Approaching Consensus in Clinical Competence Assessment

Third round of a Delphi study of academics' and clinicians' perceptions of physiotherapy undergraduates

by Vinette Cross

Summary   Quality measurement in healthcare and higher education has highlighted the need for a systematic approach to the development of instruments to assess the clinical performance of undergraduates. This paper describes the third and final round of a Delphi study to investigate the degree of national consensus on desirable attributes for physiotherapy undergraduates on clinical placement.

This third round investigates how the two panels – clinicians and academics – would recognise and interpret what they observed in students' behaviour in terms of the desirable attributes identified in preceding rounds. Eighty-nine observable behaviours were identified in relation to 12 desirable attributes associated with clinical competence.

All but six behaviours were identified by both clinicians and academics, but there were discrepancies in the frequency of responses that suggested differing perceptions between the two panels of the importance of some attributes. Application of the binomial test (SPSS) indicated that the identified behaviours were a valid representation of competence as defined by the CSP/CPSM undergraduate curriculum framework. It was concluded that the behaviours provided a starting point for development of a clinical assessment instrument that could optimise the validity and reliability of clinical assessment decisions.

Introduction

Assessment of undergraduates' clinical performance provides a key level of quality control to ensure standards of clinical practice are maintained in the healthcare professions as a whole. Congruent viewpoints among academic staff, students, clinical educators and managers seem essential to this process. However, at the macro level of educational, professional and government institutions, debate continues to centre around perceived dichotomies such as quality assurance *versus* academic freedom, fitness for award *versus* fitness for purpose, continuing professional development *versus* assessment of competencies (Cross, 1995, 1999a; Day *et al*,

1998; Hale, 1998; Winter, 1994). It seems inevitable that such debate has an impact at the micro level of programme delivery and that the potential for dissonance manifests itself at the interface between academics, clinical practitioners and undergraduates on individual programmes; particularly through the process of assessing undergraduates' clinical performance.

'Assessment of competence' seems set to become the *leitmotif* of clinical practice in general. The government has made clear its intention to collect and monitor information on clinical performance and standards, as part of new legislation on professional self-regulation (DoH, 1998), and a new Health Professions Council, replacing the Council for Professions Supplementary to Medicine (CPSM), will have powers to link retention of State registration to demonstration of continuing competence by individual practitioners. Increasing emphasis within the health service on external judgements of performance, quality and value for money are mirrored in higher education. Here also, assessment criteria must now try to satisfy an increasing orientation towards explicit norms of performance, based on centrally generated criteria, rather than the largely implicit criteria of individual assessors (Broadfoot, 1998). Setting up the Quality Assurance Agency (QAA) has moved quality management in higher education towards a more universal and structured approach (Lomas, 1999).

In physiotherapy, the final report of the Clinical Education Review Working Party (CSP, 1998) has set an agenda for change that recognises clinical education as a *cause célèbre* and establishes a strategic rather than reactive approach to improving the quality of clinical education and assessment, and reducing

the rising crisis over clinical placements. It examines contextual issues and problems, structure, management and funding, as well as the role of primary care and non-NHS sectors in the provision of undergraduate clinical education experience. Lack of communication is seen by key stakeholders to weaken the relationship between clinicians and academics. Better liaison between higher education institutions requesting clinical education of the same department is cited in the review as being very important by managers, clinicians and academics in six higher education institutions interviewed by the working party.

Identifying physiotherapy service providers' wants, their relationship to those of education providers, and the implications for quality assessment, are rightly dominant themes in the clinical education review. But ultimately assessment outcomes are only as good as the assessors themselves and the instruments they use. Commentators readily admit that the multifaceted nature of clinical competence makes it difficult to design assessment tools that are valid in terms of content (Alexander, 1996; Alsop and Ryan, 1996; Winter, 1994; Stengelhofen, 1993). In striving for content validity, instruments may become so complex as to limit reliability of resulting measures. Conversely, instruments simple enough to be reliable may be too superficial to be acceptable as valid representations of competence. Thus clinical competence assessment is often a trade-off between validity and reliability. This gap between validity and reliability must be made even wider when individual institutions are developing assessment instruments independently of each other.

In view of the dictum that assessment drives learning (Lowry, 1993), in the short term at least, there seems a convincing rationale for considering whether greater rationalisation of clinical assessment instruments within physiotherapy undergraduate education is possible or appropriate. A uniform approach to assessment, seen as valid and practicable by both the assessors (clinical educators) and the assessed (undergraduates), must increase the effectiveness of the assessment process as a basis for facilitating the quality of students' clinical learning, increase confidence in the reliability of judgements about competent undergraduate performance and improve the efficiency of implementation.

It is important to emphasise that this call for greater uniformity is not a polemic for reductionist approaches to clinical assessment, but an acceptance that the current *ad hoc* arrangements can only fail to convince stakeholders on a wider stage of its effective contribution to the quality of clinical education. The strategic policy changes urged by the CSP Clinical Education Review working party might well improve undergraduate clinical performance assessment in the long term. But a nationally agreed assessment instrument, simple in construction, representative of competence and optimal insofar as it minimises the gap between validity and reliability, might serve as a short-term expedient to maintain consumer confidence. Failing this an instrument that could standardise physiotherapy undergraduate performance assessment across universities within a single region could be a useful step forward.

Developing Assessment Instruments

Investigation into the nature of clinical competence and its measurement has been extensive throughout health professional education. Defining knowledge, skills and attitudes indicative of competence, and developing tools to measure these have all been interesting areas of research. Conceptual frameworks for competence have ranged from Benner's (1984) humanistic approach in nursing practice to the more atomistic approach of the objective structured clinical examination in medicine (Harden *et al*, 1975). All have resulted in a variety of identified domains of practice and professional capabilities to be used as a basis for assessment, although as Stengelhofen (1993) points out,

'It is up to each course and each field as a whole to identify which . . . are essential requirements. . . . It is always difficult to reach consensus in deciding what should be included' (page 183).

In contrast to work on identifying domains of competence, relatively little work has been done on establishing the reliability and validity of specific competence assessment instruments within a holistic model, where subjective

judgement is acknowledged to play some part (Carr, 1993). Published work related specifically to physiotherapy has been limited and largely centred in North America (Bemis *et al*, 1978; Mays, 1973; Kern and Mickelson, 1971). The work of Forster and Galley (1978), Loomis (1985a, b) and Sanford (1993) provide the most detailed examination of professional competence domains and their measurement as a basis for uniformity in instrument development. A critique of these studies may be found in Cross (1999b).

Undoubtedly, notions of what competence is or should be are subject to change as new models of professional practice evolve, especially in a context of evidence-based practice. However, at any one moment in a profession's history, it is essential that those responsible for allowing entry to that profession have a common understanding of what competence is. In this context the paper describes one of a series of related investigations, carried out between 1994 and 1999, aimed at creating a blueprint for development of an instrument that presents undergraduate clinical competence assessment as holistic (ie more than simply a checklist of basic competencies), realistic and measurable. It recounts the third and final round of a Delphi study begun in 1996, to investigate how physiotherapy clinicians and academics identify good undergraduate performance on clinical placement. The first two rounds are described fully by Cross (1999b).

Brief Outline of the First Two Rounds

The earlier rounds of this Delphi study investigated the extent to which attributes previously identified at a local level by clinical educators and academics, ie physiotherapy educators within higher education institutions (Cross, 1998) could be generalised to a larger, national sample of academics and senior physiotherapy clinicians, representing a wider practice perspective rather than a focused clinical educator perspective. The first round focused on eliciting adjectives and adjectival phrases descriptive of desirable and undesirable attributes for physiotherapy undergraduates on clinical placement, from 108 senior clinicians and 113 academics throughout the UK. In the second round these were categorised and

the two panels chose and ranked their top ten desirable and undesirable attributes (85 clinical educators and 98 academics responded in this round).

Data from these first two rounds were subjected to statistical and content analysis. Kendall's coefficient of concordance indicated significant agreement within the academic group and within the practitioner group on the ranking assigned to 24 desirable attributes and 25 undesirable attributes ($p < 0.000$ for a one-tailed hypothesis). Spearman's rho indicated significant agreement between the two groups ($p < 0.000$ [desirable] $p < 0.002$ [undesirable] for a two-tailed hypothesis). Results from these two rounds suggested that local perceptions were reflected at a national level. There were differences in emphasis between the two panels; academics placing greater emphasis on independent learning and critical thinking than the clinicians. At the end of the second round, two composite lists comprising 12 desirable and 14 undesirable attributes, reflecting both panels' perspectives, were identified. It was concluded that the final list of desirable attributes (fig 1) encompassed the viewpoints of:

■ More detached senior physiotherapy clinicians with an employer perspective.
■ Academics from a range of undergraduate physiotherapy programmes.
■ Grass-roots clinical educators involved in face-to-face interaction with undergraduates.

In addition, the list incorporated intellectual, cognitive, attitudinal and performance dimensions associated with a holistic model of workplace competence assessment (Moore *et al*, 1997; Best and Rose, 1996; Barnett, 1994; Stengelhofen, 1993).

Safe	Empathetic
Good communication skills	Critical thinker
Aware of own limitations	Conscientious
Able to apply theory to practice	Good knowledge base
Eager to learn	Independent learner
Good practical skills	Competent

Fig 1: Composite list of desirable attributes for physiotherapy students identified in round two of the Delphi study

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Third Round of Delphi Study

The process of assessment has been described as both a science and an art (Brown and Knight, 1994). Reynolds and Salters (1995) make the point that holistic approaches to competence assessment require assessors to make an inferential leap from what is observed. They must know how to recognise and interpret what they observe and some consensus is needed if assessment is to be reliable and valid. Therefore, on the basis of information elicited from the first two rounds, this third and final round of the Delphi study set out to:

- Investigate how the two panels would recognise and interpret what they observed in students' behaviour in terms of the desirable attributes identified in the second round.
  In other words, how accessible were these attributes to assessment in the clinical setting?

- Consider how far the panels' interpretations reflected the learning outcomes identified in the undergraduate curriculum framework (CSP/CPSM, 1996).

- Establish the basis for identifying a domain of content for a clinical assessment instrument, derived through national consensus.

Procedure

Following standard Delphi procedure, as described by Cross (1999a), the clinicians and academics in each panel were asked to make further responses based on information given to them from the previous round. They were presented with the 12 attribute categories descriptive of good physiotherapy practice and the following instructions:

> 'Overleaf is a list of the most desirable or important attributes of clinical physiotherapy students as identified by physiotherapy clinicians and academics throughout the UK. Alongside each one, please list some examples of specific behaviours or actions that you think would enable you to recognise that attribute in a physiotherapy student on placement. In other words, what observable things might a student do in the course of clinical work that would lead you to decide that he or she was really a safe practitioner, or was eager to learn, etc? Try to list at least *four* behaviours for each attribute if possible.'

Response Rate

Of the 85 clinicians who responded in round two, 47 (55%) responded in round three (table 1). Of the 98 academics from round two, 51 (52%) responded in round three (table 2). The total number of academics and clinicians (n = 98) responding to round three represented 44% of the academics and clinicians making up the original panels in round one (n = 221).

Although reservations might be expressed about a response rate below 50% this compares favourably to the latter stages of other Delphi studies extending to several rounds (Reid, 1988). To minimise the effects of attrition over successive rounds, Williams and Webb (1994) suggest that they be monitored to ensure the range of opinion is adequately represented. In this case, despite reduced numbers, the relative proportions and range of specialties and academic institutions remained similar to those in the preceding two rounds, as did mean years of experience and professional role of the respondents.

Discussion of Findings from the Third Round

As in the previous two rounds, this final round generated a considerable quantity of data. The majority of respondents provided a minimum of four behaviours for each attribute. Some provided more, others only one or two per attribute. Some could not offer any for some attributes. Several participants, both academics and clinicians, commented on how difficult they found the task, for example:

> 'This wasn't too easy. ...I've had a go.'

> 'Sorry to say I found it quite difficult to find examples in all areas, but I have tried to include thoughts which I hope are relevant.'

The consistency of emergent themes and phrases, identified through independent analysis and discussion of data in preceding rounds, provided the basis for identification of any dominant themes or core activities related to each of the 12 attributes. Themes were identified on the basis of semantic equivalence, or because different descriptions of activity clearly centred around the same issue, for example: 'stops treatment and seeks help'; 'does not carry on regardless' both

Table 1: Characteristics of third round respondents (clinicians n = 47)

Sex (%)	
Female	94
Male	6
Mean years in practice	20
Position (%)	
Superintendent	38
Physiotherapy manager	40
Senior I	21
Specialty (%)	
Musculoskeletal	21
Outpatients	19
Cardiorespiratory	13
Paediatrics	9
Elderly care	6
Managerial	6
Neurology	6
Rheumatology	4
Trauma & orthopaedics	4
Community	2
Mental health	2
General	2
Unstated	6

Table 2: Characteristics of third round respondents (academics n = 51)

Sex (%)	
Female	84
Male	15
Mean years in education	11.5
HEIs represented (% of physiotherapy programmes in UK)	81
Position (%)	
Head of department / course leader	18
Senior principal lecturer	33
Lecturer	35
Clinical tutor / co-ordinator	11
Researcher	2

relate to asking for clinical advice or help when needed. Similarly, 'can do techniques – is not clumsy' and 'confident when handling patients' were both judged to reflect a degree of co-ordination and fluency in carrying out techniques. A greater number of themes emerged for some attributes than from others. Of particular note was 'good knowledge base' for which only two separate themes could be discerned. This was because respondents seemed to see knowledge as overlapping with the ability to apply theory to practice. Thus activities listed under 'ability to apply theory to practice' were listed again under 'good knowledge base'. One comment typifies respondents' uncertainty:

> 'Not sure how [good knowledge base] is different from applying theory to practice. Knowledge is only useful on placement if you can apply it.'

The same perception of overlap was apparent in relation to 'good communication skills' and 'empathetic', with actions such as listening and making eye contact being listed in relation to both attributes. Where this occurred, activities were assigned to the attribute with which they were most frequently associated. The result of this analysis was that the original 12 attributes were, now, each associated with a number of observable behaviours as shown in table 3 (overleaf) In total, these behaviours totalled 89. All but six of the observable behaviours were apparent in both academics' and clinicians' responses but there were discrepancies in the number of responses within several of them. They seem to represent differing perceptions of importance in the minds of each group for the behaviours marked with an asterisk in table 3.

Relationship of Behaviours to the CSP/CPSM Curriculum Framework
At operational level, competence assessment instruments must have some obvious link to the job competent graduates will perform. In other words, they must possess content validity. This 'job description' for new physiotherapy graduates is expressed in the learning outcomes included in the Curriculum Framework for undergraduate programmes in physiotherapy (CSP/CPSM,

Table 3: Super-ordinate categories and observable behaviours identified by percentages of academics and clinicians in the third round of the Delphi study

	Clinicians	Academics
Safe (behaviours = 13)		
Identifying and clearing hazards in environment	42.5	41.1
Checking functioning and safety of equipment used in treatment and reporting faults	51.0	37.2
Checking for the presence of contra-indications before treating patients	32.0	37.2
Adhering to local health and safety policies	14.8	17.6
Checking equipment conforms to patients' needs	12.7	17.6
Positioning self optimally when assessing and treating patients	14.8	7.8
Restoring a safe environment after treatment*	29.7	0.0
Maintaining appropriately close proximity to patients during treatment*	6.3	19.6
Carrying out standard checks on patients after electrotherapy or cryotherapy*	19.1	3.9
Dressing professionally to ensure patients' and own safety	10.6	5.8
Checking patients' charts for relevant information before commencing treatment	8.5	5.8
Always giving standard warnings to patients about treatments	6.3	5.8
Ensuring patients are dressed in accordance with safety during treatment	4.2	2.0
Good Critical Thinking Skills (behaviours = 9)		
Analysing the reasons behind success or failure of treatment interventions*	19.1	5.8
Trying to measure clinical outcomes for own patients	12.7	7.8
Engaging in reasoned debate with colleagues about professional issues and patient management	8.5	11.7
Justifying and explaining own clinical decisions to others on the basis of research evidence*	2.1	15.6
Being able to distinguish fact from opinion in the clinical setting*	0.01	5.6
Being prepared to challenge existing custom and practice within the clinical environment in an informed and constructive manner*	12.7	3.9
Expressing informed opinions during discussions with colleagues about the context and findings of research papers*	0.0	11.6
Predicting likely clinical outcomes on the basis of past evidence and experience*	8.5	0.0
Using current research in own practice where possible and appropriate	2.1	3.9
Good Communication Skills (behaviours = 9)		
Explaining aspects of management and care to patients, relatives and carers	53.1	31.3
Feeding back clinical information about patients and treatment information	42.5	31.3
Writing reports and patients' records legibly, usefully and articulately	38.2	35.2
Participating in and/or initiating professional dialogue with the multi-disciplinary team (MDT) at all levels	34.0	13.7
Speaking clearly and audibly	6.3	15.6
Writing down instructions, such as home exercise programmes, for patients	6.3	5.8
Using the telephone in a professional manner	8.5	4.0
Demonstrating treatment techniques to colleagues or other members of the MDT	2.1	2.0
Being prepared to give talks and/or case presentations to colleagues and other professionals	2.1	0.0
Aware of Own Limitations (behaviours = 8)		
Asking for help or advice when needed	91.4	84.3
Consulting with seniors before taking new or unfamiliar action in the clinical situation	50.0	43.1
Admitting to lack of knowledge, understanding or skill in relation to particular areas of practice	29.7	31.3
Acting and advising patients only within scope of own practice	19.1	17.6
Talking about own strengths and weaknesses to colleagues/mentors/educators	14.8	19.6
Accepting others' informed opinion about own ability as a clinical practitioner	14.8	11.7
Referring queries from patients, etc, to appropriate sources of information	6.3	11.7
Acting on clinical and treatment advice given by other healthcare professionals	6.3	5.8
Competent (behaviours = 8)		
Working safely and effectively without supervision	53.1	31.3
Managing time efficiently	42.5	33.3
Achieving identified clinical outcomes for patients	38.2	35.2
Organising own clinical workload efficiently*	34.0	13.7
Accepting responsibility for patient outcomes	6.3	15.6
Setting appropriate priorities in planning treatment	6.3	5.8
Working to recognised standards in the specialty	8.5	3.9
Being flexible and adaptable	2.1	2.0

	Clinicians	Academics
Conscientious (behaviours = 8)		
Being punctual for clinical duties and appointments	70.2	66.6
Completing designated tasks fully and properly	25.5	45.0
Keeping accurate, concise and thorough records	38.2	39.2
Continuing to work beyond allotted time if necessary	25.5	23.5
Taking on extra work to assist if others are overloaded	23.4	27.4
Always carrying out clinical/treatment instructions appropriately	8.5	2.0
Being tidy and professional in appearance	8.5	11.7
Making arrangements for own work to be covered during planned absence	2.1	7.8
Empathetic (behaviours = 8)		
Listening attentively and making appropriate eye contact when assessing and treating patients	55.3	60.7
Responding appropriately to non-verbal cues from patients	14.8	19.6
Encouraging patients/clients to express their own opinions and ask questions during assessment/treatment	12.7	19.6
Showing appropriate interest in patients' lives and activities	14.8	9.8
Using appropriate touch to communicate professional concern and attention to patients	8.5	9.8
Positioning patients for their comfort and dignity during treatment	10.6	4.0
Demonstrating understanding of the work of other health professionals and the interface with physiotherapy	6.3	7.8
Supporting colleagues in the clinical situation by responding to their needs	4.2	5.8
Ability to Apply Theory to Practice (behaviours = 7)		
Being able to explain the rationale for choice of treatment/intervention to colleagues and patients	55.3	60.7
Using assessment findings to plan treatment	46.8	33.3
Relating clinical signs and symptoms to underlying pathology	21.2	21.5
Identifying salient points of patient assessment	12.7	13.7
Recognising typical patterns of clinical presentation	4.2	4.0
Selecting appropriate outcome measures related to own practice	4.2	4.0
Explaining to colleagues and/or patients why interventions might be inappropriate	2.1	4.0
Eager to Learn (behaviours = 7)		
Showing active interest, through questioning, about all aspects of physiotherapy practice	87.2	68.6
Asking to observe more experienced colleagues working with patients	36.1	29.4
Voluntarily attending in-service training events	23.4	21.5
Generating discussion with peers about aspects of learning and clinical practice	10.6	31.3
Asking for others' opinions of own work where appropriate	21.2	17.6
Asking to practise new/unfamiliar techniques when appropriate opportunities arise	25.5	13.7
Suggesting appropriate subjects for tutorials, in-service training, etc.*	2.1	9.8
Independent Learner (behaviours = 7)		
Organising time for reading and reflection on practice	68.0	60.0
Accessing clinical and academic databases to inform practice	34.0	37.2
Testing out own professional knowledge by discussing it with others*	38.2	13.7
Negotiating own learning around personal and corporate objectives*	2.1	23.5
Assessing accurately the standard of own clinical practice performance*	4.2	11.7
Maintaining a professional portfolio containing evidence of learning	0.0	2.1
Good Practical Skills (behaviours = 4)		
Being physically well coordinated and fluent when carrying out treatment techniques on patients	61.7	78.4
Adapting treatment techniques according to patient's response	25.5	15.6
Using a wide repertoire of techniques when treating patients	17.0	15.6
Perfoming treatment techniques accurately	8.5	7.8
Good Knowledge Base (behaviours = 2)		
Being able to answer questions from colleagues/educators about core clinical skills and knowledge*	25.5	60.0
Introducing relevant background reading into discussions about practice	21.2	27.4

* = Behaviours showing most discrepancy between clinicians and academics (see text)

1996, page 7). These delineate the competence and ability of chartered physiotherapists on initial qualification. Forty-two outcomes are grouped under eight main headings. The main headings appear in figure 2.

1. Enable individual groups to optimise their health and social well being

2. Manage oneself and work with others to optimise results

3. Promote equality to all individuals in physiotherapy practice

4. Deliver physiotherapy in response to individuals' needs

5. Research and evaluate physiotherapy practice

6. Respond appropriately to changing demands

7. Demonstrate and apply knowledge and understanding of issues that affect physiotherapy practice

8. Practise and promote continuing professional development

Fig 2: Learning outcomes of the CSP/CPSM undergraduate curriculum framework

If students are not to be confused by conflicting messages, it seems important that practice-based assessment procedures should clearly reflect the job description these learning outcomes represent. Moreover, as suggested above, now that physiotherapy is located within higher education, the issue of direct assessment of learning outcomes must be of particular importance. The Quality Assurance Agency demands that the two are clearly and inextricably linked, therefore any assessment measures must reflect the intended learning outcomes. For this set of behaviours to have content validity as a representation of competence in undergraduates, it would be expected that they would overlap significantly with the learning outcomes of the curriculum framework. Of 42 outcomes listed under the eight main headings, 29 overlapped with at least one behaviour identified by the Delphi panels. So, for example, curriculum outcome 2.4, 'evaluate work carried out by self against set objectives' is reflected in the super-ordinate Delphi attribute 'independent learning'.

To determine whether this degree of overlap was significant, the binomial test (SPSS) was applied to the following data:

Frequency		
Overlap	No overlap (x)	N
29	13	42

This tested the hypotheses:

H_1 There is a greater probability than not of overlap between the observable behaviours elicited from the Delphi panels and the learning outcomes identified in the CSP/CPSM curriculum framework.

H_0 There is no difference in the probability of overlap and the probability of no overlap between the observable behaviours elicited from the Delphi panels and the learning outcomes identified in the CSP/CPSM curriculum framework.

For N = 42 and x = 13 the one-tailed probability associated with the occurrence under H_0 was 0.01, indicating that the null hypothesis could be rejected. Therefore it can be concluded that this set of behaviours is a valid representation of competence as it is defined by the undergraduate curriculum framework.

Implications for Clinical Placement Assessment

In this third round of the Delphi study the informed opinions elicited from the panels of experienced practitioners and academics indicated difficulty in identifying observable, quantifiable behaviours indicative of all the desirable attributes they had identified in the second round. This suggests that clinical educators, some of whom may lack experience and sufficient training as educators, would probably be similarly perplexed. Likewise, assessment instruments based on conceptual attributes may be inherently unreliable if even academics practised in assessment, and experienced clinical practitioners are unsure what is meant by them.

Furthermore, behavioural guidelines linked to such conceptual attributes and intended to help assessors' judgements, may serve only to confuse the issue for assessors, when these are prepared at individual institution level. The 13 behaviours showing the most marked discrepancies in the percentage of academics and clinicians identifying them appear to indicate differing degrees of salience for each group. This may be related to familiarity/facility with the relevant activities. For example, the immediacy of clinical practicalities for clinicians could account for more of them describing 'restoring a safe environment' and 'organising workload' as evidence of safe and competent practice. Similarly,

academics' lack of regular patient contact might result in over-concern about 'maintaining appropriately close proximity to patients' (safe category). Greater familiarity/facility may enhance the perception that a behaviour is accessible to assessment on placement.

The salience of research is apparent in academics' choice of evidence for students' critical thinking. Although more clinicians mention 'analysing effects of treatment interventions' and 'predicting treatment outcomes', there is no overt indication that published research evidence is important in this. However, clinicians are in accord with academics in using students' ability to access databases to inform practice, as evidence of independent learning. This might suggest that students' research awareness is implicit in clinicians' judgement of clinical thinking. Similar numbers in each group also described 'organising time for reading and reflecting on practice' as evidence of independent learning, but compared with academics, more clinicians found students discussing knowledge accessible as a behaviour than students negotiating learning and self-assessment.

These findings confirm those of earlier studies that behaviours such as demonstrating research knowledge and awareness, negotiating learning and self-assessment are difficult for clinical educators to observe and hence assess in students on placement. That the academics in this study felt they were accessible might help in clarifying their role as visiting tutors in clinical placements. By encouraging students to demonstrate learning in these areas, visiting tutors might help students take research, negotiation and self-assessment for granted as integral parts of clinical practice.

If, as the clinical education review suggests, many more clinical placements in primary care will be taken on, maintaining students' focus on evidence-based practice could become a crucial task for the visiting tutor. However, to accept the view that clinical educators cannot assess these aspects of competence, for whatever reason, therefore depriving them of the chance to do so, could waste an opportunity to foster an evidence-based culture among particular groups of practitioners.

The curriculum framework emphas-ises the importance placed on fully integrating clinical education within the overall undergraduate programme (CSP/CPSM, 1996, page 16). It lays down eight key areas in which students' learning should develop in the clinical setting:

- Ability to adapt their clinical and social skills to different practice environments.
- Communication and teaching skills.
- Ability to make independent decisions.
- Ability to manage a caseload.
- Ability to keep accurate records.
- Ability to work as part of a team.
- Recognition of the role of other healthcare professionals.
- Recognition of the scope and limitations of their skills.

The significant degree of overlap between the observable behaviours identified and the learning outcomes of the curriculum framework suggests the behaviours have a good degree of content validity as a representation of competence in the context of physiotherapy under-graduate education. Those items in table 3 considered accessible by both clinicians *and* academics reflect the fitness-for-purpose of the eight areas of learning listed above and are encompassed by curriculum outcomes 1, 2, 3 and 4 in the appendix. As already discussed, some elements of outcomes 5 and 8 appear more accessible to academics than clinicians. With regard to continuing professional development (outcome 8) it is worth noting that only 2.1% of clinicians and no academics at all identified 'maintaining a professional portfolio' as a behaviour indicative of independent learning.

This appears to support earlier argument for the influence of familiarity/facility on choice of behaviours, since despite current quality monitoring initiatives in healthcare (DoH, 1998), which focus on professional development plans as an important tool in continuing professional development (CPD), creation of professional portfolios is a nettle yet to be grasped fully by physiotherapy clinicians and academics as a whole (*Physiotherapy Frontline*, 1999). Outcomes 6 and 7, which place physio-therapy within a wider context of health and social policy related to fitness for

practice in the long term, are not overtly addressed by the observable behaviours arising from the study. However, given the limited opportunity for real-life exposure of undergraduates to many of the issues involved, they seem to be best assessed outside the clinical environment using more appropriate methods.

Conclusions

'When explicit statements of required outcomes are made publicly available, as the basis for assessment decisions, much more effort needs to go in to creating the staff consensus on which the justice of those decisions depends, if the assessment procedure is to survive its exposure to public scrutiny as well as by quality auditors' (Winter, 1994, page 250).

The combined results of three rounds of the Delphi study have been useful in identifying areas of consensus related to clinical assessment of physiotherapy undergraduates. In addition they have gone some way towards clarifying the roles and domains of clinicians and academics in relation to the curriculum outcomes and clinical placement assessment. On the basis of information derived from this final round, further studies in the series use factor analysis as a step towards development of a prototype assessment instrument, that is self-explanatory and could have cross-institutional appeal. Its further development could help to enhance the quality of clinical education outcomes by maximising validity and reliability of undergraduate clinical performance measures.

The references and key messages for this and the next article are combined at the end of the second paper.