

The future of healthcare is **NOT** in clinical settings

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CREATIVE RESEARCH AND INNOVATION

The power of interdisciplinary research and practice to create collective solutions to shared problems

A group of people are exercising on stationary bikes in a gym. The image is dimmed to serve as a background for text. In the foreground, a woman with blonde hair is smiling and pedaling. Behind her, several other people are also on bikes, some looking forward and others to the side. The gym has large windows in the background.

Embracing 21st Century Health & Wellbeing
This work is more about
Optimising Life!

Currently.....



In the UK

More than one-in-four adults are physically inactive

One-in-three children do less than half the physical activity recommended for their age

(Keech, 2022)



Exercise & physical activity improves emotional health & wellbeing and is a key aspect for children's motor and cognitive development.

Lack of physical activity and its impact on health costs the **NHS 1 BILLION annually!**

(Keech, 2022)

Healthcare & Economy

“Globally, there are inequalities in levels of physical activity between women and men, girls and boys, old and young, and the socio-economically advantaged and disadvantaged – **this is unfair and unjust**”

WHO, 2022

*Nearly half of new **NCD cases (47%) will result from hypertension

43% will result from depression

*Physical inactivity costs health systems US\$ 27 billion a year and by 2030, US\$ 300 billion.

– if we do nothing

WHO, 2022



*Global stats

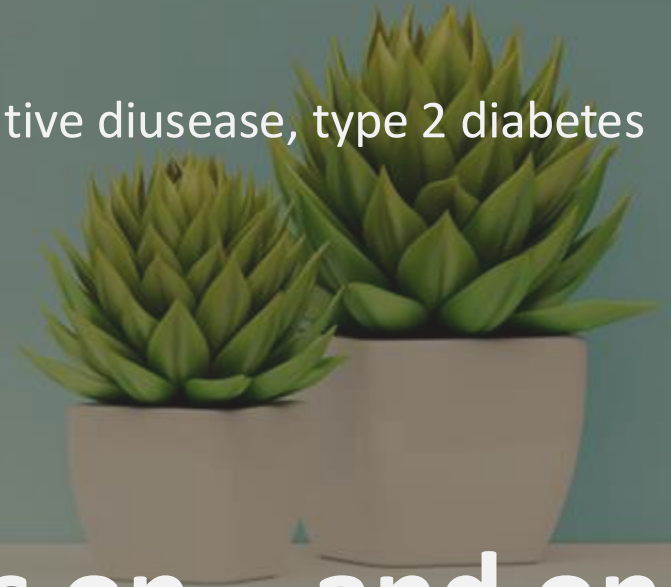
**Noncommunicable diseases (NCDs) – heart disease, cancer, chronic respiratory disease, diabetes

Fast Death – 20th century | Slow Death 21st century

Attia, 2023

Fast – Accidents, injuries, infectious diseases.....

Slow - Chronic Diseases of ageing – Heart disease, cancer, neurodegenerative disease, type 2 diabetes



– if we do nothing – it continues on....and on....



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Four Drivers to a 21st Century health & exercise?

Breathe | Eat | Sleep | Move!

However,...

5 Key Drivers to 21st Century Health-E-Spaces

- **Breathe**
- **Eat**
- **Sleep**
- **Move!**
- **+**
- **GROW**

Breathe | Eat | Sleep | Move + GROW!©
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5 Key Drivers to optimising life!

- Breathe
- Eat
- Sleep
- Move!
- +
- **GROW** – Salutogenic considerations to designing & creating spaces, experiences and interactions with a kinetic chain approach



Breathe

- Asthma is a major global health problem affecting over 300 million people worldwide (Saxer, *et al.* 2019)
- Can be considered a suitable treatment option for patients with a persistent uncontrolled asthma (Fieten, *et al.*, 2022)
- Scientifically proven to assist weight loss, reduce blood pressure and much more (Altitude lab, UK)
- Habitual Physical Activity associated with lower risk of Chronic Obstructive Pulmonary Disease (COPD)(Chen, *et al.* 2022)



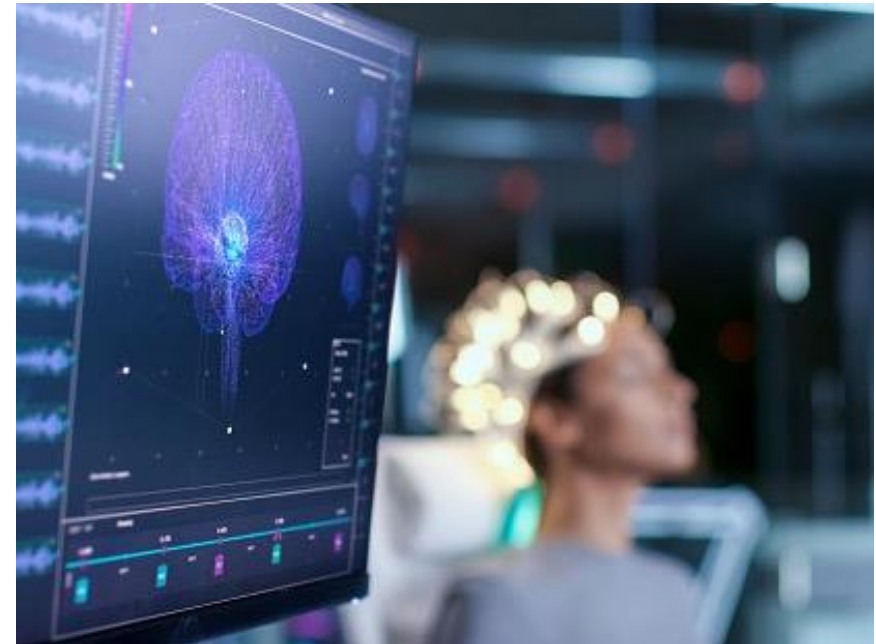
Eat

- Healthy diet is recommended to combat sedentary behaviour (Ingram, *et al.* 2020)
- Poor diet can contribute to obesity and wellbeing imbalance (McIntosh, *et al.*, 2016)
- Education can offer awareness & knowledge of food & environmental consequence, e.g., eating meat, choosing non-meat options (Macdiarmid, *et al.*, 2016)
- There can be a weak relationship between nutrition knowledge and diet quality in elite athletes (Spronk, *et al.* 2015)



Sleep

- Challenges to sleep as part of life transitions e.g., menopause (Tutia, *et al.* 2019)
- Sleep problems impacts on elite athletes' well-being and performance (Rice, *et al.*, 2016)
- Sleep studies are undertaken to diagnose sleep disorders (Mayo Clinic)
- Sleep Apnoea may be a risk factor to stroke (Culebras, 2015)



Move!

- Research Innovation Centre
- Research in a controlled environment such as a gymnasium are understudied (Schmidt et al., 2021)
- Assistive Technology such as Functional Electrical Stimulation can enhance experience in a gym setting (Bulley et al., 2011)
- Post-menopause estrogen replacement may be a factor in maintaining muscle strength and enhancing muscle trainability and thus be important in maintenance of static and dynamic balance and the potential risk of falls in older females (Perry, et al., 2005)



Breathe
Altitude Lab

Health management support for people with respiratory conditions

Conditioning space for elite athlete performance and preparations

Research space to uncover innovation & new solutions to respiratory health

Eat
Nutrition Lab

Diet & health education and workshops across the lifespan

Elite Athlete performance and nutrition education

Research & Education space to understand and promote healthy eating and nutrition

Sleep
Sleep Lab

Sleep and sleep deprivation testing and support

Elite Athlete support to performance and training schedule

Research space to health design and lifestyle researchers in academia and industry

Move
Gait Lab

Rehabilitation work and MSK health conditions and amputees - prostheses and bio-mechanics

Elite athletes gait performance testing and education

Research to collaborate design and innovate, new prototypes/emerging tech for gait/mobility

GROW!

GROW is the future environment of Moray Leisure Centre, it is a physical sanctuary, with digital support tools and professional expertise. It offers people choice to sustain and maintain health in a healthy building and feel supported as they experience optimised life, health and wellbeing across the lifespan

Some Barriers to Physical Activity

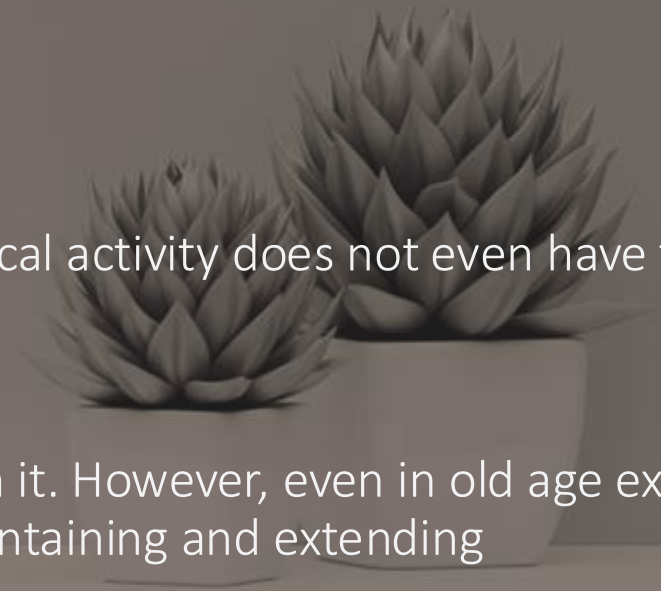
Stigma: Patients can often feel that exercise is not for 'people like them', even though it is for everyone, regardless of age, ability, weight, or background.

Pain: Many patients with long term conditions have concerns about the safety of exercising. However, for patients with chronic conditions, the benefits of physical activity far outweigh the risks

Financial: Being more active does not have to be expensive

Time: Formal exercise does not have to involve hours in the gym, and physical activity does not even have to be separate from day-to-day living.

Age: Many patients may feel they are too old to exercise, or to benefit from it. However, even in old age exercise can safely confer benefits including reducing the likelihood of falls, and maintaining and extending



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Kinetic Chain

interrelated parts of the body (i.e., joints and muscles) and how they work together to perform movement



Salutogenic approach for environments

Systems & environments that shape the development of good health at population level



Optimising Life through a kinetic chain approach!

Breathe

Eat

Sleep

Move

GROW!





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Thank You!

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