

<b>Section A: NICE to complete</b>	
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<b>Guidance title:</b>	Workplace health - older employees
<b>Committee:</b>	PHAC D
<b>Subject of expert testimony:</b>	<ul style="list-style-type: none"> <li>• Work Ability model and index</li> <li>• An assessment of Work Ability: <ul style="list-style-type: none"> <li>o Strengths</li> <li>o Weakness</li> <li>o Application in UK workplace practice</li> </ul> </li> </ul>
<b>Evidence gaps or uncertainties:</b>	Related/overarching NICE scope questions
<ul style="list-style-type: none"> <li>- Question 1: What are the most effective and cost-effective <b>methods of protecting and promoting the health and wellbeing</b> of older workers at both an individual and organisational level?</li> <li>- Question 2: What are the most effective and cost-effective <b>methods of supporting workers who wish to continue in employment</b> up to and beyond the state pension age?</li> <li>- What <b>supports or prevents</b> implementation of these methods?</li> </ul>	
<b>Section B: Expert to complete</b>	
<b>Summary testimony:</b>	See over
<b>References (if applicable):</b>	
See references section, over	

## Work Ability – strengths, weakness and application

Historically in occupational health there has been a focus on the impact of work on health, especially in relation to high hazard industries such as coal mining or the steel industry. In recent decades there has been a change in focus to help us understand the impact that our health and capabilities can have on work. We have seen this change in relation to gaining a better understanding of health and wellbeing both in work and outside of work as well as gaining a better understanding of what education and experience can bring to the workplace.

As a result of the work in Finland, the Work Ability Index (WAI) was developed as a measure of the perceived work ability of individuals (Tuomi et al., 1998). The Work Ability model is based on the interaction between the health and capacities of the individual, their competence or skill level, their values and attitudes and the demands of the work they are required to do. The model also considers other issues including the work community and social attitudes, the social environment and the family. However the index itself was developed to try to identify individuals or groups who needed support within the workplace to enable them to continue working.

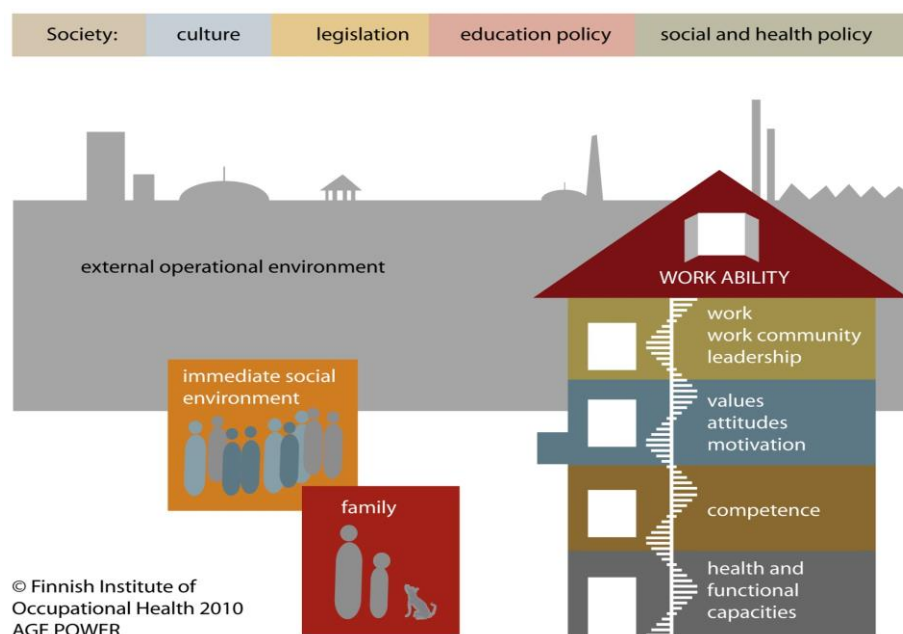


Fig 1. Model of Work Ability (Finnish Institute of Occupational Health 2010)

In evaluating the WAI, the factors that impacted upon the population aged 55-64 years were health, capacity and mental strain that were found to be associated with WAI scores suggesting that human health and work demands are important dimensions for continued work ability.

The tool has been widely used as a measurement tool and is available in multiple languages. It has been used in a number of European countries and Australia. The tool is a structured questionnaire or interview that can be used as part of an occupational health assessment at an individual level or can be used as part of larger studies across different departments within an organisation. The tool asks the individual to estimate current and future levels of work ability, doctor diagnosed illnesses, sickness absence over the previous year, the perceived impact on performance of deterioration in health and mental ability reserves.

Table 1. Items of the Work Ability Index Items Range

1	Current work ability compared with the lifetime best	0–10
2	Work ability in relation to the demands of the job	2–10
3	Number of current diseases diagnosed by a physician	1–7
4	Estimated work impairment due to diseases	1–6
5	Sick leave during the past year (12 months)	1–5
6	Own prognosis of work ability 2 years from now	1–7
7	Mental resources	1–4

There are a number of different versions available of the Work Ability Index including those that have been developed for epidemiological survey use. There are also versions available that have been shortened or in some studies, specific questions relating to perceived work ability two years from now have been used.

van den Berg *et al.*, (2010) carried out a systematic review of factors that influenced work ability examining 20 studies where the index had been used and where quantitative data were available on the determinants of work ability. The review identified that individual factors associated with poor work ability included increasing age, obesity, lack of physical activity in free time, poor physical working environment, high physical workload and poor musculoskeletal capacity. In relation to psychosocial factors, a lower work ability index score was associated with lack of autonomy and high mental work demands. It is currently available online at <http://www.arbeitsfaehigkeit.uni-wuppertal.de/index.php?wai-online-en>.

The results from the Work Ability Index are collated and analysed and a classification system gives an indication of where the scores sit as well as an indication of the need for intervention. This is shown in Table 2.

Table 2. Scoring the Work Ability Index

Score Range	Classification	Intervention
7-27	Poor	Intervene to restore work ability
28-36	Moderate	Improve work ability
37-43	Good	Support work ability
44-49	Excellent	Maintain work ability

### Strengths of the Work Ability Index

One of the strengths of the WAI is that it is straightforward to administer as part of an occupational health assessment or for use in larger scale studies as a questionnaire. de Zwart *et al* (2002) examined reliability with a group of 97 older construction workers. In comparing the completed indices at 4 week intervals by self-administered questionnaire, the group measure did not change significantly between test and re-test. However, of the individual scores, 25% remained in the same category with differences reported being attributed to the nature of construction work and the risks of injury within that particular sector.

A systematic review by van den Berg *et al* (2009) identified through 20 studies that poor work ability scores associated with lack of leisure time physical activity, poor musculoskeletal capacity, age, obesity, high mental demands, low control, poor work environment and physically demanding work.

Within the Finnish FLAME study, (von Bonsdorff *et al* 2009), a 28 year follow-up of Finnish municipal workers, a response rate of 81.3% was maintained when following a sample of 5971 participants. The Work Ability Index was used within the study at baseline and follow up. These data were analysed and hazard ratios were calculated in relation to work ability and death and it was identified that for both men and women, there was a significant association between poor work ability for white collar males workers ([Hazard Ratio \[HR\]](#)=1.84, 95%CI 1.2-2.82) and blue collar male workers (HR =2.17, 95% CI 1.54-3.07). For women the results were not significant. A pattern of increasing hazard risk was seen from good work ability to poor work ability.

Associations between disability or death and work ability were also calculated and for white collar men with poor work ability, the association was [Odds Ratio \(OR\)](#)=2.98, 95% CI 1.54-5.78 and for blue collar workers OR=3.16, 95%CI 2.01-4.96. For women significant associations were also found in relation to associations with disability or death and work ability. For white collar females workers the value was OR=3.37, 95% CI 2.45-4.98 and for female blue collar workers OR=3.37, 95% CI 2.28-4.98. A similar gradient was observed with stronger associations between moderate and poor work ability and association. A similar finding was observed in the data when associations were calculated between work ability and disability.

What the study identifies is that the Work Ability Index used in mid-life can be used as both a tool for intervention as its use can enable identification of those most at risk of workplace disability. However, at the current time, its use within interventional research is still quite limited.

### **Weaknesses of the Work Ability Index**

Before discussing research within this area, it must be understood that the index is a tool that can be used to identify groups or individuals who are having difficulty within the workplace. This in itself can be a useful measure but in no way does it replace assessments of fitness for work or other occupationally related examinations.

When some of the weaknesses associated with it are examined, one study (Geissler *et al* 2006) reported finding different scoring depending on who was administering the index. The research studied identified that higher scores were reported when work psychologists administered the questionnaire as compared to occupational physicians. However, the authors suggest that training people to use the index consistently would overcome this issue.

A further issue has been the lack of consistent evidence in relation to the use of the Work Ability Index within intervention studies. van den Berg *et al* (2009) in their systematic review identified that improvements in work ability were not always identified within the studies reviewed. These include the work of de Boer *et al* (2007) who carried out an intervention study with 292 construction workers. The intervention identified individuals with a high risk of work disability and they were randomly assigned into care as usual (N=209) or an individualised counselling and education programme (N=83). The work ability scores within the intervention group did rise after the intervention but this was not a significant change.

A further study cited by van den Berg *et al* (2009) was that of de Boer *et al* (2004). This intervention study examined the impact of an occupational health intervention of 116 employees within one organisation. The employees were all over 50 years old and identified as individuals who were at risk of early retirement. The intervention was an occupational health intervention where individuals had three consultations with an occupational physician, the development of an action plan focused on changes or developments to help the individual employee. The comparator was care as usual. The outcome measures for the study included sickness absence, measures of burnout, quality of life and the work ability index. The analysis identified that work ability scores had increased significantly at 6 months into the intervention study but no significant increases (or decreases) were identified two years post-intervention.

The report by Perkiö-Makel (2004) examined work ability in female farmers. Again this was a small study (N=126) which aimed to increase physical activity in the intervention group. Participants were randomly assigned to intervention (n=62) or control (n=64) and had an age range of 38 +/- 5 years. The intervention included physical exercise, work training and training in lifting techniques. Data were collected in relation to the functional and cardiorespiratory capacity, the work ability index and the Nordic Musculoskeletal Questionnaire. The analysis identified that although there was increased physical activity within the intervention group, there was no change in the work ability index score post-intervention.

What is unclear from much of this research is whether the design of the interventions is at fault or the Work Ability Index. It is evident that better quality intervention studies using the index are required to evaluate its use as an outcome measure.

### **Application in UK workplace practice**

In trying to understand the current situation in relation to the use of the Work Ability Index in the UK, the work of Coomer and Houdmont (2013) is helpful. Their study involved occupational health and medical practitioners in Finland (n=97) and the UK (n=436). Within the UK, when individuals were asked if they were aware of the index, 96% said that they were, with 7% reporting using it. The authors suggest that this is due to a lack of training in the UK in relation to the Work Ability Index and the concepts surrounding it. However, when the use of the Work Ability Index is examined within Finland, the concept of work ability and assessment of work ability is an agreed part of occupational health practice and within Finland, promoting work ability is part of the occupational health legislation whereas it is not in the UK. Other differences may also contribute to this as in many other European countries, an annual occupational health or medical assessment is carried out. Within the UK this is only required for specific sectors and exposure to specific hazards.

Other factors would also need to be considered within the UK where individual employees may not have access to an occupational health service. Data handling and the protection of sensitive data such as that collected by the work ability index does need to be considered and who would have a role in ensuring data protection.

Finally, the interventions required to improve work ability in the workplace may include such areas as health promotion or other means of increasing physical activity. In addition to this there is a slowly growing evidence base in relation to improving ergonomics in the workplace or increasing

access to flexible work. Thus taking a multi-disciplinary approach may be an important factor in improving workplace retention but the evidence at the current time is lacking.

### **Key References**

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