Edge Hill University

Wigan Health & Care Research Forum
Children and Young People

24-hour Movement Behaviours & Health in Children & Young People

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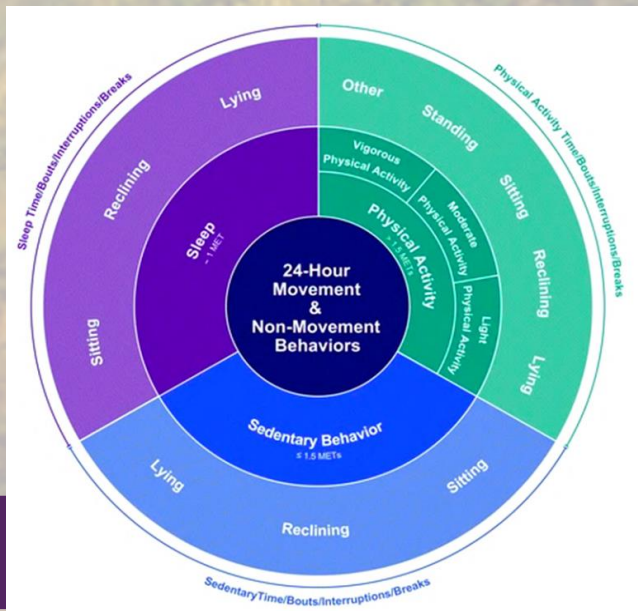
Edge Hill University



NHS Wrightington, Wigan and Leigh NHS Foundation Trust

Wigan Council

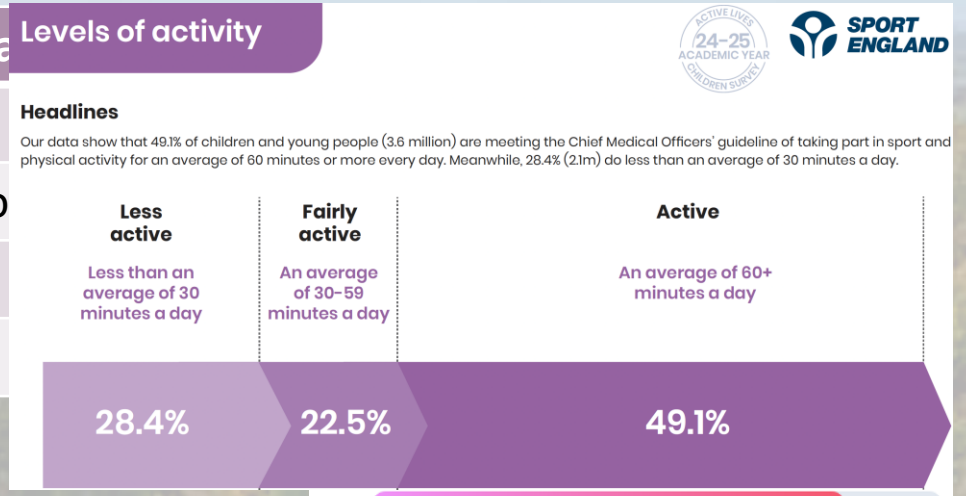
Research alignment with Wigan Public Health priorities for CYP

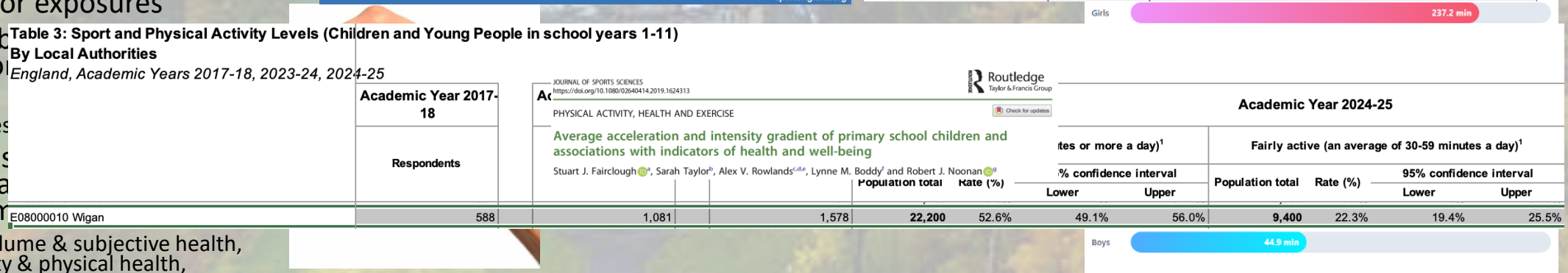
Key JNSA Priorities for Future Action

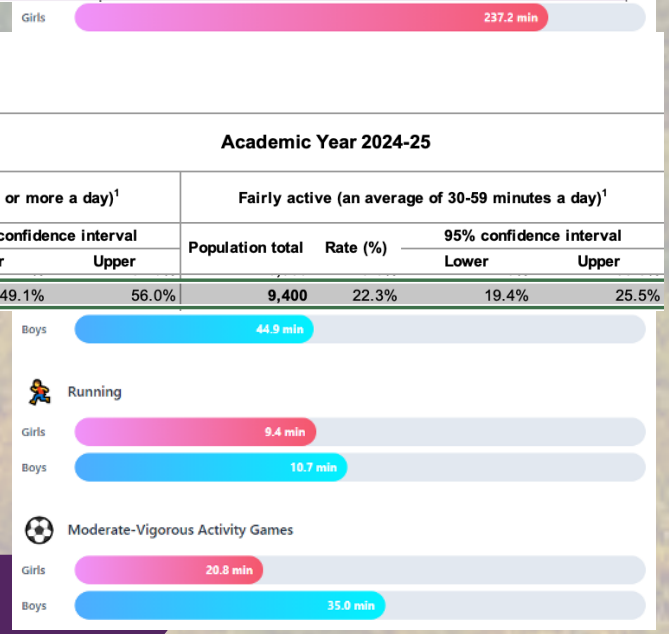
- Children and young people, particularly obesity prevention
  - Potentially through 24hMBs and integration of high-quality data to enhance future prevention programming and JSNA updates
- Healthy Lifestyles
- Reducing Health Inequalities

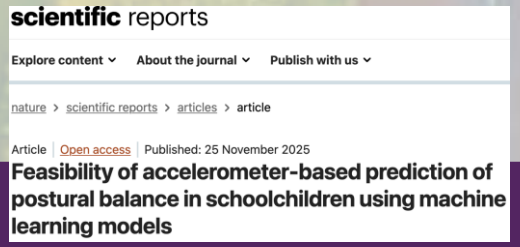
Methodological focus – assessing movement behaviours

- **Reliance on self-report methods**
  - Data trustworthiness & quality
  - Wigan sample ~2.6% of the CYP population
  - No data on sleep & sedentary behaviours
- **24hMB assessment using accelerometers/wearables**
  - Complex & multidimensional behaviours
  - As outcomes or exposures
  - Promising as b
    biomarkers fo
    health risks
    - e.g., depres
  - PA dimensions
    differentially a
    health outcom
    - e.g., PA volume & subjective health, PA intensity & physical health, running & fitness, etc
  - Great potential across all CYP age groups (including clinical populations)









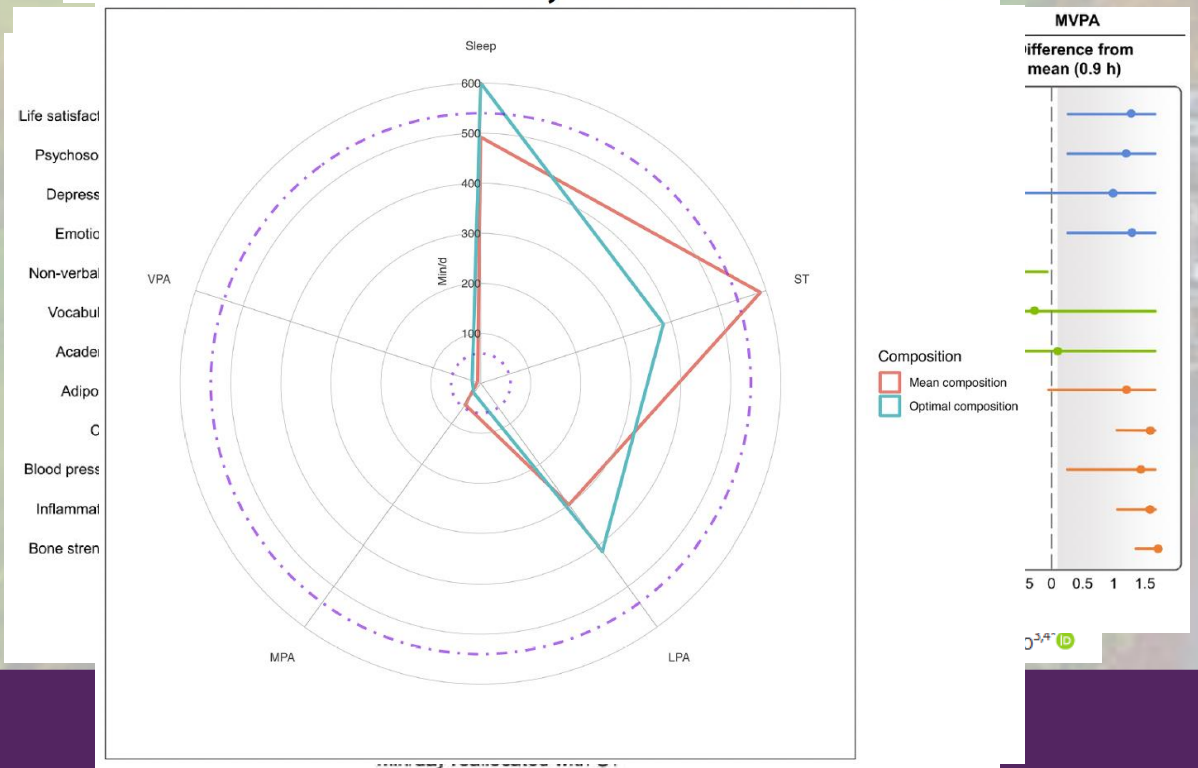
Application to 24-hour movement behaviours & health

Fairclough et al. Journal of Activity, Sedentary and Sleep Behaviors (2023) 2:11
https://doi.org/10.1186/s44167-023-00021-9
Journal of Activity, Sedentary and Sleep Behaviors

RESEARCH Open Access

Characteristics of 24-hour movement behaviours and their associations with mental health in children and adolescents

Stuart J. Fairclough[1*], Lauren Clifford[1], Denver Brown[2] and Richard Tyler[1]



Physical activity dimensions & health –
translation to inform prescription, policy, practice

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Scandinavian Journal of Medicine & Science in Spor

Fairclough et al. Journal of Activity, Sedentary and Sleep Behaviors
https://doi.org/10.1186/s44167-025-00091-x

RESEARCH

Trajectories of children's volume and intensity ac the Ready, Set, Move pr

Stuart J. Fairclough[1,2*], Lauren Clifford[3], Jordan Banks[4], Denver M. Y. Brown[5], Alex V. Rowlands[6,7,8] and Mhairi M

Fairclough et al. Int J Behav Nutr Phys Act (2023) 20:35
https://doi.org/10.1186/s12966-023-01435-z

International Journal of Behavioral Nutrition and Physical Activity

RESEARCH Open Access

Reference values for wrist-worn accelerometer physical activity metrics in England children and adolescents

Stuart J. Fairclough[1], Alex V. Rowlands[2,3], Borja del Pozo Cruz[4,5,6], Matteo Crotti[7], Lawrence Foweather[8], Lee E. F. Graves[8], Liezel Hurter[8], Owen Jones[8], Mhairi MacDonald[1], Deborah A. McCann[8], Caitlin Miller[1], Robert J. Noonan[9], Michael B. Owen[10], James R. Rudd[11], Sarah L. Taylor[8], Richard Tyler[1] and Lynne M. Boddy[8*]

Summer Term

Physical Activity Project
Barden Primary School

This data is representative of 41 Year 4 children at Barden Primary School. This data was collected i the Summer Term 2024 by the research team at Edge Hill University in partnership with Together an Active Future (TaAF) to gain child-level health and wellbeing data.

Weight Status

From the measures of height and weight, the children's Body Mass Index (BMI) was calculated.

n=41

	All	Girls	Boys
Underweight	5%	4%	6%
Healthy	59%	54%	65%
Overweight	29%	33%	24%
Obese	7%	8%	6%

Age- and sex-specific reference points were used to provide a percentage of children classed as healthy and unhealthy weight

Sleep Monitoring

only **7%** of children got the recommended amount of sleep per night (9-12hrs)

Recommended 9-12 hrs: average 7hrs 38mins sleep

22:47 Time of sleep onset

Sleep quality 85%

Sedentary Time

Sedentary behaviours involve being in a sitting, reclining or lying posture during waking hours, undertaking little movement and using little energy above what is used at rest.

The national guidelines state that children should aim to minimise the amount of time spent sedentary for extended periods, and accumulate no more than 2 hours per day of recreational screen time

In 24 hours 11hrs 46m

In a School day 4hrs 15m

The data presented above is representative of **28 children (13 boys/15 girls)** who wore the accelerometers for at least 16/hours/day on at least 3 days. Accelerometers are wearable devices that measure accelerations of body movement. This is an approved measure for physical activity widely used with childr and young people.

Mental Health & Wellbeing

Physical Activity Volume

Weekdays Significently Increase in Summer

Autumn Winter/Spring

Weekdays

Weekends No Change

Autumn Winter/Spring

Weekends

Physical Activity Intensity

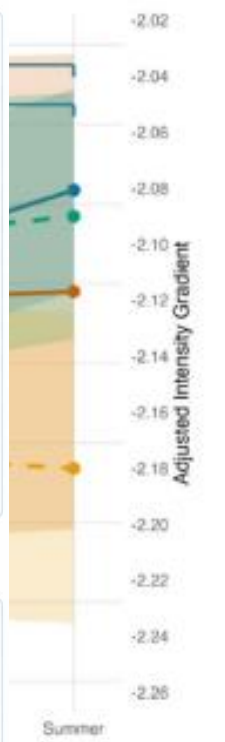
Weekdays

Autumn Winter/Spring

Weekends

Autumn Winter/Spring

Stable Across the Year



Note Estimates are adjusted for sex, 95% confidence intervals. ‡ = Sum- milligravitational units

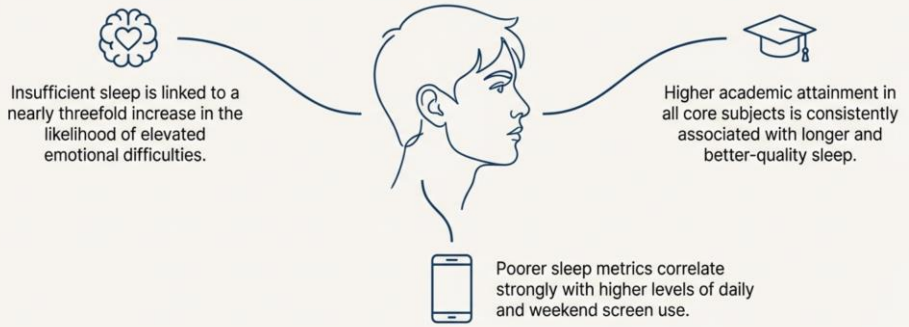
To see a further breakdown of your school's results, including the differences between boys and girls across measures, please see your school's full report for Summer Term 2024.

Combining methods & data sources to inform intervention development –

Sleep, mental health, screen-use and academic attainment

Sleep: The Hidden Factor in Student Success and Wellbeing

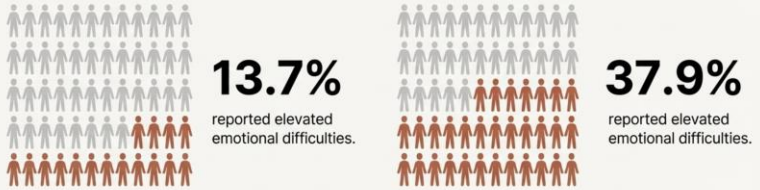
A two-year longitudinal study of young people reveals that declining sleep is significantly associated with poorer mental health, lower academic attainment, and key lifestyle factors.



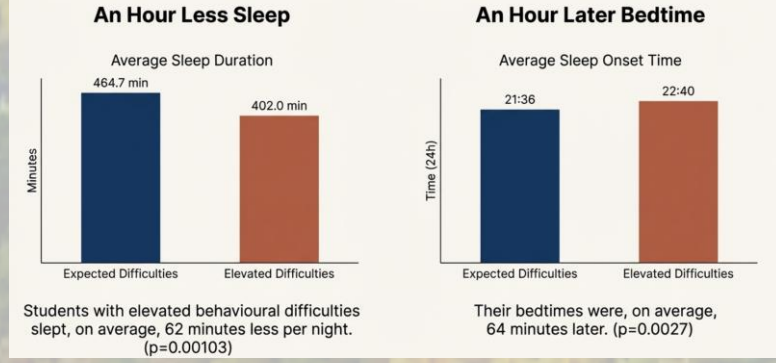
Based on a longitudinal study of ~250 students across four time points from Autumn 2023 to Summer 2025.

Insufficient Sleep is Strongly Linked to Elevated Emotional Difficulties

Students not meeting the 9-hour sleep guideline were nearly three times more likely to report elevated emotional difficulties. (p=0.0019)



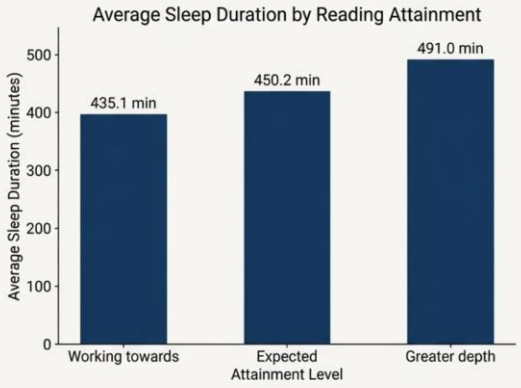
Duration and Timing Also Matter for Behavioural Health



Students with elevated behavioural difficulties slept, on average, 62 minutes less per night. (p=0.00103)

Their bedtimes were, on average, 64 minutes later. (p=0.0027)

Longer Sleep Duration is Directly Associated with Higher Academic Attainment



A clear, dose-response relationship exists: the higher the attainment level, the longer the average sleep duration.

This statistically significant pattern ($p<0.05$) was observed for Reading, Writing, and Science.

The gap between "Working towards" and "Greater depth" in Reading is nearly one hour (56 minutes).

A Consistent Link Appears Between Poorer Sleep and Higher Screen Use

Later Bedtimes, Higher Screen Use

A clear dose-response was found between weekend screen time and later bedtimes, with students reporting 2 hours of screen use going to bed nearly 90 minutes later than those with zero screen use (22:09 vs 20:41). (p=0.0204, T3)

Lower Quality Sleep, Higher Screen Use

Students who failed to meet screen time guidelines (≤1hr/day) had significantly lower sleep efficiency than those who did meet them (75.9% vs 81.6%). (p=0.0137, T4)

Sufficient Sleep, Lower Screen Use

Students meeting the 9-hour sleep guideline were nearly four times as likely to report zero weekend screen time compared to their peers who did not meet the guideline (15.7% vs 4.1%). (p=0.0325, T1)

Intervention development and evaluation

Edge Hill University

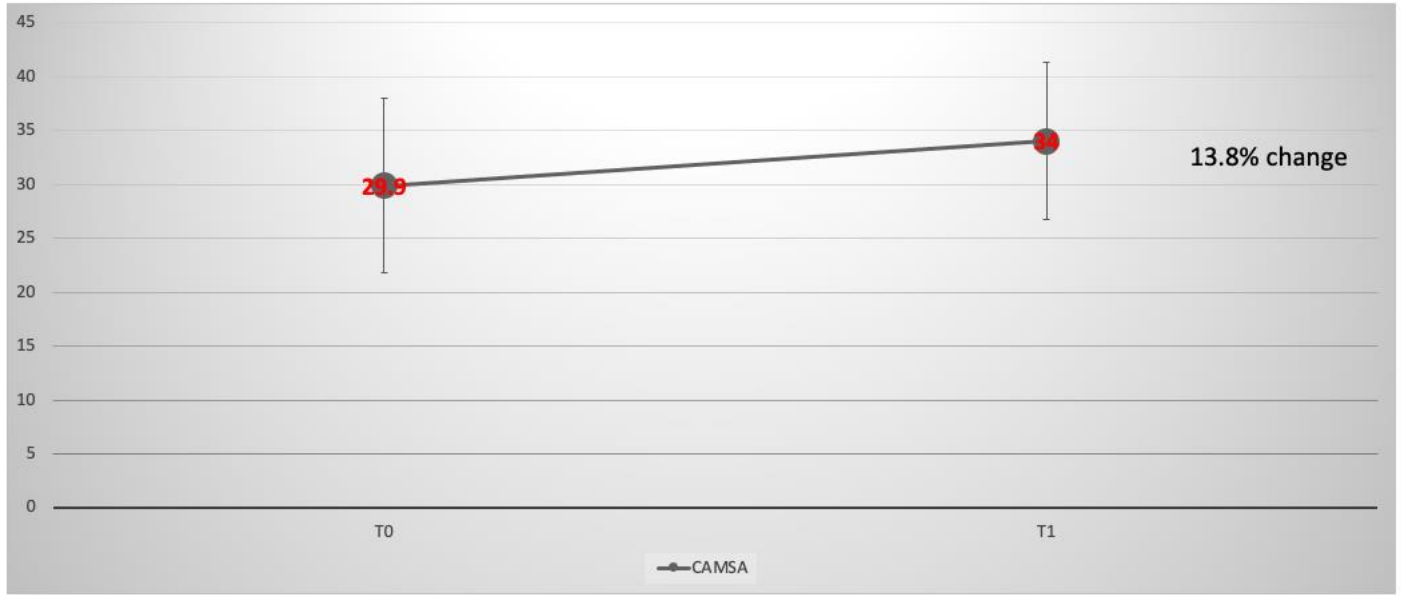
Fairclough et al. BMC Public Health 2013, 13:626
http://www.biomedcentral.com/1471-2458/13/626

BMC Public Health

RESEARCH ARTICLE Open Access

Promoting healthy weight in primary school

Secondary outcome results – motor competence



Program Area: Obesity Management

Suitable Settings: Schools (K-College)

Community Type: Not Specified

C Baseline Post-intervention Follow-up

Figure 2 Adjusted means (SE) of body size outcomes across each time point. **a**: waist circumference; **b**: BMI; **c**: BMI z-score.

Article

Evaluation of a Pilot School-Based Physical A‹ Clustered Randomised Controlled Trial—Acti

Article

Co-Creation of a School-Based Motor Competence and Mental Health Intervention: Move Well, Feel Good

Lauren Clifford [1,*], Richard Tyler [1], Zoe Knowles [2], Emma Ashworth [3], Lynne Boddy [2], Lawrence Foweather [2] and Stuart J. Fairclough [1]

[1], Bronagh McGrane [3],

RESEARCH ARTICLE

Move Well, Feel Good: Feasibility and acceptability of a school-based motor competence intervention to promote positive mental health

Stuart J. Fairclough[1]*, Lauren Clifford[1], Lawrence Foweather[2], Zoe R. Knowles[2], Lynne M. Boddy[2], Emma Ashworth[3], Richard Tyler[1]

BCCP

, worksheets, and

Move Well Feel Good

WELLBEING THROUGH EVERY MOVEMENT

Emily Hamblin, Andrew Fellowes and Keith Clements
May 2017

How might we work together?

- We have nationally- and internationally-recognised expertise in these areas
- We would like to use our expertise in collaboration with Wigan colleagues to further the public health goals of Wigan Council, WWL, and other Wigan stakeholders
- Ideally this would be driven through internal/joint/external multidisciplinary funding applications
- Feel free to get in touch!

Profile & outputs: https://research.edgehill.ac.uk/en/persons/stuart-fairclough/

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THANKS FOR LISTENING