

Experts Opinion on the Use of Normative Data for Functional Capacity Evaluation in Occupational and Rehabilitation Medicine and Disability Claims

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Abstract *Purpose* Application of normative values for functional capacity evaluation (FCE) is controversial for the assessment of clients for work ability. The objective of this study was to study when clinicians and researchers consider normative values of FCE useful or of no use for their purposes. *Methods* A focus group meeting was organized among 43 FCE experts working in insurance, occupational and/or rehabilitation medicine from eight countries during the first international FCE research meeting on October 25th, 2012 in the Netherlands. Participants were asked to rate to which degree they agree or disagree with a statement concerning their position toward normative values for FCE on a 10 cm VAS ranging from 0 (completely disagree) to 100 (completely agree) at T0 and T1. Arguments for aspects that are useful and of no use for normative values were systematically collected during the meeting and afterwards independently clustered by two researchers in higher order topics. *Results* Baseline opinion

of participants on their position toward normative values was 49 ± 29 points. After the meeting, mean VAS was 55 ± 23 ($p = 0.07$), indicating that participants did not significantly change their opinion toward normative values. Based on arguments provided by the experts, seven higher order topics were constructed namely ‘Comparison with job demands or treatment goals’; ‘Comparison with co-workers physical ability’; ‘Sincerity of effort’; ‘Validity for work ability and return to work’; ‘Experience of referrer with assessment method’; ‘Clinimetrics compared to alternative assessment methods or reference values’; and ‘Ease of use for clinician and stakeholders’. *Conclusions* Although experts state useful aspects for the use of normative values of FCE for these assessments, it may also lead to over-interpretation of results, leading to dualistic statements concerning work ability, with potential harmful consequences for work ability of patients.

Keywords Congresses · Work capacity evaluation · Focus group

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Introduction

In recent years, research on functional capacity evaluation (FCE) has evolved, proving reliable protocols [1–4] and confirming aspects of validity [4–6]. Additionally, FCE contributes moderately in predicting future sick leave while adding significant information on work ability [7–11]. Its use is advocated within a biopsychosocial environment, although it is unknown how exactly functional capacity scores should be interpreted for return to work decisions, work ability measurements or physical diagnostic purposes within complex health conditions such as non-specific pain syndromes.

The use of FCEs remains controversial among work evaluation professionals in the fields of occupational, and rehabilitation medicine, and disability claim procedures. For instance in the Netherlands, different studies show that physicians and return to work experts rate that performing FCE has additional value in the assessment of work ability and prognosis of future work participation [12, 13]. However when it comes to disability claim experts, utility of FCE was rated a mean of 4.8 on a 0–10 scale with large variations toward both ends of the scale [14]. European insurance physicians rewarded the additional value of FCE at best moderate [12, 14]. In contrast, in rehabilitation medicine, FCE can be considered a part of the medical protocol, for instance in patients with chronic low back pain, whiplash-associated disorders or osteoarthritis [15–18]. In the United States and Australia, FCEs appear more frequently in the context of medical legal cases and disability claims. The use of FCE varies substantially between countries and validity has been studied on aspects within the different medical fields.

One of the controversies of FCE lies within the application of normative values (NVs) for FCE. The idea is that comparing a client's work ability to a healthy working norm population with proven sustained employability during the past year may lead to more evidence-based decision making for clinicians. If the norm of healthy workers is known, then this norm may serve as a minimal level of functional capacity required to be confident that a patient may have sufficient work ability. However, it may also conflict with a professional interpretation concerning work ability of a client [19]. Additionally, from this point of view, the context in which NVs are being applied may be of importance. In a rehabilitation setting, where FCE is used to guide return to work and to set rehabilitation goals, the use of NVs may be less threatening than when financial decisions are based on FCE results [20]. Up to now, it is insufficiently clear when and how NVs should be applied. The opinion of experts concerning the use of NVs is of relevance, because it is this group who performs, interprets and develops FCE. More insight on the opinion of experts may improve the usefulness of NVs for FCE and identify new research areas.

The goal of this study was to gain the opinion of international experts in the field of occupational health, both researchers and clinicians, concerning the application of NVs for FCE in the context of insurance (medico legal) procedures, occupational and rehabilitation medicine. This study was performed to answer the question: "What aspects are useful and of no use for normative values for FCE in the opinion of FCE experts in the contexts of disability claim procedures, occupational, and rehabilitation medicine?"

Methods

Experts

A focus group was organized with 43 experts from eight countries (Australia, Canada, Germany, the Netherlands, South Africa, Switzerland, UK and USA) during the first international FCE research meeting on October 25th, 2012 in Haren, the Netherlands. Participants were FCE clinicians, researchers or both in the field of occupational medicine, rehabilitation medicine or the insurance industry, including physiotherapists, occupational therapists, medical doctors, psychologists, masters of science and PhDs in health sciences, human movement sciences or sports sciences. All participants were considered and included as experts. Participant characteristics are listed in Table 1.

Procedure

During a 1-hour focus group meeting, experts were firstly introduced to the purpose of NVs. Prior to (T0) and immediately after the focus group (T1), all participants were asked to rate their overall position toward the use of NVs. The statement made was: "Without normative values for FCE, clinical decisions concerning work ability of a client are not evidence-based". Participants were asked to rate the degree to which they agree or disagree with that statement on a 10 cm visual analogue scale (VAS) ranging from 0 (completely disagree) to 100 (completely agree) (see "Appendix 1"). During the meeting, qualitative data were gathered concerning when and why NVs were considered useful or of no use. All participants were divided into subgroups of three persons and were randomly assigned to either the context of disability claim

Table 1 Participant characteristics ($n = 43$)

Characteristic	Mean	SD
Age (years)	43	10.2
Gender (number) (M:F)	20:23	
	Median	IQR
Number of years using FCE in clinical decision making	2.0	1–12
Number of patients in which FCE was used for clinical decisions	20	0–200
Experience in doing research on FCE (years) ^a	0	0–4

Clinicians scored this item as 0

IQR inter quartile range

^a Experience was the median of the whole group

procedures, occupational medicine or rehabilitation medicine. All arguments in favor of the application of NVs or against it were listed on a piece of paper by each group. After 25 min, a plenary round followed that gathered all new arguments for each of the contexts. During this plenary, subgroups could add new arguments to their list. At the end of the sessions, the papers of all groups were collected.

Analyses

A dependent *t* test was used to study if participants had changed their opinion during the meeting in which T0 VAS was compared to T1 VAS. Qualitative analyses were used to list all aspects that are useful and of no use for the application of NVs for FCE, dependent on their context. First, two researchers coded the written comments of the experts into higher order topics independently (RS, PK). Then, the higher order topics of the two researchers were compared and combined where possible. Finally, in a mutual discussion between authors, the topics were discussed, until consensus was reached about the final content of the topics.

Results

Relevance of NVs for FCE in Clinical Decisions

Baseline opinion of all participants toward the statement followed a normal distribution with mean VAS score of $49 \pm SD 29$ (min 0, max 85). At T1, mean VAS was $55 \pm SD 23$ (min 0, max 100) indicating a small and non-significant shift toward a more useful standing position toward NVs in FCE ($t = 1.76$; $p = 0.09$).

Qualitative Analyses

Seven higher order topics were formulated. The topics were ‘Comparison with job demands or treatment goals’; ‘Comparison with co-workers physical ability’; ‘Sincerity of effort’; ‘Validity for work ability and return to work’; ‘Experience of referrer with assessment method’; ‘Clinimetrics quality compared to alternative assessment methods or reference values’; and ‘Ease of use for clinician and stakeholders’. The arguments for these higher order topics were rated as either useful or of no use for the contexts of rehabilitation, insurance and occupational medicine.

1. Comparison with job demands or treatment goals

Experts rated NVs for FCE useful in all contexts for comparing work ability to job demands or treatment goals. NVs were stated as being useful, because “if minimal

required functional capacity was addressed in NVs of healthy workers, then it may help you to standardize your advice or conclusion based on available data”. It was stated that “if no other references concerning job demands are available, FCE is of no use without NVs”.

NVs were rated of no use where a client’s specific and validated job demands are available. Others listed aspects that are of no use when workers are not required to make a full physical effort at work. Specifically for rehabilitation purposes, setting realistic treatment goals was mentioned as a useful aspect of NVs. NVs could then serve as a minimum required capacity score for work ability. Specifically for occupational medicine, it was recommended to construct specific NVs.

2. Comparison with co-workers’ physical ability

Experts mentioned that NVs may assist in detection if the client is performing consistently and provides good sincerity of effort. It was stated that to validate effort, tests which are unrelated to the injury could act as a comparison concerning whether the client is performing sincerely. Another group wrote that “NVs can be used to determine if a patient performs consistently”. NVs were mentioned as being useful for clients on sick leave to determine what the possible cause of sick leave is. If performing sufficiently on functional capacity, the cause of sick leave will probably not be the client’s physical work ability. Specifically for rehabilitation purposes, comparing FCE results to NVs may work as a motivator. If a patient scores higher than the lowest NV that is sufficient to perform work, then this may lead to higher self-efficacy and better therapy outcome.

NVs were stated as being of no use if clients are not required to perform at 100 % for good work ability. It was stated that NVs would be more reliable if NVs were developed that were stratified by age and gender. If the norm for specific target groups was available, better comparisons could be made.

3. Sincerity of effort

Within the occupational and medical legal field, it was stated that sincerity of effort could be assessed if functional capacity results that did not involve the injured body region of a client could be compared to NVs. In this way, the physician could compare whether the reported work limitation of the client during client’s report is in line with the client’s performance on a FCE.

Within the rehabilitation context, NVs were seen as of not being useful for determining sincerity of effort, since performing less than the norm could strengthen illness behavior and force a person into a sick role. In all three contexts it was stated that if functional capacity results were interpreted purely physically, and not taking other relevant biopsychosocial factors of the client into account,

NVs were seen as being of no use in determining sincerity of effort.

4. Validity for work ability and return to work

It was stated that interpretation of functional capacity compared to NVs was useful and should be part of a biopsychosocial assessment in which all relevant factors including psychological characteristics, work conditions and environment should be incorporated. There appeared to be clear interpretation differences in the use of NVs for three contexts. Within rehabilitation, experts tended to use FCE related to NVs as a diagnostic performance measure and as a starting point and goal setting for rehabilitation, whereas in disability claim procedures and occupational medicine, interpretation was considered as a part of (future) work ability.

It was stated that within a biopsychosocial determination for work ability, a pure physical determination was of no use.

5. Experience of referrer with assessment method

This point was only addressed in the occupational medicine section. It was stated that many physicians are unfamiliar with FCE while they should be familiar with it in order to make accurate decisions regarding work-related outcomes.

6. Clinimetric quality compared to alternative assessment methods or reference values

It was stated frequently that FCE was, more or less, the best available assessment tool for work ability. Valid clinical guidelines were mentioned as being lacking in work ability assessment and the use of only self-report questionnaires or expert-based opinions were not considered as better alternatives. NVs were stated as being a useful addition in these cases. One group stated that “There are no other references and no other alternatives with proven reliability and validity” and “There is much more transparency compared to other methods”.

NVs were stated as being of no use when “job demands are available”.

7. Ease of use for clinician and stakeholders

In the rehabilitation context, it was stated that the use of NVs for FCE could both serve as a motivator for treatment, for instance if the patient’s performance compared to the NV turned out to be better than expected as well as a demotivator, in which patients could be ‘forced into a sick role’, or “strengthen illness behavior” when patients score below the norm. If return to work is not possible, NVs could be used to enhance reintegration or modification of the work assignment of the patient. In the insurance group, interpretation of outcome was stated as being useful:

“When physical work ability is not the only relevant aspect, but when it is a part of multidisciplinary screening where all the outcomes go in the right direction, you can support your decision or advice.”

The danger of over-interpretation was stated by groups mentioning that NVs were of no use when “Data are interpreted absolutely, without considering other personal variables” or when it is assumed that “Work is purely biomechanical”. It was recommended to establish gender and age specific NVs and patient NVs to improve the use for clinicians.

Discussion

The objective of this study was to increase insight into aspects that are useful and of no use for the application of NVs for FCE. Based on the arguments provided by experts, seven higher order topics were constructed in which FCE was rated as being useful or of no use. These topics concerned ‘Comparison with job demands or treatment goals’; ‘Comparison with co-worker’s physical ability’; ‘Sincerity of effort’; ‘Validity for work ability and return to work’; ‘Experience of referrer with assessment method’; ‘Clinimetrics compared to alternative assessment methods or reference values’; and ‘Ease of use for clinician and stakeholders’. The arguments provided by experts for aspects that are useful or of no use tend to be different between different contexts. It appeared that NVs can be used for different purposes and groups. Within the rehabilitation context in the Netherlands, NVs for FCE are more used for functional diagnostic purposes (“what is a patient’s current functional status?”) and as a start for rehabilitation and goal setting, which has little consequences for a work disability pension. These differences in purpose may lead to differences in outcome [20]. Swiss, Dutch and Canadian patients were tested with a similar purpose (return to work readiness), but within a different context (disability determination, rehabilitation and workers’ compensation claim respectively) [20]. Swiss and Canadian patients demonstrated remarkable lower lifting capacity, and financial consequences was one of the differences between the cohorts. The context in which FCE is performed may therefore be of importance and may bias results if a comparison with NVs is performed to make statements concerning work ability. These arguments were considered as being aspects that are of no use. The influence of financial consequences on FCE performance should be a further topic of study.

For the quantitative results, experts considered that the additional value of NVs between 0 and 100 % on the VAS scale contribute to evidence-based recommendations of work ability, and they did not change their opinions

significantly after the focus group meeting. This may imply that most experts were able to rate aspects that are both useful and of no use for NVs. Many stated that it was ‘the best we have’. Tests from FCE can explain about 15 % of the variance for a successful return to work, but at the moment there are no instruments available that can predict more [8, 9]. From a biopsychosocial perspective it was stated that “the construct of ‘work ability’ is widely regarded as multidimensional. Whether a patient successfully returns to work or not, depends on more than functional capacity by itself. It is critical to understand that an instrument measuring a single dimension cannot be expected to assess a multidimensional construct. It is, therefore, by definition incorrect to suggest or to claim that the results of an FCE should be able to predict a person’s work ability or—even more complex—a successful return to work. At best, one may expect an FCE to measure an individual’s immediate functional ability to perform work-related activities. This should be seen as one of the prerequisites for a successful return to work [21].” This perspective appears widely distributed and recognized among experts included in this focus group and experts did not tend to change their opinion after the discussion. Most likely because when all aspects that are useful and of no use were mentioned, many other aspects remained for consideration.

Strengths and Limitations

A strength of this study was the great number of participating international experts involving researchers, practitioners and stakeholders, which led to a broad field of experts with large patient and research experience. Additionally, most parts of the world were represented, which led to a broad range of arguments on all included health care systems. Limitations of this study might include an open focus group, which had a pragmatic structure. All participants who attended the research meeting were included. Because the meeting was attended by experienced and by novice researchers and clinicians, the results reflect a wide range of research and clinical expertise. The focus group leaders (PK, RS) did not continue data gathering from the experts until data saturation was reached, but were forced to stop due to time constraints. Additionally, it may be questioned whether some of the experts fully comprehended the topic of NV and its work-related application. In this application the scores are criterion-referenced (the reference being the workload or the functional capacity of peers with similar workloads), which is in contrast to many other applications, where scores are population-referenced. By definition, when the workload is the criterion reference, stratifying NVs into age and gender groups is theoretically incorrect. For example, when the

criterion is the workload of a bricklayer, then the evaluatee is asked to defy the workload of a bricklayer, regardless of age and gender. Moreover, separating into age and gender may even be considered questionable in the context of anti-discrimination laws.

We can conclude that, although experts state useful aspects for the use of normative values of FCE for these assessments, it may also lead to over-interpretation of results, leading to dualistic statements concerning work ability, with potential harmful consequences for work ability or disability pensions of patients.

Future recommendations provided by the experts include the construction of industry- or job-specific NVs, NVs of patients, and validation studies to enhance the additional value of NVs.

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Conflict of interest All authors declared that they have no conflict of interest.

Appendix 1: The Visual Analogue Scale used in the Workshop

Please mark the line below indicating how much you agree or disagree with the following statement:

Without Normative Values for FCE clinical decisions concerning work ability of a client are not evidence based.

0  100
Completely disagree Neutral Completely agree

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