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A recommended fitness standard  
for the oil and gas industry

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A RECOMMENDED FITNESS STANDARD FOR THE OIL AND GAS INDUSTRY

October 2010

First edition

Published by

**ENERGY INSTITUTE, LONDON**

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Registered charity number 1097899

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The EI gratefully acknowledges the financial contributions towards the scientific and technical programme from the following companies

BG Group  
BP Exploration Operating Co Ltd  
BP Oil UK Ltd  
Centrica  
Chevron  
ConocoPhillips Ltd  
EDF Energy  
ENI  
E. ON UK  
ExxonMobil International Ltd  
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ISBN 978 0 85293 562 0

Published by the Energy Institute

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## FOREWORD

Fitness standards are becoming increasingly common practice in industry and the emergency services. Such standards are used by the police, fire and rescue services, the Royal National Lifeboat Institution and the military. The standards include measures of strength, endurance, anthropometrics, flexibility, motor skills and cardiac and metabolic fitness.

There are a number of benefits of introducing fitness standards to the workplace. By ensuring that an employee is physically capable of completing the essential tasks of the job to at least the minimum acceptable standard, the risk of employing physically unfit individuals in physically demanding jobs - and the associated human and economic effects e.g. through injury - are reduced. Furthermore, standards ensure selection is based solely on ability to complete tasks and is therefore fair and unbiased. This assessment based on capability also has implications for an ageing workforce, as individuals may wish to remain in employment beyond any arbitrary retirement age.

This report describes new work undertaken at the University of Portsmouth (Department of Sports Science and Exercise) for the EI's Health Technical Committee. The report provides an introduction to fitness standards and goes on to make recommendations for minimum fitness standards for the oil and gas industry. Minimum standards have been evaluated for common critical tasks - with a significant physical fitness component - e.g. valve turning and ladder climbing. The evidence base for the standards is contained within the report as is guidance on administering the tests.

The report does not provide guidance on policy issues or implementation strategies as this is considered to be a matter for individual companies.

For broader guidance on managing the roles associated with tasks that place specific demands, physical or psychological, on employers, see OGP IPIECA guidelines on *'Fitness to work guidance for company and contractor health, HSE and HR professionals.'*<sup>1</sup>

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Future publication, title correct October 2010. Visit OGP IPIECA website for further details.

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## ACKNOWLEDGEMENTS

The Energy Institute (EI) would like to acknowledge the significant work and efforts undertaken by the project team and authors from the Department of Sport and Exercise Science, University of Portsmouth, and express its appreciation of that work. In particular, the Institute wishes to thank Gemma Milligan, Dr. Jim House, Geoff Long and Professor Mike Tipton.

The authors would like to thank the following people and employees for their assistance with this project:

Energy Institute Health Technical Committee  
Shell (UK) Limited  
BP plc  
ExxonMobil  
Pat Weafer from Exxon-Mobil  
Step Change in Safety Partnership  
Petrofac Training  
Oil & Gas UK (formerly UKOOA)  
Bluewater Services (UK) Ltd  
Chevron  
Talisman Energy (UK) Ltd  
Diamond Offshore Drilling (UK) Ltd  
The Health and Safety Executive  
The CAPITA Group plc  
OIMs and crews of BRENT DELTA, BLEO HOLME, and OCEAN NOMAD  
Dr Dan Roiz de Sa, RDS Medical Ltd  
Dr. David Salt, Dave Black, Nikki Ferguson and Steve Vance all from the University of Portsmouth  
Carole Tipton  
Dr Tara Reilly

This research was commissioned by the EI's Health Technical Committee. Oil & Gas UK is acknowledged for providing a level of funding in support of this research.

The Institute would also like to acknowledge the valuable contributions of members of the Health Technical Committee in steering this project to completion. Furthermore, the EI extends its gratitude to the companies and individuals that took part in this study without which this project would not have been possible.

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## 2 INTRODUCTION

The University of Portsmouth was contracted (research project 27100 H603) by the Energy Institute (EI) to develop and recommend a suitable fitness standard for the Oil and Gas Industry (OGI) according to the following terms of reference:

- i. Review the offshore and onshore tasks requiring a significant physical fitness component (task analysis).
- ii. Determine the importance of the physically demanding tasks and identify those which are essential (common critical tasks) for success and safe work (task assessment).
- iii. Establish the method of best practice (technique, MOBP) for undertaking the essential tasks.
- iv. Establish and agree the minimum performance standard for the essential tasks (task performance) when performed using the MOBP.
- v. Assess the physical and physiological demands of these tasks (task quantification).
- vi. Design a simple-to-administer minimum fitness standard for the OGI.
- vii. Advise on fitness regimes to assist OGI in achieving the minimum acceptable level of fitness.
- viii. Validate the work undertaken in i. to vi. (initiated in March 2009).

Fitness standards are becoming common practice within industry and the emergency services. Such standards are used by the police, fire and rescue services, the Royal National Lifeboat Institution and the military (Stevenson *et al.*, 1992; Rayson *et al.*, 2000; Anderson *et al.*, 2001; Allsopp *et al.*, 2003; Reilly and Tipton, 2005). The standards include measures of strength, endurance, anthropometrics, flexibility, motor skills and cardiac and metabolic fitness.

The reasons for introducing fitness standards into the workplace are to:

- Minimise the potential for employing physically unfit individuals in physically demanding jobs; this can turn out to be costly, both in human and economic terms.
- Ensure that an employee is physically capable of completing the essential tasks of the job to at least the minimum acceptable standard, and provide employees and potential employees with a target to reach and sustain.
- Decrease the potential for injury, thereby providing a 'duty of care' for all employees.
- Ensure selection is based solely on ability to complete the task and is therefore fair, unbiased and gender free.
- Base retirement age on capability rather than an arbitrary age.
- Provide feedback on rehabilitation and return to work.
- Encourage self-training, self evaluation and a healthier lifestyle.
- Increase confidence of individuals and teams.

By setting a valid minimum fitness standard, employers should maximise the number of employees who are able to complete the essential tasks. If the standards are too low, employers will increasingly recruit individuals who are incapable of meeting the job demands. If they are too high, a proportion of individuals will be rejected, who would have been capable of doing the job. Therefore, a minimum standard should select, as accurately as possible, individuals who can perform at least to the minimum requirement of the essential tasks of the specified job.

To be valid and defensible, a fitness standard should be based on the most common (generic) tasks that are essential for operational performance of the job. These are defined as the most physically demanding, essential (i.e. critical and generic) components of the job. These tasks are identified by evaluating an occupation to determine the frequency, importance and nature of the tasks involved. Therefore, the following requirements are fundamental to the establishment of a minimum fitness standard:

- The physical tasks should be generic and essential to the successful completion of the job.
- The MOBP to undertake each task must be established and sanctioned by the employer.
- A minimum acceptable level of performance for each generic, essential task must be established and sanctioned by the employer.
- The physical demands of performing the essential tasks, using the MOBP, to the minimum acceptable level should be established and used as the basis for the fitness standard (see Annexes A and F).

The tests that constitute a fitness standard can be direct simulations of a task, in which case simple pass/fail criteria can be applied. If it is not possible to use a simulation (too difficult/expensive to set up), simple to measure tests that predict performance on the essential task can be developed. These PST can also be used to ensure that individuals are fit enough to undertake the fitness tests that employ simulations (Reilly *et al.*, 1979; Arnold *et al.*, 1982; Jackson and Osburn, 1984).

Two consequences arise from the fact that no prediction is perfect. Firstly, statistical analyses have to be used with PST to determine the strength of the relationship and thus, accuracy of the prediction. Secondly, simple pass/fail criteria should not be used. Instead, the inaccuracies inherent in the PST are accommodated by the inclusion of a 'borderline' category. The divisions between pass/borderline/fail are determined by calculating prediction intervals (Reilly *et al.*, 2005).

Once developed, a fitness test should be validated in a separate study with a different group of volunteers to ensure that the tests are reproducible and generally applicable (Reilly *et al.*, 1979; Washburn and Safrit, 1982; Rayson *et al.*, 2000).