Title:
The Clinical Utility of Functional Capacity Evaluations: the opinion of Health Professionals working within Occupational Rehabilitation.

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ABSTRACT:

Functional Capacity Evaluations (FCE’s) are used within the occupational rehabilitation arena with the aim of assessing an individual’s functional abilities in relation to work tasks. Therapists use a variety of different FCE’s, both standardized and non-standardized. This study aimed to investigate therapists’ views on the clinical utility of FCE’s in general and to identify if these differed between professional groups.

A cross-sectional study design was used. Health professionals who conduct FCE’s and who worked for WorkCover accredited rehabilitation providers in NSW were surveyed.

Surveys were returned from 79 participants working for 65 different rehabilitation providers. Of those who replied, 82% (n=63) were occupational therapists, 13% (n=10) physiotherapists and 5% (n=5) exercise physiologists. The mean years of professional experience was 10.9 years and the mean years of FCE experience was 5.3 years.

Data were analyzed using STATA [v8.0] and the clinical utility of FCE’s was considered relating to: usefulness & relevance; adaptability and flexibility; therapist perceived requirements and issues in practice. No differences were
found related to the clinical utility of FCE's between professional groups or years of professional experience. The results suggest consistency and similarities in how FCE's are currently used in practice across NSW (Australia). Limitations of this study and areas for further research are suggested.

**KEY WORDS:** Functional Capacity Evaluation, Clinical Utility, Occupational Rehabilitation.
Introduction and Literature Review.

Functional Capacity Evaluations (FCE's) are an integral part of work injury prevention and occupational rehabilitation. FCE's are designed to define the functional abilities and limitations of an individual in the context of safe, productive work tasks(19). The overall aim of conducting assessments, including FCE's, in occupational rehabilitation is to ensure that the worker's capacity and abilities match those of the job, and the work environment. FCE's are commonly used with individuals who have suffered work related injuries, particularly musculo-skeletal injuries.

Therapists working in occupational rehabilitation use a variety of FCE's. Some are standardized and commercially available. Others have been developed by specific clinics or therapists related to local needs and are therefore non-standardized. These FCE's are often specific to certain work environments or situations. All FCE's attempt to measure functional performance objectively. There is, however, a shortage of research confirming the reliability and validity of assessments to evaluate the rehabilitation
needs of workers and the assessment of their work capacity (5, 9, 14, 15, 19). However, applicable research for some of the commercially available assessment tools is beginning to appear in the literature (4, 21, 23, 24, 29). This research is an important contribution to evidence based practice for therapists using FCE’s.

Ensuring client safety when conducting FCE’s has been identified as a critical issue for consideration (8, 16). Innes and Straker (16) suggest that therapists using FCE’s would undertake a decision making process, that considers safety first, then determines the constructs of dependability (quantitative attributes and the concept of reliability) and utility (qualitative attributes and the concept of validity) demonstrated by the FCE used.

Clinical utility reflects the degree of conviction therapists have about the usefulness of an assessment (30). Clinical utility confirms that the tool is related to the purpose for which it is used (1). Table 1 outlines the important features that relate to the clinical utility of a tool.

*Insert Table 1 here.*
Clinical utility can be considered at an instrument level, at an organizational level and at an individual level (31). Psychometric properties and usage issues of the specific tool are investigated when examining the instrument (20). At an organizational level, clinical utility relates to the application of the instrument to health policy, procedures or processes and issues relating to employees. At an individual level clinical utility relates to the usefulness, purpose and the provision of relevant information about a worker being assessed, and what this information is being used for (31).

The clinical utility of an assessment tool provides important information about the usefulness of the tool and the ease with which a therapist can conduct the assessment. Qualitative studies have investigated the clinical utility of specific assessment tools by interviewing users of the assessment tools (1,30). Other qualitative studies have explored how assessments are perceived more generally (16,17,31).

This study explored the clinical utility of FCE’s using a questionnaire distributed to health professionals that investigated their attitudes, practices and perceptions
about their use of FCE’s. The study addressed the research question:
What are therapists’ views on the clinical utility of FCE’s and do these perceptions differ between professional groups?

Method

A cross sectional study design was used. Following ethics approval, a pilot survey was developed based on findings from an earlier qualitative study (18) that investigated the attitudes and practices of health professionals in relation to FCE usage. The pilot survey also included some qualitative questions relating to the format and structure of the questionnaire. Twelve health professionals completed the pilot survey. Data analysis of the pilot survey resulted in the removal of some items to improve the internal reliability of the survey subscales(13). The final survey consisted of 60 items divided into six sections: Demographic data; Type of FCE used; FCE choice; FCE usage; Perceived consequences of using an FCE and Perceptions of FCE’s. Some items sought categorical responses related to the background of the health professional and the type of FCE used. Other items
elicited ordinal responses using Likert scales relating to the subscales of FCE choice, FCE usage, perceived consequences of conducting FCE's and perceptions of FCE's. A direct estimation method of a 5, 6 or 7 point Likert scale was used for each sub-scale to measure rater attitudes to a series of statements relating to the use of FCE's (22).

The final survey was mailed to all 219 WorkCover accredited rehabilitation providers in NSW. Accredited rehabilitation providers are organisations accredited by WorkCover (NSW) to offer specialist services to help injured workers to return to work. Rehabilitation providers employ different health professionals to assess the needs of the injured worker and the workplace requirements. Rehabilitation plans are then developed to assist the injured worker to return to work (32). The Managers of each rehabilitation provider were asked to distribute information about participating in the study to any health professionals who conducted FCE's. Only those health professionals who conducted FCE's were included in the study.

Data analysis
Surveys were coded and data entered into STATA [v8.0] (27) for descriptive analysis. Cronbach's alpha was used to measure the internal consistency of the scales and to evaluate the homogeneity of the items for each subscale identified in the survey. A Cronbach's alpha of between .70 and .90 was considered to indicate sufficient internal consistency and indicates the items within the scale are measuring the same construct (3,22). Analysis of variance (ANOVA) was used to determine any differences between the professional groups on continuous scores from scale items.

**Results**

**Participants**

Surveys were returned from 79 participants working for 65 different rehabilitation providers; a response rate of 29.7% from the 219 rehabilitation providers invited to participate. Of those who replied, 82% (n=63) were occupational therapists, 13% (n=10) physiotherapists and 5% (n=5) exercise physiologists. This response is generally representative of the ratio of the different professionals working for rehabilitation providers in NSW. The mean
number of years of professional experience was 10.9 years (range: 1yr-29yrs).
The mean number of years of FCE experience was 5.3 years (range: 1yr-16yrs).
The results are presented for the four subscales included in the survey instrument: usefulness and relevance; adaptability and flexibility; therapist perceived requirements and issues in practice.

Usefulness and relevance of FCE’s.
Participants indicated that they obtained relevant and useful clinical information from the FCE used in their workplace and used results to i). predict return to work and pre-injury duties, ii). define functional abilities and limitations, iii). differentiate between manual and sedentary work, iv). help improve the outcomes of retraining, and v). improve the understanding of the case manager about further rehabilitation needs. The Items for this scale were correlated with each other with an internal consistency of 0.82 (Cronbach’s alpha).

Participants rated all items related to the usefulness and relevance of FCE’s as important (see Figure 1).
The mean value for the ratings about the usefulness and relevance subscale was 5.04 (95% CI: 4.86-5.23) out of a maximum score of six (most important) for all professionals. Physiotherapists had a slightly higher mean of 5.38 (95% CI: 5.017-5.75), Occupational Therapists a mean of 5.0, (95% CI: 4.78-5.2) and Exercise Physiologists a mean of 4.94, (95% CI: 3.64-6.23). No significant difference was detected between groups (p=1.17).

**Adaptability and Flexibility of FCE’s**

The adaptability and flexibility subscale included items that investigated the clinical utility issues of adapting FCE’s and the flexibility of FCE’s in practice. Participants indicated the adaptability and flexibility of FCE’s was important across all items. Respondents indicated that they adapted FCE’s to suit differences in job requirements, injuries or as a result of information provided in medical reports. The perceived importance of the flexibility of FCE’s and the characteristics of the assessment tasks within FCE’s was also considered important. These results are presented in Figure 2. Items were correlated with each
other indicating adequate internal consistency (Cronbach’s alpha = 0.7).

Insert Figure 2 here.

The overall mean value for the adaptability and flexibility subscale was 4.47 (95% CI 4.22-4.71), out of a maximum of six (most important). Physiotherapists reported a mean of 4.56 (95% CI: 3.93-5.19), Occupational therapists a mean of 4.45 (95% CI: 4.17-4.72) and Exercise Physiologists a mean of 4.5 (95% CI: 2.9-6.09). No significant differences were detected between groups (p=0.892) on the overall adaptability and flexibility scale.

**Therapist perceived requirements**

This group of items included requirements for therapists to be able to use FCE’s effectively in practice. The most important items were reported as having an adequate knowledge of anatomy and biomechanics, being highly skilled, competent and having further training in the use of FCE assessment tools. Accreditation and a personal knowledge of research literature were rated less important on this subscale. Items on this subscale were correlated
Figure 3 outlines the mean scores given by participants for each of the items relating to therapist perceived requirements to administer FCE’s.

The mean value for the therapist perceived requirements scale was 5.32 (95% CI: 5.07-5.57) out of a maximum of six (most important). Physiotherapists reported a mean of 5.61 (95% CI: 4.93-6.3), Occupational therapists a mean of 5.29 (95% CI: 5.09-5.48) and Exercise Physiologists a mean of 5.2 (95% CI: 4.23-6.19). No significant difference between groups was detected (p=0.258).

**Issues in Practice**

Issues related to using FCE’s in practice were presented individually in the survey (not in a scale) with issues of availability of the FCE at the workplace rating most importantly. The length of the assessment and the cost were rated less importantly. Figure 4 outlines the mean scores for the different professional groups and as an overall mean for each item.
Discussion

This study was conducted in an attempt to understand the overall clinical utility of FCE’s and to determine if professional background or level of experience was associated with variations in perceptions. Differences were anticipated between professional groups because of the diversity of undergraduate theoretical approaches to each professional role. However, the survey results did not confirm this expectation. All professional groups indicated a tendency to adapt FCE’s based on a clients’ job and injuries and as a result of information provided in medical reports, rather than adhering consciously to professionally defined models of practice. This is suggestive that participants applied pragmatic clinical reasoning when using FCE’s. Pragmatic clinical reasoning is defined by Hagedorn (12) as ‘the evaluation of whether an action is feasible, and whether the context and resources in a given situation facilitate an intervention or make it inadvisable….also takes account of a therapist’s knowledge, skill, and interests and wider organizational, sociocultural and political considerations’. Flexibility of
FCE’s was also identified as important for all the professionals groups surveyed. These factors impact upon the reliability and validity of an assessment tool, however in this study, it can be suggested that therapists are adapting FCE’s in practice despite the risks to the reliability and validity of the findings.

**Usefulness and relevance of FCE’s.**

Ratings about the usefulness of FCE's in the management of clients were uniform across all respondents. This suggested some consistency about how FCE's are currently being used in practice. Clarification of clients' abilities and limitations was rated as the most important feature of FCE’s in providing information that clarifies client function. FCE usage to predict client ability for manual vs sedentary work, for return to work or for return to work completing pre-injury duties was also rated highly. Although studies examining the predictive benefits of FCE’s are scarce and inconclusive, therapists believe that FCE's assist with predicting a client’s management (10,11). Therapists indicated the FCE also assists case managers (representing professional diversity and varied backgrounds) to have improved understanding of the need
for continued rehabilitation involvement, to maximize the potential of successful rehabilitation outcomes.

The study results regarding the usefulness of FCE's are consistent with Wind et al (31) who found ‘return to work’ case managers also perceived FCE's to be useful in the management of clients. Interestingly in his study the claims experts, who worked for the insurers, did not view FCE's to be as useful (31). Wind speculates this could be attributed to the difference in organizational context between the two groups (insurers and rehabilitation case managers). In contrast, this study surveyed health professionals working within rehabilitation provider organizations, and they also indicated an FCE was useful for case managers. In the rehabilitation provider context, a case manager would usually have a health related background and therefore it can be speculated that they would have a more comprehensive understanding of the purpose of an FCE and the information it can provide.

Further study to investigate the usefulness of FCE’s for claims experts (who may not come from a health background) within the Australian context is needed for additional comparison and to explore their influence on rehabilitation outcomes. Despite the fact that FCE’s were
viewed as useful by health professionals, further evidence for the reliability and validity of specific FCE tools is needed to support this perception.

Adaptability and flexibility of FCE’s

Participants agreed that it was highly likely that an FCE would be adapted according to a client’s injury type or job. Flexibility within the assessment and the characteristics of the FCE itself were identified as important components of clinical utility. However, this approach can threaten the standardized application of assessment tools. In this study, the importance of a tool being standardized was rated less importantly than its flexibility. This suggests therapists’ value the ability to adapt an FCE more than the standardized properties of the tool. The reliability and validity of the assessment tool may be compromised in practice if therapists adapt FCE’s to suit individual clients.

Several authors (16,19) discuss the issue of generic versus specialist (or job specific) FCE testing, and the ability to alter the test depending upon the needs of the client, work and situation. Innes and Straker (16) found that FCE’s conducted for those with no job were more
generic and the most quantitative, whereas work assessments for someone returning to a job were the most specific and qualitative. They concluded that FCE's for specific jobs consisted of a balance between the two. Strong et al (28) suggested a continuum of assessment protocol from a fixed protocol through to a flexible protocol based on clinical reasoning. They defined flexible protocol delivery as one where the therapist plans an individualized assessment based on referrer needs and client injury and defined a fixed protocol as one that requires low clinical understanding and is directed by tools and technology. In this study, FCE's were considered and no distinction was made between FCE's for those clients with a job or without a job. However, the finding that adapting the FCE in accordance with the clients' injury and job were rated as highly important, indicates agreement with previous studies on this issue (16,17,19). This is consistent with the flexible protocol delivery continuum suggested by Strong et al (28).

The characteristics of the FCE itself, was another aspect that was rated as highly important. King et al (19) suggested there is not one appropriate test for any one client or assessment situation and that the evaluator needs
to select the most appropriate for any given situation. The variety of tasks that are assessed within the FCE, the ability to adapt these to suit the individual and the flexibility within the assessment to alter procedures and processes are all characteristics that could be considered important.

**Therapist perceived requirements**

Therapists strongly agreed that further training to conduct FCE’s was necessary; however, the importance of accreditation was rated as less important. This suggests that FCE’s are perceived as a specialized area of practice that requires therapists to undertake specific training. This is the case with some standardized FCE’s that require therapists to undergo training, obtain accreditation and in some instances have ongoing requirements to maintain accreditation. Low scores were given for the item ‘undergraduate education provided me with adequate skills to perform the FCE’ suggesting that therapists felt their undergraduate education did not provide adequate skills in this area. This concurs with the requirement for postgraduate training and accreditation in the use of specific FCE tools. Furthermore, WorkCover (NSW)
recognises minimum qualifications of professionals to conduct FCE's. For occupational therapists or physiotherapists, this is a minimum of 3 months occupational rehabilitation experience. Other health professionals are required to undergo an assessment process to be eligible to conduct FCE's under the WorkCover (NSW) system (32).

Therapists identified that they needed to be highly competent, highly skilled and have an adequate knowledge of anatomy and biomechanics in relation to FCE's. This relates to the FCE being viewed as a specialized area of practice. Personal knowledge of published literature was identified as only moderately important, notwithstanding the current imperatives of evidence based practice. Professionals are constantly being encouraged, by the health professions as a whole and by those paying for services, to use evidence based practice when treating or working with clients. Evidence based practice is considered to be the integration of clinical expertise and external clinical evidence (research) when making decisions regarding the care and treatment of individual clients (20).
If there is limited external clinical evidence (research) relating to a particular service then health professionals will rely predominantly on their clinical expertise when making decisions (20). Strong et al (28) found assessors of FCE’s, in their Canadian study ranged from consumers of research and evidence based practice to those basing their decisions on historical practices. FCE research is only just beginning to become available for some of the commercially available assessment tools and as such it is important for therapists to be reviewing and updating their knowledge to assist in providing the best possible, evidence based care for clients. Despite this, health professionals, in this study, did not rate this as being an important aspect. Further research could explore the use of evidence and FCE’s.

**Issues in practice**

The important issue identified by therapists conducting FCE’s, was the availability of specific FCE’s at the workplace. Availability of resources and opportunities was also identified by Strong et al (28) as an issue affecting assessor practice. Economic reasons may inhibit providers having a variety of assessments for therapists to choose
as a result of the cost of purchase of the assessment tool, and any additional costs of training and accreditation for each therapist. Most therapists used only one FCE tool in previous research conducted in NSW, Australia(2). Other less highly rated aspects identified by therapists were the effort required to conduct the FCE, the cost, and the time it took to complete the assessment. In practice, FCE’s are charged to insurers and employers based on the time taken to complete, and costs are discussed and approved by the referrer prior to the service being provided. This was not rated as an important part of the FCE process for therapists. Relationship to the client was not rated as important, despite this being raised as a consideration in previous research (28). The potential to hurt a client was rated as more important by the exercise physiologists than the physiotherapists or occupational therapists. This may be related to the exercise physiologists having less experience, knowledge and skills in regards to injury and health due to differences in undergraduate education.

Conclusion
This study looked at the perceptions of Health Professionals, who conduct FCE’s and who worked for
WorkCover accredited rehabilitation providers in NSW, about the clinical utility of FCE’s. The study did not identify any differences in opinion related to the clinical utility of FCE’s between professional groups or experience. Rather, results suggest a level of consistency in how FCE’s are currently being used in practice across NSW (Australia) and with attitudes towards their clinical utility.

Therapists reported the FCE assisted in predicting RTW and manual versus sedentary duties despite limited research on the predictive validity being available. Therapists valued the flexibility of FCE’s and chose to adapt them to suit the client, injury type and job, rather than use standardized measures, as has been found in previous studies. Therapists felt FCE practice was a specialist area of practice and training was needed to be able to conduct these assessments.

Personal knowledge of published literature was only rated as moderately important suggesting therapists are basing decisions on historical information and practices rather than evidence based practice and current research. Limitations of this research include a small sample and the sample being from one state within Australia – results
cannot therefore be generalised beyond this group.
Additional follow up with rehabilitation providers may have
assisted to increase the response rate of this survey.
Further research could explore the issue of use of
evidence with FCE's and to provide further evidence of the
reliability and validity of the tools in use.

Acknowledgements
The authors would like to thank all therapists who gave
their time to participate in this study.

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<table>
<thead>
<tr>
<th>Features related to clinical utility</th>
<th>The evaluation provides accurate and correct information about the client’s functional ability (26).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensiveness</td>
<td>The evaluation covers a wide range of aspects of function.</td>
</tr>
<tr>
<td>Credibility</td>
<td>Therapists using the evaluation require professional skills, knowledge, background and experience (16).</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Flexibility of the instrument (30).</td>
</tr>
<tr>
<td>Practicality</td>
<td>Ease of administration and interpretation of the assessment. Related to the direct and indirect costs of the evaluation procedure (6,25).</td>
</tr>
<tr>
<td>Relevance</td>
<td>The evaluation is relevant to the client and the assessment situation (16).</td>
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<tr>
<td>Usefulness</td>
<td>The test procedure must meet the needs of the client, referrer and payer (16).</td>
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<tr>
<td>Suitability</td>
<td>The evaluation meets its intended purpose (6).</td>
</tr>
<tr>
<td>Feasibility</td>
<td>Potential to complete the evaluation and for information provided to be implemented with the client and/or the workplace (17,26).</td>
</tr>
<tr>
<td>Value</td>
<td>Providing valuable information to the</td>
</tr>
<tr>
<td>Adaptability</td>
<td>The assessment is adaptable to various disability types and situations (7).</td>
</tr>
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**Figure 1 - Usefulness and Relevance of FCE's (N=77).**

<table>
<thead>
<tr>
<th></th>
<th>PT (n=10)</th>
<th>OT (n=63)</th>
<th>ExPh (n=4)</th>
<th>Mean</th>
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<td>Predicts ND's</td>
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<td>(SD=0.97)</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4.1</td>
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<td>Success of RTW improved</td>
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<tr>
<td>(SD=0.94)</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4.3</td>
</tr>
<tr>
<td>Client retraining improved</td>
<td><img src="image" alt="Bar" /></td>
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<tr>
<td>(SD=1.07)</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4.4</td>
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<tr>
<td>Predicts RTW to preinjury duties</td>
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<td>(SD=0.65)</td>
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<td>Clarifies abilities and limitations</td>
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<td>(SD=0.76)</td>
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<tr>
<td>Predicts Man vs Sed work</td>
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<tr>
<td>(SD=0.76)</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4.4</td>
</tr>
<tr>
<td>Improved understanding of CM</td>
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<tr>
<td>(SD=0.62)</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>4.2</td>
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**Key for figure:**

- ND = Normal duties
- RTW = Return to Work
- Man = Manual
- Sed = Sedentary
- CM = Case Manager
Figure 2: Adaptability and Flexibility of FCE's (N=77)
Figure 3: Therapist perceived requirements to administer FCE’s (N=77)

- Research Literature (SD=1.03)
- Accreditation (SD=0.84)
- Skilled (SD=1.09)
- Knowledge of anatomy & biomechanics (SD=1.02)
- Competent (SD=1.01)
- Further training (SD=1.45)

1=unlikely/unimportant & 7=extremely likely/important
Figure 4: Issues in practice administering FCE's (N=77)