

# **Worcestershire Health and Wellbeing Board Joint Strategic Needs Assessment (JSNA)**

## **Falls Prevention Needs Assessment [Epidemiological]**

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# 1. Introduction

## Context

The National Falls Prevention Coordination Group's Report [Falls and Fracture Consensus Statement](#) advocates a whole system approach to falls prevention that targets both the population and individuals. Such a programme should include:

- Risk factor reduction across the life-course
- Case finding and risk assessment
- Strength and balance exercise programmes
- Healthy homes
- Management of falls and falls prevention in high-risk care environments
- Mitigation against the impact of a fall

Worcestershire published a [Falls Needs Assessment](#) in 2018. At that time, falls prevention fell under the ICOPE banner (Integrated Care For Older People). In the intervening years there has been the COVID-19 pandemic and a major reorganisation of the NHS resulting in a change in how partner organisations work together and how they engage with, and serve, their local communities. As a result, this planning structure no longer exists.

A Worcestershire Falls Prevention Task and Finish Group was established in 2022 by the Herefordshire and Worcestershire ICB. Its aim was to bring together individuals working either at the strategic or operational level to better understand what prevention activities and services were currently being provided. This group is now called the Worcestershire Falls Network.

This document is a refresh of the 2018 Needs Assessment for Falls Prevention. It presents only epidemiological information. The mapping work continues under the Worcestershire Falls Network.

In addition to a workstream on falls prevention, a frailty strategy has been produced by the Herefordshire and Worcestershire ICS: *Herefordshire & Worcestershire ICS Strategy for people at risk of and living with Frailty, 2023*.

Underpinning all other strategies is Worcestershire's Local [Health and Wellbeing Strategy \(2022-2032\)](#). This document sets out a number of ambitions to change the health status of the Worcestershire population. The one that has relevance to falls prevention is the one that aims to promote healthy living at all ages. The document sets out how this ambition will be met:

- By supporting people to start well, live well and age well so they can live a greater proportion of their lives in good health.
- By enabling people to improve and maintain their own health and wellbeing and make healthy lifestyle choices.
- By supporting people to live healthy and independent lives for longer, with appropriate support and care available when they need it.

## Reframing falls prevention

### ***The need to focus on accelerated muscle loss before individuals are at risk of a fall***

The major contributor to both to having a fall and becoming frail is the loss of functional ability that comes with accelerated loss of the body's skeletal muscle mass. Falls prevention strategies are commonly targeted at those that have either had a fall or are deemed at higher risk of falling as a result of illness. This focuses attention and resources too late in the course of an individuals' muscle decline. If we are to have any impact on the incidence of falls and frailty in the decades to come attention is needed upstream.

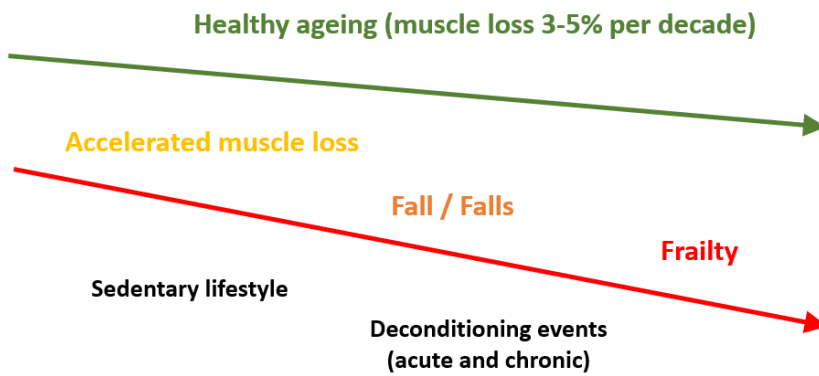


Figure 1 compares two rates of muscle decline. The green represents healthy ageing while the red line illustrates an accelerated rate of decline which will lead to loss of functional ability in older age. The red line is just one potential protectory for an individual and best illustrates a lifelong sedentary lifestyle. However, there are many ways in which accelerated muscle loss can happen. [Table 2](#) on page 8 gives examples of events that can lead to a more sudden loss of muscle mass.

**Figure 1: Muscle loss – two possible paths**

***Distinguishing between which interventions prevent falls acting through either external or intrinsic factors***

When considering what interventions to invest in, a distinction needs to be made between those activities that reduce falls but do not alter a person’s functioning state and those that reduce falls though improving an individual’s strength, power and balance. To illustrate the difference: home adaptations are highly cost-effective at reducing falls but making these adaptations alone will not address the individual's tendency to be unstable and fall. Similarly, a hospital may put structures and processes in place to increase the safety of the environment and the quality of care that is provided with the specific aim of reducing the number of falls that take place in hospital, but again this will not address the underlying problem. Only exercise can reverse muscle loss and poor balance. It is important that any strategy includes both approaches to falls prevention, but ultimately only exercise can impact on the long-term incidence of falls and prevalence of frailty and investment priorities should reflect this.

***Strength based exercise is both a public health intervention and a clinical intervention***

All too commonly, exercise is viewed solely in the context of a healthy lifestyle. However, exercise is also a clinical intervention, and it is currently being underutilised as a means to address deconditioning. This needs to change if we are to make any impact on the incidence of falls.

## **2. Useful definitions and concepts**

**Healthy ageing** is the process of developing and maintaining functional ability that enables wellbeing in older age.<sup>1</sup> It does not mean an absence of disease but the ability to maintain performance over the life course.

<sup>1</sup> [WHO World report on ageing and health 2015](#)

**The individual at risk of a fall.** There is no single definition of who is at risk of a fall but NICE targets its falls risk assessment and prevention guidance on: <sup>2</sup>

- People aged 65 or older who fall or are at risk of falling in the community, and their families and carers
- All hospital inpatients aged 65 or older
- Hospital inpatients aged 50 to 64 who have been identified as being at higher risk of falling

**Primary falls prevention (Prevent)** involves population level interventions that support and enable people to age well. The goal is to support individuals to be fitter and in better health when they enter older age. Being healthier reduces the number of deconditioning events an individual is exposed to later on in life, and this, together with being fitter, provides the functional reserve to deal with illness when it does arise.

**Secondary falls prevention (Reduce)** involves managing risk factors linked to the risk of falling and developing frailty in future. Such interventions can operate at either at a subpopulation or individual level. This requires identifying those who are at risk of, or have actually become acutely or chronically, deconditioned. The aim of secondary prevention is to reverse or reduce the rate of decline through a reconditioning programme followed by supporting an individual to adopt a lifelong habit of exercise.

Primary and secondary prevention require attention to a wider range of factors than just promoting exercise and good nutrition. These include addressing social isolation, creating more exercise opportunities for people to access, ensuring equitable access to those opportunities and addressing ageism that results in low expectations of a patient's expected level of fitness and of what older people are able to do.

**Tertiary falls prevention (Delay)** is targeted as those who have either had a major injury as a result of a fall with the few to reducing the impact of that injury to a minimum. For those who are already frail, while reconditioning and reablement remain valid goals (particularly given that frailty can be reversed in a significant minority of individuals), most tertiary prevention is about mitigating the impact of being frail for both the individual and health and social care system.

Table 1 lists common interventions at each level of prevention.

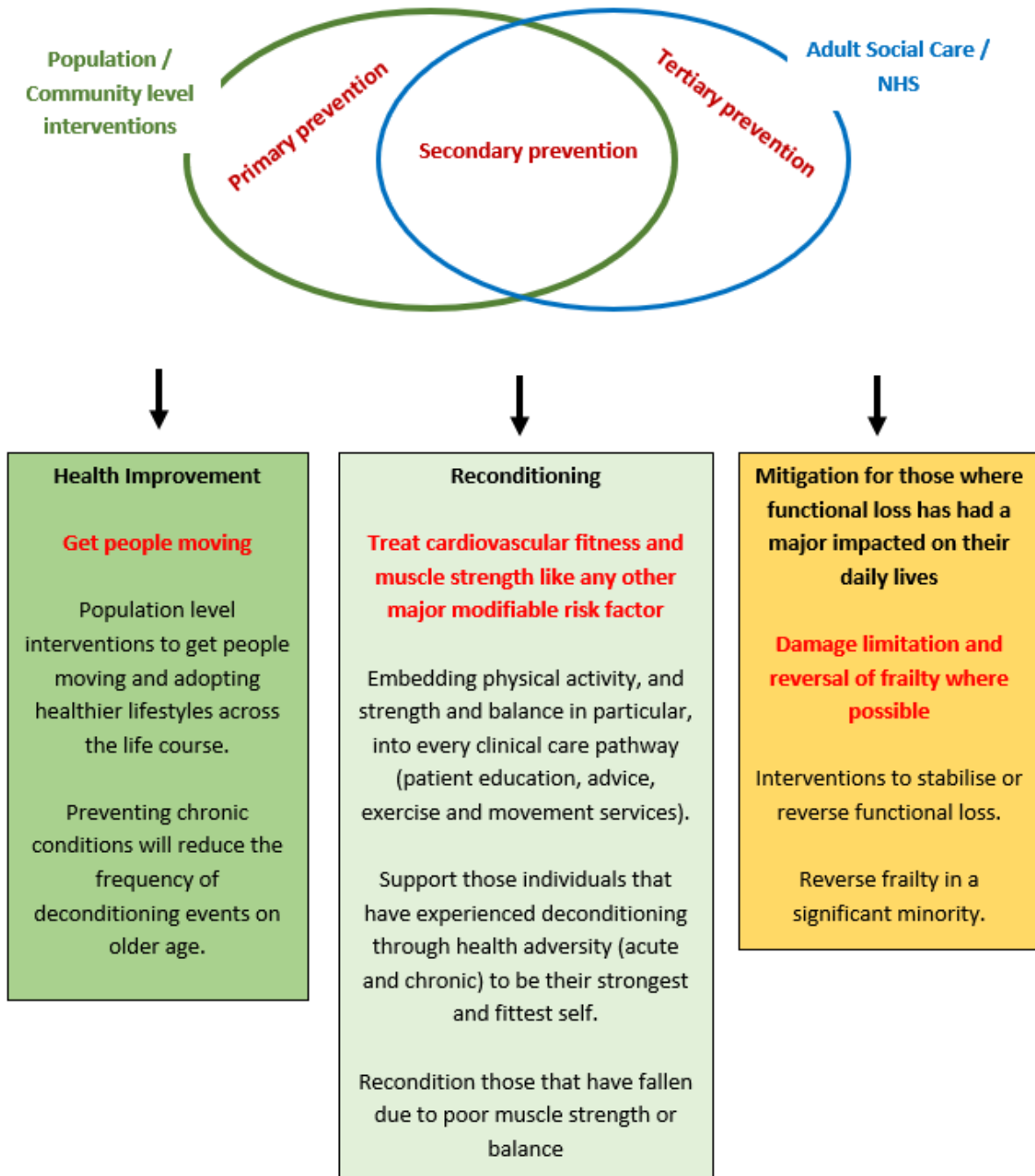
**Table 1: Common interventions within a fall prevention strategy classified by primary, secondary and tertiary intervention.**

<b><u>Primary prevention</u></b> <b>[Prevent]</b>	<b><u>Secondary prevention</u></b> <b>[Reduce]</b>	<b><u>Tertiary prevention</u></b> <b>[Delay]</b>
<ul style="list-style-type: none"> <li>• Health improvement activities across the life course</li> <li>• Healthy aging programmes</li> <li>• Funded exercise classes</li> </ul>	<ul style="list-style-type: none"> <li>• Funded resistance training</li> <li>• Advance about reconditioning</li> <li>• Home adaptations</li> <li>• Reconditioning programmes as part of NHS pathways</li> <li>• Management of osteoporosis</li> </ul>	<ul style="list-style-type: none"> <li>• Falls services</li> <li>• Avoiding admission to hospital</li> <li>• Management of hip fractures</li> <li>• Reversing frailty as part of NHS/ASC pathways</li> </ul>

<sup>2</sup> [The National Institute for Health and Care Excellence Clinical Guidance, CG161: Falls in older people: assessing risk and prevention, 2013](#)

Figure 2 illustrates the organisations that take the lead on different elements of the programme. Of the three, secondary prevention is the least clear cut, as some of the exercise provision which is being delivered at the population level is suitable for individuals who both have led a sedentary lifestyle or who need to recondition following a health event.

**Figure 2: Relationship between population and health and social care interventions**



**Deconditioning.** Deconditioning is the state of physical, +/- psychological and +/- functional decline that occurs as a result of prolonged inactivity and associated loss of muscle strength. Deconditioning can occur at any age, but amongst older adults it can occur more rapidly and with more profound impact. Deconditioning can also arise as the result of a hospital stay in which case it is called **hospital associated decondition**.

Table 2 lists some causes of deconditioning.

**Table 2: Examples of deconditioning events**

**Situations that reduce the chances of people being able to commit to regular exercise**

- Demanding lives (middle-aged women looking after both children and parents, parents with very young children, jobs with long hours or commutes)
- Social isolation
- Mental health problems
- Fear of falling or concerns about not being having access to a toilet
- Concerns about getting back to exercise after an illness or injury because of fears of worsening the condition
- Anxiety about going into the community (lack of toilets, places to stop etc)
- Lack of access to groups / facilities

**Injuries to our muscular skeletal system**

- Fall
- Back injury
- Shoulder injury from a fall
- A fractured neck of femur

**Acute illness - bed rest or fatigue**

- Severe chest infection
- Hospital stays in particular sustained periods in intensive care

**Chronic illness**

- Any

Exercising throughout life helps prevent those diseases that are linked with an unhealthy lifestyle. Preventing these conditions reduces the number of deconditioning events the individual is subjected to, particularly in older age.

**Anabolic resistance.** Anabolic resistance describes a state in which there is reduced stimulation of muscle protein synthesis to a given dose of protein/amino acids which contributes to accelerated decline in skeletal muscle mass. In this state, the body is not able to rebuild muscle so easily, despite optimum exercise and nutrition. Obesity and sedentary lifestyles are thought to contribute to anabolic resistance. Anabolic resistance is thought to play a part in loss of strength and power that is observed in the extremes of older age.

**Sarcopenia.** Sarcopenia is a condition characterised by the loss of skeletal muscle mass and function. Although it is primarily a disease of the elderly, its development may be associated with conditions that are not exclusively seen in older persons. Sarcopenia is a syndrome characterised by progressive and generalised loss of skeletal muscle mass and strength and it is highly correlated with physical disability, poor quality of life and death. Typical features are falling, muscle weakness, slow walking speed, self-reported muscle wasting and difficulties in performing daily activities. Sarcopenia is a key feature of frailty.

**Frailty.** Frailty is a progressive age-related decline in physiological systems that confers vulnerability to stressors and increases the risk of adverse health outcomes such as disability or death. Frailty overlaps with, but is distinct from, multimorbidity and disability. The five markers of frailty are weight loss, exhaustion, low physical activity, slowness and weakness.

### **3. The role of strength balance and flexibility training**

It is important to understand the role that skeletal muscle mass plays in functional loss, and therefore as a root cause of falls and frailty.



Muscle mass is built up until we reach the age of about 35 to 40 years of age after which time it starts to decline. The more muscle we have at the point at which the decline starts the better. The amount of muscle we have at any point in time is the **functional reserve**. The level of functional reserve that an individual can acquire up to point muscle begins to be lost through the ageing process is determined by a number of things including a person's genetic makeup, nutrition, environmental factors and, unsurprisingly, the level of exercise that was done through their childhood and young adulthood.

The rate at which muscle is lost should be no more than 3 to 5% per decade. This rate of loss should enable an individual to remain largely independent into old age. The rate of loss will be accelerated by a sedentary lifestyle or periods of inactivity, the cause of which is usually a health problem (including mental health) but can also be as a result of social demands and lack of exercise opportunity.

Figure 3 illustrates how thigh muscle is lost with age, include more significant loss due to a sedentary lifestyle.

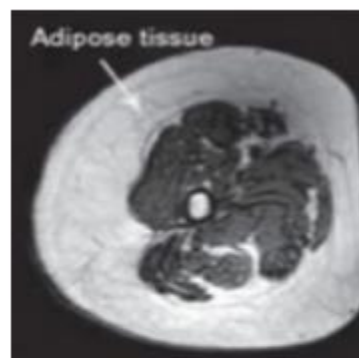
**Figure 3: MRI Cross sections of thighs at different ages and states of health**



Cross section of a thigh of an active young person



Cross section of a thigh of an active 70-year-old

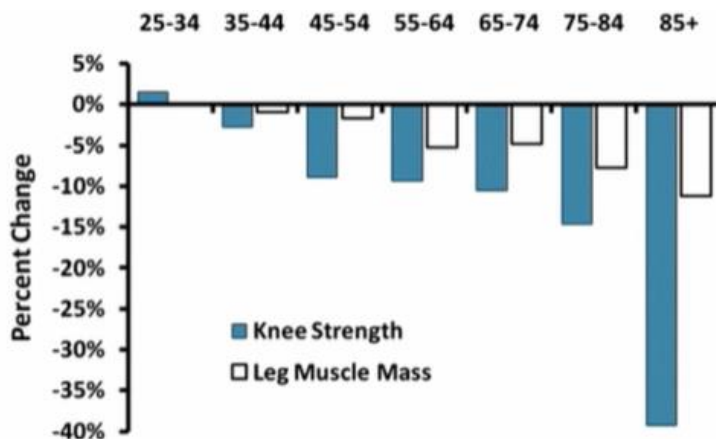


Cross section of a thigh of a sedentary 74-year-old, who is also obese. Obesity can also lead to greater fat within the muscle structure which will impair function further

*Taken from a presentation by Dr Brendan Egan, Dublin University. Original source unknown.*

Muscle mass and strength do not have a direct relationship. In older age, for each 1% loss of muscle that occurs, the loss of strength is even greater. This is one of the reasons there is often more rapid deterioration in function after the age of 80 years of age. Figure 4 illustrates that relationship. It can be seen that after 80 years of age there is a dramatic change in the loss of strength in comparison to the muscle mass lost.

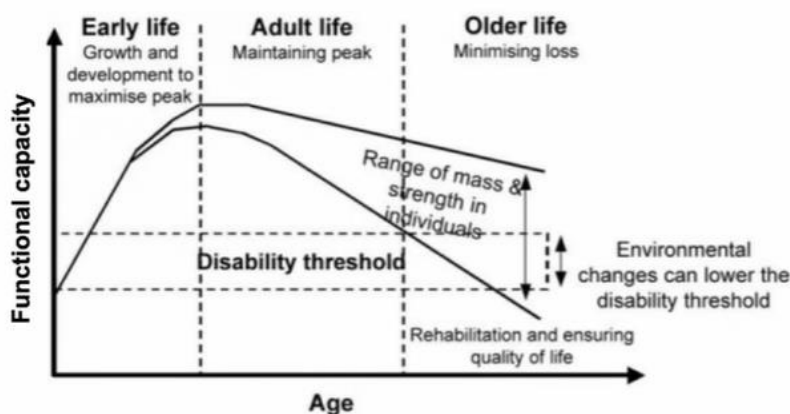
**Figure 4: Discordance between the decline in muscle size and function (strength) during the life course**



*Taken from lecture by Dr B Egan, and attributed to The Baltimore Longitudinal Study of Ageing, Ferruci et al, (2012) J Gerontol A Biol Sci Med Sci*

Figure 5 illustrates how the rate of muscle loss can determine whether or not people remain independent in later life. The figure shows one trajectory at the ideal rate (which keeps the individual able to look after themselves in older age) and a second trajectory which is an accelerated rate of decline as the result of a sedentary lifestyle which results in some degree of dependency in older life. The difference between the ideal and the actual muscle lost is known as the **fitness gap**. Given that we know exercise is the key to maintain muscle mass, it is not unsurprising that exercise should be considered the cornerstone of any falls or frailty prevention programme.

**Figure 5: Illustration of the potential impacts of different rates of muscle loss and their impact <sup>3</sup>**



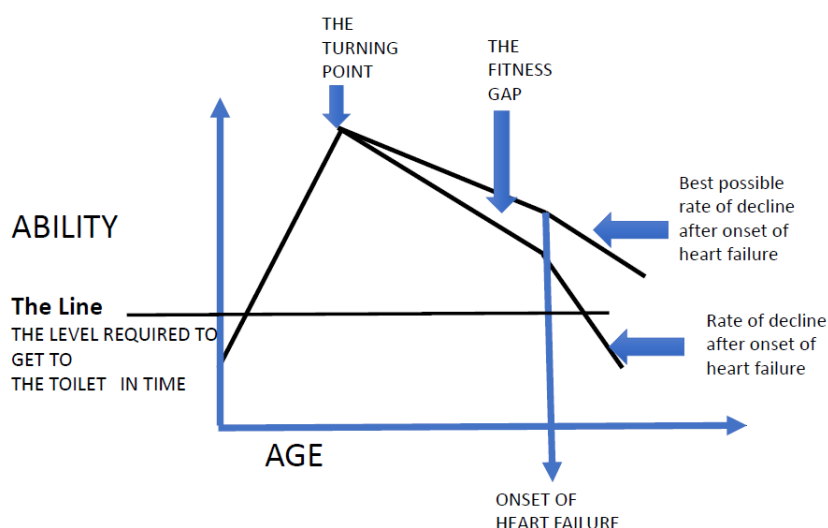
*Taken from A Kalache & I Kiekbusch, 1997*

<sup>3</sup> [A Kalache & I Kiekbusch, A global strategy for healthy ageing, World Health 50th Year, No. 4, July-August 1997](#)

Individuals are often exposed to a number of deconditioning events throughout life. Three days of bed rest is sufficient to have an impact on muscle mass. A fit 70-year-old who has 10 days bed rest due to an illness can lose 10% of their muscle mass. This is the equivalent to more than a decade of natural loss. This accelerated loss is not confined to the old. A fit young person will lose 1% to 3% after a month of bed rest.<sup>4</sup> However, not only will the younger person lose less muscle per day of inactivity, it will also be easier for them to rebuild that muscle afterwards. Regaining 10% muscle loss in later life requires commitment over a longer period of time and a degree of determination.

Figure 6 is a similar diagram to Figure 5 but this time it illustrates a single deconditioning event, in this instance heart failure. It can be seen that the greater the muscle mass the individual has when an adverse health event arises, the better it is for the individual.

**Figure 6: Illustration of the impact of chronic illness for individuals with different rates of muscle loss and fitness levels**



*Taken from Sir Muir Grey, Executive Director of the Oxford Centre for Triple Value Healthcare, and a Director of the Optimal Ageing Programme*

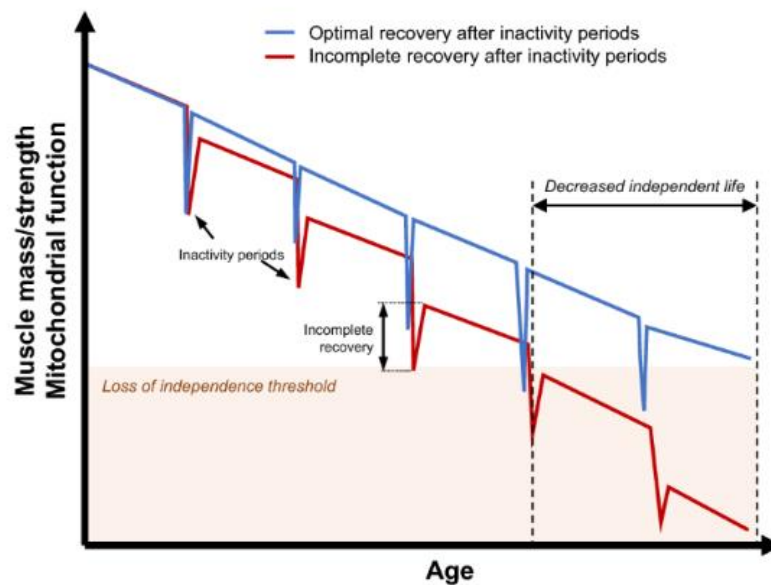
However, most people experience many deconditioning episodes throughout their life with or without improvement in condition in-between.

It has been postulated that incomplete recovery of muscle mass and strength after each event will, over time will lead to individuals moving from a healthy trajectory to an adverse one, even if individuals maintain muscle loss at the desired rate in the interval between deconditioning events. This is illustrated in Figure 7.

The implication of this is that fully reconditioning after each injury and illness is an important intervention for falls and frailty prevention.

<sup>4</sup> [Dr B Egan, Lecture, Muscling in on Aging \(TheIHMC\)](#)

**Figure 7: Incomplete recovery after inactivity periods ('catabolic crises') accelerates decline over the life course**



*Taken from Dr Brendan Egan, University of Dublin*

*Attributed to Concept: English and Paddon-Jones (2010) Curr Opin Clin Nutr Metab Care 13(1):34-9 & Figure: Pillon (2023) Eur J Appl Physiol 123(1):243-245*

#### **4. The need to incorporate muscle strength as a modifiable risk factor within clinical practice**

Poor cardiopulmonary fitness, as measured by oxygen consumption during maximal exercise ( $VO_2Max$ ), is a major predictor of premature death; more so than hypertension, obesity, cholesterol, smoking and diabetes. This means that by improving cardiopulmonary fitness more deaths can be avoided than could be through improvements in the other risk factors. Benefit is also compounded by the fact that improving cardiopulmonary fitness reduces hypertension, helps with weight management, and mitigates some of the impact of being overweight. It also contributes to mental health and general wellbeing.

Muscle mass is directly related to functional ability. Muscle mass (and therefore muscle strength) is therefore a predictor of functional loss and frailty throughout the life course. Hand grip strength has been shown to be a reliable indicator for total muscle strength and mass. Normative, if not target, hand grip strength by age and gender and for the dominant and non-dominant hand are available.

Both cardiopulmonary fitness and muscle strength are **measurable modifiable risk factors**, yet currently, neither of these two risk factors are monitored and assessed as part of clinical care.

## 5. Summary of the key falls statistics

- One in 3 people over the age of 65 fall each year.
- One in 2 people over the age of 80 fall each year.
- For an older person a fall can be:
  - trivial, profound or fatal.
  - the first sign of a new or worsening health problem.
  - a marker for the onset of frailty.
  - a 'tipping point' leading to loss of confidence and independence, and increased dependence on family, and health and social services.
- 5% of those who fall will suffer a significant injury needing hospitalisation.
- About 1 in 3 people who are admitted with a fall in Worcestershire are diagnosed with a hip fracture.
- Of those who have suffered a fractured hip:
  - One in 10 will die within 30 days.
  - A significant proportion will lose some or all of their independence / reduced QOL through withdrawal and fear of falling.
  - Even among those with higher levels of pre-fracture functional status, significant numbers do not fully recover. The rates are worse for patients who are older, cognitively impaired, and who have multiple comorbidities. <sup>5</sup>
  - On average 30% of people will not be able to return to their previous residence.
- The cost of hip fractures to the NHS, pre-COVID-19, was estimated to be £1 billion per year. <sup>6</sup>
- The pandemic has led to older people being less active. As a result, Public Health England predicted that that 110,000 more older people are expected to have at least one more fall per year in England. <sup>7</sup>
- Public Health England's modelling came to a view that for each year there is a decrease in the conditioning of older people, there is an additional £211 million in costs to the health and social care system that are incurred over a 2.5-year period.
- Life expectancy is expected to increase with between now and 2040. The duration of time people will spend living with a major illness is also expected to increase. In 2010 the duration was 9.9 years, in 2019 it was 11.3 years and by 2040 that figure is expected to be 12.6 years. <sup>8</sup>

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<sup>5</sup> [V Tang et al, Rates of Recovery to Pre-Fracture Function in Older Persons with Hip Fracture: an Observational Study, J Gen Intern Med. 2017 Feb; 32\(2\): 153–158](#)

<sup>6</sup> [The Royal College of Physicians, National Hip Fracture Database, NHFD annual report 2019.](#)

<sup>7</sup> [Public Health England, Wider impacts of COVID-19 on physical activity, deconditioning and falls in older adults, 2021](#)

<sup>8</sup> [The Health Foundation, Health in 2040 - predicted patterns of illness in England, July 2023](#)

## 6. Other data

### 6.1 Accelerated muscle loss

Accelerated muscle loss can arise from a sedentary lifestyle, a single deconditioning event (for example a hospital admission or severe long COVID) or a series of deconditioning events over time.

#### 6.1.1 People with chronic medical conditions

Individuals living with a chronic medical condition are at greater risk of having episodes of acute illness during which they do not exercise and to suffer from mental health problems. They are also less likely to exercise. Those with disabilities also have less opportunity to exercise. It is also possible that individuals and those around them have lower expectations of what someone with a chronic condition can do by way of exercise.

We do not have data on the percentage of people who live with chronic conditions who have excessive muscle loss. Table 3 provides Census 2021 data for Worcestershire for those living with a long-term condition and who feel they are limited by that condition to some degree. The data indicates that about 22% of people at the age of 40 to 45 are living with a long-term condition rising to 68% for those aged 90 and over. Of these the majority feel that this impacts on their ability to do things.

**Table 3: Individuals living with a long-term condition with and without disability in Worcestershire**

Age group	No condition	Living with a condition			Percentage living with a condition (all categories)	Percentage of those with a condition who feel limited by that condition	Total population
	Not disabled	Not disabled	Disabled – limited a little	Disabled – limited a lot			
<b>40-45</b>	27,415	3,210	3,110	1,555	22.32 %	59.24 %	35,290
<b>45-49</b>	28,625	3,730	3,735	2,175	25.19 %	61.31 %	38,265
<b>50-55</b>	32,720	4,360	4,540	2,820	26.37 %	60.80 %	44,440
<b>55-59</b>	31,455	4,460	5,130	3,295	29.06 %	65.39 %	44,340
<b>60-65</b>	25,880	5,240	4,920	3,400	35.28 %	61.36 %	38,440
<b>65-69</b>	22,880	4,115	5,320	3,310	35.78 %	67.71 %	35,625
<b>70-75</b>	23,320	4,090	6,495	3,610	37.84 %	71.19 %	37,515
<b>75-79</b>	16,315	2,570	5,445	3,860	42.12 %	78.36 %	28,190
<b>80-85</b>	9,405	1,460	4,150	3,940	50.38 %	84.71 %	18,955
<b>85-89</b>	4,640	570	2,640	3,450	58.94 %	91.44 %	11,300
<b>90+</b>	2,045	170	1,370	2,860	68.27 %	96.14 %	6,445
<b>Total</b>	<b>224,700</b>	<b>32,975</b>	<b>46,855</b>	<b>34,275</b>	<b>33.97 %</b>	<b>71.1 %</b>	<b>338,805</b>

\* Census question: Do you have any physical or mental health conditions or illnesses lasting or expected to last 12 months or more?

Source: 2021 Census

### 6.1.2 The impact of the COVID-19 pandemic on falls

The pandemic was a deconditioning event for many people. As a result, there has been focus on the impact of COVID-19 on activity levels and falls. The main sources of information about the impact of the pandemic come from the regular national survey conducted by Sports England<sup>9 10</sup> and a report by Public Health England looking at the impact of COVID-19 on older adults.<sup>11</sup> The key findings from these two reports are:

- 21.5% of adults aged 65 to 74, 34.4% of those aged 75 to 84 and 57.4% who were 85 years and over were inactive in the pre-pandemic period. The picture worsened during the pandemic.
- Older people experienced a considerable reduction in strength and balance activity between March 2019 and May 2020, with the greatest change being reported in the 70 to 74 age group with a 45% decrease in activity in men and 49% decrease in women.
- Reported findings from an Age UK and Kantar Polling survey conducted during the months of August and September in 2020 found that:
  - 1 in 3 respondents reported feeling more anxious since the start of the pandemic
  - 1 in 3 agreed they felt less motivated to do the things they enjoy
  - 1 in 3 have less energy
  - 1 in 4 respondents not being able to walk as far as they used to
  - 1 in 5 are finding it harder to remember things
  - 1 in 5 say they feel less steady on their feet
  - 1 in 3 felt less confident taking public transport, 2 in 5 felt less confident going to the shops or 1 in 4 felt less confident spending time with family

The results were more pronounced amongst people with long-term health conditions.

- 43% of people with a long-term health condition were unable to walk as far as before, compared to 13% of people without a long-term health condition.
- Amongst people from more disadvantaged socioeconomic backgrounds:
  - 22% of older people from more disadvantaged socioeconomic backgrounds reported they felt less steady on their feet compared to 14% from the most advantaged.
  - 39% of older people from a more disadvantaged socioeconomic background said they had less energy compared to 26% of those from the most advantaged.
  - Inequalities have widened. The levels of activity in November 2022 have increased by 1.4% for those coming from the most- and mid-affluent populations. In the most deprived communities, the activity levels have decreased by 2.1%.
- Activity levels to November 2022 demonstrated recovery of activity after the pandemic although this was not the case for all sections of the population.

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<sup>9</sup> [Sport England, Adults' activity levels in England bounce back to pre-pandemic levels, April 2023](#)

<sup>10</sup> [Sport England, Active Lives Adult Survey November 2021-22 Report, April 2023](#)

<sup>11</sup> [Public Health England, Wider impacts of COVID-19 on physical activity, deconditioning and falls in older adults, 2021](#)

- Overall, the level of exercise returned to pre-pandemic levels for those all groups (those with and without a disability or long-term health condition) by 2022.
- 3.8% more people with a disability or long-term health condition were active in 2022 compared to November 2015.
- With respect to ethnic background, the sub-populations most negatively affected were those belonging to the Asian (excluding Chinese) and Black communities and those coming from 'Other' ethnic backgrounds. Overall, these populations had lower levels of activity before the pandemic, did worse during it, and have recovered the least in terms of their exercise levels.
- Public Health England modelled the impact of the pandemic of the incidence of falls. In the absence of any significant mitigation, their modelling predicted that:
  - 110,000 more older people are projected to have at least one fall per year as a result of reduced strength and balance activity during the pandemic. This represents an overall increase of 3.9%.
  - the total number of falls could increase by 124,000 for males (an increase of 6.3%) and 130,000 for females (an increase of 4.4%).
  - for each year that the lower levels of strength and balance activity observed during the pandemic persist, there is projected to be an additional cost to the health and social care system as a result of the change in predicted related falls of £211 million (incurred over a two-and-a-half-year period).

These rises were predicted despite the loss of significant numbers of older people to COVID-19.

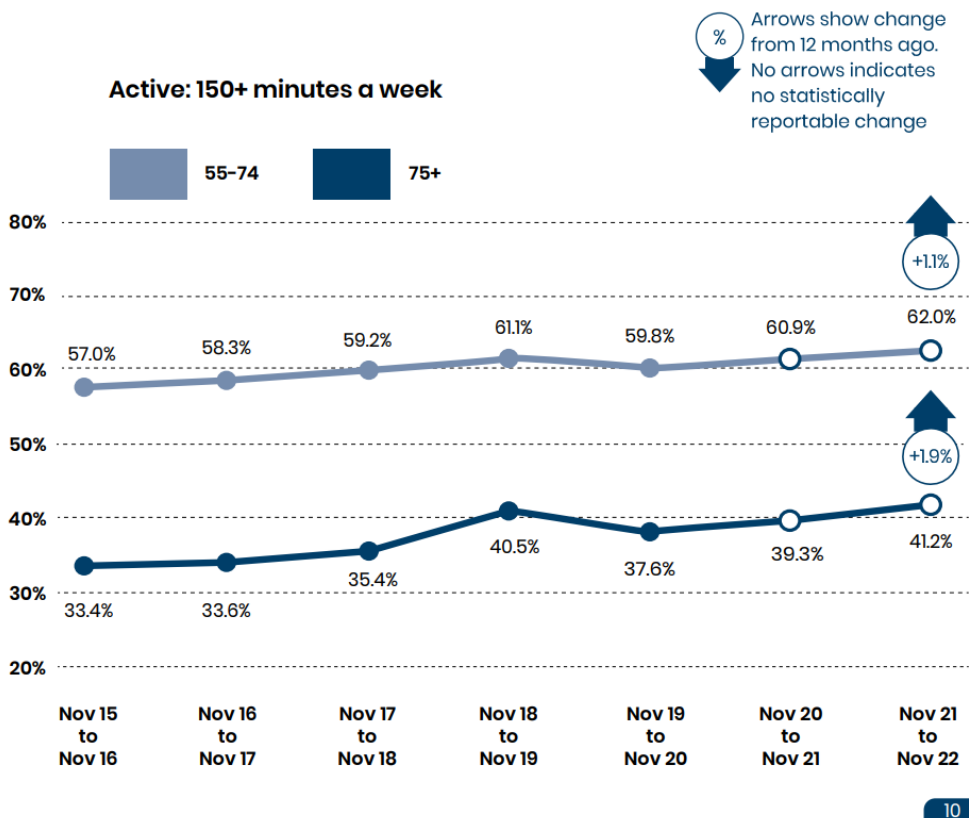


### 6.1.3 Current levels of exercise design for cardiopulmonary fitness (activities such as walking, running, cycling, swimming etc. which build endurance)

The Chief Medical Officers’ report provides recommendations for how much endurance and strengthening exercise individuals should be doing per week.<sup>12</sup> The recommendation is that adults should be doing at least 150 minutes of moderate endurance exercise per week or 75 minutes of vigorous exercise.

Figure 8 illustrates the percentage of adults aged 55 and over that were undertaking either 150+ minutes of moderate activity or 75 minutes of vigorous activity before, during the pandemic restrictions and following their end. The data indicates that only 62% of the population over the age of 55 and 41.2% of the population over the age of 75 are meeting the CMOs guidance for endurance exercise.

**Figure 8: Percentage of adults over the age of 55 undertaking the national guidance on cardiopulmonary exercise (November 2015-2022)**



Taken from Sport England, Active Lives Adult Survey November 2021-22 Report, April 2023.

<sup>12</sup> [UK Chief Medical Officers' Physical Activity Guidelines, 2019](#)

### 6.1.4 Current levels of activity for resistance exercise (exercises using body weight, resistance bands or weights as resistance, Pilates, Tai Chi, etc.)

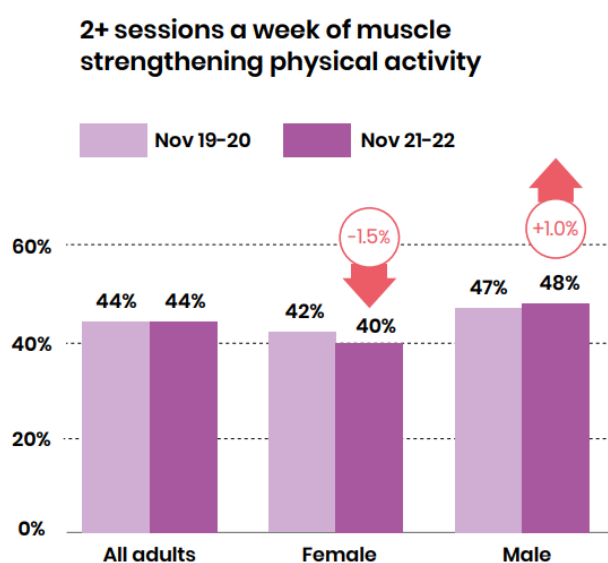
The CMOs' also recommend that adults do strengthening exercises twice a week.

Across all ages, the adult population of England consistently does less strength and balance exercise than endurance exercise.

Figure 9 shows the percentage of the population meeting the recommended levels during and at the end of the pandemic. This indicates that the majority of the adult population is at potential risk of an accelerated rate of muscle mass.

It is recognised that amongst those not doing regular strengthening exercise there will be individuals who may have physically demanding jobs or hobbies that mitigate against the lack of regular and specific muscle strengthening exercise. However, the key to maintaining muscle strength is to not only regularly undertake exercise, but also to ensure that all muscles work against resistance, balance exercises are included, and muscles and tendons are fully stretched to maintain mobility of the joints.

**Figure 9: The percentage of people undertaking resistance training just prior to the pandemic and after the main restrictions had ended (November 2019-2022)**



*Taken from Sport England, Active Lives Adult Survey November 2021-22 Report, April 2023.*

With respect to age, the picture is more mixed. Those aged 35 to 54 are doing marginally less strengthening exercise while those aged 55 to 74 are doing marginally more. The worst impact has been in those over the age of 75 where the proportion of those meeting the guideline has significantly declined.

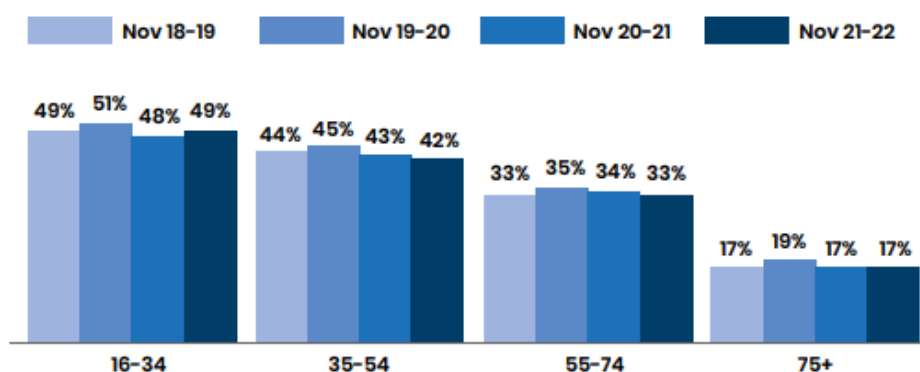
In 2022, the least affluent groups remain the least likely to meet the guidance for strengthening exercise (33% vs. 52% of the most affluent).

Despite increases in the percentages of people from Asian (excluding Chinese) (+3.0%) and Chinese (+6.9%) adults doing regular strengthening exercise, those from Asian (excluding Chinese), Black, and Other ethnic groups continue to be the least likely to meet the guidance for strengthening exercise.

### 6.1.5 Individuals perceived ability and opportunity to exercise

Sports England also looked at the view people have of their *ability* and their *opportunity* to exercise. In 2022, less than 50% of adults aged 16 years and over felt they had the ability to exercise. The percentage decreased with age, reducing to less than 20% for the over 75s as illustrate in Figure 10.

**Figure 10: The proportion strongly agreeing to the statement that ‘ I feel I have the ability to be physically active) (November 2018-2022)**



Taken from Sport England, Active Lives Adult Survey November 2021-22 Report, April 2023.

Overall, less than 40% of the adult population feel they have the opportunity to exercise. Women fared less well, as did those from the least affluent populations. Only 26% of the latter reported they felt they had the opportunity to exercise.

### 6.1.6 The relationship between exercise and falls

As already stated, Public Health England modelled the impact of the pandemic on the number of falls that could be expected in England in the years immediately after the pandemic. The estimate was based on a meta-analysis of existing data linking exercise to falls as presented in Table 4. This indicates that even less than ideal levels of activity have a positive effect on fall rates.

**Table 4: Public Health England’s summary of their meta-analysis in terms of the impact of additional activity on the falls rate, fallers rate and the average falls per faller (2021)**

Value	Impact of additional activity per week			
	1 minute	30 minutes	1 hour	2 hours
Falls Rate	-0.20%	-5.94%	-11.53%	-21.73%
Fallers Rate	-0.14%	-4.12%	-8.08%	-15.50%
Average Fall per Fallers	-0.06%	-1.90%	-3.75%	-7.37%

## 6.2 Falls

### 6.2.1 Falls in the community

There is no data on the incidence of falls in the community. Suffice to say, that in most instances individuals do not seek care when they have a fall because they may not have suffered an injury, or because the injury is minor, and they are able to manage this themselves.

Nationally there has been some modelling of the total number of people that can be expected to have a fall (with or without a hospital admission) as the population profile ages based on current data. Table 5 gives the figures for Worcestershire which indicated that between 2020 and 2040, the number will be half as many falls again by 2040. The actual figures will be determined by how well the population ages from this point forward.

**Table 5: The number of people predicted to fall until 2040**

	2020	2025	2030	2035	2040
<b>Total population aged 65 and over predicted to have a fall</b>	36,685	40,356	45,303	49,751	52,542

*Source of Data: POPPI, Projecting Older People Population Information*

### 6.2.2 Emergency admissions

The most reliable data that exists about the prevalence of falls is from emergency admissions data. It is worth noting however, that an admission for a fall may not always reflect a serious injury. Some individuals are admitted for either for another medical reason (which may have given rise to the fall in the first place) or because they are not able to be cared for in their place of residence. Other factors also operated as illustrated by admissions from care homes following a fall. The rate varies greatly home to home, and is influenced by a number of things, one of which is care home practice. The 2018 Falls Needs Assessment reported that in 2015-2016, Wyre Forest CCG, which had invested in nursing support to care homes to help with their management of falls, had a lower and a downward trajectory for admissions from care homes around 2015-2016, when other districts were experiencing higher and rising rates.

As with any data it is important to distinguish between total number of falls in a population compared to the age specific fall rate. Because Worcestershire is relatively affluent it can be expected that age specific rates of falling are lower than the national average. This means that there will be fewer falls amongst one hundred 70 years olds in Worcestershire, than there would be in hundred 70 years olds in a more deprived area. However, because Worcestershire has a relatively older population, the absolute number of falls across the County can be expected to be higher than that in a more deprived area with a relatively young population.

Worcestershire has a lower rate of fall admissions than England as a whole as shown in Table 6. Admissions per 100,000 population (adjusted for population profile) indicates that Worcestershire has 80% the rate of falls admissions than the average for England.

**Table 6: Comparative rates of emergency admissions directly attributed to a fall for Worcestershire and England, 2020-2021**

	<b>Worcestershire Adjusted rate per 100,000</b>	<b>England Rate per 100,000</b>
Emergency admissions due to falls in those over 65 years of age	1690	2100
Emergency admissions due to falls in those between 65 and 79 years of age	687	993
Emergency admissions due to falls in those over 80 years of age	3354	5311

*Source: Public Health Outcomes Framework*

Table 7 uses more local generated data and compares the rate of falls admissions across the 6 districts. The dataset used includes only those with a falls-related injury. This indicates that the districts of Bromsgrove and Redditch have the highest admissions rates for falls.

**Table 7: Emergency hospital admissions for falls injuries in persons aged 65 and over, by district, directly age standardised rate per 100,000, 2018/19 to 2022/23 pooled**

	<b>Admissions</b>	<b>DASR *</b>	<b>CI Lower</b>	<b>CI Upper</b>	<b>Significance **</b>
<b>Bromsgrove</b>	2370	1900	1824	1978	Higher
<b>Malvern Hills</b>	1892	1584	1513	1657	Lower
<b>Redditch</b>	1435	1992	1889	2098	Higher
<b>Worcester</b>	1600	1787	1700	1877	
<b>Wychavon</b>	2682	1569	1510	1630	Lower
<b>Wyre Forest</b>	2015	1620	1550	1693	
<b>Worcestershire</b>	11994	1712	1681	1743	

Source of data: Local hospital activity data <sup>13</sup>

\* The DASR is a figure taken from the locality which is then adjusted for demographic factors which impact on incidence or prevalence (most commonly age and sex).

\*\* Higher or Lower than the Worcestershire average.

<sup>13</sup> This indicator, which is used in the PHOF, only counts falls that have been coded in the cause field and Injuries in primary diagnosis field. It has been observed that there are situations where falls (ICD10 W00-W19) and Injuries (S00-T98) are coded in secondary diagnosis fields. This may result in underestimation of falls resulting in injuries.

Table 8 indicates those areas within Worcestershire that have rates of falls that are statistically higher than the average for Worcestershire. There may be a number of reasons for this, including the number of care homes in the locality. The tables below need to be interpreted with a degree of caution. Middle Layer Super Output Areas (MSOAs) typically have a population of 7000-8000.

**Table 8: Emergency hospital admissions for falls injuries in persons aged 65 and over directly age standardised rate per 100,000, 2018/19 to 2022/23 pooled – MSOAs that have higher rates than the County average**

Local Area	MSOA	Admissions	DASR	CI Lower	CI Upper
<b>Worcestershire</b>		<b>11,127</b>	<b>1588</b>	<b>1559</b>	<b>1618</b>
Redditch	Batchley & Brockhill	195	2979	2568	3436
Worcester	Lyppard Grange	107	2580	2092	3143
Bromsgrove	Bromsgrove Sidemoor	190	2511	2164	2898
Redditch	Crabbs Cross	141	2430	2027	2887
Redditch	Webheath	193	2383	2055	2748
Redditch	Church Hill South	64	2369	1778	3081
Wyre Forest	Kidderminster Town	128	2368	1971	2821
Wychavon	Evesham Central	155	2345	1976	2761
Redditch	Oakenshaw	120	2264	1868	2717
Wychavon	Evesham East	175	2233	1909	2595
Malvern Hills	Malvern Link	237	2164	1891	2464
Bromsgrove	Rubery West	187	2155	1852	2492
Worcester	Lower Wick & Bromwich Road	226	2095	1829	2390
Bromsgrove	Dodford, Belbroughton & Romsley	220	2023	1763	2310
Bromsgrove	Bromsgrove Central & Sanders Park	245	2022	1767	2302

### 6.2.3 Hip fractures

The most common serious consequence of a fall is a fractured hip. This is a major injury from which many individuals never fully recover. About 30% of individuals are not able to return to their previous place of residence after a such an injury.

Between August 2022 and July 2023, 931 individuals experienced a hip fracture in Worcestershire.

Table 9 gives the comparative rates of hip fractures per 100,000 population (directly standardised rate). It indicates that Worcestershire has 10% more fractures than the national average, even when adjusted for age and sex.

**Table 9: Comparative rates of hip fractures for Worcestershire and England, 2020-2021**

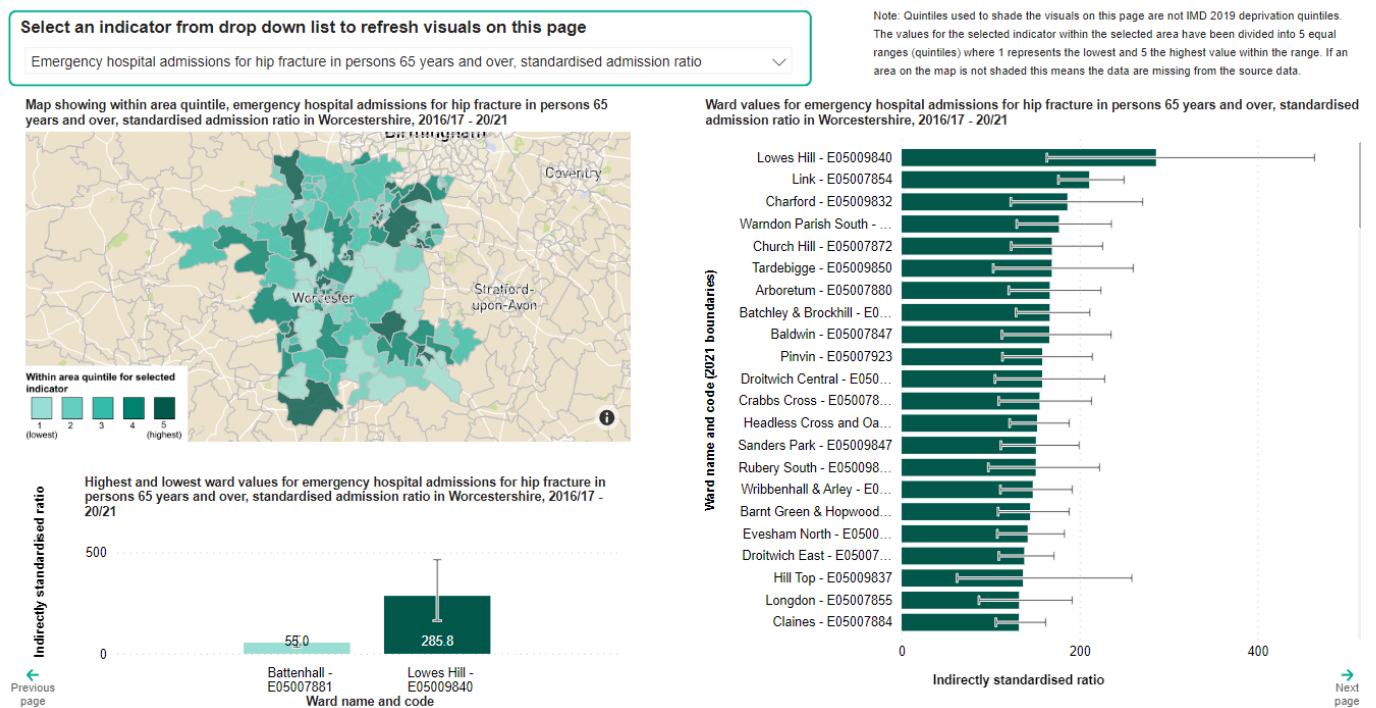
	<b>Worcestershire</b> Adjusted rate per 100,000	<b>England</b> Rate per 100,000
Hip fractures in people over 65 years of age	607	551
Hip fractures in people between 65 and 79 years of age	265	236
Hip fractures in people over 80 years of age	1601	1466

Source: Public Health Outcomes Framework

This is the reverse of what might be expected from both the profile of the population (more affluent) and the falls admissions rates. Currently there is no explanation for this higher rate.

The Office for Health Improvement and Disparities has issued a comparative data set which is broken down by ward. Figure 11 illustrates the variation in hip fractures across the Country.

**Figure 11: Variation by ward within area: Emergency hospital admissions for hip fractures in persons 65 years and over standardised admissions rate, 2016 to 2021**

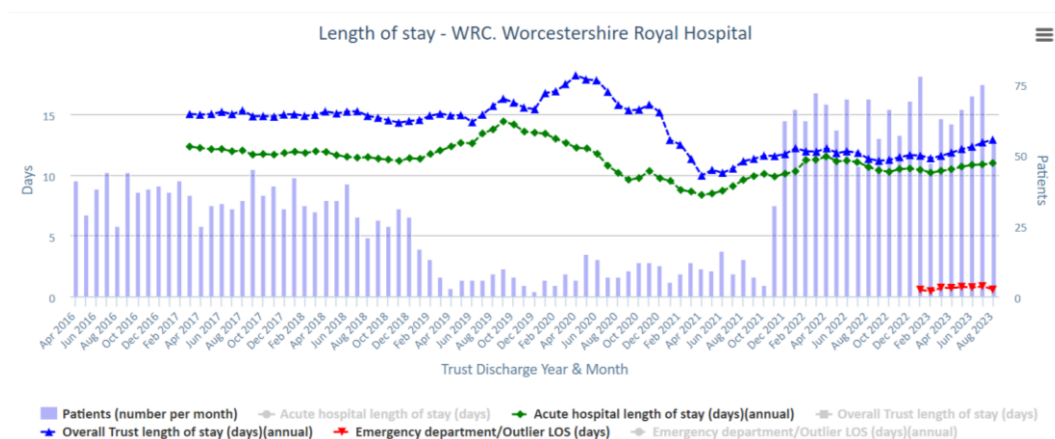


Source: OHID Local Inequalities Explorer Tool 2023

The Royal College of Physicians issue an annual report concerning the data generated by the National Database For Hip Fractures (covering England, Wales and Northern Ireland). The latest report indicates a rise in hip fractures right at the end of 2022 which resulted in 5160 more hip fractures across the three nations than there were before the pandemic.<sup>14</sup> This increase is despite a fall in the population in the older population during the years of the pandemic as most deaths were in the 65+ age group. This was predicted by the Public Health England report on the impact of the pandemic.

Figure 12 is taken from this report and illustrates the rise in hip fractures admissions to Worcestershire Royal Hospital from 2016 to 2022. This shows that the predicted post pandemic rise in fractures began in December 2021 and has been sustained up to August 2023 at least.

**Figure 12: Hip fracture admissions to Worcester Royal Hospital April 2016 to August 2023**  
(Patients numbers represented by the blue bar charts)



Source: [Length of stay \(nhfd.co.uk\)](http://nhfd.co.uk)

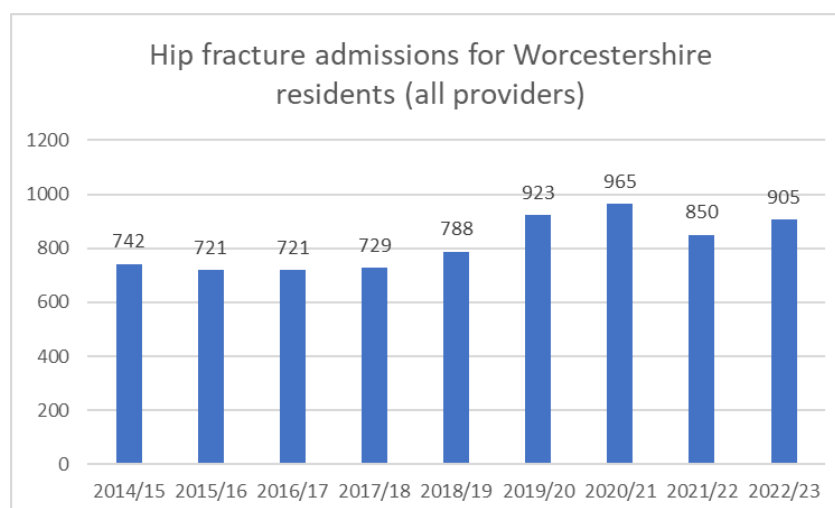
Figure 12 provides information on admissions to Worcester Royal Hospital that is the centre for treating hip fractures in Worcestershire. Not all patients that are treated at the Worcester Royal Hospital are residents of Worcestershire and not all Worcestershire patients are treated locally, with some being treated in out of area hospitals such as those in Dudley or Birmingham. Figure 13 provides the total number of hip fractures in Worcestershire residents, regardless of where they are treated, between the years 2014/15 to 2022/23.

<sup>14</sup> [The Royal Colleges of Physicians: 15 years of quality improvement, The 2023 National Hip Fracture Database report on 2022](https://www.rcplondon.ac.uk/publications/15-years-quality-improvement)



**Figure 13 Admissions for fractured hip for Worcestershire residents (2014/15-2022/23)**

*(Patients numbers represented by the blue bars)*



*Source: Hospital Episode Statistics*

Recovery from a hip fracture will be dependent on a number of factors, which includes the quality of surgery and rehabilitation. Two key NHS indicators that assess this are:

1. Hip fracture: Proportion of patients recovering to their previous levels of mobility / walking ability at 30 days
2. Hip fracture: Proportion of patients recovering to their previous levels of mobility / walking ability at 120 days

Data is not collected annually for these measures and as such we do not have this data for Worcestershire.

### **6.3 Frailty**

When muscle strength is lost and individuals fatigue easily, it reduces their ability to recover from illness. This is the start of state of **frailty**. Frailty is considered to be a complex concept based mainly on physical vulnerability, but also vulnerabilities in mental/psychological and social aspects.

Those living with frailty are at increased risk of having a fall, being admitted to hospital, and needing long-term care, whether this is delivered in the individual's own home or in care settings such as supported living, residential or nursing homes.

The prevalence of frailty shows wide variation across England as seen in Figure 14. The prevalence will in part be reflected by the structure of the local population (the higher the percentage of the population that is in the older age groups the more frailty there will be) and in part by the health state of the local population (higher frailty rates will be seen amongst those populations with the poorest health).

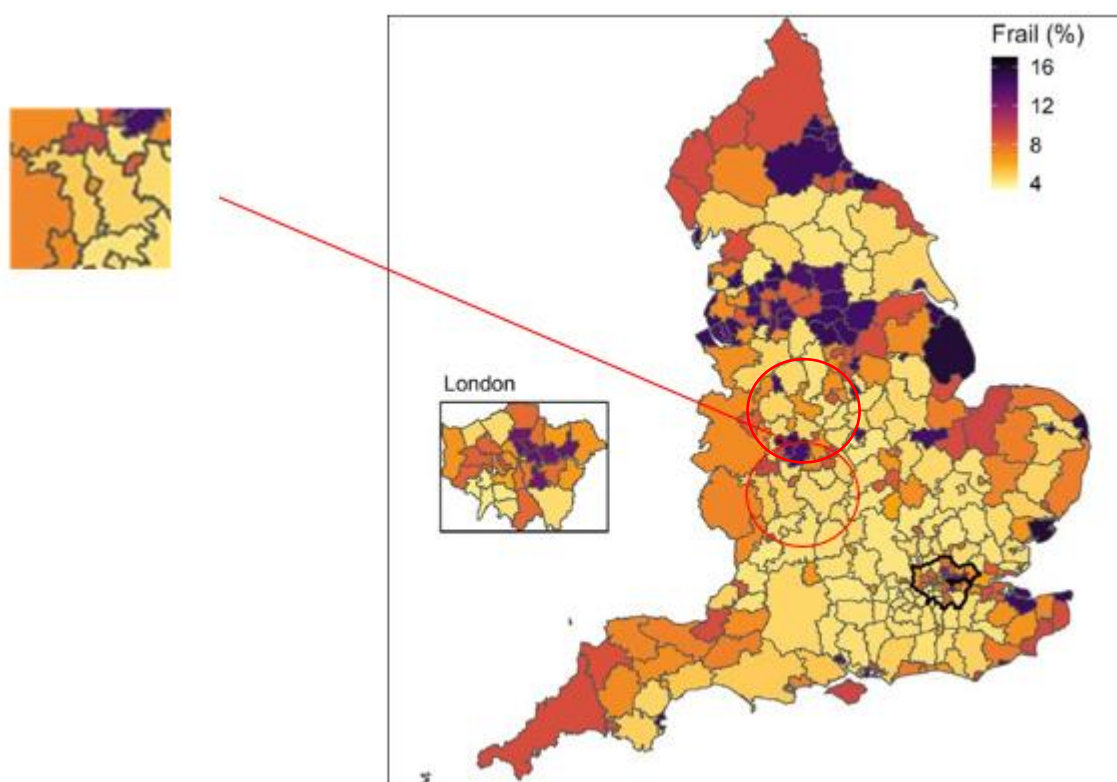
The numbers of individuals living with frailty can be expected to increase between now and 2040.

The incidence rate of frailty can be reduced by adopting a healthy lifestyle and undertaking muscle strengthening exercise.

An interesting study that looked at international comparisons of the level of frailty, found that the rates of frailty were higher in those from less affluent backgrounds, increased with age and was higher in women than men regardless of which country was studied, but that the rates of frailty were overall lower in lower income countries compared to high income countries indicating that lifestyle factors affected overall levels of frailty.<sup>15</sup>

Figure 14 shows that Worcestershire rates are generally at the lower end but are not the lowest group in the country. Worcester City, Wyre Forest and Redditch have higher rates than the rest of Worcestershire.

**Figure 14: Estimated prevalence of frailty among people aged over 50 years in each local authority district in England, 2020<sup>16</sup>**



Higher concentrations of frailty is found in poorer communities, in urban rather than rural communities, and in England's coastal communities.

<sup>15</sup> [K Harttgen et al, Patterns of Frailty in Older Adults: Comparing Results from Higher and Lower Income Countries Using the Survey of Health, Ageing and Retirement in Europe \(SHARE\) and the Study on Global AGEing and Adult Health \(SAGE\), PLoS One. 2013; 8\(10\): e75847.](#)

<sup>16</sup> [D Sinclair et al, Frailty among Older Adults and Its Distribution in England, J Frailty Aging, 2022;11\(2\):163-168. doi: 10.14283/jfa.2021.55](#)

Prefrailty in the over 50s was also estimated in an earlier report also produced by Manchester University. Their mapping of pre-frailty is shown in Figure 15.

**Figure 15: Estimated prevalence of pre-frailty among people aged over 50 years in each local authority district in England, 2020** <sup>17</sup>



<sup>17</sup> [D Sinclair, A Maharani, J Adamson et al., National Institute of Health Research, Using individual and neighbourhood profiles and trends to understand frailty with nationally representative population data Part 1: Frailty among older adults and its distribution in England, March 2020](#)

A Gloucestershire Primary Care Network has recently undertaken a community-based exercise to determine the level of frailty for all their patients aged 65 and over. By February 2023 they had assessed 85% of all registered patients falling into this age group. This exercise provides some important information about the distribution of frailty.<sup>18</sup>

As of February 2023, the percentage of patients in each Rockwood grouping (see [Appendix 3](#)) is shown in Table 10. Overall, 15% of individuals who were 65 years and over were frail.

**Table 10: Distribution of Rockwood Scores in the 65-year-old + age group for Tewkesbury, West Cheltenham, Newent & Staunton Primary Care Network**

	<b>Rockwood Scale</b>	<b>Percentage population 65+ in the PCN</b>
1	Very fit	3%
2	Well	18%
3	Managing well	50%
4	Vulnerable	14%
5	Mildly frail	9%
6	Moderately frail	4%
7	Severe frailty	2%
8	Very severely frail	
9	Terminally ill	Excluded

The PCN also reassessed 100 out of 400 patients who had had a frailty assessment and a Rockwood score recorded 4 years earlier in 2018-2019 and who had had no medical conditions at the time of the first assessment. Table 11 gives the findings. This shows that in just a 4-year period (admittedly over the course of the pandemic) there was a dramatic change in the status of those 100 individuals. Most of those that had been very fit or fit had lost their status. In 2018, 7% had been in the categories vulnerable to severely frail, while 4 years later 27% were. We do not know how representative this group were, but this data does illustrate the potential speed and scale of deterioration in physical condition that can occur.

**Table 11: Rockwood scores for 100 patients who did not have a medical condition at first assessment (2018) and the subsequent assessment 4 years later**

	<b>Rockwood Scale</b>	<b>2018</b>	<b>2022</b>
1	Very fit	10%	0%
2	Well	57%	14%
3	Managing well	26%	57%
4	Vulnerable	7%	26%
5	Mildly frail	0%	3%
6	Moderately frail	0%	0%
7+	Severe frailty	0%	0%

*Note: The full detail of the dataset is not currently known and so needs to be treated with caution*

<sup>18</sup> A Williams, Tewkesbury, West Cheltenham, Newent & Staunton Primary Care Network, Quality Improvement Project Report, Proactive Approach to identification of frail elderly patients in Primary Care to prevent further decline and deterioration, Jan 2023

## 7. Effectiveness of interventions <sup>19 20 21 22</sup>

Despite the challenges of assessing interventions aimed at fall reduction there is, nevertheless, a considerable body of evidence on the effectiveness and cost-effectiveness for some of them.

The most cost-effective interventions are:

1. **Exercise, including resistance training** at a population level (anyone and everyone).
2. **Strength and balance programmes** targeted at individuals who are significantly deconditioned and at risk of a fall with Thai Chi being the most cost-effective of all. The evidence indicates that in order to prevent falls in those at risk, training needs to be for 6 months, twice a week and should include progressive resistance training.
3. **Expedited cataract removal**  
It is important to note that individuals also have a slightly increased risk of falls following cataract surgery then individuals need to have new glasses. However, the falls rate overall is lower than pre-surgery.
4. **Home risk assessments and adaptations**

Not all exercise is sufficient to prevent falls because it does not include the above elements (namely it is suboptimal).

It is also helpful to categorise exercise into two groups - that which keeps muscle loss to a minimum and that which aims to rebuild muscle mass when an individual is deconditioned. There is very strong evidence that strength, balance and flexibility training that increased muscle mass improves functional ability (and thereby preventing falls). The following are worth noting:

- Individuals need to do strengthening exercise two to three times per week for 12 weeks to see progress and 6 months to make significant inroads to reconditioning (although more time might be needed).
- Exercise should include working against some form of resistance – this can be the individual’s own body weight.
- To regain muscle, it is essential that the resistance training is progressive (namely, the individual has to work against increased resistance over time).
- It is important that people know how to exercise properly and so exercising in a class with an instructor can be beneficial.
- Exercise sessions that both increase the heart rate and strengthen the muscle in the same session builds more muscle than just doing strengthening exercise alone.
- Exercises that reflect activities of daily living, and which use the individual’s own body weight for resistance can be effective in building muscle mass.
- Older people are more likely to continue to exercise when they exercise with others. This has the added benefit of reducing social isolation.
- Some exercise is always better than none.

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<sup>19</sup> [The Centers for Disease Control and Prevention \(USA\), A CDC Compendium of Effective Fall Interventions: What Works for Community-Dwelling Older Adults 2015](#)

<sup>20</sup> [The Centers for Disease Control and Prevention \(USA\), A CDC Compendium of Effective Fall Interventions: What Works for Community-Dwelling Older Adults 2023 \(4<sup>th</sup> Edition\)](#)

<sup>21</sup> [Public Health England, A structured literature review to identify cost-effective interventions to prevent falls in older people living in the community, 2018](#)

<sup>22</sup> [V Alipour et al, Cost-Effectiveness of Multifactorial Interventions in Preventing Falls among Elderly Population: A Systematic Review, Bull Emerg Trauma. 2021 Oct; 9\(4\): 159–168, doi: 10.30476/BEAT.2021.84375.1068](#)

- It is never too late to start / restart exercising. 85-year-olds can gain considerable muscle mass with the correct exercise.

The Otago and FAME exercise programmes have a return on investment (ROI) of £0.95- £0.99 for each £1 spent and a Societal return of £2.20-£2.28. For home assessment and modification programmes the figures are £3.17 for each £1 for Financial ROI and £7.34 for each £1 spent for Societal ROI.<sup>23</sup>

A recent study looked at the social factors that were associated with a reversal of frailty.<sup>24</sup> The study followed 5050 participants and found that frailty was reversed in this group by a third of people. The authors found that, adjusting for age and co-morbidities, two factors were strongly associated with the reversal of frailty. These were:

1. Exercised-based social participation
2. High self-rated health (with individuals who exercised regularly being able to feel their improvement).

In addition to this, the individuals that recovered from frailty were '*characterised as having high individual-level social capital components (i.e., trust in community, interaction with neighbours, and social participation)*'.

This paper demonstrates that frailty can be reversed and it implies that improving social connectedness earlier in life might be protective against frailty in older age.

Other interventions that have been found to be cost effective are:

5. **Multifactorial falls assessments and interventions** when this delivers:
  - Resistance training
  - A review of medicines
  - Home safety assessments
  - Visual assessments
6. **Cardiac pacing** for people with carotid sinus hypersensitivity who are having falls for no known reason
7. **Withdrawal of benzodiazepines**
8. **Medicine reviews**

The various evaluations of the cost effectiveness of multifactorial assessments and interventions are mixed, with some finding MFFA/I to be cost-effective and others not. Of those that were cost-effective, they were at the higher end of costs (£ per Quality of Life Years Gained). As these programmes are expensive, the model that is operating appears to be key. In their review, Public Health England found that the model operating in East England was most cost effective.<sup>25</sup>

A recent systematic and meta-analysis which compared the effectiveness and cost-effectiveness unimodal versus multimodal interventions challenges the value of MFFA.<sup>26</sup> The authors found that exercise delivered as

<sup>23</sup> [Public Health England, A Return-on-Investment Tool for the Assessment of Falls Prevention Programmes for Older People Living in the Community, 2018](#)

<sup>24</sup> [K Takatori and D Matsumoto, Social factors associated with reversing frailty progression in community-dwelling late-stage elderly people: An observational study, PLoS One. 2021; 16\(3\): e0247296, doi: 10.1371/journal.pone.0247296](#)

<sup>25</sup> <https://www.bmj.com/content/bmj/340/bmj.c2102.full.pdf>

<sup>26</sup> [C Adjetey et al, Cost-effectiveness of exercise versus multimodal interventions that include exercise to prevent falls among community-dwelling older adults: A systematic review and meta-analysis, Maturitas, 2023, Mar;169:16-31. doi: 10.1016/j.maturitas.2022.12.003.](#)

a unimodal intervention, particularly resistance training, provided better value for money than MFFA. Multimodal interventions that included exercise did not demonstrate additional benefits in terms of costs, quality of life, or fall prevention compared with exercise-only unimodal interventions. However, the evidence base for multimodal interventions was generally more limited. This study adds to the questions raised by a 2019 systematic review of multifactorial assessment and prevention programmes which did not find strong evidence for their effectiveness.<sup>27</sup>

**Box 1: Public Health England top recommendations following a review of the evidence for different falls prevention programmes<sup>28</sup>**

- Otago strength and balance programme for people aged over 80 years (mean age 82 years) who have a similar falls risk to those in the clinical studies, being 43% had a fall(s) in previous 12 months.
- Group exercise for women aged 70 years or over (mean age 76 years) with a falls risk equivalent to about 6% a month.
- Group exercise using the FaME programme in people aged 65 and over (mean age 71 years) with a falls risk equivalent to 16% having a fall(s) in the 12 months before the intervention.
- Tai Chi or Tai Ji Quan in people with mean age of 75 years and 35% have 2 or more falls in the previous 6 months.
- Common aspects of the 4 multifactorial risk assessment and management studies that were cost-effective, with a focus on that delivered by Sach and colleagues in the East Midlands in a high-risk population group in people aged over 60 years (median 82 years) and 81% having 2 or more falls in the past 3 months.
- Home assessment and modification.
- Medication reviews. These will be delivered as an intervention within the multifactorial risk assessment and management programme so the same age and falls risk characteristics apply.

The current prevailing view is that MFFA programmes should be targeted at those with a moderate to high risk of a fall, while those at lower risk of a fall, should be directed into a strength and balance programme alone. However, critical to the effectiveness and cost-effectiveness of any MFFA programme is the exercise element.

Digital technology is being explored as a means to prevent falls, particularly in social care settings, but also in individuals' homes. Using a range of sensors that track behaviour, artificial intelligence is able to identify when an individual's behaviour changes. These are currently being assessed for both their effectiveness and cost-effectiveness through a national programme of assessment. A 2022 review found that the evidence to support

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<sup>27</sup> [S Hopewell et al, Multifactorial interventions for preventing falls in older people living in the community: a systematic review and meta-analysis of 41 trials and almost 20 000 participants, British Journal of Sports Medicine 2020;54:1340-1350.](#)

<sup>28</sup> [Public Health England, A structured literature review to identify cost-effective interventions to prevent falls in older people living in the community, 2018](#)

the effectiveness and cost-effectiveness of technological approaches to falls prevention especially for people living with dementia have yet to be established.<sup>29</sup>

## 8. Implications

1. The key finding is that the only route to preventing and reversing loss of function and frailty is exercise. It is impossible to overstate the importance of reconditioning and long-term exercise to avoid falls, loss of independence and frailty.
2. Strengthen and balance exercise should be viewed as an important health care intervention. As such, the NHS should be far more engaged in promoting conditioning and reconditioning. Strength and balance in particular should be part of normal clinical conversations for all those with a chronic health condition and the ambition should be for all those with chronic conditions to be as fit as possible.
3. Given the aging population, action should be taken to influence the prevalence of falls and frailty in those currently in their 40s, 50s and 60s in order to avoid a potential system failure in terms of health and social care delivery in the future. This is best done through:
  - Public health to focus on promoting health lifestyles, health aging and create and support the development of widespread opportunities to exercise.
  - The NHS focusing on reconditioning for those with acute loss of muscle mass and the general physical fitness and strength of those with chronic conditions.
4. There is evidence that 1/3 of frailty can be reversed although more research is needed to determine which patients are best to target with a view to reversing their frailty. Reversing frailty should therefore be an ambition.
5. Given the fact that the cost-effectiveness of MFFA/I programmes is sensitive to the model that is operating, a review of what is being delivered locally and to whom, is warranted. A particular focus should be on the exercise element, and referral on as it is unlikely that current exercise programmes are of sufficient length to deliver the improvement in individuals muscle strength that is needed.
6. Individuals who are on the waiting list should receive advice about strength and balance exercise along with other lifestyle advice (smoking cessation and weight loss) before their surgery. Given the current waiting times, this is even more important.
7. Health and social care staff should be offered training in both the importance of undertaking strength, balance and flexibility/mobility activities as well as how to advise patients/clients about exercise.
8. In terms of falls prevention:
  - 8.1 Home assessments and adaptations provide the best return on investment although they do not address functional decline.

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<sup>29</sup> [Eost-Telling C et al. Rapid review of digital technologies to prevent falls in people living with dementia, January 2022.](#)



- 8.2 Multifactorial assessment and interventions are recommended by NICE and PHE, but it is recognised that they are expensive, and many are not cost effective. Nationally the East Midlands model is promoted. This includes physio delivered exercise programmes. Some recent studies have questioned the added value these services offer.
  - 8.3 Expedited cataract surgery is also very cost-effective.
  - 8.4 A review of where the County is with a systematic programme of benzodiazepine withdrawal for those over the age of 65 may be warranted.
  - 8.5 A review of how medicine reviews are managed for this age group, particularly for those recently reporting a fall may be warranted.
9. Currently, there is insufficient information on the cost-effectiveness of assistive technologies for the prevention of falls. These technologies may improve the quality of care, while not necessarily reducing the rate of falls, but the two outcomes should not be conflated. The commissioning of an external systematic review may be warranted to understand the evidence base before there is commitment to what could potentially be a high-cost programme, and which might divert funds from more cost-effective interventions. Alternatively, commissioners should press for the evidence base of claims of manufacturers of these technologies.

## Appendix 1: 2018 Needs Assessment Report Recommendations

1. Throughout the health and care system, a range of models and ways of working are in place to address falls within various settings e.g., the multi-factorial falls assessment. To ensure these models of delivery are well implemented and delivering desired outcomes, contract monitoring should include indicators to facilitate evaluating the effectiveness and fidelity of services delivered. NICE Quality Standards provide guidance for quality measures and indicators. This must be undertaken according to the stage of service development e.g., implementation, early operation or ongoing operation of the service. This information can be fed back to the falls steering group to inform service improvement and partnership working across the system.
2. The Falls Steering Group should facilitate information and data sharing across the health and care system to facilitate the delivery of the falls prevention pathway.
3. A review of the falls clinic across Worcestershire should be undertaken to determine whether the current model is delivering an efficient and equitable service for patients. This should include a review of the workforce available across primary and secondary care. Additionally, this review should be considered at a county-wide level.
4. The collaborative falls prevention work should be strengthened as part of the falls steering groups with key partners and stakeholders taking a whole-system approach to falls prevention with particular focus on workforce; upscaling of healthy ageing and physical activity work in older people; campaigns, education and increasing public awareness; and information giving. Healthy ageing and physical activity plays an important role in falls prevention for the population that are currently under 65 years of age. Ensuring that this cohort of the population engage in physical activity and healthy lifestyles will support reducing demand and risk of falls in the population for the future.
5. Consideration to be given to workforce development in Worcestershire to include upskilling of frontline staff to recognise people at risk of falling, promote healthy ageing and expand the public health workforce. Additionally, this must also consider modelling and planning the future workforce to cope with future demand.
6. Multifactorial intervention in all care homes and extended care settings to be included as part of falls prevention strategy. Enabling and supporting the excellence in care homes partnership as the facilitator to standardise and improve quality across Worcestershire.
7. Review occupational therapy services in the community to understand any barriers to home hazard assessments being undertaken and ensuring that home hazards are reduced. This must include how the wider workforce can contribute to addressing home hazards (e.g. the Fire and Rescue safe and well visits).
8. That the postural stability instruction programme is further developed to address the variance in referral rates across Worcestershire; increase capacity; increase participant retention to the programme; and consider the best model of delivery.
9. That the osteoporosis pathway is reviewed, together with access to bone sparing agents undertaken across primary and secondary care in order to understand the current variation. This review should include current workforce and pathway structures in place and their effectiveness

## Appendix 2: Key national and local performance indicators

### Public Health Outcomes Framework

C17a	Percentage of physically active adult (18 years +)	Direct outcome measure
C17b	Percentage of physically inactive adult (18 years +)	Direct outcome measure
C29	Emergency hospital admissions due to falls in people aged 65 and over	Direct outcome measure
C29	Emergency hospital admissions due to falls in people 65 to 79	Direct outcome measure
C29	Emergency hospital admissions due to falls in people aged 80 years and over	Direct outcome measure
E17	Hip fractures in people aged 65 and over	Direct outcome measure
E17	Hip fractures in people 65 to 79	Direct outcome measure
E17	Hip fractures in people aged 80 years and over	Direct outcome measure

### NHS Outcomes Framework

3.5.i	Hip fracture: Proportion of patients recovering to their previous levels of mobility / walking ability at 30 days	Direct outcome measure
3.5.ii	Hip fracture: Proportion of patients recovering to their previous levels of mobility / walking ability at 120 days	Direct outcome measure
3.6.ii	Proportion of older people (65 and over) who were offered rehabilitation following discharge from acute or community hospital	
3.6.ii	Proportion of older people (65 and over) who were offered rehabilitation following discharge from acute or community hospital	

### Adult Social Care Outcomes Framework

2A	The proportion of people who received short-term services during the year – who previously were not receiving services – where no further request was made for ongoing support (formerly metric 2D)	
2B	The number of adults aged 18 to 64 whose long-term support needs are met by admission to residential and nursing care homes (per 100,000 population) (formerly metric 2A(1))	
2C	The number of adults aged 65 and over whose long-term support needs are met by admission to residential and nursing care homes (per 100,000 population) (formerly metric 2A(2))	
2D	The proportion of older people (65 and over) who were still at home 91 days after discharge from hospital (formerly metric 2B)	
2E	The proportion of people who receive long-term support who live in their home or with family	
5A	The proportion of people who use services, who reported that they had as much social contact as they would like (formerly metric 1I)	

### NICE Quality Standards – [Falls in Older People](#)

QS1	Older people are asked about falls when they have routine assessments and reviews with health and social care practitioners, and if they present at hospital.	
QS2	Older people at risk of falling are offered a multifactorial falls risk assessment.	
QS3	Older people assessed as being at increased risk of falling have an individualised multifactorial intervention.	
QS4	Older people who fall during a hospital stay are checked for signs or symptoms of fracture and potential for spinal injury before they are moved.	
QS5	Older people who fall during a hospital stay and have signs or symptoms of fracture or potential for spinal injury are moved using safe manual handling methods.	

QS6	Older people who fall during a hospital stay have a medical examination.	
QS7	Older people who present for medical attention because of a fall have a multifactorial falls risk assessment.	
QS8	Older people living in the community who have a known history of recurrent falls are referred for strength and balance training.	










**NICE Quality Standards – for the [Management of Fractured Necks of Femur](#)**

QS1	Adults with hip fracture are cared for within a Hip Fracture Programme at every stage of the care pathway	
QS2	Adults with hip fracture have surgery on a planned trauma list on the day of, or the day after, admission.	
QS4	Adults with trochanteric fractures above and including the lesser trochanter, except reverse oblique fractures, receive extramedullary implants in preference to intramedullary nails.	
QS5	Adults with subtrochanteric fracture are treated with an intramedullary nail.	
QS6	Adults with hip fracture start rehabilitation at least once a day, no later than the day after surgery.	

**Strong and Steady 24-week intervention**

	Number of people going through a targeted 24-week strength-based exercise programme	Direct outcome measure
	Number of people completed at least 18 weeks of exercise	Direct outcome measure
	Improvements in Falls Efficacy Scale - International (FES-I) The Short Warwick–Edinburgh Mental Well-being Scale (SWEMWBS) Timed up and go score 180 Degree Turn Score	Direct outcome measure
	Number of people completing their 24 weeks exercise programme who are linked into ongoing exercise	Direct outcome measure

## Appendix 3: The Rockwood Frailty Scale

Clinical Frailty Scale	
 <p><b>1 Very Fit</b> – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.</p>	 <p><b>7 Severely Frail</b> – Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~6 months).</p>
 <p><b>2 Well</b> – People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g. seasonally.</p>	 <p><b>8 Very Severely Frail</b> – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.</p>
 <p><b>3 Managing Well</b> – People whose medical problems are well controlled, but are not regularly active beyond routine walking.</p>	 <p><b>9 Terminally Ill</b> – Approaching the end of life. This category applies to people with a life expectancy &lt;6 months, who are not otherwise evidently frail.</p>
 <p><b>4 Vulnerable</b> – While not dependent on others for daily help, often symptoms limit activities. A common complaint is being "slowed up", and/or being tired during the day.</p>	<p><b>Scoring frailty in people with dementia</b></p> <p>The degree of frailty corresponds to the degree of dementia. Common <b>symptoms in mild dementia</b> include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.</p> <p>In <b>moderate dementia</b>, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.</p> <p>In <b>severe dementia</b>, they cannot do personal care without help.</p>
 <p><b>5 Mildly Frail</b> – These people often have more evident slowing, and need help in high order IADLs (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.</p>	
 <p><b>6 Moderately Frail</b> – People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.</p>	

## **Appendix 4: Rightcare Pathway: Falls and Fragility Fractures**

This NHS RightCare Pathway provides a national case for changing how falls prevention is approached and links to a range of resources to support Local Health Economies to concentrate their improvement efforts where there is greatest opportunity to address variation and improve population health. For further information please click the link below:

**[Rightcare Pathway: Falls and Fragility Fractures](#)**