Breathe, Eat, Sleep, Move & Grow

a kinetic chain approach to designing for healthcare futures.

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Our emotional health and wellbeing can be enhanced positively through exercise physical activity. The WHO has stated the importance of health management and just viewing it as the absence of disease or infirmity. Design research approaches define unmet needs in how these challenges can be interconnected to become a r for healthcare system futures. This approach would alleviate burden on tradition healthcare providers and visualise a role beyond clinical settings that evolves becoming a catalyst and enabler to autonomous yet supported health manageme the individual across the lifespan, catering for all ages and all abilities. For the healthcare professional it provides an approach implemented during training to implement and see day to day spaces such as leisure centres, work and education settings, social spaces as places for healthcare opportunity and promotion to Bre Eat, Sleep, Move & GROW!

The NHS has faced numerous challenges to effective healthcare support and deli as we celebrate its 75 years as an innovator to human connected accessible healt (McMahon, et al., 2023). The NHS was founded with a mandate to deliver accessi free healthcare for all (Oliver, 2023). This was an innovative and marvelous initiat a time of great challenge to everyday people. Up to 1948 Childbirth, emergency c physical and mental rehabilitation was accessed based on how much money you where you were located. Bevan delivered a promise to provide healthcare “free at point of delivery” (Flyn, 2018) and for all.

The aim of this post is to document a novel concept that promotes a personal approach to health management in the future. It encourages autonomous health practice to prevent several NCD's across the lifespan, which are currently affecti efficiency and delivery of NHS services (Scrutton, et al., 2015; Main, et al., 2022) a enhance mental wellbeing of the individual. Experience Based Design approache demonstrated success in healthcare settings as a collaborative focus to deliver solutions (Bate & Robert, 2007; Macdonald, 2017). Two key questions motivated t research:

(1) How can we envision a future of healthcare that is not only focussed on clinic settings to alleviate NCD rates?

(2) How can we alleviate pressures and challenges of healthcare professionals thr future skills development?

The NHS delivers healthcare across community and clinical settings from mobil delivery with teams of healthcare professionals, technology interventions have demonstrated needs for new roles and services (Imison, et al., 2016).

Challenges can be experienced by those striving for a healthy life and adopting n behaviours and goals (Riegel, et al., 2021). In addition, there are times through m policy makers, statisticians, and other agencies whereby a focus is elevated on particular aspects of health and lifespan, e.g., prostate cancer, menopause, obesit This often results in healthcare promotions and focus, e.g., bowel cancer – bowel cancer screening (Ekberg, et al., 2014). Global events e.g., Covid pandemic can re reduced access and/or provision of services resulting in socioeconomic conseque that affect peoples' lives (Nicola, et al., 2020). It can present challenges to budget planning and closures or cancellation of service provision (Turner et al., 2020; M Council, 2023).

The Covid-19 pandemic presented real challenge to health autonomy and exercis regimes for people (Constandt, et al., 2020). Exercise was limited for some groups accessing green spaces during the pandemic (Geary, et al., 2021), people were res to exercising in their homes or with reduced access to outdoors due to closure of

leisure centres (Stockwell, et al., 2021). Gyms and exercise facilities closed, and fi professionals relied on delivering classes online (Myers, et al., 2020). Outdoor pul settings could facilitate ongoing activity and gym spaces to be inclusive in a post pandemic society (Marston, et al., 2020).

Design can be a resource that defines improvements to life (Shore, 2019), and reli making and doing (DiSalvo, 2022). This practice can have an activism that encou democratised balance to define solutions through a "social conversation" (Manzi 2015) and gives voice to invisible communities. As a social catalyst design has als played a key role in social and policy delivery (Clarkson & Coleman, 2015) and ha key to many innovations in healthcare – devices, products and services (Flood, et 2021).

As we embraced the 21st Century UK and Scottish Government introduced the I Health Innovation (& Care) Centre – DHI in 2013 as one of eight innovation cent (Rimpiläinen, et al., 2019). The DHI has researched and delivered several key innovative services, e.g., Covid-19 app, Scotcap, Backpack that introduced digita focussed supports in relation to the global pandemic, endoscopy procedures, and Multiple Sclerosis. It continues to focus on delivering digital solutions that enha practice and delivery of healthcare services in Scotland and working with partne across Europe through knowledge exchange and partnership (Hughes, 2022). Hov as this research develops, it is evident of the need for human centric focus to behaviours and attitudinal change by people as they aspire to managing their healthspan (Shore, et al., 2024a).

Leisure centres face unprecedented challenge to the maintenance and operation facilities that are intended to provide access to exercise and social engagement. Currently, physical inactivity is impacting on Quality of Life and places a cost in UK of £1 Billion and, if no action is taken, Globally the cost will be approximatel £232billion. Physical Inactivity is a global challenge that impacts Quality of Life, societal balances and results in increased rates of NCDs (noncommunicable dise e.g., stroke, heart disease, cancer, diabetes (WHO, 2022). This focus demonstrates progress made as a provocative action to innovate and address societal and publi

health challenges (Cruickshank, 2023) whilst transforming human behaviour to a autonomous and self-management to their health and wellness.

“If you don’t breathe – you die”

Earlier in 2023, I presented research as part of the bid to raise funding for the redevelopment of a Leisure Centre. I opened my presentation with “If we don’t breathe, we die!” The attendees reacted with reflective but noticeable pause. I fo this and expanded a discussion imaginign the future of healthcare beyond clinica settings (Shore, et al., 2024a), innovation and opportunity to develop a future focu leisure centre transforming human behaviour through engagement, activity, ene and design. As an emerging trend (Tsekleves & Cooper, 2017) self-management o healthcare is a design opportunity. The public space of the leisure centre was ab undergo redevelopment as a future focused health, wellness and exercise is prim emulate beyond the person to include also the environment through salutogenic architecture and design considerations that optimise and enhance the possibility “sustainable healthy future” (Dilani, 2017).

The concept would envision a traditional 20th Century Leisure Centre as an inno ‘health-e-space’ for the 21st Century. It presented the following mantra:

Breathe | Eat | Sleep | Move | GROW!

This research introduction discussed NCD’s current challenges to personal and p health management, and lifestyle. It presented five key drivers to support innova in leisure facilities and public healthcare beyond a clinical setting. It considers th importance of the current ‘leisure centre’ model and the engagement and standi has in community settings.

The research begins with the human responses we rely on daily and that can ens our capacity to be ‘healthy’ while also considering the relationship with physical digital spaces as supports to enhance our health. The geographical location of th leisure centre presented novel opportunity also due to its proximity to mountain

and forestry. It introduced four 'labs' within a healthy environment. The redevelopment of the leisure centre would require many of these existing faciliti be enhanced or improved to optimise a sustainability aligning to environmental e.g., net zero.

There are current design research activities and effectively a design research lab imagined as a 'hot live spot' in the leisure centre to ensure on the ground awaren and diarising or ideas through engagement with members, staff, public health providers and policy makers.

As the project develops it visualises the physical spaces and digital supports as a further funded innovation, it includes the development of the four lab spaces (Al Nutrition, Sleep and Gait) to the redeveloped leisure centre. The labs will provid base to remain focused on change and responsive to the needs of community and society as we progress from the 21st century to the 22nd (Siodmok, 2024)

· Conduct research and testing focus on healthcare and self-management of heal conditions innovation

· Spaces for elite athletes to train and prepare for competition/events

· Spaces for members/attendees to manage their health conditions in an environ that promotes wellness and energy.

2.1 Breathe – Altitude Lab

Altitude has been relied on to support health rehabilitation and care, particularly Alpine regions (Pichler, et al., 2022). Respiratory conditions and pulmonary disea such as asthma can benefit from Altitude treatments (Fieten, et al., 2022). Asthm major global health problem affecting over 300 million people (Saxer, et al., 2019) regular physical activity has demonstrated benefits to reduced risk of Chronic Obstructive Pulmonary Disease (COPD) (Chen, et al., 2022). Elite athletes can rel altitude training as part of competition preparation (Sharma, 2022) often as one series of preparatory approaches aimed at enhancing performance (Fernández-L et al., 2022). The lab would also lend itself to research activity that uncovers new

knowledge to enhance respiratory health management and support to the indivic
and health providers.

2.2 Eat – Nutrition Lab

Healthy diet is recommended to combat sedentary behaviour (Ingram, et al. 2020)
poor diet can contribute to obesity and wellbeing imbalance (McIntosh, et al., 20
lab within a gym/leisure centre setting could provide accessible resource to nutri
knowledge and diet quality for regular gym goers who are seeking to build a heal
lifestyle, or manage health conditions, for elite athletes and education can provic
access to build knowledge regarding food options, environmental consequence e
(Spronk, et al., 2015; Macdiarmid, et al., 2016). Food supplements are often taken
gym goers and often informed by unpredictable or unreliable sources (Mettler et
2020). The 'Eat' nutrition lab is positioned within the same environment as the le
centre attendees, therefore opportune to supporting nutrition education and
knowledge through expert staff. The lab in conjunction with the café area could
provide research opportunity to understand and share nutrition, diet manageme
knowledge to alleviate or reduce NCD's such as type 2 diabetes.

2.3 Sleep – Sleep Lab

We can spend up to one third of our lives sleeping (Frank & Heller, 2019), yet we
experience lack of sleep resulting in negative impacts (Mi & Lei, 2023) on our soc
work and healthspan. Sleep can present challenge at stages of life (Sigelman & Ri
2014) or because of transitions, hormonal changes etc., e.g., menopause (Tutia, et
2019). Elite Athletes well-being and performance can be affected by disrupted sle
patterns (Rice, et al., 2016). From a health perspective, conditions such as sleep a
can be a risk factor to stroke (Culebras, 2015). The sleep lab would provide an
opportunity whereby research is active with collaborations between academia,
industry, and general population as well as elite athletes to provide innovative
solutions that support well-being and health management.

2.4 Move – Gait Lab

The Gait Lab would provide research, innovation, and health support opportunit relation to mobility, gait pattern and behaviour etc., Research in a controlled environment such as a gym is understudied (Schmitt, et al., 2021). Assistive Tech such as Functional Electrical Stimulation can enhance experience in a gym settir (Bulley et al., 2011). Post-menopause estrogen replacement may be a factor in maintaining muscle strength and enhancing muscle trainability and thus be imp in maintenance of static and dynamic balance and the potential risk of falls in ol females (Perry, et al., 2005). This presents opportunity to provide the access to re and health management in a centre that facilitates a community interested in preventing falls, innovating emerging and assistive technologies to deliver innov from a health-e-space setting.

2.5 GROW! - the environment and space around

Our wellbeing is affected by the environments we utilise daily (Cooper, 2014). Sir daily activity such as walking can be impeded or enhanced by the built environm (Townshend, 2014). Future cities are envisioned to be sustainable and fully regenerative (Dunn & Cureton, 2020). Reimagining a traditional leisure centre is as an ambitious update of a building that is currently 'tired' with poor performin equipment and resource to efficiently operate. The new developed leisure centre position itself as a catalyst for change in traditional leisure activity, including a h centric and human connected focus to innovations in health, well-being, exercise experience. Consideration to salutogenic design principles (Dilani, 2015) will enh the attendees and community who access this new healthy environment, to provi social support space as a driver to self-management of health.

Making present what is absent in future health equity – a discussion

The simple act of breathing air into the lungs and expelling them is an act we oft don't focus on or consider, but do, are doing now as you read this post, we have h numerous intakes and discharges of air to and from our lungs. Breathe, Eat, Slee Move & GROW! promotes and encourages self-managed approaches to wellness

health. It facilitates a place that people can engage with and trust expertise, guid and support as they exercise, interact and enjoy the resources and facilities at th Leisure Centre of the future.

In the future, it operates as a 'Push' for the people who choose to walk through t door to engage in activities that enhance quality of life and health autonomy.

Current health condition management operates on a 'Pull' whereby once you are diagnosed you tend to be called to appointments or schedules that pull you throu the experience.

This focus and vision creates the possibility for individuals to experience someth tactile or tangible as their reality and autonomy across the healthspan, and to rea self-managed approach to healthcare outside of clinical settings.

Future focussed healthcare across the lifespan

Health across the lifespan can be optimized through exercise and other factors s good diet (Sigelman & Rider, 2021). Our physical, social, emotional, and mental interactions enhance our development and participation in the environments we encounter daily (Cech & Martin, 2011). PhEMiniNe reflections and practice have indicated good prospect to managing peri and menopausal symptoms (Shore et a 2024b). The importance of Mental wellbeing balance, good nutrition and support healthy environments could underpin innovation to healthspan management. Ou to-day experiences evolve and change through the lifespan, whereby we can be h to ask or seek help in our younger years we can sometimes feel a burden at times age (Marston, et al., 2022; Shore, 2019).

More than one-in-four adults are physically inactive – less than half the populati children in the UK do enough physical activity recommended for their age. This impacts as a healthcare concern across life stages and can impact on spending ar economic budgets to the NHS. Exercise & physical activity improves emotional h & wellbeing and is a key aspect for children's motor and cognitive development (Keech, 2022). Globally, this presents as further inequalities in levels of physical

activity across gender, age, and those experiencing poverty or deprivation. Almos
of new NCD diagnosis is a result of secondary impact from hypertension (47%) o
depression (43%). If we do nothing to stem or find innovative ways to encourage
activity, exercise, and social interaction this will see costs globally on health syst
and service providers of $300 Billion annually (WHO, 2022).

Wellness Laboratories enhanced health and research opportunities

Social determinants of health rely on an inclusive ecology of supports and autono
e.g., self, social, cultural (Jones, 2017) which in turn contribute to our flourishing
sense of belonging as "entanglements between people, objects and systems" (Spe
2023). Charactersitics of emotional design can optimize interactions and experie
beyond the appearance or usability (Norman, 2004).

According to the Collins Dictionary (Collins, online ed., 2014) the word 'Affect' is
defined as "If something affects a person or thing, it influences them or causes th
change in some way." Affective approaches to design and developing tools that a
utilised by individuals could encourage a sense of empowerment, and engagemer
seen previously (Shore, et al., 2024a).

APHEX-U (A Personalised Human Experience Universal) (Shore et al., 2024b) too
approaches encourage responsibility whereby the individual accesses the tool wi
purposed approach to managing or seeking informed guidance or support to
symptoms or conditions e.g., perimenopause/menopause.

Peri/menopause is a transitional stage in life, and often can feel quite debilitating
to the range of symptoms experienced that are often quite subtle and numerous (
et al., 2024b). Developing tools or emerging technologies that encourage autonor
anticipate acceptance or adoption need to be understood from the users' perspec
and their perceptions or intentions to use same (Shore, 2019). Theoretical approa
can affect and be utilised to affect user responses or behaviours, or intentions to
device (Shore, et al., 2018).

Self-Liberty was introduced previously as an attitudinal measure construct when assessing perceptions and acceptance of emerging technology (Shore, et al., 2022 facilitates expression and intent of use differently from Self-Efficacy because it encourages autonomous perception of control (Shore, 2019). Bandura discusses t four psychological approaches (cognitive, motivational, affective, & selection) tha promote our interest or engagement with tasks or activities (Bandura, 1994).

A traditional leisure centre reimagined for the future requires an ecosystem that supportive and not reliant on just the service and the products, it crosses the ecosystem to deliver access for all ages and abilities to engage on their terms util face to face, interactive and informed sources (Ghani, et al., 2020).

The future leisure centres will include those traditional and typical studios, equipment, swimming pool etc, but goes a step further to promote health autonc and management, e.g., physiotherapy supports, or NCD combined managed supp between self, the healthcare service, and the future leisure environment.

A design driven holistic hybrid approach ensures human connectedness and engagement across the ecosystem of the individual.

Conclusion

This vision and concept for an Innovative facility for the future of healthcare, pe health management and community engagement provides opportunity to review 20^{th} century model of leisure, and leisure centre environments and conceptualise innovative approach to health management. This concept is a catalyst for change personal health management and healthspan approaches that alleviate burden or distressed NHS, provide new life for the leisure centre estates of numerous coun within the UK and beyond that are struggling to optimise income and economic returns, whilst struggling with health and social care challenges.

Design research work continues as collaborative activity to ensure an inclusive a sustainable facility that promotes personal health management, physical activity

interaction and well-being whilst optimising community and stakeholder engage to utilise, innovate and collaborate.

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