# WALKING TO WELLBEING:

## Physical Activity, Social Participation and Psychological Health in Irish adults aged 50 years and Older

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# Key Findings

- Two-thirds of the Irish population aged 50 years and older report low or moderate levels of physical activity while only one-third report high levels of activity, based on the International Physical Activity Questionnaire.

- Forty per cent of women report low levels of physical activity compared to 27% of men.

- Low physical activity is almost twice as prevalent in those aged 75 years and older compared to those aged 50-64 years (men: 42% versus 23%; women 59% versus 32%).

- Middle-aged and older Irish adults with high levels of physical activity report greater participation in social activities, better self-rated health, better quality of life and lower loneliness scores compared to those with low physical activity levels.

- Middle-aged and older adults with low levels of physical activity are over twice as likely to have clinically relevant depressive symptoms as those with high levels of physical activity (14% versus 6%).

- Only three out of five Irish adults meet the recommended physical activity level of 150 minutes walking per week.

- Those walking 150 minutes per week are more socially active and have better wellbeing highlighting that a simple and accessible activity like walking is sufficient to achieve better quality of life.

- Policies and initiatives aimed at increasing physical activity including walking have the potential to improve physical health, social engagement and overall wellbeing among the over 50s in Ireland.

# Contents

# 1 Introduction

Physical activity is widely recommended as an essential component of a healthy lifestyle at all ages. The National Guidelines on Physical Activity for Ireland recommend that all adults take part in at least 30 minutes of moderate intensity activity on five days per week, to total at least 150 minutes per week (1). Total activity can be accumulated across multiple sessions of at least 10 minutes. In addition, adults aged 65 years and older should add muscle strengthening and balance exercises on two days per week to reduce the risk of falls (1).

Physical activity can include leisure time activities, transportation (walking or cycling), occupational activities, household chores, planned exercise or taking part in play, games and sports as part of daily, family or community activities (2). Walking is the most common and accessible activity for older adults and brisk walking for 150 minutes per week is also sufficient to meet the physical activity guidelines. The *Get Ireland Active* (3) and *Get Ireland Walking* (4) initiatives aim to increase the number of Irish people of all ages who take part in physical activity and/or walking for fitness, health and wellbeing benefits.

There is strong evidence supporting the health benefits of physical activity in adults aged 65 years and over. This evidence shows that more physically active older adults have increased cardiorespiratory and muscle fitness, lower body fat, a more favourable metabolic profile and lower rates of cardiovascular disease (including high blood pressure, stroke, type 2 diabetes), cancer (colon and breast), and all-cause mortality. In addition, older adults who are physically active have better cognitive function and functional health and a lower risk of falling (2). It is estimated that physical inactivity is responsible for a significant proportion of the world's major non-communicable diseases (ranging from 6% for coronary heart disease to 10% for breast or colon cancer). Increasing activity could also be expected to increase average life expectancy in Ireland by up to almost 1 year (5).

A physically active lifestyle can increase wellbeing, particularly improving mental health and quality of life (6, 7). Social participation and engagement is also an important component of successful ageing, however this area tends to receive less attention than the physical health benefits. Therefore, the purpose of this report is to examine the

associations between physical activity and indicators of social participation and wellbeing in middle-aged and older Irish adults.

## Data and Methods

This report uses data collected during the first wave of The Irish Longitudinal Study on Ageing (TILDA), a prospective study of 8,172 adults aged 50 years and older, representative of the community-dwelling middle-aged and older Irish population. Data was collected between October 2009 and February 2011. Social interviewers visited the respondents in their own homes to complete a comprehensive Computer Assisted Personal Interview (CAPI). This included detailed questions on socio-demographics, living circumstances, income and wealth, physical, mental and behavioural health, health care utilization, social support and social participation. Participants were also asked to fill out a self-completion questionnaire (SCQ) which included more sensitive questions about relationships, alcohol use and attitudes to ageing. Body Mass Index (BMI) was measured as part of a centre-based health assessment, which also included tests of cognition, cardiovascular function, mobility, vision and bone health.

In this report, we present the percentage of respondents classified into different groups or average scores (means) on the different outcome scales. Most estimates are provided with a 95% confidence interval which can be interpreted as a 95% chance that the sampled confidence interval includes the true population value. All estimates are weighted to account for age, sex and educational attainment in the 2011 Census ensuring that these estimates are representative of the whole population aged over 50 in Ireland.

## Structure of the report

The report is organised as follows. Chapter 2 describes the characteristics of the TILDA sample and their physical activity levels. Chapter 3 outlines the associations between physical activity and various measures of social participation and wellbeing. Chapter 4 uses walking as an indicator of physical activity and again, presents the associations with social participation and wellbeing. Chapter 5 summarises the findings, highlights the relevance to successful ageing and suggests areas in which these findings could inform policy.

# 2 Descriptive characteristics

Characteristics of the TILDA respondents are shown in Table 2.1. Over half of the sample (57%) are aged 50-64 years, while 21% are 75 years or older. Just over half (51%) are women. Forty-nine per cent of respondents completed secondary level education while an additional 18% completed third level education.

Respondents were asked whether a doctor had ever told them that they had any of the following conditions: heart attack, heart failure, angina, heart murmur, Parkinson's disease, stroke, mini-stroke, diabetes, lung disease, asthma, arthritis, cataracts, glaucoma, age-related macular degeneration, osteoporosis, cancer, peptic ulcer, hip fracture, high blood pressure and high cholesterol. The number of conditions reported by each respondent was categorised as 0-1, 2 and 3 or more conditions. Almost half of the respondents reported none or one GP diagnosed condition while 22% and 29% reported 2 conditions and 3 or more conditions respectively. The most common conditions were high cholesterol (37%), high blood pressure (37%) and arthritis (27%) while the prevalence of other conditions such as diabetes, asthma, cataracts and osteoporosis varied from 8% to 12%.

Participants were shown a list of 12 basic and instrumental activities of daily living (ADLs) such as walking across a room, using the toilet, cooking a hot meal and managing money. Disability was defined as difficulty in at least one of these activities. Only 13% had difficulty with any one of these activities.

As highlighted in a previous TILDA report, 36% of middle-aged and older Irish adults are obese while 43% are overweight (8).

*Table 2.1: Descriptive characteristics*

|  | Percentage (95% CI) |
|---|---|
| **Sex** |  |
| Male | 49 (48-50) |
| Female | 51 (50-52) |
| **Age group** |  |
| 50-64 | 57 (55-58) |
| 65-74 | 22 (21-23) |
| 75+ | 21 (20-23) |
| **Education** |  |
| Primary | 33 (31-34) |
| Seconday | 49 (48-50) |
| Teritary | 18 (17-19) |
| **Body Mass Index** |  |
| Underweight | 1 (0-1) |
| Normal weight | 21 (20-22) |
| Overweight | 43 (41-44) |
| Obese | 36 (34-37) |
| **Number of conditions*** |  |
| 0-1 | 48 (47-49) |
| 2 | 22 (21-23) |
| ≥3 | 29 (28-31) |
| **Disability*** |  |
| 0 ADL or IADL | 87 (86-88) |
| ≥1 ADL or IADL | 13 (12-14) |

**Note. CI = confidence interval; ADL = Activities of Daily Living; IADL = Instrumental Activities of Daily Living.**

*Number of conditions from: heart attack, heart failure, angina, heart murmur, Parkinson's disease, stroke, mini-stroke, diabetes, lung disease, asthma, arthritis, cataracts, glaucoma, age-related macular degeneration, osteoporosis, cancer, peptic ulcer, hip fracture, high blood pressure and high cholesterol.

**Disability indicated by difficulty in: dressing, walking across room, bathing or showering, eating, getting in or out of bed, using toilet, preparing a meal, household chores, grocery shopping, using telephone, taking medications, managing money.

## Physical activity in the Irish population

In TILDA, physical activity is measured using the short form International Physical Activity Questionnaire (IPAQ). Respondents were asked to indicate the number of days and typical time per day spent walking and doing physical activities of vigorous or moderate intensity during the last week (9). Vigorous activities require hard physical effort, resulting in breathing much harder than normal and can include heavy lifting, digging, aerobics or fast cycling. Moderate activities require moderate physical effort resulting in breathing somewhat harder than normal, for example carrying light loads, cycling at regular pace or doubles tennis. The total time spent in each activity is weighted based on the energy requirements of the activity giving a score in MET-minutes/week for each respondent. They are then classified as having High, Moderate or Low Activity levels based on the criteria in Table 2.2 (10).

*Table 2.2: Physical Activity Classifications*

| Physical activity classifications | |
|---|---|
| High Activity | Any one of the following 2 criteria:<br><br>• Vigorous intensity activity on 3 or more days week accumulating at least 1500 MET-minutes/week<br><br>OR<br><br>• Any combination of walking, moderate or vigorous intensity activities on 7 days per week accumulating at least 3000 MET-minutes/week |
| Moderate Activity | Any one of the following 3 criteria:<br><br>• Vigorous intensity activity of at least 20 minutes on 3 or more days per week<br><br>OR<br><br>• Moderate intensity activity of at least 30 minutes on 5 or more days per week<br><br>OR<br><br>• Any combination of walking, moderate or vigorous intensity activities on 5 or more days per week accumulating at least 600 MET-minutes/week |
| Low Activity | Meeting none of the criteria for high or moderate activity |

Overall one third of the Irish population meet the criteria for high activity levels, one third have moderate activity levels and one third have low activity levels (see Table 2.3). Men are more likely to report high activity levels than women (41% versus 26%) and less likely to report low activity levels (27% versus 40%). Irish adults are less likely to report high physical activity levels as they get older and this is especially evident in women where 31% of those aged 50-64 years report high physical activity compared to 11% of those aged 75 years and older. Approximately two in five men (42%) and three in five (59%) women aged 75 years and older report low activity levels.

*Table 2.3: Prevalence of physical activity*

| | Low | | Moderate | | High | | Total | Number in sample |
|---|---|---|---|---|---|---|---|---|
| | % | (95% CI) | % | (95% CI) | % | (95% CI) | | |
| **Male** | | | | | | | | |
| 50-64 | 23 | (21-25) | 29 | (27-31) | 48 | (45-50) | 100 | 2055 |
| 65-74 | 24 | (22-27) | 39 | (35-42) | 37 | (34-41) | 100 | 1059 |
| ≥75 | 42 | (38-47) | 31 | (27-35) | 27 | (23-31) | 100 | 590 |
| *Total* | *27* | *(25-29)* | *32* | *(30-33)* | *41* | *(39-43)* | *100* | *3704* |
| **Female** | | | | | | | | |
| 50-64 | 32 | (30-34) | 37 | (35-39) | 31 | (29-34) | 100 | 2556 |
| 65-74 | 39 | (36-43) | 35 | (32-38) | 26 | (23-29) | 100 | 1093 |
| ≥75 | 59 | (56-63) | 29 | (26-33) | 11 | (9-14) | 100 | 740 |
| *Total* | *40* | *(38-42)* | *35* | *(33-36)* | *26* | *(24-28)* | *100* | *4389* |
| **Total** | | | | | | | | |
| 50-64 | 27 | (26-29) | 33 | (31-35) | 40 | (37-42) | 100 | 4611 |
| 65-74 | 32 | (30-34) | 37 | (34-39) | 31 | (29-34) | 100 | 2152 |
| ≥75 | 51 | (48-54) | 30 | (27-33) | 19 | (16-21) | 100 | 1330 |
| *Total* | *33* | *(32-35)* | *33* | *(32-35)* | *33* | *(31-35)* | *100* | *8093* |

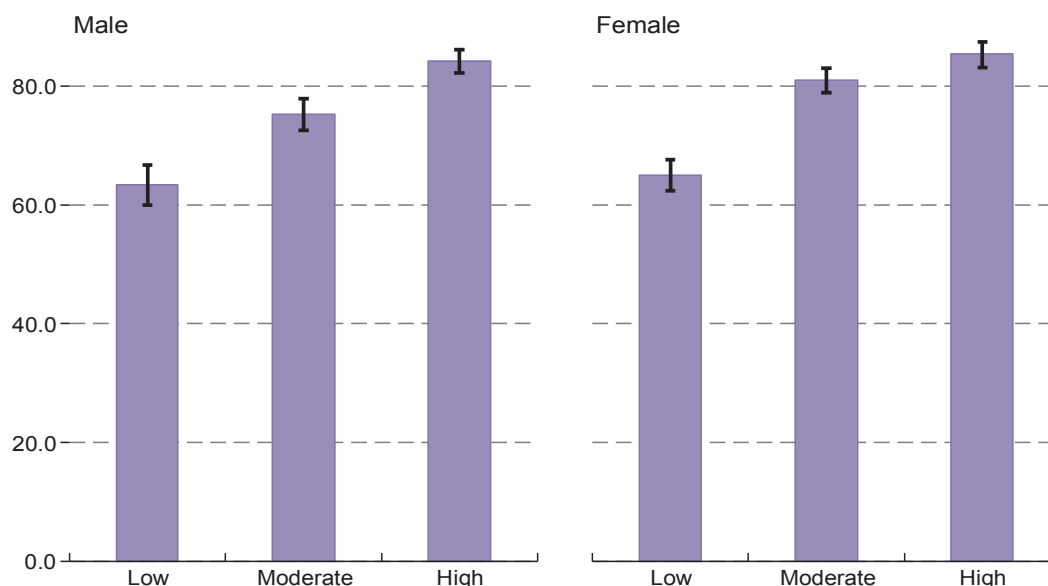Note. CI = confidence interval; Missing observations = 0.97%

# 3 Associations between physical activity and measures of wellbeing

## Physical activity and self-rated health

In TILDA, self-rated health is obtained by asking respondents to rate their health relative to people of the same age using the following categories: excellent, very good, good, fair or poor. Responses were divided into two categories - good (excellent, very good, good) or poor (fair, poor). Self-rated health is a good indicator of overall wellbeing with poorer self-rated health being predictive of future disease, functional decline, use of healthcare services and mortality (11-13).

The vast majority (85%) of middle-aged and older Irish adults who report high levels of physical activity have good self-rated health compared to 64% of those with low levels of physical activity. This pattern is consistent across all age groups and in men and women (see Figure 3.1). This supports previous research which also found that more physical activity is associated with better self-rated health in older adults (14).

*Figure 3.1: Self-rated health by physical activity and sex*



Note. N = 8092; Missing obs = 80; Error bars correspond to 95% confidence intervals

## Physical activity and quality of life

Quality of life is the general wellbeing of a person. In TILDA, quality of life is measured using the CASP-19 scale which include 19 items that cover four main areas: control (the ability to actively participate in one's environment), autonomy (the right of an individual to be free from the unwanted interference from others), self-realisation (the fulfilment of one's potential) and pleasure (the sense of happiness or enjoyment one derives from engaging with life). Scores on each item are summed and the overall score ranges from 0-57, with higher scores indicating better quality of life (15). The scale has been used in other longitudinal studies on ageing and has good psychometric, or measurement, properties (16).

The average CASP-19 score for TILDA respondents is 43 which represents 75% of the total score and indicates high levels of quality of life (17). Figure 3.2 shows that Irish adults engaged in high levels of physical activity score higher on the CASP-19 scale compared to those with low levels of activity (45 versus 42) and therefore report better quality of life. The relationships between physical activity and quality of life are similar in men and women and across all age groups (data not shown).

*Figure 3.2: CASP Quality of Life score by physical activity and age*
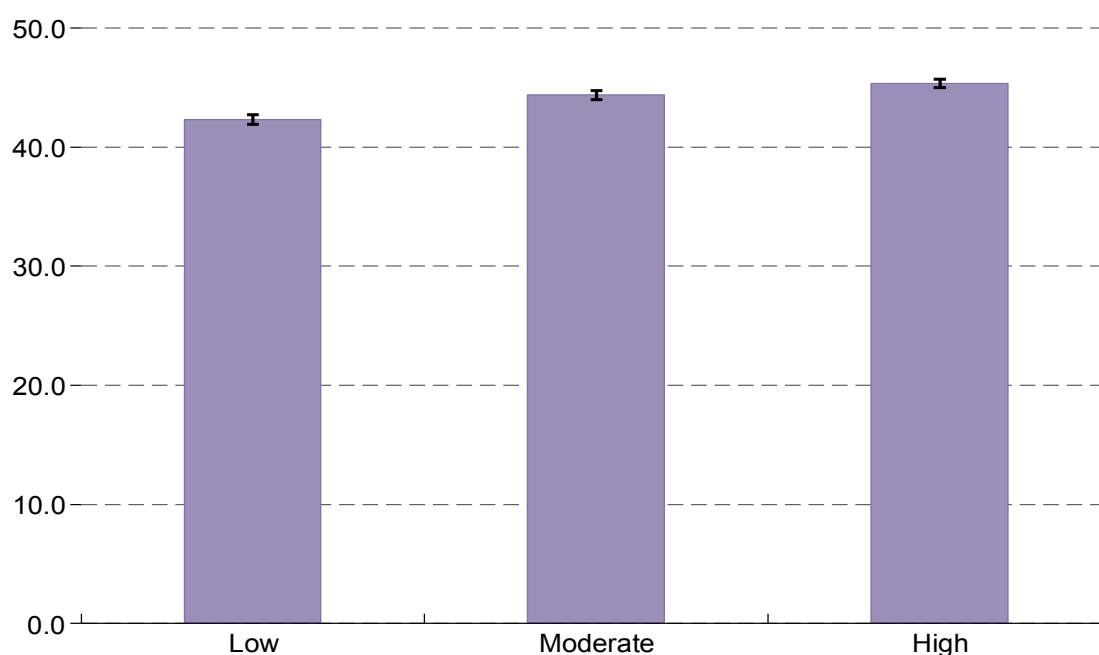


Note. N = 5823; Missing obs = 2349; Error bars correspond to 95% confidence intervals

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## Physical activity and mood

Positive mood is an important component of wellbeing throughout the lifespan. Depressive symptoms are measured in TILDA using the Centre for Epidemiologic Studies Depression scale (CES-D). Respondents use a 4 point scale to rate how often they experienced each of 20 depressive symptoms over the past week (18). An individual scoring 16 or more (out of 60) can be classified as having clinically relevant depressive symptoms (19).

A previous report showed that the overall prevalence of clinically relevant depressive symptoms in middle-aged and older Irish adults is 10% (20). However, this prevalence varies depending on the level of physical activity. Clinically relevant depressive symptoms were less common in adults with high physical activity compared to those with moderate and low activity levels (6% versus 14%; see Figure 3.3). While the prevalence of clinically relevant depressive symptoms is higher in women than men (12% versus 7%), the associations with physical activity are similar in both genders.

*Figure 3.3: Clinically relevant depressive symptoms by physical activity*
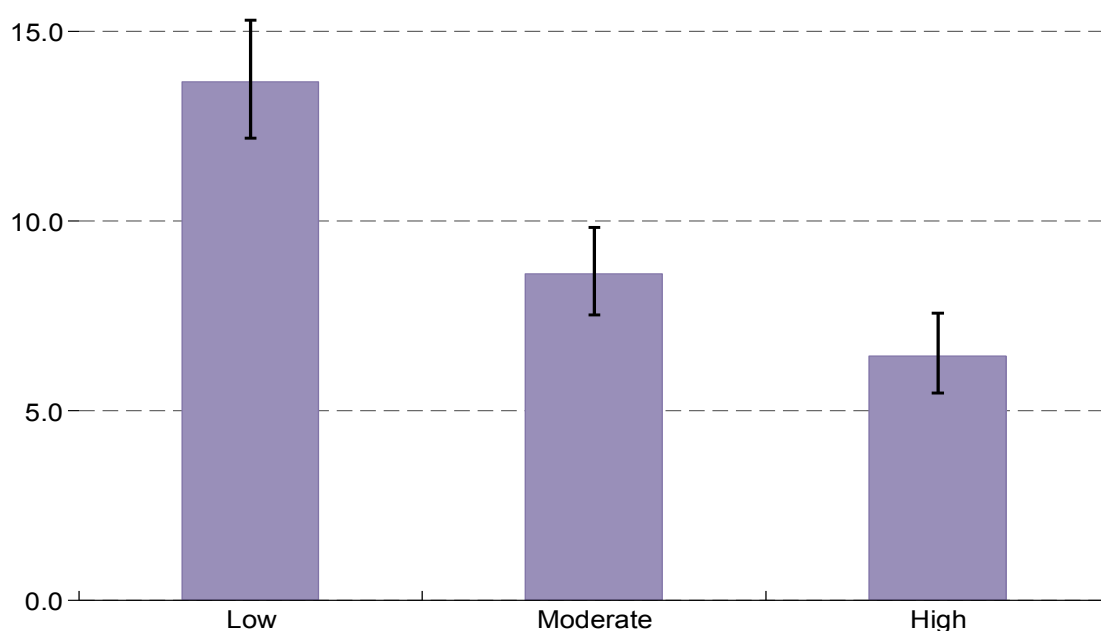


Note. N = 7966; Missing obs = 206; Error bars correspond to 95% confidence intervals

## Physical activity and loneliness

Loneliness reflects 'an individual's evaluation of their overall level of social interaction, and describes a deficit between the actual and desired quality and quantity of social engagement' (21). This can relate to feelings of missing close personal relationships (emotional loneliness) or a wider social network (social loneliness) (22). Loneliness in older adults has been associated with declines in physical, mental and cognitive health and increased risk of mortality (23). Loneliness has also been associated with reduced physical activity at baseline and after 3 years in a population study (24). However, engagement in group-based exercise involving either aerobic exercise (e.g. walking) or mild stretching and toning exercises over 6 months has been found to reduce loneliness in a clinical trial (25). In TILDA, loneliness is measured with a modified version of the University of California-Los Angeles (UCLA) Loneliness scale (26). This version includes five items, each with three response options (hardly ever or never, some of the time, often). Responses are summed and the overall score ranges from 0 (not lonely) to 10 (extremely lonely).

The average loneliness score in the Irish population aged 50 years and older is 2 indicating low overall levels of loneliness. Women who engage in moderate to high levels of physical activity have lower loneliness scores compared to those with low levels of physical activity (1.9 versus 2.4), however this relationship is not evident in men (see Figure 3.4).

*Figure 3.4: Loneliness by physical activity and sex*
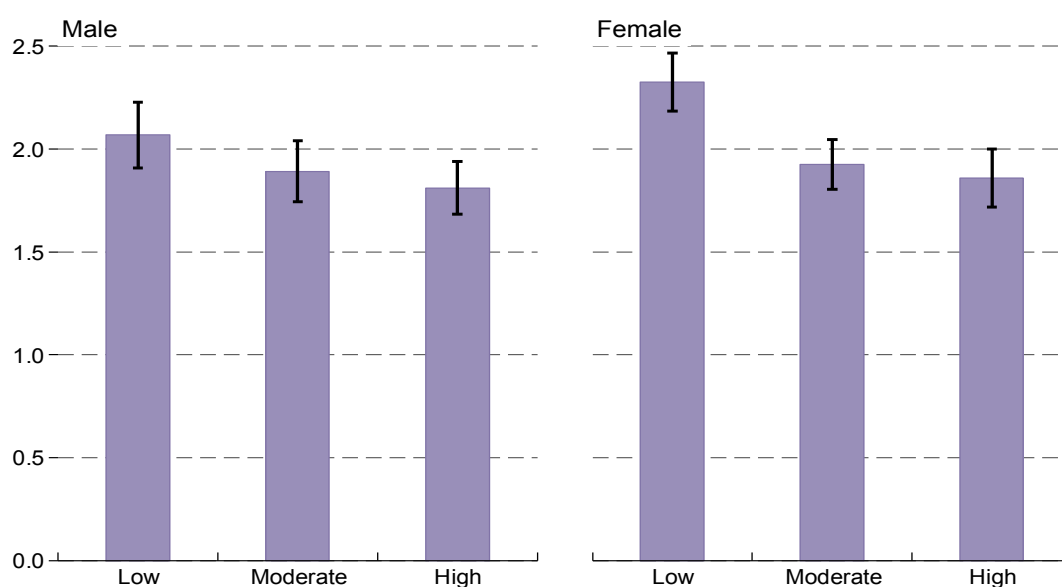


Note. N = 6622; Missing obs = 1550; Error bars correspond to 95% confidence intervals

## Physical activity and social participation

Participation in leisure activities is an important aspect of an older adult's social engagement. Social participation is measured using a scale proposed by House et al (27). A number of social activities were provided and respondents were asked to indicate how often they took part in each activity from a range of response options. These activities were categorised into four groups (i) intimate social relationships (daily visits to or from family and friends), (ii) formal organisational involvements outside of work (going to religious services or meetings at voluntary associations at least once a month), (iii) active and relatively social leisure activities (going to classes, lectures, movies, plays and concerts, playing cards or bingo, eating outside the house, taking part in sports at least once a month) and (iv) passive and relatively solitary leisure activities (watching television, listening to the radio, or reading at least once a month).

Active social participation and formal organisational activities outside of work are more common in adults with moderate and high levels of physical activity compared to those with low levels (see Figure 3.5). Women were less likely to engage in these activities compared to men (58% versus 63% for formal activities; 85% versus 90% for active and social activities) as were adults aged 75 years and older compared to those aged 50-64 years (results not shown). While 59% of women reported intimate social relationships compared to 34% of men, this was not affected by physical activity levels. Passive and solitary activities were also not affected by age, gender or physical activity levels.

*Figure 3.5: Social Participation by Physical Activity*
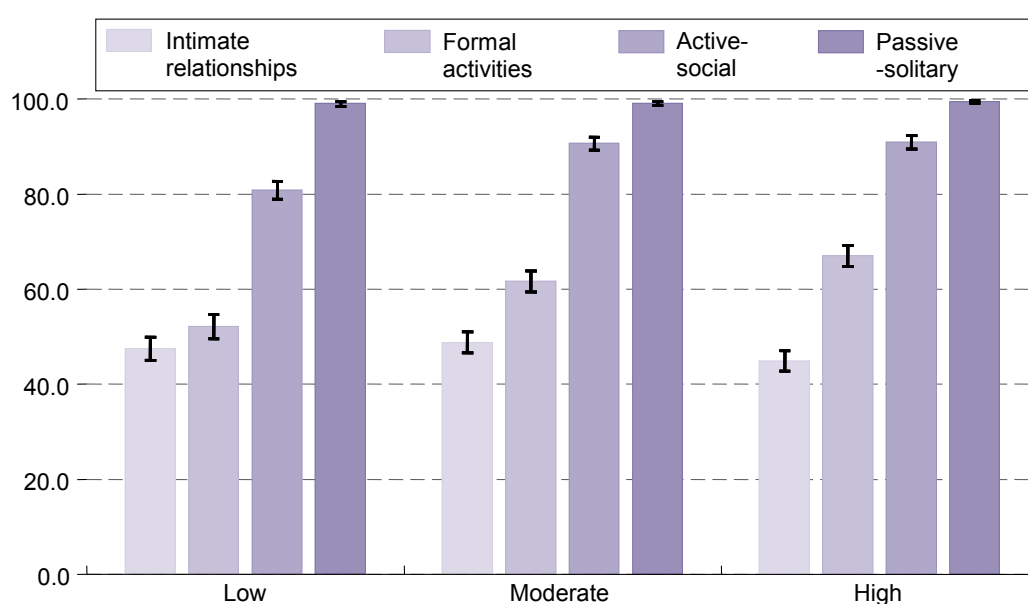


Note. N = 6741; Missing obs = 1431; Error bars correspond to 95% confidence intervals

## Physical activity and volunteering

Volunteering is an activity that provides social and economic benefits and is often viewed as a 'cornerstone of productive ageing' (28). Lum et al. reported that older adults who volunteered for at least 100 hours per year had slower declines in self-rated health and physical functioning, slower increases in depression levels, and lower mortality rates compared to those who volunteered for less than 100 hours per year. In TILDA, voluntary work is assessed by the question 'How often, if at all, do you do voluntary work?'. We examined how physical activity level affected whether someone volunteered at least once per month and at least once per week.

Overall, 26% of middle-aged and older Irish adults volunteer at least once per month while 15% volunteer at least once per week. Compared to those with low levels of physical activity, those who are highly active are more likely to volunteer at least once per month (30% versus 22%) and at least once per week (17% versus 13%). Adults aged 65-75 years are most likely to volunteer while adults aged 75 and older are least likely to volunteer (see Table 3.1). The prevalence of volunteering is also relatively similar in men and women (results not shown).

*Table 3.1: Volunteering by Physical Activity and Age*

| | Volunteering at least once per month | | Volunteering at least once per week | |
|---|---|---|---|---|
| | % | (95% CI) | % | (95% CI) |
| **50-64** | | | | |
| Low | 24.1 | (21.4-27.2) | 14.1 | (11.9-16.6) |
| Moderate | 24.8 | (22.4-27.3) | 13.7 | (11.9-15.8) |
| High | 29.0 | (26.4-31.7) | 15.4 | (13.5-17.5) |
| *Total* | *26.3* | *(24.7-27.9)* | *14.5* | *(13.3-15.8)* |
| **65-74** | | | | |
| Low | 25.6 | (22.2-29.4) | 15.3 | (12.6-18.6) |
| Moderate | 33.4 | (29.5-37.5) | 22.3 | (19.0-25.9) |
| High | 35.8 | (31.7-40.2) | 22.0 | (18.5-26.0) |
| *Total* | *31.8* | *(29.5-34.2)* | *20.0* | *(18.0-22.2)* |
| **≥75** | | | | |
| Low | 14.5 | (11.4-18.2) | 9.2 | (6.8-12.3) |
| Moderate | 23.7 | (18.6-29.7) | 16.2 | (12.0-21.4) |
| High | 26.3 | (20.2-33.5) | 14.6 | (9.9-20.9) |
| *Total* | *19.5* | *(16.9-22.4)* | *12.3* | *(10.3-14.7)* |
| **Total** | | | | |
| Low | 21.5 | (19.6-23.6) | 12.9 | (11.4-14.5) |
| Moderate | 26.7 | (24.8-28.7) | 16.2 | (14.7-18.0) |
| High | 30.1 | (28.1-32.3) | 16.7 | (15.1-18.5) |
| *Total* | *26.1* | *(24.9-27.4)* | *15.3* | *(14.4-16.3)* |

Note. CI = confidence interval

# 4 Associations between walking and measures of wellbeing

## Physical activity in the Irish population based on walking levels

As part of the IPAQ, respondents are asked to rate the activities that they take part in as either moderate or vigorous intensity. This is a very subjective approach and previous research suggests that some older adults have difficulty doing this (7) for example, respondents may rate the intensity of activity according to varying criteria including changes to breathing, sweating, feeling hot or even disliking the activity (29). However, physical activity can be obtained through a range of activities (1, 2) and brisk walking for 150 minutes per week is sufficient to meet the physical activity guidelines. It is also easily accessible for all, very simple to measure and removes the problems typically associated with categorising activities as moderate and vigorous intensity in the IPAQ. Consequently, we divided respondents into two categories (High Walking, Low Walking) based on the number of minutes spent walking in the last week (see Table 4.1).

*Table 4.1: Walking categories based on number of minutes spent walking in the last week*

| Walking definitions | |
|---|---|
| High Walking | ≥150 minutes of walking in the past week in bouts of at least 10 minutes, over 1 or more days |
| Low Walking | <150 minutes of walking in the past week |

Three out of five Irish adults aged 50 years and older reported walking for at least 150 minutes in the last week, with the remaining 40% below the recommended walking threshold (Table 4.2). Men are more likely to be in the High Walking category compared to women (65% versus 56%). Fewer men and women meet the recommended walking guidelines in the oldest age category. This effect is most pronounced in women where 63% of those aged 50-64 years meet the guidelines compared to 36% of women aged 75 and older.

*Table 4.2: Proportion of older adults meeting the recommended walking threshold*

| | Low Walking <150 mins | | High Walking ≥150 mins | | Number in Sample |
|---|---|---|---|---|---|
| | % | (95% CI) | % | (95% CI) | |
| **Male** | | | | | |
| 50-64 | 33 | (30-35) | 67 | (65-70) | 2067 |
| 65-74 | 32 | (29-35) | 68 | (65-71) | 1064 |
| ≥75 | 45 | (41-50) | 55 | (50-59) | 592 |
| *Total* | *35* | *(33-37)* | *65* | *(63-67)* | *3723* |
| **Female** | | | | | |
| 50-64 | 37 | (35-39) | 63 | (61-65) | 2568 |
| 65-74 | 43 | (40-46) | 57 | (54-60) | 1094 |
| ≥75 | 64 | (60-67) | 36 | (33-40) | 741 |
| *Total* | *44* | *(42-46)* | *56* | *(54-58)* | *4403* |
| **Total** | | | | | |
| 50-64 | 35 | (33-37) | 65 | (63-67) | 4635 |
| 65-74 | 38 | (35-40) | 62 | (60-65) | 2158 |
| ≥75 | 55 | (52-58) | 45 | (42-48) | 1333 |
| *Total* | *40* | *(38-41)* | *60* | *(59-62)* | *8126* |

## Associations between walking and wellbeing

Table 4.3 illustrates that walking for at least 150 minutes per week is associated with better scores on all measures of wellbeing. These associations are consistent with those presented in Chapter 3 where a higher level of physical activity was associated with greater wellbeing. Once again, an important difference is that 13% of middle-aged and older adults in the Low Walking group have clinically relevant depressive symptoms compared to 8% in the High Walking group. This compares to 14% and 6% of adults classed as having low and high levels of physical activity respectively (see Figure 3.3). In addition, Irish adults who walk for at least 150 minutes per week are more likely to rate their health as good, very good or excellent, report higher quality of life, score lower on the loneliness scale, and are more likely to engage in formally organised activities outside of work, active and social leisure activities and volunteering. The differences between men

and women, and between adults of different ages are similar regardless of whether activity is based on walking level or physical activity level as presented in Chapter 3 (results not shown).

*Table 4.3: Wellbeing measures above and below the recommended walking threshold*

| | Low Walking <150 mins | | High Walking ≥150 mins | |
|---|---|---|---|---|
| | % | (95% CI) | % | (95% CI) |
| CASP Quality of Life | 42.1 | (41.7-42.5) | 44.7 | (44.4-45.0) |
| UCLA Loneliness | 2.2 | (2.1-2.3) | 1.9 | (1.8-2.0) |
| | | | | |
| **Depression (%)** | | | | |
| Clinically relevant depression symptoms | 13 | (11-14) | 8 | (7-8) |
| **Self-rated health (%)** | | | | |
| Excellent/Very good/Good | 67 | (65-69) | 81 | (80-83) |
| **Social relationships (%)** | | | | |
| Intimate relationships | 46 | (44-48) | 48 | (46-49) |
| Formal organisations | 56 | (54-58) | 63 | (61-65) |
| Active social leisure | 83 | (81-84) | 91 | (90-92) |
| Passive solitary leisure | 99 | (99-99) | 99 | (99-99) |
| **Volunteering (%)** | | | | |
| At least once per week | 13 | (12-15) | 17 | (15-18) |
| At least once per month | 23 | (21-25) | 28 | (26-30) |

**Note. CI = confidence interval**

# 5 Conclusions

Physical activity is a widely recommended component of healthy and successful ageing. Two-thirds of Irish adults aged 50 years and over reported moderate or high physical activity levels while one-third had low activity levels. Physical activity declines with age and women are more likely to report low activity levels than men. These are likely to be optimistic estimates considering the evidence that self-reported physical activity tends to over-estimate the actual level of activity (7, 29). Furthermore, recent reports consider only those reporting high levels of physical activity according to the IPAQ to be sufficiently physically active (30, 31). The relatively low prevalence of high physical activity in the middle-aged and older population may be part of a more general trend in Ireland; the latest findings from the 2015 Healthy Ireland Survey suggest that only 32% of the full adult population aged 15 and over are highly active (30). These reports support the emphasis on promoting physical activity for all while the TILDA data highlight the need to specifically target the needs of older adults (1, 2) in an effort to reduce the high levels of overweight and obesity previously reported in this group (8). In addition, broader efforts are needed to change societal attitudes towards physical activity across the lifespan.

Irish adults who report higher levels of physical activity (or who walked for 150 minutes in the last week) have better self-rated health and quality of life, lower loneliness scores and are more likely to participate in social activities including volunteering. Notably, those with low activity levels are over twice as likely to report clinically relevant depressive symptoms compared to those with high activity levels (14% versus 6%). A more detailed discussion of physical activity and depression in TILDA and other Irish health surveys is available elsewhere (32). Socially integrated people have better physical and psychological function and are less likely to die than those who are socially isolated. It has even been suggested that a lack of social relationships has the same effect as established risk factors for poor health such as physical inactivity, obesity, smoking and high blood pressure (27). Regular physical activity appears to be the most likely and suitable lifestyle behaviour to maintain and improve physical and psychological health and social engagement (6).

This has important policy implications regarding the need to increase physical activity levels in the older population. Our findings highlight the benefits of incorporating a simple

and accessible activity such as walking into the daily routine. Walking can be undertaken for transport or leisure reasons and can be accumulated across multiple bouts of only 10 minutes duration. While lower levels of activity may not have the same protective effects against disease (2), any level of activity is better than none which should be highlighted to those struggling to achieve the target 150 minutes per week and those with a very sedentary lifestyle. The benefits to social wellbeing and mental health also provide support for current initiatives such as *Get Ireland Walking*. Promoting engagement in social activities e.g. through the *National Positive Ageing Strategy* may further promote physical activity, maximizing the benefits of both interventions.

The results described in this report were generally small reflecting the young age (median 62 years) and good health of the TILDA population. The data is cross-sectional and future waves are required to analyse the longer term changes in activity patterns and to determine if increased physical activity leads to greater social participation and wellbeing, or vice versa. It is possible that these psychological benefits result from greater social engagement which is facilitated by the health and functional benefits accrued through greater levels of physical activity. Regardless of the causal pathways, the consistently better scores across all scales highlight that physical activity plays a key role in an individual's holistic wellbeing.

Self-reported physical activity often does not reflect the amount or intensity of physical activity actually being completed (33). In Wave 3 of TILDA, a sub-sample of respondents were asked to wear a wrist-based accelerometer for 7 successive days (see Figure 5.1). This device provides objective estimates of the duration, frequency and intensity of physical activity as well as inactivity i.e. sleep. This will allow us to compare self-reported activity to measured physical activity and to subsequently examine the relationship with physical and functional health and wellbeing.

*Figure 5.1: A wrist worn accelerometer*

In conclusion, this report highlights the burden of physical inactivity in the Irish population aged 50 years and older and the benefits in social activity, mental health and wellbeing associated with an active lifestyle. Alongside the established effects on improving physical health and reducing chronic disease, these findings underscore the vital contribution that current initiatives such as *Get Ireland Walking* and future policies to promote physical activity may make in optimising health and wellbeing amongst the ageing population.

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