Evaluating a community-based walking intervention for hypertensive older people in Taiwan: a randomised controlled trial.

Lee, L-L. Nottingham Ph.D. 2006 G3 56-1738

A total of 202 participants aged 60 years and over with mild to moderate blood pressure were randomised to receive usual primary care involving self-initiated contact with health services as required (n=100) or a six-month Jian Community-based Walking Intervention underpinned by self-efficacy theory to enhance the participants’ confidence regarding starting and maintaining regular walking (n=102).

At six-month follow-up, the mean change in systolic blood pressure was 7.0 mm Hg lower in the intervention group than the control group (95% confidence interval, -11.5 to -2.5 mm Hg, p=0.002). Mean improvement in Self-efficacy for Exercise scores was 1.2 points higher in the intervention group than in the control group (95% confidence interval, 0.5 to 2.0, p=0.001).

A post-trial interview study (n=22) was conducted to discuss participants’ beliefs about walking and their experience of being in the study. Analysis of the interview data revealed several key elements in the intervention (such as the use of the self-efficacy theory, the regular contact provided by the public health nurse, and the provision of pedometer and walking log), which appeared to be influential in motivating participants’ regular walking. Participants’ perceived benefits from undertaking a period of regular walking were stated as influential in maintaining their regular walking.

The Jian Community-based Walking Trial appeared to lower systolic blood pressure among hypertensives. Public health nurses can play an important role in managing older people with raised blood pressure through community-based walking intervention programmes using self-efficacy theory. Future work is needed to investigate what other types of physical activity intervention are effective in reducing blood pressure and to determine the optical level of physical activity to bring about this goal.

A pragmatic randomised trial of exercise training in older people with heart failure.
Chronic heart failure is common in older people, and carries a substantial burden of morbidity and mortality. Studies of exercise training in younger heart failure patients suggest that it can improve symptoms and exercise capacity, improve quality of life, modify the pathophysiological features of heart failure and reduce death and hospitalisation. Few studies have been carried out in older, frail heart failure patients with comorbid disease, thus the feasibility and usefulness of exercise training is unknown in this group.

82 patients aged 70 and over with a diagnosis of chronic heart failure and proven left ventricular systolic dysfunction were enrolled into a single-blind randomised controlled trial. Patients in the exercise group received three months of progressive seated exercise training in outpatient classes, followed by three months of exercise in their homes. The control group received usual care.

The exercise classes were well tolerated, with no adverse incidents and an 80% attendance rate. Compared to the control group, patients in the exercise group showed a 16% improvement in daily activity as measured by triaxial accelerometry at six months. There were no significant differences between the control and exercise groups at follow up for exercise capacity as measured by six minute walk distance, or for health-related quality of life, physical function scores or morale scores.

This study has shown that a seated exercised programme for older, frail heart failure patients is safe, well tolerated, and leads to improvements in daily activity. Further work is required to optimise the effect of an exercise intervention on exercise capacity and quality of life.

Modification of the age-related changes in cardiovascular structure and function using exercise training.

Oxenham, H.C. Edinburgh M.D. 2005 G2f 55-4295

Increasing age is associated with substantial change in cardiovascular structure and function, the cause and permanence of which are unknown. Diastolic function in particular alters appreciably in older adults but non-invasive measurement of cardiac function during diastole has significant limitations. Magnetic resonance imaging with tagging was used to identify changes in three dimensional myocardial strain in older compared to young normal volunteers. This technique identified significantly delayed myocardial relaxation with more myocardial strain persisting in early diastole in older compared to younger individuals, which was brought to be due to the aging process.

Epidemiological studies and small, non-randomised trials suggest that physical activity might slow cardiovascular aging and improve diastolic function in older adults. A randomised controlled trial was therefore performed to assess whether exercise training could modify age-related changes in older, normal volunteers who had undergone screening tests to exclude significant cardiovascular disease. The intervention group underwent six months of supervised exercise training whilst participants in the control group were asked to maintain
their pre-trial levels of activity. Measurements made at baseline and after six months included transthoracic echocardiography, cardiac MRI, body composition, blood lipid concentrations, applanation tonometry, quality of life and maximal exercise capacity.

Despite significant increases in exercise capacity following exercise training in the intervention group, no other significant changes in the cardiovascular structure or function, body composition, cholesterol concentration or quality of life were observed when compared to changes seen in the control group. Six months of exercise training in previously sedentary older adults are insufficient to modify cardiovascular function and structure despite causing marked improvements in exercise capacity. These findings contrast with previously reported non-randomised trials of exercise training in older people. However, they add important, robust information regarding the likely effects of short periods of exercise training on cardiovascular function and structure in older normal adults.

The role of physical activity and other lifestyle factors in the epidemiology of osteoporosis.

Coupland, C. Nottingham Ph.D. 2004 G2p 54-14057

Case-control studies of hip fracture patients were conditioned to assess whether leisure activity or occupational activity are associated with hip fracture risk. A cohort study also examined the effect of physical activity on hip fracture risk in older people. A cross-sectional study was used to investigate whether physical activity is related to a reduced risk of falls. A further cross-sectional study, comprising baseline data from a randomised controlled trial of bone loss, was used to determine associations between measures of physical activity and bone mineral density in postmenopausal women. The role of other lifestyle factors in relation to bone mineral density was also examined in this study.

The case-control studies of hip fracture found that physical activities such as standing and walking were associated with a reduced risk of hip fracture, independent of disability and other potential confounding variables. Sedentary work at the age of 50 was associated with a three-fold increased risk of hip fracture later in life, compared with employment in more active occupations. Increasing levels of activity and muscle strength were associated with a reduced risk of falling in older people.

In the study of bone mineral density in postmenopausal women, the specific physical activities of daily living which showed the strongest associations with bone mineral density were brisk walking and stair climbing. Further positive associations with bone mineral density were identified for early use of oral contraceptives and hysterectomy status. Negative associations were found for cigarette smoking and a family history of fracture.

The results from these studies some that increasing levels of physical activity may contribute to the maintenance of bone mineral density after the menopause, and offer protection from hip fractures and falls in later life.
A randomised controlled trial of the effects of exercise on depressive symptoms in older people with poorly responsive depressive disorder.

Mather, A.S. Dundee M.Sc. 2002 G6s 51-16429

No abstract.

Exercise, the microcirculation and type 2 diabetes.

Elston, L.M. Exeter and Plymouth, Peninsula Medical School Ph.D. 2004 G6h 55-12106

An increase in cardiovascular risk and an impairment of microvascular function is seen in those with type 2 diabetes. Microvascular dysfunction precedes diagnosis of type 2 diabetes, is linked to cardiovascular risk factors and is the first step in the development of microangiopathy. Exercise impacts beneficially on many cardiovascular risk factors associated with diabetes including glycaemic control and insulin sensitivity. It is yet to be determined whether long-term aerobic exercise attenuates microvascular dysfunction in this population.

The aim of this randomised controlled trial was to examine the effect of a personalised, 6-month aerobic exercise programme on microvascular function in type 2 diabetes. Microvascular endothelial and smooth muscle cell function was determined by the local application of acetylcholine and sodium nitroprusside to the skin and the maximum achievable hyperaemia was measured following local heating. These, in addition to tests to establish aerobic fitness, cardiovascular risk and insulin sensitivity, were performed before and after the 6-month period. Additional aims were to explore the potential of the Physical Activity Scale for the Elderly (PASE) questionnaire as a surrogate measure of aerobic fitness and to examine the relationship between changes in microvascular function and changes in body weight and low-density lipoprotein (LDL) cholesterol concentration over 6-months.

The exercise intervention did not significantly improve fitness, cardiovascular risk status or microvascular function. Possible explanations for this lack of effect are discussed throughout the thesis.

Developing evidence-based health promotion interventions.

Hill, C. Sussex D.Phil. 2008 B5c 58-889
Focusing on modifiable cognitive antecedents of behaviour is likely to maximise the effectiveness of behaviour change interventions. The theory of planned behaviour (TPB) is the most widely applied model of cognitive antecedents of behaviour but there have been surprisingly few tests of the theory in trials of TPB-based behaviour change interventions. Three studies tested the utility of the TPB as a basis for the design of health promotion leaflets targeting condom use and regular exercise among young people.

Study 1 reports a randomised controlled trial (RCT) of an extended TPB-based leaflet plus quiz and motivational incentive designed to promote condom use and preparatory behaviours amongst young people. The intervention promoted pro-condom use cognitions and preparatory actions, compared to a control condition but did not increase condom use.

Study 2 reports the results of a RCT conducted to evaluate the effect of a TPB-based leaflet designed to encourage young people to exercise. The leaflet was evaluated on its own, in combination with a quiz and motivational incentive and in combination with an implementation intention formation activity. Results revealed no significant differences in cognitions or behaviour between the three intervention groups when compared to the control. This is discussed in terms of ceiling effects in the target behaviour (exercise).

Study 3 evaluated the effectiveness of a shortened 2 page TPB-based leaflet designed to encourage exercise among an older group of young people. All three leaflet interventions significantly increased reported exercise, intention to exercise and TPB-specified cognitions, compared to the control. Mediation analysis showed that intervention effects on exercise were partially mediated by the impact of intervention conditions on intention and that intervention effects on intention were partly mediated effects on TPB-specified cognitions.

Applying the theory of planned behaviour and the commonsense model of self-regulation to fitness, activity and treatment adherence in elderly patients with congestive heart failure.

Gao, C. Aberdeen Ph.D. 2006 G6h 56-12419

Exercise has been recognised as a valuable treatment and has proved to be beneficial in CHF. The present study applied the Theory of Planned Behaviour (TPB) and the Commonsense Model of Self-regulation to fitness, daily activity and medication-adherence in elderly patients with CHF. The study was in parallel with a randomised controlled trial of a 3-month exercise programme. A TPB questionnaire was used at baseline and at 3 months. Illness representations were assessed by IPQ-R at baseline. Fitness (measured by 6 minute walk test) and daily activity (measured by an accelerometer) were assessed at baseline, 3 and 6 months. ACEI-adherence (assessed by measuring serum ACE level) was assessed at baseline. The main findings from 81 CHF patients (mean age = 81 years) showed that Subjective norm (SN) was the only predictor of Intention (INT) at baseline; Attitude, Perceived behavioural control (PBC) were predictors of INT at 3 months; fitness was
predicted by PBC at 3 months. The exercise intervention led to significant changes in
*Attitude* and *PBC*. The finding also indicated that the participants were more likely to
attribute their illness to *Chance, Biological factors* and *God. Identity and Illness coherence*
predicted fitness, and *Consequences* predicted daily activity. Participants who believed that
their illness was chronic or serious were less likely to adhere to ACEI medication. A further
finding suggested that illness representations, as background factors, may influence *Intention*
directly or indirectly by impacting on *Attitude, SN* and *PBC*, and *Personal control* may be
partially mediated by *SN* to influence *INT* and *Behavioural self-blame* was fully mediated by
*SN* to influence *INT*.

**A comparison of cardiac rehabilitation versus standard care in elderly patients with heart failure. (BL: DXN067627)**

Austin, J. Glamorgan Ph.D. 2003 G4 53-6349

Set in a district general hospital with a primary catchment area of 500,000 inhabitants, this
study is among the first of its type in the U.K. The study evaluates the effects of a cardiac
rehabilitation programme on range of outcome measures: morality, health related quality of
life, functional change, health care utilisation and clinical status. The design is a randomised
controlled trial, comparing cardiac rehabilitation to standard care.

Two hundred patients (60 - 89 years, 66% male) were recruited from hospital clinics, wards,
and general practice. Patients with NYHA II or III heart failure confirmed, by
ehocardiography, were randomly allocated to control or experimental groups. Both patient
groups attended out patient appointments to see the specialist nurse and cardiologist every
eight weeks. In addition, patients in the experimental group attended cardiac rehabilitation
classes twice weekly for eight weeks, followed by weekly exercise sessions for 16 weeks.
Intervention consisted of exercise prescription, education, dietetics, occupational therapy and
psychosocial counselling. A selection of measures were used to collect data over six
months: Minnesota Living with Heart Failure (MLHF), New York Heart Association
(NYHA) perceived exertion (RPE), medication compliance monitored by ACE inhibition,
routine biochemistry, prescribed medication, coronary risk factor status, medical records and
patient diaries.

Results show statistically significant improvements for the experimental group in comparison
to control patients. Improvements were identified in health related quality of life, functional
status, meters walked and patient cost utility; a reduction in hospital admissions attributable
to heart disease was evident. No statistical difference between patient groups was evident in
mortality, contact with primary health care professionals, compliance and clinical status. The
findings are discussed in terms of previous rehabilitation studies.

In conclusion, this study describes the necessary infrastructure and provides an evidence base
for implementing a successful multidisciplinary cardiac rehabilitation programme in a district
general hospital.