

Functional Capacity Evaluation Research: Report from the Second International Functional Capacity Evaluation Research Meeting

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Abstract *Introduction* Functional capacity evaluations are an important component of many occupational rehabilitation programs and can play a role in facilitating reintegration to work thus improving health and disability outcomes. The field of functional capacity evaluation (FCE) research has continued to develop over recent years, with growing evidence on the reliability, validity and clinical utility of FCE within different patient and healthy worker groups. The second International FCE Research Conference was held in Toronto, Canada on October 2nd 2014 adjacent to the 2014 Work Disability Prevention Integration conference. This paper describes the outcomes of the conference. *Report* Fifty-four participants from nine countries attended the conference where eleven research projects and three workshops were presented. The conference provided an opportunity to discuss FCE practice, present new research and provide a forum for discourse around the issues pertinent to FCE use. Conference presentations covered aspects of FCE use including the ICF–FCE interface, aspects of reliability and validity, consideration of specific injury populations, comparisons of FCE components and a lively debate on the merits of ‘Man versus Machine’ in FCE’s. *Future directions* Researchers, clinicians, and other professionals in the FCE area have a

common desire to improve the content and quality of FCE research and to collaborate to further develop research across systems, cultures and countries.

Keywords Functional capacity evaluation · Work assessment · Disability evaluation

Background

Functional capacity evaluation (FCE) is a performance-based measure of ability to inform decisions about a worker’s capacity for participation in work activities. FCEs are often used in occupational and vocational rehabilitation to screen potential employees as pre-employment assessments, to assess physical rehabilitation needs, to determine work readiness and job placement following injury, to facilitate return to work, and to determine a person’s functional capacity for compensation or litigation reasons [1–7].

The field of FCE research has continued to grow with over twenty articles specific to FCEs published since the 1st International FCE Research Conference in September 2012 (search via Medline and PubMed). This new research builds on existing literature specifically investigating the use of FCE with particular populations or injury groups [8–13]; examines reliability and validity of various FCEs or components thereof [14–21]; explores the use of normative data in FCE [22–24]; and compares FCE with other clinical assessment components used to determine function [25–28].

Despite new research published to inform the use of FCE, there continues to be variation in FCE practice due to differences in systems and cultural contexts in which clinicians operate. There is no internationally common

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model or theoretical framework used for FCE and when combined with commercial and proprietary differences in FCE, this affects the overall presentation of FCE in the clinical environment. Inter and intra country variations in FCE practice has the potential to result in different expectations for patients and stakeholders and may impact upon the generalizability and transferability of FCE results.

This research conference aimed to provide researchers, clinicians and other interested parties an opportunity to discuss FCE practice, present research and provide a forum for discourse around the issues pertinent to FCE use.

Report

The 2nd international FCE research conference was held in Toronto, Canada on October 2nd 2014, following the Work Disability Prevention and Integration conference (WDPI) and was advertised in conjunction with the WDPI conference and via email through the organizers' and previous attendees' FCE networks. Subsequent to a call for abstracts and peer review, 11 abstracts and three workshops were presented during the 1-day conference. Fifty-four individuals attended the conference from nine countries (Australia, Canada, Germany, Hong Kong, South Africa, Switzerland, The Netherlands, UK and USA). Participants included practicing FCE clinicians, researchers and other professionals in this field. The conference gave the opportunity for the presentation of FCE research, lively discussion, networking and collaboration amongst this group of experts.

(Individual presenter files are available from the meeting website at the following link: <http://fceresearchconference.webs.com/2014-conference-abstracts>)

The conference began with an update relating to the FCE research agenda identified at the 1st International FCE Research Conference 2 years prior [29]. Of the seventeen items initially identified on the research agenda, the following items were considered:

- the use of the International Classification of Functioning, Disability and Health (ICF) as a guiding framework for FCE;
- evaluation of different FCE protocols;
- evaluation of FCE's value in the return to work process;
- validation of functional assessment procedures and determination of factors influencing performance during FCE.

However, several of the initial agenda items had received little consideration since the first conference specifically: the cost benefit of FCE; a pool of validated open access protocols; whether a 'capacity buffer' relates to sustained work functioning; FCE development

specifically for 'new work'; development of an evidence based FCE guideline and to study use of FCE in developing nations.

The use of the International Classification of Functioning, Disability and Health (ICF) as a guiding framework for FCE was addressed by the keynote speaker, Reuben Escorpizo, who presented and led a discussion on the ICF/FCE interface. He also posed questions relating to use of the ICF as the source of constructs and domains of functioning, as a basis for FCE taxonomy, and as a basis for developing a 'core' set of measures in FCE. He challenged participants to consider the ICF with its benefits and limitations in the FCE domain [30], and to consider the fact that the ICF currently has no method for rating the level of ability (capacity) nor does the ICF take into consideration the measurement of the work activity.

Evaluations of different FCE protocols were presented including some that investigated aspects of reliability and validity of the Work Well [15] and WorkHab [18, 31] protocols as well as an introduction to the development and proposed reliability studies for a new FCE for one handed assessment of function. Another presentation discussed the investigation of predictive validity of future work capacity in those with whiplash associated disorders [11]. Studies reporting on the development and use of normative data as part of an FCE [22] and comparisons of specific dexterity test components were then presented. Studies were also presented about new evaluation protocols for assessing manual dexterity and dynamic agility. Physiological and non-organic somatic signs and function were discussed in several presentations, relating to changes in heart rate [32], the effects of analgesics on function [33], blood pressure, and performance [34]. Work capacity was discussed for those with chronic non-specific low back pain [34] and for those with osteo-arthritis of the hip and knee [35]. A workshop was presented by Maurizio Trippolini and Trix Jansen, with live demonstration of the adapted cervical non-organic signs and discussion of pros and cons of the use of non-organic somatic signs in addition to FCE, with lively dialogue [36].

A proposal was presented for an international study with FCE data that would aggregate data from multiple sources in a unique, central database. This would allow the analysis of international FCE data to offer a better understanding of FCE results and the contextual factors that may impact upon these. Discussion around the logistics, funding and structure of such a study is ongoing with interested participants.

The resulting discussions allowed dialogue between participants around issues common across jurisdictions, countries and continents, and provided an opportunity to consider how information presented will be of benefit in the FCE practice environment.

An animated session debated the pros and cons of implementation of technology in FCE (i.e. use of robotic or computer-based decision support tools, computer software or other instrumentation). This included a wide range of opinions on the use of technology based assessment tools as compared to relying on clinical judgement. This concluded the day with mixed opinions shared on the debate of whether ‘man or machine’ should be used to complete and interpret FCE evaluations. However, consensus was reached that both ‘man’ and ‘machine’ are necessary to obtain a comprehensive evaluation that considers the functional demands, the biological, psychological, social and cultural factors that impact FCE results.

Future Directions

This meeting displayed the enthusiasm of researchers and clinicians in the FCE field and the importance of evidence to inform the use of FCE in practice. The presentations highlighted the differences in FCE use across cultural and system contexts in which clinicians operate and the influence of psychosocial factors on FCE results. However commonality of FCE use (people, disabilities, workplaces) and of the individual components that are included within an FCE were also highlighted. A need for further research was identified, specifically to investigate the use of decision support tools, algorithms and computer technology in comparison with clinician judgement and reasoning; the evaluation of cost effectiveness of FCE’s in comparison to alternatives; comparison of FCE results across contexts, countries and FCE protocols; and the development of an international evidence based FCE clinical practice guideline.

It was agreed a third International FCE meeting will be planned adjacent to the WDPI conference scheduled for 2016 in Amsterdam, The Netherlands. Details of this meeting will be published closer to the time and distributed to the international network of researchers, clinicians, and other professionals in the area.

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Conflict of interest James, Gross and Reneman declare they have no conflict of interest.

Ethical standard The scientific conference included no confidential data collection, so ethics approval was not pursued.

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