monitoring and Improvement Program Report 2011. All the patients were able to attain mobility level at MFAC VII (outdoor walker) and were discharged home. No adverse event was noted during the intervention period.

Conclusion: This preliminary report demonstrated that early mobilisation in ICUs in a busy Hong Kong hospital environment was safe and potentially beneficial to the critically ill patients undergoing HBS. Therefore, the putative benefits in critically ill patients suffering from acute respiratory failure is worthwhile for further study so as to expand our knowledge about the effectiveness of early mobilisation in ICU.

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Navigating exercise programme for promoting an exercise habit of diabetic patients in a primary healthcare setting

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Background and purpose: In Hong Kong, diabetic mellitus (DM) is one of the major noncommunicable diseases. A healthy life style, which includes regular exercise, is a pivotal element in DM management. However, helping patients to establish a regular exercise habit in terms of ensuring exercise compliance is a real challenge to the medical professional. A physiotherapist has an important role in fostering patients to develop a regular exercise habit. A navigating self-weight management exercise programme using telephone coaching with empowerment by exercise coaching has progressively been commenced in the NTWC since June 2011 to facilitate DM patients to adopt behavioural changes in their sedentary life style. Such a navigating programme is implemented to identify the risk of the DM patients and establish a regular self-exercise habit for a good control of DM risk factors. The objectives of this programme were as follows: (1) to empower DM patients to establish an exercise habit and (2) to facilitate DM control through a self-exercise programme.

Methods: Type II DM patients with a body mass index (BMI) of over 27.5 were recruited. This programme with two training sessions and a 6-month telephone follow-up was launched from June 2011 to December 2012. The contents included individual consultation, physical assessment, risk identification, goal setting, education talk, and exercise skill training. In addition, the regular telephone coaching helped the patients go through the stages (from the preparation stage to the maintenance stage) of their behavioural changes.

The clinical outcomes were collected at baseline, and 6 months and 12 months after the programme. The exercise habit was evaluated by Short-International Physical Activity Questionnaire (IPAQ). The effect of weight management was monitored by BMI, whereas the DM control was evaluated by the change of glycated haemoglobin (HbA1c), which was retrieved from the clinical management system. A pre- and a post-quiz were conducted for checking the exercise knowledge of participants. A patient satisfaction survey was conducted to collect the patients' feedback.

Results: A total of 403 clients were enrolled. As reflected from the Short form-IPAQ, the total physical activity score increased from 4925 ± 6922 MET-min/wk prior to the programme to $7194 \pm 11,863$ MET-min/wk after the programme ($p < 0.05$). In addition, significant curtailing of the sitting activities was observed from 1962 ± 1096 min/wk prior to the programme to 1720 ± 882 min/wk after the programme ($p < 0.05$). Moreover, BMI (from 30.3 ± 2.8 to 29.7 ± 2.9 kg/m², $p < 0.05$) and HbA1c (from $7.4 \pm 0.1\%$ to $7 \pm 0.9\%$, $p < 0.05$) were also reduced significantly. Furthermore, there was a statistical significant advancement in the exercise knowledge (from a 61% preprogramme to 82% postprogramme, $p < 0.05$). Besides, the patient satisfaction survey showed that 97% participants had positive feedback towards the programme.

Conclusion: The navigating exercise programme using telephone coaching had significant positive effect in establishing a more active life style, weight management, and DM control for DM patients.

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Efficacy of whole-body vibration training on body function, activity, and participation poststroke: A systematic review

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Background and purpose: A systematic review was undertaken to determine whether whole-body vibration (WBV) training was effective in enhancing body function, activity, and participation compared with conventional therapy or active exercise in individuals with stroke.

Methods: An extensive search using major electronic databases (MEDLINE, CINAHL, PEDro, PubMed, PsycINFO, and Science Citation Index) was conducted to identify relevant articles. Experimental studies that examined the effects of WBV on outcomes related to body functions, activity, and participation were included in this review. The methodological quality of each selected randomised controlled trial (RCT) was rated using the PEDro Scale. The results of the selected articles were extracted and synthesised. **Results:** Among 1782 articles screened, 10 articles (9 studies) totalling 341 participants satisfied the selection criteria and were included in this review. Eight of these studies were RCTs, whereas one was a quasiexperimental study. Methodological quality was "excellent" for one RCT (PEDro score: 9–10), "good" for five (score: 6–8), and "fair" for two (score: 4–5). Three studies (two RCTs) examined the effects of a single session of WBV. Five RCTs examined the effects of a WBV programme spanning 3–12 weeks. No consistent benefits on bone turnover, leg muscle strength, functional mobility, balance, activities of daily living, and societal participation were found. No serious adverse event was reported.

Conclusion: This systematic review showed that research on WBV in stroke patients is relatively scarce. Available evidence does not support the use of WBV in enhancing body function, activity, and participation after stroke. More good-quality WBV trials are required to investigate further the therapeutic value of WBV in stroke patients.

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Transmission of vertical whole-body vibration with different frequencies and postures in healthy young adults

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Background and purpose: Whole-body vibration (WBV) could be a viable and inexpensive alternative for enhancing physical functioning. The transmissibility of WBV signals is known to be affected by vibration frequency, amplitude, and posture assumed on the platform. Studies investigating the transmissibility of WBV with a combination of varying vibration frequencies and postures have been lacking. The aim of this study was to investigate the effect of vibration frequencies and postures on the transmissibility of WBV.

Methods: Fifteen healthy young adults (8 men and 7 women, mean age 30.1 ± 4.4 years) participated in this study. Participants were asked to assume six different postures (erect standing, semisquat, deep squat, tiptoeing, forward lunge, and single-leg standing) under different vibration conditions (amplitude: 1 mm; frequency: 20 Hz, 30 Hz, or 40 Hz). Triaxial accelerometers were attached to the participants' ankle (medial malleolus), knee (tibial tuberosity), hip (greater trochanter), lumbar spine segment (L3), and forehead to record the accelerations of the WBV signals at the respective body parts. Transmissibility of WBV at each anatomical site was then calculated by dividing the acceleration at the specific body part by the acceleration measured at the platform. For each body part, the main effects of posture and frequency on transmissibility and their interactions were