

EXERCISE TESTING PROCEDURE (REFERENCE DOCUMENT FOR CARDIAC PHYSIOLOGISTS)

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and/or carer. Health care professionals must be prepared to justify any deviation from this guidance.

Introduction

Exercise Testing is a widely used tool for risk assessment in patients with coronary artery disease and strong clinical suspicion of coronary artery disease. It is not a substitute for a good clinical history and is not a reliable diagnostic test in patients with a low probability of coronary artery disease as the cause of their symptoms.

Lead Clinician(s)

Mrs Julie Caulfield

Countywide Cardiopulmonary Service
Manager

Guideline reviewed and approved by Accountable Director on: 20th May 2014

Review Date: 13th September 2019
This is the most current document and is to be used until a revised version is available

Key amendments to this guideline

Date	Amendment	By:
09/09/2003	Guideline approved by Clinical Effectiveness Committee	
29/09/2007	Guideline reviewed with minor amendments made	Julie Caulfield
30/11/2009	Guideline reviewed with minor amendments made	Julie Caulfield
02/09/2011	Reviewed on 2 nd September, no changes required	Julie Caulfield
27/08/2013	Guideline reviewed with minor amendments made	Julie Caulfield
July 2016	Document extended for 12 months as per TMC paper approved on 22 nd July 2015	TMC
August 2017	Further extension for 12 months as per TMC paper approved on 22 nd July 2015	TMC
September 2017	Document extended for two years as per Julie Caulfields email, minor amendment made	Julie Caulfield
December 2017	Sentence added in at the request of the Coroner	

EXERCISE TESTING PROCEDURE

CONTENTS

	Page
Competencies Required	3
Supervision	3
On Receipt Of Request Form	4
Exercise Test Procedure	5
Day of appointment	5
When patient arrives	5
Start Test	6
End of Procedure	7
Recovery	7
Exercise Test Report	8
Termination of Test	8
Adverse Events	9
Monitoring	10
References	10
Appendices.	
Appendix 1 - Tests for DVLA (Group 2)	11

EXERCISE TESTING PROCEDURE

Competencies Required

Request forms must be signed by referring physician, or after receiving formal training and assessment i.e. auscultation skills, RACPC Specialist Nurse, Chest Pain Assessment Nurse and Cardiac Rehabilitation Nurse Specialist, to indicate that:

‘The patient has been clinically examined to confirm that none of the contraindications exist and it is safe to proceed with an exercise tolerance test’

<http://www.scst.org.uk> - Recommendations for clinical Exercise Tolerance Testing Pts 4.0

Supervision

Medically supervised tests (Doctor present throughout)

All high-risk exercise tests should be medically supervised. Any patient being exercised with aortic stenosis, hypertrophic cardiomyopathy, unstable angina, recent myocardial infarction, and all others with a recognised potential for developing malignant arrhythmias should be supervised by a Doctor

The referring Consultant must be present for any **DVLA Exercise tests** and they all must be performed out of hours, so not to impact on the NHS workload.

Specialised Cardiac Physiologist supervised tests (low risk)

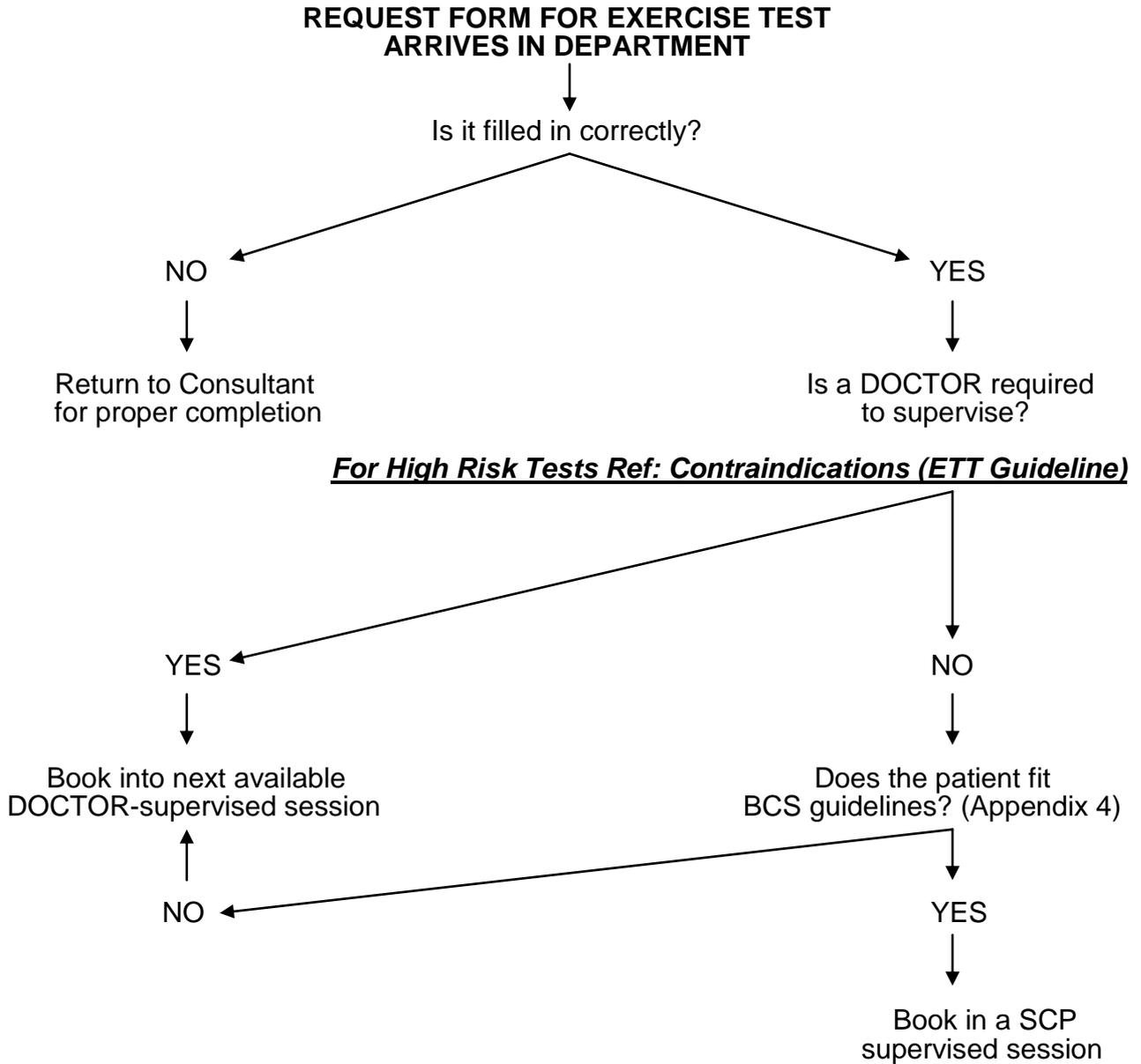
Low risk ETT is classified as an ETT that excludes the contraindications listed on page 5 of WAHT-CAR-012.

There should be a minimum of a Specialised Cardiac Physiologist (SCP) who is fully trained in exercise testing and ILS and is aware that they are responsible for the safe conduct of the test, **and** one other Cardiac Physiologist or ATO present throughout the test and recovery period. Rapid Access Chest Pain Clinic (RACPC) Nurse or Chest Pain Assessment Nurse (CPAN) may be the second person in attendance.

If there are any doubts over the suitability of a patient for a Specialised Cardiac Physiologist supervised test, the test should be medically supervised.

The type of supervision required for exercise testing in each patient should be decided by the Consultant responsible for the patient, but if a SCP is unhappy to supervise a test (because of apparent high risk) they should request medical supervision or seek advice from a Consultant Cardiologist.

ON RECEIPT OF REQUEST FORM



Following receipt of a fully completed request form an appointment should be offered at the earliest opportunity, this includes circumstances when patients come directly from clinic with a completed request form.

Patient health records are not required to book an appointment but should be requested and be available for the ETT.

If a patient cancels his/her appointment and cannot attend within the specified time allocation allowed by the BCS guidelines - 6 weeks - the patient should be booked into a Doctor-supervised session. If a patient fails to attend his/her appointment, the form should be sent back to the Consultant and the patient not re-booked. ("DNA" on request form and in patient's notes signed and dated by SCP).

Exercise Test Procedure

Exercise tests should never be performed on unprepared patients. The appointment letter contains a simple description of the procedure, and instructions regarding clothing, drugs and food. On arrival the patient is shown the test equipment and the purpose and procedure explained in more detail by the supervising doctor or SCP.

Ensure that the patient knows the importance of:

- i. not stopping walking whilst the treadmill is in motion.
- ii. immediate reporting of any symptoms experienced during the test.

Day of Appointment

Before every session:

Check that defibrillator works and arrest trolleys are checked daily.
Sign into the Resus app located on the home page of the intranet under clinical systems and sign to say the daily check has been completed.
Check that the tag is in situ for the stock but if the tag is broken/tampered complete a full check.
Ensure that the trolley and stock is checked for expiry at the beginning of every month.

2. Ensure a trust computer available to log onto EZ notes and/or Bluespier
3. Set up test equipment. Ensure that treadmill is working and that you have adequate supplies of all necessary consumables.

When patient arrives

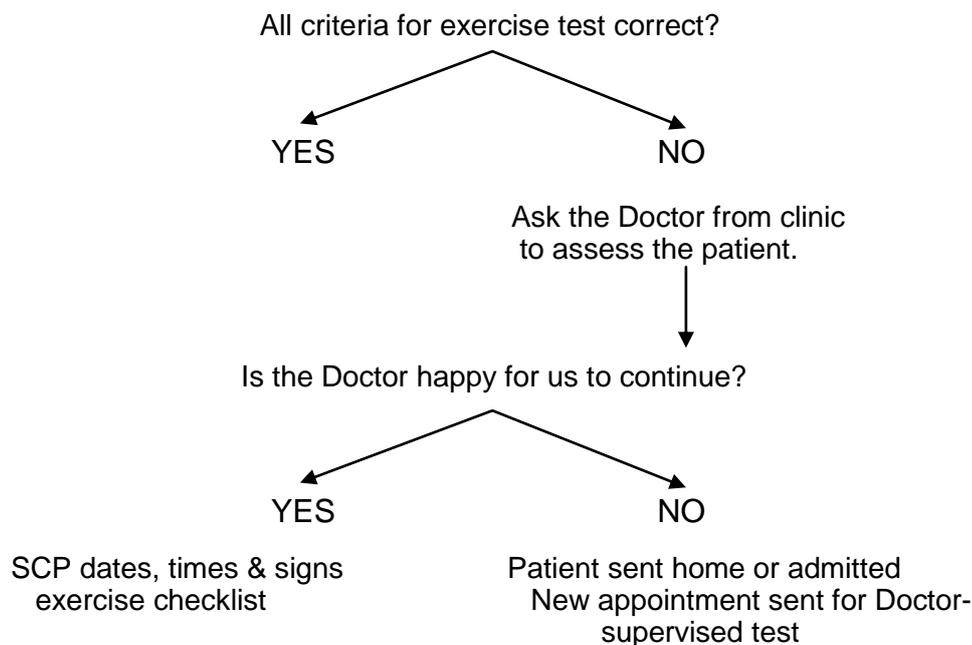
1. Check Name, Address, DOB.
2. Check Protocol (Medical or SCP Supervision, Bruce or Modified Bruce)
3. Ensure that appropriate medical and technical staff are available. For SCP-supervised tests ensure that the Doctor covering (Cardiology Consultant / SpR) the session from clinic is present and aware the exercise test is about to start. **Remind Doctor that he/she must be available immediately and respond if called.** Record staff details on database.
4. Explain the procedure to patient. Do not start exercise if medical cover is not available.
5. Apply electrodes for 12-lead ECG and record in supine position – check against previous ECG if available or show to Doctor on duty for the session.
6. Fill in checklist:
 - ECG – If any new changes, refer to Doctor.
 - Blood pressure. If diastolic >110, or systolic >200 or <90, contact Doctor if CCP supervised.
 - Has the patient had need to see any other Doctor or been admitted to hospital since the request for exercise test was made? If yes, contact Doctor

Exercise Testing Procedure		
WAHT-CAR-021	Page 5 of 10	Version 5.5

WAHT-CAR-021

It is the responsibility of every individual to ensure this is the latest version of the document

- Record patient's current medication



7. Follow selected protocol for exercise test.
8. Further explain test procedure to the patient.
9. Has the patient understood the instructions?
10. Ensure patient is aware that he/she should tell us all symptoms, and if he/she wishes to stop the test.
11. Enter patient and staff data on database – note current medication
12. Start treadmill and exercise test as per appropriate protocol.

Check patient's blood pressure every 3 minutes.

SCP to monitor the ECG throughout and print a 12 lead ECG at least every 3 minutes. Document changes throughout test.

13. When end point of test reached stop treadmill and enter recovery phase.
14. Allow patient to recover sitting or supine.

End of Procedure

Medically Supervised:

Doctor should explain result to patient – SCP to confirm that patient understands. If unsure ask Doctor to explain again until patient understands.

SCP-supervised:

Exercise Testing Procedure		
WAHT-CAR-021	Page 6 of 10	Version 5.5

WAHT-CAR-021

It is the responsibility of every individual to ensure this is the latest version of the document

If patient has come direct from clinic the patient and results to be escorted back to clinic and the referring Dr will explain the results to the patient.

If patient has not come direct from clinic results will be forwarded to Consultant.

Recovery

Continue monitoring after exercise with the patient sitting in a chair or sitting / lying on the couch.

SCP should monitor the ECG & BP throughout recovery.

Check that patient has no NEW symptoms.

Record any new symptoms on the database.

Do not disconnect the ECG from the patient unless the following criteria have been satisfied:

1. Minimum of 5 minutes in recovery have elapsed.
2. Heart rate is below 100bpm or within 15% of the initial resting level,
e.g. rest (before exercise) - HR 110bpm
recovery - HR 126bpm.
3. All/any new ECG changes have resolved.
4. Any symptoms have resolved.

Once all the above criteria have been met, the patient may be allowed to leave the exercise room.

If the criteria have **not** been met within 15 minutes of recovery the SCP should check with the relevant Doctor before allowing the patient to leave.

If the patient has new symptoms they **must** be seen by the Doctor on duty for exercise tests.

Advise patient to return to the department before leaving the hospital if they feel unwell.

Advise patient that should they feel unwell after leaving the hospital to contact their GP or local A&E department.

If patient returns before going home - Refer to Doctor on duty and follow Doctor's instructions (e.g. referral to A/E or Ward).

The SCP should fill in the report on the report form or the database and should state that it is a Technical report. The SCP should sign, date and time the report.

Exercise Test Report

Forward exercise test results to Consultant on generated report form, Technical comments to include symptoms, reason for termination, baseline and maximum heart rate, BP response to exercise, exercise duration, stage attained*, and any significant ECG change.

Remember that Bruce stage II is achieved only after completion of the second stage (i.e 6 minutes of standard Bruce, 12 minutes of modified Bruce, stage III after 9 minutes and 15 minutes respectively).

Exercise Testing Procedure		
WAHT-CAR-021	Page 7 of 10	Version 5.5

WAHT-CAR-021

It is the responsibility of every individual to ensure this is the latest version of the document

Termination of Test

(See Exercise Testing Guideline Indications for terminating the Exercise Test)

If the CCP in charge is not happy to continue for any reason they must be able to explain their decision.

The reasons for ending the test must be recorded clearly on the report.

Once termination of the test has occurred, the patient enters the RECOVERY phase.

Adverse Events (Adapted from Society for Cardiological Science & Technology guidelines)

IN THE EVENT OF ANY OF THE FOLLOWING ADVERSE EVENTS, THE TREADMILL SHOULD BE STOPPED IMMEDIATELY.

- **Patient collapses pulseless. ECG Normal or rhythm expected to produce cardiac output = Pulseless Electrical Activity.** Commence BLS. Call cardiac arrest team
- **Patient collapses in VF or pulseless VT.** Give precordial thump. If VF or pulseless VT persists defibrillate and follow VF algorithm.
- **Patient collapses in asystole or ventricular standstill.** Commence BLS and call cardiac arrest team. If ventricular standstill prepare for external pacing.
- **Patient collapses with normal rhythm and maintained cardiac output.** Stop treadmill, assess patient and call for expert medical help as appropriate.
- **Sustained VT with cardiac output.** Call for immediate expert medical help.
- **Patient develops second or third degree AV block.** Stop treadmill. Call for immediate expert medical help. Have atropine and external pacemaker ready for use if necessary.
 - **ECG shows Gross ST depression Or ST elevation and/or Patient experiences severe chest pain.** Stop treadmill. Sit patient upright in chair or on couch. Monitor BP and ECG. Call for medical help.

IF IN DOUBT ABOUT A SITUATION, FOR PATIENT SAFETY, CHECK WITH THE DOCTOR IN CLINIC.

CPR SHOULD BE TO CURRENT RESUSCITATION COUNCIL (UK) GUIDELINES.

MONITORING TOOL

How will monitoring be carried out?

Continuous review

Exercise Testing Procedure		
WAHT-CAR-021	Page 8 of 10	Version 5.5

WAHT-CAR-021

It is the responsibility of every individual to ensure this is the latest version of the document

When will monitoring be carried out? Continuous

Who will monitor compliance with the guideline? SCPs

STANDARDS:

Item	%	Exceptions
Referrals should meet the appropriate criteria	100%	
All adverse outcomes to be monitored	100%	

REFERENCES

- Chung, E K. Exercise Electrocardiography Practical Approach 2nd Ed Williams & Wilkins Baltimore / London
- Cleland, J G F ; Findlay, I N; Gilligan, D; Pennell, D J, The Essentials of Exercise Electrocardiography Bayer Current Medical Literature Ltd.
- Gordon, C A Dataset for Chest Pain Clinics developed by the Prestige project Royal Brompton & Harefield NHS Trust
- The Society of Cardiological Science and Technology.
Cardiology department sample operation policy. SCP managed exercise tolerance tests.
www.scst.org
- DVLA referrals for Exercise testing for group 2 licence holders with a history of Ischaemic heart disease.
Cardiovascular Disorders.
www.dvla.gov.uk
(Please check website as guidelines are updated every six months)
- Resuscitation Council (UK) ILS
Resuscitation Council Guidelines- Adult Basic Life Support & Advanced Life Support Algorithm.
www.resus.org.uk
(Please check website as guidelines are regularly updated)

CONTRIBUTION LIST

Key individuals involved in developing the document

Name	Designation
Mrs Julie Caulfield	Countywide Cardiopulmonary Service Manager

Circulated to the following individuals for comments

Name	Designation
Dr D Abban	Consultant Cardiologist
Dr A Scriven	Consultant Cardiologist
Dr D Smith	Consultant Cardiologist
Dr. J Trevelyn	Consultant Cardiologist
Dr. H Routledge	Consultant Cardiologist
Mrs S Dewdney	Highly Specialised Cardiac Physiologist - WRH
Miss J Bruce	Highly Specialised Cardiac Physiologist - Alex

APPENDIX 1

DVLA REFERRALS FOR EXERCISE TESTING FOR GROUP 2 LICENCE HOLDERS WITH A HISTORY OF ISCHAEMIC HEART DISEASE

Tests are requested to ensure that the patient can satisfy the exercise test standard detailed in the following paragraph in line with the current cardiac fitness standards (CLEIIII-copy attached).

Exercise evaluation shall be performed on a bicycle or treadmill. Drivers should be able to complete 3 stages of the Bruce protocol or equivalent safely, without anti-anginal medication for 48 hours and should remain free from signs of cardiovascular dysfunction, viz. Angina pectoris, syncope, hypotension, sustained ventricular tachycardia, and/or electrocardiographic ST segment shift which accredited medical opinion interprets as being indicative of myocardial ischaemia (usually >2mm horizontal or down-sloping) during exercise or the recovery period.

The DVLA request confirmation that the patient can or cannot meet the standard. If he/she cannot meet the standard we are asked to provide reasons for this. A copy of the exercise test in its entirety should be sent with the report.

A fee is payable for the Consultants' report. A fee may be paid directly to the hospital for use of facilities upon receipt of an invoice. The DVLA reference number must be quoted on the invoice.

As the Consultant will not have seen the patient within the last 3 months they may wish to assess the him/her prior to undertaking the exercise test. Should the Consultant wish to take up this option then a fee will be paid for this and its reporting.

NB: If this assessment reveals that the patient cannot currently meet the CLEIIII requirements due to the development of new symptoms/findings then exercise testing is not required at this time.

An appointment should be arranged and notified to the patient within 28 days.

The patient may be entitled to see the report unless the DVLA Senior Medical Adviser is notified that to release the report may cause serious harm to the physical or mental health of the patient. [SI 1987 no 1903 Data Protection (Subject Access Modification)(Health) Order 1987.]

(Details taken from a referral letter from the Senior Medical Adviser – Drivers Medical Group Manager, DVLA)

Exercise Testing Procedure		
WAHT-CAR-021	Page 10 of 10	Version 5.5