

STEP-PA Protocol

Registration No.: 2016-A00277-44

Ref.: RC16_0030

CPP Ref.: 22/16

Impact of telephone coaching on physical performance in a physical fitness exercise program for older patients who have experienced falls and live at home

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ABSTRACT

Study Title	Impact of Telephone Coaching on Physical Performance in a Physical Fitness Exercise Program for Older Patients Who Have Experienced Falls and Live at Home
Keywords	Physical performance, older adults, falls, frailty, telephone coaching
Study Sponsor	NANTES UNIVERSITY HOSPITAL
Principal Investigator	Guy RINCE, physical therapist
Number of centers planned	19
Type of study	Biomedical research excluding health products
Study schedule	❖ Total duration: 72 months ❖ Recruitment period: 60 months ❖ Follow-up duration per patient: 12 months
Study Design	❖ Multicenter ❖ Controlled ❖ Randomized ❖ Open-label ❖ Prospective
Study Objectives	<u>Primary objective:</u> To compare physical performance at 6 months between a group of older patients who have experienced falls and live at home, receiving telephone coaching from a physical therapist, and a control group without this telephone coaching <u>Secondary Objectives:</u> - To evaluate and compare, between the two arms, the effect of telephone coaching on physical performance at 12 months. - To assess and compare, between the two groups, at 6 and 12 months: a) the number of falls reported by the individual, b) fear of falling, c) independence, d) lower limb performance, e) single-leg balance, f) walking speed g) the number of rehospitalizations due to falls h) the number of visits to a private physical therapist for motor rehabilitation i) the number of times per week the maintenance exercise program is performed
Number of projected cases	180 patients divided into 2 groups (90 patients receiving telephone coaching, 90 not receiving it)
Schedule of the various visits and tests	Telephone coaching will be provided by physical therapists at the study sites. Assessments will be conducted by clinical research technicians. All staff members will receive specific training on the protocol in advance. - M0 (inclusion visit): enrollment/randomization and initial patient assessment

	- M1 through M5: telephone coaching for patients in the intervention arm - M6 (follow-up visit): patient assessment - M12 (end-of-study visit): final patient assessment
Primary selection, inclusion, and exclusion criteria	<u>Inclusion criteria:</u> - Patients aged 65 years or older, - patients who have received physical therapy, - patients with a history of falls (one fall within the previous 12 months) - patients being discharged from the unit to return home or living at home, - patients with a score of $\geq 24/30$ on the Mini-Mental State Examination (MMSE), - patients able to stand up from a chair and walk 6 meters without assistance (corresponds to the TUG test) - patients informed about the study who have given their free and informed consent <u>Exclusion criteria:</u> - Patients under legal guardianship, conservatorship, or trusteeship, - Patients with a progressive or degenerative condition affecting their ability to walk, - Patients unable to use a telephone, - Patients with a visual impairment preventing them from reading the physical assessment protocol, - patient's refusal to participate, - patient who willing not stop their use of private physical therapy practice focused on motor skills - for patients enrolled in another interventional research protocol
Target Indication	Elderly patients with a history of falls
Strategy/intervention/procedure under study	Combination of telephone coaching with the usual physical maintenance exercise program upon returning home
Strategy/intervention (if applicable)	Physical fitness maintenance exercise program.
Criterion for judgment Main	Timed Up and Go (TUG) score, 6 months after discharge from rehabilitation
Secondary for secondary assessment criterion(s)	- TUG score at 12 months - At 6 and 12 months: a) the occurrence of falls b) assessment of fear of falling using a visual analog scale (VAS) c) IADL (Instrumental Activities of Daily Living) independence score d) the FTSST (Five Timed Sit to Stand Test) score, e) the single-leg balance score f) walking speed g) the occurrence of rehospitalizations due to falls.

	h) Use of a private physical therapist for motor rehabilitation i) completion of the maintenance exercise program (as estimated by the patient)
Statistical analysis	<u>Analysis of the primary endpoint:</u> the mean TUG score at 6 months will be compared between the two arms using a mixed-effects linear model adjusted for the TUG score at Day 0. To account for stratification by randomization center, the center will be included as a random effect in the model. <u>Analysis of secondary endpoints:</u> Depending on the nature of the variables (quantitative or qualitative), these endpoints will be compared between the two arms using mixed-effects linear models or generalized linear models with random effects. Since each outcome is measured at 6 months and 12 months, the patient effect will be treated as a random effect (to account for the correlation of measurements over time for each patient). The center will also be treated as a random effect. For quantitative variables, these models will be adjusted for the measurement at Day 0.

SIGNATURE PAGE

SPONSOR'S SIGNATURE

The sponsor agrees to conduct this study in accordance with all applicable laws and regulations governing the research and in accordance with the protocol.

Name and title of the signing representative:	Date:	Signature:

INVESTIGATORS' SIGNATURES

I have read all pages of the clinical trial protocol for which the Nantes University Hospital is the sponsor. I confirm that it contains all the information necessary to conduct the trial. I agree to conduct the trial in accordance with the protocol and the terms and conditions set forth therein. I agree to conduct the trial in accordance with:

- ❖ the principles of the "Declaration of Helsinki,"
- ❖ the rules and recommendations of international (ICH-E6) and French (Rules of Good Clinical Practice for Biomedical Research involving medicinal products for human use—decisions of November 24, 2006)
- ❖ national legislation and regulations governing clinical trials,
- ❖ compliance with the EU Clinical Trials Directive [2001/20/EC]

I also commit to ensuring that the investigators and other qualified members of my team have access to copies of this protocol and the documents related to the conduct of the trial, so that they can work in accordance with the provisions set forth in these documents.

	Name, Position	Date:	Signature:
Principal Investigator	Guy RINCE Massage Therapist and Physical Therapist		

LIST OF ABBREVIATIONS

AMK	Massage and Physical Therapy Treatment
AMM	Marketing Authorization
ANSM	French National Agency for Medicines and Health Products Safety
ARC	Clinical Research Associate (Monitor)
GCP	Good Clinical Practice
CH	Hospital Center
CHU	University Hospital
CI	Inclusion criterion
CNI	Exclusion criterion
CPP	Committee for the Protection of Individuals
CNIL	National Commission for Information Technology and Civil Liberties
CCTIRS	Advisory Committee on the Processing of Information for Health Research
DREES	Directorate for Research, Studies, Evaluations, and Statistics
eCRF	Electronic Case Report Form
EI	Adverse Event
AAD	Expected adverse event
AE I	Unexpected adverse event
SEV	Serious adverse event
Epac	Permanent Survey on Accidents in Daily Life
EU-SILC	EU Statistics on Income and Living Conditions
EVA	Visual Analog Scale
FTSST	Five-Time Sit-to-Stand Test
HAS	French National Health Authority
HCAAM	High Council for the Future of Health Insurance
IADL	Instrumental Activities of Daily Living
ICH	International Conference on Harmonization
IDE	State-Licensed Nurse
BMI	Body Mass Index
Inserm	National Institute of Health and Medical Research
InVS	Institute for Public Health Surveillance
MK	Massage Therapist and Physical Therapist
MMS	Mini Mental Status Test
WHO	World Health Organization
PHRIP	Hospital Project for Nursing and Paramedical Research
RCP	Summary of Product Characteristics
SFGG	French Society of Geriatrics and Gerontology
SHARE	Survey on Health, Aging, and Retirement in Europe
SSR	Acute Care and Rehabilitation
TEC	Clinical Research Technician
TUG	Timed Up and Go

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INTRODUCTION

Extending and maintaining the gains from functional rehabilitation for frail older adults who have experienced a fall and live at home is a major public health challenge. Physical activity is routinely recommended for older adults living at home. Self-directed exercise programs have been shown to have beneficial effects, but effectively encouraging people to engage in them regularly and frequently remains a challenge.

Telephone coaching could be a solution to address this issue.

The STEP-PA study, with a multicenter, randomized design, aims to test the hypothesis that telephone coaching would help maintain the benefits of rehabilitation for at least 6 months after the end of their care in a population of frail older adults who have experienced falls and live at home.

1. RATIONALE FOR THE STUDY

1.1. RESEARCH CONTEXT

In France, there are 5.7 million people aged 75 and older (2012); this number is projected to reach 12 million by 2060, and the number of people aged 85 and older will nearly quadruple, rising from 1.4 million to 4.8 million by 2050. Among the latter group, 1 in 5 people has lost their independence, and “4.3 million French people regularly help a relative aged 60 or older who lives at home” (1).

With the overall cost of long-term care—including health insurance—estimated by the High Council for the Future of Health Insurance (HCAAM) to range between 9 and 21 billion euros (2), the current challenge for medicine is to detect and prevent these disabilities early on.

Thus, for more than a decade, the concept of frailty has been explored in the field of geriatrics. Frailty is defined as a clinical syndrome reflecting “a decrease in physiological reserve capacity that impairs mechanisms for adapting to stress. The frailty syndrome is a marker of risk for mortality and adverse events, including disability, falls, hospitalization, and admission to a long-term care facility” (3).

In the journal **The Lancet** (4) ~~“Frailty in Older People,”~~ it is estimated, based on two studies (5) (6), that 25 to 50% of people over the age of 85 exhibit signs of frailty. Frailty combines Fried’s physical criteria (5) (weight loss, fatigue, sarcopenia, reduced walking speed, and decreased physical activity) with cognitive and social criteria (Rockwood) (6).

Furthermore, according to the HAS (3): “Identifying frailty makes it possible to predict the risk of loss of independence, falls, institutionalization, death, and hospitalization among people aged 65 or older within 1 to 3 years.” The current challenge is to identify this frailty early in order to prevent the loss of independence.

For the most frail individuals, remaining at home—even though it is what most desire—is often compromised by a fall.

According to the French Institute for Public Health Surveillance (InVs), approximately 450,000 people aged 65 and older fall each year, and 9,300 die as a result. It is estimated that one-third of those aged 65 and older and half of those aged 85 and older experience at least one fall each year. In two out of three cases, these falls occur at home (7).

In geriatric medicine and according to the WHO, a fall is defined by consensus ~~as~~ “the act of unintentionally ending up on the ground or in a position lower than one’s starting position” (8) (9).

According to the Continuous Survey on Accidents in Daily Life (Epac) (10), 4.5% of people aged 65 and older experienced an accidental fall followed by a visit to the hospital emergency department. These falls resulted in hospitalization following a visit to the emergency department in 37% of cases. The hospitalization rate increases with age, rising from 27% among those aged 65 to 69 to 44% among those over 90.

Among serious consequences, fractures account for 41% of injuries, followed by contusions or concussions (30%). In 34% of cases, falls are minor. However, 10% of falls are not reported to a doctor (11).

Nevertheless, these minor falls are not without long-term consequences, as a study on health behaviors (12) reports that 19.5% of people aged 55 to 85 state that they have limited their mobility for fear of falling again.

Recurrences are common: their prevalence ranges from 10 to 25% (depending on age, comorbidities, and institutionalization) (8).

To slow the progression from frailty to dependence and enable older patients who have fallen to return home, rehabilitative care in post-acute care facilities incorporates the recommendations of the HAS (8)(13)(14). Physical therapy begins with an individualized assessment to ensure appropriate rehabilitation.

Numerous tests assessing physical performance and motor functions, specific to older adults, have been described and validated within the framework of multidimensional assessment. We focus on the single- and multi-task tests most commonly used in our daily practice for physical therapy diagnosis, with a direct focus on the rehabilitation of older adults who have experienced falls and/or are frail. These tests are recommended (8)(13)(14) for assessing balance, posture, movement, transfers, walking, fear of falling, and independence. (TUG (15), Five-Timed Sit-to-Stand Test (FTSST) (16), single-leg balance score (17), walking speed (18), IADL (19), and assessment of fear of falling).

As recommended by the HAS guidelines (8)(13)(14), supported by a systematic review (Cochrane)(20)(21) and a meta-analysis (22), physical therapy interventions for patients prone to falls are primarily multifactorial, utilizing “multi-category” exercise programs that combine flexibility training, muscle strengthening, and balance and gait training with potentially more targeted corrections based on the identified functional deficit. These interventions are also considered appropriate for the management of frailty (23)(24).

This rehabilitation can be carried out during hospitalization in a post-acute care unit (25), one of whose missions is to provide “comprehensive care aimed at [...] enabling patients to return to their original place of residence” (26). According to the DREES (27), the primary purpose is predominantly care involving rehabilitation (52%). The average length of stay is 34.8 days, with 50% of stays lasting less than 27 days. The most common discharge destination is home (71.3%). Rehabilitation care for frail elderly patients who have experienced falls is part of this care pathway, aimed at improving their physical performance to the point where a return home is feasible.

During their hospitalization, the regular and progressive practice of physical exercise programs with a physical therapist also aims to train them to continue this physical maintenance upon returning home, as recommended by the HAS (8):

“continue self-rehabilitation exercises [...] in order to sustain the gains from rehabilitation in daily life.”

At home, without ongoing maintenance, physical performance declines more or less rapidly starting at 6 weeks, depending on age and the duration of the training period (28)(29)(30)(31)(32). There is concern that advice—or even a prescription—for regular physical activity upon discharge from the hospital may be followed by only 50% of patients, similar to compliance with prescribed medication (33). A 2000 American study (34) examining adherence to healthy lifestyle recommendations—despite numerous messages promoting physical activity—shows that only 24% of Americans aged 65 to 74 engaged in regular physical activity. There are no up-to-date French data.

While physical activity is routinely recommended for older adults living at home, the question of how to encourage them to follow these recommendations as often as possible remains a public health challenge.

In the latest Inserm report (35) on “Physical Activity and Fall Prevention in Older Adults,” the expert panel advocates for the implementation of programs designed to “motivate sedentary older adults to engage in physical activity and provide personalized guidance.” It also recommends conducting “intervention trials primarily targeting older adults living at home [...] and aimed at evaluating the long-term effectiveness and acceptability of different types of exercise programs for fall prevention.”

The recent OSSEBO study (36) highlights the value of offering an exercise program to reduce injuries and falls among older adults. It also demonstrates the feasibility of implementing an effective, long-term, large-scale program in France. The study allowed patients to participate in group exercise sessions organized by a nonprofit organization. Patients were encouraged to continue the exercises they had learned at home.

In the field of health promotion and effective health management strategies, telephone counseling is an intervention that has already been studied for other conditions. A Cochrane meta-analysis examining the improvement of follow-up on dietary advice related to the management of chronic diseases shows that telephone follow-up is an effective intervention (37).

In other areas—such as smoking cessation (38) and follow-up of patients returning home after hospitalization (39)—the Cochrane Group has also analyzed the effectiveness of telephone follow-up. While several methodological weaknesses prevent a conclusion regarding true effectiveness, none of the studies reviewed identified any risks associated with offering this type of follow-up.

In the field of rehabilitation, a 2014 study (40) examining the impact of telephone follow-up on a population with osteoarthritis shows that it improves patients’ physical performance.

Most of these initiatives were conducted in countries where healthcare provision is not comparable to that in France.

French initiatives have been carried out, but on populations that are not comparable to our patient population: different age groups or conditions (e.g., devices for sleep apnea syndrome (41)). In some of these initiatives, the coaching sessions were group-based and conducted within the framework of nonprofit organizations by facilitators who were not healthcare professionals.

Based on these observations, we conducted a pilot study aimed at offering patients who had completed a rehabilitation program in a long-term care facility the option of follow-up care via telephone for 6 months. Conducted between 2011 and 2012, our preliminary study (25 patients, mean age 83.5 years) aimed to help patients maintain, in their own homes, the functional abilities they had acquired beyond the sessions by combining a support program with monthly telephone coaching provided by a physical therapist. Each call was scheduled as a semi-structured, motivational interview and included a remote self-assessment of several follow-up criteria (unipedal standing, FTSST, falls, fear of falling) to reinforce the practice of specific exercises based on reported weaknesses. At 6 months, we observed high acceptance of the intervention with no dropouts from the study, good adherence to the maintenance program (4.6 days/week), no rehospitalizations due to falls, and no use of private physical therapy services during this period—compared to 32.5% of the general population upon discharge from our department—as well as an appropriate frequency of calls. Physical performance even showed an improvement in the data recorded using the **Up** and **TUG** test, from 15.1 ± 4.5 to 11.8 ± 2.6 seconds. This study, which had numerous biases

(lack of randomization, no control group, informed patients, single-center study, etc.), nevertheless demonstrated the feasibility and applicability at home of this monthly telephone coaching by a physical therapist, combined with a physical maintenance program for elderly patients with a history of falls. Expertise in rehabilitation, knowledge of the patient, scheduled telephone appointments, personalized follow-up, and support for behavior change (42)(43)(44) are all factors that contribute to the “empowerment” (45) of these patients.

Therefore, we hypothesize that monthly telephone coaching, provided by a physical therapist following a physical maintenance exercise program that patients were trained in during their rehabilitation hospitalization, would enable older patients who have experienced falls to maintain their physical performance at home for at least 6 months after discharge.

From a public health perspective, this hypothesis—initially studied within a rehabilitation service—could subsequently be applied as a complement to private practice or healthcare organization interventions to reduce the costs of caring for this population.

“Bibliographic references are included in the appendix of this document.”

1.2. *BENEFITS AND RISKS FOR THE PEOPLE PARTICIPATING IN THE RESEARCH*

1.2.1. Benefits

1.2.1.1. Individual Benefits

Patients participating in this study will benefit from more tailored care.

1.2.1.2. Collective Benefit

The study will help improve fall prevention for older adults who have a history of falls and live at home. From a public health and economic perspective, coaching will help ensure that frail older adults at risk of falling—who are often isolated at home—receive the necessary attention. Coaching will also help limit the need for private physical therapy sessions by encouraging individuals to maintain their physical fitness at home.

1.2.2. Risks

1.2.2.1. Individual Risks

➤ Physical Risks and Limitations

There are no invasive tests specific to the protocol.

Assessments may carry a risk of fatigue and anxiety. Transient muscle and joint pain in the lower limbs may be felt following exercises and assessments.

Orthostatic hypotension or a fall (with or without a fracture) may occur while performing the exercises at home.

➤ Risks Related to the Patient's Health Status

Participation in the maintenance program carries risks of falls (with or without fractures) inherent to the patient population, particularly during certain balance exercises, despite training, initial recommendations, and the guidance provided in the booklet, which summarizes the topics covered during sessions while hospitalized.

➤ Risks related to the study intervention and associated interventions (AEs)

No study-specific adverse events (AEs) are anticipated, apart from fatigue, anxiety, and the risk of falls that participation in this protocol could cause in some patients.

The comprehensive list of adverse events is provided in the safety monitoring section (see below).

➤ Psychological Risks and Challenges

Possible anxiety during evaluations or while waiting for a phone call.

➤ Socioeconomic risks

None

1.2.2.2. Collective risks

None

1.2.3. Benefit-Risk Balance

The study will enable patients to access at-home fall prevention.

Risks associated with telephone coaching and assessments (possible fatigue, anxiety) will be minimized as much as possible through dialogue between the physical therapist providing telephone coaching and the clinical study technician conducting the assessments, through the scheduling of phone calls and assessments, and by the fact that the patient may withdraw from the study at any time.

1.3. DESCRIPTION AND JUSTIFICATION OF THE METHOD UNDER STUDY

The telephone coaching provided by the physical therapist to patients will consist of 5 scheduled calls lasting approximately 20 minutes each, including: a semi-structured and motivational interview; questions about the patient's general condition and events that have occurred since the last call; a report on exercise adherence and the number of falls; and a remote self-assessment of several follow-up criteria (single-leg balance, FTSST, fear of falling).

Armed with this information, the physical therapist will be able to encourage patients to perform the exercises as diligently as possible, or even to intensify certain exercises based on the self-assessment.

Five phone calls are scheduled as part of this study, at a rate of one call per month.

2. OBJECTIVES AND EVALUATION CRITERIA

2.1. PRIMARY OBJECTIVE AND OUTCOME MEASURE

2.1.1. Primary Objective

To compare physical performance at 6 months between a group of older patients who have experienced falls and have returned home, receiving telephone coaching from a physical therapist, and a control group without this telephone coaching.

2.1.2. Primary Outcome Measure (see 6.1.1)

The primary outcome measure is the 6-month Timed Up and Go (TUG) score described by Podsiadlo D (15), based on a modified version of the Get Up and Go test (Mathias S. et al.). Cited in the three HAS recommendations (8)(13)(14) regarding the care of older adults, this is a test for assessing motor function in older adults. It provides an overall assessment of walking ability and dynamic postural balance.

The TUG has a sensitivity of 87% and a specificity of 87% (46). This

test is described in more detail in section 6.1.1

This primary criterion is routinely assessed in physical therapy practice during initial and follow-up evaluations.

2.2. SECONDARY OBJECTIVES AND EVALUATION CRITERIA

2.2.1. Secondary Objective(s)

- To assess and compare, across the two arms, the effect of telephone coaching on physical performance at 12 months.

- To assess and compare, between the two arms, at 6 and 12 months:

- a) the number of falls reported by the participant,
- b) fear of falling,
- c) independence,
- d) lower limb performance,
- e) single-leg balance,
- f) walking speed
- g) the number of rehospitalizations due to falls
- h) the number of visits to a physical therapist for private physical therapy
- i) the number of times per week the maintenance exercise program is completed

2.2.2. Secondary outcome measure(s) (see 6.1.1)

- TUG at 12 months

- The following parameters will be assessed at 6 and 12 months:

a) the occurrence of falls: a fall is defined as “the act of involuntarily ending up on the ground or in a position lower than one’s starting position” (8)(9).

Patients are asked to indicate the date of the fall on their exercise log in order to record the number of falls over 6 and 12 months as accurately as possible

b) Fear of falling is assessed using a visual analog scale (VAS) ranging from 0/10 “no fear of falling” to 10/10 “extreme fear of falling”

c) The autonomy score is assessed using the IADL (Instrumental Activities of Daily Living (Lawton 1969)) (19), which assesses a patient’s level of dependence by evaluating activities of daily living. It consists of a scale assessing “8 activities that the individual must be able to perform to remain at home.” The score ranges from 0 to 8 points.

d) the FTSST (Five Timed Sit to Stand Test) score, “standing up from a chair 5 times” (Buatois S et al.) (16): a lower-limb performance test measuring the time required to stand up as quickly as possible 5 times in a row from a standard chair, without pushing off with the arms

e) the single-leg balance score (Vellas) (17), which corresponds to a timed assessment of the ability to maintain static single-leg postural balance while standing. The person must stand on the foot of their choice for as long as possible without using their upper limbs for support. Below a threshold value of 5 seconds, balance is considered abnormal.
The test is particularly useful for identifying individuals at risk of serious falls (47).

f) Walking speed

Walking speed is assessed over a distance of 4 meters.

A threshold value of 1 meter per second is an indicator of frailty (48)

g) readmission due to a fall,

h) Use of a physical therapist for private physical rehabilitation

i) completion of the physical maintenance exercise program as reported by the patient (see content in Appendix 1 of the file)

3. RESEARCH DESIGN

3.1. GENERAL RESEARCH METHODOLOGY

This study has the following characteristics:

- ❖ Multicenter (national) study,
- ❖ Controlled study
- ❖ Randomized study
- ❖ Open-label study
- ❖ Prospective study
- ❖ Parallel-group study.

3.2. STUDY DESIGN

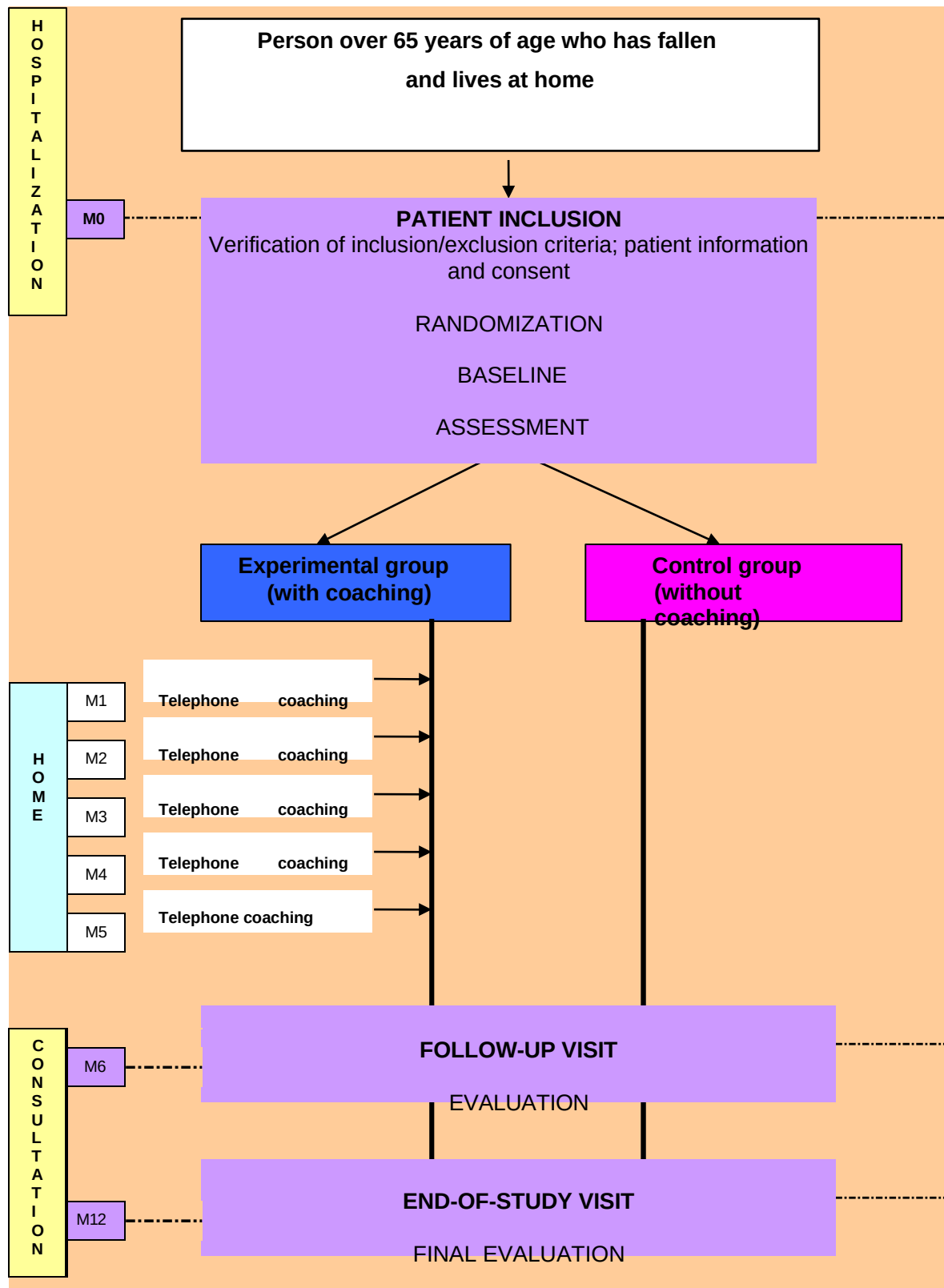
Recruitment period: 60 months

Follow-up duration for each patient: 12 months Total

study duration: 72 months

Prior to the start of the study, training sessions will be conducted for the professionals (physical therapists and TEC) participating in the study.

The purpose of these training sessions is to standardize the information provided to patients, the consent process, eCRF data entry, the conduct of assessments, and telephone coaching. In particular, each physical therapist will be provided with a telephone coaching guide (document currently being developed).



4. STUDY POPULATION

4.1. *DESCRIPTION OF THE POPULATION*

The study focuses on patients aged 65 and older who have experienced a fall and are receiving physical therapy rehabilitation.

It will take place in short- and medium-stay units and in private physical therapy practices. (See Appendix 1).

At the conclusion of their physical therapy rehabilitation, patients who meet the inclusion criteria will be invited to participate in the STEP-PA study. The physical therapist treating the patient will explain the protocol and obtain the patient's free and informed consent.

The study plans to enroll 180 patients: 90 who will receive telephone coaching (experimental group) and 90 who will not (control group).

The protocol complies with the exemption provided for in paragraph 2 of Article L1121-3 of the Public Health Code: *"Biomedical research other than that involving products mentioned in Article L. 5311-1 and included on a list established by decree of the Council of State, which involves only negligible risks and has no influence on the medical care of the person participating in it, may be conducted under the direction and supervision of a qualified person."*

Thus, physical therapists participating in the study may, as "qualified persons," enroll patients.

Patients included in this protocol may not simultaneously participate in another interventional research study.

4.2. *INCLUSION CRITERIA (IC)*

- Patients aged 65 years or older
- Patients who have received physical therapy rehabilitation Patients with a history of falls (one fall within the previous 12 months, as documented in the medical record),
- Patients being discharged from the unit to return home or living at home,
- Patients with a Mini-Mental State Examination (MMSE) score of $\geq 24/30$,
- Patients able to stand up from a chair and walk 6 meters without assistance,
- Patients informed about the study who have given their free and informed consent,
- Patient covered by social security.

4.3. *EXCLUSION CRITERIA (EC)*

- Patients under judicial protection, guardianship, or conservatorship,

- Patients with a progressive or degenerative condition affecting their ability to walk,
- Patients unable to use the telephone,
- Patients with a visual impairment preventing them from reading the physical therapy program,
- Patients who do not wish to discontinue their private physical therapy treatment focused on motor function,
- Patients who refuse to participate in the study,
- Patients already enrolled in another interventional research protocol.

5. TREATMENTS USED DURING THE STUDY

5.1. AUTHORIZED TREATMENTS

All treatments necessary for the patient's well- and for the management of their medical conditions are authorized.

5.2. PROHIBITED TREATMENTS

Patients' treatments are reassessed during their rehabilitation hospitalization and taken into account when authorizing the start of rehabilitation care.

In particular, we verify the absence of any treatments or combinations of treatments that would impair the patient's alertness or balance and would contraindicate the start of their rehabilitation.

No treatment is strictly prohibited during the study. However, the

prescription of certain treatments will be documented:

- Anxiolytics/hypnotics (benzodiazepines and others),
- Neuroleptics (dopamine receptor agonists and dopamine-serotonin receptor antagonists),
- Antidepressants (tricyclic antidepressants, serotonin reuptake inhibitors, serotonin-norepinephrine reuptake inhibitors, and monoamine oxidase inhibitors),
- Antihypertensives (diuretics, beta-adrenergic blockers, alpha-adrenergic blockers, centrally acting antihypertensives, calcium channel blockers, angiotensin-converting enzyme inhibitors, and angiotensin receptor blockers),
- Antiarrhythmics,
- Nitrates and other vasodilators,
- Digoxin,
- β -adrenergic receptor-blocking eye drops,
- Analgesics (primarily opioid analgesics),
- Anticholinergic medications,
- Antihistamines,
- Medications for vertigo,
- Hypoglycemic agents.

A letter will be sent to the patient's primary care physician upon the patient's enrollment in the study. The letter will list these medications and ask the primary care physician to be vigilant regarding their potential effects on the patient's alertness and balance, as well as the associated risk of falls.

5.3. *EMERGENCY TREATMENT*

There is no specific emergency treatment for this study.

6. STUDY PROCEDURE

6.1. *STUDY AND ANALYSIS METHODS*

6.1.1. Detailed description of assessment parameters

Patient sociodemographic variables (M0)

- Age
- Gender
- Presence of a caregiver
- Living arrangement (individual, group home)

Patient clinical variables (M0)

- Medical and surgical history
- Current treatments
- Clinical examination (weight, height, BMI)
- MMS

These data will be collected from the patient's medical record after obtaining the patient's informed consent to participate.

Variables Related to Patient Assessment (M0, M6, M12)

- **The Timed Up-and-Go (TUG) test** (15),

The test is simple and can be completed in 3 minutes in a quiet, noise-free room using a standard chair with armrests. A line is marked on the floor 3 meters from the chair. The examiner, equipped with a stopwatch, must not encourage the patient. The patient performs the test wearing their shoes and using their usual assistive device. The patient should walk at a comfortable pace and as naturally as possible. The patient will need to stand up, turn around at the line, and return to sit down.

The test is performed twice: once to verify that the patient has understood the instructions, and a second time with timing.

Repeatability of the test has a correlation coefficient ranging from $r = 0.92$ to 0.99 . There is excellent inter-rater reliability (correlation coefficient of 0.93 – 0.99) (49).

The TUG demonstrates good diagnostic validity, with a sensitivity and specificity of 87% for predicting falls (50).

The TUG can be widely used due to its simplicity, ease of interpretation, and short administration time. It is also well accepted by older adults.

- **Fear of Falling (EVA)**

Fear of falling is measured using a visual analog scale ranging from 0 (no fear of falling) to 10 (extreme fear of falling).

Fear of falling among older adults is more or less frequently expressed, even among those who have never fallen. It is a factor that limits mobility and balance, as shown in a study by Hatch et al. (51) involving 50 participants with a mean age of 81.7 years.

- **Independence (IADL)**

Lawton's Instrumental Activities of Daily Living (IADL) (19) assesses a series of daily living activities classified as instrumental. It was translated into French in 1986 by Israël and Waintraub. It consists of 8 activities that an individual must be able to perform to remain living at home:

- using the telephone;
- go grocery shopping;
- preparing meals;
- maintain the home;
- doing laundry;
- use public transportation;
- taking medication;
- managing one's budget.

The IADL score ranges from 0 to 8 points. Each item is scored as 0 or 1 depending on the level of independence of the patient being assessed.

- **The FTSST**

The FTSST (Five Timed Sit to Stand Test) score, "standing up from a chair 5 times" (Buatois S et al) (16), is a lower-limb performance test that measures the time required to stand up as quickly as possible from a chair 5 times in a row, without pushing off with the arms.

According to Whitney et al. (52), an optimal score of 13 seconds represents the best combination for the "Balance" indicator (sensitivity: 66%, specificity: 67%).

- **The single-leg balance score**

This score (Vellas; Toulouse) (17) corresponds to a timed assessment of maintenance of static single-leg balance while standing. The person must stand on the foot of their choice for as long as possible without using their upper limbs for support.

According to Vellas, the threshold value is 5 seconds; below this threshold, there is a risk of a traumatic fall.

One-leg balance appears to be a significant predictor of falls resulting in injury (relative risk: 2.13; 95% CI: 1.04, 4.34; P = 0.03) (17).

- **Walking Speed**

Assessing walking speed is an objective measure of an older adult's functional mobility. Walking speed is assessed over 4 meters (53), although assessing speed over 10 meters has better clinical validity; both tests have excellent reliability (54). The 4-meter test accommodates the architectural constraints of the testing sites. It is a quick, safe, and reliable tool for assessing an older adult's mobility independence (18).

For the assessment, a 4-meter distance is marked on the floor; the subject must walk the distance at a normal pace. The stopwatch is started as soon as the first step is taken and stopped when the subject crosses the finish line. Two tests are performed, and the examiner records only the best result.

A walking speed of less than 1 m/sec (4 seconds for 4 meters) is an indicator of frailty (48)

- **Rehospitalization due to a fall**

Rehospitalization due to a fall requires rehabilitative care that may impact the patient's physical performance.

- **Use of a massage therapist or physical therapist for private motor rehabilitation**

Private-practice care provided by a physical therapist for motor rehabilitation is likely to influence the patient's physical performance and alter their maintenance exercise routine.

- **Number of maintenance exercise sessions performed per week**

According to the WHO (55), adults aged 65 and older with reduced mobility should engage in physical activity aimed at improving balance and preventing falls at least three days a week " In addition, exercises to strengthen the major muscle groups should be performed at least two days a week "

More recently, the Inserm expert group (56) recommended a minimum duration of 50 hours over 6 months—or 2 hours per week—for a training program that "prioritizes" balance exercises.

The HAS does not specify any frequency for physical therapy interventions for people who fall.

The OSSEBO study (36) recommended that its participants perform maintenance exercises at least once a week in addition to the group session.

The Life study (57), which focused on home-based exercise, recommended performing the exercises as often as possible.

The dose-response relationship for physical maintenance depends on several factors: the type of exercises, frequency, duration, and intensity. The scientific literature does not provide conclusive data on the frequency of maintenance exercise.

The Otago program (58) is the most similar to our study (type of exercises, intensity, duration) and recommends a frequency of three times per week for 30 minutes per session

- **Falls reported by the individual**

Self-reported falls are more or less reliable (8).

In their work, Hauer, Lamb, et al. (2006) (59) cite data collection via telephone or paper questionnaire; the latter is considered more reliable. It has also been observed that retrospective data collection is less reliable than prospective data collection.

This recall bias of 13 to 32% (60) may be attributable to denial or forgetfulness, especially since the fall did not result in injury

To facilitate data collection and avoid study bias caused by contacting participants after each fall, we will use the method of recording falls on the calendar included with the exercise booklet at 6 and 12 months.

6.1.2. Description of Methods and Analyses

To meet the study objectives, patient assessments will be conducted at M0, M6, and M12.

The M0 assessment will be conducted before the patient returns home—either at the end of their hospital stay or at the conclusion of their outpatient care.

The assessments at M6 and M12 will be conducted during a visit to the study site.

The assessments outlined in the protocol are standard practice in geriatric rehabilitation. They will be performed by a duly trained physical therapist.

Data regarding rehospitalization due to a fall and the use of a physical therapist for motor rehabilitation will be collected at M6 and M12 by interviewing the patient and, if necessary, their primary care physician, who will have been notified at the time of the patient's enrollment.

To assess adherence to the exercise program, patients will be provided with a booklet containing a calendar in which they must record their completion of the physical maintenance exercises. Data from the booklet will be collected at M6 and M12 during the patient's evaluation at the study site.

6.2. STUDY TIMELINE

Prior to the start of the study, physical therapists and TEC staff will be trained on the specifics of this research protocol.

Patients aged 65 and older who have a history of falls and are receiving physical therapy rehabilitation will be invited to participate in the study.

The physical therapist at the investigator's site will inform the patient about the study procedures and provide the necessary information regarding the physical maintenance program, the details of which are included in Appendix 1 of the study protocol (presentation of the program, verification that the patient understands the program and is performing it correctly, reminder to record each completed session on a calendar attached to the program booklet, and advice on the benefits of performing the exercises as many times as possible each week).

If the patient agrees to participate, the physical therapist will provide a copy of the information sheet and obtain the patient's written consent after a 24-hour waiting period.

The patient will receive the booklet detailing the exercise program, which allows them to record their completion of the exercises as well as any falls.

Following the patient's enrollment, the physical therapist will enter the data into the electronic record and may proceed with randomization using the Clinsight® software.

The patient will be informed of the group to which they have been randomized (with or without telephone coaching).

The patient will be given an appointment notice for the assessments at M6 and M12, which will be conducted at the investigator's center. They will be reminded to bring their booklet.

At M0, enrolled patients will undergo an initial assessment including a TUG, an EVA measuring fear of falling, the IADL, the FTSST, and the single-leg balance score, as well as the 4-meter walk test

4-meter walk test. This initial assessment will be conducted by the physical therapist or the TEC, depending on the site.

Patients randomized to the control group will not receive telephone coaching. They will only be required to record their completion of physical exercises and any falls in their logbook.

Patients randomized to the experimental group will receive telephone coaching, consisting of 5 phone calls scheduled by the physical therapist at times most convenient for the patient, at a rate of one appointment per month.

Each telephone coaching session is estimated to last 20 minutes.

Like patients in the control group, they will be required to record their exercise sessions and any falls in their logbook.

The telephone coaching provided by the physical therapist to patients will involve assessing the number of exercises performed, the number of falls that may have occurred, evaluating the fear of falling, and making an overall assessment of the patient's general condition, as well as a self-assessment of their physical ability (single-leg balance, fear of falling, FTSST). Based on this information, the physical therapist will be able to encourage patients to perform the exercises as consistently as possible, or even increase the frequency of certain exercises depending on the assessment.

Data from the telephone coaching sessions will be recorded in the eCRF.

At M6, patients enrolled in both study arms will undergo an assessment including a TUG test, an EVA measuring fear of falling, the IADL, the FTSST, walking speed, and the single-leg balance score. The number of rehospitalizations and instances of seeking physical therapy for motor rehabilitation will also be assessed through the patient and their primary care physician, if necessary. This assessment will be conducted by a clinical research coordinator (CRC) during a visit at the study site.

Following the assessment at M6, patients in the experimental arm will no longer receive telephone coaching. As with patients in the control arm, they will only be required to record their physical exercise sessions and any falls in their logbook.

A final assessment of the patients will be conducted at M12 (identical to M6).

Following the visits and phone calls, the study data will be entered into the eCRF by the TEC and/or the physical therapist at the study sites.

STUDY TIMELINE

Actions	M0	M1	M2	M3	M4	M5	M6	M12 (End-of-study visit)
Verification of ID/National ID Card Patient Information Obtaining patient consent	X							
Randomization Scheduling of the 5 telephone coaching sessions (based on randomization arm)	X							
Collection of sociodemographic and clinical data	X							
Telephone coaching (for patients in the experimental arm only)		X	X	X	X	X		
Assessment (primary and secondary criteria) TUG IADL FTSS Walking speed Fear of falling Occurrence of falls Hospitalization due to a fall Use of a private physical therapist for motor rehabilitation Number of exercise sessions completed	X						X	X

6.3. IDENTIFICATION OF ALL SOURCE DATA NOT INCLUDED IN THE MEDICAL RECORD

The assessments conducted at M6 and M12, as well as the data from the telephone coaching sessions from M1 to M5 (experimental group patients only), will be entered into the eCRF.

Note:

- TUG
- IADL
- FTSST
- Single-leg stance
- Walking speed
- Fear of falling
- Number of falls
- Number of readmissions due to falls
- Number of visits to a private physical therapist for motor rehabilitation
- Number of exercise sessions completed

6.4. RULES FOR DISCONTINUING A PERSON'S PARTICIPATION

6.4.1. Criteria for premature withdrawal of a participant from the study

These criteria for withdrawal from the study are:

- Withdrawal of consent,
- Death of the patient
- Occurrence of an event that prevents continuation of the protocol.

Withdrawals from the study will only become effective after confirmation by the investigator and the research coordinator. These withdrawals are always final.

In the event of a lost-to-follow-up subject, the investigator will make every effort to reestablish contact with the patient. In the event of premature withdrawal without withdrawal of consent, the investigator must document the reasons as thoroughly as possible. Data collected for subjects who are lost to follow-up or who have withdrawn prematurely from the study will be included in the analyses unless the subject has withdrawn consent.

6.4.2. Procedures for Premature Termination of a Person's Participation in the Study

In the event of premature study termination, patients will receive the standard care typically provided to elderly patients who have experienced a fall.

6.4.3. Criteria for terminating the study (excluding biostatistical considerations)

The study will end when the last participant enrolled in the study completes their participation.

Only the authorities responsible for the study (Human Subjects Protection Committee (CPP), ANSM) and the study sponsor may decide to terminate the study before the end of follow-up for the last enrolled patient.

7. DATA MANAGEMENT AND STATISTICS

7.1. COLLECTION AND PROCESSING OF STUDY DATA

7.1.1. Data Collection

An electronic case report form (eCRF) will be created by the Data Manager of the Promotion Department at Nantes University Hospital. All information required by the protocol must be recorded in the eCRF. It will include the data necessary to confirm compliance with the protocol and all data required for statistical analyses. It must also enable the identification of major deviations from the protocol.

The individuals responsible for entering data into the eCRFs will be the physical therapists and clinical research technicians at the centers participating in the study.

7.1.2. Data Coding

By signing this protocol, the principal investigator and all co-investigators agree to keep the identities of the patients who participated in the study confidential.

The patient coding rule is defined as follows:

Center number – Enrollment number (chronological order) – Last name initial – First name initial generated by the eCRF

This code will be the only information appearing on the eCRF that will allow the eCRF to be linked to the patient at a later date.

The principal investigator is also required to code patient data on all documents in their possession (imaging reports, laboratory test results, etc.) that are attached to the eCRF.

7.1.3. Data Processing

Creation of the electronic case report form:

Data collection will be carried out through the implementation of a clinical database and the creation of a data entry form modeled after the observation form, in accordance with the protocol and current regulations.

This electronic database will be developed by the Data Manager of the Promotion Department at Nantes University Hospital, who is in charge of this trial.

The Data Manager will use Clinsight® software to create the database and data entry screens, administer and manage user accounts, implement consistency checks, and transfer and archive data.

The structure of the database and data entry screens will be approved by the trial sponsor.

Access to the electronic case report form and security measures:

Access to the electronic case report form will be restricted to authorized individuals, who will be assigned a profile, a username, and a personal password (to be changed upon first login).

Three profiles will be available:

- *Investigator* Profile (physical therapists) and *TEC* for data entry,
- *ARC Monitoring* Profile (ARC of the Promotion Department at Nantes University Hospital) for evaluating the quality of data entry,
- *Data Manager* Profile for data administration and processing.

A detailed registry will be maintained by the Data Manager.

Data Entry:

A data entry guide will be provided by the Data Manager and approved by the coordinating investigator.

If necessary, the data entry guide will be updated.

The TEC will be responsible for data entry, updates, and the correction of identified anomalies.

Data Validation and Correction Requests:

A data validation plan will be submitted to the coordinating investigator. This plan will include a detailed list of consistency checks to be performed either online during data entry (non-blocking checks) or later as part of routine processing (e.g., overnight). The conditions for data processing will be specified, including the handling of automatic and manual correction requests and a list of permitted obvious corrections.

The data processing system will go live after the final version of the validation plan is released.

The TEC will be able to view correction requests by logging in directly to the website with their username and password. The complete audit trail tracking data modifications or confirmations (out-of-range values, etc.) will be available. Validation checks will be performed until all detected inconsistencies are resolved.

Freeze of the database:

Once all data and corrections have been entered, a final quality control check of the database may be performed and documented by the Promotion Department in accordance with current standard operating procedures.

Following written confirmation from the principal investigator and the statistician in charge of the analysis, the database freeze may be performed by the Data Manager responsible for this trial.

Database Transfer:

A final transfer of the database in the form of SAS® and Excel files will be performed by the Data Manager for the statistician responsible for the analysis. If the statistician or the principal investigator so desires, the Promotion Department may send interim versions of the database.

Data Archiving and Submission of Study Documents:

Several CD-ROMs containing all study documents, the database, and the SAS® programs and tables generated for statistical analysis will be sent to the principal investigator and the statistician responsible for analyzing this trial.

All study notebooks and documents, including films, must be stored in a locked cabinet for 15 years.

7.2. STATISTICS

The study plans to enroll **180 patients**: 90 who will receive telephone coaching and 90 who will not.

Statistical analyses will be performed by Christelle VOLTEAU, a statistician in the Promotion Department of the Research Division at Nantes University Hospital.

Statistical analyses will be performed using SAS® software, version 9.4.

A data review will be conducted at the end of the study, prior to the start of statistical analyses. The following individuals will be present during this review: the principal investigator, the project manager, the monitoring ARC, the data manager, the statistician, and anyone else involved in the protocol. The objective will be to assess the progress of the study, identify any problems encountered, and classify any deviations as minor or major.

7.2.1. Description of statistical statistical planned, including the schedule for planned interim analyses

The variables measured at enrollment will be described for the entire patient population and within each of the two groups using the number of patients and percentages for each category for qualitative variables, and using the minimum, maximum, mean, standard deviation, and quartiles for quantitative variables.

Analysis of the primary endpoint: The mean TUG score at 6 months will be compared between the two arms using a mixed-effects linear model adjusted for the TUG score at Day 0. To account for stratification by randomization center, the center will be included as a random effect in the model.

Analysis of secondary endpoints: Depending on the nature of the variables (quantitative or qualitative), these endpoints will be compared between the two arms using mixed-effects linear models or generalized linear models with random effects. Since each endpoint is measured at 6 months and 12 months, the patient effect will be treated as a random effect (to account for the correlation of measurements over time for each patient). The center will also be treated as a random effect. For quantitative variables, these models will be adjusted for the measured at Day 0.

7.2.2. Statistical Justification for the Number of Participants

A descriptive pilot study on physical therapy combined with telephone follow-up, conducted between 2011 and 2012 at the Nantes Outpatient Gerontology Center on 25 patients, showed that the mean TUG score decreased from 15.1 ± 4.5 to 11.8 ± 2.6 seconds at 6 months.

Assuming a 5% alpha level, 80% power, and a standard deviation of 4.5, a sample size of 162 patients is required to detect a 2-second difference in the TUG score between the two arms. Assuming a 10% rate of missing values (withdrawal of consent, loss to follow-up, etc.), a total of 180 patients will be randomized, or 90 patients per arm.

The theoretical number of eligible patients per center is as follows:

Names of recruiting centers	Expected average enrollment per month
Nantes University Hospital (Bellier and Pirmil)	5
Nantes Red Cross Centers (Beaumanoir and Confluent)	4
Le Bodio Center in Pontchateau	3
Ancenis Hospital	2
CHD Vendée (Montaigu and La Roche-sur-Yon)	4
TOTAL	18

Over a 24-month period, this represents a total of 432 eligible patients, which should allow us to easily recruit the 180 patients whose data analysis will enable us to meet the study's objectives.

7.2.3. Expected level of statistical significance

The level of statistical significance is set at 0.05.

7.2.4. Statistical criteria for study termination

Not applicable.

7.2.5. Method for data into account of missing, unused, or invalid data

Primary outcome measure: In the event of missing data, the primary outcome measure will be imputed using the worst observed value across the two groups (maximum TUG score). A sensitivity analysis will be conducted using a multiple imputation technique that accounts for the key characteristics of patients who have fallen.

Secondary endpoints: There will be no imputation of missing data for the secondary endpoints.

7.2.6. Management of Changes made to analysis plan of the initial strategy

A statistical analysis plan will be drafted before the database is locked and will detail any changes made to the statistics section of the protocol.

7.2.7. Selection of subjects to be included in the analyses

The primary analysis population will be the “Intention-to-Treat” population. This corresponds to all patients randomized in the study.

A sensitivity analysis will be performed on the “Per Protocol” population for the primary endpoint. This population includes patients who most closely adhered to the protocol: compliance with inclusion and exclusion criteria, absence of major deviations from the protocol, and availability of the primary endpoint. This analysis will verify the robustness of the results obtained.

7.2.8. Randomization

Randomization will be open-label and stratified by center. It will be conducted in a 1:1 ratio and balanced in blocks.

Randomization will be performed using the Clinsight® software via the website: <https://www.dirc-hugo-online.org/csonline/>. Access will be granted using a username, password, and study number (DIRCXXX), provided by a data manager from the Research Promotion Department at Nantes University Hospital.

The following information must be provided:

- First initial of the last name

- First initial of the middle name
- Date of birth (month, year)
- Compliance with inclusion and exclusion criteria (yes/no)
- Signature on the informed consent form (yes/no).

The randomization number and arm will be assigned automatically during randomization. A confirmation email will be sent to the person who performed the randomization as well as to all individuals involved.

The randomization lists will be generated by a statistician from the Research Promotion Department at Nantes University Hospital. An explanatory guide to the randomization process will be available online via Clinsight®

8. MONITORING AND MANAGEMENT OF ADVERSE EVENTS

8.1. DEFINITIONS

8.1.1. Adverse Events

An adverse event (AE) is defined as any harmful occurrence in a patient or clinical trial participant that is not necessarily related to the study method.

All adverse events encountered during the study, whether observed by the physician or reported by the patient, must be recorded in the observation log in the section provided for this purpose.

The severity of adverse events will be graded according to the criteria selected when the protocol was drafted (*include the selected evaluation criteria in the appendix*). For any event not listed in the selected classification, the grading will be as follows:

- 1 = mild
- 2 = moderate
- 3 = severe
- 4 = life-threatening

8.1.2. Adverse Events

An adverse event is considered suspected if a causal relationship—regardless of its strength (doubtful, plausible, possible, certain)— can be considered to exist with the trial.

8.1.3. Serious Adverse Events (SAEs)

An adverse event is considered a serious adverse event (SAE) if it:

- * results in death,
- * is life-threatening,
- * results in temporary or permanent disability or incapacity,
- * requires or prolongs the patient's hospitalization,
- * results in a congenital or neonatal anomaly,
- * is medically significant (meaning: requires treatment to prevent progression to one of the above stages).

8.1.4. Expected Adverse Events or Reactions

An expected adverse event (EAE) is an event already mentioned in the most recent version of the information regarding the methods used in the trial.

Reminder: Expected serious adverse events or reactions will be subject to a delayed report by the sponsor to the competent authorities.

8.1.5. Unexpected adverse events

An unexpected adverse event (AE I) is an event whose nature, severity, frequency, or course does not align with the information regarding the procedures and methods used during the trial, as defined in the investigator's brochure or the package insert.

Reminder: Unexpected serious adverse events must be reported to the competent authorities within 7 or 15 days of the sponsor becoming aware of them.

8.2. SAFETY EVALUATION PARAMETERS

8.2.1. Specific safety-related evaluation criteria

Not applicable

8.2.2. Planned methods and timeline for measuring, collecting, and analyzing safety evaluation parameters

The methods selected for collecting and analyzing safety evaluation criteria are spontaneous reporting by the investigator and monitoring.

8.3. LIST OF EXPECTED ADVERSE EVENTS

Under this protocol, the expected AEs are: Regarding the study

method:

Coaching does not pose any additional risk compared to standard recommendations; performing the exercises carries a risk of musculoskeletal pain and falls, with their associated consequences (fractures, bruises, etc.).

Regarding the protocol:

Assessments conducted during on-site visits carry a risk of cramps, pain, falls, and their consequences. However, this risk is minimized by the presence of the principal investigator (PI) in charge of the assessments.

Regarding the patient's health status:

The occurrence of diseases, medical conditions, or complications related to patients' medical history or age is common in the geriatric population.

Adverse effects of medications used within the scope of their marketing authorizations for the treatment of diseases, as well as those of medical devices, are listed in the respective Summary of Product Characteristics (SPC) and package inserts.

Under this protocol, the following do not require recording or reporting to the sponsor when a severity criterion is met:

- adverse events related to routine activities: pain, cramps, falls, and their consequences during exercise
- diseases, conditions, and complications related to the patients' age and medical history
- Adverse drug reactions and adverse events related to medical devices; these adverse events are subject to the standard reporting process—regional pharmacovigilance centers and the medical device vigilance system

8.4. *MANAGEMENT OF ADVERSE EVENTS*

8.4.1. Reporting of Adverse Events

Any serious adverse event (SAE) (except as specified in the previous paragraph) requires the completion of a serious adverse event report form, whether the event is expected or unexpected. The investigator must verify that the information provided on this form is accurate and clear (do not use abbreviations...). The adverse event must be reported immediately (within 24 hours of its identification by the investigator) to the sponsor by fax (Promotion Department of the Research Division, Nantes University Hospital; Fax: 02 53 48 28 36).

Upon receipt of notification of a serious adverse event, the sponsor must report it to the regulatory authorities. Once a year, the sponsor must prepare an annual safety report.

8.4.2. Independent Monitoring Committee

Since this is a study posing a minor risk to participating patients, no independent monitoring committee is required.

8.5. *PROTOCOL FOR FOLLOW-UP AND DURATION OF FOLLOW-UP FOR PATIENTS FOLLOWING THE OCCURRENCE OF ADVERSE EVENTS*

Patients enrolled in the protocol are monitored regularly, regardless of the protocol. In the event of an adverse event, follow-up after study discharge will take place as part of their routine care until the serious adverse events (SAEs) are resolved.

9. ADMINISTRATIVE AND REGULATORY ASPECTS

9.1. *RIGHT OF ACCESS TO DATA AND SOURCE DOCUMENTS*

Each patient's medical data will be disclosed only to the sponsor or any person duly authorized by the sponsor, and, where applicable, to the authorized health authorities, under conditions that ensure confidentiality.

The sponsor and the regulatory authorities may request direct access to the medical record to verify the procedures and/or data of the clinical trial, without violating confidentiality and within the limits authorized by laws and regulations.

Data collected during the trial may be processed electronically, in compliance with CNIL requirements (compliance with reference methodology MR001).

9.2. *TRIAL MONITORING*

Monitoring will be carried out by the Promotion Department of the Research Division. A Clinical Research Associate (CRA) will visit each site regularly to perform quality control on the data reported in the case report forms.

The protocol has been classified according to the estimated level of risk for patients participating in the study. It will be monitored as follows:

Risk B: foreseeable risk similar to that of standard care

Monitoring will focus on verifying patient enrollment, ensuring informed consent has been obtained, and assessing the quality of eCRF completion, The reporting of any serious adverse events (SAEs) will also be verified.

On-site monitoring visits will be scheduled after consultation with the investigator. Clinical Research Coordinators (CRCs) must be able to review:

- The data collection logs for enrolled patients,
- The patients' medical and nursing records,
- The investigator's file.

9.3. *INSPECTION / AUDIT*

As part of this study, an inspection or audit may take place.

Inspectors review documents, logistical resources, records, and any other resources that the authorities consider to be associated with the clinical trial and that may be located at the trial site or at the sponsor's premises.

9.4. ETHICAL CONSIDERATIONS

9.4.1. Written Informed Consent

The investigator agrees to inform the patient clearly and accurately about the protocol and to obtain the patient's written informed consent (see the patient information sheet and consent form in the appendix). The investigator will provide the patient with a copy of the patient information sheet and a consent form. The patient may only be enrolled in the study after reviewing the information sheet and signing and dating the consent form. The investigator must also sign and date the consent form. These two documents will be provided in hard copy in at least two copies so that the patient and the investigator may each retain one copy. The investigator's original copy will be filed in the investigator's file.

The protocol complies with the exemption provided for in paragraph 2 of Article L.1121-3 of the Public Health Code: *"biomedical research other than that involving products mentioned in Article L. 5311-1 and included on a list established by decree of the Council of State, which involves only negligible risks and has no impact on the medical care of the person participating in it, may be conducted under the direction and supervision of a qualified person."*

Thus, physical therapists participating in the study, as "qualified individuals," may enroll patients.

9.4.2. Human Subjects Protection Committee

The sponsor undertakes to submit the study proposal for prior approval by an Ethics Review Board. The information provided covers, on the one hand, the procedures and nature of the research and, on the other hand, the safeguards provided for patients participating in this trial.

9.5. AMENDMENTS TO THE PROTOCOL

Requests for substantial amendments shall be submitted by the sponsor to the ANSM and/or the relevant Human Subjects Protection Committee for authorization or for information purposes, in accordance with Law No. 2004-806 of August 9, 2004, and its implementing regulations.

The amended protocol must be provided in a dated, updated version.
The patient information and consent forms must be amended as necessary.

9.6. NOTIFICATION TO THE COMPETENT AUTHORITIES

This protocol will be the subject of an application for authorization submitted to the ANSM.

9.7. *FUNDING AND INSURANCE*

The sponsor will provide funding for the study and take out an insurance policy covering the financial consequences of its civil liability, in accordance with regulations.

9.8. *RULES REGARDING PUBLICATION*

A copy of the publication will be provided to the Nantes University Hospital (CHU de Nantes), the study sponsor, which must be cited. The authors will be determined retrospectively by the coordinating investigator in consultation with the other physical therapists involved in the study.

Publications will include the following statement: “This study was supported by a grant from the French Ministry of Health (program acronym, program year, registration number: e.g., PHRIP 2015 XXXX.”

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