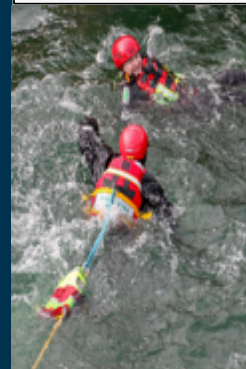
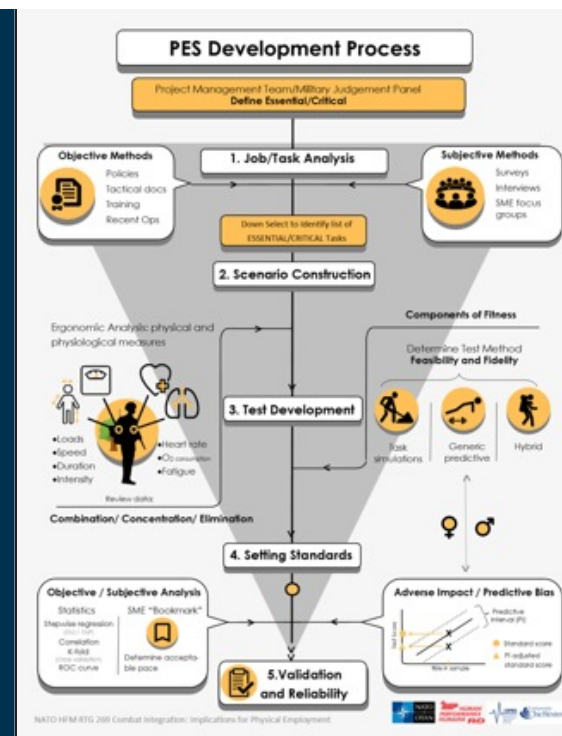


Implications for Physical Employment Standards (PES)

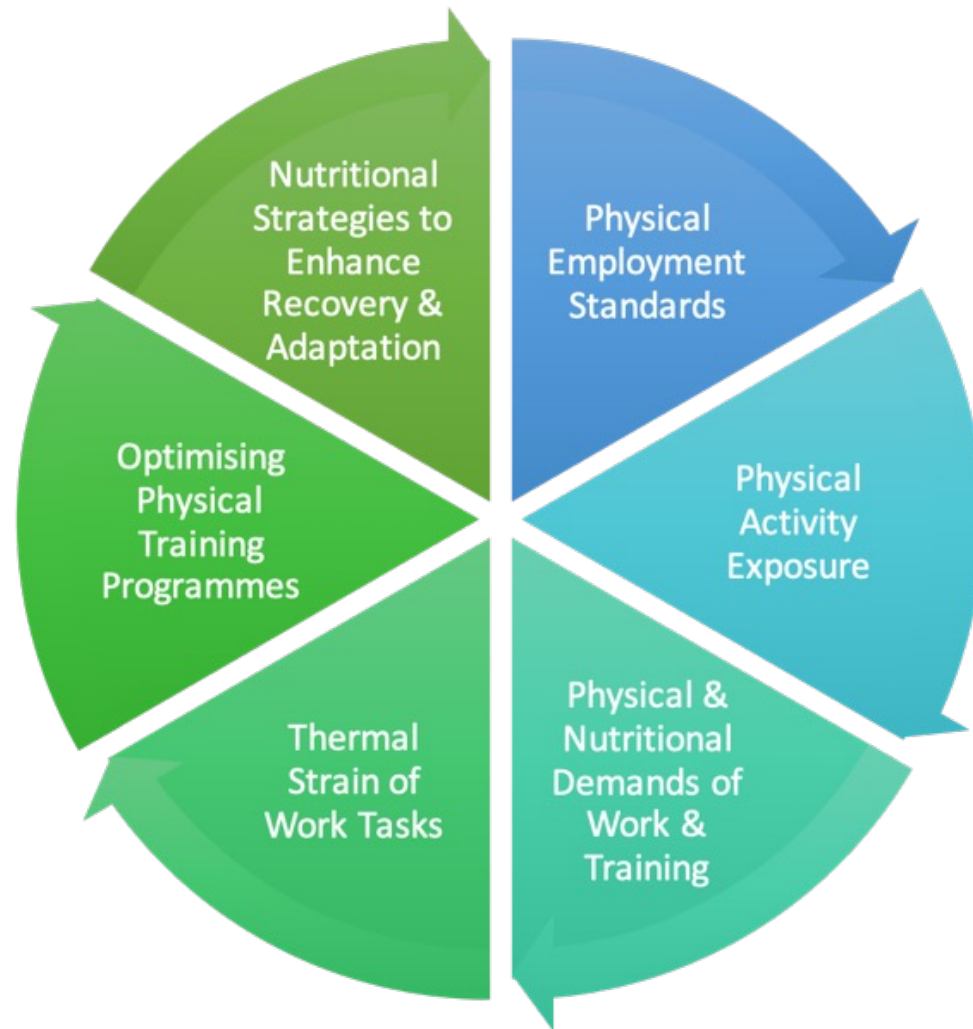
*The 33rd Finnish Exercise Testing Symposium,
Helsinki Finland, March 29-30, 2023*
Main theme: Fitness Testing in Tactical Occupations

Professor Sam Blacker (PhD)

Occupational Performance Research Group
Institute of Sport Nursing and Allied Health
University of Chichester







NATO HFM-269 Panel - Combat Integration: Implications for Physical Employment Standards

Meeting no	Date	Location
1	7-9 June 2016	Paris (FRA)
2	26-28 Oct 2016	Ottawa (CAN)
3	24-26 Apr 2017	Sandhurst (UK)
4	4-6 Dec 2017	Melbourne (AUS)
5	12-13 Jul-2018	Gosport (UK)
6	29-30 Jan 2019	West Point (USA)



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NORTH ATLANTIC TREATY
ORGANIZATION



AC/323(HFM-269)TP/936

SCIENCE AND TECHNOLOGY
ORGANIZATION



www.sto.nato.int

STO TECHNICAL REPORT

TR-HFM-269

Combat Integration: Implications for Physical Employment Standards

(Intégration des femmes au combat : implications
pour les normes physiques d'emploi)

Final report of HFM-269.



Published December 2019

Distribution and Availability on Back Cover

Combat Integration: Implications for Physical Employment Standards

(Intégration des femmes au combat : implications
pour les normes physiques d'emploi)

Final report of HFM-269.



Published December 2019

Distribution and Availability on Back Cover

“Physical Employment Standards (PES) are physical fitness tests that are derived from the job-role that an individual performs.”

“As such, when the physical requirements of a job-role are the same for all personnel, then the PES related to these roles should be the same irrespective of a person’s sex, race or age.”

“PES are used both at the point of selection and a routine in-service fitness tests.”

FIT TO FIGHT THE NEW ROLE FITNESS TEST ENTRY

WHAT IS PES

PES ensures the physical ability of Army personnel aligns to the physical requirements of their role. PES testing will be role-related, reflecting the essential, most physically demanding tasks required to perform the specific role successfully. PES standards reflect the acceptable physical standards required to safely and satisfactorily complete these essential tasks.

WHAT IS RFT ENTRY (E)

Role Fitness Test (Entry) (RFT(E)). Will be used as the selection standard to confirm that potential soldiers/officer cadets are at the appropriate level of fitness to commence Basic Training. RFT (E) will consist of: Seated Med Ball Throw, Mid Thigh Pull and a 2 km Run.

1: SEATED MED BALL THROW

A seated weighted throw with a 4kg Med Ball. To measure **explosive upper body strength**.



2: MID THIGH PULL

A basic deadlift using a mid thigh pull machine. To assess **lower limb strength**.



3: 2 KM RUN

A 2km best effort run following a group warm-up. To assess **aerobic capacity**.



FIT TO FIGHT THE NEW GCC PHYSICAL EMPLOYMENT STANDARDS

WHAT IS GCC-PES

Ground Close Combat (GCC) Physical Employment Standards (PES) ensure the physical ability of Army personnel aligns to the physical requirement of the role. PES standards reflect the acceptable physical standards to safely and satisfactorily complete essential tasks.

WHAT IS RFT(S)

Role Fitness Test Soldier (RFT(S)) replaces the current AFT to become the in-Service test. RFT(S) testing will be role-related, gender and age free, reflecting the essential, most physically demanding task required to perform the specific role successfully - RFT(S) Consists of the following.

ROLE FITNESS TEST (SOLDIER) (ANNUALLY) 1 TO 6

1: LOADED MARCH

Infantry/RAC:

4km tab with 40kg within 50 mins followed by a further 2km with 25kg in 15 mins



16AAB/Para:

4km tab with 40kg within 35mins followed by a further 2km with 25kg in 12 mins 30 secs

4: WATER CAN CARRY



Simulates moving with a stretcher. Carry two 22kg cans over 240m in 4 mins

2: FIRE & MOVEMENT

Twenty 7.5m tactical bounds controlled by a PTL followed by a 15m crawl and 15m sprint in 55 secs



5: VEHICLE CASEVAC



70kg lift, hold for 3 secs

3: CASUALTY DRAG

110kg bag pulled over 20m in 35 secs



6: REPEATED LIFT & CARRY



Shifting bags weighing 20kg 20 times over a 30m distance in 14 mins

UPDATE 3 OF 4

FIT TO FIGHT THE NEW ANNUAL PHYSICAL TEST FOR NON-GROUND CLOSE COMBAT (NON-GCC) PERSONNEL *(ANNEX A)

Listed below are the agreed Regular and Reserve tests and standards that will apply to all cap badge and employment roles



Role Group	Loaded Carry Stage 1	Loaded Carry Stage 2	Tactical Movement	Capacity Drag	Stretcher Carry	Vertical Lift	Repetitive Carry	Repetitive Carry	Incremental Lift-Lin	Incremental Lift-Shoulder	Incremental Lift-Overhead
RAPTC							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-1 (24 Ops, 24 Eng Regt, 24 Eng Regt, 24 Eng Regt)	1 km - 10 mins - 10 kg	2 km - 10 mins - 10 kg	10m - 10m (controlled)	10m - 10m	20m - 20m		Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RAC (24 Ops, 24 Eng Regt, 24 Eng Regt, 24 Eng Regt)	1 km - 10 mins - 10 kg	2 km - 10 mins - 10 kg	10m - 10m (controlled)	10m - 10m	20m - 20m		Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
SABIC							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-2 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
ARMED							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-3 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-4 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-5 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-6 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-7 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-8 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-9 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-10 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-11 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-12 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-13 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-14 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-15 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-16 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-17 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-18 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-19 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-20 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-21 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-22 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-23 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-24 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
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RE-30 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
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RE-34 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-35 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-36 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
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RE-40 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
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RE-47 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
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RE-60 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-61 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
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RE-63 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-64 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-65 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-66 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-67 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-68 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-69 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-70 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-71 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
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RE-73 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-74 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-75 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-76 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-77 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-78 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-79 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-80 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-81 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-82 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-83 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-84 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-85 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
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RE-87 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
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RE-95 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-96 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-97 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-98 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg
RE-99 (24 Ops)							Heavy	10 (14 Secs)	10 kg	10 kg	10 kg
RE-100 (24 Ops)							Medium	10 (14 Secs)	10 kg	10 kg	10 kg

Tests, standards and protocols will be published in MATT 2 prior to implementation in Apr 21



Creative Media Design A2300003

Creative Media Design A2300003

Physical employment standards for UK fire and rescue service personnel

S. D. Blacker^{1,2}, M. P. Rayson^{1,3}, D. M. Wilkinson^{1,2,†}, J. M. Carter^{1,4}, A. M. Nevill⁵ and V. L. Richmond^{1,6}



Rural Fire
50 m Shuttles
Hose Reel, Hoses &
Pump



Domestic Fire
30 kg & 55 kg Casualty,
3 x 10m



Enclosed Space
80 m³, 8 Obstacles



Ladder Climb
Ascend 13.5 m
Alight then descend



Ladder Lift
75 cm – 182 cm
From 20 kg-5 kg
Increments



Ladder Extension
fully extend a 13.5
metre pitched ladder
and lower under control



Pump Assembly
Assemble & disassemble
following diagrams



National Firefighter Selection Process
Development and Validation of National Firefighter
Selection Tests: Physical Tests



National Ambulance
Resilience Unit
NARU



Work xx (20xx) x–xx
DOI:10.3233/WOR-192960
IOS Press

A job task analysis to describe the physical demands of specialist paramedic roles in the National Ambulance Resilience Unit (NARU)

Carla A. Rue^a, Mark P. Rayson^b, Ella F. Walker^a, Julianne Doherty^a, Jane Thompson^a, Stephen D. Myers^a and Sam D. Blacker^{a,*}

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Development of physical employment standards of specialist paramedic roles in the National Ambulance Resilience Unit (Naru)

Andrew G. Siddall^{a,*}, Mark P. Rayson^b, Ella F. Walker^a, Julianne Doherty^a, Josh I. Osofa^a, Tessa R. Flood^a, Beverley Hale^a, Steve D. Myers^a, Sam D. Blacker^a

^aOccupational Performance Research Group, University of Chichester, UK

^bMark Rayson Consulting Ltd, Bristol, UK



ACSM Annual Meeting
31 May – 04 June 2016
Boston, USA

Development of an Aerobic Fitness Standard for Telecommunication Mast Climbers

Sam D. Blacker ¹, Andrew T. West ¹, Nicola Cordell ², David M. Wilkinson ^{1†}

¹ University of Chichester, Chichester UK; ² Corporate Health Limited, UK; [†]Deceased 18 April 2015



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Participants wearing climbing ensemble and instrumented with monitoring devices



Emley Moor Mast – Phase 1 data collection location



Stockland Hill Mast – Phase 2 data collection location

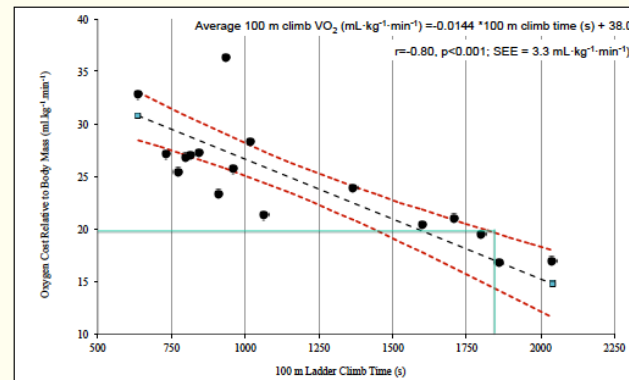
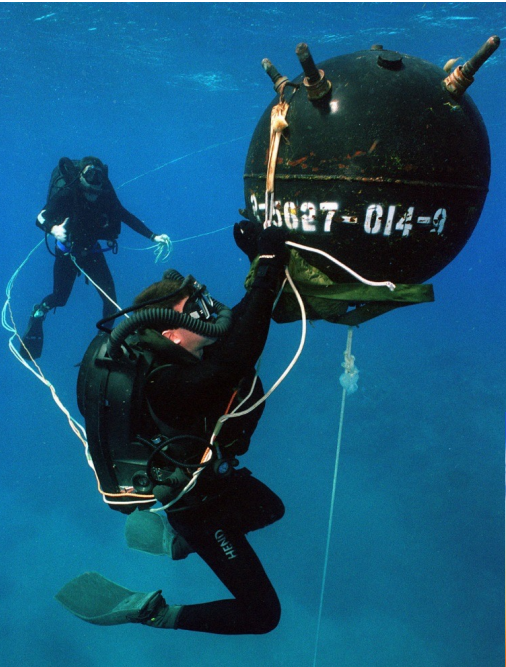


Figure 1 - The relationship between average VO_2 during climbing and 100 m climb time for climbers in both Phase 1 and Phase 2.

Adopting a common age-free and gender free job-related minimum aerobic fitness standard of $\geq 27 \text{ mL.kg}^{-1}.\text{min}^{-1}$ will ensure that the fitness standard conforms to equality legislation.

Climbers aerobic fitness is currently measured using a Chester Step Test which requires a mean $\text{VO}_{2\text{max}}$ of $28 \text{ mL.kg}^{-1}.\text{min}^{-1}$ to complete Level 4 [2]. Therefore, climbers should complete Level 4 on the Chester Step Test to meet the related minimum aerobic fitness standard for safe and effective climbing performance.





Benefits of PES

- ✓ Assurance of the the minimum role-related physical capability of all individuals in an organisation.
- ✓ Evidence-base for legal defensibility.
- ✓ Matching of the physical capability of personnel to the demands of the job, which will mitigate injury risk.
- ✓ Cost saving to organisation and worker (health & financial)
- ✓ A framework for physical training and interventions to maximise individuals role-related physical capability.

Legal Defensibility

UK Employment Law Example: Equality Act 2010

Protected Characteristics -

Sex, Age, Disability, Gender reassignment, Race, Religion or belief, Sexual orientation, Marriage and civil partnership, Pregnancy and maternity.

Direct Discrimination

Different standards for men and women, or younger and older people

Cannot be justified in Law

Allcock v Chief Constable, Hampshire Constabulary (1997)

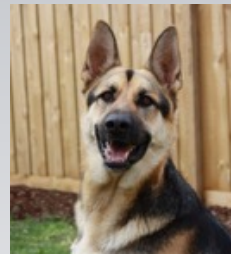
Dog handler

2 mile multi-terrain run

Pass Standard

Men 16 min,

Women 17 min



Indirect Discrimination

Same standards for men and women, or younger and older people

Can be justified in Law IF

Test and pass standard must reflect the physical requirements of the job

Bamber v Greater Manchester Police (2010)



Evidence based "job related" physical test(s)

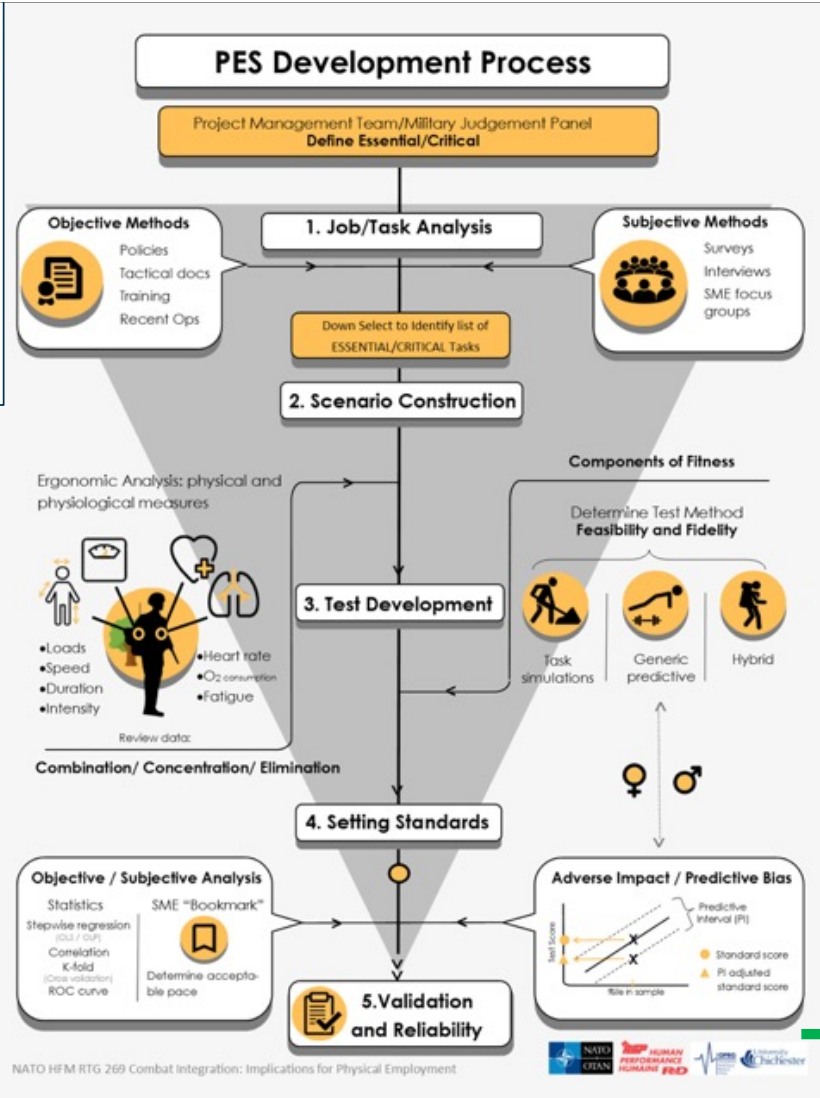
Evidence based "job related" pass standard(s)

Employment Tribunal will Decide!

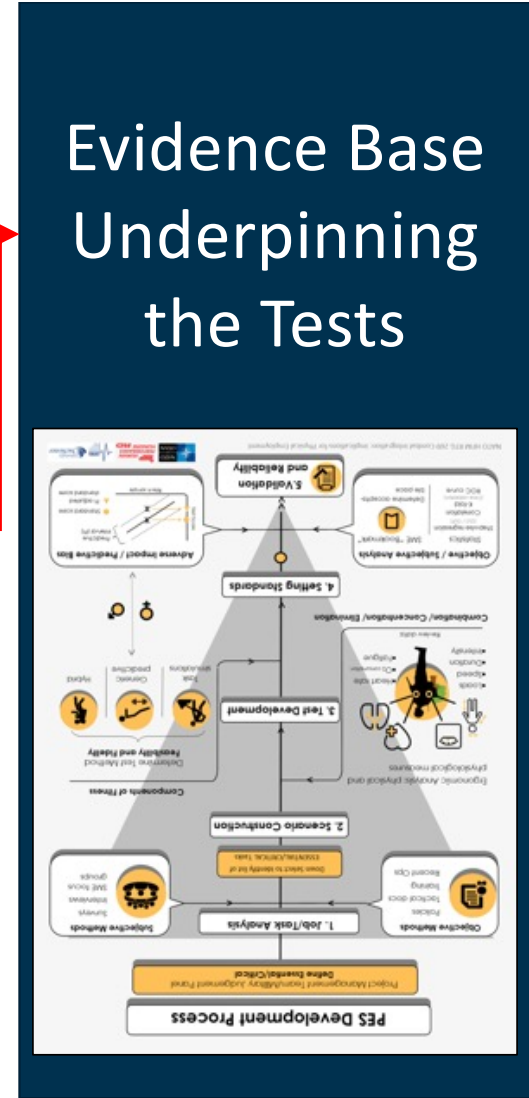
Example of PES Cost Savings

Railroad Industry (5 years of Injury Data)	Test	No Test
Number Hired	12,741	13,897
Number Injured	648	3,898
Musculoskeletal Injuries % of Total Injuries	74.8%	71.1%
Costs for Tested v. Not Tested (p<.01) [Covariates: Age, Job Tenure, & Year Injured]	\$15,316	\$66,147
Days Lost (p<.01) [Covariates: Age, Job Tenure, & Year Injured]	79.1	142.1
Costs to Replace No Test Worker for Additional Lost Days (regular & overtime pay)	<i>Regular</i> \$11,601	<i>Overtime</i> \$17,402

Baker & Gebhardt, 2001

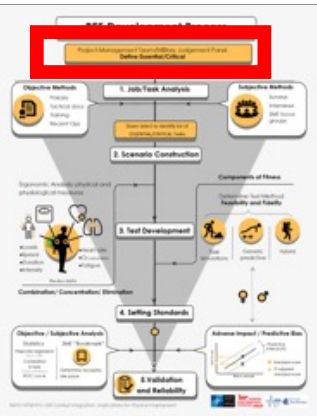


Research and Development.



Evidence Base Underpinning the Tests

Establishment of Project Management Team / Steering Group



Consisting of representatives from the research team and the employer.

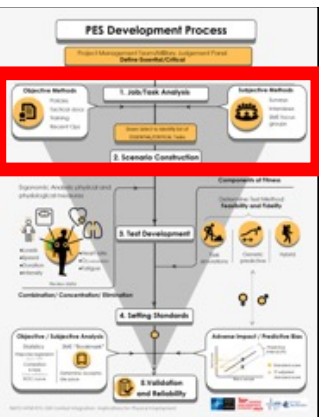
Including:

- Employment equity, mission planners.
- labor law representative (Legal counsel).
- Military physical training instructors or civilian exercise physiologists.
- Military health/medical representatives.
- Military Subject Matter Experts (SMEs).



Roles Include:

- Support the data gathering process.
- Review research and provide evidenced-based decisions and guidance.
- Guide implementation and integration with wider military policy.
- Facilitating the recruitment and participation of incumbent workers and potential applicants as research subjects.



Job Task Analysis & Scenario Construction



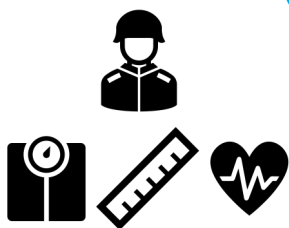
Workshops

- Technique for Research of Information by Animation of a Group of Experts (TRIAGE)



Surveys

- In-person / Online



Observations

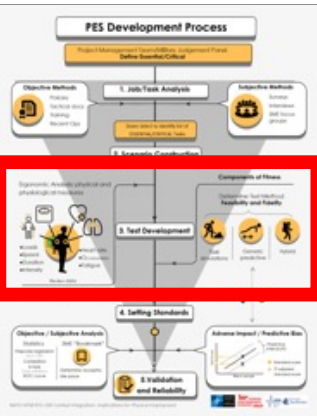
- Tasks being conducted in-situ during training.
- Some critical tasks might not be able to be observed or detailed measurements taken so may require a scenario construction for ergonomic analysis and physiological measures.

- Wide range of job tasks.
- Individual and team tasks.
- Different equipment and purposes of tasks.

Down selection of critical physically demanding tasks.



Test Development – 1



DEVELOPMENT AND IMPLEMENTATION OF EVIDENCE-BASED PHYSICAL EMPLOYMENT STANDARDS: KEY CHALLENGES IN THE MILITARY CONTEXT

TARA J. REILLY,¹ DEBORAH L. GEBHARDT,² DANIEL C. BILLING,³ JULIE P. GRIEVES,⁴ AND MARILYN A. SHARP⁵

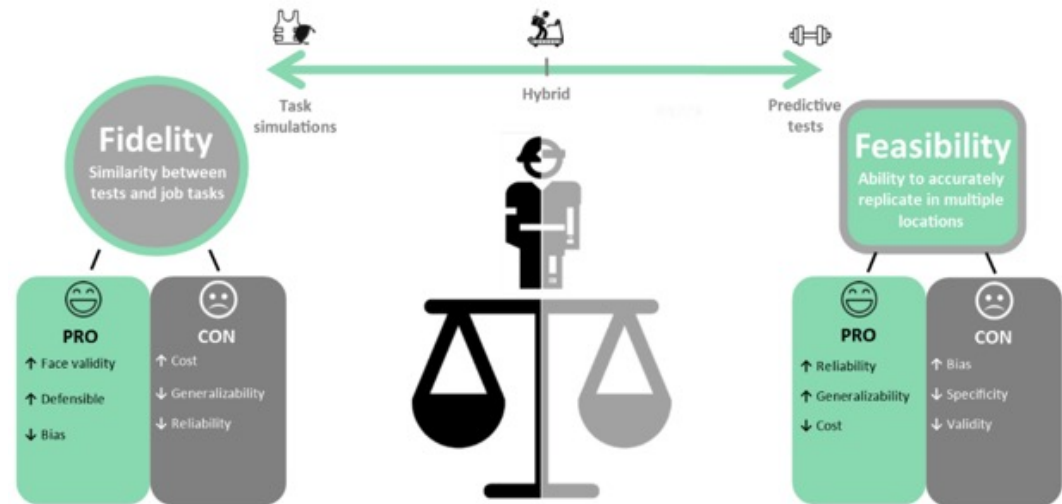
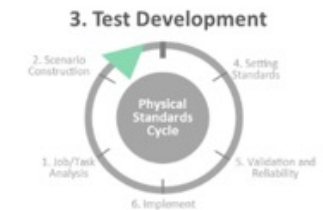
¹Human Performance Research and Development, Canadian Forces Morale and Welfare Services, Ottawa, Ontario, Canada; ²Human Performance Systems, Inc., Beltsville, Maryland; ³Land Division, Defence Science and Technology Organisation, Melbourne, Victoria, Australia; ⁴Department of Occupational Medicine, HQ Army Recruiting and Training Division, Peterborough, Ontario, Canada; and ⁵U.S. Army Research Institute of Environmental Medicine, Natick, Massachusetts

A return on investment (in terms of military capability) from the substantial development costs of employment standards can only be realized at the point when they are accepted and routinely implemented. Therefore, researchers must also apply careful consideration to factors that are critical in maximizing the potential for successful implementation of the fitness-for-duty regime, such as an appropriate level of simplicity and manageability.



BALANCING FIDELITY AND FEASIBILITY

Defining Physical Standards for Physically Demanding Jobs
(adapted from RAND National Defense Research Institute, 2018)



Test Development – 2

Fitness	Fitness Component	Definition	Example Activities
	Aerobic Capacity	Ability to sustain sub-maximal low-to-moderate/high intensity activity for a sustained period of time (minutes to hours), typically involving dynamic whole-body activities	Sustained patrolling carrying load (e.g. ≥ 30 kg) or digging a fire trench
	Anaerobic Capacity	Ability to sustain intermittent or continuous near maximal or maximal efforts for a short period of time (seconds to minutes), typically involving dynamic whole-body activities	Fire and movement task or a break contact task
	Muscular Strength	Ability of a muscle group to exert maximal force in a single voluntary contraction (< 5 seconds)	Lifting objects, e.g. a casualty, equipment onto a vehicle. Standing up from kneeling while carrying a heavy load
	Muscular Endurance	Ability of a muscle group to repeatedly generate an intermittent or continuous moderate-to-high absolute force for a more prolonged period of time (seconds to minutes)	Repetitively lifting and carrying stores or a stretcher casualty evacuation
	Muscular Power	Ability to exert maximal external force in the shortest possible time (typically less than 1 second)	Breaking down a compound/building door or jumping over a ditch or low wall
	Flexibility	The ability to voluntarily stretch, flex or lengthen parts of the body as far as possible i.e. the range of motion around a joint	Lifting a leg over a fence or bending down to pass under a low obstacle
	Balance	Maintenance of equilibrium while stationary or moving	Maintenance of a stable firing position
	Speed	Ability to perform movements in a short period of time	Rapid movement between fire positions
	Agility	Ability to change the position of the entire body in space with speed and accuracy	Hurdling a fence or rapidly changing running direction (e.g. fire and movement task)
	Coordination	Ability to synchronise the senses (e.g. sight/hearing) with body parts to move smoothly and accurately	Bringing weapons systems to bear and accurately engaging with the enemy

(Blacker S. et al, 2018)



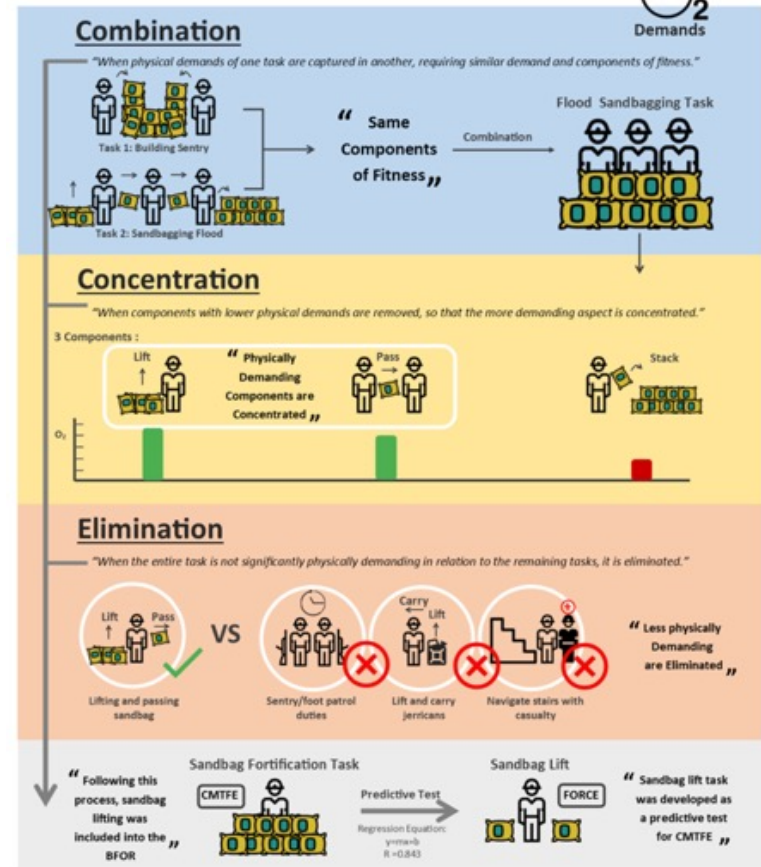
Primary Physical Actions (PPAs)



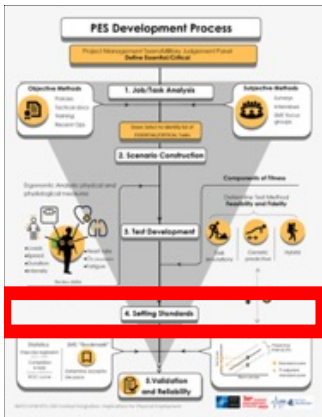
Hinde et al. 2017 Task grouping by primary physical actions; a technique for developing physical employment standards. Presented at ICSP 2020

Combination, Concentration, Elimination

(Reilly et al., 2018)



Setting Standards



Eur J Appl Physiol (2013) 113:2435–2446
DOI 10.1007/s00421-012-2569-4

INVITED REVIEW

Physiological employment standards I. Occupational fitness standards: objectively subjective?

M. J. Tipton · G. S. Milligan · T. J. Reilly

Objective

Data

Test performance
Job role requirements.
Bookmarking.

Subjective



Considerations:

- Impact analysis (pass rates for current population).
- Operational Requirements.
- Inflow and maintenance of workforce.
- Physical performance and injury risk.
- Physical training and development.
- Adverse impact.
- Positive action.

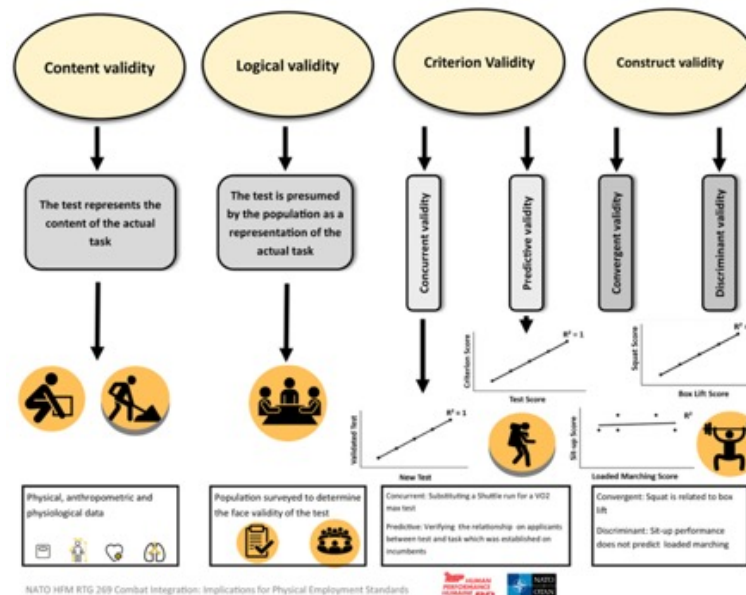


Validity and Reliability

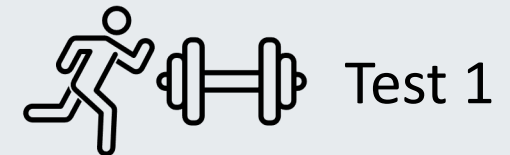


Validity

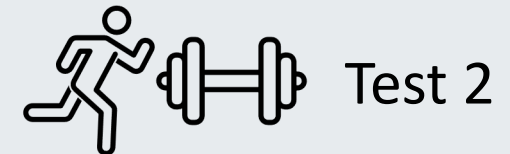
Flow Chart of Validity Concepts to Consider (Based on Concepts Presented in Milligan et al., [16]).



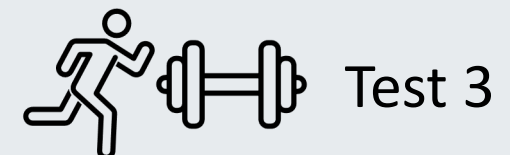
Reliability



Vs.



Vs.



Vs.....

Linking Gym-Based Predictive to Simulation Tests

National Firefighter Selection Process
A Comparison of Firefighter Physical Fitness Tests

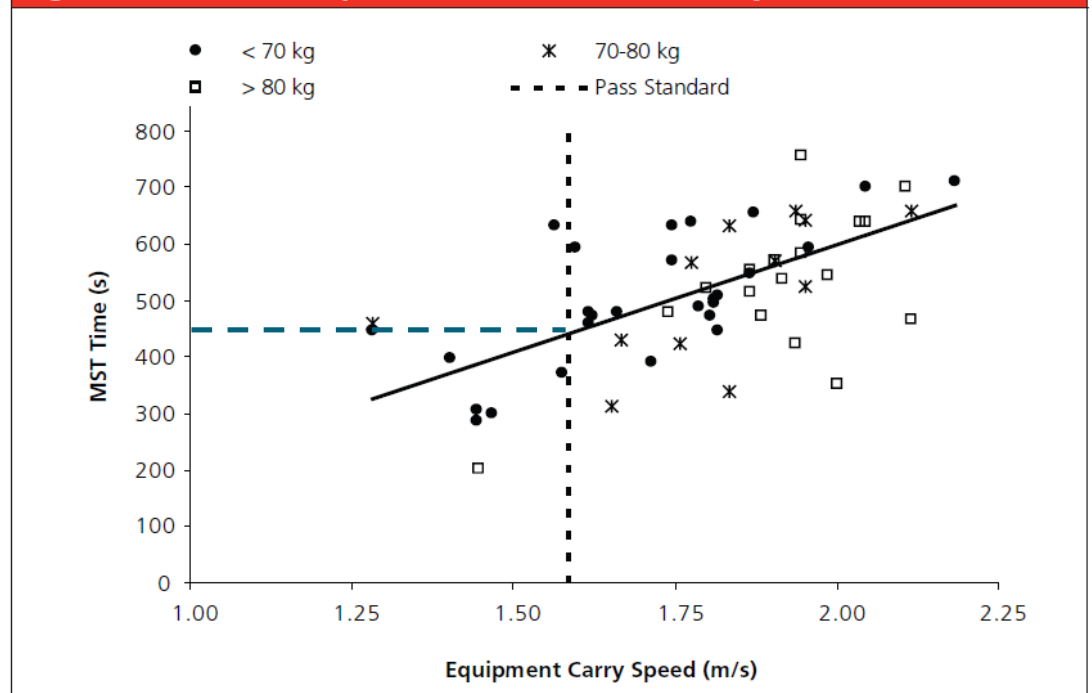


Rural Fire
50 m Shuttles
Hose Reel, Hoses & Pump



20 m Shuttle Run /
Multistage Fitness
Test

Figure 2: The relationship between ECST, MSFT and body mass



FIT TO FIGHT THE NEW ROLE FITNESS TEST ENTRY

WHAT IS ENTRY?

Entry is the physical fitness test that all personnel must pass to be considered for promotion or to remain in their current role. It is a test of physical fitness that is designed to ensure that personnel are fit to perform their duties in the field.

WHAT IS NOT ENTRY?

Entry is not a test of general fitness. It is a test of physical fitness that is designed to ensure that personnel are fit to perform their duties in the field. It is not a test of general fitness.

OCCUPATIONAL PHYSICAL ASSESSMENT TEST (OPAT)

FOUR-PART TEST

- Standing Long Jump
- Strength Deadlift
- Interval Aerobic Run
- Seated Power Throw

4 SCORING LEVELS

Heavy	Infantry, Armour and Artillery
Significant	Engineers and air defence
Moderate	Most healthcare and admin jobs
Unqualified	Does not meet physical demands

WHY IT MATTERS TO YOU

- Tests physical potential
- Predicts likelihood of injuries
- Serves as a gender-neutral standard for all occupations
- Puts the right person in the right job based on physical aptitude
- Reduces attrition
- Increases potential for recruit success

```

graph TD
    A[Project Management Team/Military Judgement Panel Define Essential/Critical] --> B[1. Job/Task Analysis]
    B --> C[2. Scenario Construction]
    C --> D[3. Test Development]
    D --> E[4. Setting Standards]
    E --> F[5. Validation and Reliability]
    
    B --> B1[Objective Methods: Policies, Tactical docs, Training, Recent Ops]
    B --> B2[Subjective Methods: Surveys, Interviews, SME focus groups]
    B --> B3[Down select to identify list of ESSENTIAL/CRITICAL Tasks]
    
    D --> D1[Ergonomic Analysis: physical and physiological measures: Loads, Speed, Duration, Intensity, Heart rate, O2 consumption, Fatigue]
    D --> D2[Components of Fitness: Task simulations, Generic predictive, Hybrid]
    D --> D3[Determine Test Method Feasibility and Fidelity]
    D --> D4[Adverse Impact / Predictive Bias: Standard score, PI adjusted standard score]
    
    F --> F1[Objective / Subjective Analysis: Statistics, Stepwise regression, PI adjusted, K-fold cross-validation, ROC curve]
    F --> F2[SME "Bookmark": Determine acceptable pace]
  
```

FIT TO FIGHT THE NEW GCC PHYSICAL EMPLOYMENT STANDARDS

WHAT IS GCC PES?

General Class Combat (GCC) Physical Employment Standards (PES) ensure the physical ability of Army personnel meets the physical requirements of the role. PES standards reflect the complete physical standards to safety and sustainably complete essential tasks.

WHAT IS RPFS?

Role Fitness Test (RPFS) replaces the current APT to increase the in-service test. RPFS testing will be role-specific, gender and age free, reflecting the essential, most physically demanding tasks required to perform the specific role successfully. RPFS is designed to be a one-time test.

ROLE FITNESS TEST BREAKDOWN (ANNUALLY) 1 TO 6

1. LOADED MARCH	2. FIRE & MOVEMENT	3. CASUALTY DRAG
4. WATER CAN CARRY	5. VEHICLE CASING	6. REPEATED LIFT & CARRY

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Implications for Physical Employment Standards (PES)

*The 33rd Finnish Exercise Testing Symposium,
Helsinki Finland, March 29-30, 2023*
Main theme: Fitness Testing in Tactical Occupations

Professor Sam Blacker (PhD)

Occupational Performance Research Group
Institute of Sport Nursing and Allied Health
University of Chichester

