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Was Predictive Validity of a Job-Specific FCE Established?

To the Editor:

Reply to: Cheng AS, Cheng SW. The predictive validity of job-specific functional capacity evaluation on the employment status of patients with nonspecific low back pain. *J Occup Environ Med.* 2010;52:719–724.

Cheng and Cheng¹ made a tremendous effort in their study into the predictive validity of job-specific functional capacity evaluation (FCE) on the employment status of patients with nonspecific low back pain. They report on a large retrospective cohort study in which patients with low back pain ($n = 645$) who have performed an FCE were provided with recommendations regarding return to work (RTW) and were followed up 3 months later to inform on actual work status. The authors concluded, "Job-specific FCE shows a high level of predictive validity based on high agreement between recommendations and work status. . . ." Nevertheless, in our opinion, there are some concerns about this article that we would like to share with you.

Our first concern is similar to the comments that were expressed² in a similar study³ published in a different journal. The authors claim evidence for predictive validity of FCE; however, we do not know whether the relationship between FCE and work status at follow-up could be attributed to the FCE results or to the recommendations provided to them. The conclusion of the study might as well be that most patients followed the recommendations given to them (patients were not blinded to the recommendations). It remains unclear whether the recommendations were appropriate and what was the contributing role of FCE. It appears that RTW recommendations were not based on FCE alone. For example, as shown in Table 3, 74 patients who passed the FCE were given recommendations to RTW with modifications and 2 patients were recommended to not work at all at the moment. Should not all patients with a pass rating

be given a recommendation to RTW to previous job if FCE was the only source of information on which RTW recommendations were based?

Second, the authors have not reflected on the issue of underrecommendations based on the FCE results. As in any capacity test, the results of the FCE are, by definition, influenced by multiple factors. (An FCE is an evaluation of capacity of activities that is used to make recommendations for participation in work while considering the person's body functions and structures, environmental factors, personal factors, and health status.)⁴ Consequently, FCE results might reflect what a person is able and willing to do,⁵ which might be different from what this person could do in a different context. This is also shown in Table 3, where patients were recommended not to RTW to a previous job after given a fail rating A or B, yet 15 respectively 18 patients were able to RTW after 3 months. This should theoretically not be possible, because they would not have sufficient capacity to defy the workload. This might imply that performances during an FCE might provide a (temporary) underrepresentation of functional capacity or invalidity of the job-demands analysis, or both.

Third, regarding job-demands analysis, the authors have described their approach to assess the physical demands of the jobs ("Before FCE, a hierarchical task analysis, guided by the modified Dictionary of Occupational Titles Physical Demand Questionnaire, was used to discuss with the patients about the physical work demands of their work"), but they have not, however, made an effort to demonstrate the reliability and validity of this assessment, nor have they discussed the potential implication of this limitation. In addition, the authors have also not provided information about the validity of their main outcome measure—work status.

The authors have suggested that FCE should be able to predict RTW. They have not, however, indicated how predictive FCE could theoretically be, given the observation that an FCE measures capacity to execute activities, which in turn are used to make recommendations for a multidimensional construct such as work-participation; 100% predictive value should not be expected. Nevertheless, what would be reasonable to expect?

The authors conclude that their study provides evidence in support of the predictive validity of the FCE studied. In our opinion, it is still unknown whether or not this

FCE has predictive validity for RTW because of the limitations expressed in this letter.

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Author's Response

To the Editor:

We thank Reneman and Soer for their interest in our article¹ and for the Letter to the Editor they wrote in response to it. Their comments are pertinent, and are consistent with previous comments of theirs on a similar study. That they make these comments is understandable because they are not familiar with the work practice, the workers' compensation system, and culture-specific factors in Hong Kong.

In Hong Kong, almost all functional capacity evaluations (FCEs) are conducted in a clinical setting. Patients are referred by their treating physicians to receive an FCE to assist them in deciding when the patient can return to work or what rehabilitation program is required. After the evaluation, an FCE report will be sent to the treating physician; therefore, patients are totally

blind to the recommendations given by therapists until they see their treating physician again. But patients can choose to follow the recommendations provided to them or not. They are not forced to return to work. Two common reasons why they might decline to follow a recommendation to return to work are: (1) they think that they are not ready to return to work, and (2) they consider that the evaluation alone cannot give them sufficient information about their work ability when they return to work. Certainly, other sociodemographic and workplace factors will affect return to work, subsequent unemployment, and changes in occupation,² particularly for compensable injuries.³ The results of our study already showed that compensability and job difficulty had a statistically significant effect on the predictive validity of FCE, which primarily relates to the relationship between the FCE result and return to work or safe continuation of work.⁴

Because of the criticism about the content validity of FCE in assessing patients' work ability to perform specific work activities, Hong Kong occupational therapists, being the main FCE provider in Hong Kong, adhere to the guideline given by the Occupational Therapy Coordinating Committee of the Hospital Authority of Hong Kong that all FCEs should be job specific. By doing so, we optimize the content validity of the FCE⁴ to make it more convincing and acceptable to patients so as to reflect what they are capable of doing in different work contexts. Furthermore, as mentioned in our article, it is necessary to conduct an analysis of the psychosocial factors in an FCE. Therefore, Hong Kong occupational therapists adopt the psychophysical testing approach based on the concept of acceptable maximal effort. For chronic low back pain sufferers, this approach can provide reliable, reproducible data regarding a person's tolerance of specific tasks within the bounds of acceptable pain.⁵ As a result, the job-specific FCE used in our study was not just an instrument measuring a single dimension. Rather, we measured both the physical and psychological abilities of the patient to deal with different work activities. Previous studies had indicated that a job-specific FCE protocol could assess work ability in a more realistic way.⁶⁻⁷

We thank Reneman and Soer for pointing out in Table 3 of our article that there were two patients who passed the FCE but were recommended not to work at the moment. These two patients suffered from non-work-related injuries. According to the workers' compensation system in Hong Kong, they were not entitled to re-

ceive any compensation or wage replacement benefit during the period of sick leave. So there was a financial need for them to go back to work. The most plausible explanation for why the therapist made such a recommendation is that during the evaluation, they demonstrated unsafe biomechanics in manual handling operation and exhibited a coefficient of variation greater than 15% in more than half of the FCE tasks. Given that safe return to work and safe continuation of work are the primary concerns of an FCE, the therapist recommended that they took a short training course to learn proper biomechanics before going back to work. This cautious and conscientious act might be a possible cause of the "under-recommendations" based on the FCE results argued by Reneman and Soer. As a matter of fact, this "under-recommendations" phenomenon has occurred in other studies. For example, in the study conducted by Gross and Battié,⁸ only 6 of 130 patients were rated as meeting or exceeding job requirements on all FCE tasks, despite the fact that only 54 patients could be contacted for a follow-up telephone interview. A majority (57%) reported that they were currently working, although 68% of these reported performing modified duties compared to the original physical tasks they were carrying out at the time of their accident. We pointed out limitations to our study due to the retrospective research design and the study data being cross-sectional in nature, several important items of information such as the change of employment status after evaluation, job sustainability, and particularly the reason why the patient did not accept or follow the return-to-work recommendation are uncertain. We are now planning a prospective study to investigate these variables.

Finally, regarding the comment on the reliability and validity of the modified Dictionary of Occupational Titles Physical Demand Questionnaire, previous studies have shown that the Dictionary of Occupational Titles is a valid tool to assist FCE.⁹⁻¹¹ A previous local study has also shown that this questionnaire is valid for establishing a work profile and a functional capacity of a local job title.¹² To ensure the reliability of the identified job demands, Hong Kong occupational therapists had double-checked with patients to see if there was any disagreement about the job demands from them. Also, this was not the only tool they used in analyzing the job demands. Reneman and Soer might have overlooked that, in our article, we mentioned that Hong Kong occupational therapists had compared the information collected from this ques-

tionnaire, as well as any comments from patients, with information in the local job bank, which was developed by them through previous interviews with patients with similar job titles and similar formal worksite evaluations. We agree with Reneman and Soer that a predictive value of 100% should not be expected from any FCE. However, we believe that our study provides important preliminary evidence that a job-specific FCE possesses the ability to predict the employment status of patients with nonspecific lower back pain.

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