KEEPING ACTIVE FOR BETTER AGEING
Encouraging physical activity in older adults
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INTRODUCTION
World Health Organization (WHO) guidelines suggest that people aged 65 and over should engage in at least 30 minutes per day of moderate intensity activity on five days a week or 150 minutes a week (World Health Organization, 2010). Yet very few older people in the Republic of Ireland (ROI) and Northern Ireland (NI) meet those guidelines, despite the benefits for physical and mental health.

This CARDI research paper examines the factors that encourage more physical activity in older adults with a particular focus on potential policy and practice interventions.

The first section looks at different types of physical activity and the current physical activity levels among older adults in ROI and NI. The second section summarises current policy on physical activity across the island of Ireland. Physical activity is then described in terms of factors that facilitate more activity and barriers that inhibit activity.

The paper presents an analysis of successful interventions for physical activity including case studies on interventions that have increased physical activity levels among older adults. The final section presents key points of learning for policymakers and practitioners.
1 UNDERSTANDING PHYSICAL ACTIVITY
This section looks at the different types of physical activity, lists the WHO guidelines for older adults and then sets out the current data on levels of physical activity among older people across the island of Ireland.

Physical activity is not just taking exercise – it can be incorporated into other activities of daily living. The most obvious example is walking to and from destinations. The term “exercise” is frequently used to distinguish structured programmes from incidental day-to-day physical activity such as active travel or housework. Whether physical activity is defined as incidental or as exercise is of less importance than the amount, the frequency and the intensity of the activity (Taylor, 2014).

Types of physical activity:

Aerobic exercise is defined as any type of activity that uses large muscle groups and can be maintained over a period of time including activities such as brisk walking, swimming or dancing.

Resistance-based strengthening requires muscles to work against a load which may be an external load or bodyweight that is progressively increased over the time of the programme.

Balance exercises include Tai Chi or other exercises such as standing on one foot or walking heel to toe. While there is evidence that such exercises can reduce the risk of falls it is less clear whether they raise physical activity levels adequately to affect cardiovascular fitness and strength.

Physical activity can also be incidental occurring throughout the course of the day during activities of daily living. It is generally of low intensity but often contains some sporadic bouts of moderate intensity activity.

Activity can also be transport-related, work-related or done during leisure time (Taylor, 2014).

In 2010 the WHO issued recommendations on guidelines for physical activity for people aged 65 and over:

1. Adults aged 65 years and above should do at least 150 minutes of moderate intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous intensity aerobic physical activity throughout the week, or an equivalent combination of moderate and vigorous intensity activity.
2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
3. For additional health benefits, adults aged 65 years and over should increase their moderate intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous intensity activity.
4. Adults of this age group with poor mobility should perform physical activity to enhance balance and prevent falls on three or more days per week.
5. Muscle-strengthening activities should be done involving major muscle groups on two or more days a week.
6. When adults of this age group cannot do the recommended amount of physical activity due to health conditions they should be as physically active as their abilities and conditions allow (World Health Organization, 2010).
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The majority of older people in ROI and NI do not meet the WHO physical activity guidelines.

Figure 1 below shows the percentages of older people reaching the recommended levels of physical activity from the Irish Longitudinal Study on Ageing (TILDA).

Figure 1: Proportion of older people meeting physical activity guidelines in ROI

Source: TILDA (2011)

The guideline of 150 minutes of moderate intensity physical activity per week has been adopted at national level in ROI and NI. However, there is debate as to whether or not the guidelines are suitable for older adults – particularly those who are sedentary. Current guidelines may be considered unachievable by many older adults and thus act as a discouragement (see for example Bull et al., (2010) and Tully (2014)).
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Figure 1: Proportion of older people meeting physical activity guidelines in ROI
Source: TILDA (2011)

Figure 2: Proportion of older people meeting physical activity guidelines in NI
Source: DHSSPS (2011)

Figure 2 shows the percentages of older people reaching recommended levels of physical activity from the Health Survey Northern Ireland (2011).

Although not directly comparable the figures show that while 37% of those aged 60-64 in ROI engage in sufficient physical activity, only 22% do so among the same age group in NI. Among 65-69 year olds, 32% in ROI engage in sufficient physical activity compared to 17% in NI. For the over 75s, just 7% engage in high levels of physical activity in NI compared to 18% in ROI. Levels of physical activity are significantly lower in NI than in ROI and physical activity declines with advancing age.

Murtagh et al. (2014) found that physical activity declines with age. Adults aged 75+ years are on average 2.5 times more likely than 60-64 year olds to be insufficiently active. In addition, women are on average 75% less likely to be sufficiently active than men (Murtagh et al., 2014).

Published in 2014, the second wave of results from TILDA enabled the analysis of physical activity levels among older adults compared with wave approximately two years earlier. The findings indicated that 53% of older adults maintained high levels of physical activity across waves with 17% of adults who reported high activity levels at wave 1 transitioning to low activity levels by wave 2. Of those who reported low activity levels at wave 1, 25% transitioned to medium activity levels by wave 2 and a further 17% transitioned to high activity levels (TILDA, 2014).

While physical activity levels are low among older adults in ROI and NI the levels are similar to many other countries. The WHO provides estimates of the percentage of people in countries who are considered insufficiently physically active: the UK has the sixth highest population of insufficiently active people with ROI at 19th highest (World Health Organization, 2014).

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1 High, moderate and low levels as defined by the International Physical Activity Questionnaire (www.ipaq.ki.se)
CURRENT POLICY ON PHYSICAL ACTIVITY IN ROI AND NI
This section examines current policy on encouraging physical activity among older people in ROI and NI.

**Republic of Ireland**

The second national goal of the ROI Positive Ageing Strategy is to “Support people as they age to maintain or improve their physical and mental health and wellbeing”. Promoting physical activity is designated as an area for action in the strategy under the aegis of the Department of Health and Health Service Executive (Department of Health, 2013).

*Healthy Ireland*, the framework for improving the health of the ROI population has a target of increasing by 20% the proportion of the population undertaking regular physical activity to be achieved by 2025 (Department of Health, 2013). A *National Grant Scheme for Sport and Physical Activity for Older People* encourages older members of the community to participate in sport and physical activity while *Go for Life* is an Age & Opportunity initiative funded by the Irish Sports Council and run in co-operation with the Health Service Executive. It is a national programme for promoting physical activity in the older population (Citizens Information, 2014).

*Get Ireland Active* is a public health campaign run by the Health Service Executive. It has a campaign website which was initially designed to promote the physical activity guidelines but has been further developed as a single-access point for physical activity information including upcoming events. The campaign aims to improve self-efficacy, encourage action planning and goal setting, and encourage access to physical activity amenities by providing searchable information by area (Health Service Executive, 2014).

A *National Physical Activity Plan* is due for publication in 2015. The vision for the plan is “An Ireland where everybody will be physically active and where we all live, work and play in a society that facilitates, promotes and supports physical activity”. In addition to increasing physical activity levels, the plan is set to promote the well-being and social inclusion of older people. The target for people aged 65 and over is to increase the proportion of the population undertaking regular physical activity by 1% per annum across the lifetime of Healthy Ireland (Hartigan, 2014).
Northern Ireland

*Fit & Well* is a 10 year public health strategic framework for NI published in 2012. It notes the deterioration in levels of physical activity among older people. The framework highlights that engaging in physical activity later in life is one factor that can prevent disease and functional decline, extend longevity and enhance quality of life. Under the framework a targeted outcome for 2012-2015 is for an increased proportion of older people to meet physical activity guidelines (DHSSPS, 2012).

The NI Active Ageing Strategy 2014-2020 was published for consultation in February 2014. One of the strategic aims of the strategy under consultation is to “promote education, training, leisure and arts opportunities which will support the development of life skills, positive mental, emotional and physical health, and well-being” (OFMDFM, 2014). However, there are no specific actions aimed at getting older people in NI involved in physical activity included in the strategy.

The Public Health Agency in NI promotes public health, aiming to improve health and social wellbeing among the population. *Get a life, get active* is the website for promoting physical activity and it has a dedicated section for older adults. The campaign aims to get older people engaged in physical activity for 30 minutes per day and promotes housework, gardening, walking, cycling, swimming and team sports as options for older people. There is a physical activity record book aimed at children and younger adults but the same is not available for older people (Public Health Agency, 2014). In 2013 the Public Health Agency also launched *Choose to Live better*, an anti-obesity campaign which promotes healthier eating and drinking as well as physical activity to combat obesity (BBC News, 2013).
FACTORS THAT ENCOURAGE PHYSICAL ACTIVITY
This section presents a review of recent research on what factors might encourage older people to engage more in physical activity. Physical activity behaviour and determining what makes some older people engage in activity but not others can be seen as the interaction between personal attributes (biological and psychological) and environmental factors (social influences and physical facilities / surroundings) (Sparling et al., 2000).

**Individual factors**

Research from a Hong Kong study of older people’s walking showed that social and individual factors had more of an influence than environmental factors (Cerin et al., 2013). Many of these social and individual factors stem from inequalities and disadvantages that have accumulated over the life-course. Cumulative advantage and disadvantage theory emphasises that early advantage or disadvantage is critical to how cohorts become differentiated. As a result of inequalities, some people are advantaged in early life, an advantage that may accumulate over time whereas others are disadvantaged and these disadvantages may also compound over time (Timonen & Pierce, 2010). This theory is relevant to physical activity in older adults as can be seen in TILDA findings which confirm that people with a higher level of educational attainment and people with more wealth are more likely to be sufficiently physically active (TILDA, 2011).

It is important to note that physical activity among older people must be maintained over longer periods for full health benefits and the determinants of initiation and maintenance may differ (Van Straalen et al., 2009). Van Straalen et al. (2009) identify three phases of initiation of physical activity. The first is the pre-motivational stage which can be influenced by determinants such as awareness-raising, knowledge of benefits and risk perceptions. The second phase is motivational and is influenced by factors concerned with thinking and deciding about becoming active such as attitude, self-efficacy and social influence. The final stage in initiating physical activity is post-motivational and is concerned with factors that influence the translation of intentions into actions such as goal-setting and planning. Determinants of physical activity maintenance tend to be concentrated on skills and strategies that facilitate sustained participation in physical activity and prevent relapse into activity (Van Straalen et al., 2009).

Age and gender have an impact on levels of physical activity. A study funded by CARDI in 2014 looked at the correlates of physical activity participation to determine what factors influence low levels of physical activity. Women reported lower levels of physical activity across all ages. Data from the SLAN, TILDA and Health Survey Northern Ireland surveys indicated that women were between 1.5 and 2 times as likely to be insufficiently active than men. The findings also showed that participation in physical activity declines with age (Murtagh et al., 2014).

**Self-efficacy**

Self-efficacy is the extent or strength of one’s belief in one’s own ability to complete tasks and reach goals. For older people this is the belief that reaching physical activity goals is possible. There is convincing evidence that targeting self-efficacy is an effective means of increasing physical activity (Williams & French, 2011). Self-efficacy has been shown to be a determinant of physical activity in people with hypertension (Burke et al., 2008) and type 2 diabetes (Darker et al., 2009). A UK randomised controlled trial showed that building
self-efficacy increased the rate of walking among community dwelling adults (Darker et al., 2009). One study of older adults in Germany showed that self-efficacy was a significant predictor of participation in physical activity and further examined the sources of self-efficacy for physical activity (Warner et al., 2014).

In 1977 Professor Albert Bandura at Stanford University identified self-efficacy as an integral part of human behaviour relating to achieving tasks. He noted that individuals create and develop self-perceptions of capability that become instrumental to the goals they pursue and to the control they are able to exercise over their environments (Bandura, 1977).

Self-efficacy is about how confident a person is in performing specific tasks. This level of self-confidence toward a particular task, such as engaging in physical activity, influences behaviour in several key ways. Efficacy beliefs help determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles and how resilient they will be in the face of adverse situations. The higher the sense of efficacy the greater the effort, persistence and resilience. Low self-efficacy can lead people to believe tasks to be harder than they actually are. This often results in poor task planning and increased stress. People with high self-efficacy tend to take a wider view of a task in order to determine the best plan. Obstacles often stimulate people with high self-efficacy to greater efforts, whereas someone with low self-efficacy will tend towards discouragement and giving up. A person with high self-efficacy will attribute failure to external factors while a person with low self-efficacy will blame low ability (Pajares, 2002).

According to Pajares (2002) there are four sources of self-efficacy:

1. **Mastery experience**: Success raises self-efficacy; failure lowers it. For example, an older adult who can easily achieve a certain goal in physical activity will have increased self-efficacy but failure to achieve that goal will lower it.

2. **Vicarious experience**: A significant model in one’s life can help instil self-beliefs that will influence the course and direction that life will take. If an older adult sees other peers succeeding in increasing their level of physical activity this can increase self-efficacy.

3. **Social persuasions**: Individuals also create and develop self-efficacy beliefs as a result of the social messages they receive from others. Thus promoting the idea that older adults can engage in physical activity can positively affect self-efficacy.

4. **Physiological states**: Anxiety, stress, fatigue and mood states can all influence self-efficacy, and self-efficacy beliefs in turn can influence these physiological states.

According to this theory, mastery experience is the most influential source (Pajares, 2002). It is usually older adults with low levels of self-efficacy that have lower levels of physical activity (Warner et al., 2014). Interventions to increase levels of activity should work on all four sources starting with easily achievable goals so the early success will increase self-efficacy; use role models to demonstrate that physical activity goals are achievable; promote the idea that older adults can achieve goals in terms of physical activity; and design interventions to reduce adverse physiological states such as anxiety and stress.
UK research among community-dwelling older men and women aged between 70 and 93 showed that older people who adhered to physical activity guidelines had fewer chronic health conditions, less depression and less severe mobility limitations. Those meeting the guidelines had higher exercise self-efficacy and exercise outcomes expectations. They left the house on more days per week, were more likely to use active transport (cycle or walk) and to walk a dog regularly (Jefferis et al., 2014).

Research on physical activity among 225 older people attending social clubs in London indicated that only 21% met the guidelines for physical activity, although if housework and heavy gardening were included this figure rose to 48%. In this sample, good health was strongly associated with higher levels of physical activity (Persson & White, 2012). UK focus groups with participants ranging in age from 52-87 indicate that for older people, preventing health decline was a vital factor in determining physical activity participation while enjoyment of exercise was also important (Hardy & Grogan, 2009).

Older adults who expect decline and disease with age are less likely to engage in aerobic exercise (Meisner et al., 2013). Thus, expectations of ageing have a significant impact on levels of physical activity. Canadian research suggests that ageing expectations can also help to explain the established association between low socio-economic status, low physical activity uptake and poor health outcomes among older adults. The research showed significant associations between ageing expectations and social functioning, energy and vitality, mental health and self-rated general health (Dogra et al., 2014). This contributes to the idea that older people who believe they are physically and mentally capable of physical activity are more likely to take it up.

A US qualitative study of older adults’ perceptions of physical activity showed that older adults continue individual patterns of meaningful physical activity across their lifespan when they have support to adapt to age-associated limitations with a gradual decline in intensity during older years. As a result, health professionals have an important role with community-dwelling older adults to influence productive ageing by designing and promoting meaningful physical activity with adaptations that address age-associated concerns (Janssen & Stube, 2014).

A study of declining rates of physical activity in the US examined the contributors to the trend over 50 years. It showed relatively stable or slightly increasing levels of leisure-time physical activity, declining work-related activity, declining transportation activity, declining activity in the home and increasing sedentary activity. The overall trend was a decline in total physical activity (Brownson et al., 2005). The WHO notes that current levels of physical inactivity are partly due to insufficient participation in physical activity during leisure time and an increase in sedentary behaviour during occupational and domestic activities (World Health Organization, 2014).

Environmental factors
Living in an area with good recreational facilities and taking part in social entertainment have been linked with being physically active at the recommended levels (Persson & While, 2012). Community-dwelling older people in the UK who reached physical activity recommended levels rated their local environment more highly for social activities and leisure facilities, having somewhere nice to go for a walk and feeling safe after dark (Jefferis et al., 2014).
Access to parks and other recreational facilities, safe footpaths and areas relatively free from crime have been identified as important environmental factors that may encourage physical activity. An evaluation of free public transport for older adults in the UK revealed that those with free passes not only travelled more often but they were also more likely to walk further than those who did not receive free passes (Taylor, 2014).

Van Stralen et al. (2009) found that environmental factors which have an impact on physical activity among older people include support from family and friends, having someone to exercise with and incentives in the home (such as exercise equipment) as well as factors in the neighbourhood and community such as traffic and personal safety, neighbourhood characteristics and aesthetics, and connectivity between streets.

Universal design, particularly as relating to public spaces and transport, can also create an environment more conducive to the needs of older people and people with disabilities when planning for meeting physical activity guidelines (Gray et al., 2012). Universal design is defined in the ROI Disability Act of 2005\(^2\) as “the design and composition of an environment so that it may be accessed, understood and used by persons of any age or size or having any particular physical, sensory, mental health or intellectual ability or disability”.

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\(^2\) The NI equivalent, the Disability Discrimination Act 1995, does not reference universal design
4 BARRIERS TO PHYSICAL ACTIVITY
BARRIERS TO PHYSICAL ACTIVITY

This section presents a review of recent research into barriers to physical activity among older adults and summarises the most cited roadblocks to engaging in adequate levels of activity. These barriers are divided into health barriers such as pain and fatigue; psychological barriers such as lack of motivation; external barriers such as loneliness and a lack of time; and finally environmental barriers such as a lack of facilities or crime. The most common reasons given by older adults for not participating in physical activity was ill-health, pain and injury (Taylor, 2014).

Health barriers
Findings from TILDA indicated that engaging in regular physical activity reduces the risk of cardiovascular disease, preserves functional ability and benefits psychological health in older people. However, the study also showed that people who have physical, psychological or mental health disorders are the group most likely to report inactivity (TILDA, 2011). A clinical review of mobility limitation in older patients found that the most common risk factors were older age, low physical activity, obesity, strength or balance impairment and chronic diseases such as diabetes or arthritis (Brown & Flood, 2013).

Chronic conditions are a significant impediment to older people taking part in physical activity. Chen et al. (2014) looked at factors associated with changes in physical functioning in an older population in Taiwan with the aim of identifying what groups of older people might be suitable targets for prevention against functional decline. The groups identified were older people with conditions such as stroke, Parkinson’s disease, diabetes and osteoporosis.

A qualitative study on physical activity published in 2009 indicated that the major barrier to physical activity was pain and there was a need for more information on the role of pain management in physical activity (Jancey et al., 2009). Kelleher et al. (2014) showed that health professionals can consider and promote physical activity irrespective of pain levels unless the pain is directly preventing physical activity.

An overlooked factor associated with low levels of physical activity among older people is fatigue and a lack of energy. Schrager et al. (2014) found a strong relationship between available energy and the maintenance of physical activity in older persons. Similarly in a 2013 study, over half of older respondents (52%) said they were too tired to participate in physical activity (Justine et al., 2013). This indicates that age-related declines in physical activity may not be socially or behaviourally driven (Schrager et al., 2014).

The 2009 New South Wales Falls Prevention Survey asked 2,225 adults aged 65 and over about the barriers and enablers to physical activity. These were adults who perceived themselves to be insufficiently active but wanted to be more active. Ill-health was the number one cited reason for 52% of the sample (Macniven et al., 2013).

Depression represents a significant barrier to participating in physical activity among older adults. Among all age groups in the TILDA findings a strong association between depression and low physical activity is observed. Overall, 47% of older adults with case level depression had low physical activity levels. This compares to 29% in non-depressed older adults (TILDA, 2011).
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Psychological barriers
Psychological barriers to physical activity are significant. Self-perception and the idea that as an older person physical activity is an unattainable goal have been identified as barriers to participation (NI Assembly, 2010).

Research on older adults remaining physically active after rehabilitation indicated that both patients and physical therapists identified lack of willpower as the primary barrier to physical activity. Patients identified lack of willpower and social influence as critical barriers more often than physical therapists, whereas physical therapists identified fear of injury and lack of time more often than their patients did (Zalewski et al., 2014).

A fear of falling or fear of physical injury can prevent many older people from participating in physical activity, particularly if they have had a bad experience with exercising. Fear of falling is more common among women, people who use a walking aid, people with a history of falls and people with poor self-rated health (Denkinger et al., 2014).

A 2013 review of qualitative evidence in the UK suggests that there is considerable evidence that fear of crime places limitations on physical activity (Lorenc et al., 2013).

External barriers
Older people who are part of certain groups face barriers to participation in physical activity. These include those from lower socio-economic groups, those who are more socially isolated and those who live alone.

An association between socio-economic status and exercise was observed in the first wave of results from the TILDA study. In the findings, 40% of those in the lowest wealth quartile reported low levels of physical activity compared to 25% in the wealthiest quartile (TILDA, 2011). A Malaysian study of community-based older (aged 60 and over) adults found that predictors of physical inactivity included being over 80 years, being female, living in an urban locality and having a low household income (Kaur et al., 2014).

In a 2014 study, older people not living with spouses, poor self-rated health, low social support, being underweight or obese and having a sedentary lifestyle were flagged as high-risk targets for prevention measures against sedentary behaviour (Chen et al, 2014).

Research has shown that lack of time is a significant barrier to achieving adequate levels of physical activity. Justine et al (2013) found that among older adults the most common external barriers were not enough time (48%), nobody to exercise with (28%) and a lack of facilities (35%).

Environmental barriers
Neighbourhood and environmental factors can prevent participation in physical activity. Yen et al (2014) noted that safety considerations are one of the most prominent influences of older adults’ decisions about mobility and physical activity. Street connectivity, pedestrian access and transit, and retail and services were also important (Yen et al, 2014).
Physical inactivity among the US population has been attributed to "a combination of changes to the built environment, an increase in suburban living and increases in the proportion of the population engaging in sedentary activities" (Brownson et al, 2005).

The WHO notes that globally increased urbanisation has resulted in several environmental factors which may discourage participation in physical activity such as high-density traffic, violence, low air quality and pollution as well as a lack of parks, sidewalks and sports or recreation facilities (World Health Organization, 2014).

Research from Porto (population 1.3 million) in Portugal which examined the relationship between socio-environmental characteristics of the neighbourhood of residence and the frequency of leisure-time physical activity among older adults found there was no association between surrounding neighbourhood and environment, and whether or not older adults engaged in physical activity or not. However, neighbourhood and environment did have an effect on the frequency of physical activity among older adults who were already physically active. The researchers assert that from a public health perspective promoting well distributed destinations e.g. shops, facilities and to a lesser extent parks could increase the current group of older people who meet physical activity recommendations. Overall more attention should be drawn to primary prevention through physical planning of places (Ribeiro et al., 2013).

Figure 3 below summarises the barriers to physical activity among older adults. Health, psychological and external barriers play a more significant role in preventing physical activity.

**Figure 3: Barriers to physical activity among older adults**

- **Health barriers**
  - Fatigue
  - Pain
  - Chronic conditions
  - Mental health
  - Depression
  - Poor self-reported health
  - Strength / imbalance impairment

- **Psychological barriers**
  - Lack of motivation
  - Fear of falling
  - Fear of crime
  - Self-perception
  - Sedentary lifestyle

- **External barriers**
  - Socio-economic status
  - Gender
  - Age
  - Loneliness and isolation
  - Lack of time
  - Sense of community

- **Environmental barriers**
  - Lack of facilities
  - Unconducive neighbourhood
  - Weather conditions
  - Lack of walking space
  - Crime
5 INTERVENTIONS: WHAT WORKS?
This section looks at interventions that research has shown to be successful and which have the potential for adoption in ROI and NI.

**Healthcare professionals providing information**

There is evidence suggesting that older adults who receive physical activity advice from their GP perform more moderate-to-vigorous intensity activity when compared to people who did not receive advice (Noordman et al., 2010). It is important that specific information is given by healthcare professionals regarding physical activity including recommending specific exercise such as walking for a fixed length of time each day rather than a simple instruction to exercise more. In a study in which older adults were given specific advice about the type and frequency of exercise by the GP with follow-up by exercise professionals the proportion of intervention group participants achieving adequate levels of exercise doubled. There was also a significantly lower rate of hospitalisation in the year following the intervention in the group given specific advice compared to the control group (Kerse et al., 2005).

Research on physical activity information among older men in Canada further shows the importance of healthcare professionals in providing information. For older adult men in Canada, family (59%), friends (58%) and books (58%) were main sources of information on physical activity. Among health care providers, physicians (46%), dieticians (23%) and physiotherapists (19%) were the main sources. The study found that if information was received from a healthcare professional it was more likely to have an impact on physical activity levels (Johnson et al., 2014).

However, there are challenges associated with healthcare professionals giving information on physical activity. Research shows that GPs do not discuss physical activity with all relevant patients. In an American study of older adults about 95% of participants had visited their GP in the last year yet only about 62% reported receiving advice about physical activity (Balde et al., 2003).

**Building self-efficacy**

A UK study examined the most effective ways to increase levels of self-efficacy and physical activity. It found that three techniques led to higher levels of both self-efficacy and physical activity: action planning (an organisational strategy that involves creating a detailed plan outlining actions needed to reach one or more goals), providing instruction and praising or encouraging behaviour change efforts (Williams & French, 2011).

Building self-efficacy for physical activity among older adults requires several stages:

1. Setting behavioural goals
2. Prompting self-monitoring of behaviour
3. Planning for relapses
4. Providing information on physical activity guidelines
5. Providing feedback on performance (French et al., 2014).

Older adults are a heterogeneous group with vastly differing health, strength, balance and mobility so a single exercise programme or prescription would not be suitable for all. The concept of what constitutes "moderate" exercise or an appropriate volume of work is dictated by the physical capabilities of the individual – one older adult may easily be capable of executing an exercise while another may be physically unable or uncomfortable with the same level of activity (Rejeski et al., 2013).
Research from NI with a sample of 35-75 year olds shows that if people are allowed to set their own targets in physical activity their activity increases more than if targets are set for them. Part of building self-efficacy is in taking an individual approach and tailoring targets to the individual (Heron et al., 2014).

Age-specific physical activities contribute to building self-efficacy. The NHS Health Development Agency published a review of physical activity interventions in 2005 to examine what interventions were the most successful. With regard to interventions for people over the age of 50 the review found that interventions aimed specifically at people in this age group were successful in bringing about short-term changes in behaviour with more limited evidence that interventions would be successful in the medium and longer-terms. Interventions that used individual-based or group-based behavioural or cognitive approaches with a combination of group and home-based exercise sessions were found to be equally effective. For this older age group, interventions that promoted moderate intensity physical activity (home-based exercise programmes) and non-endurance activities (such as balance and flexibility training) were the most effective (Hillson et al., 2005).

**Incorporating physical activity into daily lives**

An important intervention in increasing physical activity levels, particularly among sedentary older adults with no history of exercising, is promoting the incorporation of physical activity into daily lives. This approach involves not prescribing set levels of exercise but rather ensuring that some physical activity becomes part of the daily life of older people.

Physical activity is seen by many older adults not as a separate activity but rather as part of activities often rated as more important than the physical activity itself. Health care professionals such as GPs, occupational therapists and community nurses play a key role in encouraging physical activity as part of other activities (Welmer et al., 2012).

Active travel is one means of doing this – ensuring where possible walking to and from destinations or taking public transport (Tully, 2014). A UK research study showed that for older adults physical activity is mainly a means to an end undertaken in the course of shopping, visiting friends or conducting personal business. In the study older people who made frequent trips from home were more active especially those who were close to shops and other amenities. Fox noted two important interventions for increasing physical activity levels: first helping older people to change routines in the home that lead to less time sitting down and secondly encouraging sedentary older adults to include more walking in their day (Fox, 2014).
Improving physical activity environments
NHS National Institute for Health and Clinical Excellence public health guidance on physical activity and the environment was published in 2008. The seven recommendations covered strategy; policy and plans; transport; public open spaces and buildings and schools. Key recommendations relevant to older people were:

• Ensure planning applications for new developments always prioritise the need for people (including those whose mobility is impaired) to be physically active as a routine part of their daily life.
• Ensure pedestrians, cyclists and users of other modes of transport that involve physical activity are given the highest priority when developing or maintaining streets and roads.
• Plan and provide a comprehensive network of routes for walking, cycling and using other modes of transport involving physical activity.
• Ensure public open spaces and public paths can be reached on foot, by bicycle and using other modes of transport involving physical activity (National Institute for Health and Clinical Excellence, 2008).

A qualitative study of a socio-economically disadvantaged community in NI identified several potentially effective interventions for similar communities including meaningful engagement of residents in planning and organising physical activity, tailoring the activity to a local context, supporting volunteers and providing relevant resources (Cleland et al., 2014). This emphasises the importance of the community in improving environments for physical activity purposes.

It is not just the built environment that is important but also physical infrastructure for training and motivating older people to take part in physical activity. US research from 2004 showed that infrastructure that ensures access to diverse physical activities is vital, specifically providing exercise programmes for people with disabilities, in-home programmes and trained instructors, and peer leaders (Lachenmayr & Mackenzie, 2004).

Addressing inequalities
The ability and motivation to engage in sufficient levels of physical activity is affected by a wide range of socio-demographic factors. While direct interventions can be successful in terms of health professionals providing adequate information and support or designing more activity-friendly built environments there are other wider factors which must be addressed in order to increase the proportion of older people achieving physical activity guidelines. These include poor health and disability, mental health and depression, low levels of education, socio-economic disadvantage and neighbourhood deprivation.

The majority of these factors stem from socio-economic inequalities (defined by the UK Equality and Human Rights Commission as inequalities that relate to differences in income, social class, occupational background, educational achievement and neighbourhood deprivation). Tackling poverty, addressing structural inequalities and promoting healthy ageing are all part of helping to tackle inequalities (CARDI, 2014). This may in turn address the socio-economic barriers to participation in physical activity which affect some groups of older people disproportionately.
6 CASE STUDIES
CASE STUDIES

The following case studies demonstrate how suitable interventions can have a positive effect on physical activity levels among the older population.

Case study 1: Green prescription, New Zealand

A programme that seeks to capitalise on the importance of health professionals, specifically GPs, in advising on physical activity and providing follow-up information

A green prescription is a health professional’s written advice to a patient to be physically active as part of the patient’s health management. The idea of a green prescription was initially developed in New Zealand with the idea being that a doctor or nurse would “ prescribe” exercise and lifestyle goals to patients as an alternative to medication. This is now an ongoing project organised centrally by the Ministry for Health.

Research from New Zealand has shown that walking, exercise groups, or brief exercise advice on prescription delivered in person, or by phone or mail appeared to be more cost-effective than supervised gym-based exercise classes or instructor-led walking programmes (Garrett et al., 2011).

Survey and evaluation work was conducted by the Ministry of Health in New Zealand in 2014. Being overweight was the most common reason for a green prescription (58%) followed by high blood pressure and risk of stroke (28%). Of patients who participated, 68% were more physically active at six months following their prescription. Only 19% were active in a community group or programme, with the majority being active by themselves or with family or friends (Ministry of Health, 2014).

A green prescription pilot programme was tested in Donegal in 2011 and 2012. Health workers referred people to a programme involving four weeks of indoor gentle exercise training and then eight weeks of participating in volunteer-led community walks. Measurement of the pilot project involved tracking attendance records, a recall questionnaire sent to participants after seven days, clinical measurements and focus groups with participants. An evaluation showed that the project had the potential to be implemented within primary care teams (Stirrat, McCallion & Youell, 2013).
### Case study 2: Addressing inequalities in physical activity, Katanning, Australia

A local community programme aimed at involving disadvantaged groups in physical activity programmes

Katanning in Western Australia is a very diverse multicultural community with significant Aboriginal, Malay, Chinese, Burmese and Afghan communities. Many of the migrants that have moved to Katanning speak little or no English and find it difficult to integrate into the community. A Healthy Community project was launched in 2007 by the local authority in co-ordination with the Physical Activity taskforce in Western Australia.

The first step was an extensive programme of consultation with the local communities on healthy behaviours. This initial step identified several groups who were socio-economically disadvantaged and had low-levels of participation in physical activity, including older people, ethnic minorities, Aboriginal youth and mothers with young children.

The project then examined the needs of each group and developed specific weekly activities to facilitate participation. The organisers of the activities aimed to remove barriers specific to each targeted population, including costs, timing of classes around childcare and religious needs. The aim was to initially target the group and subsequently assist them to move into mainstream, community-wide programmes at a later date.

Using a local authority grant, the capacity of community members to lead programmes was built up. Promotion was aimed specifically at target groups and use was made of local media. Support and assistance was received from local sporting club coaches and the programme specifically developed strong relationships with inclusion organisations to promote physical activities to target audiences.

The result was a cost-effective, targeted programme of physical activity which improved levels of participation in physical activity among disadvantaged groups (Western Australia Local Government Association, 2012).

### Case study 3: National Walking and Running Programme, Portugal

A programme with national government finance and support to involve and train older adults in simple physical activity

The Portuguese National Walking and Running Programme is a targeted intervention programme aimed at people over the age of 60 in participating municipalities across Portugal. It has been operational since 2010 and is organised jointly by the Faculty of Sports at the University of Porto, the National Sports Institution and the Portuguese Athletics Federation. The four main objectives of the programme are:

1. Develop synergies with Portuguese municipalities in order to promote active lifestyles and suitable regular exercise to older subjects.
2. Offer quality training monitored by specialised technicians and avoid exercise practices with negative impacts on health and functionality.
3. Develop local exercise initiatives in order to increase opportunities for group practice and socialisation.
4. Distribute information on good practice in physical activity for the older population.

Currently, more than 160 Portuguese municipalities are involved in the project and around 1,500 older people are taking part. This involves more than 250 professionals who organise and supervise training for older people in walking or running. The exercise sessions for older people last for 50 minutes with a 10-minute warm up, 20-30 minutes of walking at moderate intensity and 10 minutes of respiratory and flexibility exercises.

The innovation of the programme is in the multidisciplinary approach, the focus on integrated care and the public/private partnerships. Importantly, strong links have been developed with local health centres and hospitals involving health professionals in the programme with the potential for referrals of older patients. Funding is provided mainly by the National Sports Institution and the Athletics Federation while on-going activities are financially supported by the Ministry for Health and local authorities.

Some participating municipalities are involved in monitoring and evaluating the programme and since its initiation in 2010 the numbers of older participants has increased significantly (European Innovation Partnership on Active and Healthy Ageing, 2013).

Case study 4: Dutch District Approach, the Netherlands

A national policy focusing on improving 40 deprived districts in the Netherlands using a targeted approach including improvements to the built environment

The Dutch District Approach is an urban renewal area-based initiative which was first implemented in 2008. The aim was to alleviate problems such as unemployment, education, issues with housing and the physical environment, safety, and social integration in 40 of the most deprived districts of the Netherlands. Districts were selected based on their economic, physical and social problems, and judged on statistics and survey data. Each district developed its own mix of socio-economic and environmental interventions.

Five over-arching objectives were set for interventions in each of the districts and one of these was to improve the quality of the built environment. In total, €250 million was set aside for urban renewal projects (European Urban Knowledge Network, 2008).

Changes to the built environment included improvements in public housing quality, allocating more green space, building footpaths and cycle tracks, adding playgrounds and building new sports facilities in deprived neighbourhoods.

Kramer et al. (2014) measured the patterns of leisure time walking, cycling and sports participation over time between the 40 selected districts and the remainder of the country using data from the Integrated Survey on Household Living Conditions (POLIS) from 2008 to 2011. The prevalence of cycling and sports activity did not change significantly. However, the prevalence of leisure
time walking did change from 57% of individuals actively walking at the beginning of the project implementation to 70% after three years. This change was significantly more than in the remainder of the country.

When comparing changes between the 40 districts Kramer et al. (2014) discovered that the increase in leisure walking time was not related to the intensity of changes to the built environment, i.e. the districts that made small changes showed the same level of increase as those that made major changes. This suggests that even a small investment in changing the built environment can improve physical activity levels (in terms of leisure-time walking) of the local population.

Case study 5: Active living by design, US

A philanthropy initiative which aimed to increase physical activity in daily life through community design, public policies and communications strategies

Active living is a way of living that incorporates physical activity into everyday routines such as walking to local shops or cycling to work. In 1998 the Robert Wood Johnson Foundation established the Active living by design programme. It provided 25 grants for community projects and worked with local, state and national partners to build a culture of active living and healthy eating. The idea is that local communities, employers and other groups should facilitate the incorporation of physical activity into people’s daily lives through improving the built environment, introducing cycle and walk to work schemes, and disseminate information about active living and physical activity.

The model for active living in local communities is the “5P model”:

- Preparations
- Promotions
- Programmes
- Policies
- Physical Projects

While some of the grants have been used for promoting fixed physical activity events in local communities the main emphasis has been on encouraging active living through promoting walking for physical health and improving built environments for walking and cycling. The Great Streets programme in Albuquerque, New Mexico worked with local authorities to provide safe walking routes, particularly to schools. For older residents, a public health campaign Take a friend for a walk for your health was initiated and grant money was also used for community leaders to influence the Metropolitan Transport Plan to place more emphasis on pedestrian travel.

In Cleveland, Ohio, grant money was used for a programme of community safety walks in the Broadway neighbourhood when local residents voiced concerns about neighbourhood safety. In Colombia, Missouri, Active living by design grants were used to secure $22 million in federal funding for a citywide, non-motorised transportation network - a combination of funds for infrastructure and programming improvements. In other US cities, grant money was used to lobby for changes to city charters whereby local governments would work actively to make cities pedestrian and cycle friendly (Active Living By Design, 2009).
Interventions which work to get older adults taking part in higher levels of physical activity must address the barriers to physical activity while encouraging the personal attributes and environmental factors that have been shown to facilitate increased participation in physical activity. This involves a multi-faceted approach: a structure whereby older people get advice and follow-up support on physical activity from healthcare professionals; information and public health campaigns that build self-efficacy; improving physical activity environments; and addressing inequalities, particularly in health. Physical activity for sedentary older people or those with low levels of activity should be incorporated into their daily lives.

There are four policy and practice interventions that could increase levels of participation among older adults:

1. **Clinical guidelines on physical activity**: Policy and practice interventions in ROI and NI should ensure that there are clinical management guidelines for GPs to provide information and follow-up advice on physical activity for all older adults particularly those who are sedentary. In ROI, for example, there are already guidelines for the clinical management of overweight and obese adults and children which focus on a combination of dieting and increasing physical exercise (Department of Health and Children, 2005). Similar guidelines could be issued for the clinical management of sedentary behaviour in older adults. For those groups such as older men who do not regularly visit a GP, public health nurses and other health professionals working in the community should be equipped to provide physical activity guidance.

2. **Building self-efficacy**: Given the positive evidence of links between self-efficacy and increased physical activity, a successful intervention must build self-efficacy of over the life cycle in order to motivate the initiation and maintenance of physical activity. For example this would involve assisting older people in planning their physical activity so they can achieve success in stages, reinforcing the idea that all older adults are capable of engaging in physical activity (using role models and peer groups) and designing physical activity programmes that are enjoyable and age-specific enough to maintain interest. Supporting and building self-efficacy requires support, particularly from:

   - GPs and public health / community nurses,
   - Community organisations who plan activities for older adults,
   - Health promotion organisations which can assist with setting and achieving goals.

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3 Clinical management guidelines are specifically aimed at healthcare practitioners and subject to a rigorous checklist. The BMJ checklist, for example, ensures that guidelines are peer-reviewed, have been pre-tested or piloted, are fully referenced, based on strong evidence with a detailed methodology, consistent, cover all relevant circumstances, provide adequate information on costs and refer to other existing guidelines as appropriate. The guidelines must include explicit statements of the type or quality of evidence and strength of recommendations. The strongest evidence is meta-analysis of randomised controlled trials with the weakest being evidence from expert committee reports or opinions or clinical experience of respected authorities (British Medical Journal, 2014).
Steps to building self-efficacy in an older adult who takes little or no physical activity include:

1. Dividing the new task or activity into subtasks that appear easier;
2. Emphasising the similarity of the new task to something the older person is already successful at doing;
3. Explaining and reinforcing the idea that the new task can be learned one step at a time;
4. Using the example of another older adult who has successfully increased their physical activity;
5. Offering feedback and reinforcement with successful completion of each step (Euromed Info, 2015).

Feedback from older people who have successfully increased their levels of physical activity is also important. Policy and practice interventions for older people should be modelled on other older adults who maintain high levels of activity.

3. Moving from no activity to some activity: The guidelines for physical activity of 150 minutes per week may be unattainable for many older adults and even off-putting. It is unlikely that older people who have no history of physical activity or sports participation will take up such levels of activity as they age. A study of over 334,000 European men and women found that the greatest reduction in risk of premature death from physical activity occurs in the comparison between inactive and moderately inactive groups. Thus a 20 minute brisk walk each day, taking an individual from the inactive to moderately inactive group, would reduce their risk of premature death by 16-30% (Ekelund et al., 2015).

As a result, the policy and practice focus should be on moving from no activity to some activity. For sedentary older adults or those with very low levels of physical activity, measures to incorporate physical activity, particularly walking, into daily routines can be more successful than more formal exercise programmes. Increasing activity as part of everyday life can serve as a gateway to moderate and vigorous activity at a later stage. For example, increasing walking as part of a daily routine or active transport plans may lead to other more vigorous activities. Thus advice, information and campaigns targeting sedentary adults should focus on promoting simple increases in activity as part of everyday life that are relatively attainable.

4. Planning and designing physical activity-friendly environments: Local authorities, planners and community groups are key factors in developing physical activity-friendly environments. For example, it has been proposed in the UK that Local Transport Plans can be an effective tool for combating obesity. This could be achieved through setting goals for improving transport, accessibility and issues such as pollution in communities in order to encourage physical activity (Public Health England, 2013). This is equally applicable to improving the environment for physical activity for older people, particularly with regard to accessibility for people with mobility problems. All local councils in ROI and NI have a sports co-ordinator or development officer and this role is vital in working with health professionals to find the right type of physical activity or exercise event for older people. Feedback from older people on what improvements in their area would encourage more physical activity should form part of built environment plans.
Many of the barriers to participation in physical activity stem from poor health and socio-economic disadvantage. People in socio-economically deprived groups tend to have poorer health and lower levels of physical activity.

The relationship between socio-economic status and physical activity is complicated and many different interconnecting factors are at play (Roberts et al., 2013). People from lower socio-economic groups tend to have poorer access to environments that support physical activity such as parks, gardens or safe areas for play; are less likely to visit green space and are more likely to live close to busy roads.

Affordability may be a barrier to taking part in many sports and activities with costs for gym membership being out of the range of many people on low incomes. While activities such as walking are low or no cost people in lower socio-economic groups may have competing pressures on time such as longer work hours or greater childcare responsibilities.

Higher levels of educational attainment are associated with greater literacy and numeracy, and therefore an ability to access information about healthy lifestyle choices. Low educational achievement is associated with behaviours such as smoking and being sedentary as well as diet (Roberts et al., 2013).

While the influencing factors demonstrate a complex relationship there is a definite trend of disadvantage to accumulate over the lifecycle. As a result, it is important that inequalities are addressed early in life particularly as related to health. This would ensure more equal opportunity for participating in physical activity among older adults.
CONCLUSION

Professor Ken Fox of the University of Bristol has stated that increasing physical activity is “today’s best buy in public health” (Fox, 2014). Increasing levels can improve the physical and mental health of older adults and thus reduce healthcare costs. However, this will require a change at individual, community and structural levels to encourage and support more active lifestyles not just in younger years but across the lifecycle.

Increasing physical activity levels among older people in NI and ROI requires the support of key stakeholders at national and local community levels. It would also involve the exploration of how to build self-efficacy among older adults including challenging self-perceptions about ageing and declining ability. Health professionals and nurses working in the community are essential in providing older people with information and also follow-up support, particularly if they are highlighting available activities which are tailored for older participants or ways of incorporating physical activity into daily routines. Likewise key to success is local authorities, planners and communities working together to build environments that support and encourage active lifestyles for people of all ages including older adults.

It is important to note also that many of the barriers to participating in physical activity among older people in Ireland, North and South, stem from socio-economic inequalities. This is particularly true in terms of physical health, mental health and disability. If we are to increase levels of physical activity among older adults and benefit from the attendant improvements in health addressing these inequalities is a vital component of any successful strategy.


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