FIREFIT *Research Project*

Research Team (maintained)

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- Philip Turner BA MSc (Lancs Fire and Rescue)
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Brief recap

Primary objectives

- Identification of the most physically demanding key tasks performed by fire-fighters.
- Quantification
- Recommendation of role related, minimum levels of cardiorespiratory fitness for fire service personnel.

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Research funding update

- Knowledge Transfer Partnership (2010)

University of Bath/Firefit

Feedback from 2010 Firefit conference

- Fire Research and Training Trust (2011)

University of Bath/Firefit

Improved and inclusive proposal

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Research project

Occ. Fitness test criteria must reflect the demand of the job and refer only to critical or essential job components

Consider the measures of task performance and the cardiovascular (heart rate/metabolic cost) and thermal strain (core body temperature) associated with simulated operational fire-fighting scenarios

A bespoke lifestyle intervention developed and delivered to enhance the physical fitness and alter the health profile of FRS personnel failing to achieve standard.

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FIREFIT Research Project Plan

	Operational Fitness	Employee Health and Wellbeing
Year 1	Physical Demands Analysis and Operational Fitness Standards	Lifestyle Risk Factors Associated with Chronic Disease Biomarkers.
Year 2	Influence of Physical Fitness on Thermal and Cardiovascular Strain.	Influence of Simulated Operational Stress on Chronic Disease Biomarkers.
Year 3	Influence of a Lifestyle Intervention on Physical Fitness.	Influence of a Lifestyle Intervention on Chronic Disease Biomarkers.

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Year 1

<u>Operational Fitness standards development</u>

-Approx. 90 participants
Assess the cardiovascular (**relative heart rate**) and metabolic demands (**oxygen uptake**) of a range of simulated fire-fighting tasks.

<u>Lifestyle risk factors and chronic disease biomarkers</u>

-Approx. 400 participants
Assess the relationship between physical (***cardio fitness, BMI, %body fat***) and lifestyle (***diet, exercise, smoking, sleep disturbance, anxiety***) risk factors and biomarkers of chronic disease (***oral glucose tolerance test (OGTT), serum CRP and IL6*** *concentrations*)

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Year 2

Influence of physical fitness on thermal and cardiovascular strain

Approx 90 fire-fighters. Assess the influence of cardiorespiratory fitness levels on cardiovascular (***relative heart rate***) and thermal strain (***core temperature***) whilst performing a hot fire task.

Influence of simulated operational stress on chronic disease biomarkers

Approx 90 fire-fighters. Assess the influence of cardiorespiratory fitness levels on biomarkers of cardiovascular disease (***Serum CRP, IL-6 concentrations***) in response to a simulated hot fire scenario

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Year 3

Influence of lifestyle intervention on Physical fitness

A single-blind randomised controlled trial designed to assess the influence of a lifestyle intervention to promote physical fitness and a healthy diet (participants failing to meet fitness standard)

Influence of lifestyle intervention on Chronic Disease Biomarkers

Additional measures of fasted OGTT, serum CRP and IL-6 concentrations

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Previous Research (recent UK)

Building Disaster Assessment Group (Post 9/11)

3 Categories (Most relevant)

'Physiological Performance Criteria for Firefighting'

- Physiological assessment of firefighters undertaking search and rescue (2008).
- Core temperature, recovery and redeployment during a firefighting, search and rescue scenario (2008).
- Operational physiological capabilities of firefighters : literature review and recommendations (2005).
- Physiological assessment of firefighting, search and rescue in the built environment (2004). (Optimal performance)

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Previous Research cont.

National Fire-fighter Selection Tests (NFST)

- Development and validation of National Firefighter Selection Tests; Physical tests (2006) (Optimal performance)
  - performance tests - simulations – Rural
    Domestic
    tasks - ladder climb
    ladder extension

Areas of concern…..

Numbers of firefighters used (representative power)

Demographic of participants

Metabolic demands data not collected

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Firefighting is physically challenging…

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Consultation – ongoing process

FRS	-Fitness advisors -Occ. Health -Human resources -Operational departments
Unions and representative bodies	-FBU -HSE -Equal Op Com
Scientific community	-Prof. Kevin Sykes -Dr. Mark Rayson

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Thank You, any questions?

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