



Clinical practice guidelines

- Physiotherapy -
Preserving motor function
in frail elderly people
living at home

April 2005

This publication by the *Haute Autorité de santé* contains the guidelines produced by ANAES (the former French Agency for Accreditation and Evaluation in Healthcare, now part of HAS).
The guidelines were validated by ANAES' Scientific Council in September 2004

Synopsis

Title	Physiotherapy for preserving motor function in frail elderly people living at home
Publication date	April 2005
Requested by	<i>Association française pour la recherche et l'évaluation en kinésithérapie (AFREK)</i>
Produced by	ANAES - the former French Agency for Accreditation and Evaluation in Healthcare, now part of the <i>Haute Autorité de santé (HAS)</i> - Guidelines Department
Intended for	Physiotherapists; medical practitioners
Objectives	To establish: (i) which functional capacity assessments should be performed in frail elderly people (ii) appropriate physiotherapy treatment.
Assessment method	- Review of the literature - Discussion among members of an <i>ad hoc</i> working group - External validation by peer reviewers
Literature search	1995 - 2005
ANAES project leader	Michel Gedda (Head of Dept: Patrice Dosquet MD) (Literature search: Emmanuelle Blondet with the help of Laurence Frigère (Head of Dept: Rabia Bazi); secretarial services: Élodie Sallez and Jessica Layouni)
Author of report	France Mourey PhD, physiotherapist, Dijon
Collaborations and participants (annex 1)	- Learned societies - Steering committee - Working group (Chair: Paulette Guichard-Kunstler, Member of Parliament for Doubs, vice-president of the French National Assembly, Besançon) - Peer reviewers
Internal validation	Validated by ANAES' Scientific Council in September 2004
Related publications	The full report (in French) on which these guidelines are based is on the HAS website (www.has-sante.fr): See also: " <i>Prévention des chutes accidentelles de la personne âgée</i> " (HAS, November 2005)

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Summary

These guidelines address physiotherapy in frail elderly people living at home, irrespective of actual age and independent of specific disease. They do not cover prevention programmes for independent individuals or rehabilitation for very elderly individuals living in an institution.

1. Assess loss of mobility: this is an essential step in measuring dependence.
2. Assess functional capacity (balance and walking) at start of management, using the following tests:
 - timed up and go test (TUG) - timed getting up, walking 3 metres, turning round and returning to sitting
 - mini motor test (MMT).
3. Measure tibiotarsal range of motion because of its impact on posture.
4. Take the patient's psychosocial environment into account in order to adjust your relationship with them and their carers, and to set realistic individual goals (physiotherapist's role in relation to other people involved at the patient's home).
5. Muscle strength
 - Ask the patient to:
 - Repeat functional exercises to increase muscle strength
 - Perform wall push up exercises for arms to maintain ability to perform transfers
 - Use muscle strengthening techniques when there is a specific localised deficit
 - If necessary, advise on additional self-rehabilitation programmes between sessions.
6. Transfers
 - Preserve ability to perform transfers or encourage recovery of this ability after an acute episode, particularly sit-to-stand and stand-to-sit transfers.
7. Balance
 - Use balance-restoring techniques when a deficit has been found.
8. Walking rehabilitation
 - Draw up a programme including exercises for balance and functional exercises in getting up out of an armchair and sitting down again.
9. Getting up off the ground
 - Teach the patient to get up off the ground; this must be learnt to prevent loss of autonomy.
10. Educate family members, carers, and all professionals involved and show them how to help, so that the elderly person is constantly encouraged to move during the session and in daily living activities.
11. Regularly send physiotherapy assessments to the referring doctor, to facilitate monitoring.
12. Prescribe physiotherapy using article 9 of the French general nomenclature of professional procedures (NGAP) in elderly patients who have a number of diseases and/or those with decreased functional ability: "Analytical and global rehabilitation for muscles and joints in both legs, posture, balance and coordination" (AMK 8).

I. Introduction

Preserving motor function in frail elderly people is classified as secondary or tertiary prevention. The aim of secondary prevention is to reduce the duration and severity of a disease, while tertiary prevention aims to reduce its functional effects.

Individuals can be classified by functional status into 3 groups: independent, frail or dependent. These guidelines concern physiotherapy in frail elderly people living at home, without consideration of actual age and independently of any specific disease.

The guidelines do not cover prevention programmes for independent individuals or rehabilitation for very elderly individuals living in an institution.

II. Assessment method

The guidelines were produced using the method described in Annex 2:

- a critical appraisal of the literature published from 1995 to 2005.
- discussions within a multidisciplinary working group (3 meetings)
- comments by peer reviewers.

They were graded on the basis of the strength of the evidence of the supporting studies (Annex 2). If no grade is given, they are based on agreement among professionals within the working group after taking into account the comments of peer reviewers.

III. Assessing motor function

Decreased mobility is associated with increased dependence and deterioration in quality of life, and is a predictive factor for mortality. Assessing loss of mobility is an essential step in measuring dependence.

The working group did not recommend any specific tools for assessing autonomy. The choice of tool is that of each multiprofessional team as different specialties partake in assessing autonomy. However, there should not be too many assessments using different tools. The AGGIR scale¹ is often used in conjunction with the Instrumental Activities of Daily Living (IADL) scale.

• Functional capacity

A physiotherapy assessment in frail elderly people assesses functional capacity from the outset as its secondary aim is to target analytical aspects discovered during movement. This is in contrast to usual practice.

To assess functional capacity (balance and walking), the working group recommended:

- the Timed Up and Go (TUG) test at the start of care (timed test of getting up, walking 3 metres, turning round and returning to sitting)
- and the mini motor test (MMT).

Depending on the results of these two tests, further tests may be needed (Fig. 1):

- *if the subject takes longer than 30 seconds for the TUG test and MMT score is <15: feet and ankles should be examined, a dual-task test should be performed while walking, and walking speed should be measured over 10 metres. The subject's pulse should be monitored to*

¹ *Autonomie Gerontologie Groupes Iso-Ressources* (AG-GIR) – the Geriatric Autonomy Group Resources Needs, the scale used in France to establish the degree of dependency in the elderly.

assess ability to adapt to effort. Postural recovery tests can help choose appropriate exercises;

- if the subject takes less than 30 seconds to perform the TUG test and MMT score is >15: a Tinetti test should be performed, with measurement of walking speed over 10 metres and a dual-task test. A 6-minute endurance test and a multiple sit-to-stand test to measure muscle strength may be used to measure progress. More specific muscle and joint tests should only be used if observation of functional movement has revealed a localised deficit.

When the test is performed at home and a distance of 10 metres is not available, walking speed can be measured over 6 metres.

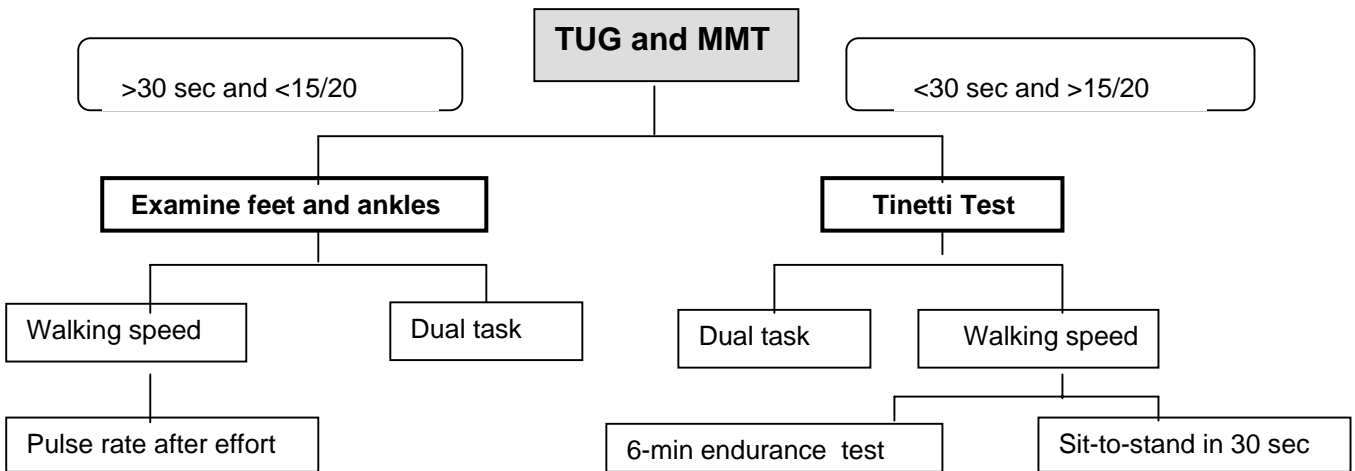


Figure 1. Decision tree for assessment functional assessment of balance and walking

To assess lower limb strength, the subject should be asked to perform as many sit-to-stand transfers as they can, provided they can adapt to effort and do not have psychomotor disadaptation syndrome. The physiotherapist should decide whether more analytical joint (hip flexion and/or knee flexion) and muscle measures are needed.

Tibiotarsal range of motion should always be checked because of its impact on postural strategies.

- **Social and material environment**

Together with the other care staff involved, the physiotherapist should take the psychosocial environment into account in order to adjust their relationship with the patient and their carers, and in order to set realistic, individual goals.

The working group recommended that the physiotherapist should assess the patient's living conditions and material environment, particularly if no occupational therapist is involved. To make the subject's daily living activities easier and reduce their risk of falling, they should assess the need for any technical or walking aids and their ability to go out. Assessment of the environmental factors that constitute a risk of falling are addressed in specific guidelines on the subject (see "*Prévention des chutes accidentelles de la personne âgée*", HAS, November 2005).

IV. Physiotherapy treatment

IV.1 Orthopaedic status

Treatment to preserve or improve range of motion in joints should focus first on tibiotarsal mobility unless the subject has a specific musculoskeletal system disorder.

Mobility of the spine, particularly the cervical spine, is required for functional movement.

IV.2 Muscle strength

The working group recommended using muscle strengthening techniques when a specific localised deficit was found:

- when the target muscles are the lower limbs: weight-loaded quadriceps, pelvis-stabilizing muscles, and calf (gastrocnemius and soleus) muscles;
- equipment: elastic resistance bands, sandbags for weight resistance and weighted limb bracelets for the ankles.

In other cases, muscles should be strengthened by repetition of functional exercises. Wall push up exercises are recommended for the arms to maintain the ability to perform transfers.

Additional self-rehabilitation programs may be recommended by the physiotherapist between sessions.

IV.3 Transfers

Preserving the ability to perform transfers or recovering this ability after an acute episode are important rehabilitation goals. Particular attention should be paid to moving from sitting to standing and from standing to sitting.

- *Turning over and getting out of bed:* repeat the following sequence of movements: lie on one side, lower the heels out of the bed, and move into a seated position on the edge of the bed by pushing down with the arms.
- *Moving from sitting to standing:* place feet into position, hold armrests, keep head up and look straight ahead, bend forward, push down on the legs, then stabilise the standing position.
- *Moving from standing to sitting:* bend forward, keep head up, grasp armrests and bend the knees.

IV.4 Balance function

- Look for anterior projection of the centre of mass during retropulsion.
- Provoke intrinsic imbalance (e.g. by asking the subject to lift their arms, move their body).
- Provoke extrinsic imbalance by pushing the subject's chest or using unstable planes.
- Make postural recovery and protection strategies automatic again.
- Change the patient's support base by gradually encouraging them to stand on one leg.
- Stimulate sensory perception, e.g. by depriving the subject of sight or stimulating the feet.
- Ask the subject to perform two tasks simultaneously: postural control and complex voluntary movement (e.g. catching a ball), or postural control and cognitive task.

IV.5 Walking

Walking rehabilitation should be part of a programme that includes balance exercises and functional exercises (getting up from an armchair then sitting down again).

- Encourage the subject to keep to a rhythm by giving rhythmic verbal instructions .
- Ask them to:
 - change speed and direction
 - go up and down stairs
 - perform dual-task walking exercises
- Monitor adaptation to effort.
- Recommend a walking aid if the patient has balance problems.

IV.6 Getting up off the ground

Learning to get up off the ground is critical in preventing loss of autonomy.

Whenever possible, the subject should get down onto the ground on their own. Ask them to lean on a support, put first one knee on the ground, then the other.

To get up, they should start in a sitting position, which will be their spontaneous position after a “mechanical” fall. From this position, they should twist the upper part of their body round and put both hands on the floor, either on their right or left side, in order to seek arm support. This leads to rotation of the pelvis and helps them get their legs into a position where they can get onto hands and knees. At first, the physiotherapist should support them when they get onto both knees, then onto just one knee. The subject then stands up using their arms.

Sessions should be short and the subject should be given time to rest.

IV.7 Pain relief

Regular exercise helps to control persistent pain. Massage and/or or physiotherapy may be useful.

IV.8 Educating the patient and family members

All carers and professionals involved with the elderly person must be educated and shown how to help so that the subject is constantly encouraged to move during the session and during daily living activities.

Maintaining activity between sessions may make it easier for the elderly person to keep mobile with help from carers or family members.

IV.9 Subjects with cognitive impairment

In patients with cognitive impairment, the assessment should be based on functional situations as this is easier for the patient. Such situations also provide more precise results, can at times be used for rehabilitation purposes, and avoid the patient experiencing failure.

Goals should be increased gradually. Patience and perseverance will be needed.

It is important for the care relationship to use reference points in time and space and to give clear instructions.

IV.10 Arrangements within the home

The physiotherapist should advise on the layout and fixtures of living areas, bathroom, toilet, and areas for preparing meals, and on how to arrange lighting. They should suggest any improvements that would make daily living activities easier and reduce the risk of falling. They should also suggest appropriate technical and walking aids.

IV.11 Prescribing physiotherapy

For elderly individuals with multiple diseases and/or those with decreased functional ability, physiotherapy comes under article 9 of the French general nomenclature of professional procedures (NGAP): “Analytical and global rehabilitation of both leg muscles and joints, posture, balance and coordination” (AMK 8).

The physiotherapist should send the referring doctor regular reports so that the patient can be monitored. It should be remembered that even frail patients can make progress.

Annex 1 – Participants

Learned societies consulted

Association d'aide à domicile aux personnes âgées et/ou malades
Association française pour la recherche et l'évaluation en kinésithérapie
Association nationale française des ergothérapeutes
Association nationale des médecins généralistes des hôpitaux locaux
Collège national des généralistes enseignants
Hospitalisation à domicile
Société française de gériatrie et de gérontologie
Société française de médecine générale

Société française des médecins libéraux généralistes
Société de formation thérapeutique du généraliste
Société de gérontologie de Bordeaux et du Sud-Ouest
Société de gérontologie Centre Auvergne
Société de gérontologie de l'Est
Société de gérontologie d'Île-de-France
Société de gérontologie et de gériatrie de Picardie
Société méditerranéenne de gérontologie et de gériatrie
Soins santé à domicile
Soins et santé

Steering committee

François-Régis Berger, senior nursing manager, Pessac
Marie Birabent, physiotherapist, Paris
Dr Patrick Dehail, doctor specialising in physical medicine and rehabilitation/geriatrician, Pessac
Dr Paul Deneuve, general practitioner, Cucq-Trepied
Michel Gedda, project manager, ANAES, Saint-Denis La Plaine

Jean-Pierre Godard, physiotherapist, Vitry-sur-Seine
Françoise Gomez, physiotherapist, Pessac
Dr Yolande Grumbach, geriatrician, Amiens
Dr Bernard Leblanc, doctor specialising in physical medicine and rehabilitation, Beaumont
Dr Sabine Pol-Roux, doctor specialising in physical medicine and rehabilitation, Compiègne
Dr Jean-Philippe Thiebault, doctor specialising in physical medicine and rehabilitation, Colmar

Working group

Paulette Guinchard-Kunstler, Member of Parliament for Doubs, vice-president of the French National Assembly, Besançon – working group chair
France Mourey, physiotherapist, Dijon – report author
Michel Gedda, project manager, ANAES, Saint-Denis La Plaine.

Benoît Biichle, senior nursing manager, Lons-le-Saunier
Claude Braize, physiotherapist, Saint-Étienne
Corinne Bugnicourt, nurse, Dax
Dr Philippe Carret, general practitioner, L'Hospitalet
Marie-Claude Chauvin de Rangot, physiotherapist, Tarbes
Dr Patrick Dehail, doctor specialising in physical medicine and rehabilitation, geriatrician, Pessac

Marie-Laure Dureysseix, physiotherapist, Dijon
Jean-Pierre Godard, physiotherapist, Vitry-sur-Seine
Hadj Kalfat, occupational therapist, Limoux
Dr Sabine Pol-Roux, doctor specialising in physical medicine and rehabilitation, Compiègne
Corinne Shabaille, social worker, Berck-sur-Mer
Dr Jean-Philippe Thiebault, doctor specialising in physical medicine and rehabilitation, Colmar.

Peer reviewers

Nicole Almeras, physiotherapist, Nîmes
Dominique Appy, nurse, Aubagne
Nathalie Avril, social worker, Bourges
Catherine Bene, nursing auxiliary, Goersdorf
Elisabeth Biais-Canhoyea, nurse, Agres
Marie Birabent, physiotherapist, Paris
Dr Marie-Ange Blanchon, geriatrician, Saint-Étienne
Dr Nathalie Bourdin, geriatrician, Bordeaux
Jean-Marc Chenevelles, physiotherapist, Ivry-sur-Seine
Loïc Coquisart, physiotherapist, Darnétal
Jean-Pierre Cosnier, physiotherapist, Cintegabelle
Martine Damon, social worker, Plougernevel
Florence de Cornelissen, occupational therapist, Boubon-l'Archambault
Professor Benoît de Wazieres, geriatrician, Nîmes
Professor Patrick Deleporte, general practitioner, Villiers-Guilain
Magaly Delhome, nurse, Poitiers
Dr Paul Deneuille, general practitioner, Cucq-Trepied
Dr Ingrid Devoueize, geriatrician, Le Cateau
Professor Pierre Dudognon, doctor specialising in physical medicine and rehabilitation, Limoges
Dr Florent Durain, general practitioner, Saint-Avertin
Dr Marc Ebel, geriatrician, Strasbourg
Nathalie Emptaz, physiotherapist, Buxy
Dr Michel Enjalbert, doctor specialising in physical medicine and rehabilitation, Cerbère
Alain Garnier, physiotherapist, Montrabe
Françoise Gomez, physiotherapist, Pessac
Dr Louis Gonzales, geriatrician, Lyon
Thierry Grunberg, physiotherapist, Chantepie
Christian Guichardon, physiotherapist, Neuville-sur-Saône
Dr Bernard Leblanc, doctor specialising in physical medicine and rehabilitation, Beaumont
Jean-Yves Lemerle, physiotherapist, Angers
Paul Lyonnaz, physiotherapist, Cordoue-sur-Logne
Maryline Marais, physiotherapist, Compiègne
Didier Marcant, physiotherapist, Thonex (Switzerland)
Dr Catherine Martin-Hunyadi, geriatrician, Strasbourg
Jean-Pierre Mercier, physiotherapist, Mont-de-Marsan
Josiane Morat, social worker, Montpellier
Jocelyne Niquet, nurse, Acquigny
Nadine Noblet, nurse, Mâcon
Éric Pastor, physiotherapist, Montpellier

Jérôme Poirier, occupational therapist, Neufmoutiers-en-Brie
Geneviève Poirier-Coutensais, nurse, Clermont-sur-Oise
Professor Pierre Pfitzenmeyer, geriatrician, Dijon
Dr Christophe Pretot, general practitioner, Salins-les-Bains
Philippe Rogala, physiotherapist, Horbourg-Wihr
Dr Emmanuel Roubertie, general practitioner, Vendôme
Sylvaine Seveignes, care manager, Caluire
Sophie Terefenko, nurse, Dijon
Brigitte Teyssier, physiotherapist, Condom
Dr Patrick Thevenet, general practitioner, Quimper
Dr Marie-Elisabeth Torre, general practitioner, Biguglia
Dr Philippe Tronchet, doctor specialising in physical and rehabilitation medicine, Berck-sur-Mer
Sylvie Uberti, nurse, Digne-les-Bains
Professor Marc Verny, geriatrician, Paris
Éric Viel, physiotherapist, Thonon
Dr Thierry Voisin, neurologist, geriatrician, Toulouse
Dr Alain Yelnik, doctor specialising in physical medicine and rehabilitation, Paris

Annex 2 – Assessment method

The ANAES method for producing these clinical practice guidelines² comprised the following steps:

Defining the scope of the guidelines (Steering committee). ANAES invited representatives from learned societies concerned by the topic to take part in a steering committee whose job was to define the scope of the guidelines, to review previous work on the subject and to nominate professionals to take part in a working group or act as peer reviewers.

Literature search (Documentation Department of ANAES): See below

Drafting the guidelines (Working group). The ANAES project manager formed a working group of 15 professionals from a number of disciplines, working in public or private practice, from all over the country. The chair of the working group coordinated the production of the guidelines with the help of the project manager whose job was to ensure conformity with the methodological principles of guideline production. One member of the working group identified, selected, and analysed relevant studies (from a literature search performed by the ANAES Documentation Department) and wrote a draft report. This draft report was discussed by the working group over 3 meetings and amended in the light of comments from other members of the working group and from peer reviewers. Proposals for future studies and action were made.

External validation (Peer reviewers). Peer reviewers were appointed according to the same criteria as working group members. They were consulted by post after the second working group meeting, primarily with regard to the readability and applicability of the guidelines (scores from 1 to 9). The ANAES project manager summarized their comments and submitted them to the working group prior to the third meeting. Peer reviewers were asked to sign the final document.

Internal validation (Evaluation Section of the ANAES Scientific Council). Two members of the Council acted as referees reporting to the Council, together with the ANAES report manager. The working group finalized the guidelines with due regard to the Council's suggestions.

Literature search and analysis (general procedure)

The scope of the literature search was defined by the steering committee and the project manager. The search was carried out by the ANAES Documentation Department and focused on searching:

- medical and scientific databases over an appropriate period, with special emphasis on retrieving clinical practice guidelines, consensus conferences, articles on medical decision-making, systematic reviews, meta-analyses and other assessments already published nationally or internationally (articles in French or English)
- specific and/or financial/economic databases, if necessary

² Full details are given in *“Recommandations pour la pratique clinique – base méthodologique pour leur réalisation en France – 1999” (ANAES)*

- all relevant websites (government agencies, professional societies, etc.)
- the grey literature (documents not identified through the usual information distribution circuits)
- legislative and regulatory texts

Further references were obtained from citations in the articles retrieved above and from working group members' and peer reviewers' own reference sources. The search was updated until the project was completed.

The articles selected were analysed according to the principles of a critical appraisal of the literature, using a checklist, to allocate a level of scientific evidence to each study. Whenever possible, the working group based their guidelines on this review of the literature. Guidelines were graded from A to C as shown in Table 1 depending on the level of the evidence of the supporting studies. If no grading is given, they are based on agreement among professionals.

Table 1. Grading of guidelines

Level of published scientific evidence	Grade
<p>Level 1 Randomised controlled trials of high power Meta-analyses of randomised controlled trials Decision analyses based on properly conducted studies</p>	<p>A: Established scientific evidence</p>
<p>Level 2 Randomised controlled trials of low power Properly conducted non-randomised controlled trials Cohort studies</p>	<p>B: Presumption of scientific foundation</p>
<p>Level 3 Case-control studies</p>	<p>C: Low level of evidence</p>
<p>Level 4 Comparative studies with major bias Retrospective studies Case series</p>	