



Non-Pharmacological
Intervention Society

Non Pharmacological Interventions Registry

Protocol : Posture-balance-motor skills and health education method or “PEM-ES” method

Health problem: Risk of fall



Bodily

Sheet Code

NPIS-00000009

Designation

Posture-balance-motricity and health education.

Abbreviation

PBM-HE

Category

Bodily

Main Health benefit

- Risk of fall <https://icd.who.int/browse10/2019/en#/W00-W19>
- Reduction in the frequency and severity of falls at the end of the program (Dyer, 2023; Hopewell, 2018; Guirguis-Blake, 2024; Wang, 2023).

- ICD10: W00-W19

Explanation

Development of functional abilities, gross motor skills, locomotion, balance and proprioception.

Routine Test

Monopodal test and Timed Up and Go (TUG).

Threshold

Maintenance of less than 5 seconds in the monopodal test and of more than 15 seconds in the Timed Up and Go (TUG) test.

Minimal Clinically Important Change

Improvement of Test monopodal and/or Timed Up and Go (TUG) tests.

Secondary benefits

47% reduction in the risk of falls 1 year after the initial program.

Direct Risks

- Chutes à conséquences mineures (Bernard, 2018; Sherrington, 2019).
- Fatigue et douleurs mineures.

Risks of interaction

None found to date.

Biological and Psychosocial Mechanisms

- Optimization of the balancing function (perceptive via the visuo-vestibular and proprioceptive systems, effector via the musculo-articular system) (WHO, 2021).
- Optimization of muscle function such as muscle mass, strength and power (INSERM, 2014).
- Optimisation of locomotor skills (Hue, 2001)
- Improvement of control self-perception (INSERM, 2014).
- Improvement of physical self-esteem (INSERM, 2014).
- Adoption of more physically active behaviours (INSERM, 2004).

Responding population

People over 60 at moderate or high risk of falling.

Nonresponding population

Contraindicated in cases of severe cognitive impairment, severe hearing or visual deficits, or behavioural problems incompatible with group practice.

Participants

Groups

Minimum : 6

Maximum : 12

Duration

12 weeks

Sessions per week

2 supervised sessions

Procedure

- Session of 90 minutes.

- 30 minutes of health education in themed sessions followed by 60 minutes of motor activities.
- Initial assessment of functional abilities to personalize objectives according to an individual motor profile (posture, balance and motor skills grids).
- Final assessment to highlight the benefits of practice and guide the person towards the most appropriate activities.
- Themes specific to the prevention of the risk of falls among the elderly covered during health education sequences: dietetics, lifestyle hygiene, medication, adaptation of the home and environment, physical fitness and health.

Components

- 30-minute group health education sessions.
- 60 minutes of posture, balance and motor skills exercises (10-minute warm-up, 40-minute session, 10-minute cool-down).
- 40 minutes of exercises adapted to individual motor profile.
- Exercises with instructions and success criteria.
- Awareness of hydration, stretching, breathing, recovery, risk of falling (avoid cluttered floors at home, remove carpets or stick double-sided tape, add grab bars in bathrooms, toilets and staircases, install lighting), ability to fall and get up again.

Equipment

- Mats of varying thickness and density.
- Balls of varying size and weight.
- Slats, hoops, studs, targets, floor markers of varying size and color.
- Chairs and sticks.

Location

- Indoors, preferably in a gymnasium or well-lit room.
- Residence, multi-professional health center, health sports center, association, independent living center.

Best implementation practices

Six functions are called upon to create exercises adapted to the profiles of practitioners:

- Physical (static or dynamic work, mono-articular or pluri-articular, mono-segmental or pluri-segmental, isometric or anisometric, concentric or eccentric, monopodal or bipodal),
- Sensitivo-sensory (hard or soft ground, eyes open or closed, barefoot or shod, flat or sloping, uphill or downhill),
- Cognitive (with or without time constraint, with or without spatial constraint, single or double task),
- Relational (individual or group exercise, cooperative or oppositional exercise),
- Physiological (increased heart rate with or without inability to speak, effort with or without shortness of breath),
- Psychological (with or without uncertainty, with or without encouragement, with or without success feedback, with or without spatio-temporal constraints).

Learning to lift from the ground must be integrated into the program.

The personalization of exercises is a component of program effectiveness (Montero-Odasso, 2022).

Best practices for sustainability

- The NPI prepares all participants to pursue pleasant, independent physical activity in their immediate environment, in line with public health recommendations on frequency, intensity and variety.
- Medication and dietary supplements should be regularly reviewed by the attending physician (HAS, 2024).
- Alcohol consumption should be limited, particularly in cases of dizziness or drowsiness (HAS, 2024).
- Regular visits to an ophthalmologist are recommended, as visual impairment caused by advanced glaucoma or cataracts, for example, is a risk factor for falls (HAS, 2024).
- Footwear should fit snugly, with good support both inside and out (HAS, 2024).

Precautions

- Warm-up at the beginning of the session and cool-down at the end.
- Organization of safe practices adapted to difficulties and/or disabilities.

Regulatory specification

- Medical certificate of no contraindication to physical exercise and medical follow-up.
- Free of charge, but the practitioner must systematically quote the program.
- University diploma (DU) PEMS-ES from the University of Montpellier required.

Main Initiator

Pierre Louis Bernard, Cedric Albinet, Olivier Hue, Gregory Ninot, Olivier Seynnes.

Qualification required

- Kinesiologist (adapted physical activity teacher).
- University diploma (DU) from the University of Montpellier.

References

Prototypical study

Hue O et al. Influence d'une pratique motrice de type "posture-équilibre-motricité" sur les capacités posturales du sujet âgé [Influence of a typical "posture-balance-motivity" motor practice on the postural capacities of elderly subjects]. Ann Readapt Med Phys. 2001 Mar;44(2):81-8. [http://dx.doi.org/10.1016/s0168-6054\(00\)00064-7](http://dx.doi.org/10.1016/s0168-6054(00)00064-7)

Pivotal mechanistic study

Grasso C et al. Effects of a short period of postural training on postural stability and vestibulospinal reflexes. PLoS One. 2023 Jun 12;18(6):e0287123. <http://dx.doi.org/10.1371/journal.pone.0287123>

Pivotal intervention trials

Albinet C et al. Contrôle attentionnel de la stabilité posturale chez la personne âgée institutionnalisée: effets d'un programme d'activité physique [Attentional control of postural stability in institutionalised elderly people: effects of a physical exercise program]. Ann Readapt Med Phys. 2006 Dec;49(9):625-31. <http://dx.doi.org/10.1016/j.annrmp.2006.06.004>

Bernard PL et al. Influence d'une activité physique sur les capacités posturales de personnages âgées: effets du temps de pratique [Influence of physical activity on postural capacities of elderly: effect of time of training]. Ann Readapt Med Phys. 2004 May;47(4):157-

63. <http://dx.doi.org/10.1016/j.annrmp.2004.01.006>

Intervention studies assessing the risks

Albinet C et al. Contrôle attentionnel de la stabilité posturale chez la personne âgée institutionnalisée: effets d'un programme d'activité physique [Attentional control of postural stability in institutionalised elderly people: effects of a physical exercise program]. *Ann Readapt Med Phys*. 2006 Dec;49(9):625-31. <http://dx.doi.org/10.1016/j.annrmp.2006.06.004>

Bernard PL, et al. Relationship between a three-month physical conditioning "posture-balance-motricity and health education" (PBM-HE) program on postural and balance capacities of sedentary older adults: influence of initial motor profile. *Eur Rev Aging Phys Act*. 2018 Nov 20;15:14. <http://dx.doi.org/10.1186/s11556-018-0203-0>

Implementation study in Europe

Bernard PL et al. Relationship between a three-month physical conditioning "posture-balance-motricity and health education" (PBM-HE) program on postural and balance capacities of sedentary older adults: influence of initial motor profile. *Eur Rev Aging Phys Act*. 2018 Nov 20;15:14. <http://dx.doi.org/10.1186/s11556-018-0203-0>

Others

Dyer SM et al. Exercise for falls prevention in aged care: systematic review and trial endpoint meta-analyses. *Age Ageing*. 2023 Dec 1;52(12):afad217. <http://dx.doi.org/10.1093/ageing/afad217>

Guirguis-Blake JM et al. Interventions to prevent falls in older adults: Updated evidence report and systematic review for the US preventive services task force. *JAMA*. 2024 Jul 2;332(1):58-69. <http://dx.doi.org/10.1001/jama.2024.4166>

HAS. Personnes âgées à risque de chute : Prescription d'activité physique. HAS, La Plaine, 2024. https://www.has-sante.fr/upload/docs/application/pdf/2024-04/synthese_aps_personnes_agees_a_risque_de_chute.pdf

Hopewell S et al. Multifactorial and multiple component interventions for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews* 2018;7(CD012221). <http://dx.doi.org/10.1002/14651858.CD012221.pub2>

INSERM. Activité physique et prévention des chutes chez les personnes âgées. Paris, INSERM, 2014. https://www.inserm.fr/wp-content/uploads/media/entity_documents/inserm-ec-2015-chutespersonnesagees-synthese.pdf

Montero-Odasso M et al. World guidelines for falls prevention and management for older adults: a global initiative. Age Ageing 2022;51(9). <http://dx.doi.org/10.1093/ageing/afac205>

OMS. Lignes directrices de l'OMS sur l'activité physique et la sédentarité Genève: OMS; 2021. <https://apps.who.int/iris/bitstream/handle/10665/349728/9789240032118-fre.pdf?sequence=1&isAllowed=y>

Sherrington C et al. Exercise for preventing falls in older people living in the community. Cochrane Database Syst Rev. 2019 Jan 31;1(1):CD012424. <http://dx.doi.org/10.1002/14651858.CD012424.pub2>

Wang BY et al. Exercise for fall prevention in community-dwelling people aged 60+: more effective in trials with higher fall rates in control groups. J Clin Epidemiol. 2023 Jul;159:116-127. <http://dx.doi.org/10.1016/j.jclinepi.2023.05.003>

Author(s) of the Sheet

Pierre-Louis Bernard 

Creation Date : **15/10/2024**

Revision Date : **27/10/2025**

Version : **V02**

Posture-balance-motor skills and health education method or “PEM-ES” method, NPIS reference document for INM, Code sheet NPIS-00000009, Version V02, 2024.

Link to the online listing: [click here](#).

Suggérez une amélioration : Rendez-vous sur sa fiche numérique de la plateforme du Référentiel NPIS des INM [by clicking here](#).

Contact the NPIS

5, rue des Reculettes, 75013 Paris - France

Phone: +33 (0)1 56 79 17 91

Non-Pharmacological Intervention Society - Non-profit geleerde vereniging van algemeen belang

Our supporters



Our partners



Regulatory information and precautions:

Any use or reproduction requires prior authorization from NPIS. Any reference or quotation must mention the NPIS Reference Document for INM.

The reader acknowledges using this information under their sole responsibility.

The NPIS is not intended to answer questions about a personal case or that of a loved one. These should be asked to a healthcare professional. Nothing replaces a consultation with a doctor.

The NPIS is not intended to answer questions about a personal case or that of a loved one. These should be asked to a healthcare professional. Nothing replaces a consultation with a doctor.

