

Abstract fra verdenskongres i Amsterdam 2011

Bilag til artiklen: Fysioterapi efter hjerteoperation og i forbindelse med cancer-rehabilitering

Stationary cycling is as effective as walking in phase I cardiac rehabilitation: a randomized-controlled trial

Hirschhorn A., Richards D., Mungovan S., Morris N., Adams L.

Purpose: The purpose of this study was to determine if cycling as effective as walking in Phase I cardiac rehabilitation (CR) after coronary artery bypass graft surgery (CABG).

Relevance: Physiotherapists routinely employ walking exercise in Phase I CR after CABG. While guidelines exist for Phase I CR exercise prescription, there are limited data investigating the optimal mode and dose of exercise to restore postoperative functional capacity. Stationary cycling may provide an effective alternative to 'traditional' graded walking programs.

Participants: Consecutive patients (n=64) awaiting first-time, non-emergency CABG at Westmead Private Hospital between August 2008 and July 2009 (mean age: 66±9 years, 57 men, 7 women) participated in the study. Exclusion criteria were concomitant surgery and musculoskeletal/neurological impairment precluding exercise testing/training.

Methods: Patients were randomly allocated to receive Phase I CR comprising either physiotherapy-supervised, moderate intensity stationary cycling or walking exercise. Ten-minute exercise sessions were scheduled twice-daily from the third postoperative day until hospital discharge. Primary outcomes, six-minute walk distance (6MWD) and six-minute cycle work (6MCW), were measured preoperatively and at hospital discharge by a physiotherapist blinded to group allocation. Secondary outcomes were postoperative length of hospital stay (LOS) and compliance with exercise training. For all completed training sessions the following data were recorded: i) cycle work or walk distance as applicable, and ii) exercise heart rate (HR) and blood pressure (BP).

Analysis: Repeated measures analysis of variance was used to compare stationary cycling and walking exercise groups for 6MWD and

6MCW. Non-parametric analysis of variance was used to test for differences in LOS. Generalised linear effects models were used to assess

the impact of i) group, postoperative day and time and their interaction on exercise training compliance, HR and BP; and ii) postoperative day and time on training cycle work and walk distance.

Results: Stationary cycling (n=32) and walking (n=32) exercise groups were well matched at baseline for demographic/anthropometric variables, 6MWD and 6MCW. At hospital discharge there was no significant difference between 'cyclists' and 'walkers' for 6MWD (402±93m vs 417±86m, p=0.803) or 6MCW (15.0±6.4kJ vs 14.0±6.3kJ, p=0.798). There

was no significant difference between groups for LOS (cyclists: median 7.0, IQR 7.0-8.5 days vs walkers: median 7.0, IQR 7.0-8.0 days, $p=0.335$). Training compliance was excellent and similar between groups (cyclists: 185/246, 75% of scheduled sessions attended vs walkers: 199/242, 82%, $p=0.162$). Training cycle work

(1.2kJ/session, $p<0.001$) and walk distance (46m/session, $p<0.001$) improved significantly and linearly with postoperative time. There were no significant differences between groups, or across postoperative time, for exercise HR and BP.

Conclusions: Stationary cycling provides a clinically effective alternative to walking exercise in Phase I CR after CABG. Compliance with physiotherapy-supervised Phase I exercise programs is excellent, regardless of exercise mode. The optimal frequency, intensity and duration of exercise in Phase I CR requires further investigation.

Implications: As stationary cycling facilitates both: i) measurement of hemodynamic data, and ii) titration and measurement of exercise intensity, future investigations of exercise dose might preferentially employ stationary cycling.

Physical activity promotes pulmonary recovery after cardiac surgery

Jonsson M., Westerdahl E.

Purpose: The aim of this study was to determine the relationship between lung function and postoperative self-reported physical activity after cardiac surgery.

Relevance: Lung function, measured with spirometry, declines with decreasing level of physical activity in all age groups in the general population. However, no studies have been published where the relationship between physical activity and lung function after cardiac surgery has been investigated.

Participants: A sample of 76 patients undergoing cardiac surgery was identified and followed up 2 months postoperatively.

Methods: Physical activity level was quantified using a categorical question about physical activity at work and during leisure time (no or sporadic exercise / regular exercise), and the International physical activity questionnaire for the elderly (IPAQ-E). Lung function was

measured by spirometry. The measurements were made preoperatively and 2 months postoperatively.

Analysis: The data were analyzed using descriptive statistics, Mann-Whitney U-test, and Pearson correlation analysis. The SPSS version 15.0 software package (SPSS Inc, Chicago, IL) was used for the statistical analysis.

Results: A sample of 63 male (83 %) and 13 female patients with a mean age of 68 ± 9 years was followed up 2 months after cardiac surgery. Preoperatively the lung function was normal with VC 105 % of predicted and FEV1 100 % of predicted. The patients had increased their self-reported level of physical activity two months postoperatively. Patients

with a higher level of physical activity showed a significantly better lung function two months after cardiac surgery (VC 95 % \pm 11 vs 91 % \pm 7 ($p = 0,043$) and FEV1 93 % \pm 8 vs 89 % \pm 6 ($p = 0,008$)). No correlation was found between IPAQ-E and spirometric values.

Conclusions: This study demonstrates that physical activity has an impact on postoperative lung function. Besides the well-established positive cardiovascular effects of physical activity, our result shows that physical activity also has a beneficial effect on the pulmonary recovery after cardiac surgery.

Implications: To improve pulmonary recovery after cardiac surgery, patients would benefit from engaging in regular exercise.

Effects of inspiratory muscle training compared with active cycle of breathing techniques and usual care in coronary artery bypass surgery

Savci S., Arıkan H., Saglam M., Inal-Ince D, Degirmenci B., Turan H.N., Demircin M.

Purpose: The aim of the study was to determine the effects of inspiratory muscle training (IMT) and compared with the active cycle of breathing techniques (ACBT) and usual care on postoperative pulmonary function, respiratory muscle strength, and functional capacity among patients with coronary artery bypass graft (CABG) surgery.

Relevance: Cardiopulmonary dysfunction is common in patients with post-CABG surgery. Chest physiotherapy and mobilization are frequently used treatment techniques by physiotherapist to prevent post-operative pulmonary complications. The IMT can be implemented in the perioperative care of CABG surgery.

Participants: Seventy-three patients undergoing CABG surgery were randomly assigned to one of the three groups: IMT group ($n=23$), ACTB group ($n=25$), and usual care (control) group ($n=25$).

Methods: The study was a single-blinded, randomized controlled trial. Pulmonary function testing, respiratory muscle strength, and 6- minute walk test (6MWT) were assessed preoperatively and the fifth day after the surgery. Subjects in all groups received the same usual care once daily. The ACBT and IMT group trained daily, 2 times per day for 10 days (5 days in preoperative period, 5 days in postoperative period). The ACBT consisted of 1-2 breathing control breaths, three thoracic expansion exercises followed by a 3-second breath hold at the end of deep inspiration, and the forced expiration technique. Each IMT session consisted of 30 minutes of inspiratory muscle training under the supervision of a physiotherapist. The patients were trained to use an inspiratory threshold-loading device. The patients started breathing at a resistance equal to 15% of their maximal inspiratory pressure. The resistance was increased incrementally between 15 and 45% based on patients' tolerance in the following days.

Analysis: Comparisons between groups were performed with the one-way ANOVA followed by Tukey's b post-hoc test. The statistical tests were 2-sided and $p < 0.05$ was considered statistically significant.

Results: There were no significant differences in age, gender, and surgical procedures among the groups ($p>0.05$). Inspiratory and expiratory muscle strength, and six-minute walk distance were significantly higher in IMT group compared with the other techniques ($p<0.05$). Intensive care unit stay was significantly shorter in IMT group compared with the other techniques ($p<0.05$). Inspiratory and expiratory muscle strength were also significantly higher in the ACBT group compared with the control group ($p<0.05$).

Conclusions: The IMT results in a faster recovery of inspiratory muscle strength and functional capacity compared with ACBT and usual care after CABG.

Implications: Improvements in functional capacity and respiratory muscle strength may lead patients to participate activities of daily living. Further study is needed to determine the effects of longer inspiratory muscle training on postoperative pulmonary complications and disease specific quality of life in patients undergoing CABG with a wider sample size.

The predictive value of the timed-up-and-go on disability in older patients 1-year after coronary artery bypass surgery

LaPier T.

Purpose: The purpose of this study was to evaluate the ability of outcome measures used at the time of hospital discharge to predict disability in patients 1-year after coronary artery bypass (CAB) surgery. A secondary purpose was to examine the relationship between disability,

exercise self-efficacy, habitual physical activity (PA), and cognitive function in older patients 1-year following CAB surgery.

Relevance: Older patients recovering from CAB surgery are especially susceptible to disability and activity restriction. Development or progression of disability often occurs after hospitalization or restricted activity. Hospitalization itself may contribute to progression of disability in vulnerable populations.

Participants: This prospective longitudinal study included 27 people, over the age of 65 years, who had undergone CAB surgery and were within 48 hours of hospital discharge. Subjects were consecutive volunteers recruited from a regional medical center. Exclusion criteria included significant cognitive deficit, stroke following CAB surgery, and inability to stand from chair or walk without > moderate (50%) assistance with or without assistive device.

Methods: Multiple domains of functional status were examined just prior to hospital discharge including balance ability (Timed-Up-and-Go (TUG)), endurance / aerobic capacity (2 Minute Walk Test), strength performance (Hand Grip Force, Timed Sit-to-Stand), cognitive function (Telephone Interview of Cognitive Status-Modified), and psychosocial function (Center for Epidemiological Studies Depression Scale). One year follow-up outcomes were obtained via phone interview and included measures of disability (Disability Index), habitual PA (Baecke PA Questionnaire), and exercise self-efficacy (Self Efficacy for Exercise Behavior Scale).

Analysis: Data analysis consisted of descriptive statistics, correlations, and regression analysis ($P < 0.5$).

Results: We found correlations between disability and both habitual PA ($r = -0.63$) and cognitive function ($r = -0.38$) scores at 1-year following CAB surgery. When evaluating the baseline scores relative to 1-year outcomes, we found correlations between scores on baseline TUG and disability ($r = 0.68$) and between TUG and habitual physical activity ($r = -0.61$). Also, cognitive function at hospital discharge was correlated with 1-year habitual physical activity ($r = 0.59$). Regression analysis of baseline TUG with 1 year disability showed a significant adjusted R square = 0.44 with 95% confidence intervals of -4.75 lower and -0.66 upper.

Conclusions: Results suggest that there is a relatively strong relationship between disability and habitual PA level 1-year following CAB surgery. Also, baseline TUG scores are related to both disability and habitual physical activity level 1 year after CAB surgery. Furthermore baseline TUG scores seem to be moderately predictive of 1-year disability in this patient population. Interestingly baseline cognitive function was related to 1-year habitual physical activity possibly indicating that ability to retain health information is related to behavior change, especially in an acute setting.

Implications: The TUG may be useful in predicting future disability in older patients after CAB surgery. Being able to identify patients recovering from CAB surgery who are vulnerable to subsequent disability, would allow physical therapists to better identify and advocate for appropriate rehabilitation services following hospital discharge.

VALIDATION OF AN INSTRUMENT TO DETECT KINESIOPHOBIA (FEAR OF MOVEMENT) AMONG PATIENTS WITH CORONARY ARTERY DISEASE

Bäck M., Cider Å., Herlitz J., Lundberg M.

Purpose: The aim of the study was twofold; firstly to examine the reliability and validity of the Tampa Scale for Kinesiophobia Heart (TSK- SV Heart), and secondly to investigate the occurrence of kinesiophobia among patients with coronary artery disease (CAD).

Relevance: Kinesiophobia, i.e. debilitating fear of movement, in relation to CAD is a well-known clinical phenomenon. It is, however, not known which role kinesiophobia plays for the level of physical activity in patients with CAD. Further, there is no measure available to detect kinesiophobia among patients with CAD.

Participants: The study consisted of 333 patients (75 women), age 65 ± 9.1 years, with CAD who attended the medical department at Sahlgrenska University Hospital between year 2007-2009. Exclusion criteria were death during the hospital period, serious diseases interfering participation in the study and inability to understand the Swedish language.

Methods: The patients were asked to fill in the TSK-SV Heart, which comprises of 17 items that assess the patient's subjective rating of kinesiophobia. An operational definition of kinesiophobia was defined as TSK-SV Heart >37 points. The reliability test included stability over time, internal consistency and homogeneity. The test of validity comprised face validity, content validity and construct validity.

Analysis: The Intraclass Correlation Coefficient (ICC) and the Pearson product-moment correlation coefficient were used for the test- retest calculation. Internal consistency was calculated by a Cronbach's alpha coefficient and the corrected item total correlation coefficient was used to assess the homogeneity of the TSK-SV Heart. In order to test face validity a panel of experts were asked to assess the TSK- SV Heart. Five physiotherapists with experience from working with patients with CAD were asked to judge the content validity of the TSK- SV Heart. In order to analyse the construct validity an explorative factor analysis was used.

Results: In terms of reliability the TSK-SV Heart was found to be stable over time (ICC 0.84). Moreover, the internal consistency was good (Cronbach's alpha 0.84). In terms of validity the TSK-SV Heart was considered to have face and content validity. The factor analysis indicated a five-factor solution. Thirty percentage of the patients had kinesiophobia (TSK-SV Heart >37 points).

Conclusions: TSK-SV Heart seems to be reliable and valid and could therefore be used to detect kinesiophobia in patients with CAD. One third of a sample of patients with CAD suffered from kinesiophobia, which might negatively impact the patients' future level of physical activity and exercise. The challenge for the future is to further consider the meaning of kinesiophobia for patients with CAD and to find a possible treatment.

Implications: The opportunity to detect kinesiophobia in patients with CAD with a reliable and valid questionnaire will hopefully be a first step towards an efficient treatment for these patients, which could enhance the adherence to physical activity and exercise.

Exercise and cancer: the evidence to date and future direction

Hussey J., Walsh J., Feeney C., Mc Neely M., Kilbreath S.

Learning objectives: 1. Understand the evidence for physical activity /exercise in the prevention of cancer, the management of the side-effects from its treatment and in increasing physical performance in order to improve medical and surgical outcomes. 2. Understand the specific challenges in implementing exercise programs for patients with cancer and survivors 3. Discuss how the evidence presented can be used to guide future research, clinical practice and education of physical therapists working in the cancer area.

Description: Cancer management poses an enormous global challenge. Estimates predict that cancer will to be the biggest worldwide killer by 2010. While some cancers such as lung cancer are still associated with significant morbidity, developments in screening and medical management have improved the longevity of many persons with cancer to such an extent that in many cases this disease is now considered in terms of its chronicity. For example, five year survival for breast cancer is now almost 90%. Medical management for cancer ranges from active monitoring of the disease to surgery, radiotherapy, chemotherapy, and hormone treatment. Both the surgery and the adjuvant therapies used in treatment of the disease can cause short and long-term physical and psychosocial side-effects. These impairments can be local, such as pain around the area of surgery, or systemic such as fatigue associated with chemotherapy.

Physical activity and exercise are important throughout cancer care. The benefits of exercise range from prevention up to and including management of symptoms in palliative care. There is a significant role for physical therapists throughout the cancer trajectory. This is particularly so with regard to symptom management of the side-effects experienced as a result of both primary and adjuvant treatments such as lymphoedema, pain, weakness, fatigue and reduced functional status.

Implications/conclusions: As specialists in exercise assessment and prescription, physical therapists are well placed to prescribe exercise programmes for patients with cancer and cancer survivors. Specifically-tailored exercise programmes can be beneficial in managing some of the psychosocial symptoms often associated with diagnosis and treatment of cancer such as anxiety and depression. Engaging in regular physical activity is important in the prevention of obesity and secondary diseases such as cardiovascular disease and osteoporosis, which may occur as a result of sedentary behaviour or reduced physical functioning following cancer treatment. Other emerging roles for physical therapists include health promotion in the prevention of this disease, assessment of physical performance and function to aid clinical decision making, 'prehabilitation' to optimize physical capacity prior to surgery/medical management in order to improve outcome.

Early physical exercise and walking in icu: accept the challenge!

Perme C., Jones A., van der Schaaf M.

Learning objectives: 1. Understand evidence-based literature available related to early rehabilitation of patients in the ICU. 2. Understand the importance of therapeutic exercises in the management of patients in ICU. 3. Identify patients who would benefit from an early physical exercise and walking program in the ICU.

Description: Physical therapists working with patients in Intensive Care Unit face a complex challenge. These patients have limited mobility due to life support, monitoring equipment, multiple medical problems and muscle weakness. For selected patients in ICU, early physical exercise and walking enhances functional outcomes by optimizing cardiopulmonary and neuromuscular status. Early mobility can lead to an increase in the patient's quality of life and higher functional capability. It can also potentially reduce length of hospital stay with overall reduced costs. The content of this symposia will demonstrate how early physical exercise, mobility and a walking program can positively impact the recovery of selected patients in the ICU.

Implications/conclusions: The content of this symposia will guide physical therapists through the process of managing adult ICU patients with primary focus of improving functional outcomes.