

OGUK Medical Guidelines - COVID-19 Amendments for 'socially distanced' assessment

On 18 March 2020 OGUK issued advice on the extension of OGUK medicals to 30 June 2020 (1). Although circumstances vary within the UK and elsewhere, there is continued advice from professional bodies to avoid 'routine' physiological testing (2) and therefore a need to reconsider how to undertake OGUK medical assessments under conditions of endemic Covid-19 infection and continued requirements for 'socially distant' working arrangements. This further advice note addresses that need.

1. A 'socially distant' OGUK medical assessment?

The use of 'remote' medical assessment is well established in the oil and gas industry as the only practical means of providing advice and support to installation medics dealing with illness and injury offshore. NHS 111 (3) is a well-established telephone and internet service providing direct patient response to clinical problems in the UK, and telephone consultations have been evaluated for clinical effectiveness and safety for decades (4). In the current Covid-19 pandemic, remote consultations have become commonplace for large numbers of patients (5). There seems little reason to doubt that an occupational fitness for work assessment such as the OGUK medical assessment cannot be successfully adapted to be completed by similar remote means.

While examining doctors may continue to undertake OGUK medicals by the usual means where local circumstances permit this, it is therefore considered reasonable for OGUK medical assessments to be conducted by 'remote' means where necessary: 'remote means' may be by telephone, video consultation, or minimum-contact in-person assessment. Examining doctors may undertake assessments in this manner as they deem appropriate to national and local requirements for altered medical practice, for as long as these alterations to practice are required by relevant authorities.

Remote medical assessment will require alteration to the usual means of assessment, specifically in relation to tests and physical examination. Paragraph 3.2 of section 1 of the guidelines sets out the minimum requirements of the OGUK medical as:

photographic identification from the examinee comprehensive medical social and occupational history audiometry urinalysis visual acuity body mass index (BMI) appropriate clinical examination

The appropriate amendments to the guidelines for remote assessment are as follows:

Photographic identification from the examinee

Inspection of photographic confirmation of examinee identity will remain possible in socially-distanced in-person and video-based assessments, but proof of identification will be more difficult in telephone assessment. Confirmation of identity by remote assessment by video is therefore to be preferred wherever technically possible.



Comprehensive medical, social and occupational history

Examining doctors will readily appreciate that the process of taking a history by remote means is qualitatively different from that in a 'face to face' encounter. Non-verbal communication clues and cues may be missing altogether, or more difficult to appreciate. Resources to assist NHS clinicians unfamiliar with remote consultations have been established (6) and examining doctors may find it helpful to consult these for advice on the general principles involved.

Care should be taken in the assessment to explore pauses and hesitation in the examinee's history, rather than simply ascribing these to lag or other technical issues with the system used. Adequate pauses by the examining doctor to permit responses by the examinee should be incorporated into the assessment.

It is good practice to establish the basic facts of the examinee's occupational history offshore, and this should include number of years in offshore work, number of years with present employer/in present post, duration worked on current installation (if core crew/regular rotation), and rota worked – there is an obvious difference in the situation of a '56 year old male, former car mechanic, 30 years offshore, 10 years with present employer as mechanical technician on [installation operator] [name of installation] on 3:3 rota, next trip due [date]' and '21 year old female, former shop assistant, never worked offshore previously, applying for employment with [employer] for intended ad-hoc rota work as relief stewardess', and the variations possible on this theme.

Examining doctors should document the examinee's previous history of inactive medical problems (e.g. past surgery for appendicitis) and pay particular attention to ongoing chronic conditions (e.g. diabetes, cardiovascular disease). The examinee's medication history, in particular those medications the examinee is *supposed* to be taking, as well as those they indicate they do take on medical advice, may indicate clinical problems inadvertently omitted by the examinee because so familiar to him/her as to be forgotten about.

Assuming adequate exploration and documentation of past history at the preceding medical, it is particularly important that examining doctors discuss any new onset medical problems or conditions since the examinee's last medical. Employers/agencies may have information regarding sickness absence, medevac, missed check-ins, or other medical concerns to share, and this information should be sought from them.

The medical assessment is an opportunity to provide brief motivational intervention for examinees in regard to health habits. Smoking habit, alcohol consumption and physical activity habits should be discussed with examinees and appropriate advice, encouragement and direction to additional sources of support provided as necessary. Understanding of the examinee's social history (relationship status, responsibility for childcare and other family members) and family history of medical conditions will aid risk assessment in some circumstances and provide contextual understanding of the potential impact of health issues on work in others.

In practice, the clinical history is of greatest importance in the evaluation of fitness for offshore work – a careful history, supplemented where necessary by additional information from treating clinicians, is essential and adequate time and resource should be allocated to this, particularly when the other elements of the assessment may be less readily available.

Audiometry

While audiometry at the medical may be used as an indication of functionally normal hearing, it is in practice a means of meeting in part the health surveillance requirements of the Control of Noise at Work Regulations (7). Paragraph 319 of part 6 and paragraph 19 of appendix 5 of L108 ('guidance on the regulations') recommend a 'baseline' audiogram (ideally prior to noise exposure) followed by audiometry annually for the next two years and three-yearly thereafter, or at intervals determined by the results of the tests. Given endemic Covid-19, HSE has advised that audiometry may be deferred for three months and clinical judgement then applied (8).

2 June 2020



Adequate functional hearing for work offshore may be established by the process of telephone or video consultation itself, particularly given that lip-reading is not possible by telephone and is likely to be more difficult by video consultations. The examinee who is able to understand communications over the telephone or video consultation may be assumed to have adequate functional hearing for work offshore.

Examining doctors should follow the recommendations of L108 in considering the frequency of audiometry; it is **not** necessary for audiometry to be undertaken 'routinely' at every assessment. Where the examining doctor considers that a first or repeat audiogram is appropriate, arrangements may be made for this in a 'socially distanced' manner: the examinee should be present in the test centre for the minimum period of time necessary (any administrative and clinical 'paperwork' having been completed beforehand where feasible), the test undertaken in a manner which maximises distance between examinee and the person administering the test (for example, the examinee may be instructed on placement of headphones, the operation of the 'respond' button, etc from a distance, rather than be directly assisted with placement of these), and the testing booth, earphones and respond buttons should be disinfected both prior to and after use on each occasion.

It is recognised that this advice may have significant implications for the organisation of health surveillance for hearing loss in the offshore oil and gas industry: employers will wish to review with their medical advisors their existing processes for recording and acting on dates recommended for repeat audiometry and for arranging tests in accordance with these, bearing in mind that the recommended interval for repeat audiometry may not coincide with the recommended review date for next OGUK medical assessment.

Urinalysis

Examining doctors are likely to interpret the requirement for urinalysis as being a requirement for dipstick testing for protein, blood and glucose.

Testing for haematuria

The Renal Association and British Association of Urological Surgeons advised in 2008 that 'urine testing for haematuria should only be undertaken for identifiable clinical reasons; there is currently no evidence to support opportunistic screening of the general population.' (9). This situation does not appear to have changed since.

It is **not** necessary for examining doctors to undertake 'routine' urinalysis for haematuria. Where the examining doctor suspects that the examinee may have pathology for which urinalysis for haematuria would be appropriate, it will be also be appropriate for the examining doctor to communicate that clinical suspicion to the examinee's GP or personal physician, who would then be expected to undertake the necessary clinical assessment and investigations directly. This will minimise the number of medical contacts the examinee/patient will require. Examining physicians should obtain a report from the GP on the outcome of investigation in the usual way. Depending on the degree of clinical suspicion and the nature of the suspected pathology, certification may be time-limited or postponed pending receipt of the GP report.

Testing for proteinuria

Paragraph 1.1.28 of NICE guideline CG182 (10) suggests that testing for chronic kidney disease (CKD) using either eGFRcreatinine (a blood test) or ACR should be offered to persons with a range of clinical conditions (many of which may be encountered in workers undergoing OGUK assessments): diabetes, hypertension, acute kidney injury, cardiovascular disease (ischaemic heart disease, chronic heart failure, peripheral vascular disease or cerebral vascular disease), structural renal tract disease, recurrent renal calculi or prostatic hypertrophy, multisystem diseases with potential kidney involvement (e.g. systemic lupus erythematosus), family history of end-stage kidney disease (GFR category G5) or hereditary kidney disease – for example, autosomal dominant polycystic kidney disease. Paragraph 1.1.18 recommends urine ACR to detect and identify proteinuria, and

2 June 2020



paragraph 1.1.17 advises against urine test strips for this purpose unless they are capable of detecting albumin at low concentrations and expressing the result as an ACR.

It is **not** necessary for examining doctors to undertake 'routine' urinalysis for proteinuria – the list of conditions for which testing for CKD is suggested by NICE are those for which reports from treating clinicians may well be required by examining doctors: if the examining doctor considers that knowledge of the results of testing for urine ACR are necessary for the OGUK medical assessment, a report from the treating clinician should be obtained for this purpose. Certification may be time-limited or postponed pending receipt of the report, as necessary.

Testing for glucose

Urinalysis for glucose is one of the appropriate tests where a diagnosis of diabetes is suspected. Where the examining doctor suspects a diagnosis of diabetes from the clinical history, it would be appropriate to refer the examinee to his/her GP/personal physician for diagnostic assessment. Because a negative urinalysis in this situation would not exclude the diagnosis, urinalysis for glucose is not required for appropriate action by the examining doctor in the event of clinical suspicion. It is **not** necessary for examining doctors to undertake 'routine' urinalysis for glycosuria.

Obesity as a risk factor for the development of diabetes is common in the offshore workforce. Even in the absence of symptoms, examining doctors may suspect that diabetes is a plausible unrecognised condition in the examinee. A risk assessment tool such as that provided by Diabetes UK (11) may assist examining doctors assess risk in the examinee. Where the examining doctor considers that the possibility of unrecognised diabetes is sufficiently great to justify diagnostic testing, the examinee's GP/personal physician should be contacted and a plan for investigation agreed; the examining doctor will wish to know the outcome of this for certification purposes, and certification should therefore be time-limited or postponed (depending on the degree of suspicion and urgency of investigation) accordingly.

Visual Acuity

Examinees with corrective lenses for refractive errors should be following their optician's recommendation for repeat vision testing. In examinees other than crane operators, where a record of visual acuity is available from previous OGUK medical notes, repeat assessment is *not* required unless the examinee reports an apparent decrement in vision or a pattern of progressive visual change is apparent from the records. Where examinees do report an apparent decline in vision, they should be instructed to attend an optician for a formal eyesight test, this being a necessary examination in the clinical circumstances. The optician should be asked to provide a statement of the examinee's visual acuity expressed as Snellen equivalents, and certification may be time-limited or postponed as necessary while this is obtained.

Where no record of visual acuity is available to the examining doctor (for example at a first-ever assessment), the examinee should be instructed to attend an optician for a formal eyesight test, this being a necessary examination in the occupational fitness assessment circumstances. The optician should be asked to provide a statement of the examinee's visual acuity expressed as Snellen equivalents, and certification postponed while this is obtained.

Crane operators are an occupational group in which visual function is of significant importance. They should be asked to provide an optician's report of eyesight testing, with a recommendation from the optician for repeat testing.

2 June 2020



Body Mass Index

Calculation of body mass index requires a measurement of the examinee's height and weight.

Measurement of height

It is known that height may decrease during adult life, but the magnitude of this change is unlikely to exceed 1 cm over the course of a decade (12). Examining doctors need not 'routinely' measure the examinee's height, if a measurement of height within the past decade is already available from previous records or other sources.

Measurement of weight

In many instances at OGUK medicals, measurement of weight and calculation of BMI is used to advise the examinee on his/her degree of obesity (if any), change in weight since last medical, and the health implications of this. Where previous records indicate that BMI is not at a level where minor error in measurement will be critical to certification decisions, weight may be self-measured by the examinee. Where the examinee is using a moveable camera device for video consultation, he/she may be requested to show the examining doctor the scale reading if desired.

Failure or limited duration certification outcomes at OGUK medicals is due to weight in approximately 0.1% of medical assessments overall (13). In cases where measurement of weight is required with sufficient accuracy to be critical to certification decisions, arrangements may be made for this in a 'socially distanced' manner: the examinee should be present in the test centre for the minimum period of time necessary, weight measurement undertaken in a manner which minimises the time the person undertaking the measurement is close enough to the examinee to read the scale indicator, and appropriate disinfection processes followed.

In some cases, examining doctors may be following a process of limited duration certification to encourage 'active weight management'. In these circumstances, it may be feasible for the examining doctor to contact the medic on the installation the examinee is to travel to next after the assessment and request the examinee's weight as recorded in 'Vantage'*.

*(weight is measured at helicopter flight check-in and entered into the Vantage POB system, where it is stored for one month for flight weight and balance calculations. However, it is not accessible to workers in the 'My Vantage' app, nor is it feasible for examining doctors to request weights directly from the Vantage database administrators).

Pulse and Blood Pressure

Despite not being specified as minimum requirements at paragraph 3.2 of section 1 of the guidelines, it will be near-universal practice for examining doctors to measure pulse and blood pressure.

<u>Pulse</u>

It will not be possible for examining doctors to take an examinee's pulse by 'remote' means. Careful attention to solicitation of history of possible palpitation or cardiac irregularity will identify those in which investigation of arrhythymia would be appropriate and communication with the examinee's GP to arrange this undertaken. Where relevant, examining doctors may be able to instruct examinees in simple self-assessment of pulse rate and rhythm during a video consultation.

2 June 2020



Blood Pressure

Examinees without a known history of hypertension (and without comorbidity in which blood pressure is relevant to assessment)

Paragraph 1.2.10 of NICE guideline NG136 (14) recommends measurement of blood pressure in persons without a diagnosis of hypertension 'at least every 5 years, more frequently if close to 140/90 mmHg'.

Frequency of blood pressure measurement at 'socially distanced' OGUK medical assessment should follow this recommendation. BP measurements from previous OGUK medicals or other sources (e.g. GP reports) should be noted, and a decision made on the necessary timings of repeat measurements. Where a measurement of blood pressure is deemed necessary, 'no contact' measurement may be obtained by examinees themselves with a home blood pressure monitor. The British and Irish Hypertension society provides a list of validated home blood pressure monitors (15), and a well-known high street pharmaceutical chain currently (May 2020) offers its own-brand upper arm BP monitor for £19.99. Where examining doctors consider a blood pressure measurement is necessary because a previous measurement was 'close to 140/90 mmHg', a period of home blood pressure monitoring with a self-purchased monitor is likely to be thought clinically appropriate.

Examinees with an established history of hypertension (or with comorbidity in which blood pressure is relevant to assessment)

NICE NG136 recommends either clinic (GP surgery) (paragraph 1.4.15) or home blood pressure (paragraph 1.4.17) measurements for monitoring of established hypertension, with treatment targets of less than 140/90 or 135/85 respectively (paragraphs 1.4.20 and 1.4.22). Although no frequency of measurement is stated, usual clinical practice in the UK would be to measure blood pressure annually or six monthly. It is therefore to be expected that treating clinicians will have relevant records of blood pressure measurements. Examining doctors may obtain records of BP measurements from treating clinicians (with certification being time-limited as appropriate while this is done) or as an alternative, may suggest examinees obtain a validated home blood pressure monitor* and take readings themselves – many examinees with established hypertension may have already done so themselves, and those who have not may be able to assist their treating clinician in their clinical care by doing so.

*The British and Irish Hypertension society provides a list of validated home blood pressure monitors (15), and a well-known high street pharmaceutical chain currently (May 2020) offers its own-brand upper arm BP monitor for £19.99.

Other tests sometimes undertaken

PEFR, spirometry and blood tests are not routine requirements of an OGUK medical assessment and need not be undertaken 'routinely'. The recommendations of the ARTPS and BTS in regard to respiratory function testing (2) should be followed, and where the guidelines refer to specific spirometric values as an assessment of fitness, an appropriate functional test should be substituted (see below).

Appropriate clinical examination

Although a conventional physical examination may not be possible by remote consultation, general observation and inspection will be possible to some extent by videocall. Range of movement of limbs and joints may be observed, and the examinee's general appearance noted. As suggested already (6), examinees may be able to undertake guided self-examination directed by the physician, including use of scales, blood measure monitors and similar.



Administrative Aspects

Medicals expiring on or after 1st January 2020

For OGUK medicals expiring on or after 1st January 2020 (some of which may have been extended under the 18 March 2020 advisory note), repeat assessment may be undertaken by 'socially distanced' means subject to the following provisions:

The examining doctor should have access to the most recent prior OGUK medical assessment. Where necessary, the record should be obtained from the previous examining doctor, if different. Examining doctors should provide a copy of the records of a past OGUK medical to another examining doctor on request and without undue delay and without charge or fee to either the examinee or the requesting examining doctor for this purpose.

The examining doctor should be provided with a statement from the examinee's employer or employment agency (where relevant) of the examinee's sickness absence record, medevac history, missed or delayed trip history, or any other medical concern about the examinee since the date of the preceding OGUK medical.

Certification may follow the usual periodicity on completion of the assessment.

Medicals expiring on or before 31st December 2019

Where an OGUK medical lapsed on or prior to 31st December 2019 and was not renewed prior to widespread social 'lockdown' in the UK in late March 2020, it is more likely that the holder is not a frequent offshore worker. Employer/agency knowledge of sickness absence record, medevac history etc may therefore be less certain, and a 'socially distanced' medical assessment made under the 'new medical' provisions is appropriate. Certification may follow the usual periodicity on completion of the assessment.

'New Medicals'

Where an examinee has not undergone an OGUK medical assessment previously, there will be no prior record of medical history or examination findings, nor will there be any employer/agency knowledge of apparent medical concerns from workmates or installation medics. 'Socially distanced' medical assessment is therefore only appropriate with the following provision:

The examining doctor must seek corroboration of the examinee's medical history and any available most recent record of height, weight, body mass index, pulse/blood pressure and visual acuity, typically from the examinee's GP/personal physician. The GP may be provided with a copy of the examinee's completed medical questionnaire and asked to comment on any omissions/inaccuracies, and the GP may be asked to provide the most recently recorded height, weight, BMI, blood pressure and visual acuity available in the GP notes.

It should be noted that these 'Covid-19 amendments' assume assessment within a country possessing a primary healthcare system similar to that of the UK, and with a population prevalence and spectrum of chronic disease similar to that of the UK. Where these assumptions are not valid, examining doctors in locations with a Covid-19 related need to do so should attempt to apply the principles of the 'socially distanced' OGUK medical so far as their circumstances allow.

It should also be noted that while the duration of the Covid-19 pandemic remains unknown and unpredictable, it is envisaged that these amendments will be required for a period extending to approximately late 2020/early 2021, but not necessarily beyond this. The situation will be kept under review and further amendments to guidance issued as required as this changes.

2 June 2020



Examining doctors will be aware that it is intended to revise the current (2008, 6th edition) guidelines, and this remains the case – these amendments are not a revision of the guidelines as such, but experience of their application is likely to inform the revision process itself as that resumes in due course. Examining doctors should continue to assess examinees in accordance with the existing guidelines, albeit while applying these amendments.

Examining doctors should be aware that OGUK has issued advice on assessment of vulnerability of offshore workers (16). The 'Covid-19 amendments for socially distanced assessment' does not of itself address the assessment of worker vulnerability to severe manifestation of Covid-19 infection: that will continue to be addressed in separate advice.

2. Guidelines Section 2 – specific conditions

There are relatively few instances in the guidelines where specific action is predicated on examination or test findings.

Paragraph 2.3 Hypertension

Examining doctors should refer to the general notes on measurement of pulse and blood pressure above.

Paragraph 7.3 Obstructive or Restrictive Pulmonary Disease

Current recommendations advise against spirometry in non-essential circumstances (2). The guideline requirement to assess functional ability to respond to a platform emergency may be met by substituting a functional assessment for the spirometry values.

Experience from the 'daily mile' initiative for children (17) indicates that during a 15-minute self-paced walk, jog or run, 90% of 8-12 year olds manage to cover a distance of one mile or more (FAQs – will a child find a mile too far to run?). A 'brisk' walking pace in adults is 100 steps per minute (18, 19), corresponding to 3METs, the lower bound of 'moderate' physical activity intensity range. The 2011 Compendium of Physical Activities (20) indicates that a walking speed of 3.2 to 3.5 miles per hour is 'moderate' to 'brisk' paced, and 3.5 to 4.3 METs equivalent.

It should therefore be possible for a normal adult in normal health to complete a one-mile brisk-paced walk in just over 17 minutes (17 min 9 secs = 3.5 mph) to just under 19 minutes (18 minutes 45 sec = 3.2 mph) Inability to complete a brisk walk over one mile may be interpreted as indicating significant cardio-pulmonary or other-caused functional impairment, or lack of adequate physiological reserve due to deconditioning. The former may be amenable to clinical treatment, while the latter will correct with simple physical training.

Where it is necessary to assess functional ability to respond to a platform emergency, the examinee should undertake a timed, self-paced, continuous brisk walk of one mile (1.61 km) distance. The examining doctor should plan out a suitable level outdoors course (circular or 'out-and-back'; an online mapping tool may be of assistance) and accompany the examinee on his/her walk, at an appropriate 'social distance'. The examinee should be encouraged to undertake a suitable physical reconditioning programme (21) beforehand until confident of their ability to complete the walk. Those unable to complete the walk in 19 minutes or less should have certification postponed until able to do so; those completing the walk in a time between 17 min 9 sec and 19 minutes should be encouraged to continue the physical reconditioning programme until able to complete it in 17 min 9 sec or less. Limited duration certification should be issued and repeated appropriately as necessary.

2 June 2020



If the degree of physical exertion involved in a one-mile brisk walk is considered medically contraindicated for the examinee, he/she will be unfit for offshore work due to the possible physical exertion required during platform emergency procedures also being contraindicated.

Paragraph 9.2 Obesity

Examining doctors should refer to the general notes on measurement of BMI above.

Paragraph 19.2 Visual Acuity

Examining doctors should refer to the general notes on assessment of vision above.

3. Guidelines Section 3

Paragraph 2 Emergency Response Teams

A revised system of fitness assessment for ERT duty will follow on completion of consultation with operator medical advisors

Paragraph 4 Crane Operators

Consideration of the assessment of vision in crane operators is referred to in the general notes on visual acuity above.

4. Guidelines Section 4

Provision for the assessment of 'fitness to train' for in-water EBS exercises on survival courses was included in the OGUK advice note of 18 March 2020 (1).

2 June 2020



References:

- 1. Covid-19 Medical Evaluations. OGUK, 18 March 2020: https://oilandgasuk.co.uk/wp-content/uploads/2020/05/COVID-19-Medical-Evaluations.pdf
- 2. Respiratory Function Testing During Endemic Covid-19. ARTPS and BTS, 26 May 2020: https://www.artp.org.uk/write/MediaUploads/Standards/COVID19/Respiratory_Function_Testing_During_Endemic_COVID_V1.5.pdf
- 3. NHS 111: https://www.nhs.uk/using-the-nhs/nhs-services/urgent-and-emergency-care/nhs-111/
- 4. Car, J. Telephone Consultations. BMJ 2003;326:966 https://doi.org/10.1136/bmj.326.7396.966
- 5. Greenhalgh, T. Covid-19: a remote medical assessment in primary care. BMJ 2020;368:m1182 https://doi.org/10.1136/bmj.m1182
- 6. Video Consultations in the NHS. Nuffield Department of Primary Healthcare Services, University of Oxford (undated, last accessed 31 May 2020): https://www.phc.ox.ac.uk/research/resources/video-consulting-in-the-nhs
- 7. L108 Controlling Noise at Work Guidance on Regulations. Second edition. HSE, 2005: https://www.hse.gov.uk/pubns/priced/l108.pdf
- 8. Health and medical surveillance during the coronavirus outbreak. HSE (undated, last accessed 31 May 2020): https://www.hse.gov.uk/news/health-surveillance-coronavirus.htm
- 9. Joint Consensus Statement on the Initial Assessment of Haematuria. Renal Association and British Association of Urological Surgeons. July 2008. https://www.baus.org.uk/ userfiles/pages/files/News/haematuria consensus guidelines July 2008.pdf
- 10. Chronic kidney disease in adults; assessment and management. NICE CG182, January 2015: https://www.nice.org.uk/guidance/cg182/chapter/1-Recommendations#investigations-for-chronic-kidney-disease-2
- 11. Know Your Risk. Diabetes UK (undated, last accessed 31 May 2020): https://riskscore.diabetes.org.uk/start
- 12. Sorkin, J D et al. Longitudinal Change in Height of Men and Women: Implications for Interpretation of the Body Mass Index: The Baltimore Longitudinal Study of Aging. American Journal of Epidemiology, Volume 150, Issue 9, 1 November 1999, Pages 969–977, https://doi.org/10.1093/oxfordjournals.aje.a010106
- 13. OGUK Medical Advisor presentation at OGUK Examining Doctors Conference 2019.
- 14. Hypertension in adults: diagnosis and management. NICE NG136, August 2019: https://www.nice.org.uk/guidance/ng136
- 15. BP Monitors. British and Irish Hypertension Society (undated, last accessed 31 May 2020): https://bihsoc.org/bp-monitors/
- 16. Vulnerable Persons Advice. OGUK, April 2020: https://oilandgasuk.co.uk/oguk-vulnerable-persons-advice/
- 17. The Daily Mile Children Fit for Life (undated, last accessed 31 May 2020): https://thedailymile.co.uk/

2 June 2020



18. Tudor-Locke, C et al. How fast is fast enough? Walking cadence (steps/min) as a practical estimate of intensity in adults: a narrative review. BJSM 2018; 52; 776-788 : http://dx.doi.org/10.1136/bjsports-2017-097628

19. Tudor-Locke, C et al. Patterns of adult stepping cadence in the 2005–2006 NHANES. Preventive Medicine, 2011 (53) 178-181: https://doi.org/10.1016/j.ypmed.2011.06.004

20. Compendium of Physical Activities 2011: https://sites.google.com/site/compendiumofphysicalactivities/Activity-Categories/walking

21. NHS. Couch to 5k: week by week (undated, last accessed 31 May 2020): https://www.nhs.uk/live-well/exercise/couch-to-5k-week-by-week/