



Notes on the G+ Webinar on **Physical capacity/medical requirements and standardisation for offshore wind**

on Tuesday 26 May 2020, 12.00 – 13.00 (BST) held as a Webex webinar

Welcome and Opening Remarks

B. Hildenbrand, Manager Offshore Wind, Energy Institute

B Hildenbrand welcomed all to the first G+ health Webinar which follows the face to face meeting on physical capacity/medical requirements and standardisation for offshore wind that was had in May 2019, in Poole UK. At this meeting it was agreed to develop standardised guidelines within “Fitness and Medicals” as well as updating existing recruitment processes regarding physical requirements.

This webinar aimed to update on where the work progressed, inform about possibilities for experts in the international wind industry and experts in occupational health in offshore wind to get involved and to provide an outline of the next steps.

A schematic framework was presented that shows the key components of the workstream (robust medical evaluation, physical evaluation and physical fitness support programmes) and how these are developed via the three studies undertaken by the Energy Institute’s Health Technical Committee (in cooperation with G+), University of Portsmouth (contracted by G+) and Ørsted (in cooperation with G+). The diagram illustrated the different phase of the work strands and how they are linked and complement each other in the development of a harmonised standard.

Medical Standard for Offshore Wind

Dr K. Mike Doig, EI HTC

Dr M Doig provided an update on the medical standard. The Guidelines are being developed and presented at a high level so that may be compatible with other international standards already being developed. They are being written in a format that provides guidance in principle to the examining occupational physicians. The guidelines will not contain a prescriptive list of precluded conditions or diagnoses. A key principle is that the examining physician will use their own professional skills and judgement and knowledge of the workplace to individually evaluate the individual’s fitness for duty, whilst ensuring they are not unfairly excluded from employment.

The draft preliminary format and text has been completed and has been circulated. Final Appendices to be added once the Cardiovascular and Physical Capability projects have been finalised and the resulting standards incorporated in the document.

Industry review and feedback will be then be incorporated in the final version prior to publication.

Physical Capacity Assessments for offshore Service Technicians

Dr Gemma Milligan, University of Portsmouth

Dr G Milligan presented on the work strand University Portsmouth is conducting with the aim to determine the essential tasks of Offshore Wind Technicians and establish the physical requirements of these tasks. To assess an employees’ physical capability to undertake their job, it is important to follow a valid methodology. A global task-based approach has been adopted to assess physical capability in occupations such as the Military and Emergency services. These standards generally base the suitability for employment on the physical and physiological components associated with the safe and successful completion of tasks that are considered generic and essential, for a specific job. She stressed that thus employment is free from age and sex discrimination.

The aim of Phase 1 and 2 of this stream of work is to: Determine the most physically demanding essential tasks of service technicians working in offshore wind. And to establish the physical requirements of these essential tasks. In a Phase 3, physical capability assessments for service technicians working in offshore

wind are then recommended. The budget for the third phase will seek approval from the G+ Board once more details of the work needed are confirmed.

To complete the first aim of the project a job task analysis will expand on the previous work carried out with G+ and the University and Portsmouth.

A typical working day will be broken down into component jobs, which will then be analysed in terms of technical specifications of turbines, frequency, duration, rest breaks, clothing ensembles, environmental conditions and the methods of best practice (MOBP) for undertaking each of the tasks. This will allow the most physically demanding tasks to be identified, performance standards to be established and differences between turbines to be identified.

The job task analysis will be completed using a combination of internationally recognised methodologies aim to get input from all members of G+. To further establish the physical demands for tasks where the acceptable levels of performance could be established (i.e. the rate, frequency and duration for which a task is performed), tasks with a strength/strength endurance component will be quantified in terms of loads lifted and, pulling, pushing forces. For tasks identified to have a cardiovascular requirement, a simulation will be constructed to replicate the task using the methods of best practice and performance standards.

The results of the job task analysis will be presented to the G+ Focal Group for comment and endorsement along with potential avenues these could be assessed taking into account global differences. If organisations already have assessments in place these data can be used to validate their existing processes.

In the third phase it is likely, in order to cater for global differences in assessments, both, predictive tests, that can be undertaken in an office alongside medicals, and simulations that could completed as standalone assessments or as part of competency based training would have to be developed.

To date, ethical approval for phase 1 has been submitted and approval has been received. A senior health director for the Western Hemisphere was consulted regarding global differences in how individuals can be assessed. By time of the webinar seven G+ member organisations were contacted, and interviews were either undertaken or arranged for the coming months with their subject matter experts. A global mapping of wind farms and turbine types is available, and a review of available resources is in progress. Due to the COVID-19 pandemic outbreak a mitigation planning is undertaken where necessary.

In order to facilitate the first phase more support form member organisations and experts is welcome. This includes access to those individuals that make up the subject matter experts' group. Access to Standard operating procedure documents and turbine specifications e.g. ladder heights, hatch dimension and loads, and small space dimensions etc. In a next step it is hoped to gain access to service technicians at work (COVID-19 permitting).

Attendees were asked to get in contact with Dr Gemma Milligan or Bea Hildenbrand (G+ Secretariat), if they feel they could offer support in any of these areas.

Capacity for offshore wind technicians - Ørsted PhD study

Anne Skov Østergaard, Ørsted

A Skov Østergaard, PhD Student presented her work stream which aims to map the physical exposures and potential health implications among offshore wind service technicians and to test the feasibility and effect of individually tailored physical exercise as a strategy for increasing physical capacities and minimizing musculoskeletal discomfort.

Background for her PhD is that due to offshore wind still being a quite new industry, there is still only limited knowledge about the demographics of workforce, their physical exposures and how the work affects the physical health of the workers and therefore also the physical requirements. The different elements and perspectives that are incorporated into the design of the three individual studies of the PhD are physical capacity, physical exposure and physical capacity promotion.

The data collection for the first two studies has been conducted and is currently being analysed. She presented the individual studies as follows:

1) The first study: Cross-sectional company survey distributed to Ørsted technicians in DK and UK, corresponding to approx. 350 techs. Primary questionnaires included in the survey targeted musculoskeletal complaints, perceived physical capacities and physical exposures (~60 % response rate).

Preliminary data show that the body parts most frequently reported as painful by techs include the neck, knees, shoulders and lower back, with the latter being the most prevalent in our sample. Further, 55 % responded that physical pain or discomfort did negatively affect their work within the last week (=>a little) and 10 % of the sample don't think it is realistic that they will be able to do their current job two years

from now. We also asked the techs about how strenuous they perceive their job using the BORG scale and on average their perception is categorized as “high exertion”. Earlier studies have found that perceived exertion at this level on the BORG scale appears to be a good indicator that high muscular loading occurs at work.

2) The second study: Field observational study that involved objective physical exposure and capacity assessment among a subgroup of 27 technicians servicing middle and large sized turbines. The physiological and ergonomic exposures were assessed using HR-monitoring and accelerometers attached at 5 different body parts for detection of the time spent working in some of the critical ergonomic postures, that are known risk factors for the development of musculoskeletal disorders.

Data is currently being analysed in collaboration with the Danish national research center for working environment, using their validated software.

3) The third study (expected to be carried out in the late summer and fall of 2020): 12-week intervention to test the effect and feasibility of individually tailored physical exercise during working hours on physical performance parameters and musculoskeletal complaints.

Unlike many earlier generic interventions that have tested the effect of physical training at the workplace, this approach individualizes exercise prescriptions based on the occupational work profile, individual physical performance measures and musculoskeletal health complaints.

In summary, the results from the PhD will contribute to the G+ workstream with perspectives on the long-term health of workers and overall physiological and ergonomic exposure of the work as a supplement to the specific readiness to work task-based approach. Additionally, the intervention study on the implementation of individually tailored physical exercise training will give information on the potential effect and effectiveness of the implementation of physical exercise as a strategy to pass requirements, increase the general physical work performance to and decrease musculoskeletal discomfort among workers.

Q&A Session

The presentations were followed by a Q&A session where attendees were encouraged to raise questions directly to individual presenters or in general to the whole panel.

Q1: Would you consider options on physical stress on techs who climb multiple parts of the turbine/ multiple assets a day?

A1: The study will commence with techs with high level of physical stress. They would create modular standards, depending on the type of turbine, type of transfer they undertake etc. Those modules would be differentiated by task and turbines. They study will commence with service techs, but it would be possible to extend to other work groups based on a risk task analysis.

Q2: Target group is described as Service Technicians. Does it mean that the workers during construction phase of a wind farm are excluded and the focus is on the O&M phase?

A2: The work is based on activity risk assessment, rather than specific target groups. As the set-up of the standard would be modular it can be designed for any specific work group or others like visitors to side. Also, an extension to onshore wind requirements is possible.

Q3: What age range the physical capacity assessments are aimed at?

A3: Physical capacity assessment is based on the work tasks that are to be carried out, and it is therefore irrespective of age.

For the medical standard an annex would be added to the study for those who will have a limited exposure to hazards, as well as for those who suffer minor medical conditions that won't affect their abilities to perform required tasks.

Q4: Should the examination be done by an occupational physician?

A4: The assessment should be done by an occupational physician. However, the assessment procedure may not be carried out by an occupational physician (e.g. a nurse), but it should be reviewed retrospectively, as a minimum by an occupational physician that understands the environment in which the person has to take the task required.

Q5: How can stakeholders contribute to the in the work task analysis that is being conducted to help better understand the physical demands on WTTs?

A5: Anyone who is involved in WT should contact GM directly, in particular, regarding various wind turbine designs that may inherently have an impact on certain physical activities.

Q6: What is the business case for companies that would like to invest in programs that will increase health of their workforce?

A6: It is hard to give numbers, but in Ørsted trials promoting one hour of physical exercise with office and blue collar workers for a 10-20 week period, have seen a decrease on pain related issues of 50% of pain cases.

Q7: What impact might COVID-19 have on the work stream, especially where physical examination is required?

A7: Due to the current situation in which visitors to wind farms will be restricted, if technicians could wear accelerometers and cameras the study would benefit on understanding how the activities are carried out in the field, reducing the need for them to go offshore to observe those activities.

Annex: Presentation Sides

Physical capacity/medical requirements and standardisation for offshore wind

G+ Webinar

26 May 2020, 12:00 – 13:00 BST

www.gplusoffshorewind.com

In partnership with the



- Part I
- Welcome and Opening Remarks** *B Hildenbrand, G+/EI*
 - Medical Standard** *Mike Doig, EI HTC*
 - Physical Capacity Standard** *Gemma Milligan, University of Portsmouth*
 - Capacity for offshore wind technicians** *Anne Skov Østergaard, Ørsted*
 - Road Map for activities** *B Hildenbrand, G+/EI*
- Part II
- Q&As** to all presenters *(please post questions via chat)*

Aim of this webinar is to engage with G+ members and wider stakeholders to

- inform about the status of this workstream
- ask for your active involvement and feedback in the specific phases and tasks
- provide you with an outlook on the next steps

Employees need to:

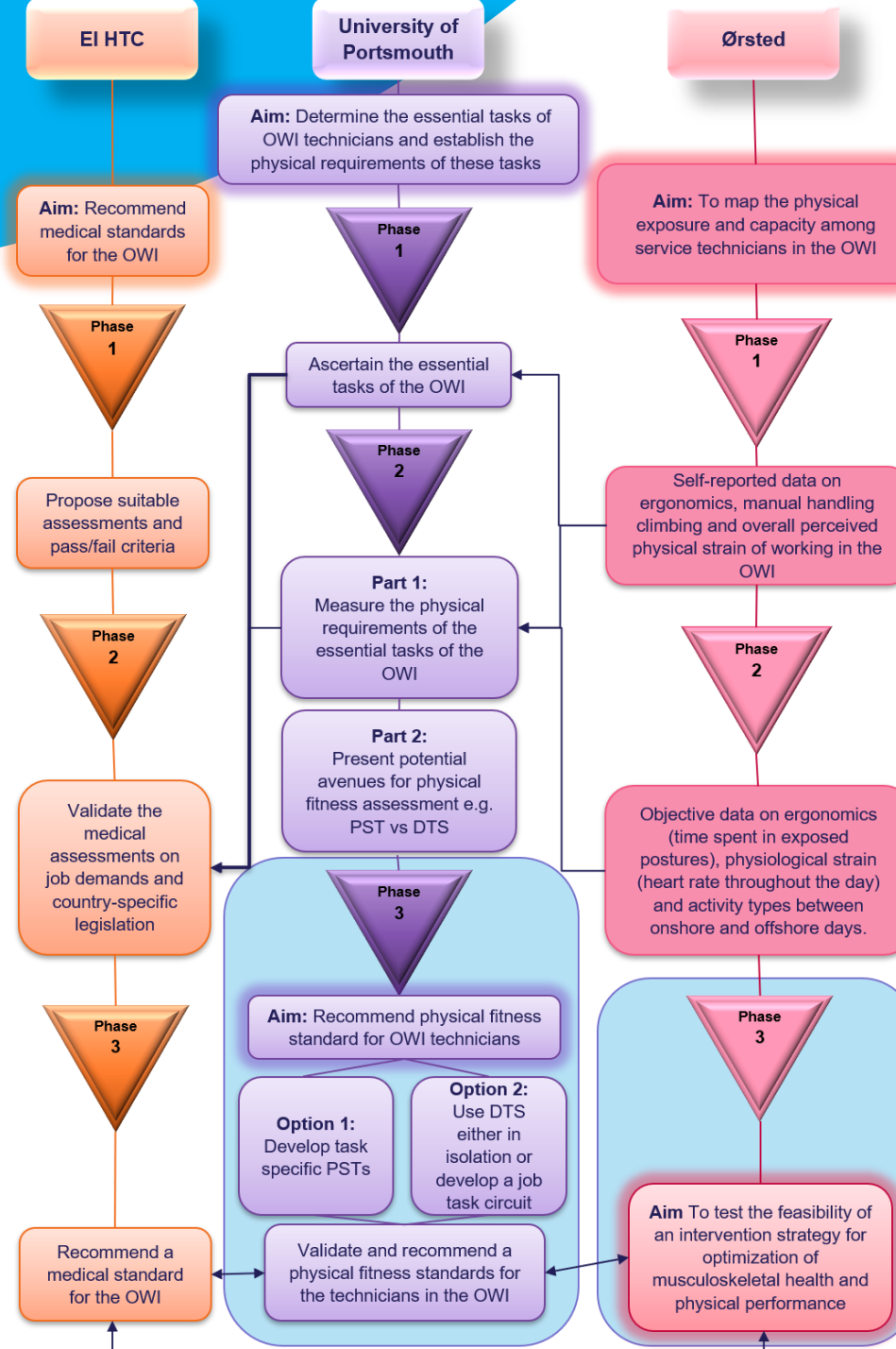
- Be free of medical conditions that could become a threat to themselves or others
- Have the physical fitness capability (e.g. cardiovascular fitness, muscular strength and endurance and mobility) to perform the essential tasks of the job

Key Components of the G+ work stream



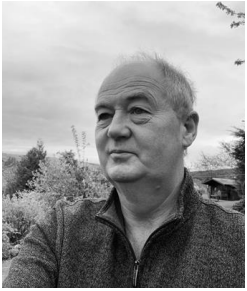
- **Robust medical evaluation**
 - Appropriate Guidance
 - Suitably qualified examining physicians
- **Physical Capability evaluation**
 - Relates to key job components
 - Practical and realistic
- **Physical Fitness support programmes**
 - Help workers maintain physical fitness and retain safe working practices

Scope of the G+ workstream



Key:
 OWI = Offshore Wind Industry
 PST = Predictive Selection Test
 DTS = Direct Task Simulation

The presenters today



Dr K Mike Doig,
Consultant and member of the EI
Health Technical Committee

- ❑ Member and past chairman of the EI Health Technical Committee since its inception in 2003
- ❑ Many positions in remote and occupational medicine from flying doctor in the North Sea, through Senior Medical Officer for the Channel Tunnel project and latterly Regional Medical Manager for Europe Eurasia Middle East and Africa - Chevron Corporation.
- ❑ MSc in Occupational Medicine University of London.



Dr Gemma Milligan, PhD,
BASES, FHEA, CSci
Senior Lecturer in Sport Exercise
& Health, University of Portsmouth

- ❑ Joined the School of Sport, Health and Exercise Science, in March 2008
- ❑ Completed her PhD in Fitness Standards for the Maritime Coastguard Agency and Oil and Gas Industry, in 2013
- ❑ Subsequent research has been in the area of Occupational Physiology, working with companies including the: Energy Institute, G+ Offshore Energy, The Royal National Lifeboat Institution, and British Armed Forces



Anne Skov Østergaard, PhD
Student, HSE Systems & Support,
Offshore, Ørsted Ørsted &
University of Southern Denmark

- ❑ 2018 – current: PhD student (Ørsted) and lecturer at the department of Sports Science and Biomechanics, research unit for Physical Activity and Health in Working Life
- ❑ 2017-2018 – Health Consultant at Ørsted, Human Resources (Health Strategy)
- ❑ MSc Human Physiology (2016), BSc Sports Science (2014), University of Copenhagen



Bea Hildenbrand, Manager
Offshore Wind, Energy
Institute

- ❑ Manager Offshore Wind, working for G+ (Global Offshore Wind Health and Safety Organisation) and SafetyOn (Onshore Wind Health and Safety Organisation)
- ❑ MSc in Environmental Sciences, research associate in atmospheric research and climate modelling at German Aerospace Centre

Some webinar ground rules

- Please keep your microphones muted and cameras off for the duration of the webinar
- Post your questions for the presenters via the chat function directly to the host

(Energy Institute).

- All questions will be addressed after the presentations
- This seminar will be recorded to be shared afterwards

Offshore Windfarm Medical Guidelines

The principles

Dr K M Doig

May 2020



Medical Evaluation

The Guidelines are being developed and presented at a high level so that may be compatible with other international standards already being developed.

They are being written in a format that provides guidance in principle to the examining occupational physicians. The guidelines will not contain a prescriptive list of precluded conditions or diagnoses.

A key principle is that the examining physician will use their own professional skills and judgement and knowledge of the workplace to individually evaluate the individual's fitness for duty, whilst ensuring they are not unfairly excluded from employment.

Medical Evaluation

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UNIVERSITY OF
PORTSMOUTH

School of Sport, Exercise and Health Science



Physical Capacity Assessments for Offshore Service Technicians

Dr. Gemma Milligan & Prof. Mike Tipton

gemma.milligan@port.ac.uk

Aims

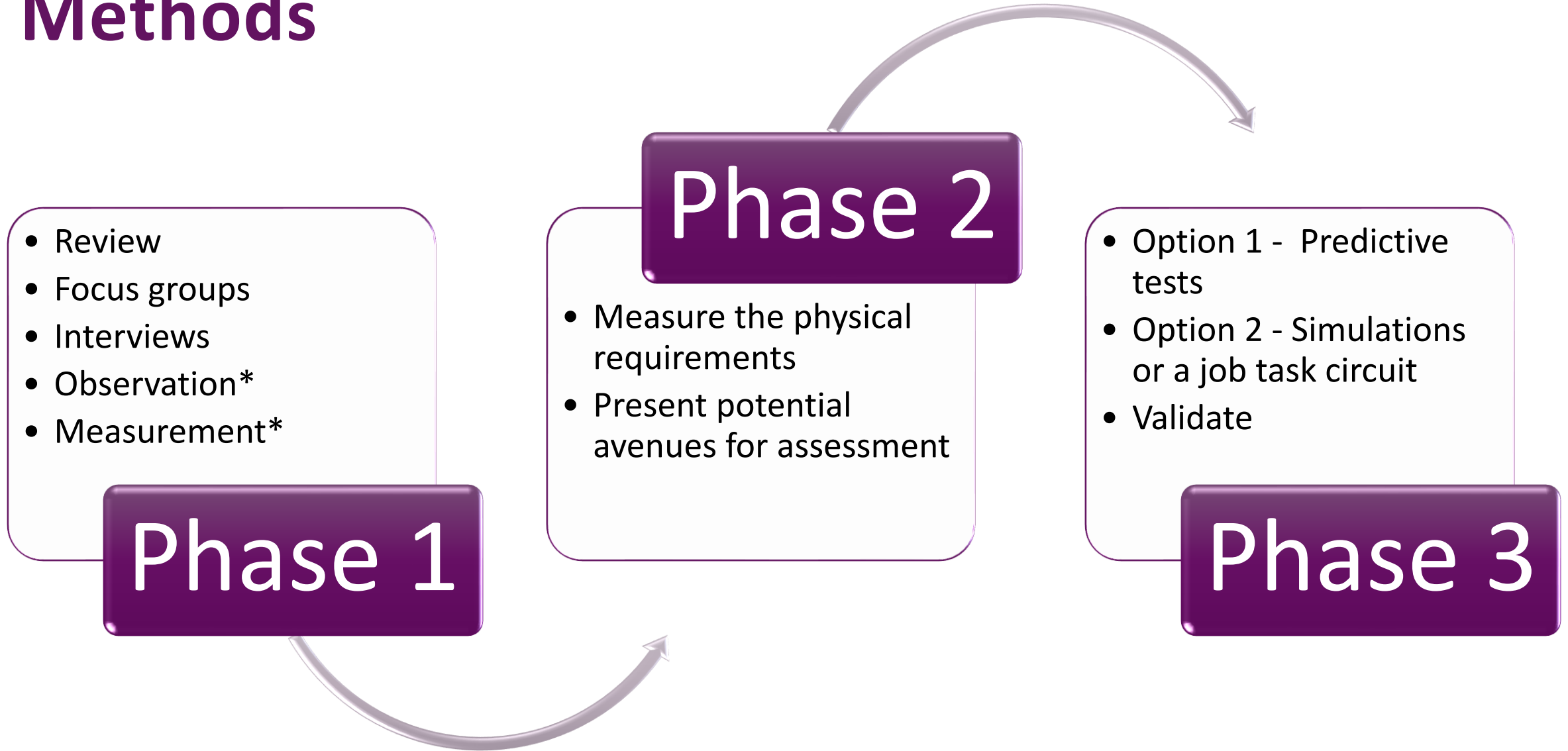
1. Determine the most physically demanding essential tasks of service technicians working in offshore wind industry
2. Establish the physical requirements of these essential tasks

PHASE 1 & 2
CURRENTLY FUNDED
Completion
Dec 2021

3. Recommend physical capability assessments for service technicians working in offshore wind industry

PHASE 3
NOT FUNDED

Methods



Progress

- ✓ Submitted and received ethical approval to undertake Phase 1
- ✓ Consulted with Senior Health Director for the Western Hemisphere regarding Global differences in how individuals can be assessed
- ✓ Contacted 7 G+ member organisations (22.04.2020)
 - Interviews undertaken and arranged for the coming months with Subject Matter Experts
- Global mapping of wind farms and turbines
- Review of available resources - in progress
- COVID – 19 Mitigation planning

Next Steps

- To facilitate Phase 1
 - Access to subject matter experts
 - Standard operating procedure documents
 - Turbine specifications
 - Access to facilities*

If you feel you could offer support in any of these areas, please contact myself (gemma.milligan@port.ac.uk) or Beate (bhildenbrand@energyinst.org).

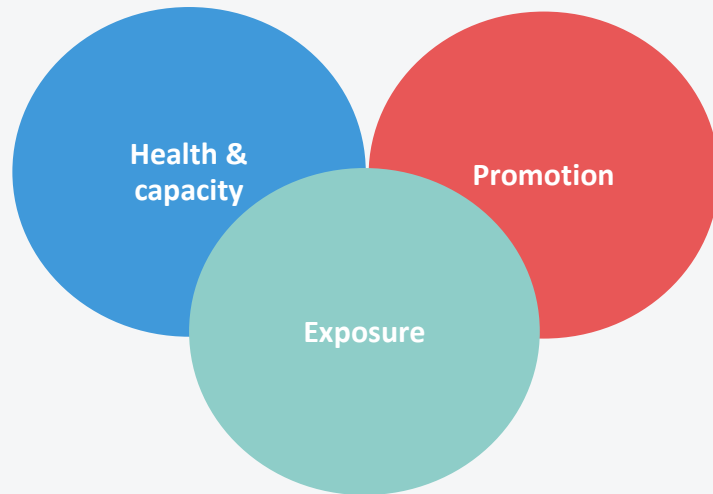
Many thanks and I look forward to working with you in the coming months.

Ørsted PhD: Overview

Background

- New industry (long-term implications of exposure and current health state of population not known)
- Physical demands and thereby requirements not established

Overall aim of PhD



Individual studies

Cross-sectional survey
(self-reports)



Exposure and capacity evaluation
(objective data)

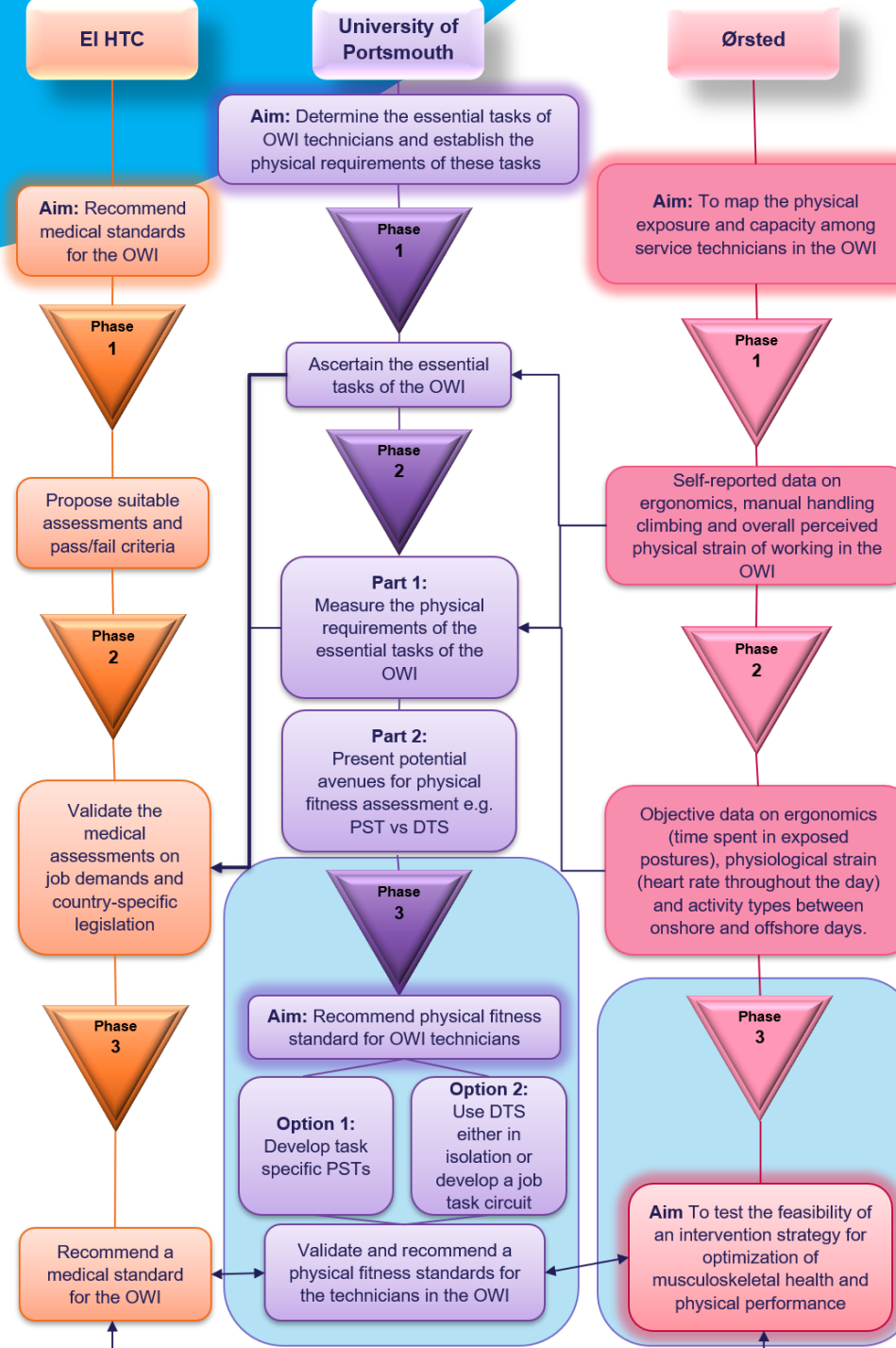


Physical exercise intervention (health
promotion)



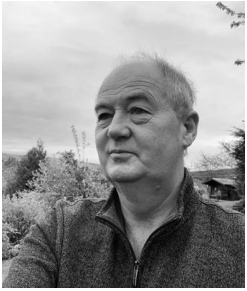
- Data collection completed
- Data collection not yet completed

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We are happy to take your questions!



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Any further Questions?

Bhildenbrand@energyinst.org

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Organisation

In partnership with

