
Sharing the benefits
of healthy living
Vitality
Protective benefits
of the Vitality
Programme.
Physical activity.
Health insurance · Life insurance · Car insurance · Investments

Contents.

1 Introduction.

Key highlights:

The World Health Organisation recently published guidelines on the amount of physical activity a person should perform over a week.

It recommends doing at least **150-300 minutes** of moderate-intensity physical activity, or least **75-150 minutes** of vigorous-intensity physical activity, or an equivalent combination of the two, as well as muscle-strengthening activities on **2 or more days** a week.

Physical activity can have a profound impact on mental wellbeing. According to PAGAC (2018), around **30 minutes** of physical activity per day may reduce the likelihood of experiencing depression by more than **40%**.

In the UK, **35.9% adults** and up to **80% adolescents** do not meet the lower limit of the range recommended by WHO.

According to World Health Organization's (WHO) broad definition, physical activity refers to any bodily movement that results in energy expenditure, including walking, cycling, wheeling, sports, active recreation, play and gardening. Physical activity is a natural part of our lives, yet the amount of physical activity that we engage in is largely subject to personal choice and may vary considerably from one person to another as well as for a given person over time. Physical activity has been conclusively shown to have both short- and long-term beneficial effects on both physical and mental health and should be encouraged at any age.

Even though the beneficial effects of physical activity are generally consistent across the various aspects of human health, the extent to which an activity contributes to health improvement depends on many factors, including type of activity, its duration, intensity and frequency.

All types of activity can be characterised by their energy expenditure, typically expressed in kilojoules (kJ), kilocalories (kcal or Cal) or METs (metabolic equivalents of task), a standardised measure which explicitly relates energy expenditure to a person's weight.

This is particularly useful in order to establish a common denominator for different types of activity, reflecting that e.g. going for a run is considerably more demanding – and provides greater benefits – than going for a walk. Combined with duration, one can therefore determine the total energy expenditure for an activity or for the day as a whole.

This is also reflected in the official WHO guidelines, which refer to the minimum recommended amount of activity per week and recognise that vigorous-intensity (e.g. running, fast-cycling) activity is broadly twice as demanding (i.e. results in twice as much energy expenditure per unit of time) as moderate-intensity activity (e.g. fast-pace walking or cycling at a regular pace).

The term "physical activity" should not be confused with "exercise", which is a subcategory of physical activity that is planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness.

Similarly, it should not be confused with "physical fitness", which relates to a set of attributes that people have or achieve, an ability to carry out tasks with vigour and without fatigue. This may cover cardiorespiratory endurance muscular endurance, muscular strength, body composition, or flexibility.

Lastly, a lack of physical activity should not be confused with sedentary behaviour, which has recently gained in importance as a separate major mortality risk factor[1]. Indeed, individuals can be considered both active and sedentary at the same time and should aim to increase or maintain their physical activity levels while also reducing or maintaining low levels of sedentary behaviour.

1. Physical activity, inactivity, and sedentary behaviours: definitions and implications in occupational health.

Physical activity guidelines.

The new World Health Organisation guidelines on physical activity and sedentary behaviour published in November 2020 recommend, for adults aged 18 years or more, the following:

Do at least 150-300 minutes of moderate-intensity physical activity throughout the week or do at least 75-150 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.

Do muscle-strengthening activities involving major muscle groups on 2 or more days a week.

Limit the amount of time spent being sedentary, replacing it with physical activity of any intensity.

2

Prevalence of physical inactivity.

Most recent global estimates show that 27.5% adults[2] and up to 81% adolescents[3] aged 11-17 do not meet the lower limit of the range recommended by the 2020 WHO guidelines for aerobic exercise, set to 150 minutes of moderate-intensity physical activity.

In the UK, adults are doing worse than the global average, with 35.9% being physically inactive (31.5% for men, 40.0% for women). Prevalence of physical inactivity has also been increasing over time in high-income countries, increasing by more than 16% between 2001 and 2016.

Critically, significant differences exist between population subgroups. Only approximately 20% of the least deprived[4] individuals in the UK do less than 30 minutes of moderate physical activity a week while 70% are sufficiently active. On the contrary, in the most deprived areas these shares are 34% and 55%, respectively, i.e. a difference of approximately 15 percentage points.

Women show consistently worse outcomes than men across all population breakdowns, as do older individuals compared to younger ones.

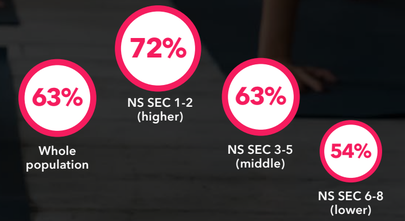
National Statistics Socio-economic Classification (NS-SEC) is the official social economic classification based on occupation in the UK (see infographic).

As statistics show, physical activity levels vary greatly between different social economic groups.

2. Worldwide trends in insufficient physical activity from 2001 to 2016.
3. Global trends in insufficient physical activity among adolescents.
4. Deprivation is defined by the Ministry of Housing, Communities and Local Government for 30,000+ small areas in the UK and takes into account income, employment, education, health, crime, barriers to housing and services, and living environment in the given area.
5. Sport England. Active Lives Adult Survey.

Percentage of active adults across England

Proportion of members doing at least 150 minutes of exercise each week.



A rating of 8 indicates never being in long-term employment up to 1 which indicates higher managerial and professional occupations[5].

3

Benefits of physical activity: physical health.

Insufficient physical activity is one of the leading risk factors for death worldwide and increasing physical activity can dramatically reduce a member's overall mortality risk.

Insufficient physical activity is estimated to cause 9% of all preventable deaths due to heart disease in the UK[6]. However, given the strong links between physical activity and biometric risk factors, such as high blood pressure, cholesterol, blood glucose and BMI, the actual long-term effects are significantly higher; estimates by Public Health England rank physical activity equal to smoking, causing one in six deaths in the UK and costing up to £7.4 billion annually, including £0.9 billion to the NHS alone[7]. The data suggests that the benefits are even greater for women than men.

More generally, the recently published WHO guidelines[8] list physical activity as a critical determinant of health outcomes for adults ranging from adiposity (weight gain, change, control) and cognitive and mental health outcomes, including symptoms of anxiety and depression, to adverse events in general. In particular, regular physical activity is proven to help prevent and manage noncommunicable diseases (NCDs) such as heart disease, stroke, diabetes and several cancers.

The estimates suggest that regular physical activity reduces risk of developing type 2 diabetes by up to 40%, dementia by up to 30% and various types of cancer by up to 30%[9].

What is more, high-intensity exercise has been shown to provide benefits above and beyond light moderate physical activity through improving overall fitness levels.

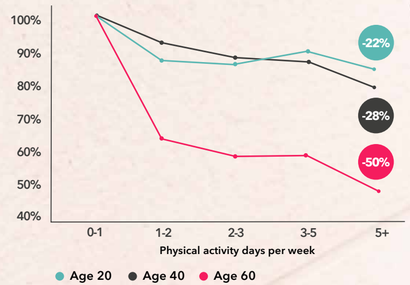
Estimates suggest that regular physical activity reduces risk of developing type 2 diabetes by up to 40%, dementia by up to 30% and various types of cancer by up to 30%.

Cardiorespiratory fitness, the level at which heart, lungs and muscles work together when exercising for an extended period of time, is estimated to have up to twice as much direct impact on risk of premature death. It is measured by VO2 max, which had historically been measured by specific running, treadmill or cycling tests but has recently been introduced as a core measure in various wearable activity trackers, greatly increasing its accessibility to the general public.

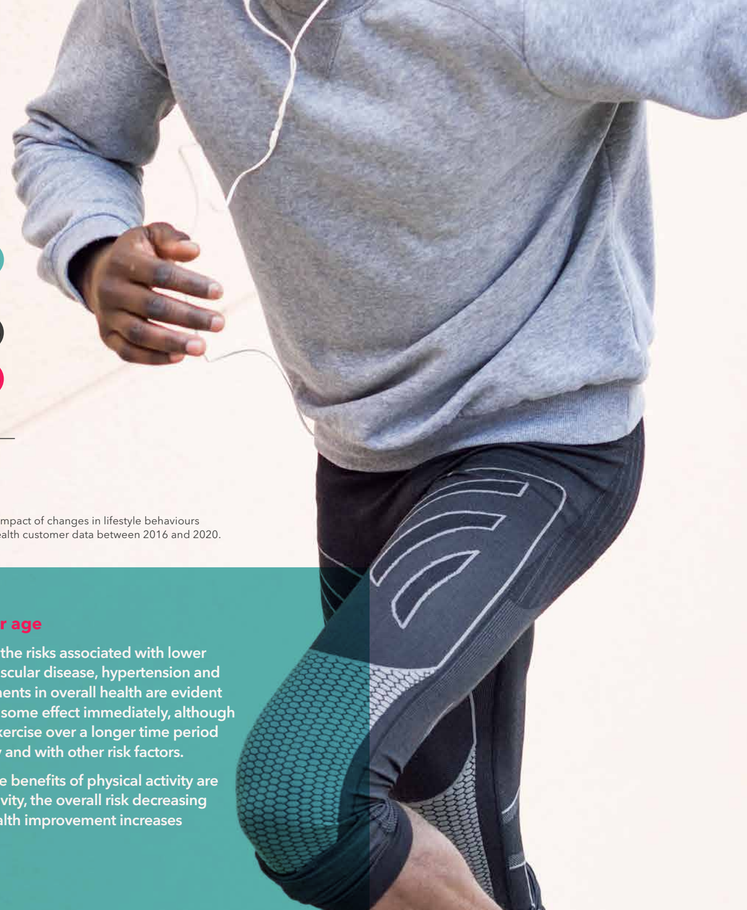
Williams PT. Physical fitness and activity as separate heart disease risk factors: a meta-analysis. Med Sci Sports Exerc. 2001; 33:7 54-761

6. GBD Results Tool.
7. Public Health England. Physical activity: applying All Our Health.
8. World Health Organization 2020 guidelines on physical activity and sedentary behaviour.
9. Public Health England. Physical activity: applying All Our Health.

Risk of claiming in-hospital over the next 12 months based on number of days of physical activity*



*A Bayesian Network was used for causal inference and the expected impact of changes in lifestyle behaviours estimated using do-calculus. Models were built on Vitality Life and Health customer data between 2016 and 2020.



Vitality Insights

Physical activity is beneficial at any level or age

As an individual's level of physical activity increases, the risks associated with lower levels of physical activity, such as the risk of cardiovascular disease, hypertension and diabetes, are reduced substantially. These improvements in overall health are evident even after just one physical activity session and take some effect immediately, although most of the benefits are achieved through regular exercise over a longer time period due to the substantial links between physical activity and with other risk factors.

Analysis done by Vitality shows that while the relative benefits of physical activity are greatest when moving from no to some physical activity, the overall risk decreasing linearly beyond that point. The magnitude of the health improvement increases significantly with age.

4

Benefits of physical activity: mental health.

Increasing physical activity has been shown to improve quality of sleep, help individuals perform everyday tasks more easily and feel better overall. Physical activity has been shown to improve cognitive skills such as the ability to plan and organise, control emotions, improve memory, attention and academic performance.

A meta-analysis of 15 studies, lasting between 1-12 years involving over 33,000 individuals, found that physical activity is associated with a 38% reduced risk of cognitive decline. Cognitive decline[10] includes everything from the ability to concentrate to dementia.

The benefits of physical activity can be felt immediately. For example, a single session of moderate-to-vigorous activity will provide a number of health benefits including reducing anxiety symptoms, improving sleep and improving cognition on the day the physical activity event is performed. Performing physical activity regularly, will often enhance these benefits further.

Depression and physical activity

According to the World Health Organisation, depression is one of the leading causes of disability worldwide, affecting over 264 million people. It can affect anyone at any age and affects more women than men. Around 800,000 people die each year due to depression, and it is the second leading cause of death for people aged between 15-29 years old.[11]

Physical activity has been shown to help reduce depressive symptoms in individuals with or without clinical depression and can also help reduce the risk of an individual developing clinical depression. According to PAGAC, around 30 minutes of physical activity per day may reduce the likelihood of experiencing depression by more than 40%.[12]

Sleep and physical activity

There is strong evidence demonstrating that moderate to vigorous physical activity improves quality of sleep in a number of ways, including reducing the amount of time it takes to fall asleep and increasing the amount of time spent in deep sleep. It can also help to reduce daytime sleepiness. The effects of physical activity on sleep can be felt immediately.[13]

10. Physical activity and risk of cognitive decline: A meta-analysis of prospective studies.
11. Depression, World Health Organisation
12. 2018 Physical Activity Guidelines Advisory Committee Scientific Report.
13. Physical activity and risk of cognitive decline: A meta-analysis of prospective studies.
14.Walking in (affective) circles: Can short walks enhance affect?, Ekkeakakis et al., 2000.
15. Job strain and leisure-time physical activity in female and male public sector employees, Kuovonen et al., 2005.
16. The size, burden and cost of disorders of the brain in the UK.
17. Prevalence, incidence, morbidity and treatment patterns in a cohort of patients diagnosed with anxiety in UK
18. Coronavirus: Mental Health in the Pandemic

Mood and physical activity

Physical activity has also been shown to have a positive impact on people's mood. According to Ekkeakakis, who asked participants to rate their mood following a period of activity, such as going for a walk, and after periods of inactivity, such as reading a book, participants felt calmer, had more energy and felt more content, compared to periods of physical inactivity[14]. Physical activity can also be very effective in relieving stress; highly active individuals tend to have lower stress rates compared to individuals who are less active.[15]

Anxiety and physical activity

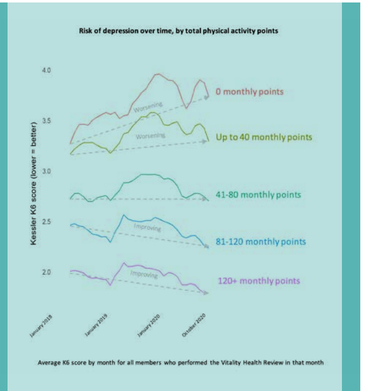
Anxiety affects a large number of people every year. In 2013 there were 8.2 million cases of anxiety in the UK. Anxiety can affect anyone at any age, however in England women are almost twice as likely to be diagnosed with an anxiety disorder than men.[17]

According to PAGAC (2018), engaging in regular exercise can reduce symptoms of anxiety in individuals with acute symptoms of anxiety and individuals with chronic levels of anxiety. The benefits of engaging in physical activity can have a positive impact on anxiety immediately.

Vitality Insights

Research done by Vitality confirms findings from the prior literature that high levels of physical activity (members earning higher levels of physical activity points) are related to improved levels of mental wellbeing and vice versa. There appears to be a dose-response relationship; the more physical activity one does, the larger the reduction in overall risk.

Vitality's research also shows that mental wellbeing for those with low levels of physical activity has been worsening over time in the recent years, as shown in the associated graphic. The opposite also holds true as mental wellbeing of those with high levels of physical activity has been improving over time.



Mental health during the COVID-19 pandemic

According to a UK-wide, long-term study into mental health changes during the COVID-19 pandemic carried out by the Mental Health Foundation, more than half of adults and over two thirds of young people said their mental health had declined during lockdown. For those already experiencing mental health problems, some of the symptoms have gotten worse during the pandemic[18]. Additionally, many people who were not experiencing mental health problems have developed mental health problems as a result of the pandemic.

These findings have been confirmed by a survey by Vitality which found that one in five members were more anxious and one in four were more stressed than in the pre-lockdown period.

Critically, while over 80% of UK adults have experienced stress as a result of the pandemic, nearly 60% of those said that physical activity – specifically walking – has helped them cope. Walking was found to be the preferred way to cope with stress.

5

Benefits of physical activity: economy.

Physical activity plays an important role in maintaining our overall health - from improving mental wellbeing to reducing the likelihood of developing lifestyle diseases, including diabetes, stroke, heart disease and several cancers. Physical activity also has a big impact on the economy and society, from reducing pressure on the healthcare system to increased productivity in the workplace, which can lead to significant economic benefits.

One study found that physical inactivity cost healthcare systems $53.8 billion globally.

Healthcare system

The costs of physical inactivity on healthcare systems around the world is evident. One study, based on data from 142 countries, representing 93.2% of the world's population, estimated that physical inactivity related deaths contribute $13·7 billion in productivity losses globally.[19] The study also estimated the direct healthcare costs and disability adjusted life years for coronary heart disease, stroke, type 2 diabetes, breast cancer, and colon cancer attributable to physical inactivity. The study found that physical inactivity cost healthcare systems $53.8 billion globally and was responsible for $13·4 million disability adjusted life years (DALYs) globally.

Another study found that 11.1% of health care costs overall in the US were associated with physical inactivity[20]. According to Public Health England physical activity ranks equal to smoking, causing one in six deaths in the UK and costing up to £7.4 billion annually, including £0.9 billion to the NHS alone.[21]

Workplace productivity

A study based on the Physical Activity Module of Statistics Canada's Population Health Model (POHEM-PA), which provides projections of physical activity and other health outcomes in Canada, was used to analyse the impact of getting 10% of Canadians with suboptimal levels of physical activity to move more and reduce their sedentary behaviour between 2015 and 2040. The study found by 2040 gross domestic product (GDP) would increase by a cumulative $7.5 billion as Canadians would be living longer and healthier lives. Reducing sedentary behaviour and increasing physical activity can reduce the total number of days off work (absenteeism) by 90,000 by 2040, which would help to boost productivity. Healthcare spending on hypertension, diabetes, heart disease and cancer would be reduced by $2.6 billion.[22]

Read the full study

A recent study undertaken by Vitality in collaboration with RAND Europe has confirmed these findings and shows that higher levels of physical activity are associated with increased workplace productivity, through reducing the overall levels of sickness, absence and presenteeism (practice of being in work when unwell[23]). When comparing to inactive individuals (individuals doing less than the recommended 600 MET-minutes of physical activity each week), those doing 600–750 MET-minutes of physical activity per week reported 0.8-1.5 percentage point lower average workplace productivity loss.

At the level of the economy, doing the recommended amount of physical activity as outlined by the 2020 WHO guidelines may lead to an increase in the global gross domestic product (GDP) of US$314-$446 billion per year and US$6.0–8.6 trillion cumulatively over 30-year period.

19. Physical Activity Series 2 Executive Committee
20. Inadequate physical activity and health care expenditures in the United States.
21. Physical activity: applying All Our Health.
22. Moving Ahead: The Economic Impact of Reducing Physical Inactivity and Sedentary Behaviour
23. Estimating the global economic benefits of physically active populations over 30 years (2020-2050), Hafner et al, 2020

Vitality Insights

A novel study by Vitality, based on data from more than 30,000 employees in the UK collected in the 2017 Britain's Healthiest Workplace survey, looked at understanding the different factors that impact employee's productivity.[25]

Three individual structural equation models were constructed.

The first was a **Personal Model,** which measured influences such as mental health, physical health and sleep etc. Mental and physical health were found to have the strongest direct influences on workplace productivity, with coefficients of 0.296 and 0.260 respectively.

The **Job Model** analysed the influence of job-related factors such as work commuting time, work engagement and job characteristics. Job characteristics (coefficient of 0.291) was found to have the biggest impact on workplace productivity. Employees facing less stress at work and those more satisfied with their job are on average more productive.

The final individual model, the **Workplace Model,** analysed the influence of workplace and organisational factors such as support available, work engagement and managerial support. Support from the organisation (coefficient of 0.108) and managerial support (coefficient of 0.030) were both found to be statistically significant predictors of work engagement and productivity. Both were also found to indirectly affect productivity through work engagement.

The models were then combined. Physical activity (coefficient of 0.248), alongside mental health (coefficient of 0.268) and broader job characteristics (coefficient of 0.140) were among the most important factors that were found to have an impact on an employee's productivity levels. When looking at the indirect effects, 93% of the indirect effects were found to be mediated through mental and physical health.

16

Impact of COVID-19 and lockdowns on physical activity levels.

The Active Lives survey by Sport England[25] captured the impact the pandemic has had on activity levels. During the mid-March to mid-May period, the number of active adults (classified as someone doing over 150 min of physical activity a week) fell by 7.1% to 58.2%. This resulted in just over 3 million fewer active adults.

In particular, this was due to fewer options for engagement in physical activity as only a handful of activities were permitted during the lockdown periods – primarily walking, cycling, running and informal activities – and general restrictions around contact with others.

Vitality data shows that during the first early lockdown stage, physical activity levels fell by 23% when compared to pre-pandemic levels

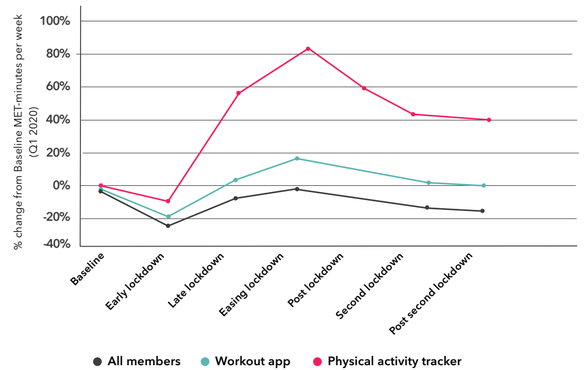
In response to the reduction in steps taken by its members, Vitality introduced Vitality at Home benefits, offering members access to workout apps and discounts on activity trackers to encourage members to work-out at home.

Those who took out a Physical Activity Tracker or signed up to a workout app increased their physical activity above pre-pandemic levels. Those who took out a physical activity tracker also maintained higher levels of physical activity throughout the pandemic.

During the early lockdown stage physical activity levels fell by 23% when compared to pre-pandemic levels.

Looking at daily activity by more than 330,000 Vitality members who tracked their physical activity between 6th January 2020 and 3rd January 2021, physical activity levels fell as the pandemic restrictions took place, as shown in the diagram below:

Physical activity during lockdown



25. Active Lives Adult Survey Coronavirus (Covid-19)

7

Impact of the Vitality Programme.

At Vitality, we're inspired by our core purpose, which is to make people healthier and enhance and protect their lives.

Vitality takes a holistic approach to health and wellbeing. The Vitality Programme has been designed to encourage and reward our members for taking steps to improve their health and wellbeing and has been designed on the foundation of behavioural economics theory. Members are encouraged to get active, stop smoking, reduce alcohol intake, improve diet and improve sleep behaviour.

This is achieved particularly through the Active Rewards Programme, which offers short-term incentives such as weekly coffees, alongside their long-term rewards, such as discounted gym memberships and flights. Members can earn Active Rewards by earning Vitality points. Vitality points can be earned in a number of ways, including:

1. Reaching step targets

WHO recommends doing at least 150-300 minutes of moderate-intensity physical activity each week. One of the ways of reaching this target is by meeting the 10,000 steps per day target five times a week. This steps target is a widely used recommendation to encourage people to increase their physical activity levels.

Vitality encourages its members to reach daily step targets and rewards them for doing so. Members can earn 3, 5, or 8 Vitality points by reaching 7,000, 10,000 or 12,500 steps respectively. Vitality members have access to discounts on activity trackers to encourage them to be more active and to reach their step goals.

2. Exercising at the gym

Another way to reach the WHO physical activity guidelines is by completing 75-150 minutes of vigorous-intensity physical activity throughout the week. Doing a cardio workout at the gym three times a week will ensure you meet the WHO physical activity recommendations.

Vitality offers its members 50% off monthly gym memberships at Virgin Active, David Lloyd and Nuffield Health gyms. Members can earn 5 Vitality points for each visit to one of our partner gyms per day.

3. Heart rate activities

Getting your heart rate up is a great way to meet the physical activity guidelines, this includes activities such as brisk walking, gym workouts, running and cycling. As a general rule everyone should aim to do at least 30 minutes of moderate physical activity every day.

Vitality members can also earn 5 Vitality points for working out for 30 minutes at 60% of their age-related maximum heart rate. This increases to 8 points if a Vitality member works out at 70% of their age-related maximum heart rate for at least 30 minutes.

Case Study.

Proven to incentivise physical activity

A four-year observational study, with over 11,000 UK participants, was undertaken to identify whether the introduction of short-term incentives increased verified physical activity levels and whether these increased levels of physical activity were sustained. Members were identified as having either low, moderate, or high engagement prior to the introduction of Active Rewards.

The study tracked how many active days members recorded each year. An active day refers to a day on which a point earning activity was completed, such as step-tracking, heart rate activities or a gym workout.

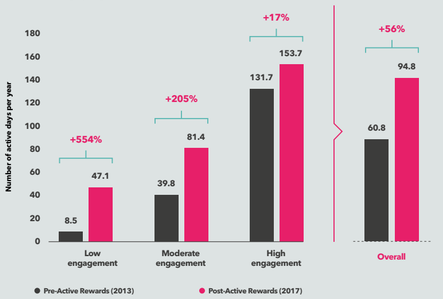
The study found that the average number of active days members recorded increased by 56%, an increase of over 30 days a year[26].

Another study conducted by RAND Europe looked into Vitality's flagship reward: Apple Watch is offered at no additional cost (or at a very reduced price) to those who achieve predefined levels of physical activity, regardless of the type of activity they do.

Looking at more than 400,000 participants across South Africa, United Kingdom and America over a three-year period, the study analysed verified physical activity data including steps, heart rate activities, calories and gym visits.

By comparing Vitality members who received a gain-framed active reward, such as weekly coffees, to those who received the Apple Watch as a loss-framed incentive in addition to the other gain-framed active rewards, the study showed that members with the Apple Watch became even more active than those with other Active Rewards and were able to sustain the increased levels of physical activity over time. Specifically, Vitality UK members with Apple Watch did 27.7% more physical activity, equivalent to more than four extra days of physical activity per month.

Active days per year, before and after Active Rewards.



26. The impact of short-term incentives on physical activity in a UK behavioural incentives programme

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