STATE OF LIFE

Social value of disabled people's physical activity

Using HM Treasury endorsed methodology

State of Life

December 2024

activity alliance
disability inclusion sport

Commissioned by Activity Alliance

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Glossary

Intensity of activity	
Light activity	Activity where you neither raise your heart rate, are out of breath or are sweating.
Moderate activity	Activity where you raise your heart rate.
Vigorous activity	Activity where you're out of breath or are sweating.
Moderate intensity equivalent minutes (MIE or moderate equivalent minutes)	Only moderate or vigorous activity counts. Vigorous counts as double the minutes of moderate.
Sport England's standard measure of physical activity	
Inactive	Less than 30 (moderate equivalent) minutes a week.
Fairly active	30 to 149 (moderate equivalent) minutes a week.
Active	150 or more (moderate equivalent) minutes a week (Chief Medical Officer's guideline recommended level of activity for adults).
Sport England's detailed categories within 'Inactive'	
No activity	No activity reported in the last week which is at least 10 minutes in duration.
Light activity only	Only activity where you neither raise your heart rate, are out of breath or are sweating, but it could be any amount of this activity.
Low levels of activity	1 to 29 (moderate equivalent) minutes a week.
Levels used in headline analysis for this report	
Some moderate activity	1 to 149 (moderate equivalent) minutes a week.
Analysis technique	
Multiple linear regression	A statistical method which estimates how a difference in one factor influences another, whilst taking into account other influences as well. e.g. how employment influences wellbeing, once accounting for age, gender, socio-economics and other demographic factors.

Regression coefficient	The estimated relationship between one variable and another, when conducting multiple linear regression. e.g. being employed rather unemployed has a regression coefficient of 0.46 on life satisfaction (Annex 2, HM Treasury (2021).
Control variables	Factors that are likely to influence the outcome we are interested in and are observable in the data. e.g. age, gender or employment status.
Statistically significant	An observed relationship between two or more variables is revealed, through statistical techniques, to be caused by something other than chance.
WELLBY	A 'wellbeing-adjusted life year'; a one-point change on a 0 to 10 scale of life satisfaction, caused by an intervention of interest, affecting one person for one year. It is valued at £15,300 (in 2023 prices).
Social value	"All significant costs and benefits that affect the welfare and wellbeing of the population". (H.M. Treasury 'Green Book', 2020).

Executive Summary

The problem – a significant activity and wellbeing gap for disabled people

- Data from Sport England's Active Lives Survey (2021-22) highlights how disabled people or those with long-term health conditions are twice as likely to be physically inactive, with 41% inactive compared to 21% of non-disabled people.
- This has persisted over the years and is more stark for those with multiple impairments (48% inactive for those with three or more impairments).[1]
- Disabled people also report significantly lower wellbeing than average - scoring 5.7 on a (0-10) life satisfaction scale compared to non-disabled people who report on average 7.4[2]. In wellbeing terms, this is a big gap - almost three times that of being unemployed compared to employed[3].

Can increased activity for disabled people start to bridge this wellbeing gap?

In short, yes. This study aims to evidence the wellbeing benefits, and social value, of disabled people doing more physical activity. We find the wellbeing benefits of physical activity are **greater for disabled people** than non-disabled people (benefit of being 'active' is three times greater). Moreover, for disabled people there are substantial wellbeing benefits in physical activity before the 150 minutes a week guideline is met (approximately two-thirds the benefit from meeting the guideline).

Putting a monetary value on wellbeing – using the new WELLBY

The UK Government defines social or public value as "all significant costs and benefits that affect the welfare and wellbeing of the population" beyond those determined by economic markets (H.M. Treasury 'Green Book', 2022). We follow the UK government's guidance on policy appraisal (The Green Book[4]), and more specifically the guidance on standardised methods to measure and value social benefits[5]:

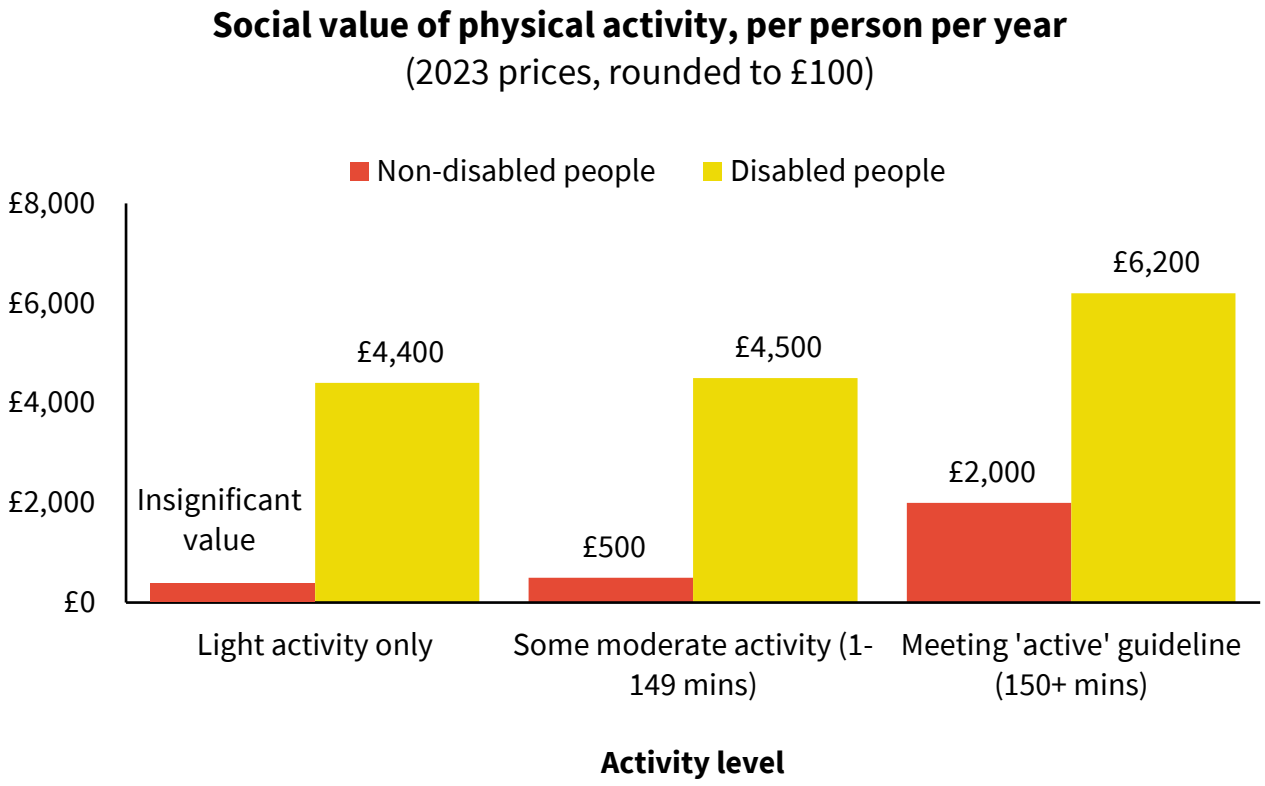
- Measurement should be based on the subjective wellbeing measure of life satisfaction (on a scale from 0 to 10).
- Valuation should utilise the WELLBY (wellbeing-adjusted life year); a change of one point on the life satisfaction scale, caused by the intervention of interest, affecting one person over a period of one year. It should be valued at £15,300 (in 2023 prices).

[1] Sport England data tables
[2] Table 4, Adult Active Lives data, 2018-22
[3] 0.46, Annex 2, HM Treasury (2021)
[4] HM Treasury (2022)
[5] HM Treasury (2021)

Analysis and attribution

To enable a large sample size, we append four years of data from Active Lives (2018-22). Attribution is key in this type of research; to what extent is a change in wellbeing due to a change in physical activity? We address this by using a statistical method – **multiple linear regression** – which accounts for the influence of other factors, such as age, employment status or socio-economic status.

The findings[6] are important and eye opening in a number of ways



- The wellbeing benefit for disabled people meeting the Chief Medical Officer's weekly 'active' guideline (150+ minutes) is high; +0.406 in life satisfaction, a social value of £6,200 per person per year (PPPY).
- For disabled people there are substantial wellbeing benefits (and therefore social value) in activity before the 150 minutes a week guideline is met:
    - The social value of 'doing some moderate activity' (1 to 149 minutes) is £4,500 (72% of the value of being 'active').
    - The social value of 'doing only light activity' is £4,400 (71% of the value of being 'active').

[6] Only statistically significant findings which control for other factors (multiple linear regression) are reported here. Wellbeing benefits (increased life satisfaction) are in comparison to 'no activity'. Significant findings are then converted to a monetary value using the WELLBY. Values are in 2023 prices and are rounded to the nearest £100.

'Light' activity

- Where you neither raise your heart rate nor are out of breath or sweating (for example gentle walking).
- Does not count towards one's weekly 'active minutes' in CMO guidelines.
- A person doing only light activity is categorised as physically inactive.

[These key findings are illustrated clearly in Table 8. To provide a comparison, being employed rather than unemployed has a wellbeing benefit of 0.46 and a WELLBY value of £7,000 (2023 prices).][7]

Huge value to society if disabled people were as active as non-disabled people

Applying these individual values to estimates of the disabled population in England (9.1 million) reveals the following:

- The current physical activity levels of disabled people are worth £35.9 billion in social value.
- £3.5 billion of this is generated by the 9% of disabled people who only do 'light' activity. Considering them as 'inactive' (in adherence with the guidelines) would therefore underestimate the value.

We estimate the 'activity gap' at a cost to society of £10.9 billion, i.e. this would be the additional value if activity levels of disabled people were the same as non-disabled people.

In summary, **light activity for disabled people (and interventions which encourage this)** are likely to be an **effective way of achieving wellbeing gains.**

[7] £6,000 in 2019 prices, Annex 2, HM Treasury (2021)

1. Introduction

As explored in our literature review, physical inactivity is a pervasive missed opportunity among the UK's disabled population. Data from Sport England's ongoing Active Lives Survey (2021-22) highlights how disabled people or those with long-term health conditions are twice as likely to be physically inactive, with 41% inactive compared to 21% of non-disabled people. This activity gap has persisted over the years, and only slightly reduced from 43% and 21% respectively in the first year of data collection (2015-16). Moreover, the level of inactivity increases significantly with the number of impairments an individual has, reaching 48% for those with three or more impairments.[8]

Research in this sector suggests a high rate of social and economic return of getting people active[9]. However, research exploring these benefits among disabled people specifically is more sparse and very few do this using the 2021 Greenbook-consistent WELLBY methodology of social value estimation.

We aim to address this gap in our assessment using HM Treasury endorsed approaches. This report evidences the individual wellbeing benefits of disabled people being more physically active, in comparison to non-disabled people and explores physical activity at different levels. The analysis underling this report is broadly in-line with our wider work for Sport England on the primary social value of physical activity.

About Activity Alliance

Activity Alliance is the leading voice of disabled people in sport and activity. Its portfolio of sector-leading research and insight plays an important part in its role to influence and advocate in its vision to achieve fairness.

With the launch of the new strategy in 2024, Activity Alliance has recognised some gaps regarding the return on investment and the economic impact of participation in sport and physical activity for disabled people.

[8] Sport England data tables

[9] State of Life literature review

About State of Life

State of Life helps organisations (large and small) to evaluate and measure the social impact and economic value of their activity or project.[10] State of Life's expertise lies in quantitative analysis, particularly in measurement and evaluation of wellbeing outcomes, in line with the 2021 HM Treasury Green Book,[11] in which State of Life are named advisors in the Supplementary Guidance on wellbeing.[12]

2. Research aims

The aim of the study is to understand the impact of 'more disabled people accessing the health and wellbeing benefits of sport and activity'. For this report, we focus on measuring the wellbeing benefits. Our measure of wellbeing (life satisfaction) is an all-encompassing measure of a person's welfare, of which health is only one component (albeit an important one).

Research Questions

Q1. What is the wellbeing benefit for a disabled person to be more physically active?

- Q1a. How do these wellbeing benefits differ from the wellbeing benefits for a non-disabled person?
- Q1b. What are the wellbeing benefits of low levels or low intensity activity for disabled people?

Q2. What is the wellbeing benefit, therefore, to society of disabled people being more physically active?

3. Methodology

3.1 Data source and our sample of disabled people

This research utilises data from Sport England's nationally representative **Active Lives Adult Survey**[13], which is conducted by IPSOS Mori and available annually through the UK Data Service since 2015[14]. Respondents are aged 16 or over. We have appended four waves of data for the purpose of this project, from years 2018-2019 to 2021-2022[15].

[10] State of Life (2023).

[11] HM Treasury is the UK government's economic and finance ministry. The Green Book is technical guidance issued by HM Treasury on how to appraise and evaluate policies, projects and programmes.

[12] HM Treasury (2021).

[13] https://www.sportengland.org/research-and-data/data/active-lives

[14] https://ukdataservice.ac.uk/

[15] Although 7 waves of data are available, wave 4 (18-19) was when the general health question (an important control in our analysis) was included in the survey.

Some survey design restrictions reduce our sample[16] so the sample we can utilise is approximately 230,000 adults[17].

For this study, we compare between those who are disabled and those who are not. Adults considered disabled are individuals reporting they have a physical or mental health condition or illness that has lasted or is expected to last 12 months or more, and has a substantial effect on their ability to do normal daily activities. This classification is in line with the Equality Act 2010[18]. The grouping is computed using Sport England's three-part question on disability, which can be found in Appendix 1.[19] Appending multiple years of Active Lives data enables us to have a large sample size and be more confident in our findings. Our analysis therefore is based on data from approximately 38,000 disabled individuals and 192,000 non-disabled individuals.[20] In general, the sample of disabled people in Active Lives is representative of the population (see Appendix 3).

Measures from the Active Lives dataset relevant for our analysis are outlined below in sections 3.2, 3.3 and our control variables are outlined within section 3.5.

3.2 Measuring wellbeing

Our main measure of wellbeing is life satisfaction, as standardised by the Office for National Statistics (ONS)[21]. This is the measure needed to apply HM Treasury compliant monetary value to wellbeing benefits (explained in section 3.6). It is collected using the following question:
'Overall, how satisfied are you with your life nowadays?'
[where 0 = not at all and 10 = completely]

Outcome measures in the data are informed by the five DCMS outcomes for sport and physical activity[22]. These other measures (such as 'place' based outcomes of trust or community integration) were not the focus of this report but could be explored in future research.

[16] The Active Lives survey can be completed either on paper (a shorter version) or online. There are two routes through the online questionnaire with the sample split into two groups, and not all questions are asked to all respondents. This is to reduce survey length. (Active Lives technical report, available through UK Data Service). Most wellbeing questions (including our key measure of life satisfaction) are only asked to those in group 2 of the online version (approximately a third of respondents). Although the full sample of Active Lives is approximately 177,000 to 180,000 adults per year (714,000 over our four waves) we have a sample of approximately 242,000 adults who were asked the necessary questions.
[17] From our potential sample of 242,000 adults, 2% prefer not to answer the disability questions and the information is missing for 3%.
[18] https://www.gov.uk/definition-of-disability-under-equality-act-2010
[19] See section 5 for a discussion of this question, and Appendix 2 for Activity Alliance's suggested wording for these questions.
[20] These are unweighted samples, i.e. the actual number of respondents. The weighted samples, i.e. where the sample is adjusted to be more representative of the population, are 44,000 and 185,000 respectively.
[21] Personal Wellbeing Survey User Guide, ONS
[22] Sporting Futures, 2015

3.3 Measuring activity levels

Sport England's key metric for physical activity is informed by the Chief Medical Officer (CMO's) guidelines for adults, which recommends doing 150 minutes or more of moderate intensity equivalent activity a week[23]. In Active Lives, activity level is presented in three groups:

1. Inactive (less than 30 minutes a week).
2. Fairly active (30 to 149 minutes a week).
3. Active (more than 150 minutes a week).

It is key to note here that only 'moderate intensity equivalent' (MIE) minutes are counted towards these weekly targets. In Active Lives, activity is recorded as either 'light', 'moderate' or 'vigorous'.

- Light activity is where you neither raise your heart rate, or are out of breath or sweating.
- Moderate activity is activity where you raise your heart rate.
- Vigorous activity is activity where you're out of breath or are sweating.[24]

Moderate intensity equivalent means only counting 'moderate' or 'vigorous' activity. In addition, 'moderate' minutes of activity count as one minute and each 'vigorous' minute of activity counts as two minutes. Only individual bouts of activity which are at least 10 minutes are counted. **Therefore, any light activity does not count towards a person's weekly target minutes.**

For some disabled people, light activity or fewer minutes might be all that is reasonably possible. Descriptive statistics in section 4.1 show us that mobility and long-term pain are the most common impairments among disabled people (experienced by almost 50% of disabled people). A person with these impairments may be less likely to do moderate or vigorous activity. While the CMO guidelines acknowledges that it may not be possible for all disabled people they still recommend aiming for at least 150 minutes of moderate intensity activity each week[25].

Therefore, we also use the more detailed grouping of activity levels to reflect a broader spectrum of activity. This measure splits the 'inactive' group in the key metric into three categories, allowing us to isolate the impact of activity at lower intensity (light only, group 2 below), as compared to low levels of moderate equivalent activity (1 to 30 minutes a week, group 3 below). Therefore, this measure has five groups in total:

1. No activity.[26]
2. Light activity only.
3. Low levels of activity (1 to 29 minutes a week).
4. Fairly Active (30 to 149 minutes a week).
5. Active (more than 150 minutes a week).

[23] 'Levels of Activity', Sport England
[24] Active Lives November 2021-22 Report
[25] Physical Activity for Disabled People, 2019
[26] Since only individual bouts of activity which are at least 10 minutes are counted, this group may include people whose only activity is short sessions (less than 10 minutes).

3.4 Analysis technique: descriptive statistics

It is standard practice in quantitative research studies to produce descriptive statistics[27]; this enables us to understand the nature of the data set we are dealing with and see initial patterns and trends. It is noted that Sport England produces detailed annual reports documenting activity levels including how these vary for disabled people[28]. Those reports should remain the reference point for most accurate population estimates of activity levels[29]. For completeness, and following best practice, we also produce descriptive statistics using the sample within this study[30].

3.5 Analysis technique: multiple linear regression

Researchers must do their best to ensure any change in the outcome of interest (life satisfaction here) is, as closely as possible, caused by the intervention and not by other factors. Research methods to obtain the most robust estimates of causation (e.g. randomised control trials) are expensive and beyond the scope of this project, in fact they are beyond the scope of most social research projects.

We can, however, get the closest estimates of causation using **'multiple linear regression'** applied to already existing national data. This method identifies how a difference in one 'variable'[31] (known as the 'independent variable', e.g. physical activity) influences another outcome variable (known as the 'dependent variable', e.g. life satisfaction), while taking into account influences from other observable variables as well. Other observable variables are factors that are likely to influence the outcome we are interested in, and can be identified in the data; these are known as 'control variables' e.g. age.
Our 'independent variable' and our 'control variables' are known as 'explanatory variables'; they explain the variation in our 'dependent variable'.

A regression model simultaneously estimates the relationship between our 'explanatory variables' and our 'dependent variable'. Each of these relationships is expressed as a **regression coefficient**, alongside information about whether the relationship is statistically significant.
A regression model therefore isolates and estimates the relationship between physical activity and wellbeing, whilst controlling for other factors, such as age, employment status or socio-economic status.

Control variables

The following information is captured through the Active Lives Adult data and are used as control variables in our regression models.

[27] Statistics that quantitatively describe or summarise a dataset or sub sample within a dataset.
[28] Sport England (2023).
[29] And are what we will use when applying our findings to the population in section 4.6.
[30] The sample is waves 4 to 7, group 2 (see section 3.1). Since we want descriptive statistics to be representative of the population, we apply the weighting scheme in Active Lives. wt_final_c is the appropriate weight variable for group 2.
[31] An element, feature, or factor that is liable to change, i.e. it varies.

Table 1: Standard control variables included in regression analysis	
Demographic characteristics: • Age (grouped) • Gender • Ethnicity • Education (highest qualification) • Employment status • Number of adults in household • Number of children in household • Household composition • Socio-economic status (NS-SEC)[32] • Self-reported health[33]	**Timing of survey:** • Month of interview • Year of data collection • Level of COVID restrictions[34] **Geographic location:** • Region of England • Urban/rural classification • Local area deprivation (IMD decile[35])

3.6 Social value, the Green Book and the WELLBY

The UK Government defines social or public value as "all significant costs and benefits that affect the welfare and wellbeing of the population" beyond those determined by economic markets (H.M. Treasury 'Green Book', 2022). Our social value approach is informed by this guidance on policy appraisal and evaluation. The Green Book provides supplementary guidance (2021[36]) on measuring wellbeing and valuing social benefits.

Behind the approach is a newly defined, standardised way to measure wellbeing impacts, known as the WELLBY (wellbeing-adjusted life year). It is based on the subjective wellbeing measure of life satisfaction (measured on a scale from 0 to 10, see section 3.2). One WELLBY is defined as a change of one point on this scale, caused by the intervention of interest (e.g. physical activity), affecting one person over a period of one year. The guidance outlines that individual wellbeing effects should be included at a recommended valuation rate of £13,000[37] per WELLBY (in 2019 prices).[38] We convert this to £15,300 in 2023 prices.[39]
This method enables researchers to robustly estimate the social value (in monetary terms) of changes in our lives, or the value of an intervention, and provides a comparable tool for policy makers. This method has been used to estimate the value of being employed (rather than

[32] National Statistics Socio-economic classification (NS-SEC), see table 1.
[33] The analysis for sample of non-disabled people also includes a control for 'non-limiting' disability. This is to be perfectly in-line with our analysis for Sport England, where the default full set of demographic controls variables are included.
[34] Four categories were created (no restrictions; limited restrictions; severe restrictions; full lockdown), informed by Sport England's report during these periods; November 19-20 and November 20-21 (page 4).
[35] Index of Multiple Deprivation
[36] HM Treasury (2021).
[37] This figure is the mid-point between two values using different methods (£10,000 is based on converting a Quality Adjusted Life Year (QALY) and £16,000 is based on estimating the effect of changes in income on life satisfaction).
[38] HM Treasury (2021). See box 7.
[39] Using the formula recommended in the Green Book supplementary guidance (HM. Treasury, 2021, p57).

being unemployed) at +0.46 on the life satisfaction scale, a value of £7,000 per person per year (2023 prices).[40]

Organisations with a social purpose can apply this method to evidence the social value of their work by valuing the wellbeing impacts. To answer research question one, we can estimate the wellbeing benefit (a change in life satisfaction) resulting from a disabled person being more physically active, and multiply this by £15,300.

3.7 Value to society (in pursuit of fairness)

Once we have estimated an associated increase in life satisfaction, and therefore social value of physical activity at the individual level, we can extrapolate this to society, answering research question two. We are inspired by Activity Alliance's vision to achieve fairness and apply this to activity levels. This requires a few components:

- The estimated population of disabled people in England (age 16+) (Sport England/ONS[41]).
- The proportion of disabled people who fall in each 'activity level' (Active Lives data).
- The estimated social value of a disabled person being at different activity levels (individual benefit, calculated in section 4.5 of this report).
- The proportion of non-disabled people who fall in each 'activity level' (Active Lives data).

We answer:

- What is the value to society of disabled people's activity at current levels?
- How much of this is from 'light activity only'? i.e. the amount that would be undervalued if we only considered active minutes according to CMO guidelines.
- What would be the additional value to society if disabled people had the same levels of activity as non-disabled people? i.e. what is the cost of the activity gap?
- What would be the value of small shifts towards reducing this activity gap?
- What would be the value of disabled people doing more light activity?

[40] £6,000 in 2019 prices, Annex 2, HM Treasury (2021)

[41] In order to be in line with the Active Lives data, we use the estimates of the disabled population used by Sport England in their publications.

4. Findings

4.1 Levels of disability, activity and wellbeing

Impairments and long-term health conditions

Table 2: Proportion of sample who are disabled and have different impairments Active Lives Adult data, years 2018-2022		
	N	**%**
Disability		
Non-disabled	184,887	80%
Disabled	44,900	20%
No. of limiting impairments for disabled people		
1	13,255	31%
2	10,874	25%
3+	18,964	44%
Proportion of disabled people with different impairments type		
Long term pain	21,206	48%
Mobility	21,040	48%
Mental health	17,064	39%
Chronic health condition	14,755	34%
Breathing	11,014	25%
Dexterity	6,441	15%
Memory	5,850	13%
Hearing	5,076	12%
Behavioural	4,306	10%
Learning	2,077	5%
Speech	1,395	3%
Other	2,896	7%
Notes: waves 4 to 7 are appended to make one dataset. Data is from 'group 2' in the survey. Data is weighted using wt_final_c The proportion with different impairment types sums to more than 100% since many disabled people (69%) have more than one impairment.		

Table 2 shows that 20% of our sample are considered disabled. A high proportion (70%) of disabled people have more than one impairment. Both mobility impairments and long-term pain are present in almost 50% of the disabled population.

Levels of activity

Table 3: Levels of activity for disabled adults compared to non-disabled adults[42]
Active Lives Adult data, years 2018-2022

	Disabled	Non-disabled
Weighted[43] sample size	N=44,900	N=184,887
Activity level (MIE minutes per week, headline metric)		
Inactive (0-29)	41.3%	21.1%
Fairly active (30-149)	11.7%	11.4%
Active (150+)	47.0%	67.5%
Activity level (MIE minutes per week, detailed measure)		
No activity (0)	32.2%	12.3%
Light activity only (0)	7.5%	7.8%
Low levels of activity (1-29)	1.5%	1.0%
Fairly active (30-149)	11.7%	11.4%
Active (150+)	47.0%	67.5%
Notes: Active Lives Adult data, waves 4 to 7, group 2. Weighted using wt_final_c		

Table 3 shows that disabled are twice as likely to be inactive compared to non-disabled people (41% compared to 21%), and less likely to be active compared to non-disabled people (47% compared to 68%). For how this differs for different impairment types see Appendix 3.

Splitting the 'inactive' group into more detail shows us that a key difference is in those doing no activity at all; 32% of disabled people and 12% of non-disabled people. The proportion doing 'light only' or 'low levels' is similar. Those who do 1 to 29 minutes per week is a low proportion in both populations (only 1% of respondents). Regression coefficients for a sub-category can be unstable if that sub-category has relatively few observations. Findings would be more meaningful if this group was merged with another group. To preserve the isolation of 'light activity only' in our regression analysis, the group doing 1 to 29 minutes is merged with the 'fairly active' group, to form the group 'some moderate activity (1 to 149)', (table 7).

[42] Activity levels for those with different types of disability are shown in appendix 3.
[43] The sample is adjusted to be more representative of the population

Levels of wellbeing

Table 4: Life satisfaction of disabled adults compared to non-disabled adults[44] Active Lives Adult data, years 2018-2022		
	Life satisfaction [0 to 10]	
	Disabled	**Non-disabled**
Weighted[45] sample size	N=44,900	N=184,887
	5.7	7.4
Notes: Active Lives Adult data, waves 4 to 7, group 2. Weighted using wt_final_c		

Life satisfaction is significantly lower[46] (by 1.7 over a scale from 0 to 10) for those who are disabled compared to those who are not. As a reminder, being employed rather than unemployed is associated with an increase of 0.46 in life satisfaction[47] highlighting the magnitude of the difference we see here.

Wellbeing and activity level

Table 5: Average life satisfaction for different levels of activity Active Lives Adult data, years 2018-2022		
	Life satisfaction [0 to 10]	
	Disabled	**Non-disabled**
Weighted[48] sample size	N=44,900	N=184,887
Activity level (minutes per week, detailed measure)		
No activity	5.1	7.1
Light activity only	5.9	7.2
Low levels of activity (1-29)	5.5	7.0
Fairly active (30-149)	5.9	7.2
Active (150+)	6.1	7.4
Notes: Active Lives Adult data, waves 4 to 7, group 2. Weighted using wt_final_c		

[44] Activity levels for those with different types of disability are shown in appendix 4.
[45] The sample is adjusted to be more representative of the population.
[46] Statistically significant at the 1% level using a standard t-test. However, it is important to note this is a simple two-variable comparison. A more meaningful finding would be whether this difference was statistically significant, once considering other influences (i.e. using a regression analysis method as explained in section 4.3 and as we use in section 4.4 and 4.5). This specific relationship (between disability and wellbeing) wasn't the focus of this research but could be done in further research.
[47] Annex 2, HM Treasury (2021)
[48] The sample is adjusted to be more representative of the population.

For both those who are disabled and those who are not, life satisfaction is higher for those who are most active. This relationship appears to be stronger for those who are disabled; for disabled people the difference in life satisfaction between the least and most active is 1, whereas for those who are not disabled the difference in life satisfaction between the least and most active is 0.3.

It is vital to note here, that these are simple two-variable comparisons and do not account for the influence of other factors. For example, people with some impairments might face more barriers to be independent or be employed. It could be these factors that drive low activity and low wellbeing. Hence the importance of our control variables and accounting for other factors using multiple linear regression (section 3.5), presented in the following sections.

4.2 Headline social value of physical activity

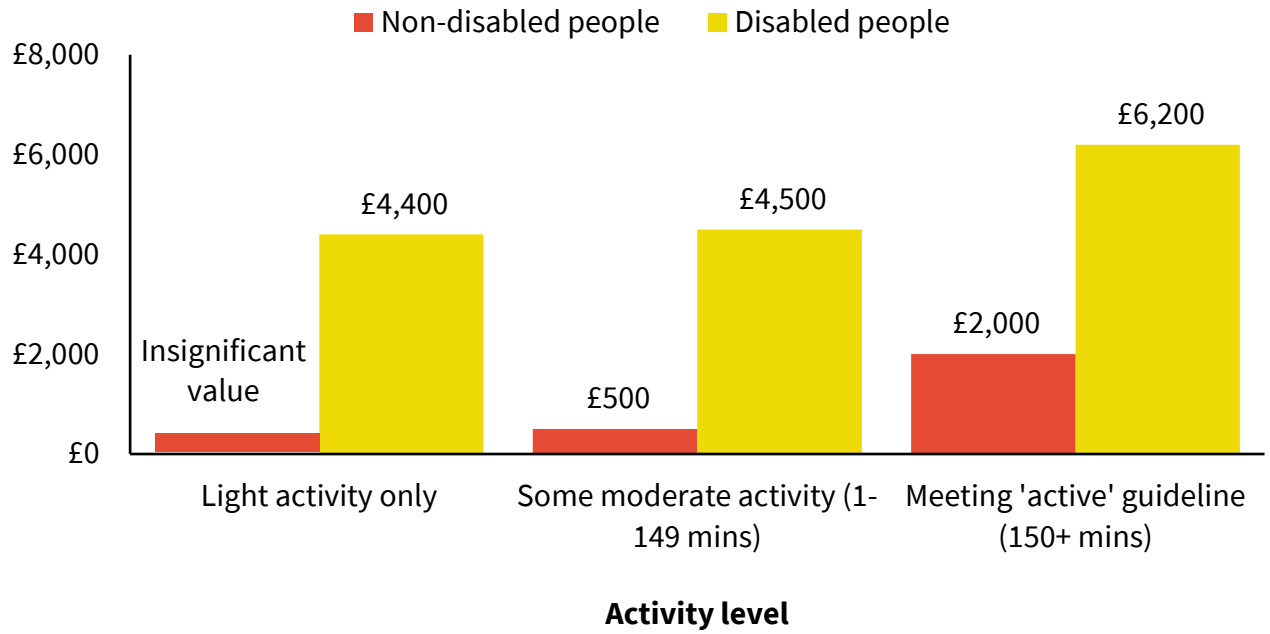
In summary, we find that the social value of physical activity for disabled people is much higher than the value for non-disabled people. Headline values are displayed in the table and chart below. The details behind these findings are presented in sections 4.3, 4.4 and 4.5.

Table 6: Summary of social value of physical activity to individuals

	Social value, per person per year (rounded to £100), compared to no activity		
	Light activity only	**Some moderate activity (1-149)**	**Meeting 'active' guideline (150+)**
Disabled people	£4,400	£4,500	£6,200
Non-disabled people	insignificant value[49]	£500	£2,000

[49] The coefficient on 'light activity only' for non-disabled people (0.023, table 9) is insignificant (the higher wellbeing value may be down to chance). All other coefficients are significant, and hence converted to monetary values.

Social value of physical activity, per person per year
(2023 prices, rounded to £100)



4.3 Interpretation of regression results

In this section we report results from regression analysis. Each table first specifies the outcome variable of interest (life satisfaction). Next specified is the different populations (disabled and non-disabled people) for which we have run our regression analysis, these are known as separate regression 'models' (and are visually shown as separate columns in the table). Next our intervention variable is outlined. We have also included a 'base group'. The base group is what we are comparing to, e.g. in table 4, 'inactive' is the 'base group' and we compare those who are 'fairly active' and 'active' to this group.

In the tables we report each group's coefficient[50], or the difference in the outcome due to being in that group compared to the base group (and not explained by the control variables). In other words, the coefficient is the change in reported life satisfaction associated with being in that subgroup after controlling for other factors. Each coefficient is reported with a level of significance or how confident we are that this finding is not due to chance. This is indicated by the number of asterisks; the more asterisks the higher our confidence in the result. At the bottom of each table is the number of observations (individuals in this case) in the model and the adjusted R-squared, which indicates the 'fit of the model'[51].

[50] The base group or comparison group has a coefficient of 0.000.
[51] Specifically, the proportion of variation in the outcome variable which is explained by variation in all explanatory variables.

4.4 Wellbeing benefit of being 'active' (using Sport England activity level measure)

Table 7: Regression coefficients indicating the impact of being active on life satisfaction, comparing between disabled and non-disabled adults
Active Lives Adult data, years 2018-2022

Outcome variable:	Life satisfaction [0 to 10]	
Sample population:	**Disabled**	**Non-disabled**
Intervention variable of interest:		
Inactive (0-29) (base group)	0.000	0.000
Fairly Active (30-149)	0.241***	0.031**
Active (150+)	**0.332*** **	**0.124*** **
Observations:	35,054	176,032
Adjusted R-squared:	0.260	0.156

Notes: Stars denote statistical significance: *p<0.1, **p<0.05, ***p<0.01. Only the coefficient of the variable of interest is shown here. A coefficient of 0.000 means this is the base group other subgroups were compared to. **Other factors we have controlled for are:** age group, gender, ethnicity, socio-economic status, working status, education, region, rurality, Index of Multiple Deprivation, household composition (includes marital status), number of children, general health, month, year of data collection and level of COVID restriction. The output in this table is exactly in line with our findings in our work for Sport England.

In table 7, we present regression results, exploring the impact of physical activity on life satisfaction for disabled adults and non-disabled adults. The same model was used on both populations, using the same set of control variables[52]. The coefficients of interest are those associated with being 'active'. In these models, this is in comparison to being 'inactive'.
Even once we control for a variety of factors, we find that:

- A disabled adult being active rather than being inactive is associated with an increase in life satisfaction of 0.332 (on a 0-10 scale).
- This is almost three[53] times the associated increase for those who are non-disabled (0.124, on a 0-10 scale).

[52] Number or type of impairments could be an important factor in determining wellbeing for disabled people. However, there is no equivalent information for non-disabled people. Hence, in the interest of using consistent controls and enabling compatibility between disabled and non-disabled people, these are not included as controls. As a test we did include number of impairments as controls (see appendix 5) and still found a similar coefficient for being 'Active' (0.338)
[53] 0.332/0.124 = 2.7

It is also important to note in the above table the coefficients for being 'fairly active'. The associated increase in life satisfaction for disabled people being 'fairly active' is 0.241. Looking another way, **for disabled people the wellbeing benefit of being 'fairly active' is almost as high as (73%)[54] the benefit from being 'active'**. This implies that, for disabled people, there are substantial wellbeing benefits of lower levels of activity before the 150 minutes a week guideline is met. We therefore explore the more detailed categories of activity level in section 3.3.

4.5 Wellbeing benefit of activity, including low intensity or low levels activity

We now use the more detailed measure of activity (explained in section 3.3 and tabulated in section 4.1) which enables us to also explore the impact of low intensity (light activity only) as opposed to low levels of moderate activity (1 to 29 minutes per week). Only 1% of respondents (table 3, section 4.1) fall into the group who do 1 to 29 minutes per week. Hence for the purpose of our regression analysis, this is merged with the 30 to 149 group to form this latter group of 'some moderate activity'. All groups are now compared to a base group of 'no activity'[55].

Table 8: Regression coefficients indicating the impact of activity, including low level or low intensity activity on life satisfaction, comparing between disabled and non-disabled adults
Active Lives Adult data, years 2018-2022

Outcome variable:	**Life satisfaction [0 to 10]**	
Sample population:	**Disabled**	**Non-disabled**
Intervention variable of interest:		
'No' activity (base group)	0.000	0.000
Light activity only	**0.287*** **	0.023
Some moderate activity (1 to 149)	**0.294*** **	0.034*
Active (150+)	**0.406*** **	0.132***
Observations:	35,054	176,032
Adjusted R-squared:	0.261	0.158

Notes: Stars denote statistical significance: *p<0.1, **p<0.05, ***p<0.01. Only the coefficient of the variable of interest is shown here. A coefficient of 0.000 means this is the base group other subgroups were compared to. **Other factors we have controlled for are:** age group, gender, ethnicity, socio-economic status, working status, education, region, rurality, Index of Multiple Deprivation, household composition (includes marital status), number of children, general health, month, year of data collection and level of COVID restriction.

[54] 0.241/0.332 = 0.73

[55] Up to and including activity where individual sessions were less than 10 minutes at a time in duration.

In table 8, coefficients are reported for both disabled and non-disabled people. Even once we control for a variety of factors, we find that:

- A disabled adult **being active** rather than doing no activity is associated with an increase in life satisfaction of 0.406 (on a 0-10 scale)[56]. This is three[57] times the associated increase for those who are non-disabled (0.132, on a 0-10 scale).
- For disabled people, **activity below the 'active' guideline is almost as valuable as meeting the guideline**; doing light activity is associated with an increase in life satisfaction of 0.287(on a 0-10 scale) and doing some moderate activity is associated with an increase of 0.294[58]. Both these figures are more than twice the shift for non-disabled adults being active rather than being inactive (0.124, table 7).

We apply the social value approach explored in section 3.6, converting resulting changes in life satisfaction (coefficients reported in table 8) to a monetary value by multiplying by £15,300 (the value of one WELLBY[59])[60] (see boxes below of main findings).

Box 1: Social value of disabled person being active

Even once we control for a variety of factors, we find that a disabled person being active is associated with an increase in life satisfaction of 0.332 to 0.406[61], a social value of £5,100 to £6,200 per person per year. The upper and lower estimates are from the two slightly different models; one comparing 'active' to 'inactive' and one comparing 'active' to 'no activity'

This is approximately three times the associated increase in life satisfaction for a non-disabled person being active (0.124 to 0.132, a social value of £1,900 - £2,000 per person per year)

[56] This is higher than in table 4 because the 'base' group is a lower state of activity; 'no activity' rather than 'inactive'.
[57] 0.406/0.132 = 3.1
[58] Both these figures are in comparison to doing no activity.
[59] wellbeing-adjusted life year.
[60] HM Treasury (2021). See box 7. All values are in 2023 prices and rounded to the nearest £100.
[61] The upper and lower estimates are from the two slightly different models; one comparing 'active' to 'inactive' and one comparing 'active' to 'no activity'.

Box 2: Social value of disabled person doing low intensity or lower levels of activity

There is substantial wellbeing benefit from disabled people doing light activity, or low levels of activity, which do not meet Sport England's 'active' threshold of 150+ moderate intensity equivalent minutes per week.

Even once we control for a variety of factors, we find that a disabled adult doing light activity rather than no activity is associated with an increase in life satisfaction of 0.287, a social value of £4,400 per person per year (71% of the value of being 'active').

With the same controls, a disabled adult doing some moderate activity (1 to 149 minutes) rather than no activity is associated with an increase in life satisfaction of 0.294, a social value of £4,500 per person per year (72% of the value of being 'active').

Evidence suggests the wellbeing benefits of light activity or low levels of activity for non-disabled people is low[62].

4.6 Value to society as a whole

We now consider the value to society of disabled people being more physically active. Firstly, we calculate the value to society of disabled people's activity at current levels (table 9). We do this using the more detailed activity measure rather than the standard three levels, due to the relatively high value of 'light activity only'.

There are few components required for this calculation;

- The **proportion of disabled people who fall in each 'activity level'**. For the most accurate population estimate this should come from Sport England's official annual statistics. For the more detailed measure of activity level, we obtain this from Sport England's Active Lives Online query builder[63].
- The **estimated population of disabled people in England, age 16+; 9,127,400**.[64]
- The estimated social value per person, of a disabled person being at different activity levels (individual benefit) (this was estimated in section 4.5).

[62] +0.023 in life satisfaction for light activity, but insignificant. +0.034 in life satisfaction for low levels of activity, significant only at the 10%.
[63] Annual reports and data tables only include the standard measure of activity.
[64] Since our analysis of the value is done Adult Active Lives data (age 16+), we use the population estimates of disabled people aged 16+ presented by Sport England in their 2021-2022 data tables (Tables 1-5 Levels of Activity, 4,332,800 + 1,054,300 + 3,740,300 = 9,127,400). (Easily obtained population estimates directly from Office of National Statistics allow us to calculate the number of disabled people aged 15+).

We then calculate the social value of various shifts in disabled people's activity levels (tables 10 and 11) by hypothetically changing the proportion of disabled people who fall in each 'activity level'.

Table 9: Estimated value to society of disabled people's activity at current levels

	% of disabled people	**Estimated population of disabled people (16+)**	**Social value per person** (rounded to £100)	**Social value to population** (rounded to £1,000)
Notes/ source:	Active Lives Query Builder 2021-22	9,127,400, Active Lives data tables	associated increase in LS from table 5*£15,300	value per person* estimated population
No activity	30.5%	2,783,857	£0	£0
Light activity only	8.8%	803,211	£4,400	£3,534,129,000
Some moderate activity (1-149)	13.3%	1,213,944	£4,500	£5,462,749,000
Meeting 'active' guideline (150+)	47.5%	4,332,777	£6,200	£26,863,216,000
	Total value to society:			£35,860,094,000

In table 9, we see that the estimated total value of disabled people's activity is approximately **£35.9 billion**. This assumes a value of 0 for the estimated disabled population (30%) who do 'no activity' and assigns the individual value we have calculated to the remainder of the disabled people. Most of this value (76%) is generated from disabled people who are 'active' (doing 150+ 'moderate equivalent' minutes per week).

It is interesting to note that **£3.5 billion** is generated from the 9% of disabled people who are doing 'light' activity only; activity which does not count towards one's 'moderate equivalent' minutes per week, according to existing CMO guidelines. Therefore, excluding those doing 'light' activity only would underestimate this value.

Next, we illustrate the value to society if disabled people's activity was at the same level as non-disabled people (table 10), i.e. if there was no 'activity gap'.

Table 10: Illustrative value to society if disabled people's activity levels were then same as non-disabled people				
	% of disabled people	**Estimated population of disabled people (16+)**	**Social value per person** (rounded to £100)	**Social value to population** (rounded to £1,000)
Notes/ source:	Active Lives Query Builder 2021-22	9,127,400, Active Lives data tables	associated increase in LS from table 5*£15,300	value per person* estimated population
No activity	11.6%	1,058,778	£0	£0
Light activity only	8.1%	739,319	£4,400	£3,253,005,000
Some moderate activity (1-149)	12.1%	1,104,415	£4,500	£4,969,869,000
Meeting 'active' guideline (150+)	68.1%	6,215,759	£6,200	£38,537,708,000
	Total value to society:			£46,760,582,000
	Difference compared to current level:			**£10,900,488,000**

In this 'fair' world, there would be an additional **£10.9 billion** value to society. This figure can also be considered the cost of the 'activity gap'.

Of course, this situation is a major shift, and unlikely, given the number of barriers disabled people face in society and the older age of the disabled population compared to the non-disabled population (appendix 3). Instead, we illustrate using some smaller shifts; a 10% or 20% shift towards the activity levels of non-disabled people. Even with a 10% shift in disabled people's activity levels to the activity levels of non-disabled people, the value to society would be approximately £1.1 billion. **A 20% shift would be approximately £2 billion.**

Given the relatively high wellbeing value (and therefore importance in terms of improvement of quality of life) of light activity for disabled people, compared to moderate or vigorous activity, we also calculate the social value for a theorised situation where half the disabled population who do 'no activity' did light activity (table 11), a more modest target perhaps.

Table 11: Illustrative value to society if half the disabled population doing no activity did light activity				
	% of disabled people	**estimated population of disabled people (16+)**	**Social value per person** (rounded to £100)	**Social value to population** (rounded to £1,000)
	half of no activity (Table 6) shift to light	9,127,400, Active Lives data tables	associated increase in LS from table 5*£15,300	value per person* estimated population
'No' activity	15.3%	1,391,929	£0	£0
Light activity only	24.1%	2,195,140	£4,400	£9,658,615,000
Some moderate activity (1-149)	13.3%	1,213,944	£4,500	£5,462,749,000
Meeting 'active' guideline (150+)	47.5%	4,332,777	£6,200	£26,863,216,000
	Total value to society:			£41,984,580,000
	Difference compared to current level:			**£6,124,486,000**

If half the disabled people who do 'no activity' did some 'light activity', the value to society would be **£6.1 billion.**

5. Limitations of the study

Our report for Sport England on the primary value of sport and physical activity outlines limitations in section 5, all of which apply to this study as well. Limitations more specific to this study are outlined below.

Potential underreporting of disabilities

The wording of the disability questions in Active Lives are outlined in Appendix 1. It is noted that the wording of these may cause bias in underreporting of disabilities; specifically due to the limited detail on impairments and health conditions included in question one, and the routing based on this answer. Activity Alliance have found that many people legally considered disabled under the Equality Act wouldn't necessarily answer 'yes' to the first question from Sport England without the detail about what impairments and health conditions are included[65].

[65] Activity Alliance' suggested wording can be found in Appendix 2

Indeed, when the Active Lives data is unweighted, 16.5% are disabled; lower than the national average which is estimated between 18%[66] and 24%[67]. This bias could also be caused by lower response rates of disabled people. This is exactly the reason the data is weighted, so is worth noting but is not of concern.

Potential underreporting of activity (in short bouts)

As explored in section 3.3, only individual bouts of activity which are at least 10 minutes are counted towards the measure of moderate intensity equivalent. Therefore, our group of people doing 'no activity' may include people whose only activity is short sessions (less than 10 minutes). This means we cannot truly isolate 'no activity' as a base/comparison group, and we cannot explore the value of such short bouts of activity (using the standard measures for physical activity levels in Active Lives).

6. Suggestions for future research

Further demographic groups

There is scope in the data to explore how the value of activity differs for other subgroups of disabled people. For example, this could be split by socio-economic group, age or ethnicity.

Although beyond the scope of our research questions on this project, we have split our analysis by gender.[68] We find that the value of being active is higher for disabled women than for disabled men. A disabled woman being active rather than being inactive is associated with an increase in life satisfaction of 0.352 (on a 0-10 scale), a WELLBY value of £5,400 whereas for a disabled man, this is associated with an increase in life satisfaction of 0.302 (on a 0-10 scale), a WELLBY value of £4,600 (see Appendix 6).

If there were resources for further research, this split analysis could be repeated for any subgroups of interest.

Focus on different impairments

Alternatively, further analysis could be done to explore how the value of activity differs for those with certain impairments, or the number of impairments they have. Even the least common impairment type (speech) would likely[69] have a sample size of over 1,000 observations. Potential sample sizes can be seen in table 2, in section 4.1.

[66] age standardised, England and Wales, ONS
[67] UK, Family Resources Survey
[68] This is inspired by Caroline Criado Perez and her book Invisible Women on gender data bias. Often conclusions are drawn from analysis of a population sample when in fact different conclusions may have been drawn if gender had been taken into account.
[69] We say 'likely' because multiple linear regression requires information on all variables in the model, including all control variables. The potential sample of those with speech impairments is 1,395 (table 2), but this could reduce slightly if any information is missing (question was skipped by the individual).

Impact on other outcomes

Further insight could also be gathered by exploring how increased physical activity of disabled people influences other outcomes such as trust, belonging or loneliness (these outcomes are also measured in Active Lives).

Comparisons to other aspects of life

Further analysis could reveal how the value of physical activity compares to the value of other aspects of life for disabled people.

Comparison to values for health improvements (QALYs and DALYs)

The WELLBY is related to the health measures of a QALY (quality-adjusted life year - one year lived in full health) and a DALY (disability-adjusted life year - the loss of one year of full health)[70]. Further research could explore how these WELLBY values could be framed as QALY values, e.g. in terms of individual's (or the NHS's) willingness to pay for a QALY.

Expanding to include secondary value

Additionally, physical activity can lead to wider value to society, including to the state. This can be referred to as the secondary value. In our research for Sport England, research into the secondary social value of sport and physical activity is being led by Sheffield Hallam University (SHU) and Manchester Metropolitan University (MMU). The above work could be expanded to include this secondary value as well.

[70] https://www.happierlivesinstitute.org/report/wellby

Appendix

Appendix 1. Wording of disability question in Active Lives survey

No.	Routing	Question
1	Asked to all	**Do you have any physical or mental health conditions or illnesses lasting or expected to last 12 months or more?** [Yes, No, Prefer not to say]
2	If 1 = yes	**Do these physical or mental health conditions or illnesses have a substantial effect on your ability to do normal daily activities?** [Yes, No, Prefer not to say]
3	if 1= yes	**Does this disability or illness affect you in any of the following areas?** [**Long term pain:** persistent or chronic pain as a result of tissue damage or inflammation (for example from arthritis) or to do with the nervous system (for example from diabetes). **Chronic health conditions:** conditions for which there is currently no cure, and which are managed with medication and other treatment, for example: diabetes, coronary heart disease, stroke, epilepsy and hypertension. **Mobility:** the ability to move around. Problems with mobility may cause unsteadiness and difficulty walking or moving. It can be caused by many things including muscle weakness, joint problems, pain or neurological conditions. **Dexterity:** using the hands or body for fine motor skills or small movements. Problems with dexterity may affect picking things up, maintaining a hold on items, buttoning clothing, or writing. **Mental health:** Mental health problems can affect the way people think, feel and behave. This includes anxiety disorders, bipolar disorder, depression, eating disorders, personality disorders, psychosis and schizophrenia. **Visual:** a limitation in one or more functions of the eye or visual system. This includes total blindness as well as visual impairment or low vision that cannot be corrected with standard glasses or contact lenses.

No.	Routing	Question
3	continued from above	**Breathing:** medical conditions that affect the lungs and respiratory system and may result in breathlessness, asthma attacks or fatigue. Includes obstructive conditions (e.g. bronchitis), restrictive conditions (e.g. fibrosis), vascular diseases (e.g. pulmonary edema) or infectious, environmental and other "diseases" (e.g. tuberculosis, asbestosis). **Memory:** difficulty consistently remembering information which impacts on daily life. It can be a result of brain trauma, stroke, dementia and other conditions. **Hearing:** includes partially or wholly lacking hearing, in one or both ears, at birth, through disease early in life, or later in life. Also known as hard of hearing, hearing loss, deaf, deafness. **Learning:** reduced intellectual ability and difficulty with everyday activities. Also known as intellectual disability or learning difficulty. **Speech:** a disruption in normal speaking patterns that makes verbal communication difficult. This can include lisps and stammering, dyspraxia and dysarthria. **Behavioural:** Behaviour traits that have a negative effect on daily life and/or social interactions or that make certain tasks more difficult. This may be associated with ADD (Attention Deficit Disorder), autism, Asperger's Syndrome or have no apparent cause. **Other** **None of these** **Prefer not to say**

Appendix 2. Wording of disability question preferred by Activity Alliance

No.	Routing	Question
1	Asked to all	**Do you have any long-term health conditions, impairments or illnesses?** **<u>This could include, for example, physical, sensory, learning, social, behavioural or mental health conditions or impairments.</u>** **Long-term means that they have lasted, or are expected to last, 12 months or more.** [Yes, No, Don't know, prefer not to say]
2	If 1 = yes	**Do these health conditions, impairments or illnesses have a substantial effect on your ability to do normal daily activities?** [Yes, No, Don't know, prefer not to say]
3	if 1= yes	**Do these health conditions, impairments or illnesses affect you in any of the following areas?** [Breathing or stamina Chronic health condition (for example, but not limited to, diabetes, coronary heart disease, stroke, epilepsy and hypertension) Dexterity (for example lifting and carrying objects, using a keyboard) Hearing (for example deafness or partial hearing) Learning or understanding or concentrating Long term pain Memory Mental health Mobility (for example walking short distances or climbing stairs) Social or behavioural (for example, but not limited to, associated with autism, attention deficit disorder or neurodiversity) Speech or making yourself understood Vision (for example blindness or partial sight) Other (please specify) Don't know Prefer not to say]

Appendix 3. Demographics of our Active Lives sample

Table 12: Key demographic characteristics compared to Activity Alliance data				
	Activity Alliance Annual Disability and Activity Survey 2022-2023		**Our Active Lives sample** (Active Lives Adult data, years 2018-2022)	
	Disabled	**Non-disabled**	**Disabled**	**Non-disabled**
Sample size			N=44,900	N=184,887
Age				
16-24	8%	16%	12%	13%
25-64	53%	68%	54%	66%
65+	38%	17%	35%	21%
Gender				
Male	45%	51%	40%	51%
Female	55%	49%	59%	49%
Non-binary	-	-	1%	0%
Ethnicity				
White/White British	89%	80%	90%	85%
Asian/Asian British	5%	10%	6%	9%
Black/Black British	3%	4%	2%	3%
Mixed ethnic group	2%	3%	2%	2%
Other ethnic group	1%	2%	1%	1%
Region				
North East	6%	4%	6%	5%
North West	15%	13%	14%	13%
Yorkshire and the Humber	10%	10%	11%	10%
East Midlands	9%	9%	10%	8%
West Midlands	11%	10%	11%	10%

East	11%	11%	11%	11%
London	12%	16%	12%	16%
South East	15%	17%	15%	17%
South West	11%	10%	11%	10%
Notes: Comparison data from Activity Alliance is relevant to the UK, except for Region which is calculated for England only. Active Lives Adult data is waves 4 to 7, group 2. Weighted using wt_final_c.				

Comparison data comes from Activity Alliance's targets for their Annual Disability and Activity Survey which are informed by the national Family Resources Survey . In general, the Active Lives sample of disabled people mirrors the national picture found by Activity Alliance; those with an impairment are generally older, more likely to be women, more likely to be White/White British ethnicity and less likely to live in London[71].

The Active Lives sample of disabled people is slightly younger than the national population of disabled people, particularly the age group 16-24 (12% in this group compared to 8% nationally) and slightly more likely to be women (59% women compared to 55% nationally).

[71]It's likely that these trends by demographic are largely driven by age (older people are more likely be disabled, and also more likely to be female, White/White British and live outside of London.)

Appendix 4. Activity levels for those with different types of impairment or health condition

Table 13: Levels of activity for those with different types of impairment or health condition (age 16-54)
Active Lives Adult data, years 2018-2022

Age 16-54	Sample	Activity level		
	(weighted)	Inactive	Fairly active	Active
Disabled	18,409	32%	12%	57%
By number of impairments				
1	6,700	26%	12%	62%
2	4,206	28%	12%	60%
3+	6,701	39%	11%	50%
By type of impairment (least active listed first)				
Memory	2,516	43%	12%	45%
Mobility	5,498	42%	12%	45%
Dexterity	1,456	40%	11%	49%
Hearing	897	39%	11%	49%
Visual	894	38%	10%	51%
Breathing	3,478	38%	11%	51%
Long term pain	7,397	38%	12%	50%
Speech	654	37%	10%	52%
Learning	1,317	37%	12%	52%
Behavioural	2,680	36%	9%	55%
Chronic health condition	4,957	36%	12%	53%
Mental health	10,763	33%	11%	56%
Other	1,431	30%	11%	60%

Notes: Active Lives Adult data, waves 4 to 7, group 2. Weighted using wt_final_c

Table 14: Levels of activity for those with different types of impairment or health condition (age 55+)
Active Lives Adult data, years 2018-2022

Age 55+	Sample	Activity level		
	(weighted)	Inactive	Fairly active	Active
Disabled	19,546	51%	12%	37%
By number of impairments				
1	4,467	39%	12%	49%
2	5,013	47%	13%	40%
3+	9,406	59%	11%	30%
By type of impairment (least active listed first)				
Memory	523	69%	7%	24%
Mobility	419	68%	7%	26%
Dexterity	2,430	64%	10%	27%
Hearing	12,459	59%	11%	29%
Visual	3,455	59%	9%	32%
Breathing	920	59%	12%	29%
Long term pain	4,052	59%	11%	31%
Speech	1,827	58%	10%	32%
Learning	3,498	55%	11%	34%
Behavioural	5,893	55%	12%	33%
Chronic health condition	10,612	55%	11%	34%
Mental health	7,582	54%	12%	34%
Other	1,008	40%	12%	48%

Notes: Active Lives Adult data, waves 4 to 7, group 2. Weighted using wt_final_c

Appendix 5. Regression results which include a control for the number of impairments

Active Lives Adult data, years 2018-2022		
Outcome variable:	Life satisfaction [0 to 10]	
Sample population:	**Disabled**	
Models specified:	**No control for impairments**	**With control for impairments**
Intervention variables of interest:		
'No' activity (base group)	0.000	0.000
Fairly Active (30 to 149 mins per week)	0.241***	0.230***
Active (150+ mins per week)	**0.332*** **	**0.338*** **
1 impairment		0.000
2 impairments		0.003
3+ impairments		-0.297***
Observations:	35,054	33,890
Adjusted R-squared:	0.260	0.262
Notes: Stars denote statistical significance: *p<0.1, **p<0.05, ***p<0.01. Only the coefficient of the variable of interest is shown here. A coefficient of 0.000 means this is the base group other subgroups were compared to. **Other factors we have controlled for are:** age group, gender, ethnicity, socio-economic status, working status, education, region, rurality, Index of Multiple Deprivation, household composition (includes marital status), number of children, general health. month, year of data collection and level of covid restriction.		

Even when including a control for the number of impairments, the coefficients on activity level are similar (0.338 converts to a monetary figure of £5,200). Interestingly, two impairments compared to one does not significantly impact life satisfaction. There is, however, a significant reduction in wellbeing for those with three or more impairments.

Appendix 6. Regression results show the impact of activity for disabled people of different genders

Active Lives Adult data, years 2018-2022		
Outcome variable:	Life satisfaction [0 to 10]	
Sample population:	**Disabled women**	**Disabled men**
Intervention variables of interest:		
'No' activity (base group)	0.000	0.000
Fairly Active (30 to 149 mins per week)	0.235***	0.270***
Active (150+ mins per week)	**0.352*** **	**0.302*** **
Observations:	20,921	13,884
Adjusted R-squared:	0.239	0.289
Notes: Stars denote statistical significance: *p<0.1, **p<0.05, ***p<0.01. Only the coefficient of the variable of interest is shown here. A coefficient of 0.000 means this is the base group other subgroups were compared to. **Other factors we have controlled for are:** age group, gender, ethnicity, socio-economic status, working status, education, region, rurality, Index of Multiple Deprivation, household composition (includes marital status), number of children, general health, month, year of data collection and level of covid restriction.		

The coefficients on being active are higher for disabled women than men (0.352 converts to a monetary figure of £5,400, 0.302 converts to a monetary figure of £4,600). Interestingly, the coefficients on being fairly active are higher for disabled men than women.

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