Assessment of (dis)ability in a prospective commercial diver with a hand injury – a case study

A case study in disability.

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From time to time medical practitioners are required to give an opinion on request of an employer or employee with regard to the ability of a person to perform his or her work. Medical practitioners also issue sick leave certificates in which recommendations are listed with regard to the temporary inability of a person to perform his or her work. These recommendations are often empirically formulated with little objective justification.[1] They frequently include confusing instructions, e.g. 'light duties only', which may be extremely difficult for employers and line managers to interpret or implement. Medical practitioners are actually in a very poor position to provide constructive information on an employee's ability to work if they are not intimately familiar with the specific working environment of the employee.[2-4]

Ideally, clear recommendations should be provided to the employer and employee, based on objective measurements relevant to the specific job of the employee.

In this case study the assessment of a commercial diver who has suffered an injury to his hand is described. It illustrates the importance of objectively assessing fitness for work in a way relevant to the individual's actual job requirements.

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Case study

An aspirant commercial diver sustained a crush injury of his left (non-dominant) hand while training for entry-level diving. Several surgical procedures (8 in total) were performed, including a number of debridements, internal fixation of fractures (and removal thereof afterwards), plastic surgery for a full-thickness skin graft over the dorsum of his index finger, and an arthrodesis of the proximal interphalangeal and distal interphalangeal joints of his index finger (Figs 1 and 2).

Fig. 1. Dorsal aspect of left hand, relaxed posture.

Fig. 2. Palmar aspect of left hand, relaxed posture.

His rehabilitation included physiotherapy and occupational therapy, but his hand function remained permanently impaired. An occupational therapist with postgraduate training in hand therapy performed a thorough assessment. The degree of impairment was calculated using the American Medical Association (AMA) Guides to the Evaluation of Permanent Impairment.[5]

To assess his ability to work, the occupational therapist performed objective measurements of his hand function. A team consisting of a diving medical practitioner, an occupational therapist and two commercial diving instructors assessed his ability to meet the requirements of a commercial Class IV (entry level commercial SCUBA diving) and Class III (surface supplied air diving) course. All the components of the diving training curriculum that required the use of his hand were included in a battery of tests specifically constructed for this assessment. The evaluation included some typical diving tasks initially performed above the water to familiarise him with some of the equipment that he had not used before, while assessing his abilities. This was followed by a session in the confines of a training pool and then in the ocean where more advanced evaluations were performed, including his ability to perform certain emergency procedures and underwater construction work. The assessment was recorded with an underwater videocamera and assessed afterwards by the team.

Assessment outcomes and conclusions

Although the diver suffered only a hand injury, the extent of the injury was significant (21% impairment of the whole person using the AMA Guides).

However, the diver displayed exceptional watermanship skills. He is a very strong swimmer with a good aptitude for water-related activities. He passed the practical entry requirements with the greatest of ease. He was able to complete all of the underwater exercises and performed most of the tasks in a normal manner, but with some he needed to adapt the way in which the task should be performed. He was significantly slower than expected in all tasks requiring bilateral hand function. During the assessment his health and safety were judged not to be compromised.

Based on the assessment he was found to be fit for training as a commercial diver, with appropriate restrictions. (This finding can however not be extrapolated to other workplace settings. Additional assessments are necessary for such an opinion.)

Discussion

Whenever an injured or ill person's ability to perform his or her work needs to be assessed, a medical practitioner would invariably be involved. The medical practitioner typically performs a clinical assessment consisting of the clinical history (usually considered most important), a physical examination, side-room investigations and appropriate special investigations. Recommendations, which are based on the composite clinical picture, are then forwarded to the workplace – usually in the form of one or two written sentences. Providing a fitness-for-work opinion on clinical assessment only is mostly based on perceptions of the practitioner about the workplace, which are often influenced by the person being assessed. Time and again these recommendations are not accurate,[1,6] and they frequently create confusion with line managers who sometimes receive medical certificates with instructions that are irrelevant or impractical to implement.

Commercial divers are obliged to have a comprehensive, annual diving medical fitness assessment, not unlike that of commercial pilots. Although the medical investigations were normal in this case, the diver's hand injury was of sufficient concern for the medical practitioner to declare him unfit to dive.

The level of impairment often does not match the level of functionality in the workplace.

However, such a recommendation without a functional capacity evaluation is unjustified, has very little meaning, and should be discouraged.[5,7-9] The level of impairment often does not match the level of functionality in the workplace. A person with a minor impairment may in fact be totally disabled for his or her work, e.g. a pianist with an arthrodesis of one finger. Conversely, a person with a very high percentage of impairment may have quite limited restrictions in working ability. So, even if a practitioner bases a recommendation on objective measurements of impairment (e.g. the AMA Guides), the recommendation may still be biased, as they are based on workplace assumptions and perceptions unless actual measurements that represent ability in the workplace are performed.

Various assessment models and tools aim to fulfil this requirement and are often used by occupational therapists to perform work assessments of employees. Most assessments are based on simulated work environments and conditions that predict the ability of injured workers to perform their job. Their predictive value in real work situations is typically less than most medical practitioners would assume. Many are actually not reliable or valid.[10,11] The reasons can be attributed to numerous contextual factors that are not measured, e.g. psychological factors (e.g. motivation of the employee and his eagerness to return to work), organisational factors (e.g. the corporate culture of a specific workplace), and other work-related factors (e.g. lack of supervisor or co-worker support).[4,9,12] Other factors to consider are ethical issues, legal requirements, pressure, social structures, and emotional issues, all of which are easily missed in the medical consultation, especially when it comes to function and disability, because the consultation is generally geared towards the medical problem rather than the contextual factors.

The occupational therapist assessed this diver by means of a range of functionality tests. I used this information to structure a conceptual model of what the diver would be able to do in a typical workplace. It was however impossible to extrapolate the information to the functionality of this person's hand under water and his ability to perform commercial diving work. The effects of buoyancy and low temperatures are for instance not included in any of these tests. Because of these factors (and the possibility of many more immeasurables), it was imperative to develop an assessment tool to evaluate his hand function in an appropriate setting, i.e. under water.

There could nonetheless still be criticism with regard to this assessment and the methodology: because the diver did not complete his training, he was not employed as a diver, and there were therefore no person-job specifications available from an employer, and generic requirements for passing a diving course may not accurately simulate the requirements of a specific employer. Furthermore, even though most of the commercial diver's working tools were used in the assessment, there were no normative data for comparison. This reduced the assessment outcomes under water to a qualitative, subjective binary 'competent' or 'not competent' classification based on the experience and opinions of the evaluators, but likely still missing a number of the above-mentioned contextual factors.

The ideal fitness-for-work assessment would include all these factors when considering a specific person-job match. These can change from time to time and differ from place to place, so fitness for work and worker (dis)ability is a dynamic and ever-changing concept. The best way to perform a fitness-for-work assessment would perhaps be to provide the employee with an opportunity to be evaluated while performing the particular job, involving a team of role players led by

an occupational medicine practitioner and occupational therapist. Objective assessments should be used where possible, but subjective informed judgements have their place.[9]

The assessment team should consider numerous factors. A recent systematic review[13] identified health and safety risks (to self, fellow employees and the public), the capacity of the employee (especially physical and psychological), ethical considerations, legal requirements and economic criteria as the factors most commonly used in assessments.

The assessment was recorded with an underwater videocamera and assessed afterwards by the team.

In terms of the Employment Equity Act, occupational medicine practitioners in South Africa have to consider the legal definition of a person with a disability, namely a person 'who has a long-term or recurring physical or mental impairment which substantially limits their prospects of entry into, or advancement in employment'.[14] Designated employers are required to implement affirmative action measures and remove barriers to employment of persons with disabilities. There is an added responsibility when employees are disabled because of occupational causes in the workplace in question. The occupational medicine practitioner advising employers can provide invaluable inputs.

Conclusions

A (dis)ability assessment that takes place in an employee's workplace provides more information on exactly what the employee is able or unable to do. As opposed to a clinical assessment in the consulting room or even a more objective assessment in a simulated environment, it provides a better concept of whether the employee would be able to perform the inherent requirements of the job. Because the assessment is performed in a real world setting, it can include the assessment of additional issues that are often not measured, e.g. corporate culture and support from supervisors and fellow employees. With good communication between all stakeholders the requirements of the employer (to maximise profits) and the employee (to participate competitively in the work environment) could result in a win-win situation with or without compromise by either party.

Perceptions in the workplace also need to change. Although barriers to employment of disabled persons are addressed in many workplaces, a great number of workers who report functional impairment are often not accommodated in the workplace at all.[15] Performing assessments in the workplace allows educational opportunities for addressing such issues.

Such a comprehensive evaluation is extremely labour intensive and may require significant resources that may not always be justified. While the presence of a number of skilled individuals, including medical practitioners, is required, there are few incentives for medical practitioners to conduct worksite evaluations.[4] Training and development of specific skills to conduct these assessments are also lacking, which may lead to resistance to participation and taking on this greater responsibility.[3,4]

Recommendations

Although this is hardly ever an issue during the assessment of healthy individuals medical practitioners should be cautious when giving an opinion on fitness for work in the case of an employee with an impairment, unless they are intimately familiar with the specific working environment of the employee. Consultation with an occupational medicine practitioner is indicated in the presence of impairment.

The ultimate fitness-for-work evaluation may need the involvement of an assessment team consisting of persons with expertise in various disciplines and workplace settings. Limited facilities exist to evaluate the functional capacity of employees in a way that accurately simulates the working environment. The industry will benefit tremendously if more centres are developed (e.g. an underwater centre for divers) and existing centres are used more often.

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In a nutshell

- Medical practitioners should be cautious when providing an opinion regarding fitness for work or writing sick certificates without having proper knowledge of the employee's working environment.
- Numerous contextual factors cannot be assessed in the confines of a consulting room.
- Even more objective work assessments performed by occupational therapists may not predict working ability accurately.
- The best assessment of working ability is probably in the actual workplace, with an assessment conducted objectively by a team of experts and stakeholders, while not disregarding subjective measurements.
- Additional factors to consider include health and safety risks and capacity of the employee, but also ethical, legal and economic criteria.
- Comprehensive assessments are time consuming and expensive and not justified in all circumstances.
- Occupational health practitioners are familiar with details of the workplace and can provide valuable information with regard to fitness for work. Referral to such a specialist should be considered in certain cases.