



## Article

# The Experiences of Older Adults with Dementia of “Balance Wise”—An Individual or Group-Delivered Exercise Programme: A Qualitative Study

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**Abstract:** This study aimed to understand the experience of older adults with dementia towards, and the practicality of, the Balance Wise exercise programme. A qualitative study guided by the General Inductive Approach was employed. Ten people with dementia aged 71–87 years who completed the exercise programme and four care partners aged 69–76 years old (three of whom also participated in Balance Wise) were interviewed in dyads. The programme (individually or group delivered) was held once a week for 30 min for 10 weeks and included balance and strength exercises, cognitive training, and other enjoyable physical activities. Interviews were thematically analysed. Three overarching themes were identified (i) decision making, (ii) comprehension, and (iii) perceived benefits. Participants acknowledged their decision to participate was influenced by ‘awareness’ about their declining memory and their ‘health belief’ about the potential benefits of exercise. ‘Perceived benefits’ were influenced by the ‘support system’ and improvement in postural stability. ‘Comprehension’ was, however, an important cognitive ability to understand the purpose of the activities in the programme and facilitated motivation. This study highlighted an important message that such programmes should be developed from the end-user perspective, and this included that the programme be flexible and safely delivered, as well as be fun and pleasurable, thus promoting socialisation.

**Keywords:** cognitive impairment; dementia; older adults; falls prevention; physical activity; exercise; qualitative



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## 1. Introduction

Older adults with dementia are at high risk of falling, with about 50% experiencing a fall each year and a reported rate of falling two to five times higher than that of cognitively unimpaired older adults [1,2]. Recurrent falls are three times more likely for older adults with dementia than older adults without dementia [1]. Reasons for this high risk of falling include impaired attention and executive function [3,4], and for recurrent falling, delayed recovery from a previous fall injury [5,6]. Post-fall anxiety syndrome [4] can cause those with mild cognitive impairment to be more fearful of falling; conversely, people with moderate cognitive impairment may become less fearful or risk averse, resulting in increased rates of falling [7].

With overwhelming evidence that exercise programmes can reduce fall rates and injuries in community-dwelling older adults [8], a growing number of studies have investigated the role of exercise in reducing falls in older adults with cognitive impairment [1,9,10].

For this population, evidence for the effects of exercise on improving postural stability and reducing falls is becoming stronger but continues to need to be interpreted with caution due to a relatively small number of studies, limited quality of some studies, and generally small sample sizes [1]. One possible reason for this may be that engagement in exercise programmes by older adults with dementia is low, with a reported 30–45% adherence rate [11–13]. The identified challenges to exercise participation are mostly related to disease progression, particularly as symptoms become more noticeable, for example, fatigue, the need for more sleep, and behavioural and psychological changes [13,14]. One important factor that influences the engagement in exercise is the practicality of the exercise programme [13]. Further research is required to explore the opinions of older adults with dementia towards exercise to enable a more holistic understanding of their preferences and facilitators to exercise participation.

Older adults with dementia can be critically dependent on care partners for support to access healthcare [15], for example, exercise programmes, and both older adults with dementia and their care partners can become overwhelmed as extra activities are added to an already overloaded care schedule [16]. Caregiver burden can cause distress mentally, physically, financially, and socially [17,18], and mood disturbances [19]. Dyadic exercise (carer and care recipient) has been found to positively decrease care partner burden [20]. Therefore, whilst requesting care partners to assist older adults with participation in exercise programmes may be considered burdensome, by joining in, the care partner may themselves gain benefits.

In our previous qualitative study [21], we found that older adults with mild to moderate cognitive impairment and their care partners had complex and changing perceptions about exercise and physical activity. The people we interviewed seemed to fluctuate between states of acceptance, denial, and accommodation, and each state would impact participants' decisions to exercise or be physically active and what sort of physical activity they wished to engage in. Further to this, it appeared that older adults with mild to moderate cognitive impairment preferred meaningful activities that were relevant or made sense to either their past or current identity. Concurrently, these activities stimulated and facilitated the development of social connectedness and were activities that were considered enjoyable and pleasurable. Based on these findings, we developed and piloted an exercise programme, Balance Wise, for older adults with mild to moderate cognitive impairment and their care partners.

Balance Wise was designed based on the evidence-based, older adult, strength and balance exercise fall prevention intervention, the Otago Exercise Programme (OEP) [22,23] and its community peer-facilitated derivative, Steady as You Go Fall Prevention Programme (SAYGO) [24]. The OEP has been reported as a safe and acceptable exercise programme in older adults with cognitive impairment [25]. We modified these programmes addressing considerations identified in our qualitative study [21], namely, to shorten session duration and keep exercise intensity low to accommodate for fatigue and limited concentration spans; to include exercises that challenged cognitive function and visual input and involved complex motor tasks used in everyday life; and to ensure that all exercises chosen were fun and enjoyable to do. Participants could choose to have a home- and individual-based exercise programme or attend a group-based exercise programme.

This paper reports a qualitative evaluation exploring the experiences of the Balance Wise participants of both older adults with dementia and their care partners. Specifically, we wished to explore (1) the acceptability and practicality of delivering the Balance Wise intervention for older adults with dementia and (2) the potential benefits of the programme regarding postural stability and falls risk.

## 2. Materials and Methods

As this study explored a health service (an exercise programme), we chose qualitative evaluative methodology. This methodology specifically assesses health programmes and services [26]. We collected data using semi-structured interviews and analysed the data

with the General Inductive Approach, a pragmatic approach developed for the analysis of health evaluation data [27]. The study was approved by the University of Otago Human Ethics Committee (Health) (H15/073). This report adheres to the Consolidated criteria for Reporting Qualitative research (COREQ) checklist [28].

### 2.1. Researcher Reflexivity

The research team were all physiotherapists with experience in working both clinically and in research with older adults with dementia and held a constructionist stance. Our theoretical approach to analysis was underpinned by a pragmatist approach [29]. N.M. and D.M. were doctoral students and M.P., K.D.H., and L.H. were experienced qualitative and quantitative researchers. Three researchers were female and two were males.

### 2.2. Participants

Older adults with dementia were included if they were aged  $\geq 55$  years old for Māori or Pacific Island or  $\geq 65$  years old for individuals identifying with an ethnicity other than Māori or Pacific Island. The difference in age classification of 'older adult' by ethnic group is considered acceptable due to the reported health status variance among these ethnicities [30]. Other inclusion criteria were a diagnosis of dementia confirmed by their general practitioner (GP) (permission was gained from participants to contact their GP), a Mini Mental State Examination (MMSE) score of  $\geq 10$  [31]; ability to self-consent to participate (determining this ability was guided by steps outlined by the United Kingdom's Alzheimer's Society [32]; ability to understand verbal instruction sufficiently to safely participate in the exercise programme and take part in an interview; independently mobile for at least 5 m (with or without walking devices); free from musculoskeletal, cardiac, and neurological impairments that would prevent the participant from participating in the intervention; and living in the community or in a retirement village. Consent was gained from participants to obtain medical clearance and appropriate health information from their GPs to participate in testing and the intervention. The MMSE, administered by N.M., screened cognitive function and has robust psychometric properties [33]. A license to use the MMSE was obtained from Psychological Assessment Resources, Inc., Lutz, FL, USA. Potential participants not meeting the above criteria were excluded.

Care partners were defined as a person who was a family or whānau member, caregiver, or support worker who was important and central to the care and support of the participant with dementia. Hereafter, "participants" refers to the older adult with dementia participants and "care partners" to the care partner participants.

### 2.3. Recruitment

Recruitment was via public advertising (for example, local newspapers, public noticeboards) and via meetings and newsletters of the local Alzheimer's Society, Age Concern, and the Disability Information Service. On expression of interest, potential participants were sent a study information sheet, a consent form, and a questionnaire. Those willing to participate contacted a research administrator via telephone or email who explained the study further, answered any questions, and checked study eligibility, and if the participant was still willing to be involved, arranged the first appointment. Participants were asked to nominate their caregiver and if their caregiver agreed to participate, written consent was gained from them as well.

### 2.4. Intervention: Balance Wise

Balance Wise was delivered by two physiotherapists (D.M. and N.M.) to ensure safe delivery. Table S1 in the Supplementary Data shows the main features of Balance Wise. The type of exercises and tasks were kept the same throughout the programme to assist participants' familiarity with them. The group class was organised to be held on the same day and at the same time weekly in a university-based physiotherapy clinic, and to be as simple and short as possible to facilitate optimal learning and engagement.

The intervention was a maximum of 30 min in duration (the time varied depending on participant ability) and practiced once a week for 10 weeks. Participation in the programme, capability to accomplish the group-based exercise programme, and any adverse events (i.e., pain, discomfort, falls) were recorded at the end of each session by the instructors (D.M. and N.M.). To optimise engagement, a reminder note for the next class was given after each class. The care partners were encouraged to exercise alongside the participants.

For the home- and individual-based programme, participants were asked to undertake the exercises alongside their care partner, both of whom were appropriately trained in one to two home visits. To optimise engagement, participants were phoned on weeks 1, 2, 4, and 8. Participants were asked to record any adverse events in a provided diary and this information was collected via telephone calls.

## 2.5. Data Collection

### 2.5.1. Demographic Data

Self-reported (or with assistance from their care partner) demographic data on age, sex, marital status, ethnicity, education level, medical status, and history of falls and medications were collected prior to commencement of Balance Wise.

### 2.5.2. Interviews

Each participant and their caregiver were interviewed together one week after completion of the programme. Participants were reminded that participation in the interview was voluntary, and they could stop at any point of the interview if they chose. All interviews were conducted by N.M. at a mutually agreed location, time, and date. The interviews were audio-recorded using a Sony ICD-UX300F voice recorder (Sony, Tokyo, Japan). Table 1 illustrates the primary questions of the interview. The sequence of questioning changed according to the progress of the interview. At the conclusion of the interview, participants were provided with a NZD 25 grocery voucher as an acknowledgement of their time, travel, and/or parking costs.

**Table 1.** Primary questions of the post-intervention interview.

| Questions |   |
|-----------|---|
| 1.        | Please tell me about the exercise programme you have just completed.        |
| 2.        | What motivated you to participate in the programme?                         |
| 3.        | What were your expectations?  |
| 4.        | What were your perceptions of being in the exercise group/exercising alone? |
| 5.        | What would you like to change about the programme to suit you better?       |
| 6.        | What would stop you from continuing, or help you to continue, to exercise?  |

### 2.5.3. Data Analysis

The demographic data were analysed descriptively. Considering the qualitative data from a latent perspective, these data were analysed guided by the General Inductive Approach. Five steps are described in the process of this inductive coding which include: (1) preparation of the raw data; (2) close reading of the text; (3) creation of categories; (4) overlapping coding and un-coded text; and (5) revision and refinement of the categories [27] (p. 5).

All interviews were transcribed verbatim by N.M. and crosschecked against the audio recording by an independent person (M.P.), not involved with programme delivery or data collection, to reduce errors in the transcribing. Once the transcribed data files were cleaned, the text data were read closely by both N.M. and M.P., and coding of the data commenced. On the first couple of readings and while listening to the audio recordings, any interesting ideas and quotes and intonation in the text were noted. By this means, potential codes via the grouping and naming of comparable data were generated through line-by-line open coding, each code having a unique meaning. Both the similarities and the differences in the perspective between participants and caregiver responses were noted. The codes were then

discussed by N.M. and M.P., refined further, and collapsed into categories and then themes that reflected codes with similar meaning. Within each category, exemplar quotations were selected to convey its core primary message.

The group notes and participant diaries were reviewed [34] and analysed descriptively [35]. Information related to adverse events was inspected and the number and the percentage of reported adverse events calculated [34,36].

### 3. Results

Twenty-seven people responded to the recruitment drive; 12 did not meet eligibility criteria (not interested after receiving further study information = 4, health issues = 7, work commitments = 1) and 15 participated in the Balance Wise intervention ( $n = 12$  group,  $n = 3$  home). Ten participants consented to be interviewed post intervention ( $n = 9$  group,  $n = 1$  home). Four care partners also consented to be interviewed post intervention, three of whom participated in and assisted with the group-based programme. Of the remaining five Balance Wise participants, two developed unrelated health issues and three were lost to follow-up. Table 2 shows all interviewees' characteristics (by pseudonym). The age range of participants was 71–87 years and for the care partners it was 69–76 years. All participants had a diagnosis of dementia with a Mini-Mental State Examination score of  $\geq 10$  [27].

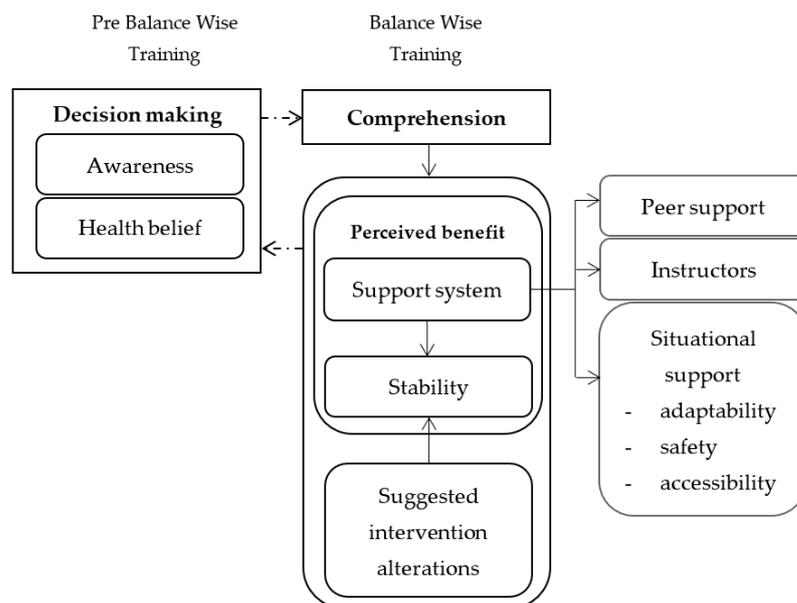
**Table 2.** Characteristics of interviewees (names are pseudonyms).

| G/I | Participants with Dementia |     |            |            |      | Care Partners |            |      |              |
|-----|----------------------------|-----|------------|------------|------|---------------|------------|------|--------------|
|     | Name                       | Sex | Age (Year) | MMSE Score | LTCs | Name          | Age (Year) | LTCs | Relationship |
| G   | Alia                       | F   | 74         | 28         | 11   |               |            |      |              |
| G   | Zain                       | M   | 74         | 21         | 1    | Joana         | 70         | 0    | Wife         |
| G   | Dane                       | M   | 82         | 24         | 2    |               |            |      |              |
| G   | Sue                        | F   | 81         | 30         | 0    |               |            |      |              |
| G   | Wilson                     | M   | 87         | 28         | 3    |               |            |      |              |
| G   | Mark                       | M   | 72         | 24         | 2    |               |            |      |              |
| I   | Julie                      | F   | 71         | 25         | 0    | Brown         | 71         | 0    | Husband      |
| G   | Leslie                     | F   | 71         | 25         | 0    |               |            |      |              |
| G   | Wood                       | M   | 74         | 17         | 7    | Cole          | 69         | 1    | Ex-wife      |
| G   | Hansen                     | M   | 76         | 21         | 3    | Megan         | 76         | 1    | Wife         |

Notes: G—group-based Balance Wise; I—individual-based Balance Wise; LTCs—number of long-term conditions; MMSE—Mini Mental State Examination. Long-term conditions included diabetes, hypertension, arthritis, knee and hip replacement and respiratory problems, and back pain.

#### 3.1. Linkage between Themes

Qualitative analysis of the post-intervention interviews identified three themes—decision making, comprehension, perceived benefit—and are described below. Figure 1 illustrates the link between the themes and categories, addressing the study questions about acceptability, practicality, and safety.



**Figure 1.** Illustration of the linkage between themes and categories.

### 3.2. Decision Making

‘Decision making’ was an important theme as it spoke to the acceptability of the intervention. In the first instance, participants had to decide whether the intervention was acceptable for them to participate. Their initial expectation was that the intervention would help to improve postural stability; however, many also held the belief that it would also help improve their memory. As they continued with the intervention over the 10 weeks, they continued to deliberate as to whether the perceived benefits of attending the classes were worth the effort, i.e., did it continue to be an acceptable intervention, and this influenced adherence to the intervention. This decision making was influenced by participants’ ‘awareness’ of, and ‘health belief’ in, the intervention. Similar deliberation was also reported by the care partners.

In the category ‘awareness’, participants said they initially decided to join the intervention as they thought it would help their declining memory. Most interviewees were concerned and worried about their memory, that it was gradually deteriorating, especially their short-term memory. The exercise programme appeared to offer hope to battle the deterioration of their memory. For instance, Leslie mentioned during the interview “*I was looking for exercises that I could do which would be beneficial for my balance and memory*”. With continued involvement in the intervention, there was a growing awareness that the intervention could improve their physical performance, particularly their postural stability, while at the same time, they would be using executive function, i.e., focus while doing a task. As one of the interviewees explained:

*I used to go downstairs sideways, one foot at a time. But now I go down normally, but it requires more concentration now than it used to. So, from that point of view, yes. I suppose I always have concentrated, but now I realise I must concentrate a bit more.* (Wilson).

In the category ‘health beliefs’, the acceptability of the intervention was strengthened by participants’ beliefs that it would be beneficial for them. For one participant, the decision to take part in the programme was determined by the belief that the medical system facilitated health benefits and thus empowered a person to assist themselves. This belief system developed from previous positive experiences of receiving treatments from healthcare professionals. As Sue acknowledged: “*The medical system has always been very helpful to me, but it is up to me too, to do things for myself, that is what I believe*”.

For another participant, the internal belief that one must exercise hard to receive the benefit from exercise, drove him to try and obtain the most out of the exercise classes:

*If you get on the bicycle, and put the load on, pretending [cycling] up hill, putting stress on [muscle], that's good. The same [thing] when you do stepping. You do the stepping [similar to walking] up hill, because of the slope, it [uses a lot of] energy, and you have to work at it. No pain, no gain. (Dane).*

For another participant, her internal belief was to only do exercises that she was “comfortable” doing without becoming too anxious trying to do something that she could not. Although the amount of both physical and cognitive effort applied to the exercises might have differed between participants, they all still held the health belief that participating was beneficial, thus highlighting the intervention’s acceptability.

Joana, who supported Zain (whose cognitive limitation required supported decision making) had a similar comment to make:

*I thought ‘well, we’ll give that a try.’ It’s reasonable to say that [Zain] doesn’t make those decisions. I do, to try and keep him going. And since then, walking’s got a bit easier for you, hasn’t it, for you, since you’ve been coming to the programme. (Joana, caregiver).*

### 3.3. Comprehension

It appeared that most participants were able to grasp the concept and purpose of the activities in Balance Wise (for example, activities to improve the use of the sensory system or those that were aimed to increase muscle strength), even for the multi-tasking activity that involved calculation and concentration. For instance, Wilson said: “I can understand the theory behind it, if you’re thinking of something else, in your head, you’re not thinking of where your feet are going.” (Wilson).

However, unsurprisingly, a few participants found the latter activity to be quite challenging. These tasks demonstrated to participants that some cognitive skills, which they had hitherto been unconsciously competent with, were now challenging. As one participant stated: “I found [the cognitive stimulation activity was] quite difficult. I had forgotten about that one. Yes, I found [it was] quite challenging, I had never done anything like that before, it was new, and interesting.” (Sue).

The care partners interviewed also said they could see the purpose of the whole programme, that it had exercises that focused on both cognitive and physical limitations, which was good.

*Because you’ve got to think—they’ve got to try and think about what they’re doing. And I think it might help coordination, it might help, well, balance in particular, I think that’s what the biggest problem is for older people. They lose their balance, and I think that meant, yeah, those exercise programmes on the walkways and things I think would probably help quite significantly [challenging] for quite a few of them. (Joana, caregiver).*

### 3.4. Perceived Benefits

Balance Wise was viewed as beneficial by both participants and care partners and this also spoke to its acceptability. Within this theme were two categories (‘support system’ and ‘stability’) that described in more detail how and why Balance Wise was beneficial.

#### 3.4.1. Support System

Support systems were viewed as an important characteristic of Balance Wise that linked to decision making and acceptability. There were three support systems that were deemed important: (i) peer support, (ii) instructors’ support, and (iii) situational support (adaptability, safety, and accessibility).

##### Peer Support

Participating in the programme led to the development of social capital. The attendance of care partners (spouses, one ex-wife, and friends) became integral to the partic-

ipants' support system. The support system that was built via the socialising occurring during the intervention was continued outside the intervention. The participants expressed that socialising gave companionship, and this was considered particularly important for the class members who lived alone. It also delivered a sense of empowerment and motivation between members to keep going, and this was considered important for current well-being but also as a preventive action to minimise future health issues. For one participant, his support system was the basis for generating the discipline to continue exercising on a weekly basis.

*Well, I enjoy the social side of it. I [found the activities were] pretty easy. [I] enjoyed and [I] like the people, very much. [The group had] a great mixture of both in personalities and the [cognitive] stage they're at. (Hansen).*

Further, the care partners could see the benefits of the class either from participating in the exercises themselves, or due to the short period of relief away from the stress of being a support person. Indeed, the care partners also found that the Balance Wise programme gave them an opportunity to make new friends.

*I really like the class; I met some nice people. A couple of really nice women, that I think they have asked for my contact details. I think we will keep in touch. So that was a good aspect of it. (Cole, caregiver).*

#### Instructors' Support

All participants and their care partners valued the support of the exercise instructor. They recognised that some participants required more attention than the others, as Alia said:

*So yes, but it's been good seeing how you handle other people. And trying to set them on the right road if they're not doing it correctly—that's a difficult one. [A] challenging one, actually. (Alia).*

Participants highly valued: (1) the instructor's clear instructions accompanied by demonstrations and (2) having two instructors increased participant confidence as they felt there was more opportunity for individual attention. Megan (caregiver) explained:

*I think sometimes clear explanation beforehand, with a visual demonstration. But that might be just me, I don't know. I think it's good when there's two of you because one of you is watching while the other one's demonstrating, I think that's probably very good, because you can see who needs a bit of help. (Megan, caregiver).*

#### Situational Support (Adaptability, Safety, and Accessibility)

Participants said that the exercise programme was "easy" to follow and something they could adapt and include into their daily lives so that the exercise was not only something that could take place in the physiotherapy clinic but could be "done every day" at home. For example, Sue reported that she now did the one leg standing exercise that she learnt from the exercise programme at home while she watched television. Similarly, Mark and Julie said they adapted the exercises that they had learnt from the exercise programme while doing activities outdoors. Hansen said he counted a handful of money whilst walking. Julie, the only person who participated in the home-based programme mentioned:

*I think I [am aware] and I have to concentrate a little bit more on my balance. For instance, recently at Papatowai, going down [the trail] was very steep and [Jim] said 'remember your exercise', and I [walked] down without any problems. It was a real test. (Julie).*

Wilson felt that whilst most participants managed the exercises reasonably well, for some, the exercises could be a little more strenuous, especially those that involved dual tasking, for instance, simultaneous cognitive and postural stability tasks. Wilson did acknowledge though that the exercises had to be safe.

*You have to think up something a little bit more strenuous on the mind or strenuous on the feet, to be able to dissociate the two, so that you did tend to lose your balance, although you can't have people falling down all over the place. (Wilson).*

Transportation to the physiotherapy clinic was not reported as a barrier to attendance. Most participants were able to catch a bus to and from the clinic. A few participants came by car and parking did not appear to be an issue. However, Julie chose to do the individual home-based exercise programme due to the time it took to travel to the clinic. She explained that:

*Doing it in a group was probably more fun, but I was a bit restricted with time, in that I'm doing a lot of other things as well. And I just felt if I did it at home, it would be more conscientious effort on my part. Without wasting time coming and going. (Julie).*

Participants were aware that they were part of a research study and were thus conscious of the added need to give an apology if they could not attend. They also acknowledged that it was their responsibility to attend the exercise programme and thus respect the other members who participated. Other possible barriers to attendance that participants mentioned, but were not considered major barriers, were inclement weather, challenges in getting ready to attend on time, and ill health. For one participant, however, the internal conflict he had with himself was a barrier to attendance. As his caregiver explained, he sometimes was reluctant to attend, but for no specified reason:

*Well, he just didn't really want to participate, but I encouraged him to continue the course. I say if you start something you [have to] finish it. But it worked out all right in the end. (Megan, caregiver).*

#### 3.4.2. Stability

Quite clearly, participants found value in the intervention as a means of improving their postural stability. As Dane said:

*I think the [activities that] associated with balance. There were mainly—some of those were on foam, and some were without. I think the balance [activities], it's not only [that activity] involving the muscle, [it also involving] the brain and the sensory organs. That's what I think is the most interesting part. (Dane).*

Sue reported that she had not tripped once since starting in the intervention. Wilson said that he was now able to walk downstairs “normally” even though he still needed to concentrate. Leslie said that the intervention had “increased her confidence”, that the habit of concentration had now become automatic, and that she frequently reflected on what was learnt from the intervention whilst walking downstairs, an activity she was previously afraid to do. Mark told how his general practitioner was “pleased he was participating in the exercise programme” and encouraged him to “continue” to do so. Sue also spoke of the benefits of the intervention:

*Well, I know already that [exercise] helped with my walking, my balance, and [while I am] getting dressed. I have mentioned to you that I can now stand on one leg and put my trousers on. (Sue).*

#### 3.4.3. Suggested Intervention Alterations

Although Balance Wise was considered an acceptable exercise programme, participants did suggest improvements. These related to the components of the exercises, mostly about balance between repetition and variation (e.g., exercises for upper limb and for coordination; activities related to dual tasking), and the duration of the exercise programme. Wilson expressed:

*I mean throwing somethings to one [and] another, but it's probably a little bit lacking in [the exercise programme], [such as] an activity that involves coordination between individuals rather than coordination between hand and eye, in one individual. But*

*coordination between- in other words, the unexpected, dealing with the unexpected.* (Wilson).

It appeared that participants with memory issues had greater difficulty in completing dual task activities. While some participants felt that a multitask activity was easy, it was not for others.

*You are thinking as well as physically doing something, and you [are] combining the two. You know, could have been much better if I would [have] been counting forward, but that would be too easy, wouldn't it?* (Leslie).

Some participants liked how the programme had a variety of exercises, although Cole (caregiver) felt that there should be a balance between variety and repetition. She did recognise that this would be challenging to achieve—that something is more easily remembered by doing it frequently, but at the same time variation enhanced enjoyment.

*It is a hard [to achieve] balance, between systematically, repetitively, doing the same thing, and making it challenging and different. I think there was a balance there, but it needs to have a pattern for people who can pick that up and realise [each of the exercise]. It is because they [have difficulties in] memory, but they will still remember [the exercises] as they go, [and] at the same time you have to stimulate their interest.* (Cole, caregiver).

Although most participants were satisfied with the short duration (30 min) of the sessions, many felt they could have been longer by about 15–30 min. Participants who were satisfied with the short duration of the exercise sessions reported that they did not feel they were tired at the end. Megan (caregiver) acknowledged that increasing the duration of sessions could increase fatigue levels, but that this could be mitigated by frequent rest periods.

*He gets tired easily and he [takes a] rest most [of the] afternoons, because [he needs to] concentrate [while doing] something on his own, [such as] a code cracker and he rests for a while before continue doing his task. So, I guess, if [the exercise] is an hour, there's [would] have to be spaces for rest where there was sitting time.* (Megan, caregiver).

Some care partners expressed concern that the exercises should be individualised to the person's ability and that a mixed level of ability in the class minimised the benefits. One caregiver felt that the group-delivered balance exercise was not suitable for a person who had significant cognitive impairment because of the potential limitation in understanding the instructions. This caregiver did not think the group-based balance exercise offered much to the person they supported. To overcome this limitation of the intervention, she suggested that the skills and exercises provided in the classes should be determined by ability level. For instance, “[When you have] a big enough cohort, perhaps split [it] into two groups, one for the less and one for the more cognitively challenged people, according to the tests that you do at the start” (Cole, caregiver).

While some participants found group-based balance exercise was “pleasant” and “fun”, other participants recognised that they should be encouraged to do more exercise at home. In other words, they realised the benefit of doing individual exercise as well.

### 3.5. Safety and Adverse Events

No falls or other serious adverse events related to the exercise programme were reported during the study period. Minor complaints relating to muscle soreness were reported but eased or resolved the subsequent day. One participant even commented specifically about the safety of the class: “You have got a chair near you, there is no reason why you actually collapse, unless you get suddenly lack of blood to the head.” The use of chairs to increase the level of safety during exercises was considered by participants to be good.

## 4. Discussion

This study aimed to qualitatively explore the acceptability and practicality of delivering the Balance Wise intervention for older adults with dementia, and the programme's po-

tential benefits regarding postural stability and falls risk. We established three overarching themes that spoke to these aims: decision making, comprehension, and perceived benefits.

The decision making to attend the programme appeared to be influenced by the positive perceptions held by participants of the benefits of exercise for them. Whilst short-term memory can be a challenge in dementia, ability to retrieve old information from long-term memory is largely still intact [37]. Continued engagement in the programme was facilitated by the perceived benefits gained from the programme once started, which included increased confidence to move due to the perceived improvement in posture and concentration during movement. These beliefs align with the Health Belief Model of behaviour change in which people's beliefs about whether or not they are at risk for a disease or health problem, and their perceptions of the benefits of taking action to avoid it, influence their readiness to take action [38]. Whilst previous studies have identified the Health Belief Model to be potentially beneficial in encouraging non-cognitively impaired adults to adopt healthier lifestyles to reduce their risk for developing dementia [39,40], we could only find one study that intentionally used the Health Belief Model to underpin development of an intervention programme; in this example, a home-based, computerised cognitive training programme for older adults with early cognitive disorders (mild cognitive impairment and dementia). Qualitative evaluation found the programme to be feasible with both benefits and challenges identified. Participants with dementia or mild cognitive impairment considered the programme beneficial for their memories, which the authors felt was a potential hook to drive further engagement [41]. Future research exploring the utilisation of the Health Belief Model on which to develop fall prevention exercise programmes appears warranted.

Participants and care partners also identified that peer support and socialisation were other benefits derived from this group-based programme. Many studies have evaluated and reported the benefits of support for people with dementia from health professionals, delivered via a variety of models [42]. Peer support is less well researched; however, peer support has been reported to have a positive emotional and social impact [43,44]. It offers identification with others and vicarious experiences which can be mutually valuable and is founded on the lived experience and a strengths-based understanding of dementia [43,44]. Furthermore, peer support has been shown to reduce social isolation [45].

A group intervention led by well-trained and knowledgeable instructors appears to be another method of facilitating older adults and the people who support them to be engaged in fall prevention exercises [24], and this theory was reinforced by participants in our study. The group environment was valued highly due to the companionship both participants and the care partners derived from it. Developing positive relationships, without disrespect or discrimination due to the level of the disability and/or disadvantages that a person might have, is in keeping with the psychological theory of belongingness [46]. In belongingness theory, older adults tend to seek companionship with others rather than exist in isolation [47]. Studies have found that one of the predictors of adherence to a programme is the ongoing support from family members and the environment [48,49], especially when engaging in a physical activity programme [48].

Situational support was another enabling factor identified that encouraged engagement. Participants were complimentary on the meaningful way the instructors communicated with participants. As the group included people with a mixed cognitive ability, the instructors used plain language and avoided the use of elaborations and additional instructions that would confuse the participants who had more moderate levels of cognitive impairment [50–53]. Our findings are like that of a previous study which identified key elements likely to be motivational for people with dementia and the care partners to engage in group exercise, namely, classes facilitated by professionals and volunteers with experience with dementia, a venue with easy access and availability of parking, and a social area. Attendance to these factors were theorised to have a positive impact both for the person with dementia (e.g., maintaining current abilities and preventing deterioration, increasing confidence and chances to participate in other activities) and the caregiver (e.g., supportive community, sharing of useful knowledge) [54].

The exercise intervention in our study was conducted by two instructors (D.M. and N.M.) and assisted by three care partners. This meant that there was a ratio of 1 'instructor' to 2 participating older adults with dementia. Based on this highly supportive ratio, the exercise intervention was found to be practical and doable but is, potentially, with this level of support input, not sustainable in the long term. In our study, the cognitive level of all participants who completed the exercise programme was classified as mild impairment. However, it was evident that two participants found it difficult to do the exercises as they found it difficult to follow the instructions. It seems that, for those who have more limitation in cognitive function, there needs to be a one-to-one instructor to participant ratio to ensure that the participant performs the exercise correctly to avoid harm and to maximise benefit. This finding was supported by one systematic review that suggested older adults with cognitive impairment need an individually tailored exercise training programme [55]. Whilst this high ratio of health professional to person with dementia may not be conducive to financial sustainability, strategies such as assistant instructors, trained volunteers, or a circuit arrangement of the exercise class could be utilised and should be considered as reasonable accommodations to ensure article 25 of the United Nations Convention on the Rights of Persons with Disabilities (CRPD)—the right to health [56]. The CRPD promotes, protects, and ensures the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, promotes respect for their inherent dignity, and includes those living with dementia.

The participants also suggested that the exercises should be repeated following the same sequences. It makes the exercises easy to remember and be retained in the memory. The literature supports this concept: older adults with cognitive impairment learn best under consistent practice conditions and constant practice of a specific and relevant task to their abilities [57–59]. How the exercises can be learnt best is explained by the theory of motor relearning among older adults with cognitive impairment: these adults use procedural memory and learning systems which are still intact [58,59].

The addition of a secondary cognitive task while balancing was challenging for participants. Undertaking dual tasks was found to be effective in improving postural stability in older adults with cognitive impairment [60–62]. Dual tasks were associated with attentional demand and older adults with cognitive impairment were at high risk of falling because of the increment of cognitive load [63]. Thus, dual task activity should be incorporated in an exercise intervention that targets postural stability in older adults with cognitive impairment. The challenges might also be influenced by the difficulty and complexity of the dual tasks.

### *Strength and Limitations*

A strength of this study was that the exercise programme was developed based on qualitative research with older adults with mild dementia and their care partners. A study limitation was that despite our previous qualitative findings suggesting that both individual- and group-based exercise programmes were being requested, only three participants wished to be in the individual-based programme and only one of these three consented to be interviewed. This limited comparison with the group-based programme. Another related issue was the small number of participants recruited. It was not known why older adults with dementia did not want to participate in this study. Our previous qualitative study identified three dispositions where people with mild-to-moderate cognitive impairment appeared to fluctuate between—acceptance, denial, and accommodation. Each of these states appeared to self-impact, in the moment, an individual's decision to exercise or be physically active and what sort of physical activity to engage in [21]. This apparent fluctuating nature of the early stages of dementia may be one reason people may not be inclined to participate in studies or activity programmes. This is thus an important area to be explored. A further study limitation was that the interviewer was the same person as the instructor who conducted the exercise programme. This could impact on the information received from participants. Throughout the programme, the interviewer built

up a connection with the participants, thus the study was potentially exposed to reporting bias. It would be worthwhile in the future for the person conducting the interviews to not be the person undertaking the assessments or instructing the intervention, as this would reduce bias.

## 5. Conclusions

This study highlights that older adults with dementia and those who support them consider exercise engagement to be beneficial. Whilst initial engagement was for the purpose of preserving memory, it became evident that there were benefits in terms of posture, balance, and functional mobility. Further, a growing recognition of the value of social connection appeared to build intrinsic motivation and a sense of belongingness. Participants liked how the programme was flexible enough to cater for all levels of impairment (for example, exercises could be adapted), the high ratio of personal support from two instructors and accompanying care partners, and the clear communication from the instructors that ensured safe participation. Further research needs to explore the opinions of participating care partners more.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/disabilities4010002/s1>, Table S1: The main features of the Balance Wise Programme.

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