

Work ability of aging workers

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Possibilities to manage in worklife with advanced age are determined by the physical, mental, and social capacities of the individual (1). When these functional capacities are related to work demands, the term work ability can be used. Work ability, however, is a complex issue covering not only different objectively measurable capacities, but also aspects like education, knowledge, skill, experience, and motivation. Therefore there is no single objective method with which to assess work ability. In practice the work ability of aging workers needs to be evaluated for several reasons, namely (i) for identifying decline in work ability at an early stage, (2) for following the effects of preventive measures and early rehabilitation, and (iii) for assessing work disability. Work ability should primarily be assessed in relation to the job of the worker in question. Because of lacking methods, such an assessment is often impossible (2). There is a need for a feasible method that will take aspects of health, functional capacities, and work demands into consideration. Such a method was constructed, and it is called the work ability index. The aim of the present study was to clarify how a worker's rating on this index changes with age and how the proportion of persons with poor work ability according to the index is related to age, gender, and work content.

Subjects and methods

The subjects consisted of 1799 male and 2456 female municipal workers. They remained in the same municipal job during a four-year follow-up period. The mean age at the beginning of the follow-up was 50 (SD 3.4) years for the men and 50 (SD 3.5) years for the women. The age range in the analysis, including the follow-up period, was 45–62 years.

The conceptual definition for work ability represented the question: "How good is the worker at present and in the near future, and how able is he or she to do his or her work with respect to work demands, health, and mental resources?" The seven items of the work ability index have been presented earlier (3). The index was derived as the sum of the ratings on the seven items. The range of the summative index was 7–49, which was classified into the following three

groups: (i) poor work ability (score 7–27), (ii) moderate work ability (score 28–43), and (iii) good work ability (score 44–49). The cut-off points for poor and good work ability were chosen from the 15th percentile of the index distribution of the total population before the follow-up period (3).

The risk ratio (RR) for poor work ability was calculated by dividing the prevalence rate of poor work ability after the follow-up by the prevalence rate before the follow-up. For data analysis, the SAS (statistical analysis system) program was used.

Results

Work ability index by age and gender. The average score of the index declined slightly from 40 to 30 throughout the age range 45–62 years. The decline was similar for both the men and the women.

Among the men, the work ability index declined similarly among men doing physical or mixed (physical and mental) work. Men doing mental work showed no systematic decline in the index up to the age of 57 years. Among the women, the decline in the index was similar in all of the work content groups of physical, mixed physical and mental, and mental work. However, the index was, on the average, lowest for the women in physical work and highest for the women in mental work already at the age 45 years, and the differences in the index between the work content groups were rather constant over the whole age range of 45 to 62 years.

Risk ratio of poor work ability by age, gender and work. Among the men, the risk ratio of poor work ability was highest (RR 2.5) for the men aged 50–54 years in physical work before the follow-up. The same value (RR 2.5) was found for the men aged 55–58 years in mental work before the follow-up (figure 1).

Among the women, the risk ratio for poor work ability was highest (RR 2.7) for the women aged 45–49 years in mental work before the follow-up. In this youngest female age group a high risk ratio of 2.5 was also found for the women whose work was both physical and mental. Women aged 50–54 years in mental work before the follow-up still had a risk ratio of 2.5 (figure 1).

In physical work, the comparisons of the risk ratio between the men and women indicated that poor work

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ability was higher for the men (RR 2.5) than for the women (RR 1.6) in the age group of 50–54 years. In mixed physical and mental work, the women had a higher risk ratio than the men in the age groups of both 45–49 and 55–58 years. In mental work, the women had a much higher risk ratio for poor work ability than the men, both in the youngest age group (RR 2.7 for the women versus 1.3 for the men) and in the middle age group (RR 2.5 for the women versus 1.3 for the men). In the oldest age group of 55–58 years, however, the risk ratio for poor work ability was 2.5 for the men and 1.4 for the women.

Work ability index and work disability pension. Of those men and women who, at the age of 51 years, had a poor work ability, about one-third became disabled to work during the four-year follow-up period (table 1). Of those with a good work ability at the age of 51 years, only a few became disabled to work during the same period.

Discussion

The validity of the work ability index has been evaluated against the clinical assessment of health status and work ability (4). The index correlated well with the clinical assessments at the group level. In addition the associations between functional capacity and work ability were studied (2). The mental capacity tests had systematically lower correlations with the work ability index than the tests for physical capacity did. It was shown that objective measurements of functional capacity among older employees measure partly different aspects of work ability than self-assessment with the work ability index does.

The unbroken decline in work ability as indicated by the index between 45 and 62 years of age showed that there are no special steps of decline in work ability within this age range. In spite of the fact that work ability was experienced to decline with age, the average scores remained in the class "moderate work ability." The decline was dependent, however, on work content. The women and, especially, the men doing mentally demanding work experienced a fairly unchanged work ability between the ages of 45 and 57 years.

The risk ratio results suggested that men experience poor work ability about four years earlier in physically demanding jobs than in mentally demanding ones. This phenomenon can be explained by the decline in physical work capacity, which can be rather dramatic after the age of 45 years if there is no participation in regular physical training (5). The difference in risk ratio between the men and women in physically demanding jobs suggested that men are at higher risk of poor work ability from the ages of 50–54 to 55–58

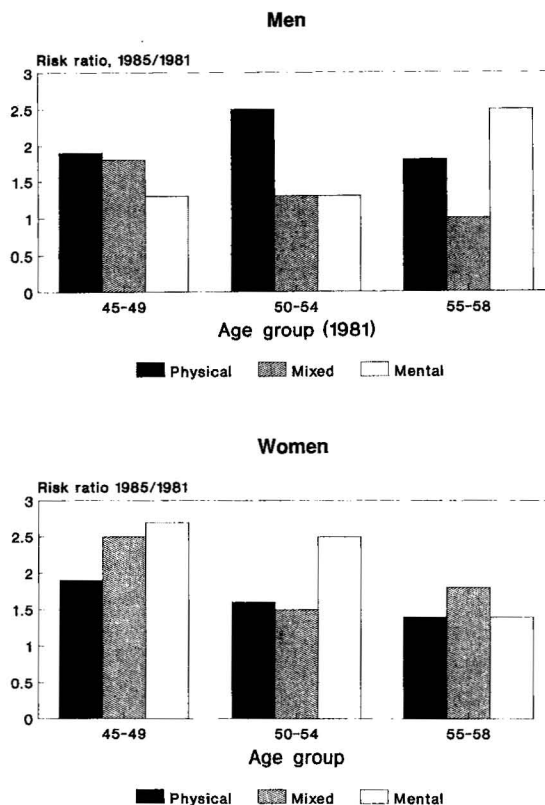


Figure 1. Risk ratio for poor work ability among the men and women by age and work content. (Physical = physically demanding work, mixed = mixed physically and mentally demanding work, mental = mentally demanding work)

Table 1. Work ability of 51-year-old men and women in municipal jobs according to the work ability index and their work disability pension rate during a four-year follow-up.

Work ability at 51 years of age	Received a work disability pension between 51 and 55 years of age	
	Number	Percent
Men^a		
Information lacking (N = 503)	56	12.4
Rating on work ability index		
Poor (N = 362)	119	37.8
Moderate (N = 1561)	120	8.4
Good (N = 371)	3	0.8
All (N = 2294)	242	11.5
Women^a		
Information lacking (N = 503)	45	9.9
Rating on work ability index		
Poor (N = 369)	109	33.3
Moderate (N = 2108)	85	4.4
Good (N = 480)	7	1.5
All (N = 2957)	201	7.5

^a Numbers include those who died or received an old age pension during the follow-up period.

years than women are. The severity of cardiovascular diseases among older male employees probably explains the mentioned gender differences in poor work ability (3). Interestingly, the risk ratio of poor work ability among the men and women in mentally demanding work was different. The risk ratio was lower for the men than for the women before the age of 55 years, but it was higher for the men than for the women after this age. The differences in work load, in individual factors, and in early retirement might explain this finding (6). On the other hand, the small number of workers with poor work ability in mentally demanding jobs means that large changes in the risk ratio can be due to an increase of just a few cases of poor work ability.

In a relatively short period, the work ability index predicted well later disability to work. It can be concluded that this index is a suitable method with which to identify the early signs of decreasing work ability and with which to select subjects for preventive measures.

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