

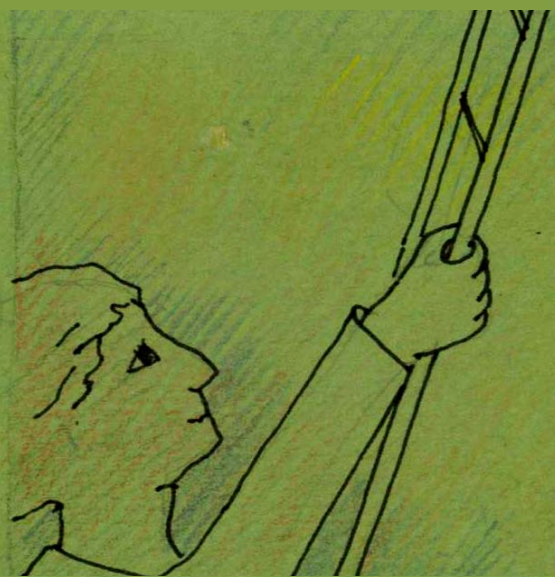
# CHALLENGING MOBILITY

## Ways to improve population health by providing options to make every day mobility more natural and diverse through design interventions

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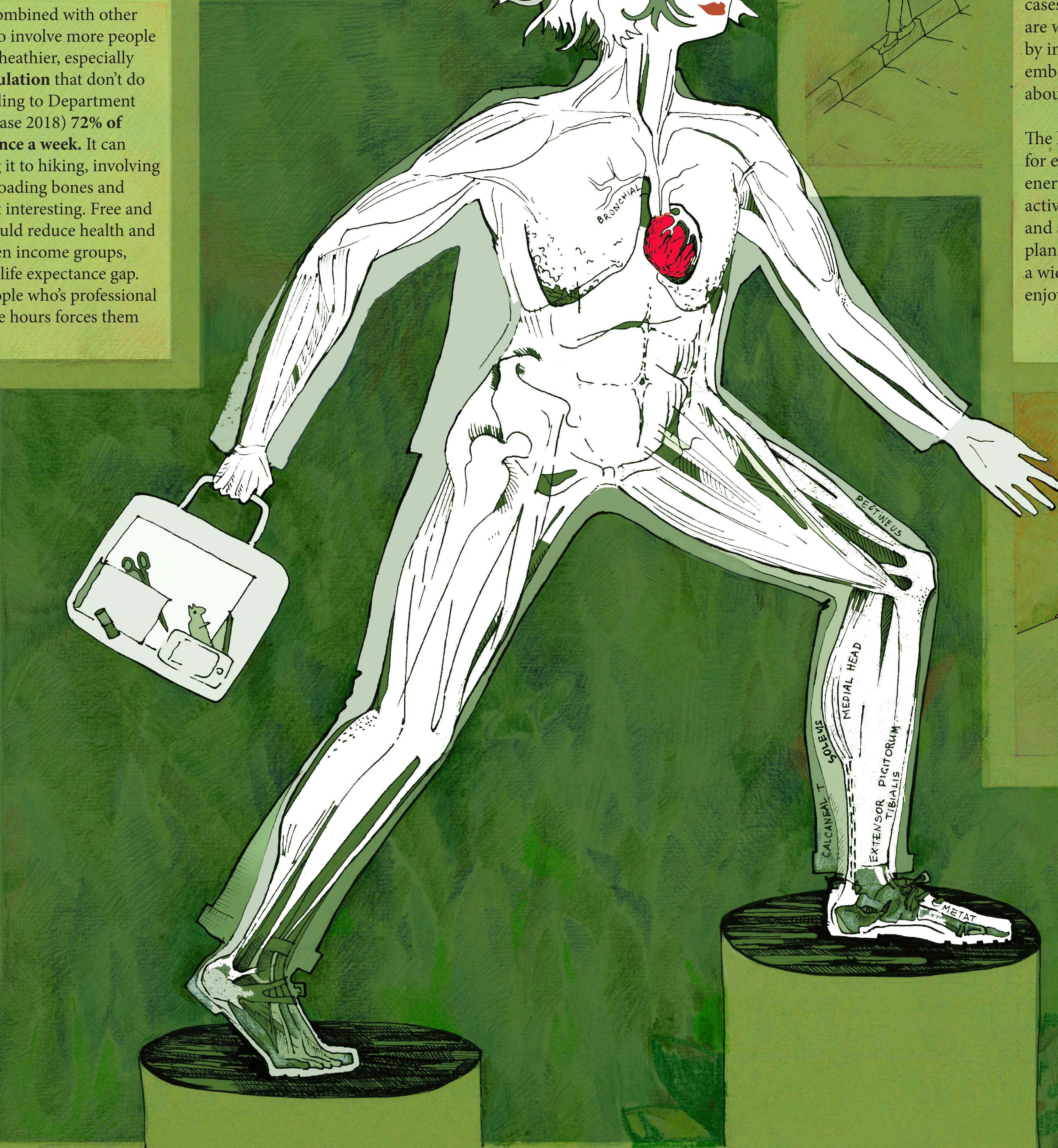
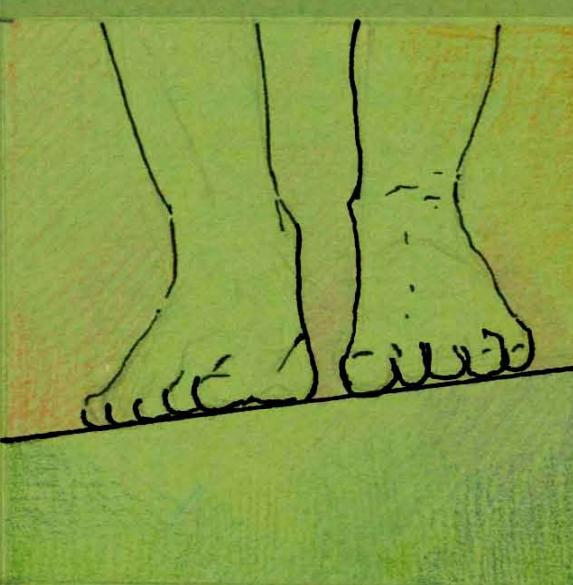
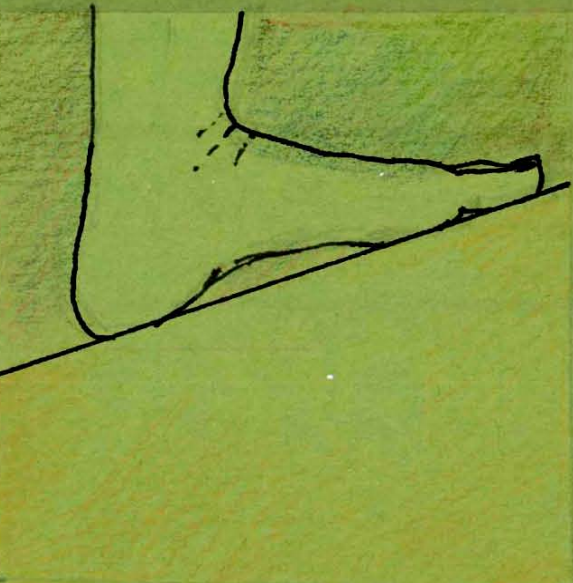
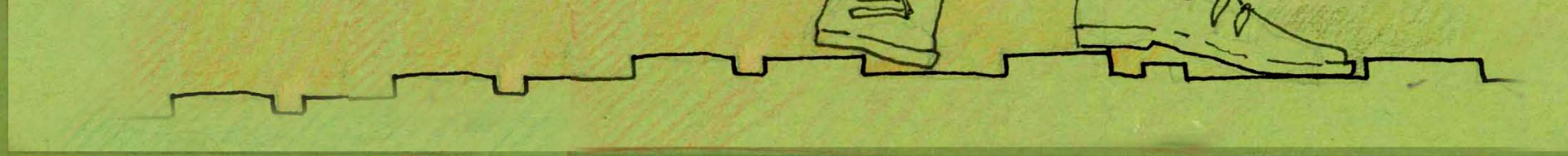
Health is a key component of quality and length of life. Architects, Urban Designers and Planners address this topic in many ways: increasing natural light, ventilation, green spaces, decreasing overcrowding and so on. Most researchers agree there are multiple health benefits to being physically active. The NHS recommends **150 minutes of moderate or 75 minutes of vigorous activity per week**. Additional recommendations for senior citizens over 65 are: strength exercises twice a week to maintain bone and muscle mass, plus **stretches and balancing to prevent falling**. The above information is actively passed to the general population through schools, posters and leaflets, however, **40% of Londoners still don't exercise enough**. Recent studies show that the reason most frequently mentioned by respondents is lack of time, followed by luck of motivation, habit, or resources to make it interesting. Looking beyond self-reported reasons, people don't want to think about disease and death and would like a quicker results of their effort, so such motivators pleasure, a desire to look more attractive or curiosity might be more effective than health information.

Urban design, especially combined with other measures, has a potential to involve more people in exercising and become healthier, especially those **50% of the UK population** that don't do any sport regularly. According to Department of Transport (Statistic Release 2018) **72% of Londoners walk at least once a week**. It can diversify walking, bringing it to hiking, involving a wider range of muscles, loading bones and internal systems, making it interesting. Free and easily accessible activity could reduce health and activity inequalities between income groups, possible reason for 8 years life expectancy gap. Another target group - people who's professional life with long unpredictable hours forces them into sedentary lifestyle.



There are steps done leading toward Active Urban Environment around the world, many of them very successful and well researched: senior playgrounds, exercise trails combining running with open air gyms and reflexology paths in Asia. Some of the shapes that could be used for “urban hiking”, but are not used enough, for example low walls, choice of smooth of cobbled surfaces, I am working on identifying reasons preventing people from using them, and possible ways of encouragement. So far, my research showed that children use challenging routes in almost 100% of cases, adults use them if they are shorter or give a better view. In some cases adults would climb on shapes, such as the sculpture by st. Paul if they are waiting for someone as a way to spend time. Among reasons named by interviewees not to take active path were: fear of falling (trauma or embarrassment), belief (mistaken) that it is not permitted and concerns about hurting plants.

The key of the concept of an **Active Urban Environment** is inclusivity for everyone: “active shapes” can be used for walking on as part of energetic daily commute, jumping and stretching as a dedicated sport activity, sitting for those who can't walk for long distances without rest, and as sensory cues for visually impaired pedestrians. (Healthy urban planning.2000. Barton) It can only be applied in urban spaces that have a width allowing energetic route in addition to accessible- making it enjoyable and accessible for everyone.



In addition to immediate exercising effect, Active Urban Environment can show normally inactive people that they can enjoy exercise, keep positive memories and possibly join a gym. (Pleasure and displeasure from the body: Perspectives from exercise.2003 P. Ekkekakis)

While adult playgrounds and park gyms already exist and are actively used I am looking on the possibilities of bringing this concept into the city environment as a part of every-day travelling to work and daily routine.

At the moment I am running a series of experiments with movable concrete stepping stones (p8)



**Uneven surface.** Biokinetic studies showed that on an uneven surface similar to old cobbled stones with 25 mm high unevenness increase metabolic rate is 28% higher than on even surface. Overall the activity of the thigh muscles increases by 50%, plus all the balancing systems: sensors, processing, motor response get more involved providing much needed training for elderly people to prevent falling. (Biomechanics and energetics of walking on uneven terrain, 2013,A.Voloshina, D.Kuo, M.Daley, D.Ferris) Walking on “cobblestone mat” inspired by Asian reflexology showed improvement in balancing and reduced blood pressure. (Improving physical function blood pressure in older adults through cobblestone mat walking : a randomised trial 2005 F. Li, K. Fisher, P. Harmer)



**Stepping up** gives exercise to quadriceps, other muscles involved include glutes, calves and hamstrings, which assist in the movement. Overcoming gravity adds load to bones beyond normal walking, adding to maintaining bone mass. High step helps stretching calve and thigh muscles. (p2)

**Stepping stones** in grass or permeable pavers give more space for active travel and to plants, insects and animals.



**Balancing on beam or wall** improves the balance, which is especially important to the senior citizens(p6)It involves wide range of muscles in lower and upper body, as well as analysing data from eyes, internal ear and proprioceptor neurons distributed throughout body. Exercising prevents fear of falling among older adults (Fear of falling in elderly persons: association with falls, functional ability, and quality of life.2003, F. Li, K. Fisher, P. Harmer, McAuley, Wilson)

**Stretching** is an important part of every exercise- for sport performance and injury prevention. Variety of steps, slopes, vertical elements would allows everyone to find stretch suitable to his body parameters.

