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EUNAAPA – Work Package 4

**Expert Survey on Assessment Instruments
for Physical Activity and Physical Functioning in Older People**

National Report United Kingdom

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1. INTRODUCTION

The European Network for Action on Ageing and Physical Activity (EUNAAPA) is committed to improving the health, wellbeing and independence of older people throughout Europe by the promotion of evidence-based physical activity.

The aim of EUNAAPA work package No. 4 (Assessment of Physical Activity and Physical Functioning in Older People) was to document the opinion of national experts concerning the use of instruments for the assessment of physical activity and the assessment of physical functioning among older people.

In February and March 2007, each Associated Partner of the project consulted experts in their country, with the help of a standardised EUNAAPA questionnaire which sought the opinion of the experts on the following issues:

- Which instruments are used and how commonly
- Why other instruments are not used
- What is the general opinion of the instruments that are and are not used. The resulting data have been submitted to the work package leader (Karolinska Institute, Stockholm).

The present document is a national report on the data collected from the United Kingdom experts.

2 METHODS

2.1 Selection of Experts

As requested by the leader of Work Package 4, ten Experts were selected with the help of the matrix below (Table 1), and with the guidance that Partners were “not required to fill all the cells of the matrix but should seek a ‘balanced’ selection of 8 to 12 Experts, *e.g.* by selecting two government representatives, two health/social care specialists, two experts from the commercial sector, and three academics”

All but one of the Experts selected were known personally to one or (more usually) both of the Associated Partner and the Collaborating Partner. Selected Experts were contacted by the Associated Partner by telephone. Where necessary, e-mail or an answering service was used to arrange a mutually convenient appointment for the telephone conversation. The purpose of the project was explained to the Expert by the Associated Partner and the Expert’s support was requested.

	Community-dwelling older adults				Institutionalized older person			
National level	Government 1	Health care/ social care 2	Commercial sector 3	Academics/ Professional Education 4	Government 5	Health care/ social care 6	Commercial sector 7	Academics/ Professional Education 8
Regional/ local level	Government 9	Health care/ social care 10	Commercial sector 11	Academics/ Professional Education 12	Government 13	Health care/ social care 14	Commercial sector 15	Academics/ Professional Education 16

Table 1. Matrix used to guide the selection of Experts for WP4

Distribution and return of questionnaires

As soon as each Expert agreed to participate, a bound, paper copy of the questionnaire was posted to them, with a covering letter prepared from a Work Package 4 template. The covering letter included an assurance that the Expert was “free to consult with colleagues as widely as [they] wish[ed] in the limited time available” between agreeing to participate (various dates between 14 and 28 February 2007) and the deadline for return of the questionnaire (09 March 2007).

3 RESULTS & COMMENTS

3.1 Selection of Experts

Ten potential Experts were selected and invited to participate. All agreed. It later emerged that one of the selected Experts had not merely consulted a colleague but had delegated the completion of the entire questionnaire to a colleague. In the description of the Experts (Table 2), the details of the person who completed the delegated questionnaire are included rather than those of the intended Expert.

3.2 Return of questionnaires

By 23 March, only four questionnaires had been returned. Reminders were sent by e-mail to the 6 defaulters. By 08 April, 7 questionnaires had been returned. Of the missing 3 questionnaires, 1 was delayed and 2 had been lost in the postal system. The latter two questionnaires were completed again by the appropriate respondents.

3.2 Experts’ areas of expertise

When selecting the Experts, the WP Leader and the Collaborating Partner judged that the 10 Experts represented 6 different primary matrix fields (See Table 2). Two of the primary matrix fields (*viz.* ‘national level

academic/professional education’ and ‘national level healthcare/social care’) were each represented by 3 Experts.

Most Experts, however, could justifiably be identified with more than one field in the selection matrix. This is evidenced by the areas for which the Experts themselves considered they were answering as experts (see Table 2). The 10 Experts each selected a median of 5 (range 1-9) of the 11 areas offered.

Table 2. The Experts’ areas of expertise

Expert Number	1	2	3	4	5	6	7	8	9	10
Primary matrix field*	4	2	7	11	12	4	4	2	2	1
Physical activity #	X	X		X	X	X				
Physical functioning #			X		X		X	X	X	X
National level #	X	X	X		X	X		X	X	X
Regional/local level #				X	X			X		X
Community dwelling older adults #	X	X		X	X	X		X	X	X
Institutionalised older person #			X		X			X	X	X
Governmental sector #	X									X
Health care #	X		X	X	X			X	X	X
Commercial sector #			X	X	X					
Educational sector #					X	X				X
Social care sector #			X							X

* As perceived by the WP Leader and Collaborating Partner when selecting the Experts.

As selected by the Experts when completing the questionnaire.

3.4 Frequency of use of the assessment instruments

Eighty four recognised instruments for the assessment of aspects of physical activity and physical functioning in older people were listed in the questionnaire. The WP4 team intended that the grouping of the instruments would reflect the distinction among body functions, activities and participation recommended by the WHO's International Classification of Functioning, Disability and Health (ICF) (<http://www.who.int/classifications/icf/site/icftemplate.cfm>). This is not a rigid distinction but the groupings adopted in the questionnaire have been retained for the presentation of results.

Tables 3a to 3i report the number of Experts who said that the assessment instruments were in current use in the UK. They also report the number of Experts who said that current use was 'very common' (as opposed to 'not very common', 'don't know' or blank).

Physical activity: (Table 3a) The weight of opinion suggests that Pedometers and the Compendium of Physical Activities are probably more commonly used than the other proffered instruments for the assessment of physical activity in the UK.

It is reasonable to accept that the number of Experts reporting that an instrument is in current use probably reflects the confidence with which that assertion can be accepted. On the other hand, the number of Experts reporting that an instrument is in current use need not reflect the frequency with which the instrument is used.

Furthermore, Tables 3a to 3i are not, strictly speaking, comparing like with like. For example, in Table 3a, the Compendium (Ainsworth *et al.*, 1993) is a reference manual for allocating metabolic costs to particular activities, whereas most of the other instruments are intended as ways of recording or measuring the frequency or duration of these activities.

Moreover, the Frenchay Activities Index (Wade, Leigh-Smith & Hewer, 1985) was designed specifically for use with stroke patients and, strictly speaking, was designed, not to measure energy expenditure or the level of physical activity, but to record participation in activities which are more social and more complex than basic self care activities.

The Nursing Home Life Space Diameter (Tinetti & Ginter, 1990) was designed for use with an even smaller subgroup of patients, applying the 'Life Space' concept (May, Nayak & Isaacs, 1985; Baker, Bodner & Allman, 2003) again a more complex construct than mere energy

consumption or habitual activity, to patients receiving care in ‘skilled nursing facility’ nursing homes.

For the sake of completeness, it should also be acknowledged that one of the measures of physical activity (*viz.* Stewart *et al.*, 2001) was listed twice, under slightly differing titles (see Table 3a). As the responses elicited by the two listings were virtually identical, however, it seems unlikely that the Experts were misled.

Physical functioning – endurance: (Table 3b) Of the five tests listed in the questionnaire, four are ‘performance’ tests of sustained walking speed whereas the fifth test, the ‘Step Test’, is a test of the cardiovascular response to sustained exercise.

All 5 tests were reported by at least 3 Experts each, with current use of the Step Test and the Six Minutes Walking Distance being reported most often. Four Experts volunteered comments on the fact that 6 and 12 minutes walking would be too long for some elders, especially if sick or frail. One Expert indicated that the Step Test was unsuitable for frail elders. And one Expert expressed concerns about the safety of the increasing walking speed required by the Endurance Shuttle Walking Test.

There are many different forms of step test for the measurement of aerobic fitness. The questionnaire does not indicate precisely which form should be considered. It must be acknowledged that we cannot be entirely confident which form of Step Test was in the Experts’ minds. Indeed, the reference cited by the WP4 team in the ‘Endurance’ section of the questionnaire (*viz.* Dean, Richards & Malouin, 2000) actually refers to a test of balance. From the free text comments which they offered, it was clear that at least one Expert was referring to a test of aerobic fitness but at least one other was concerned about the scope for confusion among different step tests.

Physical functioning - mobility: (Table 3c) The timed version (Podsiadlo & Richardson, 1991) of the Get-up and Go Test (Mathias, Nayak & Isaacs, 1986:389) was frequently reported as being in current use and in very common use.

Physical functioning - balance: (Table 3d) Functional Reach was the balance test most frequently reported to be in current use and most frequently described as being in very common use. Each of the 13

proffered balance tests was reported by at least one Expert to be in current use.

Many tests could justifiably appear under more than one heading. For example, the TUG was included in the questionnaire as a test of mobility but it could have been included equally appropriately as a test of balance. On the other hand, it should be noted that the Step Test referred to among the instruments to assess balance is not the same as the various forms of Step Test used to assess endurance. The Step Test in Table 3d is a 15 second test of dynamic balance while standing on the affected lower limb after stroke (Hill *et al.*, 1996).

Physical functioning- range of motion: (Table 3e) Only three tests were offered to the Experts. All relate to the shoulder and none employs goniometry. They are not so much tests to measure the range of shoulder movement as active motor tests for the assessment of patients with shoulder pain (Westerberg, Solem-Bertoft & Lundh, 1996).

Two of the three tests were reported by only one Expert to be in current use. Use of the other test was not reported by any of the Experts. It remains uncertain whether this truly shows lack of use of these or related tests. The fact that there were 6 or 7 ‘Don’t know’ responses to the question about current use suggests that the Experts did not recognise the tests from the names used and/or were unfamiliar with the source cited for all three tests (*viz.* Solem Bertoft *et al.*, 1998 [*sic*]).

Physical functioning - dexterity: (Table 3f) Three Experts reported the Nine Hole Peg Test as being in current use. Two of them reported that its use was very common. Only 1 Expert reported current use of the Box and Block Test and he/she described its use as ‘not very common’.

Physical functioning - muscle strength: (Table 3g) Nearly all the Experts reported that a test of grip strength is in current use and 5 of them reported ‘very common’ use. Chair Stands test lower limb extensors and are arguably of greater functional relevance than the more convenient Grip Strength. A single rise from a chair was the form of Chair Stand test most frequently reported to be in current use. In the source reference given for this test, it is a timed test. It is possible, however, that the reported use may apply more to the qualitative, clinical observation of the sit-to-stand manoeuvre.

Physical functioning - overall index: (Table 3h) Five Experts reported that the Elderly Mobility Scale was in current use. Four of the 5 reported

‘very common’ use of the Elderly Mobility Scale. However, 3 Experts commented on the ceiling effects encountered if using this scale outwith hospital practice.

Four Experts reported current use of Tinetti’s Performance-oriented Assessment of Mobility Problems, another index aimed primarily at elderly patients. In contrast, Guralnik’s Short Physical Performance Battery was described by one Expert as “very easy to administer” in community surveys. Two other Experts also reported it to be in current use.

Of the 15 overall indices of physical functioning proffered, 5 received no reports of current use, and 4 received only 1 mention each.

Physical functioning - activities of daily living: (Table 3i) The Nottingham Extended ADL Scale (8 Experts) and the Functional Independence Measure (7 Experts) were the ADL tests most frequently described as being in current use but were not often described as being in ‘very common’ use. The Barthel Index and the Bristol ADL Scale each received 6 reports of current use but the Barthel index was notable for the fact that all 6 described its use as ‘very common’. Indeed, one Expert commented “It is the only ADL I come across in use in UK”.

Table 3a. Experts' responses concerning the frequency of use of instruments to assess physical activity

PHYSICAL ACTIVITY	Number saying currently used	Number saying very common
Test name		
Pedometer	6	4
Compendium of physical activities (METs)	5	4
7 days physical activity recall	5	2
International physical activity questionnaire (IPAQ)	4	2
Accelerometer	4	1
Double labelled water	4	0
Minnesota leisure time physical activity questionnaire	3	1
CHAMPS physical activity recall, CHAMPS self-report physical activity questionnaire for older adults, Physical activity scale for the elderly (PASE), Frenchay activities index (FAI)	2	0
Modified Baecke questionnaire, Modified Dallosso questionnaire, Yale physical activity survey (YPAS), Walking habits	1	0
Zupthen physical activity, Nursing home life space diameter	0	0

Table 3b. Experts' responses concerning the frequency of use of instruments to assess endurance

PHYSICAL FUNCTIONING - ENDURANCE	Number saying currently used	Number saying very common
Test name		
Step test	6	2
Six minutes walking	5	1
Endurance shuttle walking test	3	2
Twelve minutes walking, Two minutes walking	3	1

Table 3c. Experts' responses concerning the frequency of use of instruments to assess mobility

PHYSICAL FUNCTIONING - MOBILITY	Number saying currently used	Number saying very common
Test name		
Timed up-and-go (TUG)	7	5
Get-up and go	4	3
Walking speed 10m	4	2
Walking speed 30m	4	0
Stops walking while talking	3	2
Dynamic gait index	3	0
TUGmanual, L test, Functional ambulation	0	0

Table 3d. Experts' responses concerning the frequency of use of instruments to assess balance

PHYSICAL FUNCTIONING - BALANCE	Number saying currently used	Number saying very common
Test name		
Functional reach	7	5
Timed unsupported steady standing, Romberg test	5	3
Berg's balance scale,	4	4
One leg stance, 180° turn	4	2
Tandem stance	3	3
FICSIT 3-balance scale, FICSIT 4-balance scale	2	0
Solec test (i.e. stand on one leg, eyes closed), Figure of eight, Modified figure of eight, Step test	1	0

Table 3e. Experts' responses concerning the frequency of use of instruments to assess range of motion

PHYSICAL FUNCTIONING – RANGE OF MOTION	Number saying currently used	Number saying very common
Test name		
Hand in neck, Hand in back	1	1
Pour out of pot	0	0

Table 3f. Experts' responses concerning the frequency of use of instruments to assess dexterity

PHYSICAL FUNCTIONING - DEXTERITY	Number saying currently used	Number saying very common
Test name		
Nine hole peg test	3	2
Box and block test	1	0

Table 3g. Experts' responses concerning the frequency of use of instruments to assess muscle strength

PHYSICAL FUNCTIONING – MUSCLE STRENGTH	Number saying currently used	Number saying very common
Test name		
Grip strength	8	5
Chair stand once	5	3
Chair stand 3 times	4	3
Chair stands in 30 seconds	3	2
Chair stand 10 times	3	0
Chair stand 5 times	2	2
Climbing boxes	1	0

Table 3h. Experts' responses concerning the frequency of use of overall indices of physical functioning

PHYSICAL FUNCTIONING – OVERALL INDEX	Number saying currently used	Number saying very common
Test name		
Elderly mobility scale	5	4
Tinetti's performance-oriented mobility assessment	4	1
Short physical performance battery	3	1
Clinical outcome variables, Physical performance test 8-items, AAHPERD fitness task force	2	0
Functional fitness	1	1
Physical fitness field tests, Nursing home disability instrument, General motor function assessment	1	0
Timed functional movements, Functional fitness in daily functioning, Physical performance and mobility examination, Modified elderly mobility scale, Groningen fitness test	0	0

Table 3i. Experts' responses concerning the frequency of use of instruments to assess the performance of activities of daily living

PHYSICAL FUNCTIONING – ACTIVITIES OF DAILY LIVING	Number saying currently used	Number saying very common
Test name		
Nottingham extended activities of daily living scale	8	2
Functional independence measure (FIM)	7	1
Barthel index	6	6
Bristol activities of daily living scale	6	0
Katz ADL	5	1
OARS-IADL*	4	0
Sheik's activities of daily living index	3	2
Lawton instrumental activities of daily living	3	1
Functional activities questionnaire (FAQ)	3	0
Combination ADL-IADL	2	0
Cleveland scale for activities of daily living, Instrumental activity measures (IAM), ADL staircase	1	0

*Older Americans resources and services multidimensional functional assessment questionnaire - IADL

3.5 Reasons for non-use of some assessment instruments

When Experts did not answer ‘yes’ to the question ‘Is this instrument currently used in your country?’, they frequently did not answer either ‘no’ or ‘don’t know’ but, instead, just left all three tick boxes blank. This adds to the interpretative difficulties already described.

Experts indicating that an instrument was not in use were asked to choose from a list of possible reasons for the non-use. They frequently failed to do so. When they did choose, much the commonest reason for non-use was ‘Not known’ (Table 4). Unfortunately, however, this still begs the question whether this response was meant to convey (1) that potential users did not know of the test, (2) that the Experts themselves did not know of the test, or (3) that the Experts did not know why the test was not in use.

The other possible responses were selected so rarely that they are uninterpretable (Table 4).

3.6 Translation of instruments

The Experts were asked if each instrument had been translated into their language. Although some of the instruments had been developed in non-anglophone countries, all were published in English. The relevance of this question to the UK situation was therefore very uncertain. It seems that the UK Experts themselves were unclear about this. More than half did not respond to this question (and the associated subsidiary questions). On other occasions, they gave answers that suggest that ‘yes’ and ‘no’ could both mean ‘it did not need translation’. Accordingly it would not be appropriate to try to analyse these very incomplete, ambiguous data any farther.

3.7 General opinion of the assessment instruments

Experts were asked “What is the general opinion of this instrument in your country?” (Table 5a to 5i). At first sight the response rate was very poor. On closer examination of the individual responses, however, it seems likely that most of the Experts had adopted a convention of offering an estimate of the general opinion of an instrument only if they had already indicated that the instrument was in current use. It is not surprising, therefore, that adverse opinions have been reported only rarely.

Table 4. Experts' opinions on why instruments were not currently in use
(Total number of times each explanation was offered)

Too expensive	1
Too time consuming	2
Special skills required	0
Poor measurement properties	0
Not known*	65
Not relevant/suitable	2
Other	3

*Unclear whether Experts choosing this response were indicating (1) that potential users did not know of the test, (2) that the respondents themselves did not know of the test, or (3) that the respondents did not know why the test was not in use.

Table 5a. Experts' responses concerning the general opinion in the UK of instruments to assess physical activity

PHYSICAL ACTIVITY Test name	Number saying general opinion very good	Number saying general opinion fairly good
Accelerometer	3	1
Double labelled water	3	0
7 days physical activity recall	2	3
Compendium of physical activities (METs)	2	2
Pedometer	1	3
Physical activity scale for the elderly (PASE)	1	1
International physical activity questionnaire (IPAQ), Minnesota leisure time physical activity questionnaire, CHAMPS physical activity recall, CHAMPS self-report physical activity questionnaire for older adults	0	3
Frenchay activities index (FAI), Modified Baecke questionnaire, Yale physical activity survey (YPAS)	0	1
Modified Dallosso questionnaire, Walking habits, Zupthen physical activity, Nursing home life space diameter	0	0

Table 5b. Experts' responses concerning the general opinion in the UK of instruments to assess endurance

PHYSICAL FUNCTIONING - ENDURANCE Test name	Number saying general opinion very good	Number saying general opinion fairly good
Six minutes walking	2	3
Twelve minutes walking, Two minutes walking	1	1
Step test	0	4
Endurance shuttle walking test	0	2

Table 5c. Experts' responses concerning the general opinion in the UK of instruments to assess mobility

PHYSICAL FUNCTIONING - MOBILITY		
Test name	Number saying general opinion very good	Number saying general opinion fairly good
Timed up-and-go (TUG)	2	5
Get-up and go	1	3
Walking speed 10m	1	2
Walking speed 30m, Stops walking while talking, Dynamic gait index	0	2
TUGmanual, L test, Functional ambulation	0	0

Table 5d. Experts' responses concerning the general opinion in the UK of instruments to assess balance

PHYSICAL FUNCTIONING - BALANCE		
Test name	Number saying general opinion very good	Number saying general opinion fairly good
Timed unsupported steady standing	2	2
Berg's balance scale	2	1
Functional reach	1	4
Romberg test	1	3
Tandem stance	1	2
One leg stance, 180° turn	1	1
Figure of eight	1	0
FICSIT 3-balance scale	0	2
FICSIT 4-balance scale, Modified figure of eight	0	1
Solec test (i.e. stand on one leg, eyes closed), Step test	0	0

Table 5e. Experts' responses concerning the general opinion in the UK of instruments to assess range of motion

PHYSICAL FUNCTIONING – RANGE OF MOTION	Number saying general opinion very good	Number saying general opinion fairly good
Test name		
Hand in neck, Hand in back	0	1
Pour out of pot	0	0

Table 5f. Experts' responses concerning the general opinion in the UK of instruments to assess dexterity

PHYSICAL FUNCTIONING - DEXTERITY	Number saying general opinion very good	Number saying general opinion fairly good
Test name		
Nine hole peg test	1	1
Box and block test	0	1

Table 5g. Experts' responses concerning the general opinion in the UK of instruments to assess muscle strength

PHYSICAL FUNCTIONING – MUSCLE STRENGTH	Number saying general opinion very good	Number saying general opinion fairly good
Test name		
Grip strength, Chair stand once	2	3
Chair stand 3 times, Chair stands in 30 seconds	1	1
Chair stand 10 times, Chair stand 5 times	0	1
Climbing boxes	0	0

Table 5h. Experts' responses concerning the general opinion in the UK of overall indices of physical functioning

<p>PHYSICAL FUNCTIONING – OVERALL INDEX</p> <p>Test name</p>	<p>Number saying general opinion very good</p>	<p>Number saying general opinion fairly good</p>
Tinetti's performance-oriented mobility assessment	2	0
Elderly mobility scale	1	3
Short physical performance battery	1	1
Functional fitness	1	0
Clinical outcome variables, AAHPERD fitness task force	0	2
Physical performance test 8-items, Physical fitness field tests, Nursing home disability instrument,	0	1
Timed functional movements, Functional fitness in daily functioning, Physical performance and mobility examination, Modified elderly mobility scale, Groningen fitness test, General motor function assessment	0	0

Table 5i. Experts' responses concerning the general opinion in the UK of instruments to assess the performance of activities of daily living

PHYSICAL FUNCTIONING – ACTIVITIES OF DAILY LIVING	Number saying general opinion very good	Number saying general opinion fairly good
Test name		
Barthel index	2	0
Nottingham extended activities of daily living scale	1	1
Katz ADL, Sheik's activities of daily living index	1	1
Functional independence measure (FIM)	0	4
Bristol activities of daily living scale, Lawton instrumental activities of daily living	0	2
Combination ADL-IADL, Functional activities questionnaire (FAQ), Instrumental activity measures (IAM), ADL staircase, OARS-IADL*	0	1
Cleveland scale for activities of daily living	0	0

*Older Americans resources and services multidimensional functional assessment questionnaire - IADL

3.8 Instruments identified by Experts as being modified versions of instruments listed in the questionnaire,

Where an Expert has identified a modified version of an instrument listed in the WP4 questionnaire, it has been recorded below unless ...

- the authors of the present report have been unable to find a suitable supporting reference, or
- the authors of the present report have been unable to satisfy themselves that the modification mentioned by the Expert had been validated or, at least, extensively used with elderly people (but, CAUTION, not necessarily very elderly people), or
- the suggested instrument has already been listed elsewhere in the questionnaire, or
- the suggested instrument constitutes a part of a composite instrument already listed in the questionnaire.

Physical activity:

EPAQ2: The European Prospective Investigation into Cancer Study-Norfolk Cohort (EPIC-Norfolk) Physical Activity Questionnaire (Wareham *et al.*, 2002)

<http://www.srl.cam.ac.uk/epic/questionnaires/epaq2/>

Derived in part from the Minnesota Leisure Time Activity questionnaire and in part from the Modified Tecumseh Occupational Activity questionnaire

Physical functioning – endurance: None

Physical functioning – mobility:

Modified Dynamic Gait Index (Krishnan): (Krishnan, O’Kane & Gill-Body, 2002).

Modified Dynamic Gait Index (Marchetti): (Marchetti & Whitney, 2006).

Physical functioning – balance: None

Physical functioning – range of motion: None

Physical functioning – dexterity: None

Physical functioning – muscle strength: None

Physical functioning – overall index tests: None

Physical functioning – activities of daily living:

EASY-Care: Elderly Assessment SYstem.

(Philp, 1997; Philp *et al.*, 2001) Developed for the European regional office of the World Health Organisation. A combination of two established instruments (OARS-IADL and Barthel Index) and parts of several others for an overview assessment of physical, mental and social functioning in primary care. Like the Mayers Lifestyle questionnaires (see below), the EASY-Care does not yield a 'score' but acts as a client-centred aid to the identification of problems and the setting of priorities.

3.9 Other instruments suggested by Experts and not listed in the questionnaire

Where an Expert has suggested an instrument not already listed in the questionnaire, it has been recorded below, subject to the same exclusion criteria as were applied for the inclusion of modified versions of instruments (see section 3.8).

Physical activity:

Heart rate monitors, with and without accelerometry were suggested by one Expert but it seems that published validation has not yet been extended to elderly people. The Expert advised that validation studies with older people are currently underway.

HSfE PAQ: Health Survey for England Physical Activity Questionnaire.

<http://qb.soc.surrey.ac.uk/surveys/hse/hse04.htm>

(Stamatakis, Ekelund & Wareham, 2007)

GPPAQ: General Practice Physical Activity Questionnaire.

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_063812

The GPPAQ is intended for use in routine general practice with people aged 16 - 74 years to provide a simple, 4-level description of an individual's current physical activity. The Department of Health website emphasises that the GPPAQ is designed merely as a simple tool for identifying patients who would benefit from increased physical activity and that it is not appropriate for measuring the effectiveness of physical activity interventions.

SHS PAQ: Scottish Health Survey Physical Activity Questionnaire 2003.

(Stamatakis, 2005).

<http://www.scotland.gov.uk/Publications/2005/12/02160336/03543>

Physical functioning – endurance: None

Physical functioning – mobility: None

Physical functioning – balance:

Sway on force plate: (e.g. Piirtola & Era, 2006)

Balance Confidence: One Expert suggested two measures of ‘balance confidence’ but these have not been listed here as the construct which they are designed to measure is confidence, not balance *per se*.

Physical functioning – range of motion:

Goniometer: e.g. for the measurement of joint range of motion at the shoulder.

(Bassey *et al.* 1989; Skelton *et al.*, 1999a)

Physical functioning – dexterity:

Key in the lock test: (Skelton *et al.*, 1999b)

Physical functioning – muscle strength:

Manual muscle testing: Subjective (but criterion referenced) scoring, based on movement against gravity or against opposing force provided by the investigator (Nerve Injuries Committee, 1943).

Handheld dynamometry: (Martin *et al.*, 2006)

Physical functioning – Overall index tests:

PPA: The Physiological Profile Assessment (Lord, Menz & Tiedemann, 2003) combines the results of tests of vision, peripheral sensation, muscle force, reaction time and postural sway to assess an individual’s risk of falling.

Physical functioning – activities of daily living:

MDS RAI: The ADL component of the Resident Assessment Instrument of the Minimum Data Set (Won *et al.*, 1999) was described by one Expert as probably the most used ADL instrument not already listed in the WP4 questionnaire.

AMPS: Assessment of Motor and Process Skills (Merritt & Fisher, 2003).

CDI: Community Dependency Index (Eakin & Baird, 1995; Stewart *et al.*, 2005)

COPM: Canadian Occupational Performance Measure (Law *et al.*, 1990; Sewell *et al.*, 2005).

Edmans ADL index: (Edmans & Webster, 1997)

Mayers lifestyle questionnaires: The Mayers' questionnaires (one for use with clients with enduring mental health problems and the other for use with those with problems related to physical disability and/or ageing) are not limited to activities of daily living but also include items ranging from mobility to spirituality (Mayers, 1998). Furthermore, like the Easy-Care questionnaire (see above), they do not generate a 'score'; they are intended more as a client-centred aid to the identification of problems and setting of priorities.

MOHOST: The Model Of Human Occupation Screening Tool (Kielhofner, 2002; Parkinson, Forsyth & Kielhofner, 2006) combines an overview of multiple aspects of volition, habituation, skills and environmental factors, each rated on a four-point, criterion-referenced scale. It aims to determine the scope for occupational therapy intervention and to monitor progress towards intervention goals. Published evidence of formal validation with elderly clients has proved hard to find but the Expert who drew attention to this instrument reports that it is used extensively with older people.

OCAIRS: The Occupational Circumstances Assessment Interview and Rating Scale (Forsyth *et al.*, 2005) is also designed to provide a profile of strengths and weaknesses in the conceptual areas of the Model of Human Occupation. Again, published evidence of formal validation with elderly clients has proved hard to find but the Expert who drew attention to this instrument reports that it is used extensively with older people.

3.10 Guidelines recommending instruments for the assessment of physical activity in older adults

Only two Experts stated that they were aware of national, local or professional guidelines which recommended any of the instruments listed in section B (Physical Activity) of the WP4 questionnaire, for use when assessing physical activity in older adults (Table 6).

3.11 Guidelines recommending instruments for the assessment of physical functioning in older adults

Five Experts stated that they were aware of national, local or professional guidelines which recommended instruments listed in sections C to J (Physical Functioning) of the WP4 questionnaire, for use when assessing physical functioning in older adults (Table 7). The origins of 4 sets of guidelines were identified (Table7) and 2 of these (NICE-CG21 and COT) were expressly concerned with the prevention of falls.

Table 6. Experts’ awareness of guidelines recommending instruments listed in section B (Physical Activity) of the WP4 questionnaire, for the assessment of physical activity in older adults.

Expert	Aware of inclusion of instruments in guidelines	Instruments recommended in national guidelines	Instruments recommended in local guidelines	Instruments recommended in professional guidelines
UK01				
UK02				
UK03	X	GPPAQ		
UK04	X			METs BACR*
UK05				
UK06				
UK07				
UK08				
UK09				
UK10				

*BACR = British Association for Cardiac Rehabilitation

Table 7. Experts' awareness of guidelines recommending instruments listed in sections C to J (Physical Functioning) of the WP4 questionnaire, for the assessment of physical functioning in older adults.

Expert	Aware of inclusion of instruments in guidelines	Instruments recommended in national guidelines	Instruments recommended in local guidelines	Instruments recommended in professional guidelines
UK01				
UK02				
UK03	X			
UK04	X	Get up & go NICE-CG21*		Get up & go, 180° turn, TUG, TUSS, Tandem stand CSP**
UK05			TUG, Stops talking while walking	Funct'l reach, 180° turn, Hand in neck, Hand in back
UK06				
UK07				
UK08	X	Get up & go		180° turn, TUG, Berg balance, Elderly mob. scale, POMA, Funct'l reach.
UK09	X			AMPS, COPM, CDI, EdmansADL, Katz ADL, MOHOST, OCAIRS, TUG, Mayers Lifestyle Qr, Berg balance, Funct'l reach, COT***
UK10	X	EASY-Care		Barthel Index -RCPL****

*NICE-CG21 = National Institute for Clinical Excellence Clinical
Guideline No.21(The assessment and prevention of falls in older people)

**CSP = Chartered Society of Physiotherapy

***COT = College of Occupational Therapists (Falls management
[guidance] 2006)

****RCPL = Royal College of Physicians of London

4 CONCLUSIONS

This report documents the opinions of just ten, highly selected individuals, of which instruments they think are commonly used in the UK to assess the physical activity and physical functioning of older people. There were many gaps in the data.

The limitations of this approach mean that conclusions must be extremely guarded and that any apparent insights cannot be as secure as they might have been had there been the resources to conduct a comprehensive and representative survey of which instruments are actually being used.

The cross-national report, which the Swedish partners are preparing, will compare and contrast the views of the Experts from all 14 countries involved. Its analysis may yet be robust enough to pose important questions but will still depend on data acquisition methodology which has considerable potential for unintentional bias. Nevertheless, the process of summarising the responses of the 10 UK Experts has heightened our awareness of some principles pertinent to the selection of suitable instruments.

It is too simplistic to think in terms of good tests and bad tests. It is more a matter of selecting the instrument best suited to a specific purpose, a specific context and a specific client group.

It is important, also, not to be constrained by the classification of the instruments. For example, an instrument listed as a test of 'mobility' may, in some circumstances, be a valid test of 'balance', and *vice versa*.

Nevertheless, it is essential to be crystal clear about the purpose for which an instrument is to be used, in order to ensure that the chosen instrument is fit for that purpose. For example, for a particular purpose and with a particular client group, a given instrument may show unacceptable floor effects, whereas in another context it may be ideal or may even show unacceptable ceiling effects.

Alternatively, the properties of an instrument may limit its usefulness and validity when seeking to measure an attribute, yet the same instrument may be ideal as a prompt, to ensure comprehensive assessment, or as a screening test to identify individuals requiring more detailed attention.

5 REFERENCES

Ainsworth BE, Haskell WL, Leon AS, Jacobs DR, Montoye HJ, Sallis JF, Paffenbarger RS. Compendium of physical activities: classification of energy costs of human physical activities. *Med Sci Sports Exercise* 1993; 25: 71-80.

Baker PS, Bodner EV, Allman RM. Measuring life-space mobility in community-dwelling older adults. *J Amer Geriatr Soc* 2003; 51: 1610-1614.

Bassey EJ, Ebrahim SB, Dallosso HM, Morgan K. Normal values for range of shoulder abduction in men and women aged over 65 years. *Ann Human Biol* 1989;16: 249-257.

Dean CM, Richards CL & Malouin F. Task-related circuit training improves performance of locomotor tasks in chronic stroke: a randomized, controlled pilot trial. *Arch Phys Med Rehabil* 2000; 81: 409-417

Eakin P, Baird H. The Community Dependency Index: a standardised assessment of need and measure of outcome for community occupational therapy. *British Journal of Occupational Therapy*. 1995; 58: 17-22.

Edmans JA, Webster J. The Edmans ADL index: validity and reliability. *Disability and Rehabilitation* 1997; 19: 465-476.

Forsyth K, Deshpande S, Kielhofner G, Henriksson C, Haglund L, Olson L, Skinner S, Kulkarni S. The Occupational Circumstances Assessment Interview and Rating Scale (OCAIRS) Version 4.0, 2005.

Hill K, Bernhardt J, McGann A, Maltese D, Berkovits D. A new test of dynamic standing balance for stroke patients: reliability, validity and comparison with healthy elderly. *Physiotherapy Canada* 1996; 48: 257-262

Kielhofner G. *A Model of Human Occupation: Theory and Application*, 3rd ed. Baltimore: Lippincott, Williams & Wilkins pp. 268-270, 2002.

Krishnan LV, O’Kane KS, Gill-Body KM. Reliability of a modified version of the Dynamic Gait Index – a pilot study. *Neurology Report* 2002; 26: 8-14.

Law M, Baptiste S, McColl M, Opzoomer A, Polatajko H, Pollock N. The Canadian Occupational Performance Measure: an outcome measure for occupational therapy. *Canadian Journal of Occupational Therapy*. 1990; 57: 82-87.

Lord SR, Menz HB, Tiedemann A . A physiological profile approach to falls risk assessment and prevention. *Physical Therapy* 2003; 83: 237-252.

Lowther M, Mutrie N, Loughlan C, McFarlane C. Development of a Scottish physical activity questionnaire: a tool for use in physical activity interventions. *British Journal of Sports Medicine* 1999; 33: 244-249.

Marchetti GF, Whitney SL. Construction and validation of the 4-item dynamic gait index. *Physical Therapy* 2006; 86: 1651-1660.

Martin HJ, Yule V, Syddall HE, Dennison EM, Cooper C, Aihie Sayer A. Is hand-held dynamometry useful for the measurement of quadriceps strength in older people? A comparison with the gold standard Biodex dynamometry. *Gerontology* 2006; 52: 154-159.

Mathias S, Nayak USL, Isaacs B. Balance in elderly patients: the "get-up and go" test. *Arch Phys Med Rehabil* 1986; 67: 387-389.

May D, Nayak USL, Isaacs B. The life-space diary: a measure of mobility in old people at home. *Int Rehabil Med* 1985; 7: 182-186.

Mayers CA. An evaluation of the use of the Mayers' Lifestyle Questionnaire. *British Journal of Occupational Therapy* 1998; 61: 393-398.

Merritt BK, Fisher AG. Gender differences in the performance of activities of daily living. *Archives of Physical Medicine and Rehabilitation* 2003; 84:1872-1877.

Nerve Injuries Committee. Aids to the Investigation of Peripheral Nerve Injuries. Medical Research Council War Memorandum No.7 (Revised second edition) HMSO London 1943.

Parkinson S, Forsyth K, Kielhofner G. The Model of Human Occupation Screening Tool, (MOHOST). Version 2.0. University of Illinois at Chicago, 2006.

- Philp I. Can a medical and social assessment be combined? *Journal of the Royal Society of Medicine* 1997; 90(Suppl 32): 11-13.
- Philp I, Newton P, McKee KJ, Dixon S, Rowse G, Bath PA Geriatric assessment in primary care: formulating best practice. *British Journal of Community Nursing*. 2001; 6: 290-295.
- Piirtola M, Era P. Force platform measurements as predictors of falls among older people – a review. *Gerontology* 2006; 52:1-16.
- Podsiadlo D, Richardson S. The timed "up & go": a test of basic functional mobility for frail elderly persons. *J Amer Geriat Soc* 1991; 39: 142-148.
- Sewell L, Singh SJ, Williams JEA, Collier R, and Morgan MDL. Can individualized rehabilitation improve functional independence in elderly patients with COPD? *Chest* 2005; 128: 1194-1200.
- Skelton D, Young A, Walker A, Hoinville E. Physical Activity in Later Life: Further Analysis of the Allied Dunbar National Fitness Survey and the Health Education Authority Survey of Activity and Health. Health Education Authority 1999a. pp 37-39.
- Skelton D, Young A, Walker A, Hoinville E. Physical Activity in Later Life: Further Analysis of the Allied Dunbar National Fitness Survey and the Health Education Authority Survey of Activity and Health. Health Education Authority 1999b. pp 46-47
- Stamatakis E. Chapter 4, Adult physical activity, In: Bromley C, Sproston K, Shelton N.(eds.) *Scottish Health Survey 2003*, Scottish Executive (2005).
- Stamatakis E, Ekelund U, Wareham NJ. Temporal trends in physical activity in England: the Health Survey for England 1991 to 2004. *Preventive Medicine* (2007) doi:10.1016/j.ypmed.2006.12.014.
- Stewart AL, Mills KM, King AC, Haskell WL, Gillis D, Ritter PL. CHAMPS physical activity questionnaire for older adults: outcomes for interventions. *Medicine & Science in Sports & Exercise* 2001; 33: 1126-1141.
- Stewart S, Harvey I; Poland F, Lloyd-Smith W, Mugford M, Flood C. Are occupational therapists more effective than social workers when

assessing frail older people? Results of CAMELOT, a randomised controlled trial. *Age and Ageing* 2005; 34: 41-46.

Tinetti ME, Ginter SF. The nursing home life-space diameter. A measure of extent and frequency of mobility among nursing home residents. *J Amer Geriat Soc* 1990; 38: 1311-1315.

Wade DT, Leigh-Smith J, Hewer RL. Social activities after stroke: measurement and natural history using the Frenchay Activities Index. *Int Rehabil Med* 1985; 7: 176-181.

Wareham NJ, Jakes RW, Rennie KL, Mitchell J, Hennings S, Day NE. Validity and repeatability of the EPIC-Norfolk Physical Activity Questionnaire. *International Journal of Epidemiology* 2002; 31: 168-74.

Westerberg CE, Solem-Bertoft E, Lundh I. The reliability of three active motor tests used in painful shoulder disorders. Presentation of a method of general applicability for the analysis of reliability in the presence of pain. *Scand J Rehab Med* 1996; 28: 63-70.

Won A, Morris JN, Nonemaker S, Lipsitz LA. A foundation for excellence in long-term care: the Minimum Data Set. *Annals of Long-Term Care*. 1999; 7: 92-97.

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