



Accra, Ghana, September 4 – 7

11th Regional Teaching Course

in Sub-Saharan Africa
in cooperation with AFAN



How to examine the elderly patient

Accra, September 4, 2019

Prof. Claudio L. Bassetti
Neurology Department
University Hospital
Bern, Switzerland

Acting president EAN

No conflicts of interest

Introduction
Mental Status
Cranial nerves
Extremities/Gait
Screening and functional tests

Introduction

Mental Status

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THE NEUROLOGY OF OLD AGE.*

**BY MACDONALD CRITCHLEY, M.D. BRIST.,
F.R.C.P. LOND.,**

**JUNIOR NEUROLOGIST TO KING'S COLLEGE HOSPITAL; ASSISTANT
PHYSICIAN TO THE NATIONAL HOSPITAL, QUEEN SQUARE.**

MELBOURNE

1953

skull thickened
meninges thickened
brain and spinal cord shrank
neuronal loss
peripher fibres loss
media thickening

The neurology of aging

- loss of 10-50'000 neurons/year
- reduction of brain weight (20-90y: 5-10%)
- reduction of olfactory, hearing neurons
- reduction in number/size of muscle fibers (25%)

Hauw, Rev Neurol 1986; Baker, Semin Neurol 1989; Jenkyn, Sem Neurol 1989;
Quinn and Kaye, The Neurologist 2001

Neurologic history and examination I

- „low and high doctor“ control history
- systematic review of systems and examination
- „you won't find what you don't look for“
- observation during interview, walking, undressing,..
- examination is guided by hypothesis

Elderly

- speak/go slow, open-ended questions
- enough light/glasses
- sit in front (eye-level, lips reading)

Neurologic history and examination II

Abnormal findings

- normal aging usually predictable, symmetric
- residua unpredictable, often asymmetric
- early signs of a neurologic disorder

Epidemiology of neurologic problems >65y

M. Alzheimer incidence: 1%, prevalence: 2-4%

M. Parkinson incidence: 0.1%, prevalence: 1%

Stroke incidence: 0.5-1.0% (2% when >85y)

Dementia prevalence 5-7% (40% when >90y)

Gait problems prevalence 5-15% (40-60% when >80y)

Hearing loss prevalence 30%

Geriatric Functional Assessment, UoM, 2003; De Lau, Lancet Neurol 2006
Hirtz, Neurology 2007; Mahlkecht, PlosOne 2013; Winblad, Lancet Neurol 2016

M. Alzheimer

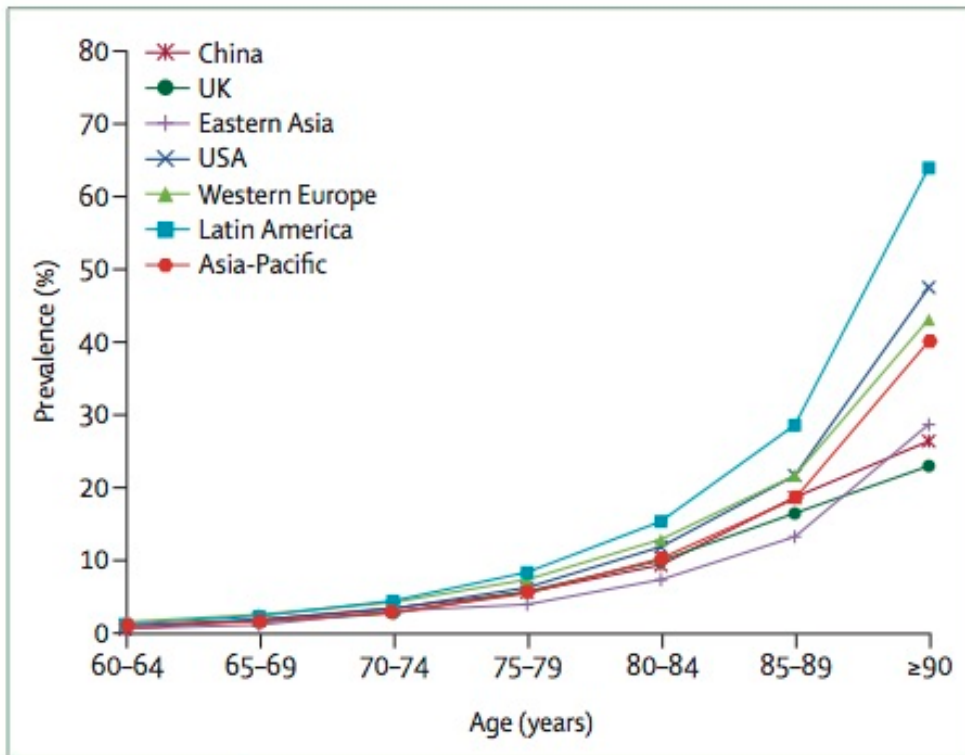
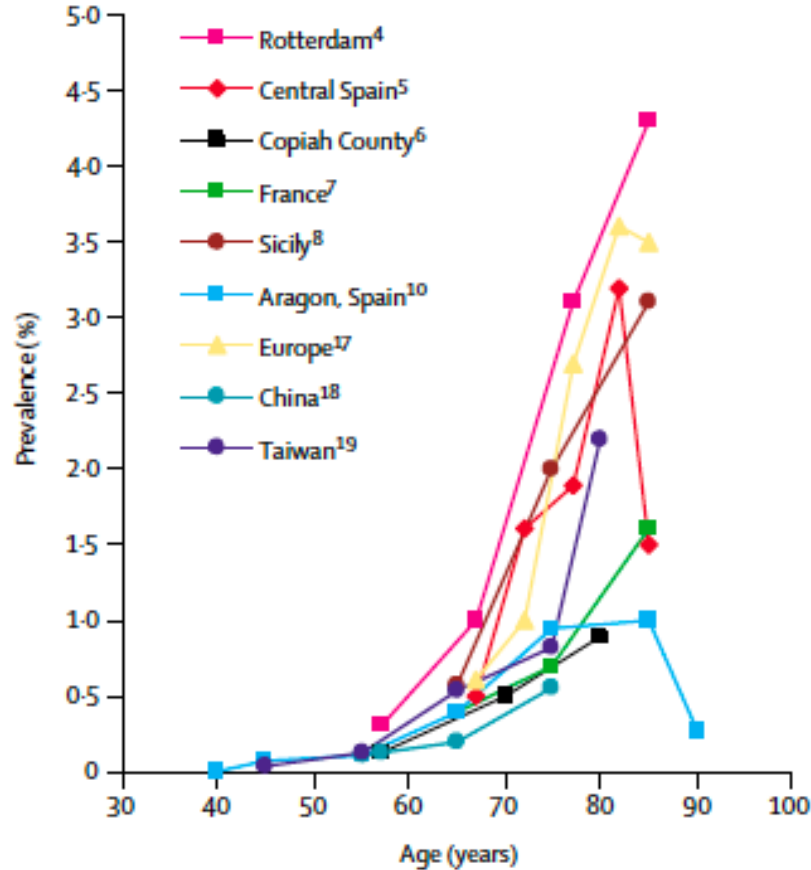


Figure 3: Age-specific prevalence of dementia by world region and in major countries

Patterns of age-specific prevalence of dementia are similar across worldwide regions, but vary substantially among the oldest old (age ≥90 years).⁷²⁻⁷⁵

Winblad, Lancet Neurol 2016

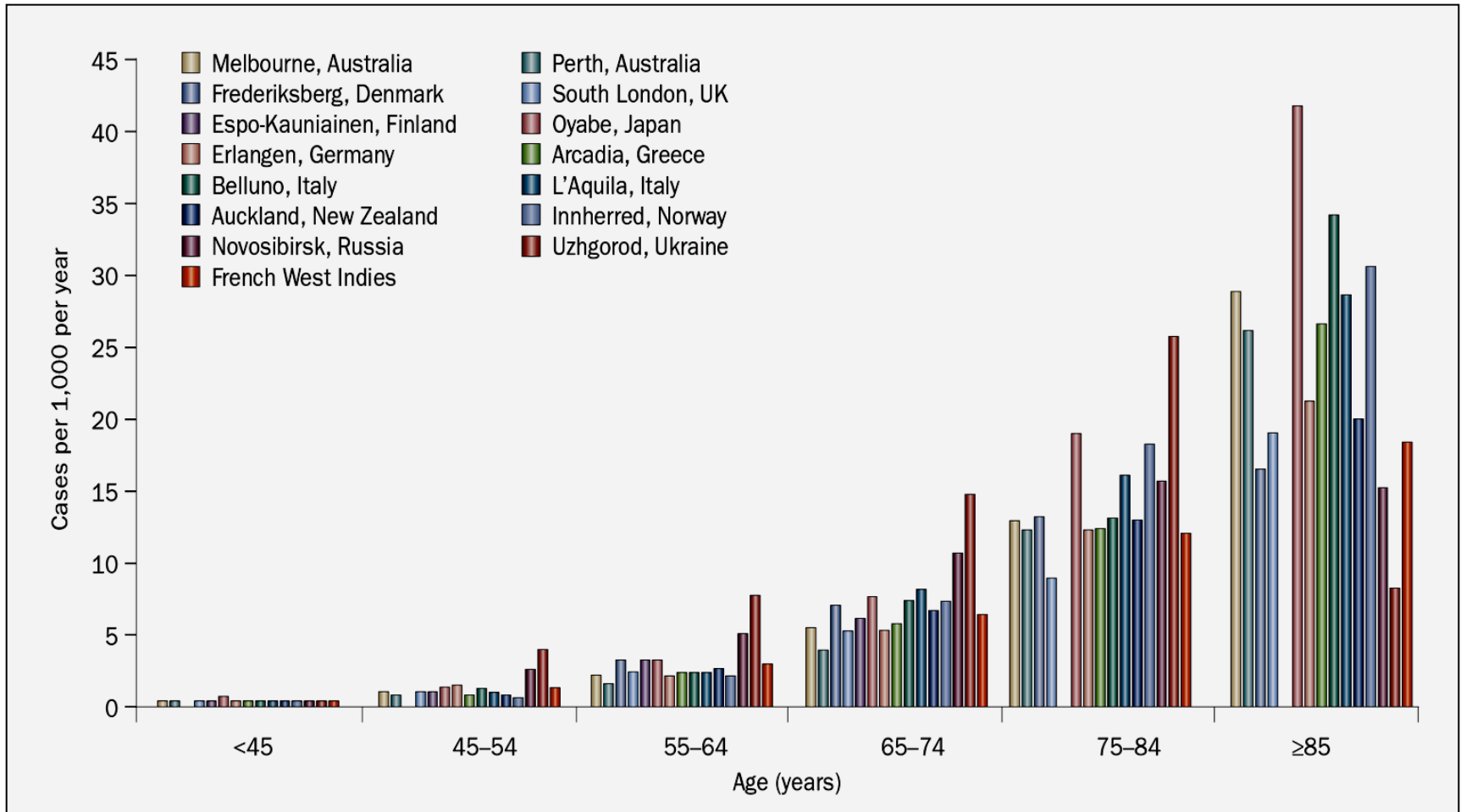
M. Parkinson



De Lau, Lancet Neurol 2006

Figure 1: Population-based prevalence studies of Parkinson's disease

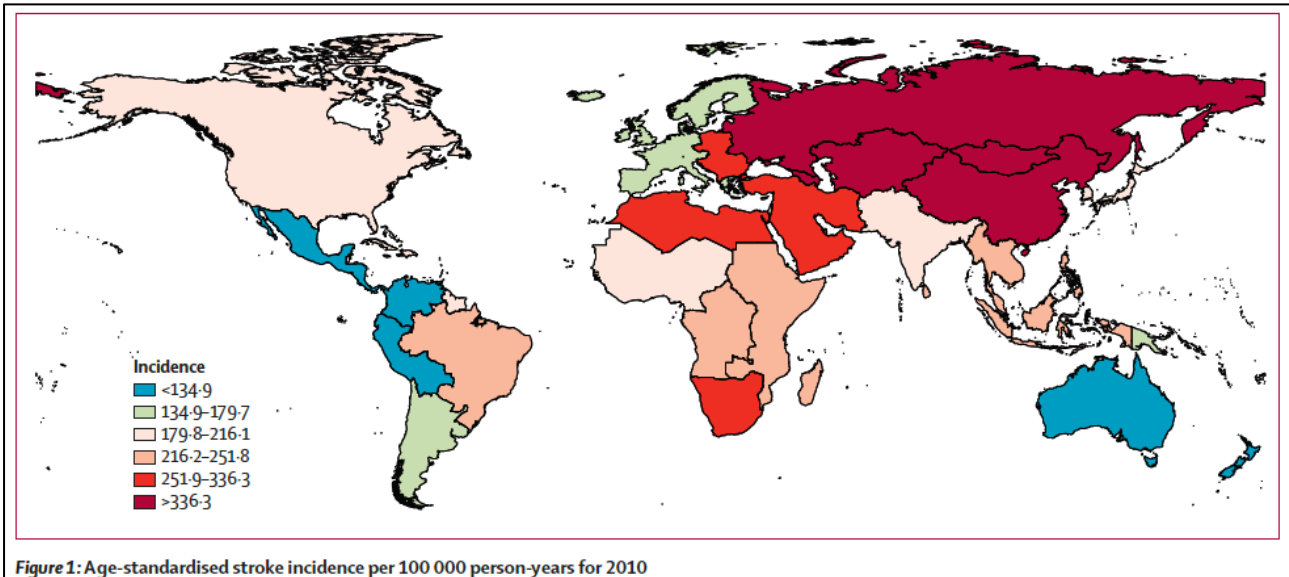
Stroke



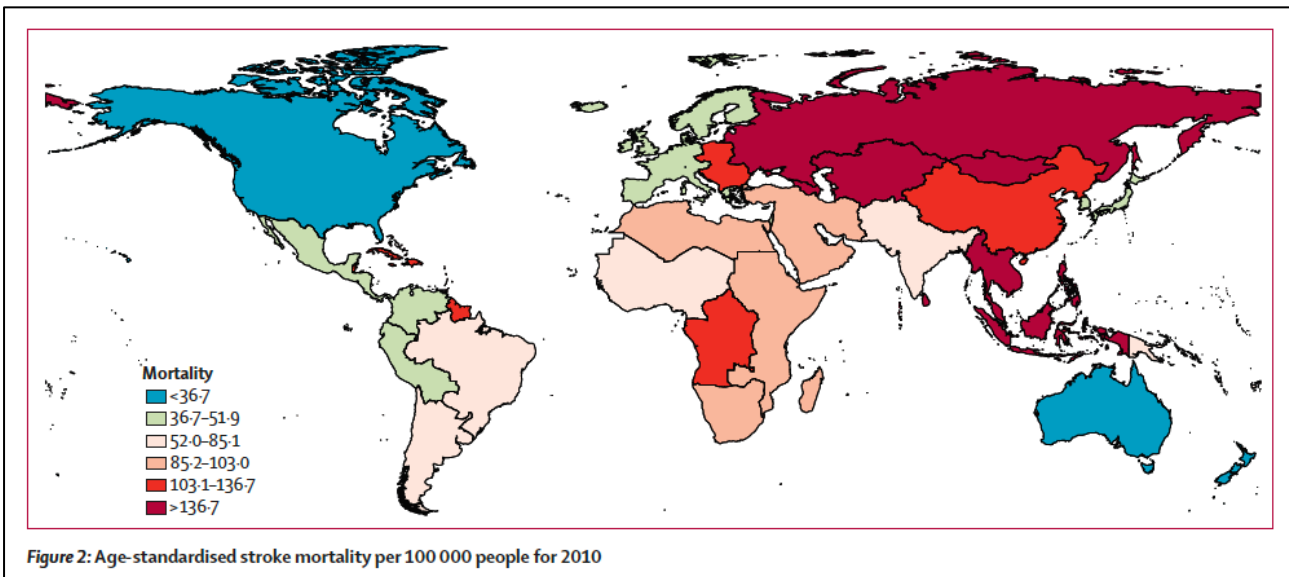
Nature Reviews Neurology 2010

Stroke

Incidence



Mortality



Feigin, Lancet 2014

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Mental status examination of the elderly I

- a mental status examination is **mandatory** in all pts
- **observation/history taking** are informative:
 - vigilance, drive, attention, memory
 - language, speech
 - mood, behavior
 - insight, concern
- **screening**/formal tests are done according to clinical situation and hypothesis

S.D., 65j



Imitation behavior

(environmental dependency syndrome)



M.W., 80y

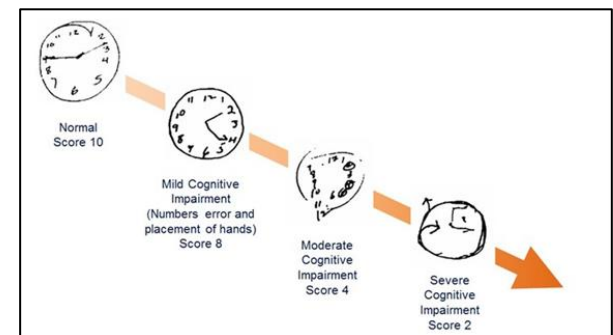
Mental status examination of the elderly II

Normal are mild/discrete:

- psychomotor **slowing** (word fluency >14/min)
- problems **with recall**, create **new memories**

Abnormal are disturbances of:

- orientation, attention (digit span <4)
- language, speech
- judgement
- praxias
- organization of space (clock drawing)



Apraxia („le corps pour object“)

„Show me how you comb your hair“



„Show me how you brush your teeth“



K.B., 70y

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Cranial nerve examination of the elderly

Normal are:

- decrease of **olfaction** (in 75% >75y), and **taste**
- **small pupils**, sluggish reflexes
- limited **upgaze** (10-20 degrees), convergence, pursuit
- reduced **facial expression**
- **hearing loss** (presbycusis, 30% >65y, high frequencies)

Abnormal are:

- clear-cut vision or visual fields deficits
- unilateral pupillary changes, ptosis
- nystagmus
- dysarthria

Chamberlain, Am J Ophthalmol 1971
Kaye, Arch Neurol 1994

M.R., 67y: since many years



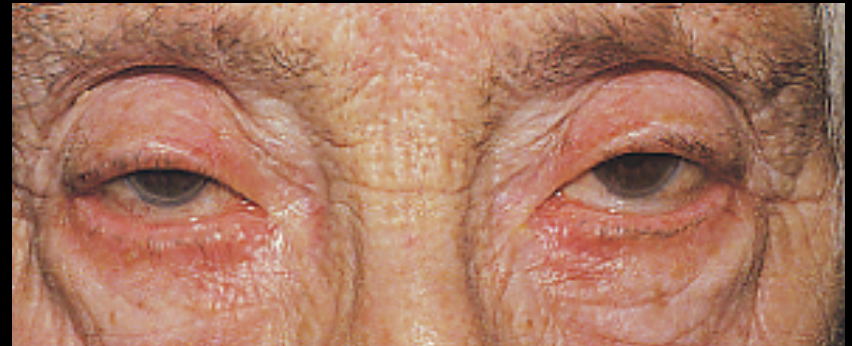
M.W., 61y: acute after exercise



J.D., 80y: fluctuating



N.N., 85y: „I do not know“



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Motor examination of the elderly

Normal are:

- some muscle **wasting** (thenar, small feet muscles)
- decrease of **strength** (20-30%, legs>arms)
- mild **bradykinesia**
- mild **paratonic rigidity** (Gegenhalten, legs)
- mild, symmetrical **extrapyramidal signs** (50% >85y)

Abnormal are:

- **paresis** (exception: proximal legs)
- **tremor**
- **ataxia**

Potwin, J Am Geriatr Soc 1980; Tweedy, Neurology 1982; Newman, Neurology 1985; Benassi, Neuroepidemiol 1990; Prettyman, Age Ageing 2001; Bennett, NEJM 2006

Mild central paresis

Mingazzini/Barré



E.W., 80y

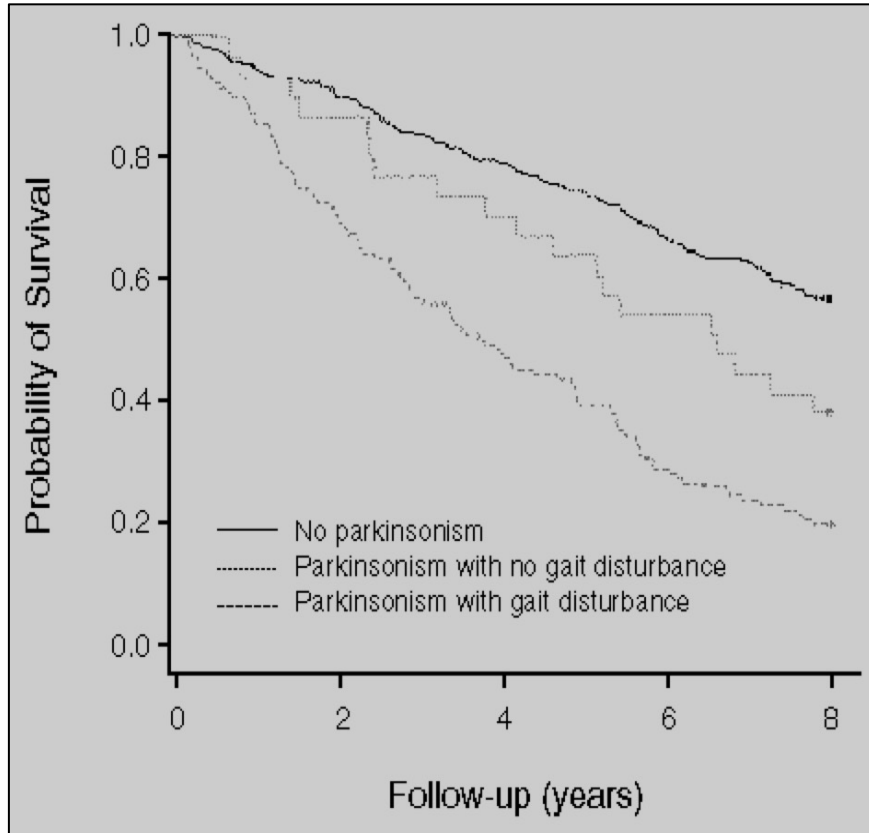
Mild central paresis

Barré/Mingazzini



K.B., 51y

Prevalence of Parkinson syndrome



Bennett NEJM 1996

467 subjects >65 year-old:

- Parkinson syndrome*: 34%
(resting tremor: 5%)
- 2x higher risk of death

*2 ore more: bradykinesia, gait disturbance, rigidity, tremor

Sensory/reflex examination of the elderly

Normal are:

- decreased vibratory sensation at the ankles (25-50% >85y)
- decreased achilles reflexes (absent in 5-10% >65y)
- primitive reflexes (at least 1 in 25% general population)

Abnormal are:

- loss of touch, pinprick, postural sensation
- loss of patellar reflexes
- Babinski sign (when bilateral: cervical myelopathy)

Olney, Muscle Nerve 1983; Impallomeni, Lancet 1984; Benassi, J Epidemiol 1990
Hogan, Age Ageing 1995; Brown, Neurology 1998; O'Keefe, Lancet 1994

Increase of central motor drive

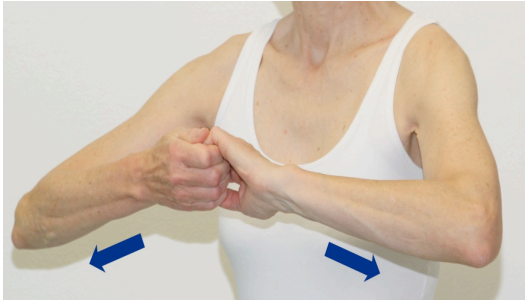


Fig. 4.2a



Fig. 4.2b

Fig. 4.2 (a,b): Two manoeuvres to increase the central motor drive: Jendrassik manoeuvre (a) and clench-your-teeth manoeuvre (b)

EAN e-book
Neurological examination

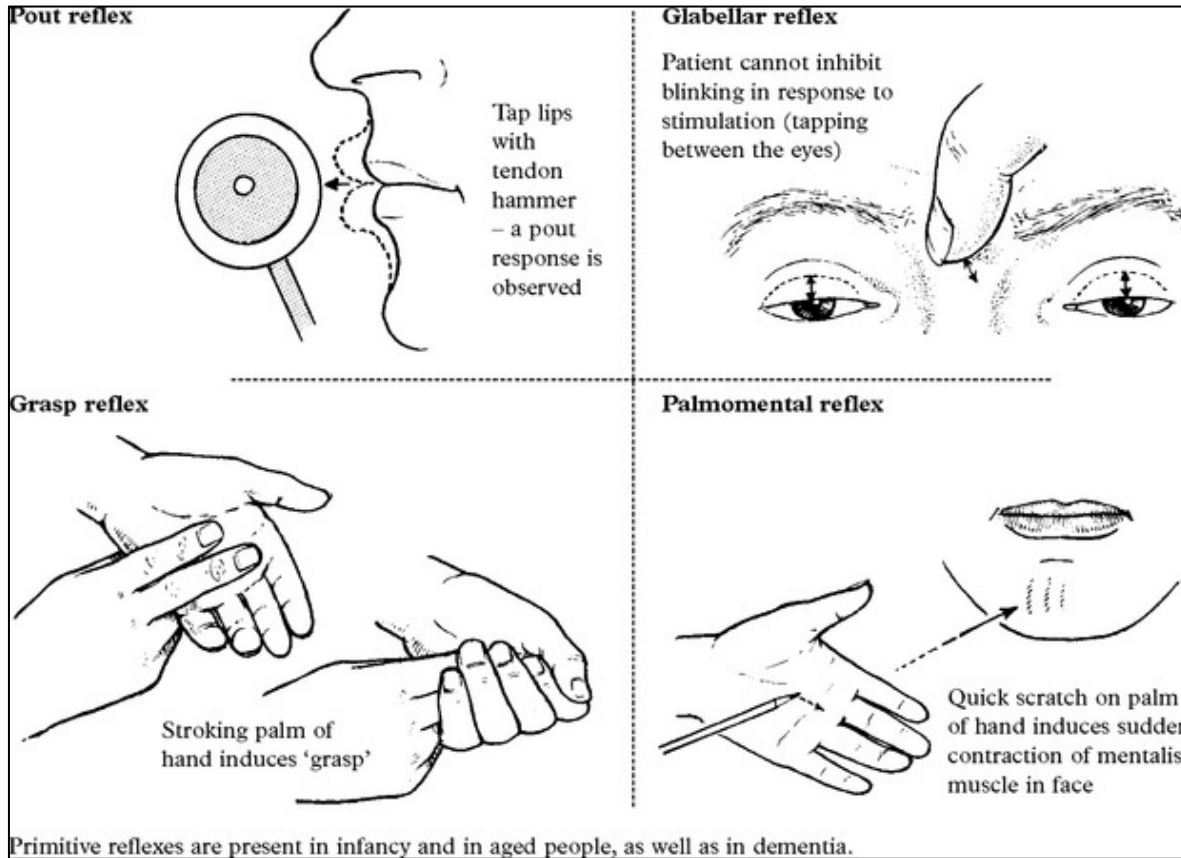


E. Jendrassik
1856–1921



A. Van Gehuchten
1861–1914

Primitive reflexes



25% of subjects
one primitive reflex

0.4-2% ≥ 1 reflex

Brown, Neurology 1998

Grasping



Motor impersistence



Z.A., 68y

C. Rend. Soc. Biol
1896; 3: 207-8

Babinski sign

Signe de l'orteil, signe de l'éventail

SUR LE RÉFLEXE CUTANÉ PLANTAIRE
DANS CERTAINES AFFECTIONS ORGANIQUES DU SYSTÈME NERVEUX CENTRAL,
par M. J. BABINSKI.

J'ai observé dans un certain nombre de cas d'hémiplégie ou de monoplégie crurale liée à une affection organique du système nerveux central une perturbation dans le réflexe cutané plantaire dont voici en quelques mots la description.

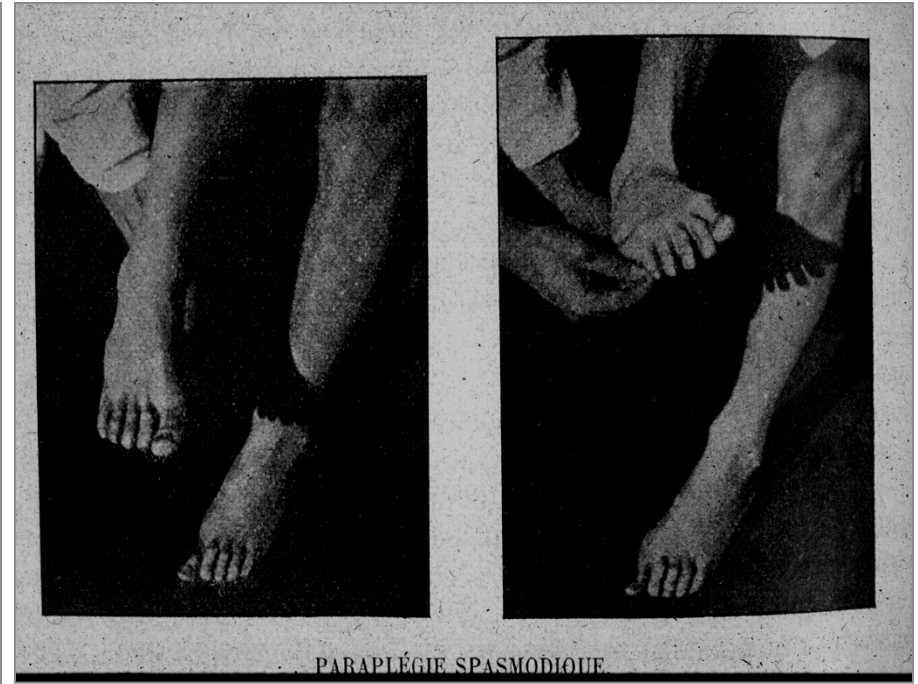
Du côté sain la piqure de la plante du pied provoque, comme cela a lieu d'habitude à l'état normal, une flexion de la cuisse sur le bassin, de la jambe sur la cuisse, du pied sur la jambe et des orteils sur le métatarse. Du côté paralysé une excitation semblable donne lieu aussi à une flexion de la cuisse sur le bassin, de la jambe sur la cuisse et du pied sur la jambe, mais les orteils, au lieu de se fléchir, exécutent un mouvement d'extension sur le métatarse.

Il m'a été donné d'observer ce trouble dans des cas d'hémiplégie récente remontant à quelques jours seulement, ainsi que dans des cas d'hémiplégie spasmodique de plusieurs mois de durée; je l'ai constaté chez des malades qui étaient incapables de mouvoir volontairement les

*plantarographi:
diaplanter avec une aiguille
tels,*



Gaz Hôp 1900; 53: 533-8



Rev Neurol 1903; 11: 728-9

Standing and gait examination of the elderly

Normal are:

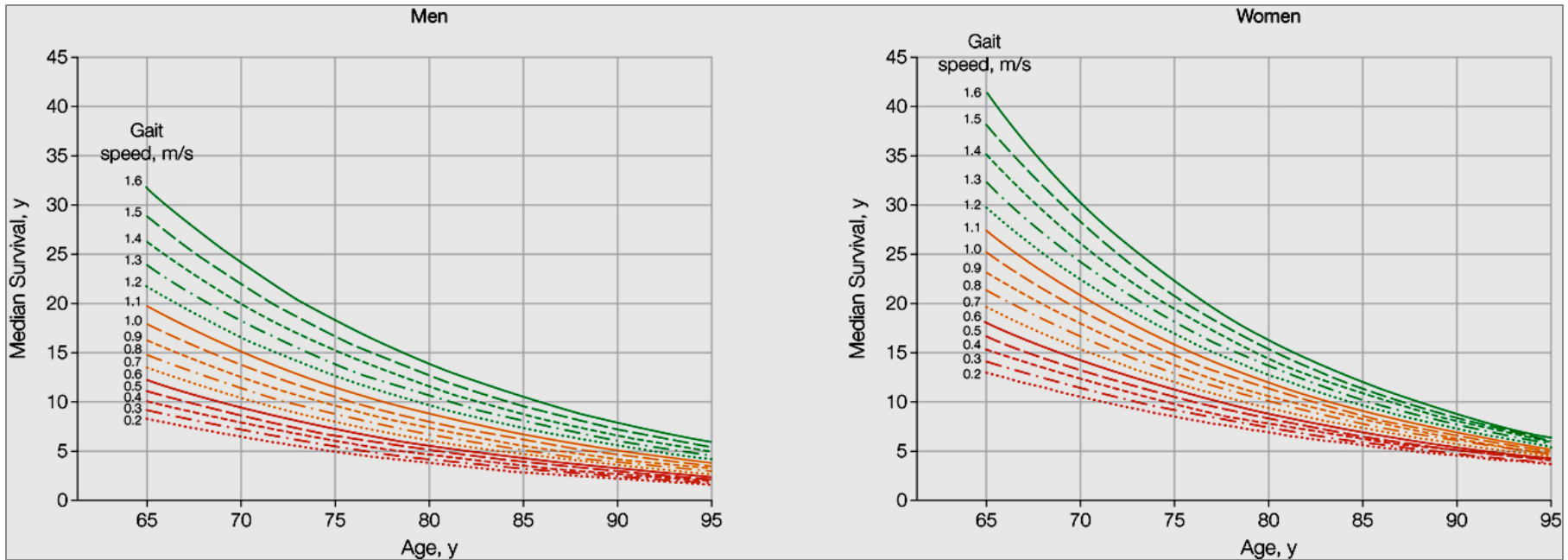
- increased **postural sway** (presbyastasis, Romberg+ in 50%>85y)
- general **flexion** (head/neck, kyphosis, elbows, knees)
- gait **slower** and **cautious** (walking on ice)
- **short steps** (marche à petits pas)
- shortened **standing on 1 leg** (>65y: 5-15 sec, eyes open)
- impaired tandem gait

Abnormal are:

- start hesitation, shuffling, freezing
- falls

Bohannon, Physical Ther 1984; Elble, J Neurol 1992; Kaye, Arch Neurol 1994

Predicted median life expectancy by age and gait speed



Studenski, JAMA 2011

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Useful screening/functional tests

Screening

- for dementia (MoCA)
- for depression

1) "During the past month, have you often been bothered by feeling down, depressed, or hopeless?"

2) "During the past month, have you often been bothered by little interest or pleasure in doing things?"

Functions

- timed up and go test
- activities of daily living

MONTREAL COGNITIVE ASSESSMENT (MOCA)
- ITALIA -

NOME: _____
Scolarità: _____ Data di nascita: _____
Sesso: _____ DATA: _____

VISUOSPAZIALE / ESECUTIVO		Copi il cubo		Disegni un orologio (undici e dieci) (3 punti)		PUNTI																		
[] []		[] [] [] []		Contorno Numeri Lancette		_/5																		
DENOMINAZIONE																								
[]		[]		[]		_/3																		
MEMORIA		Leggere la lista di parole: il soggetto deve ripeterle. Fare le prime 2 prove di seguito e il "Richiamo" dopo 5 min.		<table border="1"> <tr> <td></td> <td>Faccia</td> <td>Velluto</td> <td>Chiesa</td> <td>Margherita</td> <td>Rosso</td> </tr> <tr> <td>1° prova</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2° prova</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			Faccia	Velluto	Chiesa	Margherita	Rosso	1° prova						2° prova						0 punti
	Faccia	Velluto	Chiesa	Margherita	Rosso																			
1° prova																								
2° prova																								
ATTENZIONE		Leggere la serie di cifre (una cifra / sec.)		Il soggetto deve ripeterle [] 2 1 8 5 4 Il soggetto deve ripeterle in ordine inverso [] 7 4 2		_/2																		
		Leggere la serie di lettere. Il soggetto deve dare un colpo con la mano sul tavolo ad ogni lettera "A". 0 punti se ≥ 2 errori		[] F B A C M N A A G H L B A F A H D E A A G A M O F A A B		_/1																		
		Sottrazione di 7 partendo da 100 per 5 volte		[] 93 [] 86 [] 79 [] 72 [] 65 4 o 5 sottrazioni corrette: 3 pt, 2 o 3 corrette: 2 pt, 1 corretta: 1 pt, 0 corrette: 0 pt		_/3																		
LINGUAGGIO		Ripeta: So solo che oggi dobbiamo aiutare Giovanni. Il gatto si nascondeva sempre sotto il divano quando c'erano cani nella stanza.		[] []		_/2																		
Fluenza / In 1 minuto		nomini il maggior numero possibile di parole che iniziano con la lettera "F". [] (N ≥ 11 parole)				_/1																		
ASTRAZIONE		Similitudini tra per es. banana / arancio = frutti; [] treno / bicicletta [] orologio / righello				_/2																		
RICHIAMO DIFFERITO		Deve ricordarsi le parole SENZA AIUTO		<table border="1"> <tr> <td>Faccia</td> <td>Velluto</td> <td>Chiesa</td> <td>Margherita</td> <td>Rosso</td> </tr> <tr> <td>[]</td> <td>[]</td> <td>[]</td> <td>[]</td> <td>[]</td> </tr> </table>		Faccia	Velluto	Chiesa	Margherita	Rosso	[]	[]	[]	[]	[]	Punti solo per ripetizione SENZA AIUTO								
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Opzionale		AIUTO		<table border="1"> <tr> <td>Categoria Seman.</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Scelta multipla</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Categoria Seman.					Scelta multipla													
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ORIENTAMENTO		[] Data [] Mese [] Anno [] Giorno [] Luogo [] Città				_/6																		
© Z. Nasreddine. Traduzione a cura di A. Pirani, C. Tulipani, M. Neri. Versione 26 Luglio 2006 www.mocatest.org		Normale: ≥ 26 / 30		TOTALE _____/30 Aggiungere 1 punto se ≤ 12 anni di istruzione																				

Montreal Cognitive Assessment (MOCA)

cut-off for AD 26
high sensitivity, low specificity

Davis, Cochrane Database Syst Rev 2015
Thomann, J Alzheimer Dis 2018

A photograph of a man and a woman in a dark room. The man is seated on a folding chair on the left, wearing a light blue short-sleeved shirt, khaki shorts, and glasses. He is looking towards the woman. The woman is standing in the center, wearing a blue patterned top and grey pants, looking down at a device in her hands. The floor is dark with a faint purple light on the right side.

Timed up & go test

cut-off <10 sec

Conclusions

- abnormal findings often due to pathologies, not age
- mental and gait examination very important
- Common normal findings in the healthy elderly subject:
 - slow cognition, minor memory problems
 - reduced vision, hearing, upward gaze
 - primitive reflexes
 - decreased vibratory sensation and ankle reflexes
 - cautious gait with short steps, difficult tandem

Critchley, Lancet 1931; Walshe, Progr Med 1987; Uldry and Regli, Praxis 1991
Biedert, Fortschr Neurol Psychiat 1993; Gladstone, Geriatr Aging 2002