

STUDENT FEEDBACK FORM

This section details the *extent* to which the assessment criteria are demonstrated by you, which in turn determines your mark. The marks available for each category of skill are shown. Lecturers will use the space provided to comment on the achievement of the task(s), including those areas in which you have performed well and areas that would benefit from development/improvement.

Generic Assessment Criteria	Marks available	Marks awarded
1. Engagement with Literature Skills		
	20	
2. Knowledge and Understanding Skills		
	40	
3. Cognitive and Intellectual Skills		
	30	
4. Practical Application Skills		
5. Transferable Skills for Life and Professional Practice		
	10	

Assessment Mark (Assessment marks are subject to ratification at the Exam Board. These comments and marks are to give feedback on module work and are for guidance only until they are confirmed.)	Late Submission Penalties (tick if appropriate)	%
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University of Wales Trinity Saint David

BSc. Health, Nutrition and Lifestyle

BMHN4001 – Health, Exercise and Society

Assessment Two (Essay)

**The relation between falls and physical activity levels in the UK along with
preventative interventions for falls among the elderly**

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Introduction

Falls are one of the most leading causes of accidental injury-related deaths globally (WHO, 2021). The Office for Health Improvement & Disparities (2021) describes a fall to be an incident where someone unintentionally drops to the ground or a lower level. Despite anyone can suffer a fall it is more common among older adults who are at risk and likely to fall particularly if they have longstanding medical illnesses (National Health Service (NHS), 2021). The NHS (2021) went on to advise that 30 % of older adults age 65 years and over are likely to suffer a fall each year. Based on their data collected, they also stated that for older adults over the age of 80 years, the percentage of falls increases to 50%. Some persons may experience hip fractures from falls, which then increases their mortality risk by “9.4 % at 30 days and 31.2% at 1 year” with an average hospital stay of 20.5 days within the year of the fracture. Age UK (2019) stated that approximately 100,000 people 65 years and above suffered hip fractures between 2017 and 2018. The Office for Health Improvement & Disparities (2021) said that 20% of those who suffer hip fractures required long-term care within the first year after the fracture. With the fractures associated with these falls, there are sooner admissions into nursing homes due to their reduced functionality (Dionyssiatis, 2012). When compared to men, women are 50 % more likely to suffer fall-related injuries (Dionyssiatis, 2012) and account for two-thirds of hip fractures (Age UK, 2019). Luukinen et al. (1995) and McClure et al. (2005) also stated that these falls are twice more common in nursing home residents than in those elderly living in communities. These falls in older adults are associated with many risk factors that can be behavioral, biological, socioeconomic, and environmental (WHO, 2021). The biological factors include excess alcohol use and lack of exercise, biological factors involve age, gender, and chronic illnesses, and environmental factors are associated with poor building design and insufficient lighting.

It is important to prevent falls as it can reduce the financial burden on the NHS and social care due to hospital admissions (Age UK, 2013) and preserve the health, welfare, and independence of the older adults (Office for Health Improvement & Disparities, 2021). According to the Office for National Statistics (2021), the population across the UK has continued to grow between 2015 and mid-year 2020 with little

significant decrease. Public Health England (2017) states that those aged 65 and above are projected to increase by 40 % in approximately 12 years. This may potentially increase fall rates as WHO (2021) indicates that the likelihood of having a fall that results in injury or death rises with age worldwide. Hip fractures from falls are known to cost the UK approximately 2 billion GBP annually (Public Health England, 2017). It was expressed that though many tend to label falls in later life as inevitable Age UK (2019), they can be reduced through physical activity that improves fitness, strength and balance (WHO, 2021). There have been made reviews on different programs that assessed their relationship with falls.

Physical activity and how it can prevent falls

Physical activity is defined as any bodily movement of the skeletal system that uses up energy (Department of Health and Social Care, 2019). It is known to prevent falls in the elderly and reduces the risk by 30%. The department expresses that the benefits of being active outweigh the risk and the guidelines for the elderly (65 years+) remain the same as for regular adults. They recommend 150 minutes of moderate-intensity aerobic activity per week or 75 minutes of vigorous-intensity. However, surveys from the Department of Digital, Culture, Media, and Sport (DCMS) (2020 & 2022) show that physical activity level decreases with the aging population. Dipietro et al. (2019) claims that physical activity not only reduces the chances of falls but delay the loss of functionality and mobility which is a big contributing risk factor to falls.

Gormsley and Hussey (2005) indicated that exercise cannot be generic due to variation in physiological and biological statuses. Age UK (2013) stated that falls can be reduced up to 54% through personalized exercise programs. Ades et al. (1996) noted that participating in a resistance training program for approximately 3 months increases the leg strength and walking resistance in elderly persons. Before administering any physical activity program, Gormsley and Hussey (2005) advised that the checks should be done to cover various areas such as strength and balance, aerobic capacity, and bone mineral density. As suggested by Otis and Goldingay (2000), physical activity is important in building bones. They advised that the bone mass density should be developed as much as possible before the age of 30 -35 as it declines after this age

particularly in women due to the absence of some hormones such as estrogen after menopause. This is the main cause for their higher risk compared to men as previously mentioned. Fractures occur with falls with the impact is more than the total bone strength (Berry and Miller, 2008). It is important to aim in achieving bone mass peak from an early age through weight-bearing activities to prevent the development of predisposing conditions such as osteoporosis (Otis and Goldingay, 2000) that is a high-risk factor of falls (Dionyssiatis, 2012).

A study by Pereira, Baptista, and Infante (2014) reiterates that being active decreases fall-related injuries. It was conducted on 506 older adults aged 50 years and over who suffered a fall-related injury. They reported that the chances of falling were decreased by 2 % for every 100 metabolic expenditure (MET-min/week) of total physical activity. This decrease rate increases to 5 % for each 100 MET-min/week of vigorous activity. Exercise programs used as interventions included tai chi and yoga and have been proven to reduce the risk of falls and strengthening bones and improving balance in the elderly.

Exercise interventions for fall prevention and their effectiveness

Reviews by Winser et al. (2019) and Sherrington et al. (2020) among others have confirmed that exercise does reduce the risk of falling among the elderly. It is suggested that exercise reduces the number of falls over time by approximately 23%. The studies involved exercises around strength training, balance, and function training along with a combination that includes resistance training.

The review by Sherrington et al. (2020) consisted of 108 studies that included 23,407 participants from 25 countries including Australia, the USA, Japan, and the UK. The average age of the participants was 76 and 77% of them were females. The results showed that exercise interventions that include multiple types of exercises for gait, balance, and functional tasks along with resistance training are likely to provide a reduction in falls by 34%. Balance and functional exercises only were said to reduce the rate of falls by approximately 24 % and the effectiveness of resistance training on its own along with regular exercise such as walking and dancing (endurance exercise) was

claimed uncertain. Liu et al. (2017) said that progressive resistance exercise did help with lower body functionality, and muscle strength. However, resistance exercise alone was still less effective than combined exercises which were suggested to have more effect on balance, muscle strength, and lower body function improvement.

The Lifestyle-integrated Functional Exercise (LiFE) program was an intervention used in some research reviewed by DiPietro et al. (2019). It describes functional exercises to be those that are created in a manner to promote lower-body strength, balance and motor performances in an effort to improve physical activity on a daily basis. Examples of these include stepping over obstacles, toe raises, chair stands, and squatting. Clemson et al. (2010) described it as a program that incorporates exercise into daily activity. Earlier it was disclosed that physical activity decreases with age. Burton et al. (2013) found in their research that older adults receiving care services prefer “incidental” physical activity like house cleaning, gardening, or walking to the shop rather than regular exercise schemes as the younger population. This physical activity intervention method from their investigation increased participation and functionality. Their study was based in the Perth Suburbs for adults 65 years and older who were assessed to require physical activity by their care managers. A pilot study conducted by Clemson et al. (2010) showed a reduction in falls by more than half. Their study was geared towards older adults aged 70 and over for a 6-month period. Participants had to have 2 or more falls in the past year. After the intervention, the test group recorded 12 falls while the control group had 35 falls. Because of the design of these programs and their relatedness to regular life such as housework or simply brushing one’s teeth LiFE may be more effective than regular exercise programs (Weber, et al., 2018).

The study by Cauley et al. (2013) was suggestive of a dose-response between falls and regular exercise physical activity. This investigation involved participants who were 65 years and older. It showed that the risk of fall-related injury and bone fractures was reduced with at least 30 minutes of moderate-intensity physical activity compared to low-intensity physical activity. Iinattiniemi, Jokelainen, and Luukinen (2008) stated that persons aged 85 and older also see a similar relationship with 60 or more minutes

of moderate-intensity activity per week. Lower amounts of moderate-intensity physical activity like walking may not be adequate to decrease the risk of fall-related injuries and fractures in older age (Cauley et al., 2013, Iinattiemi, Jokelainen, and Luukinen, 2008). Despite many studies and the proof that physical activity aids in reducing falls and the likelihood of suffering from one, there is still no precise exercise dosage or prescription due to many varying factors such as a participant's aerobic ability, bone density, muscle strength, and existing chronic conditions.

Different types of exercises will result in a varying impact on fall risk and reduction. Most programs are revolved around strength and balance training. However, despite being more cost-effective than other multifactorial interventions to prevent falls they are less effective in comparison. Winsor et al. (2019) suggested that many are not inclined to carry out institution-based exercise programs and recommend carrying out group-based learning with home-based delivery and follow-up. Sherrington et al. (2020) explained that due to the multiple contributors including physiological factors an exact dose of exercise cannot be given. Despite the possible dose-response effective between falls and physical exercise, the Department of Health and Social Care (2019) advised that "some physical activity is better than none: even light activity brings some health benefits compared to being sedentary".

Summary and Conclusion

Falls can happen to anyone but they are more frequent among older adults due to the effects of the aging process. Though falls in later life may be unavoidable, exercise is one lifestyle activity that can reduce your likelihood of falling. As the population is aging it will be a good initiative to improve the physical activity levels of the elderly over 65 years. One new intervention that encourages more participation of the elder due to the relativeness to regular daily activities is a LiFE program. This may help to reduce the number of hospital and nursing home admissions that will place fewer burdens on the NHS and the social care services. Any exercise program should not be "one for all" and should cater to activity level to avoid injury from physical activity. The focus should be placed on balance and strength exercise and successful exercises

used in different interventions included tai chi and simple activity such as toe rises and chair stands.

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