



CHARTERED PHYSIOTHERAPISTS WORKING WITH OLDER PEOPLE



Physical activity and exercise management for the older adult with cardiovascular disease.

This information provides an outline of a comprehensive document produced by the Association of Physiotherapists in Cardiac Rehabilitation (ACPICR) titled 'Standards for Physical Activity and Exercise in the Cardiac Population', updated in 2014, which can be accessed free of charge from the ACPICR website at <http://acpicr.com/publications> and should be consulted as required for further reading around the topic.

Aim of this document:

- to be an easy to read general guide for AGILE members who are managing physical activity and exercise in elderly patients who have cardiac disease
- to act as a signpost to further reading e.g. the British Association of Cardiovascular Prevention and Rehabilitation (BACPR) Standards and Core components and in particular core component 3.2.1 Physical activity and exercise
British Association for Cardiovascular Prevention and Rehabilitation. The BACPR Standards and Core Components for Cardiovascular Disease Prevention and Rehabilitation. 2nd Edition. London: BACPR; 2012
- to be a benchmark for those already providing physical activity advice/exercise to the elderly cardiac patient
- to be a guide for setting of local and national standards around safe and effective physical activity and exercise for the elderly cardiac patient
- to provide evidence for line managers and physiotherapists in order to secure a quality service
- to provide information on the importance of a referral to cardiac rehabilitation services as appropriate for the individual patient dependent on their clinical condition
- to be a guide to health and safety

This information is by no means exhaustive and therefore further reading is highly recommended as required. These guidelines and further reading should be used in conjunction with the *Chartered Society of Physiotherapy (CSP) Quality Assurance Standards for Physiotherapy Service Delivery. London: CSP; 2012.*

Background

Burden of Cardiovascular disease (CVD)

- Although mortality from CVD is reducing year on year, it continues to be the most common cause of death in the United Kingdom (UK), accounting for just under almost 180,000 deaths

each year. However death rates from myocardial infarctions in England have halved since 2002, the incidence of coronary heart disease has decreased in all areas but there are still 1.2 million men and 900,000 women diagnosed with chronic angina. In the UK there are also currently approximately 800,000 people suffering from heart failure (HF) with 13.1% of men and 11.9% of women aged over 75 years old diagnosed with heart failure.

Prevention of cardiovascular disease (CVD)

Prevention can be classified as primary or secondary prevention.

Primary prevention strategies should be targeted at those with

- established atherosclerotic CVD
- individuals diagnosed with diabetes
- those at high risk of developing symptomatic CVD

Individuals can be considered at risk if there is:

- Family history of premature atherosclerotic disease or established familial dyslipidaemia,
- Elevated blood pressure > 160 mm Hg systolic or > 100 mm Hg diastolic
- Elevated total cholesterol to high density lipoprotein (HDL) cholesterol ratio > 6.0
- Asymptomatic individuals who have a combination of risk factors

Secondary prevention. Patients eligible for cardiac rehabilitation services are those that have recently been diagnosed with:

- Acute myocardial infarction
- Revascularisation procedures, which include coronary artery bypass graft, percutaneous coronary intervention (PCI) and primary PCI
- Newly diagnosed heart failure
- Other specialised interventions such as cardiac transplant, left ventricular assist devices (LVAD), implantable cardiac defibrillators (ICDs) and cardiac resynchronization therapy (CRT).

Commissioners may also wish to include patients with angina or other conditions who would benefit from receiving cardiac rehabilitation services.

Both primary and secondary CVD prevention services require a multi-factorial approach to the nine modifiable risk factors:

1. Smoking status
2. history of hypertension
3. diabetes
4. waist to hip ratio
5. dietary pattern
6. physical activity levels
7. alcohol consumption
8. blood lipoproteins
9. psychosocial factors

Lack of physical activity is an independent risk factor and contributes to risk reduction in many of the other risk factors.

Physical activity is defined as any human movement above resting state. It is the total volume of physical activity as influenced by the size of muscle mass engaged and the intensity, frequency and duration of such activity. These factors should be considered when participating in structured exercise, recreation or activities of daily living as it is the combined accumulation from all these activities which will determine whether an individual is attaining enough physical activity to be considered healthy. As well as CVD other health conditions are related to inactivity and time spent sitting, including: poorer insulin sensitivity, blood glucose and fat metabolism, type II diabetes, obesity, some cancers, and poorer psycho-social well-being and mood.

The greatest benefit in reducing the development or progression of CVD in both primary and secondary prevention is when physical activity is performed at an intensity which leads to an improvement in aerobic fitness (>40% of maximal aerobic capacity).

The key target of getting large proportions of national populations to attain beneficial physical activity has been to recommend individuals accumulating 150 minutes of moderate intensity activity or 75 minutes of vigorous activity per week; along with minimising extended periods of being sedentary. *Chief Medical Officers. Physical Activity, Health Improvement and Protection. Start Active, Stay Active: A report on physical activity from the four home countries. London: DoH, 2011.*

30 minutes moderate intensity activity 5 times (150 mins) a week or 75 minutes of vigorous activity spread across the week

A combination of moderate and vigorous activity spread across the week

The activity should be performed in at least 10 min bouts

The overall volume of activity is more important than the duration and intensity

The Definition of Cardiac Rehabilitation (CR)

“The coordinated sum of activities required to influence favourably the underlying cause of CVD, as well as to provide the best possible physical, mental and social conditions, so that the individuals may, by their own efforts, preserve or resume optimal functioning in their community and through improved health behaviour, slow or reverse progression of disease”.

CR (outcomes taken from research following exercise-based CR following myocardial infarction or coronary revascularisation) brings about:

Reduction in

- All cause mortality by 11- 26%
- Cardiac mortality by 26 – 36%
- Unplanned hospital admissions by 28 -56%

Improvement in

- Quality of life
- Functional capacity
- Early return to work
- Development of self-management

Similarly, systematic reviews have highlighted benefits to individuals with chronic heart failure (HF), demonstrating evidence of decreased mortality, enhancement of quality of life, and confirms that exercise is safe for these individuals.

Much of the data in both CHD and HF individuals has been collected on males under the age of 65 years, and thus for many the “one size fits all” may not be appropriate (physiologically and behaviourally). **This may be especially true for the older, low functioning and higher risk individual.** Before designing an exercise programme, appropriate goal setting must consider the following: risk stratification, current functional capacity, psychosocial constraints and co-morbidities. (Information on risk stratification tools and methods of assessing functional capacity can be found in the full ACPICR Standards document).

Physical activity and exercise therapy must be included as a core component of any programme that aims to either reduce the incidence of, or prevent further disease progression in “at risk” individuals with and without established CVD. Exercise performed should follow the recommended standards and guidelines.

Provision of CR

Comprehensive CR, combining the key components of exercise, education, psychological and social support, is endorsed by NICE. CR involves a team of professionals working in an integrated way with the individual, his/her partner and family.

Exercise is a key element within the core components for the prevention and rehabilitation of CVD. The seven components are:

1. lifestyle risk factor management (physical activity and exercise, diet, weight management and smoking cessation)
2. psychosocial health (reduction in anxiety and depression)
3. cardio-protective therapies (with use of optimal medication and implantable cardiac devices as appropriate)
4. medical risk factor management (BP, lipids, blood glucose)
5. health behaviour change and education
6. audit and evaluation
7. long-term management.

0.3% of the population are estimated to be suitable for referral to a cardiac rehabilitation service.

CR service details can be located using the national cardiac rehabilitation finder at

<http://maps.cardiac-rehabilitation.net>

There are approximately 400 CR programmes registered in the UK which are delivered in a variety of settings; either group based in a hospital or community setting or individually in the patient's home. Mixed models of provision are likely to be appropriate within a local area.

Following a comprehensive assessment, the delivery of a CR service should be tailored to the individual. From a range of options available, the individual should be encouraged to access the interventions appropriate to his/her clinical needs at the time and in a suitable setting. Home and group based CR appear to be equally as safe and effective in improving the clinical and health-related quality of life outcomes.

Emphasis on empowering individuals to manage their own health is a key element in the management of CVD and other long-term conditions. In order to complete the CR pathway, it is vital that the individual takes advantage of the many exercise and physical activity opportunities available in his/her local community long term, with continued support from their primary care team

Specialist Knowledge, skills and competences

Physiotherapists who wish to work/specialise in this area should refer to the following publications:

- BACPR EPG Core Competences for the Physical Activity and Exercise Component of cardiovascular rehabilitation Services.
<http://acpicr.com/sites/default/files/Role%20of%20the%20Physiotherapist%20in%20Cardiac%20Rehabilitation%20Document%20version%204.pdf>
- BACPR Exercise Professionals Position Statement BACPR EPG.
http://www.bacpr.com/resources/51A_EPG_Position_Statement.pdf
- Skills for Health National Workforce Competence Guide for Coronary Heart Disease document. *Skills for Health Coronary Heart Disease Framework 2007. Skills for Health. Available from <http://www.skillsforhealth.org.uk> [accessed 9 April 2012].*

There are specific training courses for physiotherapists and other exercise specialists working with the cardiac population. These are run by the BACPR in association with the ACPICR. More information can be found at www.bacpr.com/education

The following are areas in which appropriate professional development is required:

- Exercise physiology and prescription in CVD
- Interpreting clinical exercise results and assessing fitness
- Synthesis of assessment results into a safe and effective exercise and physical activity plan, with appropriate goal setting, meeting individuals' psycho-social (cognitive and behavioural) capabilities and needs
- Designing, instructing/coaching appropriate exercise movement techniques and safely managing and monitoring individual or groups of exercising individuals in home, community or hospital-based settings.

- Promoting physical activity both in prevention and rehabilitation of CVD, based upon the latest epidemiological and evidence based practice.

There is no substitute for experience and when coupled with guided feedback of results and reflective practice, all possible clinical scenarios can be managed successfully. The use of clinical and research networks to share experiences e.g. iCSP (www.csp.org.uk) is encouraged.

The BACPR cite seven standards for the delivery of CR and these should be taken into consideration for anyone involved in exercising a patient with a cardiac condition.

STANDARD 1: Service Agreement for Recruitment and Referral

There should be a local recruitment policy/protocol for all individuals to be referred for physical activity advice and the exercise.

STANDARD 2: Initial Assessment

Individuals should be assessed and advised on appropriate physical activity and exercise as early as possible within the rehabilitation process. Individuals should undergo thorough screening and an assessment prior to undertaking physical activity and exercise. The referral information should include, as a minimum, baseline data on individual demographics, presenting condition and any relevant investigations and treatments.

Using all relevant information gained from a thorough assessment, the CR professional should use their clinical reasoning skills to advise on physical activity and to prescribe a safe and effective exercise programme tailored to the individual's needs.

The following are contraindications which preclude an individual from joining or continuing the exercise component

- Unstable angina
- Resting systolic blood pressure (SBP) of >180mmHg, or diastolic BP >110mmHg
- Orthostatic blood pressure (BP) drop of >20 mmHg with symptoms
- Significant aortic stenosis (aortic valve <1.0cm²)
- Acute systemic illness or fever
- Uncontrolled atrial or ventricular arrhythmias
- Uncontrolled sinus tachycardia (>120 bpm)
- Acute pericarditis or myocarditis
- Uncompensated congestive heart failure (CHF)
- 3rd degree AV block (without pacemaker)
- Active pericarditis or myocarditis

- Recent embolism
- Thrombophlebitis
- Resting ST segment displacement (>2 mm)
- Uncontrolled diabetes mellitus
- Severe orthopaedic conditions that would prohibit exercise
- Other metabolic conditions, such as acute thyroiditis, hypokalaemia, hyperkalaemia or hypovolaemia
- Severe grade 3 rejection (cardiac transplantation recipients)

STANDARD 3: Informed Consent

Valid consent must be obtained from the individual prior to carrying out an assessment, functional test or intervention. The physiotherapist should consult and be aware of guidance on consent issued by their relevant health departments, regulating bodies and local policies and procedures.

Consent should be a continuous process rather than a one off event and should be focussed on the rights of the individual.

STANDARD 4: Health Behaviour Change to assist individuals to become more physically active

Health behaviour change is essential to facilitate a physically active lifestyle.

‘In meeting the individual needs, health behaviour change and education are integral to all components of cardiac rehabilitation. ‘The goals belong to the individual; they have to be meaningful for them to have ownership and to want to try to achieve them.’

STANDARD 5: Safety Information for Physical Activity

All individuals should receive safety information prior to commencing a guided programme of physical activity and this should be reinforced throughout.

The individual should receive ongoing education on how to exercise safely and effectively thereby graduating towards being a confident and independent exerciser (as appropriate when considering the elderly patient).

STANDARD 6: Structured Exercise Programming

Structured exercise should:

- Include a warm up, conditioning component and a cool down
- Achieve a training effect via the FITT (frequency, intensity, time and type) principle, Table A
- Be performed at a moderate intensity
- Be individualised

- Incorporate resistance work

The overall volume of activity is more important than the duration or intensity in order to achieve improvement in CV fitness and health benefits.

A warm up should:

- Last for 15 minutes. *However for lower functioning individuals the period of warm up should be reduced proportionally to the length of the conditioning phase.*
- Mobilise joints and 'warm-up' all large muscle groups that will be engaged in the exercise training session.
- Include pulse raising activities which are appropriate in content to the activities being performed in the conditioning phase.
- Include static stretching interspersed with pulse raising moves to maintain heart rate (HR) - at present the evidence of preparatory stretching as a part of the above is equivocal but the performance of stretches by individuals often provide periods of active recovery within the warm-up and act as a useful guide to assess the individuals' proprioceptive/motor control abilities and joint mobility limitations.
- Perform a rewarm-up after preparatory stretching before commencing the conditioning component
- Allow for alternative intensities of aerobic work.
- Increase exercise effort gradually so that by the end of the warm up the following should have been reached:
 - A maximum of 40-50% of peak capacity
 - HR within 20 beats per min (bpm) of training/target heart rate (THR)
 - A maximum of 40% heart rate reserve (HRR)
 - **A RPE - BORG <11 (RPE scale) or <3 (CR10).**

Conditioning phase

The recommended dose of weekly CV exercise can be achieved by varying the amounts of the frequency, intensity and duration which are suitable for the individual.

Frequency (F)

In order to improve functional capacity, exercise should be undertaken at least 2-3 times per week

Intensity (I)

- Moderate intensity aerobic exercise, designed to suit a range of fitness levels, is recommended for most individuals undergoing exercise training
- Individuals should be working at:
 - 40%-70% Heart rate reserve (VO2 max)
 - **11 – 14 (BORG RPE scale) OR**
 - **2 – 4.5 (CR-10 scale)**
- *Low functioning, more sedentary or high risk individuals should work towards the lower end of these intensity targets: 40% HRR, or RPE 11 (BORG RPE scale) and RPE 2 (CR10)*

- Low risk or more active individuals should work towards the higher end of these intensity targets: 70% HRR or RPE 14 (BORG RPE scale) and RPE 4.5 (CR10)

NB Calculations for training heart rates (HRR) are not given in this document. Use of Rate of Perceived Exertion (RPE) scales may be more appropriate for the clinical scenarios in which AGILE members work. However if desired the training heart rate formulae can be accessed in the full ACPICR document.

Duration of exercise/TIME (T)

- The duration and frequency are interchangeable
- For a structured exercise session a minimum duration of 20 minutes is recommended for the conditioning phase which can be progressed to 60 minutes.

Type of exercise (T)

- The two types of exercise that should be included are CV and strength training.
- Common CV exercises include circuit training, walking, cycling or gym based activities.
- Aerobic exercise utilising large muscle groups in a rhythmical manner is recommended; a continuous or interval training approach can be performed.
- Muscle strength/endurance exercises which can be performed separately, as a part of the active recovery phases of interval type training or as part of the cool down.
- Alternative options should be available for low functioning, high risk individuals or those with comorbidities e.g. resistance training and seated exercise.
- All exercise should consider balance, co-ordination and flexibility and opposing muscle groups.

Cool down

- The risk of hypotension, ischaemia and arrhythmias within the first 30 minutes after stopping an exercise session is well documented. A graded cool down has been found to reduce the incidence of these complications. Cool down exercise should be the reverse of the warm up in most respects with the aim to gradually return the cardio-respiratory system to near resting levels within 10 - 15 min.
- The duration should be a minimum of 10 minutes. *For low functioning individuals the length of the cool down should be moderated to the length of the conditioning component.*
- Exercise effort should be gradually decreased from the individual's exercise prescription.
- Stretching for the purposes of improving flexibility can be incorporated into the cool down.
- Individuals should be supervised for a minimum of 15 minutes from the end of the cool down.

Resistance training

Resistance training is associated with enhancement and maintenance of muscle strength and power leading to an improvement in functional ability, stimulation in bone formation and reduction in bone loss. It has also been shown to improve glucose metabolism, reduce blood pressure and maintenance of weight. It can be performed safely by many individuals with CVD. Resistance training can be used as either an independent session or as part of the active recovery component or cool down of an aerobic circuit; when undertaken after the CV component, a partial cool down is necessary prior to resistance work. Resistance work should be followed by a final cool down.

Moderate (>30% 1RM) to high (70% 1RM) resistance training programmes performed twice a week for 3 - 6 months have shown improvements in muscular strength and endurance of 25-100%.

Frequency

Train each major muscle group at least twice a week

Intensity

Upper body 30 - 40% 1RM

Lower body 50 - 60% 1RM

These intensities should be used initially and progressed, based on clinical and functional needs.

Determination of intensity should be set by appropriate exercise instruction methods in keeping with best practice.

1RM testing in this group has been shown to be safe but it may not be tolerable for other reasons such as MSK pain. Estimations of working at the appropriate %1RM can be made by the following options:

- Working the selected muscle group to fatigue within 10-15 reps.
- Choosing a weight which elicits a Borg CR-10 score of 4 to 6 (RPE 14-16) after two repetitions.

Time

Sets:

- A set comprises of the recommended repetitions
- Each set of repetitions for a given muscle group should not be repeated within the circuit.
- 2 – 4 sets will improve strength and power

Repetitions:

- Perform 8 -12 repetitions to improve strength and power
- Perform 15 – 20 repetitions to improve muscular endurance
- Older adults or those starting out, perform 10 – 15 repetitions to improve strength

For more detailed guidance refer to the European Society of Cardiology (ESC) guidelines.

Type

A circuit should include 8 -10 different key muscle groups

This may not be achievable for low functioning and less able individuals, therefore it is recommended to select a few key muscle groups that would promote function and aid independence.

Resistance training should be performed:

- In a rhythmical manner, through a full range of motion (ROM) that is controlled at a moderate to slow speed (i.e. 3 seconds concentric and 3 seconds of eccentric contraction)
- By alternating between lower and upper body to allow muscles to rest between exercises
- Considering muscle balance
- With good technique:
 - Good posture
 - Avoiding excessive gripping of weights
 - Avoiding breath hold

It is recommended to wait 48 hours between each resistance training session

Flexibility recommendations

Considerable evidence suggests that a programme of stretching exercises increase tendon flexibility, improve joint ROM and function, and enhance muscular performance

- Flexibility exercises are best performed 2-3 times a week when the muscles are warm e.g. following aerobic exercise.
- Hold stretch for 10-30 seconds to point of tightness or slight discomfort
- Ensure that venous return is maintained whilst stretching.
- Repeat stretch 2 – 4 times, accumulating 60 seconds per stretch.
- Static, ballistic and proprioceptive neuromuscular facilitation (PNF) stretches are effective.

Seated Exercise

Seated exercise programmes can provide an opportunity to allow low functioning individuals such as the elderly and frail to engage in regular exercise. This evidence suggests that seated exercise improves muscular strength, systolic BP and HR response, balance and everyday living activities along with reducing body fat and the risk of falls. Seated exercise programmes should follow the same principles as ambulatory exercise and include: CV, resistance and flexibility exercises. It is essential that all programmes comprise of a warm up, conditioning phase and a cool down component.

Seated exercise can be delivered in a variety of ways:

- In separate components i.e. CV exercise followed by resistance training or can be delivered as part of a circuit interval training programme.
- With equipment including bikes, rowers and arm ergometers.
- Using rhythmic body movements or supported/unsupported bodyweight exercises.
- Alongside an ambulatory CR circuit training class or delivered independently as a low functional capacity programme.

Key seated exercise considerations

Seated exercise, though potentially lowering the metabolic demand, can lead to an increase in intrathoracic pressures and activities should be performed appropriately to prevent this e.g. correct posture, breathing technique and maintaining venous return.

Once the CV time and movements have been progressed, the patient should be moved onto a mix of supported and unsupported ambulatory exercise, which will provide greater dynamic challenges that will continually improve CV fitness.

Key exercise considerations

Ensure correct posture is maintained throughout.

Ensure balance of opposing muscle groups.

Avoid overuse and overload of any one muscle group.

Use a variety of different muscle groups throughout sessions to gain global strengthening and to allow individuals to exercise for longer.

Ensure that feet are kept moving during upper body exercise to maintain venous return

Avoid sustained breath holding and isometric exercise

Avoid rapid changes in position as this can lead to hypotension particularly in the elderly and those on beta blockers.

Avoid exercises performed in lying during the main conditioning phase. Floor work when indicated (e.g. relaxation exercise and stretching) should be carried out after a cool down period when the CV system has returned to near resting state.

Ensure appropriate adaptation and supervision of exercise for individuals with comorbidities.

Ensure music tempo and volume is appropriate to the component of the session.

In general, all physiotherapists should promote increased daily physical activity and advise a reduction in sedentary time considering the individual's functional status. 'Patients should receive individual guidance and advice on ADLs together with a tailored activity and exercise plan with the collective aim to increase physical fitness as well as overall daily energy expenditure'

The content of the exercise prescription depends on the aim of the exercise. De-conditioned individuals may require an adapted prescription initially until they are able to perform the recommended prescription for health benefits. In some circumstances, the aim may be to maintain their current level of activity and to reduce sedentary time.

TABLE A	F frequency Number of days per week <i>How often?</i>	I intensity How much exertion? <i>How hard?</i>	T time How many min per day? <i>How long?</i>	T type What specific activity? <i>What sort?</i>
CV Fitness	2 – 3 times per week	Moderate BORG RPE 11 – 14 CR10 2 – 4.5 40 – 70% HRR	20 – 60 min continuous or interval (plus a 15 minute warm up and 10 minute cool-down)	Large muscle groups worked rhythmically.
Muscle strength and endurance	2 – 3 times per week	Upper body 30-40% 1RM Lower body 50-60% 1RM	Minimum 1 set, ideally 2-4 sets of 10 – 15 reps.	8 – 10 different muscle groups
De-conditioned individual unable to sustain 3 METS	Incorporate into daily routine	Moderate BORG RPE 12 CR10 2 40% HRR *	5 - 10min bouts (gradual increase to accumulate 30 min per day)	Activities to improve function, muscle strength and endurance, posture, balance and coordination e.g. walking, low step-ups, sit to stand, seated activities.

Either of the Borg scales (6-20 or 0-10) can be used to monitor the intensity of exercise (Rate of perceived exertion).

- 6 No exertion at all**
- 7 Extremely light**
- 8**
- 9 Very light**
- 10**
- 11 Light**
- 12**
- 13 Somewhat hard**
- 14**
- 15 Hard (heavy)**
- 16**
- 17 Very hard**
- 18**
- 19 Extremely hard**
- 20 Maximal exertion**

BORG RPE Scale ⁶⁰

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Borg's RPE Scale® Instructions ⁶⁰

Whilst exercising we want you to rate your perception of exertion, i.e., how heavy and strenuous the exercise feels to you. The perception of exertion depends mainly on the strain and fatigue in your muscles and on your feeling of breathlessness or aches in the chest.

Look at this rating scale; we want you to use this scale from 6 to 20, where 6 means “no exertion at all” and 20 means “maximal exertion.”

9 corresponds to “very light” exercise. For a normal, healthy person it is like walking slowly at his or own pace for some minutes.

13 on the scale is “somewhat hard” exercise, but it still feels OK to continue.

17 “very hard” is very strenuous. A healthy person can still go on, but he or she really has to push him or herself. It feels very heavy, and the person is very tired.

19 on the scale is an extremely strenuous level. For most people this is the most strenuous exercise they have ever experienced.

Try to appraise your feeling of exertion and fatigue as honestly as possible, without thinking about what the actual physical load is. Don't underestimate it, but don't overestimate it either. It's your own feeling of effort and exertion that's important, not how it compares with other people's. What other people think is not important either. Look at the scale and the expressions and then give a number.

CR10 Scale

0	Nothing at all	
0.3		
0.5	Extremely weak	Just noticeable
0.7		
1	Very weak	
1.5		
2	Weak	Light
2.5		
3	Moderate	
4		
5	Strong	Heavy
6		
7	Very strong	
8		
9		
10	Extremely strong	"Maximal"
11		
↔		
●	Absolute maximum	Highest possible

Borg CR10 scale^{® 137}

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Borg's CR10 Scale Instructions¹³⁷

Basic Instruction: 10, "Extremely strong", is the main anchor. It is the strongest perception you have ever experienced. It may be possible, however, to experience or to imagine something even stronger. Therefore, "Absolute maximum" is placed somewhat further down the scale without a fixed number and marked with a dot "●". If you perceive an intensity stronger than 10, you may use a higher number.

Start with a *verbal expression* and then choose a *number*. If your perception is "Very weak", say 1; if "Moderate," say 3; and so on. You are welcome to use half values (such as 1.5, or 3.5). It is very important that you answer what *you* perceive and not what you believe you ought to answer. Be as honest as possible and try not to overestimate or underestimate the intensities.

Scaling perceived exertion: We want you to rate your perceived exertion, that is, how heavy and strenuous the exercise feels to you. This depends mainly on the strain and fatigue in your muscles and on your feeling of breathlessness or aches in the chest. But you must only attend to your subjective feelings and not to the physiological cues or what the actual physical load is.

- 1 is “very light”, like walking slowly at your own pace for several minutes.
- 3 is not especially hard; it feels fine, and it is no problem to continue.
- 5 you are tired, but you don’t have any great difficulties.
- 7 you can still go on but have to push yourself very much. You are very tired.
- 10 This is as hard as most people have ever experienced before in their lives.
- This is “Absolute maximum” for example, 11 or 12 or higher.

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STANDARD 7: Screening, Monitoring and Progression

All physical activity and exercise should be continuously monitored (by observation, RPE and using heart rate in appropriate circumstances) and evaluated to ensure that it is safe, effective and relevant to changing circumstances. The level of monitoring should be specific to the individual’s needs with the aim of progressing towards individual self-monitoring (as appropriate for the elderly patient).

The Physiotherapist delivering exercise to the cardiac patient must be skilled in screening, monitoring and exercise progression. No method of monitoring should be used in isolation; monitoring should be meaningful to the individual, encouraging them towards safe, effective and independent exercise in the long term.

STANDARD 8: Home-Based Programmes and Independent Exercise

Home-based programmes are a safe and effective form of physical activity and exercise. Evidence demonstrates no significant difference between home and hospital based rehabilitation in terms of mortality, risk factors, health related quality of life, cardiac events and exercise capacity. They are as cost effective as group based sessions.

Home based programmes are a safe and effective alternative to group sessions. As home programmes are often unsupervised, it is essential that the individuals receive thorough instructions and the physiotherapist should ensure that the instructions have been understood.

STANDARD 9: Long-term Physical Activity Planning

It is important that by the end of the individual’s clinically supervised rehabilitation, they should be empowered to participate in physical activity for the long term. The aim is to develop the individual’s confidence in their ability to exercise independently and to take responsibility for their health. Continued secondary prevention and support by healthcare and exercise professionals is necessary to assist adherence to physical activity recommendations in the long-term.

The patient, if medically stable, can be referred to a long-term maintenance exercise session as appropriate led by an appropriately trained exercise professional who holds a REPS level 4 qualification in exercise in cardiovascular prevention and rehabilitation.

STANDARD 10: Outcome Measures

Consistent measuring of outcomes is an essential component in the evaluation of the effectiveness of intervention is vital for quality improvement.

Outcomes provide meaningful feedback to patients on their progress encouraging the maintenance of healthy behaviours. Outcomes also provide data to demonstrate the efficacy of a programme and are important to justify the value of services both clinically and financially.

Outcomes measures include:

- Patient-reported health-related quality-of-life e.g.
 - Short Form (SF) 36 and SF 12
 - Quality of Life after Myocardial Infarction (QLMI) questionnaire
 - EuroQoL 5D (3L or 5L versions)
 - Dartmouth COOP Domain
 - Minnesota Living With Heart Failure Questionnaire
 - MacNew Heart Disease health-related quality of life instrument
- Clinical outcomes e.g.
 - Six minute walk test (6MWT)
 - Shuttle walk test (SWT)
 - Chester step test (CST)
 - Ergometer tests including treadmill and cycle
 - Hospital Anxiety and Depression Scale (HADS)
 - Cardiovascular Limitations and Symptoms Profile (CLASP)
 - Global Mood Score
 - Illness Perception Questionnaire
 - Physical activity measures (questionnaires, activity monitors)
- Achievement of patient centred goals
- Patient reported experience

STANDARD 11: Health and Safety

Local protocols for health and safety should be followed at all times. The safety of cardiac patients during exercise is paramount. This will be optimised with an accurate risk stratification assessment an effective induction (Standard 5) and an appropriate exercise prescription (Standard 6) by appropriately trained members of staff. All individuals should be screened prior to each exercise session to ensure they are safe to participate (Standard 7). All staff should be trained and updated regularly in local protocols for life support, moving and handling, infection control and fire.

Safety of staff and exercising individuals is paramount. National health and safety guidelines and local operational policies should be applied when conducting health and safety assessments.

STANDARD 12: Documentation

Clear and accurate records must be kept which fully reflect each episode of care. The most appropriate style of record keeping will be determined by the clinical setting. Local security policies and Caldicott guidelines must be followed and records must satisfy legal requirements

There is a professional and legal requirement to maintain accurate and up to date health records which may be paper based or in an electronic format or both.

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