Does Low Intensity Exercise Improve Physical Performance among Cardiac Survivors?

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Rehabilitation Physician

Intro..

- Physical inactivity remains a global problem, particularly in clinical populations such as coronary heart disease (CHD) patients
- A recent meta-analysis including >1,000,000 individuals found that individuals who are inactive and sit the most have the highest risk for mortality

Ekelund U, Steene-Johannessen J, Brown WJ, et al. Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women. Lancet 2016;388:1302–10.

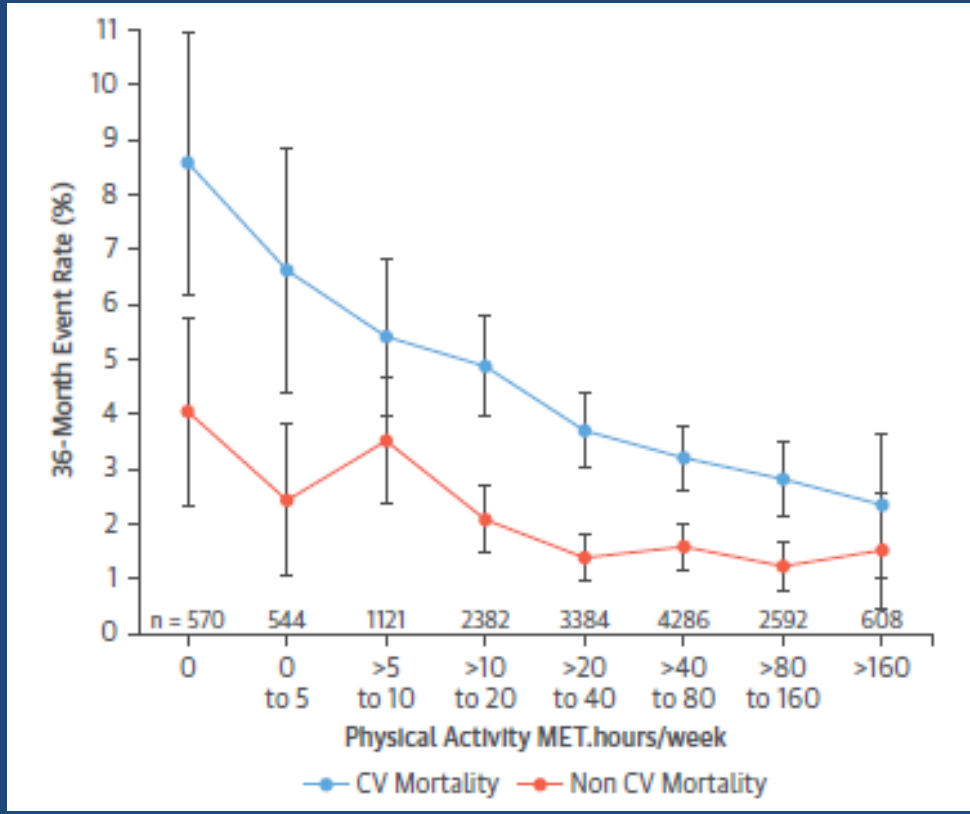
Intro..

- The typical CHD patient usually performs little regular exercise and sits much of the time
- Strategies to increase physical activity (PA) and decrease sitting in high-risk populations such as CHD patients are therefore needed
- Current guidelines prescribe similar PA recommendations for primary and secondary prevention
- Studies do not inform on the minimal dose, optimal dose, and potential upper limit of PA to reduce cardiovascular morbidity and mortality

Physical Activity Guidelines Advisory Committee. Physical Activity Guidelines Advisory Committee Report. Washington DC, U.S.: Department of Health and Human Services. 2008. Available at: https://health.gov/paguidelines/report/pdf/ CommitteeReport.pdf Accessed July 27, 2017.
Fihn SD, Gardin JM, Abrams J, et al. 2012 ACCF/ AHA/ACP/AATS/PCNA/SCAI/STS Guideline for the diagnosis and management of patients with stable ischemic heart disease: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, and the American College of Physicians, American Association for Thoracic Surgery, Preventive Cardiovascular Nurses Association, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. J Am Coll Cardiol 2012;60:e44–164.
O'Gara PT, Kushner FG, Ascheim DD, et al. 2013 ACCF/AHA guideline for the management of ST-elevation myocardial infarction: a report of the American College of Cardiology Foundation/ American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2013;61:e78–140.

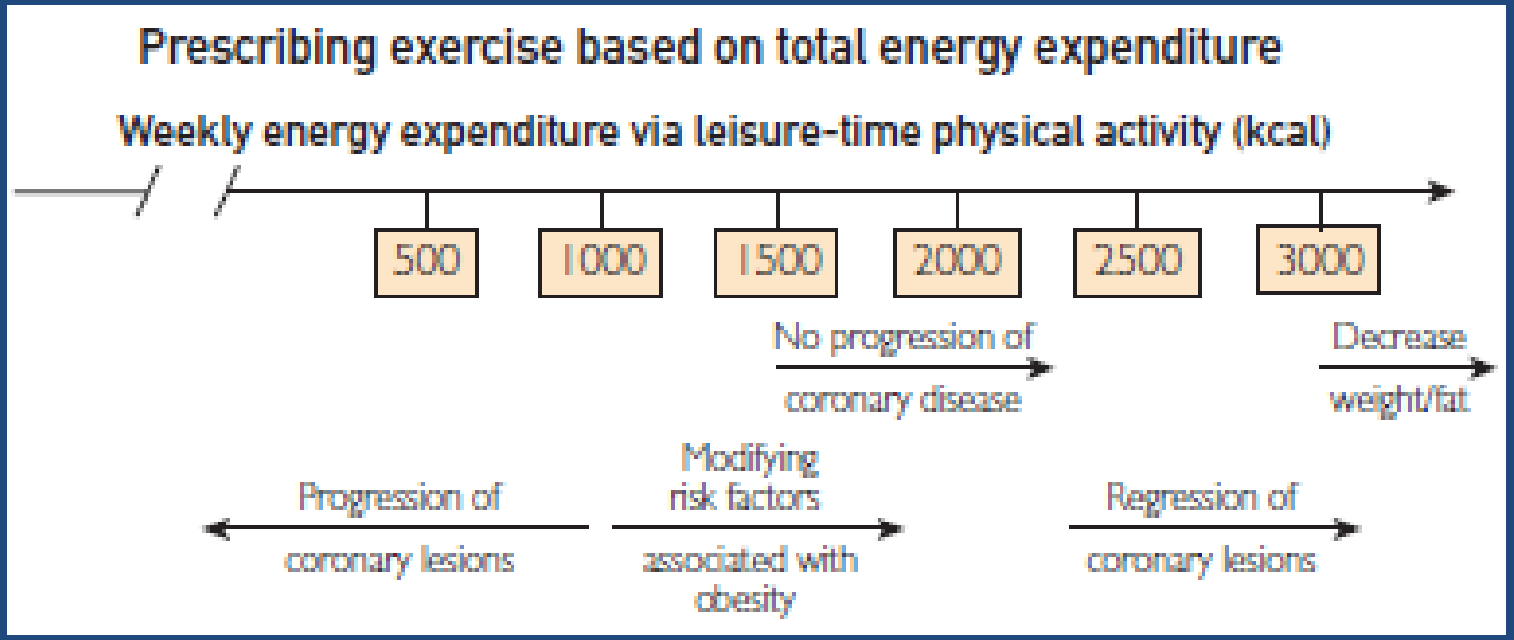
Associations Among the Volume of Mild, Moderate, and Vigorous Physical Activity and CV and Non-CV mortality

- Stewart et al. suggest that as little as 10 min/day of brisk walking (i.e., 3.5 mph) is associated with a 33% risk reduction for all-cause mortality
- For those unable to walk at a brisk pace, 15 to 20 min/day at a slower pace (2 to 2.5 mph) will yield similar benefits



Stewart RAH, Held C, Hadziosmanovic N, et al., on behalf of the STABILITY Investigators. Physical activity and mortality in patients with stable coronary heart disease. J Am Coll Cardiol 2017;70: 1689–700.

Impact of the amount of physical activity (kilocalories per week) on angiographic, risk factor, and weight loss outcomes associated with exercise-based cardiac rehabilitation.



Mayo Clin Proc. n May 2013;88(5):431-437 http://dx.doi.org/10.1016/j.mayocp.2013.03.009
www.mayoclinicproceedings.org

Definition

- **Physical activity** is any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level
- **Exercise** is a subcategory of physical activity that is “planned, structured, and repetitive and purposive in the sense that the improvement or maintenance of one or more components of physical fitness is the objective”
- **Intensity**. Intensity refers to how much work is being performed or the magnitude of the effort required to perform an activity or exercise

Classification of Physical Activity Intensity

Endurance Type Activity — Relative Intensity

Intensity	Percent VO_2R* Percent HRR	Percent HR_{max}*	RPE†
Very Light	<20	<50	<10
Light	20-39	50-63	10-11
Moderate	40-59	64-76	12-13
Hard	60-84	77-93	14-16
Very Hard	≥85	≥94	17-19
Maximal	100	100	20

Physical Activity Guidelines Advisory Committee. Physical Activity Guidelines Advisory Committee Report, 2008. Washington, DC: U.S. Department of Health and Human Services, 2008

Classification of Physical Activity Intensity (continued)

Endurance Type Activity — Intensity (METs and %VO2max) in Healthy Adults Differing in VO2max

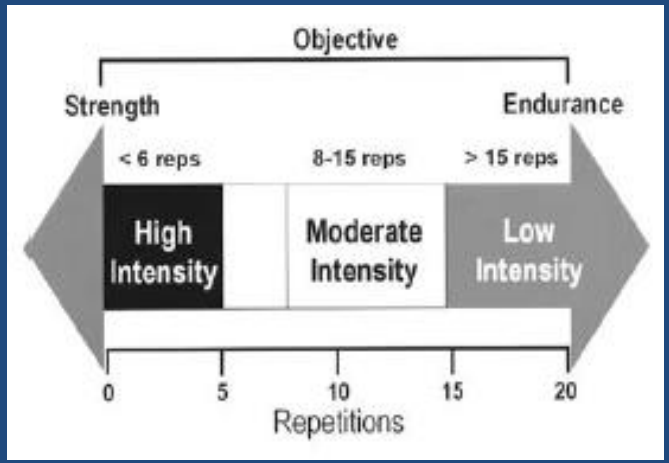
Intensity	VO_{2max} = 12 METs METs	VO_{2max} = 12 METs Percent VO_{2max}**	VO_{2max} = 10 METs METs	VO_{2max} = 10 METs Percent VO_{2max}	VO_{2max} = 8 METs METs	VO_{2max} = 8 METs Percent VO_{2max}	VO_{2max} = 5 METs METs	VO_{2max} = 5 METs VO_{2max}
Very Light	<3.2	<27	<2.8	<28	<2.4	<30	<1.8	<36
Light	3.2-5.3	27-44	2.8-4.5	28-45	2.4-3.7	30-47	1.8-2.5	36-51
Moderate	5.4-7.5	45-62	4.6-6.3	46-63	3.8-5.1	48-64	2.6-3.3	52-67
Hard	7.6-10.2	63-85	6.4-8.6	64-86	5.2-6.9	65-86	3.4-4.3	68-87
Very Hard	≥10.3	≥86	≥8.7	≥87	≥7.0	≥87	≥4.4	≥88
Maximal	12	100	10	100	8	100	5	100

Physical Activity Guidelines Advisory Committee. Physical Activity Guidelines Advisory Committee Report, 2008. Washington, DC: U.S. Department of Health and Human Services, 2008

Classification of Physical Activity Intensity (continued)

Resistance-Type Exercise

Intensity	Relative Intensity Percent 1RM[§]
Very Light	<30
Light	30-49
Moderate	50-69
Hard	70-84
Very Hard	≥85
Maximal	100



Barry A. Franklin, PhD

(Prev Cardiol. 2000;3:63–70)

Physical Activity Guidelines Advisory Committee. Physical Activity Guidelines Advisory Committee Report, 2008. Washington, DC: U.S. Department of Health and Human Services, 2008

	ACSM guidelines for the general adult population[7]	ADA guidelines for adults with T2DM[4]	HFA and EACPR guidelines for adults with HF (NYHA class I to III)[5]
Continuous moderate-intensity exercise	30–60 min performed on 5 or more days of the week, in bouts of at least 10 min and with a minimum target of 150 min/wk. Bouts less than 10 min may still have benefits for severely deconditioned individuals	A minimum of 150 min/wk, performed in bouts of at least 10 min spread over 3 or more days of the week	20–60 min, performed on 3–5 days per week
Vigorous-intensity exercise (Including vigorous-intensity continuous exercise as well as high-intensity interval training; HIIT)	May replace some or all moderate-intensity aerobic exercise, although a combination of moderate- and vigorous-intensity exercise is strongly recommended for most adults. Using vigorous-intensity exercise alone, 20–60 min should be performed on 3 or more days of the week, in bouts of at least 10 min and with a minimum target of 75 min/wk	May replace some or all moderate-intensity aerobic exercise (in younger or more active individuals), provided at least 75 min/wk is performed	When patient capabilities allow, HIIT may replace sessions of continuous moderate-intensity aerobic exercise
Light-intensity physical activity (Including occupational and leisure-time tasks of daily living as well as low-intensity structured exercise)	Should be strongly recommended for severely deconditioned individuals. A minimum of 7000 steps per day should be encouraged for all adults	Increasing active tasks of daily living (dog-walking, gardening, housework etc) should be recommended to all patients. May also be used as the initial focus of exercise interventions in previously inactive individuals, before progressing to more intense structured exercise	Increasing activity in tasks of daily living should be encouraged in all patients. Severely deconditioned patients may benefit from gradual mobilisation though 'calisthenic exercises' or 5–10 min of low-intensity exercise twice weekly before progressing, as tolerated, to moderate-intensity aerobic exercise
Resistance exercise	2–3 sessions per week, training major muscle groups. Training the same muscle group on consecutive days should be avoided. The number of 'sets', repetitions and weight may be manipulated to promote greater improvements in muscular strength or endurance. Older adults and individuals previously unfamiliar with resistance exercise may see benefits in strength, power and endurance with a lower number of sets, repetitions and weight	2–3 sessions per week performed on non-consecutive days, with 8–10 exercises per session. 1–3 sets of each exercise should be performed, reaching 'near-fatigue' by the end of each set. Weight can be adjusted according to patient preference but 'near-fatigue' should be reached within 6–15 repetitions	May be considered as an addition to moderate- to vigorous-intensity aerobic training. May be particularly considered for older patients to attenuate muscle wasting. However, care should be taken to avoid excessive pressure load by using lower weight, shorter contraction duration and longer rest periods
Flexibility training	2–3 sessions per week focusing on major muscle-tendon groups. May be most effective when performed after light- to moderate-intensity aerobic activity. Static stretches should be repeated 2–4 times (10–30 s each time) for a total of approximately 60 s per exercise	2–3 sessions per week focusing on major muscle-tendon groups. Strongly recommended for patients aged 50 years or more, or those with peripheral neuropathy. Yoga or tai chi may be encouraged in interested individuals	No specific guidelines are provided. However, patients may benefit from 'calisthenic exercises' (see *Light-intensity physical activity*)
Sedentary behaviour	Reduce sedentary behaviours, particularly avoiding prolonged periods of sitting, in all adults, irrespective of exercise habits	All patients should reduce daily sedentary behaviour. In particular, prolonged sitting should be interrupted at least every 30 min with bouts of light activity	No specific guidelines are provided

Abbreviations: ACSM = American College of Sports Medicine; ADA = American Diabetes Association; T2DM = type 2 diabetes mellitus; HFA = Heart Failure Association; EACPR = European Association for Cardiovascular Prevention and Rehabilitation; HF = heart failure; NYHA = New York Heart Association.

- Mounting evidence shows that breaking prolonged sitting time with slow walking or other forms of light-intensity physical activity elicits substantial, acute improvements in postprandial glucose metabolism in individuals with or at high risk of T2DM
- Longer-term benefits have also been demonstrated with supervised interventions employing light-intensity exercise training.

A Single Session of Low-Intensity Exercise Is Sufficient to Enhance Insulin Sensitivity Into the Next Day in Obese Adults

Sean A. Newsom, phd
Allison C. Everett, bs
Alexander Hinko, phd
Jeffrey F. Horowitz, phd

- Interestingly, when matched for energy expenditure, prolonged continuous light-intensity exercise training was equally as effective as continuous moderate- to high-intensity training in lowering HbA1c and increasing whole-body and skeletal muscle oxidative capacity in patients with obesity and T2DM

Diabetes Care 36:2516–2522, 2013

Baggetta et al. BMC Geriatrics (2018) 18:248
https://doi.org/10.1186/s12877-018-0938-5

BMC Geriatrics

RESEARCH ARTICLE Open Access

Effect of a home based, low intensity, physical exercise program in older adults dialysis patients: a secondary analysis of the EXCITE trial

Rossella Baggetta[1], Graziella D'Arrigo[1], Claudia Torino[1], Samar Abd ElHafeez[3], Fabio Manfredini[2], Francesca Mallamaci[1], Carmine Zoccali[1], Giovanni Tripepi[1*] and on behalf of the EXCITE Working group

Abstract

Background: Older adults dialysis patients represent the frailest subgroup of the End Stage Renal Disease (ESRD) population and physical exercise program may mitigate the age-related decline in muscle mass and function.

Methods: Dialysis patients of the EXCITE trial aged > 65 years ($n = 115$, active arm, $n = 53$; control arm, $n = 62$) were submitted in random order to a home based, low intensity physical exercise program. At baseline and 6 months after exercise training 6-min walking distance (6MWD) and 5-time sit-to-stand test (5STS) were performed, and quality of life (QoL) was tested.

Results: The training program improved both the 6MWD (6-months: 327 ± 86 m versus baseline: 294 ± 74 m; $P < 0.001$) and the 5STS time (6-months: 19.8 ± 5.6 s versus baseline: 22.5 ± 5.1 s; $P < 0.001$) in the exercise group whereas they did not change in the control group ($P = 0.98$ and 0.25, respectively). The between-arms differences (6 months-baseline) in the 6MWD (+ 34.0 m, 95% CI: 14.4 to 53.5 m) and in the 5STS time changes (− 1.9 s, 95% CI: -3.6 to − 0.3 s) were both statistically significant ($P = 0.001$ and $P = 0.024$, respectively). The cognitive function dimension of QoL significantly reduced in the control arm ($P = 0.04$) while it remained unchanged in the active arm ($P = 0.78$) (between groups difference $P = 0.05$). No patient died during the trial and the training program was well tolerated.

Conclusions: This secondary analysis of the EXCITE trial shows that a home-based, exercise program improves physical performance and is well tolerated in elderly ESRD patients.

Trial registration: The trial was registered in ClinicalTrials.Gov (Clinicaltrials.gov identifier: NCT01255969) on December 8, 2010.

Keywords: Dialysis patients, Physical exercise, Quality of life

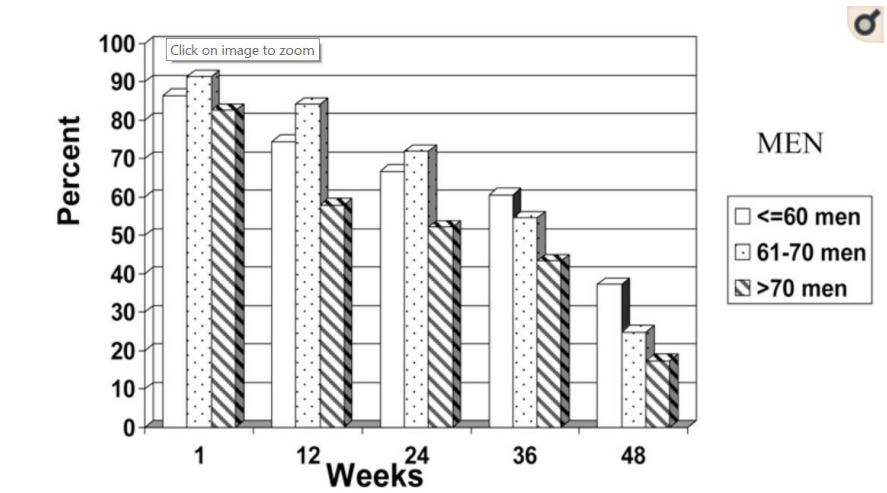
Adherence to physical activity

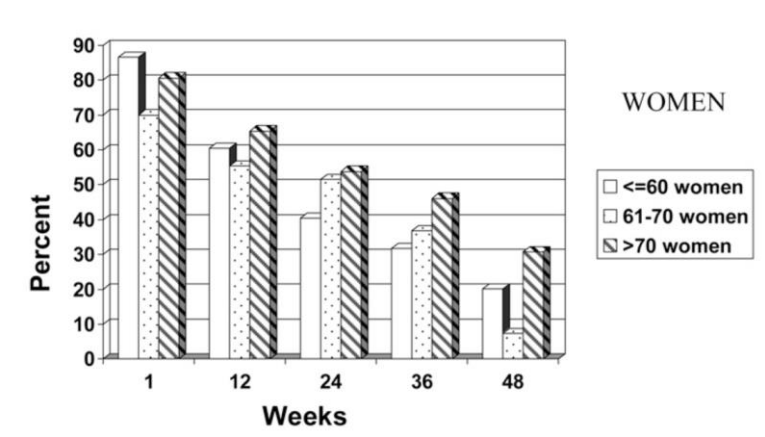
- After cardiac rehabilitation, maintenance of an increased level of physical activity is difficult, although it would be important for sustaining achieved health benefits
- Only ~40% of cardiac patients adhered to physical activity three times or >150 min weekly 1 year after cardiac rehabilitation

Guiraud T, Granger R, Gremeaux V, et al. Accelerometer as a tool to assess sedentarity and adherence to physical activity recommendations after cardiac rehabilitation program. Ann Phys Rehabil Med 2012;55:312
Dolansky MA, Stepanczuk B, Charvat JM, Moore SM. Women's and men's exercise adherence after a cardiac event. Res Gerontol Nurs 2010;3:30–38

Women's and Men's Exercise Adherence after a Cardiac Event: Does Age Make a Difference?

Mary A. Dolansky, RN, PhD, Assistant Professor, Beth Stepanczuk, BA, Medical Student, Jacqueline M. Charvat, MS, Project Director, and Shirley M. Moore, RN, PhD, FAAN, Professor and Principal Investigator





Percent of Men and Women that Continue to Exercise ≥3 Times a Week by Age Group Over Time

Dolansky MA, Stepanczuk B, Charvat JM, Moore SM. Women's and men's exercise adherence after a cardiac event. Res Gerontol Nurs 2010;3:30–38

Adherence to exercise

Effects of low-intensity exercise and home-based pulmonary rehabilitation with pedometer-feedback on physical activity in

in free-living activity [5]. The present study showed that the patients' compliance in a home exercise program was relatively good; the patients were able to perform our daily program at home for 239 ± 25 days of a year (4 days a week, in other words). We suspect that our program's patient

Purpose: We evaluated the effects of low-intensity and home-based pulmonary rehabilitation (PR) on physical activity (PA) and the feedback provided by a pedometer in stable elderly patients with chronic obstructive pulmonary disease (COPD).

Our home-based PR program with low-intensity exercise for 1 year also resulted in significant improvements of PImax, 6MWD, and CRQ scores. Pitta et al. reported that

Exercise intensity	% $\dot{V}O_2$ peak	% HR max	RPE*	% 1-RM	METs	Example activities (METs)[42]
Light	37 to 40	57 to 63	9 to 11	30 to 49	2.0 to 2.9	Standing (2.0)
Moderate	46 to 63	64 to 76	12 to 13	50 to 69	3.0 to 5.9	Walking the dog (3.0) Walking for exercise (4.3) Mowing the lawn (5.5)
Vigorous	64 to 90	77 to 95	14 to 17	70 to 84	6.0 to 8.7	Jogging (7.0) Cycling (8.0)
Near-maximal to supra-maximal	91 or above	96 or above	18 or above	85 or above	8.8 or above	Stair climbing, fast pace (8.8)

*RPE (rating of perceived exertion)[43] is measured on a scale of 6 (no exertion at all) to 20 (maximal exertion). Instructions are provided and participant should be familiarised with these before exercise.

Abbreviations. METs = metabolic equivalent of task. % $\dot{V}O_2$ peak = percentage of peak oxygen consumption. % HR max = percentage maximal heart rate. % 1-RM = percentage of 1-repetition maximum.

Training modality	Start	Progression*	Optimal intensity	Frequency	Outcomes of interest (number of ticks reflects strength of the effect)				
					$\dot{V}O_2$ peak	Physical function	HbA_{1c}	Exercise (in)tolerance	Muscle strength/ mass
Light-intensity physical activity	Calisthenic exercises *Intensity:* RPE <11 *Duration:* 5–10 min	Increase frequency and duration gradually, while also incorporating non-exercise physical activities *Duration:* 30 min	*Intensity:* 40–50% $\dot{V}O_2$ peak (RPE ~11) *Duration:* 30–45 min	2–5 sessions per week	✓	✓ ✓	✓	✓	✓
Continuous aerobic exercise training	*Intensity:* 40–50% $\dot{V}O_2$ peak *Duration:* 10–15 min	Increase intensity gradually towards 50–70% $\dot{V}O_2$ peak *Duration:* 30 min	*Intensity:* 50–70% $\dot{V}O_2$ peak (RPE 13–15) *Duration:* 45–60 min	3–5 sessions per week	✓ ✓	✓ ✓	✓ ✓	✓ ✓	–
High-intensity interval training (HIIT) (Aerobic interval training; AIT)	*Intensity:* 50–60% of HR max during 1–2 x 3–4 min bouts. Patients should remain 'active' during recovery periods (3 min each) but at a low intensity (50–70% of HR max) *Duration:* 5–15 minutes (including recovery periods). Start low and go slow. The very deconditioned may require longer recovery periods between high-intensity bouts	*Intensity:* gradually increase interval number and duration up to 4 x 4 min, while simultaneously decreasing the recovery period (if required) towards 3 min. Subsequently, increase intensity of exercise intervals towards 85–95% HR max *Duration:* 15–30 min	*Intensity:* 4 x 4-min intervals at 85–95% HR max (RPE 15–16 during intervals) *Duration:* 30–40 min	3 sessions per week	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓
Resistance training**	*Intensity:* <30% 1-RM focusing on use of the correct technique. *Circuits:* 1–3 per session, containing a range of upper and lower body exercises. *Repetitions:* 5–10 per exercise per circuit	*Intensity:* (RPE 12–13) *Circuits:* 1 per session *Repetitions:* 15–25 per exercise per circuit	*Intensity:* 40–60% 1-RM (RPE 13–15) *Circuits:* 1 per session *Repetitions:* 8–15 per exercise per circuit	2–3 sessions per week	✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓

*Duration and frequency of training is increased according to symptoms and clinical status.
**Sustained maximal isometric exercise (i.e. weight lifting) is contraindicated, because of the excessive rise in blood pressure and the lowering of the stroke volume.
Abbreviations: 1-RM = the highest weight that a person can lift once with correct form, throughout a complete range of motion. $\dot{V}O_2$ peak = peak oxygen consumption. HR max = maximal heart rate. RPE = rating of perceived exertion.[43]

Ann Physiol Anthropol. 1992 May;11(3):365-8.

The benefits of the low intensity training.

Tanaka H[1], Shindo M.

Author information

Abstract

This presentation addressed the researches concerning the effects of the low intensity training on health promotion done in our laboratory. Supervised physical training performed at 50% VO2max or lactate threshold for 60 minutes, 3 or 5 times a week for 30 sessions could induce the improvement in VO2max, lipid profiles, and augment in cardio-pulmonary baroreflex. This training was also applied for patients in ischemic heart disease, hypertension, and obesity. These patients could improve their aerobic work capacity. Hypertensive patients could reduce their blood pressure in association with modulating in humoral factors without changes in body weight and diet. The obese patients succeeded in significant body reduction with mild food reduction. We also found the existence of break-point of double product (BPDP) during graded exercise test corresponding to lactate threshold. BPDP will be able to use for estimating lactate threshold. This low intensity training, which is easier and safer, can be recommended to the wide-variety of persons including older person to promote health.

Low Intensity Exercise Training in Patients With Chronic Heart Failure

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Ancona, Italy and Torrance, California

Objectives. The present study was designed to evaluate whether a specific program of low intensity exercise training may be sufficient to improve the exercise tolerance of patients with chronic heart failure.

Background. Recent studies have shown that exercise training can improve exercise tolerance in patients with stable chronic heart failure, mainly through peripheral adaptations. These changes have been observed with exercise regimens at intensities of 70% to 80% of peak oxygen uptake and >8 weeks.

Methods. We studied 27 patients (23 men, 4 women; mean [±SD] age 57 ± 6 years) with mild chronic heart failure. We classified patients into two groups: trained group and untrained group. The trained group underwent a low intensity (40% of peak oxygen uptake) training program three times/week for 8 weeks. The untrained group performed no exercise.

Results. An increase in peak oxygen uptake (17%, $p < 0.0001$), lactic acidosis threshold (20%, $p < 0.0002$) and peak work load (21%, $p < 0.0002$) were obtained in the trained group only. Cardiac output and stroke volume were unchanged. A high correlation was found between the increases in peak oxygen uptake and volume density of mitochondria of vastus lateralis muscle ($r = 0.77$, $p < 0.0002$).

Conclusions. Patients with stable chronic heart failure can achieve significant improvement in functional capacity from a low intensity exercise training regimen. The mechanism responsible for this favorable effect involves an increase in mitochondrial density, which reflects an improvement in oxidative capacity of trained skeletal muscles.

(J Am Coll Cardiol 1995;26:975–82)

Res Gerontol Nurs. 2017 May 1;10(3):121-128. doi: 10.3928/19404921-20170411-02.

Effects of Low-Intensity Exercise in Older Adults With Chronic Heart Failure During the Transitional Period From Hospital to Home in China: A Randomized Controlled Trial.

Xueyu L, Hao Y, Shunlin X, Rongbin L, Yuan G.

Abstract

The transitional period from hospital to home is critical to decreasing rates of preventable, poor post-discharge outcomes. Older adults with chronic heart failure (CHF) may be challenged to exercise during the transitional period. The purpose of the current study was to test the effects of low-intensity exercise on health-related quality of life (HRQoL), physical function, and heart function in Chinese older adults with CHF during the transitional period. The study was randomized, single-blinded, and controlled. Seventy-eight older adults with stable CHF were evaluated. The intervention group (n = 41) participated in a regular low-intensity walking protocol and the control group (n = 38) did not. Measures included the Minnesota Living with Heart Failure Questionnaire (MLHFQ), 6-minute walk distance (6MWD), Timed Up and Go (TUG) test, resting heart rate (RHR), and left ventricular ejection fraction (LVEF). After 12 weeks, the intervention group showed significant improvements in MLHFQ, 6MWD, and TUG scores compared to the control group ($p < 0.05$), and no significant improvements in RHR and LVEF ($p > 0.05$). Low-intensity exercise during the transitional period is an effective way to improve HRQoL and physical function in older adults. [Res Gerontol Nurs. 2017; 10(3):121-128.].

A Community-Based Low Intensity Exercise Program for Individuals with Chronic Conditions and Functional Limitations: A Case Study

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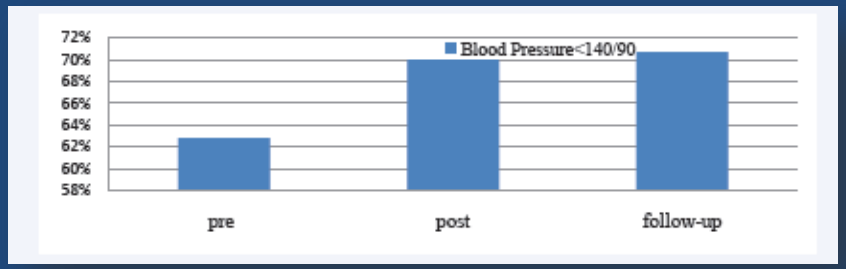
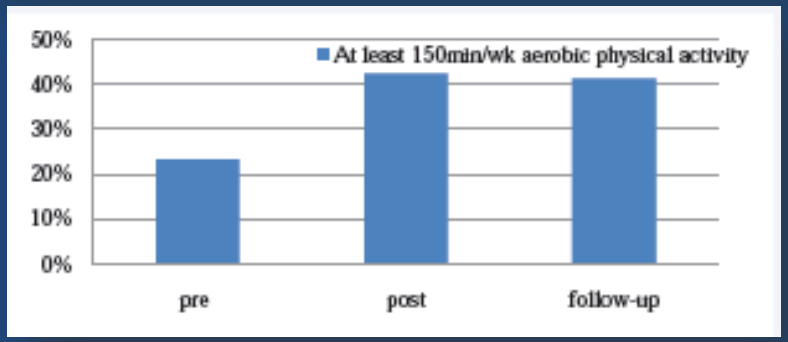




Abstract

Musculoskeletal conditions, chronic pain and other complex chronic conditions are primary causes of disability and higher costs to the health system world-wide and in Nova Scotia. Evidence has shown that exercise is considered an effective way to prevent further deterioration and facilitate better health in individuals with these debilitating conditions. However, adherence to exercise programs is shown to be low in individuals with pain related conditions due to many factors including symptoms related to the conditions, access to the programs and lack of motivation. Primary Health Care in Nova Scotia has designed free health and wellness programs offered in community settings, namely, the Community Health Teams (CHTs). In their initial engagement with the communities, implementation of exercise programs for individuals with functional limitations due to chronic conditions was identified as a priority. Consequently, the Low Intensity Exercise Program (LIEP) was developed and implemented to address this priority of the community. In the ten-week program, participants are empowered to safely self manage symptoms of over-exertion and are taught techniques to gradually progress their physical activity. The impact of the intervention was examined in an observational study. A total of 140 individuals participated in the study and showed significant improvements in physical health and over 90% indicated being satisfied with the program. Over 50% of participants also showed improvements in modifiable risk management factors. LIEP is a one-of-a-kind initiative in Canada that has taken into account adherence challenges into its design considerations and is considered a leading practice by Accreditation Canada.

Effectiveness Of Low Intensity Training In Limited Sessions Of Cardiac Rehabilitation Program

- Objective:
  - To evaluate the effectiveness of low intensity training in Phase II CR with limited exercises training schedule

Method

- 6 weeks post MI
- Completed 6MWT with Borg scale of 11 and below
- Walking exercise prescribed base on 6MWD for 30 min
- Home endurance training program (walking) based on prescribed distance and duration 3x/week

Prescribing Walking Exercise

- To calculate an appropriate walking intensity:
- 6 min walk distance (6MWD) ÷ 6 = Distance in 1min
  - For distance in 30 mins x 30
  - For distance in 20 mins x 20
- For Training:
  - 80% of this distance in the prescribed time.

Example of prescription

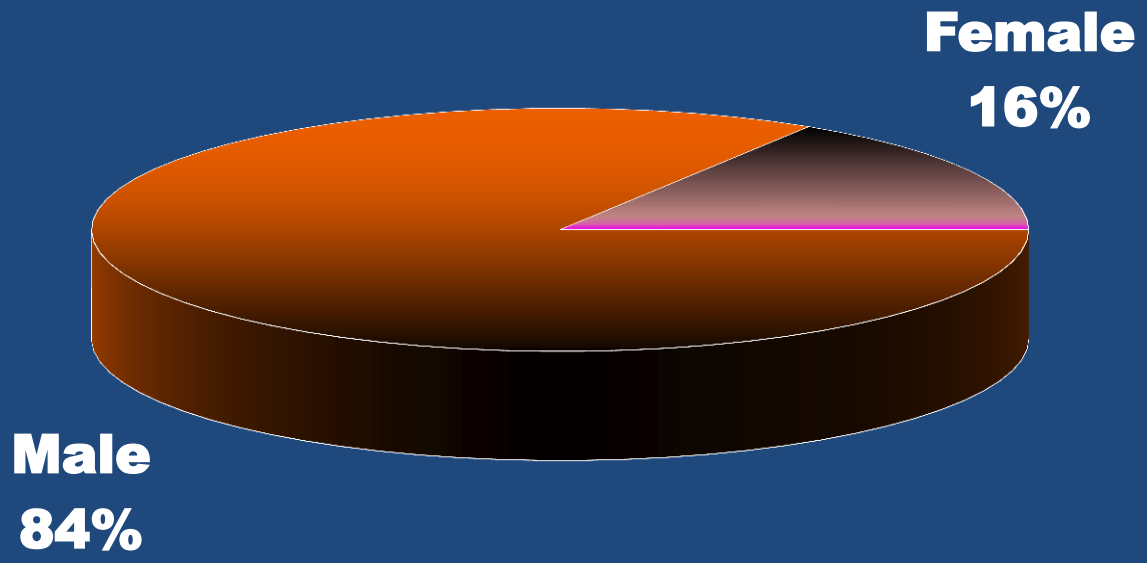
- 6MWT distance = 360 metres

- Distance in 1 min = 360 ÷ 6 = 60 metres
- For a 30 minute walk training = 60 x 30 = 1800 metres

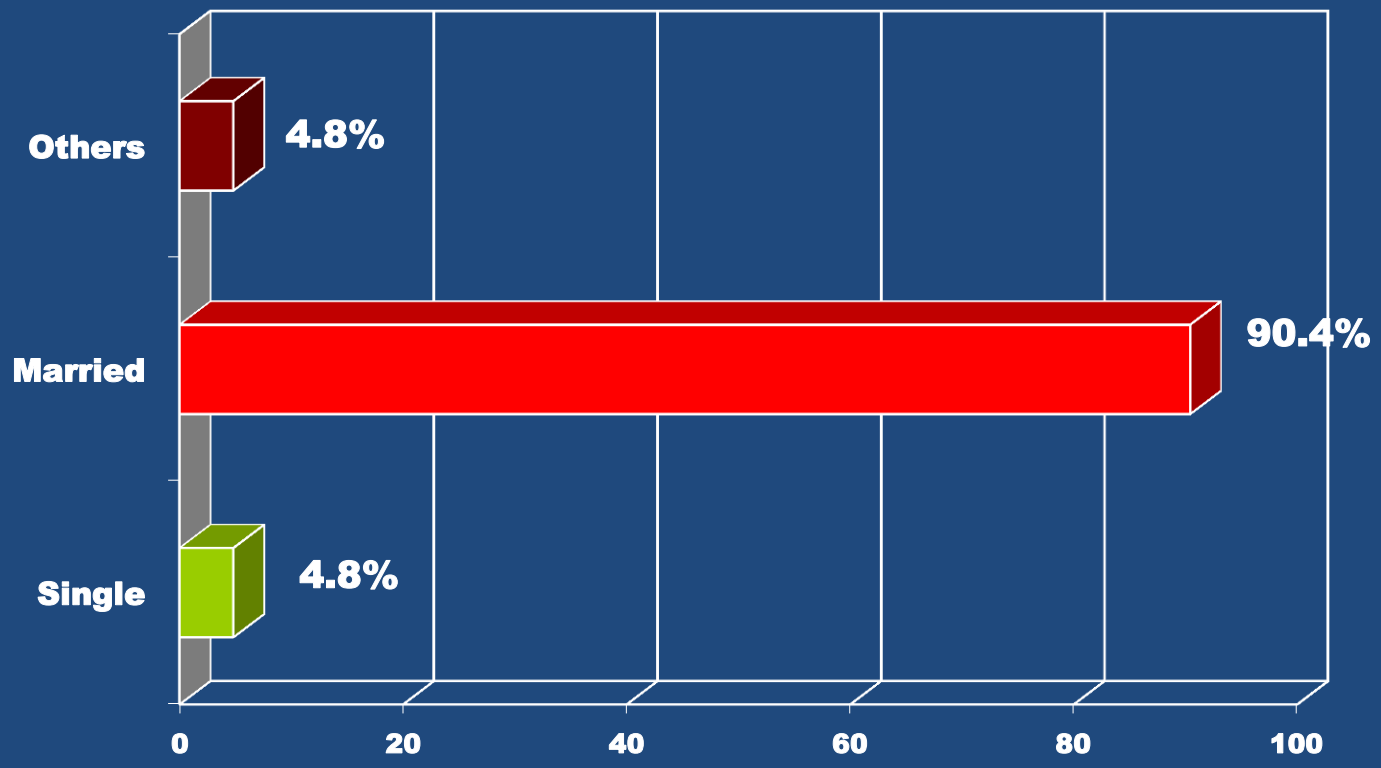
- BUT need 80% for training = 0.8 x 1800 = 1440 metres in 30 mins

Result

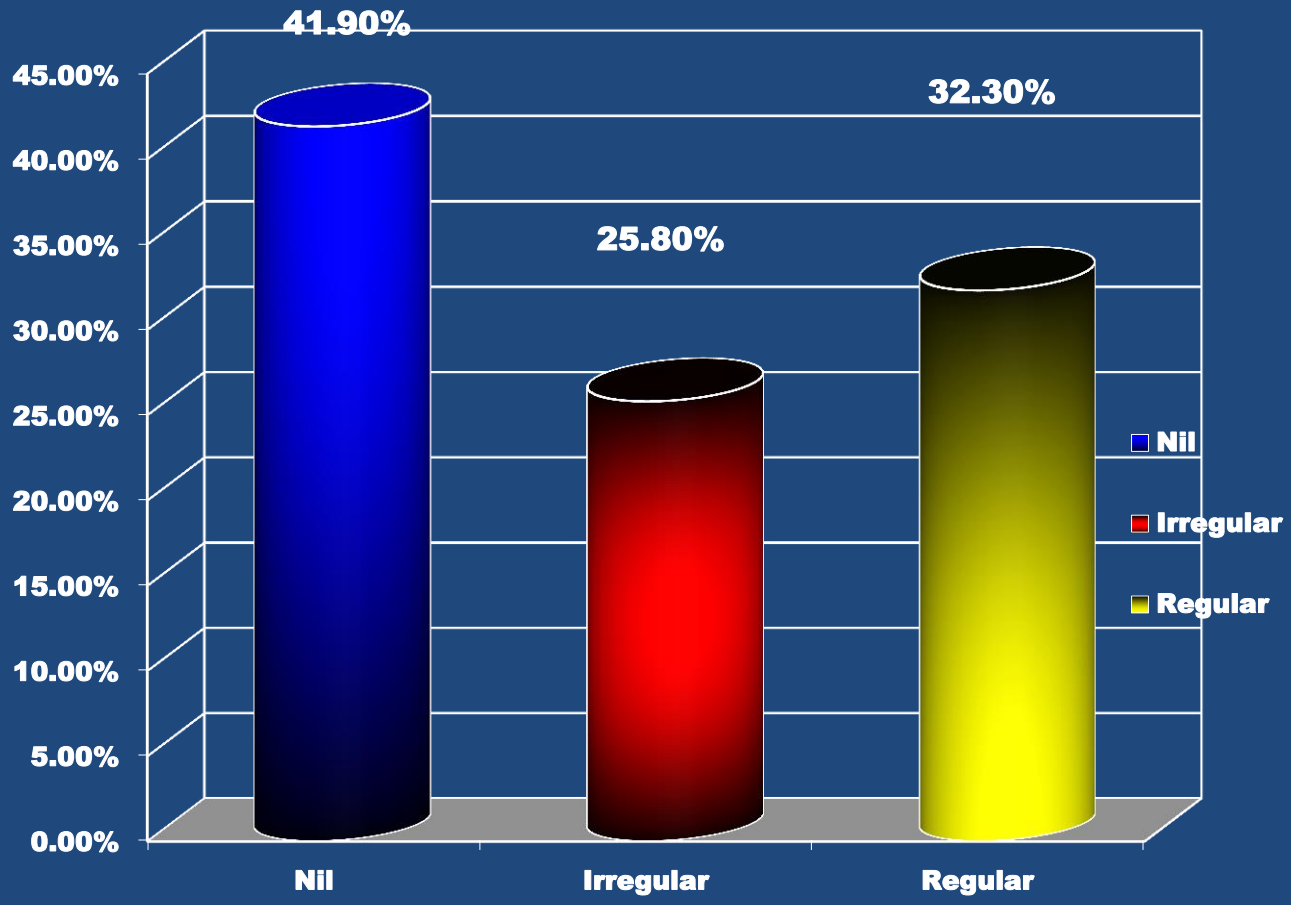
- A total of 62 patients were enrolled in this study with a mean age of 53.42±9.66 year old.
- Majority were male (83.9%) and more than half (58.1%) had received at least secondary education.



Marital Status



Exercise Prior CRP



Mean 6MWD (m)

At entry of Phase II	Completed 6 weeks Phase II	3 months after Phase II
383.45±61.4	**426.50±65.9**	**453.23±66.1**

(p < 0.005)

- no significant improvement of RPE

Conclusion

- Low intensity exercise has significant improvement in physical performance of patients with CAD
- Low intensity physical training with home exercise program and adequate education session, can be implemented in lack of resources setting
- Severely deconditioned patient, frail older adult and heart failure shall be prescribed with low intensity exercise

Thank You

Little Is Good, More Is Better, Vigorous Is Best

Thijs M.H. Eijsvogels

"Lack of activity destroys the good condition of every human being, while movement and methodical physical exercise save it and preserve it."

Plato, Greek philosopher