Psychomotor Therapy in Elderly Care
PSYCHOMOTOR EXAMINATION AND THE ASSESSMENT OF THE ELDERLY

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The introduction of institutionalised and personalized care projects in both institutions and at home favour the specific assessment of the elderly patient. Furthermore, the 2008-2012 Alzheimer Plan in France places psychomotor therapy at the centre of care projects for this population. It requires a specific assessment of psychomotor skills of patients and the establishment of a care plan that is adapted to the needs of each person.

The psychomotor examination is the opening act of the psychomotor therapist’s job. It comprises several stages: interview, observation of spontaneous behaviour or in response to the environment, and the administration of appropriate tests. Clinical factors are collected during such an examination, jointly with paraclinical data, and they are used to adapt the situational exercises and the tests. Both clinical and paraclinical signs leads to the formulation of a psychomotor diagnostic hypothesis. This information leads to additional examinations and be used in conjunction with the diagnosis of other health care professionals (doctor, speech therapist, psychologist) to lead to a general diagnosis and to formulate the broad framework of the care project or to provide guidance and support.

The psychomotor examination focuses on different processes and mechanisms that disrupt intentional motricity and affect its result. The assessment is in relation to theoretical models of motricity (cf. Fleishman & Reilly, 1998 - for a taxonomy of psychomotor abilities; Thon, 2007 - for a cognitive approach and Zanone, 2007 - for an ecological-dynamic approach of motor performance), of the psychomotor development (Bloch, 2000; Lécuyer, 2004; Rivière, 2000; Thelen, 1995) and of the psychomotor disorders (Corraze, 1999; Albaret, 2001). It allows the patient and caregivers to perceive and understand the patient’s difficulties and provides the opportunity to create an early therapeutic alliance.

Now psychomotricians have standardized tools so that they can best meet the needs of the patients and their relatives and increase patient adherence to treatment plans. The psychomotor approach focuses on the action of the subject, « namely the perceptual-motor adjustment determined by the indi-
individual’s one time project under the conditions of particular environmental and body conditions» (Corraze, 1984).

Psychomotor assessment usually begins with a clinical interview as a means of collecting patient history, which is relevant to the psychomotor diagnosis. Important elements of a patient’s history include description of the problem, medical history (including any childhood or developmental problems, psychiatric and psychological history), educational and occupational history. It is also important know the lifestyle of the person (sleeping & eating habits) (HAS, 2009). Understanding of these habits will often prevent some behavioural disturbance. It is important to know the areas of expertise of the elderly patient, it can explain the preservation of some abilities (Clarkson-Smith & Hartley, 1990a; Clarkson-Smith & Hartley, 1990b).

Firstly the interview gives some clues about the cognitive functioning of the patient: fluid or confused speech, memory, attention capacities and understanding. The movement disorders may be also observed, for example bradykinesia, tremor etc. This initial data permits an appropriate choice of evaluation tools.

This interview also provides qualitative information about the patient’s ability to act in a socially apt manner, organize and communicate information (verbally and non-verbally), and provide an indication as to the patient’s mood and motivation and his understanding of his problems.

It is only within this context that an accurate interpretation of their test data and a psychomotor diagnosis can be made to customize and adapt the treatment of an elderly patient.

The psychomotor examination consists of both global tests such as The Geronto-Psychomotor Examination (GPE – Michel et al., 2011), specific tools to measure particular psychomotor aspects (balance, walking, manual motricity), but also scales of observation in particular to observe behavioural disturbances in dementia, like The French-revised Algase wandering scale for long term care (Martin et al., 2013).
The Geronto-Psychomotor Examination

The Geronto-Psychomotor Examination (GPE) is intended to assess psychomotor skills and some cognitive functions in the elderly and to screen for pathological symptoms, particularly for people affected by Alzheimer’s disease and other dementias (Michel et al., 2011).

The GPE consists of 17 items measuring balance (static coordination I and II), walking and running (dynamic coordination I and II), joint mobilization of upper and lower limbs, upper extremity fine motor skills (buttoning, finger drumming, finger-thumb opposition, picking a coin), lower extremity fine motor skills (foot placement, kicking a ball, pointing with foot), praxis (use of cutlery, pantomime, copy of drawings, construction with cubes), body part knowledge, vigilance, perceptual memory (colour, body position), spatial field (geographical location, orientation, line bisection), verbal memory, perception (familiar theme recognition, reproduction of rhythmic structures, stereognosis, image recognition, reading), time field (current and birth dates, time, days and months, sequence of events), verbal and non-verbal communication.

Each item is scored on a 0 to 6 range with a total score of 102 points. A radar chart allows to identify the current strengths and weaknesses of a given person (see figure 2).

We carried out a standardized study of 492 adults aged 60 to 90 and older. There was no difference between women and men. We found significant differences between ages with three age bands: 60-75, 75-85, 90 and older.

Apparent validity has been achieved by the judgement of experts in gerontology and geriatrics (physician, neuropsychologist, and psychomotor therapist). Preliminary data were collected on a clinical sample of 61 people with Alzheimer’s disease and other dementias. They obtained lower results than the control group with greater variability.
The homogeneity, estimated via the split-half reliability index, was good ($r = .80$). The internal consistency was found to be high ($a = .83$). Interscorer reliability has been studied in 33 subjects with an average difference of one point between observers.

**Specific tools for psychomotor assessment in elderly**

The Functional Reach Test (Duncan et al., 1990) is a clinically measure of balance or of the margin of stability, as the difference between arm’s length and maximal forward reach, using a fixed base of support in the standing position with the shoulders flexed at 90°. The subject is asked to stand with the feet a comfortable distance apart, make a fist, and forward flex the dominant arm, close to a wall, to approximately 90 degrees. The other hand is placed on the outside of the thigh. The head of the metacarpal of the third finger is used as the reference point. The patient is then asked to lean forward as far as possible keeping feet flat on the floor and without losing balance, falling forward, or taking a step. The distance between the start and end point is then measured. For a better use, this measure is then divided by the height of the person to obtain the functional reach index. In their initial study, Duncan et al. (Duncan et al., 1990) have shown a strong
correlation between FRT and the center of pressure excursion (laboratory measure of subject stability). Scores on the FRT correlated also with different scores like walking speed, tandem walk or one foot balance. The test is age-sensitive with decreased efficiency and impaired coordination of postural adjustments in elderly than in the young persons. Functional Reach scores were shown to be predictive of falls in elderly (Duncan et al., 1992; Sallagoïty & Albaret, 2001; Studenski et al., 1994). A modified version allows evaluation of sitting balance with forward and lateral reach while sitting (Katz-Leurer et al., 2009).

Eighty-nine female and 73 male volunteers, aged 60 to 80 and older, participated to the French standardization/study (Sallagoïty & Albaret, 2001). There was no difference between women and men when the functional reach index was used, but a significant difference was found between the three age bands (60-69 years; 70-79 years; 80 years and older).

One leg balance was proposed by Vellas et al. (Vellas et al., 1997): Being able to stay on one limb, a member in extension and other leg slightly flexed knee muscles for 5 seconds seems a reliable test to predict the risk of traumatic fall. They found that subjects who were unable to balance on one foot standing for 5 seconds had 2.1 times the risk of incurring an injurious fall as individuals who could balance for more than 5 seconds. This quick and easy test is useful to predict falls injury risk in an elderly population but it is not predictive of fall risk in general.

For this reason, we standardized the unipedal balance duration, with eyes open, on the same population in which the FRT has been evaluated (Albaret et al., 2001). We found in our study a significant decrease between age bands with aging: 26 seniors for 60-69 years; 17 seniors for 70-79 years; 7 seniors for 80 years and older.

The Timed Get Up and Go Test (Mathias et al., 1986) requires patients to stand up from a chair, walk a short distance, turn around, return, and sit down again. It then assesses the sit to stand transfer, walk and changes of direction. Balance function was scored on a five-point scale. Our standardized study confirmed a significant increase of the impairment score and of the achievement time with aging on the population mentioned above (Albaret et al., 2001).
The Ten Meter Walk (Cress, 1994) requires patients to walk on a straight line for 20 meters, but only the times to travel the middle 10 meters are recorded. Excluding the first and last five meters remove periods of acceleration and deceleration. The measures include gait speed, step length and number of steps. Numerous indicators of impairment in physical functioning and health are associated with slow walking speed. We found a difference between age bands, and between sexes with a slower speed and a smaller step length in women (Albaret et al., 2001).

For these tests we found different significant correlations between RTF and the unipedal balance duration ($r = .61$), the Get Up and Go Test ($r = -.61$ for score and -.65 for time) and between RTF and the Ten Meter Walk ($r = .71$ for gait speed, .73 for step length and -.69 for number of steps) (Albaret et al., 2001).

Others tests can be used like the Tinetti Balance Test and the Stops walking When talking test. The Tinetti Balance Test of the Performance-Oriented Assessment of Mobility Problems is a clinical test of balance and gait during various manoeuvres used in everyday life (Tinetti, 1986). The balance test rates nine items which are graded on an ordinal scale as either normal, adaptive or abnormal. The gait portion consists of seven gait characteristics assessed as normal or abnormal.

In the Stops Walking When Talking test (Lundin-Olsson et al., 1997), the patient walks to his cadence comfort. The examiner is walking behind him. After 10 seconds, the examiner initiates a conversation while continuing to walk, the test is positive if the subject stops walking. It is not really a test, but this clinical observation seems appropriate to complete the review of the risk of falling. The principle of this test is based on the relationship between the occurrence of falls and changes in gait and attention-demanding task performance whilst dual tasking amongst older adults.

The Purdue Pegboard is a test of manual and finger dexterity and coordination, used originally in the selection of employees for jobs in industry (Tiffin, 1968; Tiffin & Asher, 1948). The test was also a part of neuropsychological assessment as it has been found to be sensitive to the presence of brain damage (Jódar & Junqué, 1998; Reddon et al., 1988). The board features two parallel lines of 25 small holes running vertically down the center
of the board. The test consists of four parts (cf. Figure 3): insert pins into holes of the board for 30 seconds with right hand (1), left hand (2), both hands (3), assembly pins, collars and washers using both hands during 60 seconds (4). Three trials were administered for the four parts test.

French standardization was conducted on 104 subjects (82 females and 22 males) aged 60 to 80 and older (Dell’Omodarme et al., 2003). There was no difference between women and men, but we found a significant impairment for the different measures, more pronounced after 80 years. Test-retest reliability is good when the third trial of the test was compared to the first trial of the retest.

Observational scale of psychomotor behaviour: The French-revised Algase wandering scale for long term care

The French-revised Algase wandering scale for long term care (F-RAWS-LTC, Martin et al., 2013) was originally created by Algase et al. (Algase et al., 2004) to estimate the degree of wandering behaviour in patient with dementia in long-term care settings. The F-RAWS-LTC contains 3 subscales, including persistent walking, spatial disorientation, and wandering behaviour. It has 19 items whose values range from 1 to 4, a high score meaning a more wandering. The scores are computed by averaging the ratings for all items for every subscale and all the scales. Scores computed as item averages allow for comparison of subscale scores of unequal length. A valid rating is needed on 75% of the items to compute a useable score. This same computation rule applies to the overall RAWSLTC scale score as well. The nursing staff completes it. The respondent should have provided care to the PWDs over several recent shifts. This criterion ensures that the respondents have had the opportunity to observe the wandering behaviour. Their answers should reflect their observations of the patients during the preceding week. The scale can be completed independently or by having it read to the caregivers by another individual. It can be administered in 10 minutes.
French data were collected with a nonprobability sampling strategy using structured format face-to-face interviews. On a population of 767 institutionalized patients living in 12 specialized homes for elderly people from 5 French departments (Haute-Garonne, Gers, Tarn, Rhône and Gard), we selected 50 wanderers and 50 nonwanderers matched for sex and dementia diagnosis. The overall score of the F-RAWS-LTC, was significantly higher in wanderers than in nonwanderers, (F(1,98) = 156.99, p < .01) and for each subscale score: persistent walking (F(1,98) = 168.24, p < .01), eloping behaviour (F(1,98) = 97.48, p < .01), spatial disorientation (F(1,98) = 22.46, p < .01). The correlation between the overall F-RAWS-LTC score and the overall MMSE score was r = .50 (p < .01). This negative correlation reflects the increased frequency of wandering according to cognitive impairment.

The F-RAWS-LTC has high internal consistency (α = .92), which is highly significant and interesting for use in research. For convergent validity, the moderately significant correlation (r = .42, p < .01) between the aberrant motor behaviour subscale of the NPI-ES score and the F-RAWS-LTC score allows us to consider that we are partially measuring a common phenomenon, but the NPI-ES subscale also contains repetitive and endless activities.

Each subscale was correlated with the overall F-RAWS-LTC score (from r = .73 to r = .87, p < .01). Correlations between the subscales demonstrated moderate to high significant relationships ranging from r = .31 (spatial disorientation and persistent walking) to r = .73 (eloping behaviour and persistent walking, p < .01).

This instrument enables us to describe and quantify wandering behaviour in long-stay care settings.

**Conclusion**

Psychomotor therapist’s field of competence is being extended. The psychomotor examination must play an important part in the therapeutic process. “This practice avoids non-targeted interventions and specifies the psychomotor approach as a therapeutic one and not just a recreational activity” (Michel et al., 2010).
Our assessment guides the treatment plan; it helps to provide appropriate psychomotor care to the patient but also gives information to care teams and to informal caregivers. The tools mentioned above could be used in clinical situations and also in future research, particularly in a test–retest design to measure the long-term effects of psychomotor interventions (Guittard, Basse & Albaret, 2005).