

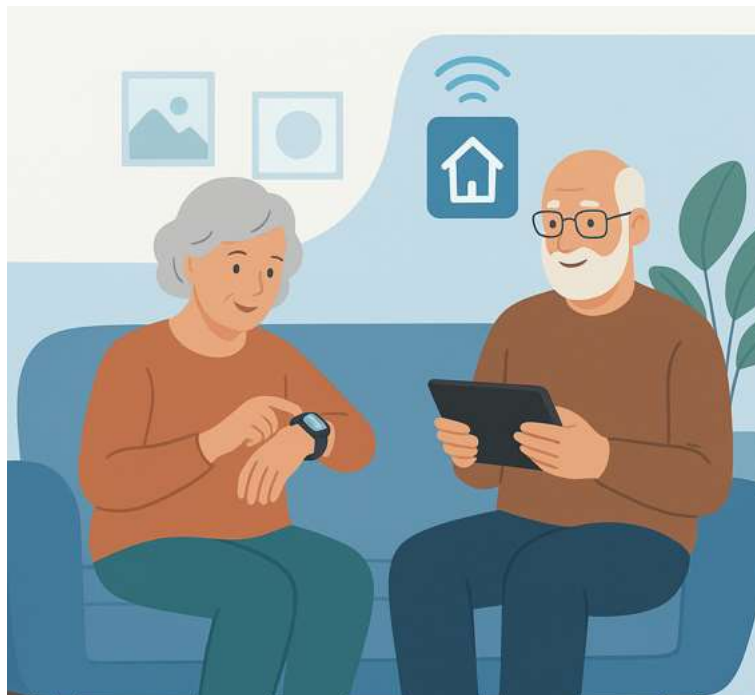


Capacity building on sustainable and motivational training design enhanced by smart technologies for senior citizens.

White paper for targeted stakeholders of the quadruple helix model

Evidence-Based Recommendations on Integrating Smart Technology for Healthy Active Ageing

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Executive Summary

This white paper presents a consolidated analysis of the IKIGAI55 project, which investigated the use of smart tools (wearables and Virtual Reality) in physical activity interventions for adults aged 55 and over. The findings are drawn from a multi-source evidence base: end-user (trainee) questionnaires, trainer feedback, and facilitator reports from eight pilot interventions across seven European countries.

The data conclusively shows that smart tools, when implemented correctly, significantly boost motivation, enable safer, personalised training, and foster digital inclusion. However, a pronounced usability gap exists, with challenges in setup, navigation, and data interpretation hindering seamless adoption.

This report provides a holistic view of the ecosystem, culminating in targeted, actionable recommendations for the Quadruple Helix stakeholders: Industry, Academia, the Public Sector, and Civil Society, to collectively build a future where technology empowers healthy, active ageing for all.

1. Introduction

Europe's ageing demographic presents both a challenge and an opportunity. Promoting sustained physical activity is crucial for healthy ageing, yet traditional exercise programmes often struggle with long-term adherence. The IKIGAI55 project posited that smart technologies could be a catalyst for change. This white paper synthesises three distinct, complementary data streams to provide a 360-degree evidence base:

1. The End-User Perspective (Trainees): Direct feedback from 87 older adults on usability, challenges, and perceived impact.
2. The Facilitator Perspective (Trainers): Insights from professionals on implementation, observed outcomes, and practical barriers.
3. The Organisational Perspective (Project Managers): Strategic insights on programme design, tool selection, and systemic impact.

By integrating these views, this report moves beyond isolated observations to present a unified strategy for scaling technology-enabled active ageing initiatives.

2. Methodology

This report employs a qualitative meta-analysis of data collected during the IKIGAI55 project's pilot phase.

- Data Sources:
 - Trainee Questionnaires: Standardised surveys completed by participants (n=87) across all pilot sites, covering digital skills, motivation, usability, and satisfaction.
 - Trainer Questionnaires: In-depth feedback from 12 trainers on tool selection, intervention dynamics, challenges, and participant impact.
 - Facilitator Reports: Structured summaries from 8 project partners, detailing intervention design, logistical outcomes, and strategic learnings.
- Analysis: Data was coded and analysed to identify cross-cutting themes, convergent findings, and unique insights from each stakeholder group, ensuring triangulation and validity.

3. Consolidated Findings

3.1 The Participant Profile and Intervention Landscape

The pilots engaged a diverse cohort of older adults, primarily aged 55-85, with varying levels of prior physical activity and digital literacy. The interventions, summarised in Table 1, were designed to be inclusive and were delivered in community-based settings.

Table 1: Overview of Pilot Interventions and Smart Tools Used

Country	Intervention Type	Smart Tool Used	Key Participant Characteristics
Belgium	VR Boxing	Meta Quest 3 VR Headset	55-65, no prior VR experience, good health
Spain (DZ)	Strength Training for Sarcopenia	Amazfit Bip 5/6 Smartwatch	55-80, rural, low prior activity & digital skills
Portugal	Fit-YogaDance 55+	Huawei Watch Fit 3	55-76, multicultural, all female, variably active
Greece	Hatha Yoga	Redmi Watch 5 Active	55+, primarily female
Italy	Light Impact Fitness	Amazfit Bip 6 Smartwatch	55+, average age 73, low prior tech use
Hungary	Nordic Walking & Dancing	Xiaomi Smart Band 8	55+, average age 74, mixed digital skills



Country	Intervention Type	Smart Tool Used	Key Participant Characteristics
Cyprus	Reformer Pilates	Various Simple Smartwatches	55+, good mobility
Spain (ES)	Silver Smart Pilates	Samsung Galaxy Watch Active	70-85, all female, generally active

Annex3 contains more detailed information about each intervention

3.2. The Smart Tool Selection Process: Usability as the Prime Driver

A consistent theme across all three data sources was the critical importance of tool selection. Facilitators and trainers consciously prioritised ease of use, battery life, and cost-effectiveness.

- Facilitator Insight: The Portuguese partner's in-person device testing was highlighted as best practice, underscoring that "it is not a good option to buy such devices online for older citizens."
- Trainee Validation: This focus on usability was validated by trainees, who frequently requested "more intuitive" devices with "bigger screens" and "buttons instead of small screens."

3.3. The Impact: A Multi-faceted Success

The combined data reveals a powerful, positive impact across physical, psychological, and social domains.

- Dramatically Increased Motivation: This was the strongest and most consistent finding.
 - Trainee Data: A high average score (~4/5) for the statement "My motivation to exercise has improved."
 - Trainer Observation: In Belgium, a "significant number of participants liked it so much they decided to purchase a VR headset." In Spain and Portugal, sharing data in WhatsApp groups created a "positive competition" and "pull effect."
- Enhanced Safety and Personalisation:
 - Trainer/Facilitator Report: Smartwatch data was instrumental in real-time safety monitoring. Partners in Portugal and Spain reported identifying "excessive effort" in participants who showed no visible signs of overexertion, allowing for immediate intervention.
 - Trainee Benefit: This created a "sense of security," as noted by several trainees.
- Growth in Digital Literacy and Confidence:



- Trainee Self-Assessment: Moderately positive scores (~3.5/5) for "My digital skills have improved," with many individuals showing significant personal progress.
- Facilitator Observation: The Greek partner reported technology acted as a "confidence booster," while the Italian partner noted a shift in mindset from scepticism to engagement.
- Strengthened Social Cohesion:
 - All-Source Convergence: All three data sources highlighted the social benefits. Facilitators reported "strong social bonds," trainers observed enhanced "group dynamics," and trainees engaged in peer-supported learning.

Table 2: Triangulated Impact Assessment

Impact Area	Trainee Perspective (Questionnaire)	Trainer/Facilitator Perspective (Observation)
Motivation	High scores (avg. ~4/5) on improved motivation.	Observed enthusiasm; some participants purchased VR headsets; data sharing fostered competition.
Safety	Appreciation for real-time feedback and a sense of security.	Used heart rate data to prevent overexertion and personalise exercises in real-time.
Digital Skills	Moderate self-reported improvement (avg. ~3.5/5).	Observed rapid growth in confidence and fluency with devices after initial support.
Social Wellbeing	Relied on peers and trainers for help; enjoyed group interaction.	Noted strong group bonding and the smart tool becoming a social conversation piece.

3.4. The Challenges: A Persistent Usability Gap

Despite the overall success, significant barriers were identified, primarily revolving around usability.

- The Initial Hurdle: Setup and Navigation:
 - Trainee Challenge: The most common difficulties were "setup," "pairing with the phone," "navigating the menu," and "small text."
 - Trainer Challenge: The primary task was providing "individual support and step-by-step guidance" to overcome low digital literacy at the start.
- Data Interpretation is Harder Than Basic Use:



- Trainee Data: Many who found the device easy to use (score 1-3) still found interpreting the results difficult (score 4-5).
- Facilitator Insight: This indicates a critical gap in data visualisation and presentation for this user group.
- Physical and Cognitive Design Mismatch:
 - Trainee Requests: The most frequent suggestions were for "larger text," "audio guidance," "more user-friendly straps," and "less complex layouts."
 - Trainer Recommendations: Echoed the need for "larger fonts," "longer battery life," and "simplified user interfaces."

Table 3: Consolidated Challenges and User-Requested Modifications

Challenge Category	Specific Issue Reported by Trainees & Trainers	Trainee-Led Solution Requested
Initial Setup	Pairing with phone, forgotten passwords, app complexity.	A device that works without a smartphone app; easier setup.
Physical Design	Small screens, small icons, uncomfortable straps.	Bigger screens, buttons instead of touchscreens, better straps.
User Interface	Complex menus, difficult navigation, small text.	Simpler menus, larger text/icons, high-contrast colours, audio guidance.
Data Interpretation	Understanding what heart rate, calories, and other metrics mean.	Clearer visual presentation of data, tutorials, and trainer explanation.



4. Consolidated Recommendations for the Quadruple Helix

The following recommendations are derived directly from the consolidated data and are targeted at the four key actors in the innovation ecosystem.

4.1. For Smart Tool Producers (Industry)

1. Develop a Mandatory 'Senior Mode': Implement an easy-access mode featuring large, high-contrast fonts, simplified menus, and comprehensive voice guidance as a default or easily selectable option.
2. Radically Simplify the 'First-Mile' Experience: Redesign the unboxing, charging, and pairing process to be a seamless, intuitive, and sub-3-step activity.
3. Prioritise Long Battery Life and Ergonomic Design: A battery lasting 7+ days is a significant advantage. Ensure straps are easy to fasten with one hand and are comfortable for all-day wear.
4. Redesign Data Presentation: Move from complex dashboards to simple, visual, and actionable feedback. Provide context for what the data means for the user's health.

4.2. For Academia and Research Institutions

1. Conduct Co-Design and Usability Studies: Use this data to design specific studies that test design interventions (e.g., button vs. touch interfaces) with older adult users.
2. Establish Standardised Metrics for "Age-Friendliness": Create a certification or evaluation framework to help consumers and professionals identify well-designed tools.
3. Research Long-Term Adoption and Motivational Drivers: Investigate the factors that influence sustained use of smart tools beyond short-term interventions.
4. Integrate Technology into Professional Curricula: Train future sports scientists and trainers to be proficient in using and teaching smart tool integration, positioning them as "Happiness Ambassadors" (as suggested by the Portuguese partner).

4.3. For the Public Sector (Policymakers)

1. Fund Foundational Digital Literacy Programmes: Support community-based initiatives that build general digital skills, creating a receptive base for health technologies.
2. Create Subsidy or Loan Schemes: Develop programmes to make certified age-friendly smart tools financially accessible to older adults and community centres, particularly in rural areas.
3. Incentivise Inclusive Health Programmes: Provide funding for community exercise programmes that mandate the integration of technology and adaptability for varying abilities.



4. Promote Intergenerational Learning Projects: Support initiatives that pair younger generations with older adults for mutual skill-sharing and to reduce digital isolation.

4.4. For Civil Society and End-User Communities

1. Act as Multipliers and Peer Support Hubs: Replicate successful intervention models within local communities and foster peer-to-peer mentoring networks.
2. Advocate for User-Centric Design: Collect and channel user feedback to manufacturers and policymakers, demanding products that meet real-world needs.
3. Build Strategic Partnerships: Collaborate with local gyms, health services, and tech shops to create a supportive ecosystem for technology-enabled active ageing.
4. Promote Awareness: Host "tech taster" sessions to demystify smart tools and showcase their benefits in a low-pressure, social environment.

5. Conclusion and Next Steps

The evidence from the IKIGAI55 project is clear and compelling: smart technology holds immense potential to revolutionise physical activity for older adults. The synergy of trainee, trainer, and facilitator perspectives provides an unambiguous roadmap. The key to unlocking this potential lies in addressing the usability gap through collaborative, user-centred design and support.

The findings demonstrate that success is not just about the technology itself, but about the entire ecosystem in which it is deployed. Effective implementation requires accessible tools, skilled facilitators, supportive communities, and enabling policies.

The next steps are:

1. Scale and Replicate: Use the IKIGAI55 Training Guide and the evidence in this report to scale successful pilots into mainstream health promotion programmes.
2. Implement Co-Design: Industry must actively engage with older adults and trainers in the product development cycle.
3. Embed in Policy: Public sector bodies should integrate the principles of digital inclusion and technology-supported activity into national ageing strategies.

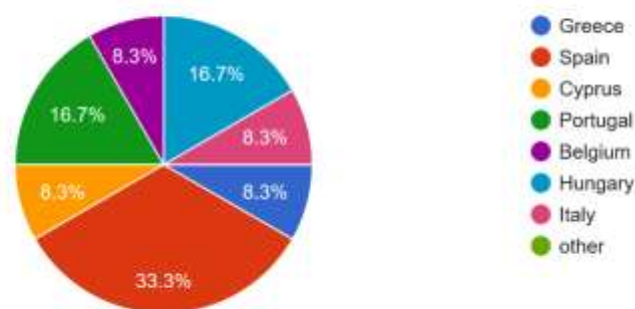
By aligning the efforts of the Quadruple Helix, we can transform the landscape of healthy ageing, ensuring that older adults are not left behind by the digital revolution but are instead empowered by it to lead healthier, more connected, and more fulfilling lives.

Annexes

Annex 1 Trainers feedbacks: Analysis of Trainers' Questionnaire

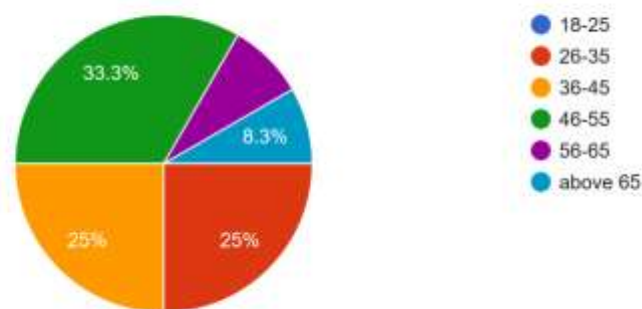
This analysis synthesizes the feedback from 12 trainers who facilitated the 5-week IKIGAI fitness interventions using smart tools (VR and Smartwatches). The objective is to understand the facilitators' perspective on tool selection, implementation challenges, observed impacts, and to gather their expert recommendations for improvement. Trainers represented 8 organisations from 7 countries, from age groups 26 to 70.

Country
12 responses



Trainers represented 8 organisations from 7 countries.

Your age
12 responses



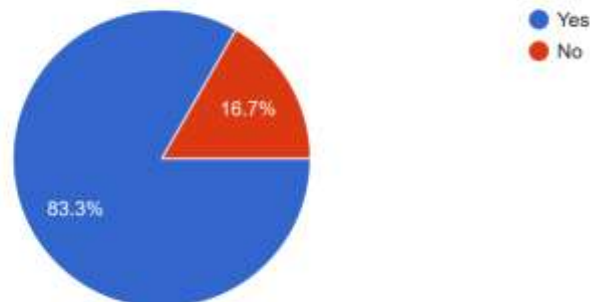
Trainers age



1. Personal Use & General Perception of Smart Tools

Do you (personally) have a smart tool related to sport/fitness/wellbeing?

12 responses



Most trainers (10 out of 12) personally use smart tools, primarily smartwatches, for 1-10+ years. They value them for:

- Quantifiable Data: Tracking performance, heart rate, and progress.
- Motivation: Providing a sense of achievement and accountability.
- Personalization: Enabling tailored training adjustments.

Noted Disadvantages:

- Accuracy Issues: Inconsistent heart rate and calorie readings.
- Usability: Complex navigation, overwhelming notifications, and short battery life.
- Group Limitations: Difficult to manage with large groups and can be costly to scale.

2. Tool Selection for the Intervention

The selection process was a critical phase, with two main approaches:

- Pre-Defined by Institution: Some used existing university-owned equipment (e.g., VR headsets).
- Conscious Selection: Others undertook a deliberate process based on:
 - User Experience (UX) & Ease of Use: The paramount criterion. One trainer emphasized the importance of visiting a store to "feel and try" devices, stating it's not a good option to buy online for older adults.
 - Price-to-Quality Ratio: Finding a balance between budget and functionality (e.g., ~€100 per device).



- Key Features: Long battery life, large display, easy navigation, and relevant data types (heart rate, steps).

3. Intervention Implementation: What Worked & What Didn't

What Worked Well:

- High Participant Motivation: Trainers reported high levels of enthusiasm. The novelty of VR and the quantifiable data from smartwatches were significant motivators.
- Enhanced Safety and Personalization: Data from smartwatches allowed trainers to monitor exertion levels in real-time, preventing overtraining and enabling safer, more personalized adjustments.
- Professional Enhancement: Trainers felt the tools made their work more professional and data-driven, allowing for better control and adaptation of sessions.
- Social Connection: Sharing results in group chats (e.g., WhatsApp) fostered a sense of community and friendly competition.

Main Challenges:

- Initial Familiarization: The steepest challenge was the initial setup and basic navigation for digitally inexperienced participants. This included pairing devices with phones, navigating menus, and charging.
- Technical Hurdles: Issues like forgotten passwords, incompatible smartphones, and difficulties in turning off audio notifications were common.
- Overcoming Mindset Barriers: Some participants held the preconception that digital tools are for "younger people" and were initially reluctant to be "controlled."
- Physical & Visual Design: Small screens, small text, and sometimes uncomfortable straps were repeatedly noted as obstacles.

4. Impact and Unexpected Observations

- Impact on Participants: Trainers observed clear improvements in muscle control, flexibility, and balance. The tools boosted participants' confidence and motivation to exercise.
- Impact on Trainers: The intervention enhanced the trainers' own skills, providing new perspectives on integrating technology into traditional training.
- Unexpected Results:



- High Adoption Intent: A significant number of participants liked the VR experience so much they considered purchasing a headset themselves.
- Utility of "Simple" Features: Features like sleep tracking were unexpectedly popular and useful for participants.
- Shifting Perceptions: Participants who started with skepticism began to see the value and benefits of the smart tools.

5. Trainers' Recommendations for Improvement

The trainers' recommendations are highly practical and user-centric:

- For the Tools Themselves:
 - Improve Accessibility: Larger text/icons, high-contrast visuals, audio feedback, and voice guidance.
 - Simplify the User Interface (UI): Reduce complexity, streamline menus, and eliminate unnecessary information.
 - Enhance Physical Design: Lighter weight, more user-friendly straps, and longer battery life.
 - Simplify Setup: Make the initial pairing and configuration process seamless and intuitive.

Quotations for improvement

- "More individualization and adaptability
- Increased icon size and audio feedback
- the tactile screen can be sometimes challenging
- Lighter weight (VR)
- It would probably be nice to make participants get to know this tools in a different type of activity, for example bringing them to have long walks somewhere, so they can check the steps and be happy with the day activity before getting to know health specific indications and more difficult aspects of smart tools in physical activities
- I would make it easier to switch off the audio notifications. The device is not water resistant, just "drop resistant".
- built-in health education tips personalized feedback
- letter size adjustment!, longer battery life



Annex 2 Analysis of Trainees' questionnaires

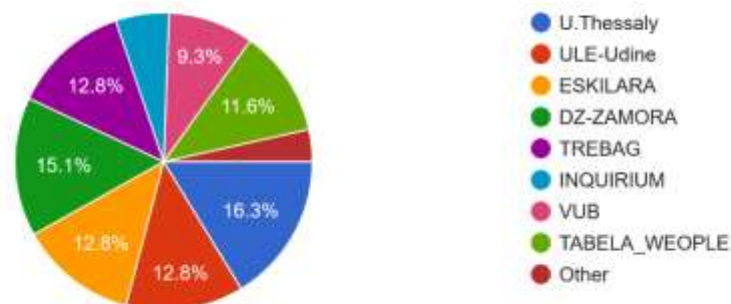
1. Participant Overview and Demographics

The IKIGAI55 project engaged a total of 86 participants across the seven pilot countries. The inclusion criteria for participants were being a healthy older adult aged 55 or above, expressing willingness to participate in a 5-week physical activity programme utilising smart tools. Key exclusion criteria included significant health concerns that could impede safe participation and the lack of access to a smartphone, as most smart tools required a smartphone for initial setup and data synchronisation.

The responses were spread over several months (April-October 2025), indicating a phased or ongoing data collection process across the different country pilots (Belgium, Greece, Spain, Portugal, Cyprus, Italy, Hungary).

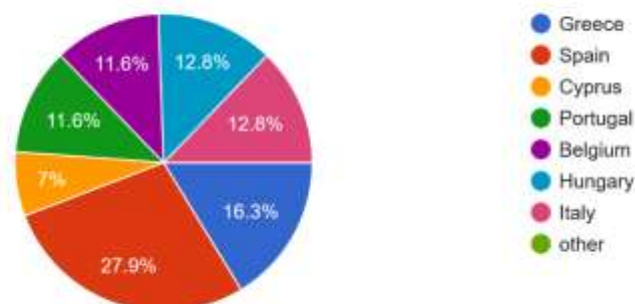
Name of the Organization

86 responses



Country

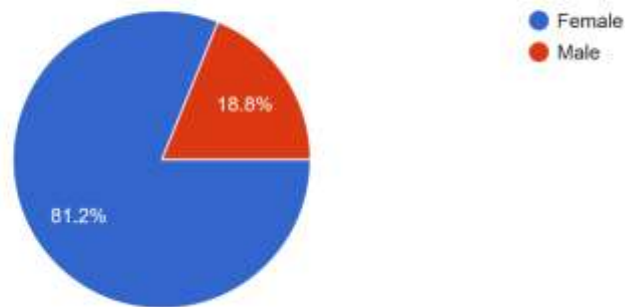
86 responses



The majority of respondents were female. This gender imbalance is a tendency in ageing Europe, reflecting a higher participation rate of women in such programmes.

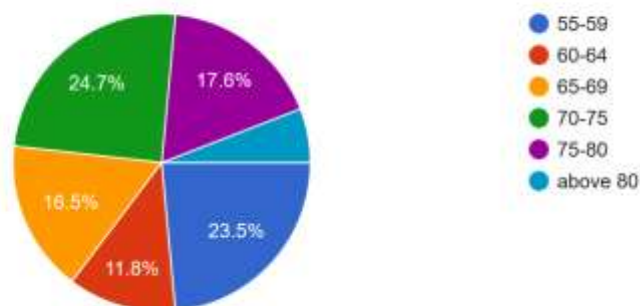


Your gender
85 responses



The age range was exclusively 55 and above, with good representation across the 55-59, 60-64, 65-69, 70-75, and 75-80+ brackets. This allows for analysis of needs and challenges across different stages of older adulthood.

Your age
85 responses



26,7 % of the trainers had previously used some types of smart tools mostly between 1-5 years prior to the intervention.

2.Experiences at the intervention

Two primary types of smart tools were used: VR Glasses (primarily in Belgium) and Smartwatches/Smart Bands (used in all other countries, with models like HUawei watch Fit 3 and Xiaomi Smart Band 8 being common).

3.Difficulty in use and interpretation of data

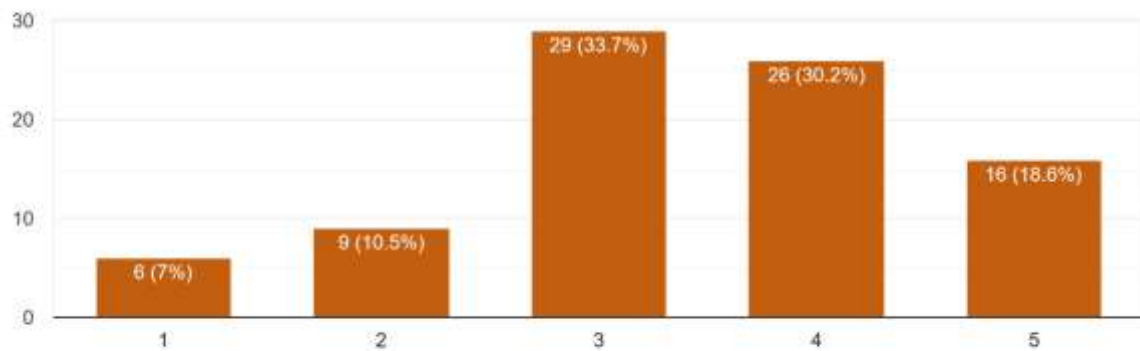
As for use responses are highly polarized. Many found it very easy (scores 1-2) or very difficult (scores 4-5), with fewer in the middle. This indicates that the learning curve is steep and highly dependent on individual factors like prior digital skills. VR systems were frequently rated as more difficult (scores 3-5) to learn compared to some smartwatch users.



Interpreting results was consistently reported as more challenging than learning the basic use. Many who found the device easy to use (score 1-3 for learning) still found the data interpretation difficult (score 4-5). This points to a significant gap in data visualization and presentation that is accessible to this user group.

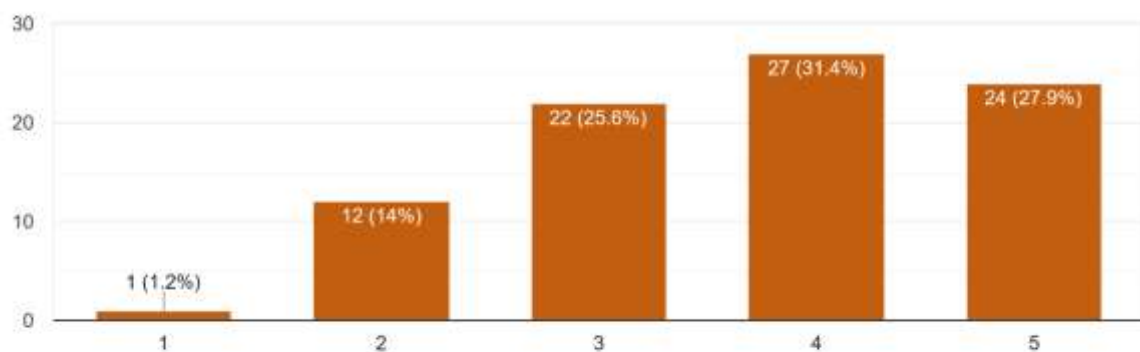
How difficult was it to learn the use of the smart tool?

86 responses



How difficult was it to interpret the results?

86 responses



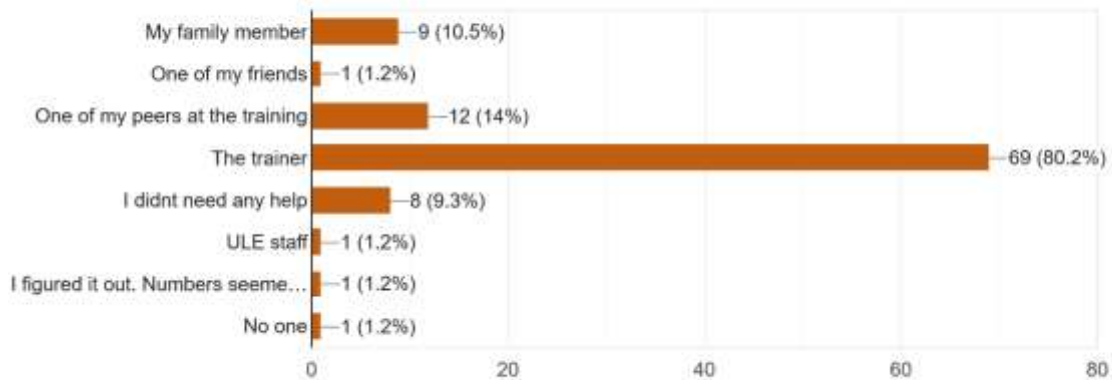
4.Help in the use of smart tools

The trainer was, by far, the most common source of help, underscoring their critical role as the primary facilitator of digital learning. This was complemented by support from family members and peers within the group, which fostered a collaborative learning environment. A small number of confident users, often those with prior device experience, did not need any help. Notably, several participants reported receiving assistance from their grandchildren in setting up the smart tools. This interaction was often described as a novel and positive experience that served to strengthen intergenerational bonds. The overwhelming reliance on trainers, family, and peers—spanning from professional instructors to younger family members—highlights the fundamental importance of human support systems in bridging the digital divide for older adults.



Who helped you to learn how to use it?

86 responses

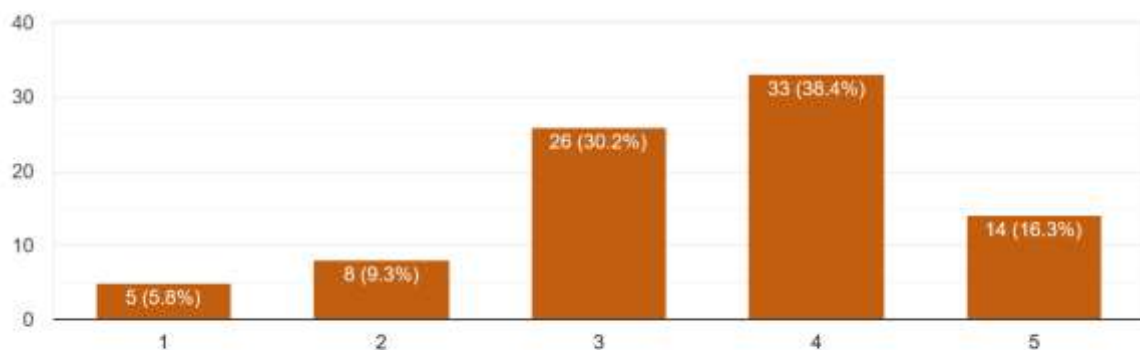


5.Improvement in digital skills, motivation to exercise, and wellbeing

As for digital skills improvement the average score is moderately positive (~3.5). Many users reported an improvement (scores 4-5), confirming that such interventions can enhance digital literacy. However, a notable number saw little to no improvement (scores 1-2), suggesting the training did not meet everyone's learning needs.

My digital skills have improved (1-5)

86 responses

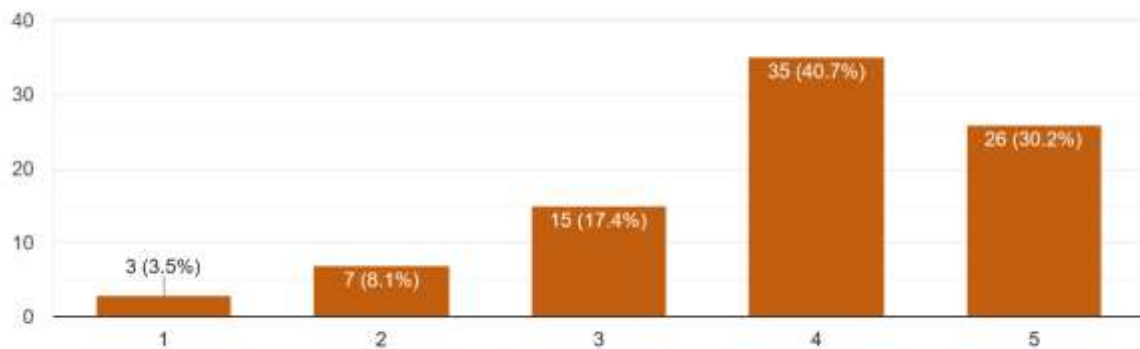


As for motivation to exercise, this is one of the most positive outcomes, with a high average score (~4). Many users gave a score of 5, indicating that the smart tools, despite their usability issues, were successful in boosting exercise motivation.



My motivation to exercise has improved (1-5)

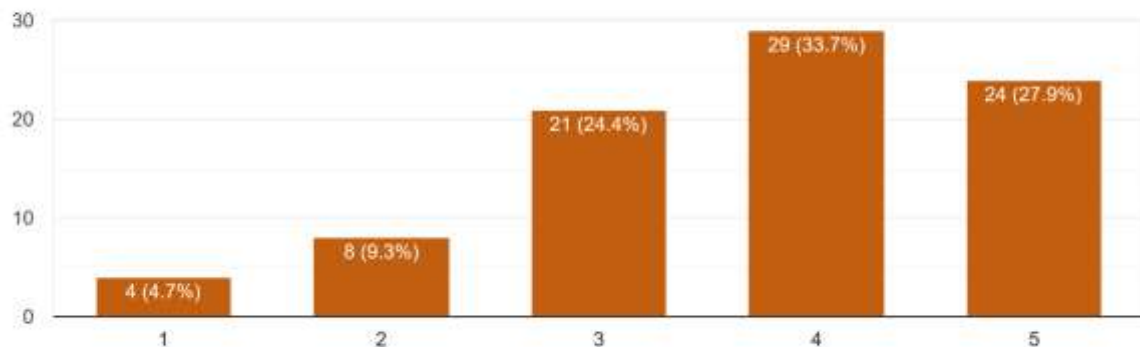
86 responses



Scores for general life satisfaction and wellbeing improvement are generally positive (~3.7) but slightly lower than for motivation. This suggests that while the tools effectively promote exercise, the translation to overall wellbeing is more varied and likely influenced by other factors.

My general life satisfaction and wellbeing have improved (1-5)

86 responses



6. Common challenges and recommendations

Challenges clustered around:

- Setup & Navigation: Difficulty with initial setup, pairing with phones, and navigating menus.
- Physical Aspects: Issues with small screens, small icons, and uncomfortable straps.
- Understanding Data: Confusion over what the results (e.g., heart rate, calories) meant and how to act on them.
- Technical Issues: Problems with accuracy and reliability of the data.

Suggested recommendations for change by trainees:



- Visual Accessibility: Larger text, bigger screens, high-contrast colors, and less complex layouts.
- Audio Support: Voice guidance and audio prompts were frequently requested.
- Simplification: Easier setup, fewer options, more straightforward navigation, and devices that work without a smartphone app.
- Physical Design: More user-friendly straps and the use of buttons instead of touchscreens.
- Social & Guidance Features: Incorporating social interaction (e.g., with other participants) and structured training schedules or better coaching integration.

Annex 3 Sumup of each intervention

There were 8 interventions by 8 organisations across Europe from seven countries. The main features of these interventions are summed up in a chart in [Table 1: Overview of Pilot Interventions and Smart Tools Used](#). Here there is a more detailed description of the interventions.

1. University of Thessaly (UTH) Greece

The University of Thessaly in Greece conducted a 5-week organized Hatha Yoga program as an intervention for persons 55 and older. Fifteen of the sixteen ladies that took part finished the entire program. Twice a week, 45–60-minute sessions were conducted with an emphasis on breathing techniques, mindfulness, and mild to moderate physical activity. Enhancing physical health (strength, flexibility, and balance), lowering stress levels, and encouraging social interaction and emotional well-being were the major objectives. The activity levels were tracked via wearable smartwatches, and their motivation, acceptance of technology, and mental health were evaluated using validated three different validated questionnaires (PALMS, UTAUT2, WHO-5).

2. Diputacion de Zamora (DZ) Spain

The IKIGAI55 pilot in Zamora, Spain, delivered a five-week strength training programme in the town of Monfarracinos (Zamora) to prevent sarcopenia in adults aged 55–80. Sessions were held twice a week for 60 minutes and combined lower and upper body strength, core stability, balance, flexibility, yoga, and mindfulness. Smartwatches monitored heart rate, stress, and calories burned, helping to tailor intensity and boost motivation. Physical activity data from these devices was complemented by evaluations of motivation, technology acceptance, and mental wellbeing validated questionnaires (PALMS, UTAUT2, and WHO-5). Most of the 15 enrolled participants had low prior physical activity and limited digital skills; 14 completed the programme. Motivation was reinforced through achievable goal-setting, positive feedback, and a dedicated WhatsApp group to maintain engagement.

Assessments showed improved physical performance, emotional wellbeing, and group cohesion, with participants expressing a strong interest in continuing the training.

3. Vrije Universiteit Brussel (VUB) Belgium

This study examined the experience of XR training in healthy adults aged 55–65, using a cohort study methodology. Participants engaged in intensive VR Boxing training based on the Les Mills Body Combat program. This high-energy workout incorporates movements from martial arts such as kickboxing and karate, with various training options. Participants interact with an imaginary opponent, reducing the risk of injury while performing challenging movements.

4. WEOPLE Portugal

The 5-week Fit-Yoga-Dance 55+ pilot course was developed and implemented in Cascais, Portugal in July 2025 by Weople Portugal, with 10 participants and 2 trainers (1 yoga & breathwork and 1 dance & embodied movement teacher) within the framework of the Ikigai55 project. The pilot course was designed specifically for senior citizens ranging between 55 and 76 years of age, to promote active aging and support psycho-bio-cognitive wellbeing through a dynamic and holistic approach.

To achieve this, the intervention combined various forms of movement rooted in both tradition and creative expression, including hatha yoga, vinyasa yoga, partner yoga - enhancing balance, flexibility and muscle strengths - as well as oriental dance, contact improvisation and embodied conscious movement - boosting stamina, cardiovascular and pulmonary capacity.

A third component, pranayama and breathing meditation was also included in the training design to improve mindfulness and mental health.

5. Università delle LiberEtà del FVG - ETS (ULE) Italy

The intervention was carried out at the facilities of Università delle LiberEtà del FVG – ETS in Udine during the months of August and September 2025. The 5-week intervention was divided into two different sessions, one on Tuesdays and one on Fridays. Each session lasted 60 minutes and in total 20 participants were involved, 10 per session. The program's primary objectives were to enhance participants' physical fitness while simultaneously fostering social connection.

6. INQUIRIUM (INQ) Cyprus

INQUIRIUM conducted a 5-week interventional reformer Pilates exercise program for adults aged 55 years and older. The program initially included 10 participants; however, following an injury to one individual, 9 participants completed the intervention.

Sessions were held twice per week. Due to scheduling constraints, participants were divided into two subgroups, each attending Pilates classes at different times. Each

session lasted between 45 and 60 minutes, with a primary focus on improving muscle strength and stability.

Throughout the program, participants' activity levels were monitored using wearable smartwatches. In addition, their motivation, technology acceptance, and mental well-being were assessed using three validated questionnaires: PALMS, UTAUT2, and WHO-5.

7. Eskilara (ESK) Spain

The 5-week Silver Smart Pilates course was developed and implemented in Bilbao, Spain from the 5th of May to the 9th of June 2025 by Eskilara, with 11 participants and 2 trainers within the framework of the Ikigai55 project. The pilot course was designed specifically for senior citizens ranging between 55 and 85 years of age, to promote active aging and support physical and mental wellbeing. Over the course of the five weeks, participants met regularly to engage in guided physical activity sessions using smart watches. This pilot demonstrated how technology, when combined with a human-centered approach, can empower older adults to lead healthier, more active, and digitally connected lives.

To achieve this, the intervention combined different types of exercises in order to address: agility, balance, flexibility, stability and functional strength.

8. Trebag Hungary

TREBAG conducted a 5-week exercise program for adults aged between 60 and 80 years. The program was concluded by 13 participants.

Sessions were held twice per week each time around 90 min of duration. On Tuesdays there were dancing sessions and on Fridays there were Nordic Walking trainings. Each participant participated in both days for 5 weeks. The sessions were held both inside and outside in a park and each session included some time on how to use the new smart tools (HUAWEI Smart Band 8)



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