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Effects of Engaging Older Adults in Technology-Based Dance Programs

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Abstract: Functionality is a crucial aspect of aging that is vital to one's health and well-being. Older adults often struggle with mobility issues, which increases their risk of injury from falls and other problems. Dancing has the potential to be a physically stimulating activity that may be tailored to older individuals' ages, physical conditions, and cultural preferences. The study aimed to determine whether dancing programs can improve older adults' physical and mental health by using technology. Sixty women were divided into two groups at random: a dance group (N = 33; mean age 62.24) and a dance group using technology (N = 27, mean age 67.37). The intervention lasted six months and was performed twice a week for 75-min sessions. Dances were chosen from all over Greece. Participants' physical and cognitive status was evaluated before and after the intervention. The results show that the dance group improved balance ($p = 0.001$), lower body strength ($p = 0.006$) and aerobic capacity ($p = 0.006$), while the dance group with the use of technology shower greater improvement in the same tests ($p = 0.002$, $p < 0.0001$ and $p < 0.0001$). Both groups improved on walking balance and danger of falling ($p < 0.0001$). Depression ($p = 0.007$) and sociability ($p = 0.001$) significantly improved in the dance group. Dance, an enjoyable activity, contributes to the well-being of older adults by maintaining their physical status and functional capacity at acceptable levels.

Keywords: dance; older adults; technology-based program; well-being

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1. Introduction

The changes affecting aging at the biological level are complex according to World Health Organization studies [1]. As a phenomenon, it concerns the whole world, and several scientific specialties are trying to deal with it and offer solutions so that older people can be functional in their daily lives. The percentage of older adults is increasing, and this makes it difficult for people to stay healthy and happy. The population aged 60 and over is growing faster than all other age groups worldwide. In 2017, one in eight people were aged 60 or older and in 2050 they are expected to represent one in five people in the world and 35% of the European population [2]. An aging society is a huge challenge, so new strategies and action plans for aging and health will help older adults to improve their daily life and to live independently with a greater quality of life [3]. Some changes in life expectancy and birth rate mean that we need to think about ways to care for, support, and activate older adults in a different way.

Aging causes a gradual decline in physical and mental ability while contributing to an increased risk of disease. Severely limited mobility due to lack of physical exercise is aggravated by the presence of chronic diseases as body composition changes, muscle strength and endurance decrease, and joint range of motion and flexibility are limited, resulting in an increased risk of falls. Regular physical activity is an important factor in leading a good lifestyle and maintaining good health in old age. As we grow older, our bodies become less active, leading to a decline in physical health [4]. An effective option for exercise is to use dance and motion therapy [5].

Movement is a part of nature and dance is the primary means of expression. Dance-like behaviors have been observed in a variety of animal species. While these behaviors may not always resemble human dance, they often involve rhythmic movements, coordinated actions with other members of the same species, and a communicative or social function. Balcombe (2009) discusses the role of play and dance-like behaviors in promoting positive emotions and social bonds among various animal species [6]. In humans, movement is an activity that brings them together. Although they may not share words and ideas, they experience something much more whole. When you dance with someone else and give your soul through your dance, you share an experience that cannot be described. Movement is an inherent part of nature, and dance serves as a beautiful expression of this natural impulse. Throughout history and across cultures, humans have used movement as a means of communication, storytelling, celebration, and spiritual practice, drawing inspiration from the world around them.

Dancing is one way to keep older adults healthy and happy, as it is a physically and mentally challenging activity that can help seniors stay independent and connected to other people. A meta-analysis of quantitative research has shown that dance therapy is more effective than other forms of therapy. However, most of the research on this topic is qualitative and emphasizes the importance of the concrete physical activity involved in dance therapy. One important element of the activity is developing body awareness and mindfulness, as well as verbal expressions of experiencing movement [7]. These references fulfill a significant role in the context of cooperating with other dancers during a session or performance or between dancers and their social environment (family, audience).

Dance is a type of low-intensity physical activity that helps increase flexibility, balance, and coordination. It can also improve cardiovascular health, reduce the risk of falls, and relieve joint pain [8]. As a musical motor skill, it requires coordination of body movements with rhythmic stimuli, developing the adaptability of movement. It also improves muscle strength, flexibility, balance, and bone mineral density, as well as reducing back and hamstring pain [9].

In general, dance is an activity that involves coordinating movements with music as well as activating the brain because it is constantly necessary to learn and remember new movements. It improves the cognitive and physical status of older adults and contributes to a better quality of life [10], but importantly, it improves brain network performance by providing better information flow and functional reorganization of brain network nodes that induce neuroplasticity [11]. The sensorimotor area of the brain, which is involved in spatial orientation and motor planning, is stimulated by dancing. Folk dances, including ballroom dancing, have a positive impact on the autonomic nervous system, physical balance, and mental health of seniors. They also improve memory and encourage the growth of cognitive processes related to visual and spatial learning (important for learning dance) [12]. Other studies have shown that dancing reduces symptoms of depression and anxiety, improves cognitive function, and increases sociability [13,14]. Participating in dance classes or social dance events can also provide a sense of community and belonging, which is especially important for older adults. It is a fun and effective way for them to stay healthy and engaged in their communities [15,16].

The connection between dance and technology began when dance teachers and researchers used videos to record dances and media to store them [17]. During the last decade, dance researchers have become interested in the use of video conferencing, distance education, and online dance instruction. Distance education, as a result of the development of technology and communication, is a tool for flexible forms of learning, education, and training [18]. Expert interest has shifted to using the internet to merge choreography with virtual environments [19]. A web-based research program called WhoLoDancE allowed users to access and browse the dance motion repository of synchronized multimodal recordings (MoCap and video) made during motion capture recording sessions, segmented and annotated by Consortium dance experts [20]. The Terpsichore project aimed to support a set of services such as virtual/augmented reality, social media, interactive maps, and the

presentation and learning of European folk dances to deliver a huge impact on European society, culture, and tourism [21,22].

The use of technology among older adults has become more prevalent in recent years thanks to the increasing availability and accessibility of various digital devices and platforms. These technological tools can provide significant benefits to seniors, including increased social connections, improved health outcomes, and enhanced cognitive function [23,24]. Likewise, engagement with digital devices can improve memory and cognitive function in seniors, helping to prevent age-related deterioration. The internet can provide a wealth of information and educational resources for seniors to explore and learn. In general, the use of technology can provide significant benefits for older adults, allowing them to stay connected, manage their health, and stay mentally sharp [21,22,25].

The advancement of medicine and new technology has led to an increase in life expectancy in Europe. This means that older adults can potentially have a better quality of life, even though they may have more health problems. Increased access to new technologies will help people live longer, healthier lives at all ages, increasing longevity and promoting healthy aging. For instance, technological advancements have been used to maintain people's physical activity levels, enable independent living, such as by detecting falls, smart home technology, early disease detection, and management, and maintain social connections by reducing social isolation [26–28]. Creating technologies that will not exclude older adults but will benefit them will provide benefits for aging and lifespan.

The main objective of this research is to provide an answer to the question of whether the participation of older women in dance activities with the use of technology contributes to their overall well-being, which is defined as an improvement in their physical, mental, and cognitive health. Until recently, older adults participated in dance classes and studied traditional dances with the physical presence of a dance teacher. The study's originality is the use of technology to teach Greek traditional dance to older adults who are considered digitally illiterate. Some older adults have less experience or familiarity with digital technology. It is important to recognize that digital literacy is a skill that can be learned and improved upon, regardless of age.

2. Results

A *t*-test for independent samples was performed to determine if there was a statistically significant difference between the baseline and final measurement means for each variable and for each group. Table 1 shows the data analysis following physical and mental health assessments. The p-value is ≤ 0.05.

The outcomes seem especially encouraging, but they are also very beneficial for the i-dance group. Compared to the baseline measurement, the dance group showed significant improvement in most variables, such as static balance ($p = 0.009$), strength of the upper and lower body ($p = 0.001$ and $p = 0.006$), aerobic capacity ($p = 0.016$), flexibility ($p = 0.010$), balance and fall prevention ($p < 0.0001$), depression and its severity ($p = 0.007$ and $p < 0.0001$), physical and mental health ($p = 0.048$ and $p = 0.005$), stress ($p = 0.021$), sociability ($p = 0.001$), risk of falls ($p = 0.019$), and quality of life ($p < 0.0001$). Accordingly, the i-dance group compared to the baseline measurement showed significant improvement in many variables, including static balance ($p = 0.001$), strength of the upper and lower body ($p < 0.0001$), aerobic capacity ($p < 0.0001$), lower back and hamstring flexibility ($p = 0.011$), dynamic balance and agility during walking ($p = 0.003$), balance and fall prevention ($p < 0.0001$), walking balance ($p = 0.019$), physical and mental health ($p = 0.003$ and $p = 0.014$), stress ($p = 0.002$), and quality of life ($p < 0.0001$).

The i-dance group needed more time to learn the steps through the dance model and showed better outcomes in the one-leg balance test ($p = 0.001$) than the dance group ($p = 0.009$). This was because they spent more time on one leg waiting for the next step to follow. At the same time, they were focused enough to complete a dance pattern, so without realizing it they were strengthening their static balance. This result agrees with the

research of Duncan and Earhart, where they showed that static balance improved in older adults after a dance intervention [29].

Table 1. Data analysis for dance and i-dance groups between the initial and final measurement.

	Dance Group		i-Dance Group	
Variables	**t (32)**	***p*-Value**	**t (32)**	***p*-Value**
Balance one leg	−2773	**0.009**	−3776	**0.001**
BMI	1365	0.182	0.396	0.696
Chair stand test	−2947	**0.006**	−6643	**0.000**
Arm curl	−3583	**0.001**	−5316	**0.000**
2-min step test	−2555	**0.016**	−4549	**0.000**
Sit and reach	−2742	**0.010**	−2743	**0.011**
Back scratch	−1349	0.187	−0.164	0.871
Foot-up-and-go	1153	0.258	3222	**0.003**
Berg balance scale-BBS	−4670	**0.000**	−6033	**0.000**
Tinetti	−0.360	0.721	−2508	**0.019**
GDS	2872	**0.007**	0.000	1.000
IADL	−1437	0.160	1000	0.327
PHQ-9	4444	**0.000**	1688	0.103
SF12 PCS	−2053	**0.048**	−3346	**0.003**
SF12 MCS	−3027	**0.005**	−2630	**0.014**
BECK	2432	**0.021**	3469	**0.002**
Friendship scale	−3834	**0.001**	−2064	0.490
Risk of falls	2464	**0.019**	−1000	0.327
WHO-QOL	−6285	**0.000**	−7072	**0.000**

Aerobic capacity is an important indicator of overall physical fitness and health, particularly as we age. Participating in a dance program can be an effective way to improve aerobic capacity, especially in older adults, as shown in the results of this study ($p = 0.0016$, dance group; $p < 0.0001$, i-dance group). This is because dance involves continuous movement, improving the circulation, and helps the body to use oxygen better. This has the potential to enhance overall fitness levels, cardiovascular endurance, mood, and mental health, and to reduce the risk of chronic illnesses such as diabetes and heart disease [10].

Dance is often and effectively used to treat depression-related disorders, which are becoming a major global issue, especially for those who are 60 to 80 years old, typically women. Dance also reduces anxiety and prevents stress [30]. During stress control, the dance group ($p = 0.021$) and i-dance group ($p = 0.002$) improved in relation to their baseline measurements. Participation in physical activity works positively in the treatment of anxiety and depression and helps to tackle daily problems. The satisfaction they feel during dancing raises their self-esteem and confidence, contributing to their quality of life ($p < 0.0001$). The i-dance group improved their stress levels after the intervention due to the beneficial feelings offered by dance, such as the emotional, physical, social, and spiritual well-being of the people involved [31,32].

In relation to the baseline measurements in the Berg balance test, improvement was shown in the dance and i-dance groups ($p < 0.0001$), while in the Tinetti test, improvement was shown only in the i-dance group ($p = 0.019$). Both tests assess tasks identical to tasks of daily life. The corresponding findings emphasize that the participants improved in general the level of functionality by improving balance and gait, reducing the risk of falls. The results are in line with similar findings in the literature, showing that regular physical activity maintains and improves balance [8].

Anxiety is the physical and psychological reaction of the individual to any change that occurs in his life which is manifested in the individual's attempt to adapt to the new condition. Anxiety can be creative, and this is the individual's need to achieve his goals by developing healthy coping strategies to manage stress, such as exercise, relaxation techniques, etc., when needed [33]. In the present study, dance as a physical activity seems to obviously reduce the participant's anxiety comparing the outcomes in the dance group

(p = 0.021) and in the i-dance group (p = 0.002). Even though this was their first time using technology to learn traditional dances, the dance group was not stressed about the new and unfamiliar way of teaching the dances; instead, they just tried to cope with the new challenge.

The i-dance group showed significant changes in the older adult's physical and mental status. They gained a new perception of how to learn to use technology and engage in recreational activities through it. The modern lifestyle "requires" the implementation of these programs for physical activity safely and at home and it is legitimate for someone to take advantage of this potential in cooperation with health professionals to change their lifestyle.

In the SUS test, which is a tool to measure system usability, the i-dance group showed a performance of 79.81 (±SD: 9.45) (Table 2). The score of approximately 80 shows that it is a good and acceptable system [34] and its practical implementation has the potential to provide the expected results. Although participants initially stated that the full implementation of the program was difficult to use, by the end of the study their perceived usability increased to a significant level.

Table 2. Average values for the SUS score.

System Usability Scale (SUS)	Intervention	N	Average SUS Score	Standard Deviation	Mean Standard Error
	i-Dance	27	79.81	9.45	1.82

The traditional dances convey a great deal about the culture and traditions of the region from which they originate, as well as its history. Dancing is one of the most important social events for older adult Greeks; it is connected to tradition and has been a part of their lives since they were young. For many years, individuals of all ages used to learn dances with the physical presence of a teacher. The teaching of dance is often carried out through a teacher-centered educational process where the imitative method predominates.

In this study, we tried to integrate technology into dance learning in older adults without the physical presence of an instructor by trying to learn steps and movements through videos. We waited to see how the participants (i-dance group) would respond to this kind of training (due to years of habit), but the outcomes were quite positive. Many of the variables that were evaluated showed very good outcomes, and some of them were even better than those of the group that did not use the technology. Incorporating technology into dance classes and striking balance between utilizing technology as a tool emphasizing the physical and embodied aspects of dance can enhance the learning experience and open up new possibilities for creativity.

3. Materials and Methods

3.1. Study Design

The target participants in this study were older adults who joined the day care centers of two municipalities from different cities. This study is quantitative in nature and experimental in design. Two intervention groups will be created, one of which will use technology to educate the participants in dance. Figure 1 summarizes the study design by dividing participants into groups. To determine the efficacy of the intervention programs, the primary and secondary trial outcomes will be evaluated through surveys and physical assessments at 2-time points: baseline (time 1) before the intervention, and after 6 months, at the end of the intervention (time 2).

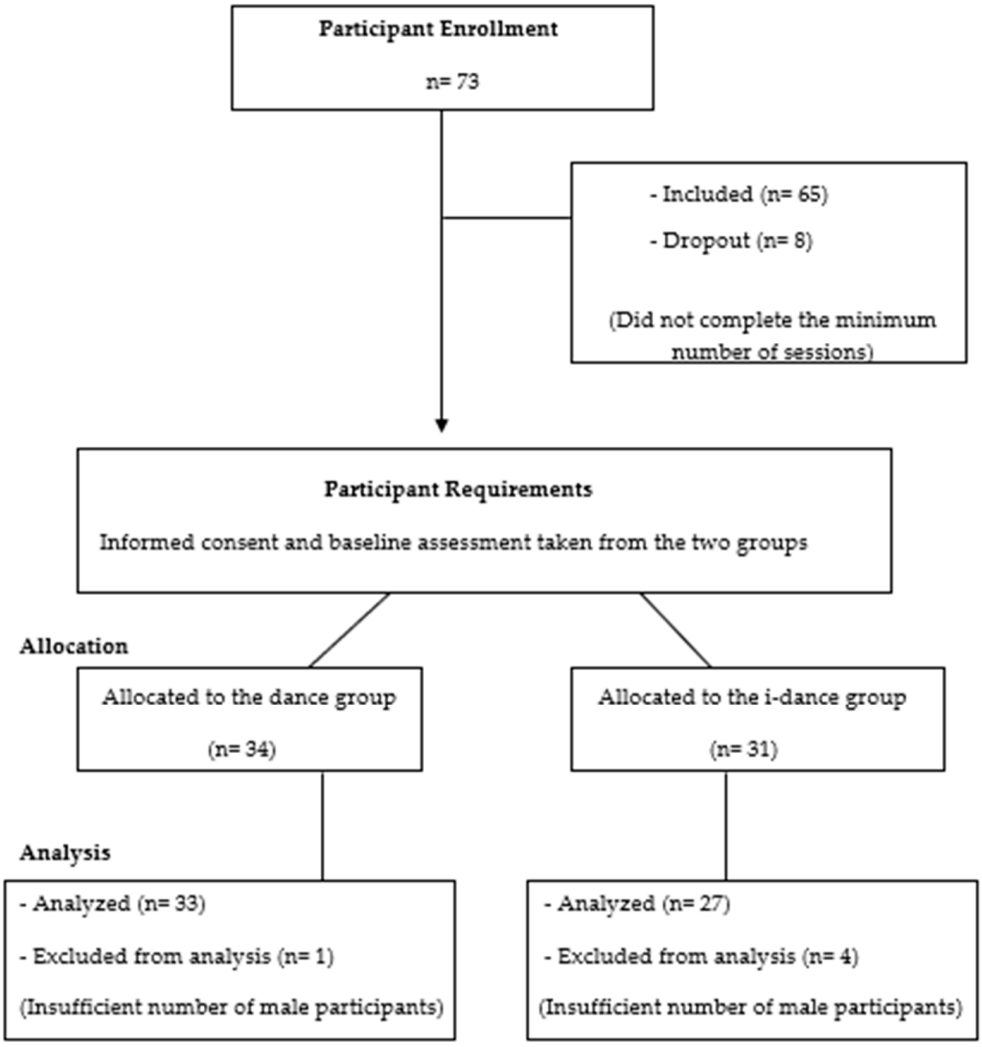

Figure 1. Flowchart of the study.

3.2. Participants

A total of 68 older women were assessed as study volunteers, but only 60 completed the intervention and assessment process. The 8 who dropped out of the study did not complete the minimum number of sessions. Alongside 60 women, 5 men were enrolled in both groups of the study, but this number was insufficient to include them in the analysis or to compare their outcomes to those of women. This was the reason they were excluded from the study. Unfortunately, men participate barely or not at all in the activities offered by day care centers, including physical activity, art therapies, and dance. Moreover, the majority of women were widows, and participating in these activities may help those who feel lonely. Many of them were also doing another activity such as reading or art therapy. They undertook these activities in parallel with the dance program until their second evaluation at the end of it.

The 60 women were aged 60 and over and were members of the day care centers of the municipalities of Thessaloniki and Pella. To join these centers in Greece and take part in the activities, you need to be 60 years old. The participants were randomly assigned into 2 groups: the dance group with the physical presence of a teacher that took place in the municipality of Pella (dance group, N = 33, mean age 62.24 years) and the dance group with the use of technology that took place in the municipality of Thessaloniki (i-dance group, N = 27, mean age 67.37 years). Before and after the intervention, all participants were evaluated for their physical status and functional capacity.

The main inclusion criteria for participation in the study were:

- Aged 60 years or older;
- No serious motor or cardiovascular problems;
- Good hearing and vision;
- Doctor's consent for training in mild physical activity.

The main exclusion criteria were:

- History of serious neurological or psychiatric diseases;
- A recent (within 6 months) history of stroke;
- Traumatic brain injury, multiple sclerosis, Parkinson's disease;
- Concurrent enrollment in other studies.

Furthermore, the confidentiality of their data was ensured, and their informed consent was obtained to comply with ethical guidelines that ensure good practice procedures in conducting research. They consented that the researchers could share their photos from the dance intervention program online and/or in print media for educational and scientific purposes. The study was approved by the Research Ethics and Deontology Committee of the School of Medicine of Aristotle University of Thessaloniki, Greece (protocol number 278, 19 April 2016).

3.3. Traditional Dances

The dances selected were from different regions of Greece and were classified into 3 categories according to intensity: mild, moderate, and high (not so intense to reach their maximum heart rate). Extra classification was undertaken based on complexity and the number of steps, the hand position, as well as the rhythmic intensity. The total number of selected dances was 20 and they were the same for both groups.

The majority of participants had some prior dance experience, but only a few of them knew the steps in 2 of the 20 dances that were included in the program. Therefore, we could observe that almost all of them were on the same knowledge and experience base.

3.4. Physical Assessment

Participants' physical status and functionality were evaluated with the following specific tools:

- Senior fitness test (SFT): assesses the physical status and functional capacity (lower and upper body, aerobic capacity, flexibility, balance) through 6 tests including chair stand, arm curl, sit and reach, back scratch, 2-min step, and 8 foot-up-and-go [35].
- Berg balance scale (BBS): assesses balance and fall risk [36].
- Tinetti test: assesses balance and gait [37].
- Static balance: assesses balance on 1 leg [38].

3.5. Functional Ability and Quality of Life Assessments

Participants' quality of life and functional ability were evaluated with special tools such as:

- Geriatric depression scale (GDS) [39].
- Instrumental activities of daily living scale (IADL) [40].
- Patient health questionnaire (PHQ-9): assesses symptoms and functional impairments for a provisional diagnosis of depression and estimates the severity [41].
- Social functioning-12: assesses functional health and well-being from the participant's perspective in the intervention [42].
- Beck anxiety inventory (BAI): self-report measure of anxiety [33].
- Friendship scale: short questionnaire of 6 domains related to social isolation [43].
- Personal risk factors: a 10-question tool that screens for risk factors for possible falls (*adapted from the Minnesota Safety Council Fall Prevention Checklist-Personal Risk Factors and Hennepin County Community Health Department with permission*).

- WHO-QOL: assesses quality of life (physical and mental health, social relationships, and environment) [44].

3.6. System Usability Scale–SUS

The system usability scale (SUS) was used to measure system usability and user satisfaction. The scale is a 5-point Likert scale that includes 10 questions and the response options range between 2 extreme values which are "strongly disagree" and "strongly agree". The scale score is as follows: 85+ excellent, 70–85 good/acceptable, 50–70 poor/usability problems, and <50 not usable [34].

3.7. Intervention

The intervention lasted 6 months with a frequency of 2 times/week in 75 min sessions. The minimum number of sessions to complete each intervention was 80% of the total sessions, i.e., 38 sessions out of a total of 48 sessions that defined the 6 months. The planning of the intervention for each dance group is explained in the following section.

3.7.1. Dance Group (Traditional Dance Group with the Physical Presence of a Teacher)

The basic equipment used was a computer for the recorded dances and loudspeakers. At the beginning of the training, some ethnographic elements of the dance were given, and videos of the specific dance performed by other dance sections were shown many times to enrich the information and knowledge of the dance. In order to properly learn and perform the dances, a demonstration of the correct technical performance was given, and then the dance was divided into parts so that it could be taught correctly. The teaching methods used, depending on the requirements of each dance, were the whole and the partial method. In some sessions, in addition to the specific dances of the program design, at the end of the session the participants also performed local dances (Figure 2). Methodical breaks were taken during the training process to reorganize their thinking and mood, especially in the hot months.

Figure 2. Screenshots of the dance group.

3.7.2. i-Dance Group (Traditional Dance Group Using Technology)

The basic equipment consisted of a computer, a projector, and loudspeakers. The material used to implement the specific dance program was established in a web-based course management system [45], created to support the learning and teaching of Greek traditional dances on the Moodle platform http://ellinikoixoroi.phed.auth.gr (accessed on 10 March 2023). It was posted on the platform on the website "Traditional Dances" and included the basic ethnographic elements of the dance as a theoretical framework (origin, measure, handle) and 3 videos to demonstrate and teach the steps of the dance. This part is divided as follows:

First phase: video presentation of the dance by a model dancer who counts and shows the steps, without music (Figure 3).

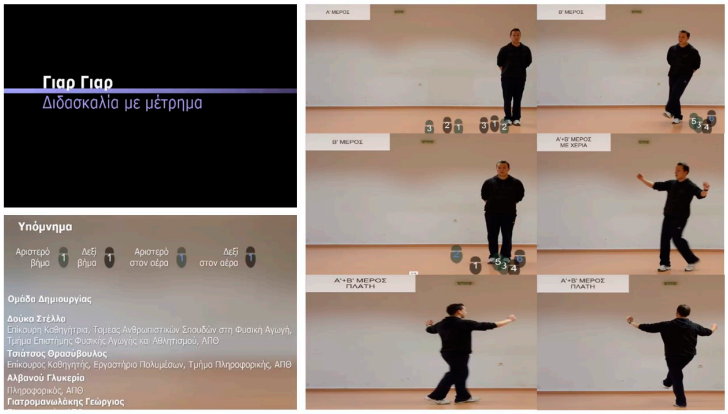

Figure 3. Model dancer counting and showing the steps.

Second phase: video presentation of the dance by a model dancer without counting, but dancing to music (Figure 4).

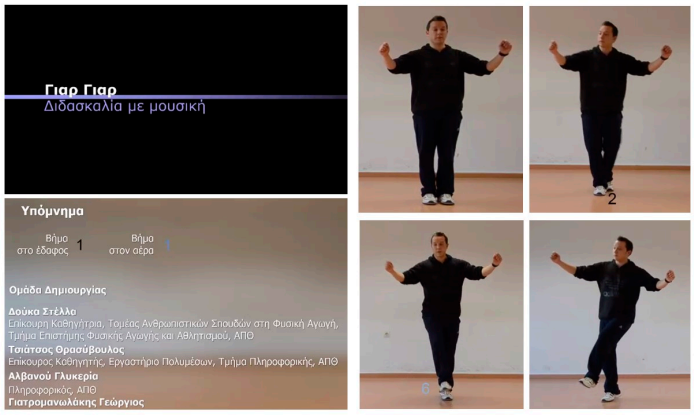

Figure 4. Model dancer showing the steps to music.

Third phase: video presentation of the dance by a group of young dancers with parallel practice by the participants (Figure 5).

Figure 5. Group of dancers showing the dance.

In the first 2 videos, each participant tried to figure out the dance movements on their own in order to perform the steps. Footprints were displayed at each step position with different colors to recognize the right from the left step, but also to recognize the one that touches the ground from the one that does not (in the air). They were focused on the videos and needed to repeat them several times for better understanding (Figure 6).

Figure 6. Screenshots of i-dance group with the use of web-based educational course management system.

In the third video they were in a circle and tried to perform the dance following the movements of the dance group (Figure 7). The participants knew that they were trained to perform the dance correctly due to their experience, so they did not mention the dancers' ages.

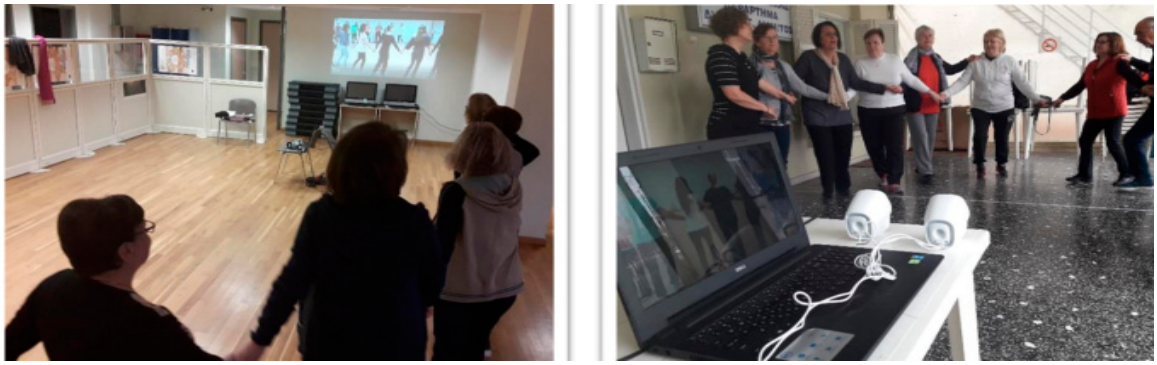

Figure 7. Participants follow the movement of the dancers.

Table 3 summarizes the demographics of the groups and the methodology observed:

Table 3. Demographics and methodology.

Groups	N	Mean Age	Assessments (Before and After the Intervention)	Intervention
Dance	33	65.24	-Physical status -Functional capacity and quality of life -System usability (at the end)	-Duration: 6 months -Place: day care centers -Frequency: 2 times/week -75 min/session -20 traditional dances (from all over Greece)
i-Dance (with the use of technology)	27	67.37		

3.8. Statistical Analysis

Statistical analysis was performed with SPSS 26. Descriptive analysis was used to summarize the data and provide a general overview of the results (means, standard deviations) A *t*-test was used for independent samples to compare the outcomes of the 2 intervention groups (pre and post measurements). The level of statistical significance was set at $p = 0.05$.

4. Conclusions

Dance is an important activity that contributes to the well-being of older adults in order to live an independent and quality life. Combined with new technology, a wide range of possibilities and options are offered to active older adults. They can join the new digital

reality where their participation in various technological processes and protocols helps them to obtain a different perception and discover other benefits.

Greek traditional dances are particularly important for older Greeks because they are related to their tradition, culture, and life. It is a popular and easily self-selected physical activity that can equally provide beneficial effects through exercise. It offers a lot of physical and mental benefits for individuals, especially when they train to improve their health. In order to acquire skills in the new digital environment, they need to receive the right guidance and support to enjoy all the opportunities and challenges presented to them. The study's findings are very encouraging, leading researchers to the conclusion that this web-based technology platform reduces the risk of various diseases and motor deficits appearing in older adults while also allowing them to remain independent, equal, and active members of society for a longer period of time.

Furthermore, the use of technology in traditional dance can play a decisive role in reforming the teaching and learning of older adults, adapted to the needs of the present. The modern lifestyle "mandates" the implementation of these physical activity programs safely and at home. It is legitimate for someone to take advantage of the possibilities offered to them in collaboration with specialized health professionals in order to change their lifestyle and also to contribute to the improvement of health services.

In conclusion, movement and dance play a crucial role in the lives of older adults. They can enhance coordination and proprioception, reducing the likelihood of accidents. Dance offers a holistic approach to physical activity, promoting physical health, cognitive function, emotional well-being, and social engagement. Moreover, technology has established a strong and enduring position in life as a component of active aging, and older adults are attempting to adapt to technological advancements. Dance and technology can offer them exciting opportunities and benefits. The online platform in this study offers instructional videos that provide convenience and flexibility while promoting physical activity. It allows them to learn movement and improve their technique promoting social engagement, cultural exchange, and the sharing of movement knowledge between different age groups.

It is worth noting that while technology can provide valuable resources for older adults to engage in dance, it is essential to consider accessibility and user-friendly interfaces to ensure their inclusivity of varying levels of technological literacy. The findings of our study demonstrate that the SUS score of approximately 80 is good for usability performance with regards to effectiveness, efficiency, and overall ease of use.

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Institutional Review Board Statement: The study was approved by the Research Ethics and Deontology Committee of School of Medicine of Aristotle University of Thessaloniki, Greece (protocol number 278, 19 April 2016).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data sets used and analyzed in the current study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

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