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Mortality, disability and changes in occupation among aging municipal employees

by Kaija Tuomi, LSocSc, Jouni Toikkanen, MSocSc, Leena Eskelinen, PhL, Ann-Lis Backman, MD, Juhani Ilmarinen, PhD, Erkki Järvinen, MSc, Matti Klockars, MD[1]

TUOMI K, TOIKKANEN J, ESKELINEN L, BACKMAN A-L, ILMARINEN J, JÄRVINEN E, KLOCKARS M. Mortality, disability and changes in occupation among aging municipal employees. *Scand J Work Environ Health* 1991;17(suppl 1):58—66. During a four-year follow-up period the indicators of work load, individual factors, and stress reactions predicting mortality, disability, and change of occupation were studied. In 1981, 6257 active workers aged 44—58 years answered a questionnaire. The study was repeated in 1985 when 1 % of the subjects had died, 9 % had become disabled, and 5 % had changed their occupation. These changes had occurred the most often in occupations which included muscular work, poor work postures, and a poor physical environment. The highest mortality rate was observed for the male installation and auxiliary workers who had reported the presence of cardiovascular, but no musculoskeletal, disease four years earlier. The highest disability rate was well predicted by a poor index of work ability. Major diseases leading to disability included malignant tumor, coronary artery disease, congestive heart failure, rheumatoid arthritis, bronchitis or bronchial asthma, and mental disease. Work-related stress reactions were associated with both mortality and disability.

Key terms: disease, incidence, stress reaction, work ability, work load.

Changing occupation, becoming disabled to work, and mortality are linked to health selection, and they influence the results of cross-sectional studies. The selection can occur both into and out of a job. Both phenomena can either weaken or improve the health picture of different groups of workers (1). Therefore the longitudinal design is preferred in epidemiologic studies.

The healthy worker effect describes the features of job selection. The employee's initiative, the employer's choice, and job characteristics influence job selection. Healthy workers have more capabilities, and they are better able to maintain their health at work. The health care system of a workplace also supports their health. If a poor employment rate prevails, the dismissals and lay-offs are directed towards employees with poor health (2). For such reasons active workers commonly have better health and lower mortality than the general population of the same age.

High mortality rates among young workers in physically demanding jobs, such as building painters, has been reported (3). During aging these employees changed to lighter occupations, and simultaneously mortality declined (3). Vinni & Hakama (4) found low mortality rates, but poor health, among administrative workers (4). A high incidence of disability was linked to physically heavy work and the presence of several diseases in another study (5). Poor health, poor work ability, and perceived strain have also been found to accumulate in physically heavy occupations (6).

The present follow-up study was made to investigate how occupation and work demands, stress reactions, diseases, and other individual factors predict mortality, disability, and changes in occupation during a four-year period. The selection and grouping of independent variables were mainly based on the stress-strain concept of Rutenfranz (7).

Subjects and methods

The sample consisted of occupations with physical, mental, or mixed physical and mental demands. In the first cross-sectional inquiry in 1981, 6257 subjects participated. The response rate was 85 %. The subjects were employed in municipal occupations in different regions of Finland. More than one hundred subjects of the most typical occupations were studied at their workplaces, and an analysis of work demands was included (8). According to the job analysis the occupations were classified into three work content groups, 13 work profile groups, and 40 occupational groups. The subjects in the first study were 44—58 (mean 50.5, SD 3.6) years of age (6). Table 1 shows the classifications of occupations and the average ages of the subjects.

The questionnaire covered more than 80 variables concerning work stressors. These variables were

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Table 1. Mean age of the men and women by work content group in the first cross-sectional study in 1981.

Work content group	Men		Women	
	N	Mean age (years)	N	Mean age (years)
Physical	1361	51	1288	51
Auxiliary work	503	51	785	51
Unskilled assistants	31	51	1	..
Painters	79	51	1	..
Cleaners	2	..	202	51
Hospital aides	—	—	240	51
Kitchen helpers	—	—	185	51
Construction workers and streetsweepers	204	51	94	51
Park workers	96	51	60	51
Laborers	91	52	2	...
Installation work	858	51	3	..
Firemen	114	49	—	—
Janitors	162	51	2	..
Mechanics and pipe fitters	182	50	—	—
Car mechanics	91	50	1	.
Carpenters	145	52	—	—
Electricians	164	51	—	—
Home care work	—	—	500	51
Bathers	—	—	155	51
Domestic helpers and housekeepers	—	—	345	50
Mixed mental and physical	711	50	1196	50
Transport work	572	50	—	—
Machine operators	387	51	—	—
Bus drivers	164	49	—	—
Other transport workers	21	49	—	—
Dump work	47	51	1	..
Dump workers	47	51	1	..
Kitchen supervision	—	—	146	51
Cooks	—	—	146	51
Dental work	14	50	81	51
Dentists	14	50	81	51
Nursing work	78	50	968	50
Child care workers	3	..	264	50
Practical nurses	—	—	280	50
Psychiatric nurses	70	50	97	50
Nurses specialized in surgery	3	..	85	49
Other nurses	2	..	242	50
Mental	725	51	976	51
Office work	14	..	328	51
Draftsmen/women	8	..	59	51
Typists	—	—	57	49
Office workers	6	..	212	51
Administrative work	184	51	396	51
Social workers	20	50	102	52
Head ward nurses	2	..	171	50
Head nurses	—	—	102	50
Office supervisors	162	51	21	51
Technical supervision	203	51	—	—
Fire chiefs	17	50	—	—
Supervisors at construction sites	184	51	—	—
Physician's work	61	49	25	50
Physicians	61	49	25	50
Teaching work	263	51	227	51
Vocational school teachers	184	51	65	51
Secondary school teachers	78	50	24	49
Day care center teachers	1	..	138	51
Total	2797	51	3460	50

Table 2. Work load factors in 1981 and their reliability — Cronbach's α or r.

Work load factor	Reliability
Physical demands	α 0.83
Muscular work	α 0.76
Standing in place	
Continuous walking or movement	
Carrying of objects by hand	
Sudden strainful effort	
Work posture	α 0.76
Similar repeated movements	
Bent or twisted postures	
Otherwise poor postures	
Mental demands	α 0.83
Use of knowledge	α 0.82
Accuracy in information processing	
Complex decision making	
Decision making under time pressure	
Responsibility for people	r 0.55
Communication with people	
Responsibility for others	
Possibilities to develop and influence at work	α 0.85
Possibility to help plan work	
Possibility to influence work environment	
Possibility receive training and update skills	
Possibility to use one's own abilities	
Possibility to learn new things	
Possibility to receive recognition and esteem	
Work tools and rooms	α 0.65
Personnel facilities	
Quality and quantity of tools	
Workplace	
Physical-chemical work environment	α 0.85
Dirtiness and risk of accident	α 0.80
Dirtiness	
Dust, smoke, steam, etc	
Risk of accident	
Machine operating	α 0.71
Noise	
Vibration	
Lighting and glare	
Physical climate	α 0.58
Heat, cold, changing temperature	
Dryness, dampness	
Restless work environment, noisy people	
Organization and social environment	α 0.80
Management	α 0.79
Cooperation between employer and employees	
Supervisor's attitude	
Planning and direction	
Information	
Role conflict	α 0.67
Quantity of responsibility	
Task inconsistency	
Supervision and control	
Fear of failure and mistakes	
Lack of freedom of choice	r 0.59
Paced work	
High work pace and tight time schedule	
Uninspiring work	r 0.34
Monotonous and uninteresting work	
Isolation and loneliness	
Worktime system	r 0.32
Rest breaks	
Workhours	

grouped by factor, correlation, and reliability analyses into seven major groups and further into some minor groups. These classified variables and their reliabilities are presented in table 2.

Every major and minor work load factor was derived as a sum of single variables from the questionnaire. The sum variables were scaled identically (0 through 10). The missing information was replaced by averages of the work profile group values. The four major and some minor variables of stress reactions were derived in a corresponding manner. This procedure has been presented elsewhere (9). The major variables of stress reactions were (i) immediate physical stress at work, (ii) musculoskeletal symptoms, (iii) cardiorespiratory symptoms, and (iv) psychological reactions.

Health status was described by the occurrence of diseases. A list of diseases in the questionnaire included 46 items classified according to the Finnish translation of the International Classification of Diseases (10). The subjects answered the question "Do you currently suffer from any of the following diseases, and, if so, has it (have they) been diagnosed by a doctor or is it your own opinion?" The diseases were classified into the following 11 major groups: (i) musculoskeletal diseases: degenerative arthritis of the upper back, degenerative arthritis of the lower back or sciatica, degenerative arthritis of the limbs; (ii) cardiovascular disease: coronary heart disease, arterial hypertension, congestive heart failure; (iii) mental disease (diagnosed disease or continuous use of sedatives); (iv) accidental injury of the back or limbs; (v) respiratory diseases: nasal catarrh or recurrent inflammation of respiratory organs, bronchitis or bronchial asthma; (vi) diseases of the digestive organs; (vii) diseases of the ears or eyes; (viii) overweight or diabetes; (ix) allergic eczema; (x) rheumatoid arthritis; (xi) malignant tumor.

Work ability was assessed by an index described elsewhere (11). The index value ranged from 7 to 49. Because of a poor memory of absenteeism from work due to the diseases during the previous year, the index rate represents 84 % of the subjects.

The causes of death and disability were taken from national registers. However, for disability compensation granted by the national municipal insurance company, information on the cause of the disability was not coded.

Mortality was analyzed with respect to standardized mortality ratio (SMR), disability, and change of occupation by both cumulative incidence rates and crude rate ratios. A rate ratio was formed as a relation of two incidence rates of the affecting variables, namely, low/high. The cut-off point was below the median (< median, ≥ median). The rates of work disability and change of occupation were calculated in groups from which the diseased and old-age pensioners were subtracted. Rate ratios were corrected for average rates in cases in which the diagnoses of disability were missing.

Results

Major events during the four-year follow-up period

In 1985, 90 % of the subjects responded to the second cross-sectional inquiry. During the four-year follow-up 95 had died, 544 had become disabled, and 311 had changed their occupation (table 3). Most of the subjects (68 %) still worked in the same occupation. Because of lowered pension ages, 463 subjects had retired due to old age, for instance, from occupations such as bus driver and fireman (old-age retirement 55 years) and nurse, bather, and hospital assistant (old-age retirement 57—60 years).

Cardiovascular disease was the most common cause of death, whereas musculoskeletal disease was the most frequent cause of work disability (table 4).

Mortality

Compared with the mortality of the general Finnish population, that of our study population was not high during the four-year follow-up. The highest mortality was found for the men in physically demanding work (SMR 68) and the lowest for the men in mentally demanding work (SMR 36) (table 5). The most common causes of death were cardiovascular disease (45 %) and malignant tumor (41 %). Among the men, death caused by malignant tumors was more frequent than expected.

Cardiovascular mortality among the men in physically demanding work was associated with the presence of cardiovascular disease. For instance, the male installation workers who suffered from cardiovascular disease (but no musculoskeletal disease) in 1981 had the highest mortality rate, and death was the most frequently caused by cardiovascular disease. Those who had reported both a cardiovascular and a musculoskeletal disease in 1981 had a lower mortality rate. A similar tendency was observed also for male auxiliary workers (table 6).

Of the diseases, the presence of malignant tumor, coronary heart disease, and heart congestive health failure in 1981 best predicted mortality during the follow-up period. For the men, the total mortality rate was also increased for those with allergic eczema, overweight or diabetes, bronchitis or bronchial asthma, and arterial hypertension. Of the men whose work ability index was good in the beginning of the follow-up in 1981, only 0.8 % had died, whereas of those with poor work ability 3.9 % had died. For the 55- to 58-year-olds the mortality rate was twofold that of the 44- to 49-year-old subjects.

For the men both cardiorespiratory symptoms and immediate physical stress at work predicted mortality. Excess mortality was seen for the men who had many cardiorespiratory symptoms but few psychological stress reactions (5.2 % mortality compared with 2.4 % for all the men).

Work disability

Disability rates were highest for the men in physically demanding work, particularly for the male auxiliary

Table 3. Major events of municipal workers during the follow-up period (1981—1985).

Event	Men		Women	
	Number in study	%	Number in study	%
Death	67	2	25	1
Disabled	298	11	246	7
Change in occupation	177	6	134	4
Old-age retirement	174	6	289	8
Change to part-time employment	25	1	95	3
Same occupation	1799	64	2456	71
Nonresponse	257	9	215	6
Total	2797	100	3460	100

Table 4. Number of subjects having died or having been granted a disability pension in 1981—1985.

	Men (N)	Women (N)	All (N)
Dead	67	25	92
Cardiovascular disease	35	6	41
Other diseases	32	19	51
Disability pension	298	246	544
Musculoskeletal disease	95	101	196
Cardiovascular disease	79	36	115
Mental disease	21	34	55
Other diseases	59	40	99
Insufficient information	44	35	79

Table 5. Mortality among the men and women and the standardized mortality ratio for 1981—1985 according to previous work content group.

Work content group	Men			Women		
	Number in group	Observed deaths (%)	Standardized mortality ratio	Number in group	Observed deaths (%)	Standardized mortality ratio
Physical	1361	3.0	68	1288	0.6	44
Mixed physical and mental	711	1.7	40	1196	0.7	38
Mental	725	1.9	36	976	0.9	50
Total	2797	2.4	53	3460	0.7	44

Table 6. Cardiovascular mortality in 1981—1985 and the presence of reported cardiovascular and musculoskeletal diseases among the men in auxiliary and installation work.

Disease in 1981	Cardiovascular mortality in 1981—1985			
	Auxiliary work		Installation work	
	Number of workers in group	Observed deaths (%)	Number of workers in group	Observed deaths (%)
Cardiovascular and musculoskeletal disease	60	1.7	74	4.0
Cardiovascular, no musculoskeletal disease	61	3.3	96	8.4
Musculoskeletal, no cardiovascular disease	106	1.0	255	0.5
Neither disease	276	2.0	433	0.5
Total	503	2.0	858	1.6

Table 7. Incidence of work disability among the men and women by work content group.

Work content group	Men		Women	
	Number in group	Work disability (%)	Number in group	Work disability (%)
Physical work	1361	14	1288	11
Auxiliary work	503	18	785	13
Home care	—	0	500	9
Installation	858	11	3	0
Mixed physical and mental work	711	12	1196	6
Kitchen supervision	—	0	146	7
Transportation	572	13	—	0
Dump work	47	15	1	0
Dental work	14	0	81	4
Nursing work	78	6	968	7
Mental work	725	7	976	5
Office work	14	0	328	6
Administrative work	184	6	396	4
Technical supervision	203	9	—	0
Physician's work	61	3	25	4
Teaching work	263	7	227	4
Total	2797	12	3460	8

Table 8. Work stressors affecting the work disability of the men and women by disease.

Work stressors in 1981	Crude rate ratio for disability[a]			
	Musculo-skeletal	Cardio-vascular[b]	Mental	All[b]
Men				
Physical demands	2.5	1.7	2.4	1.8
Mental demands	0.7	0.8	1.6	0.9
Possibilities for developments	0.4	0.7	1.3	0.7
Physical-chemical work environment	2.6	1.4	2.5	1.9
Social organization	1.2	1.2	1.5	1.2
Work schedule	1.1	0.9	1.8	1.0
Women				
Physical demands	4.0	1.6	1.0	2.0
Mental demands	0.5	0.8	1.4	0.6
Possibilities for development	0.5	0.5	1.0	0.6
Physical-chemical work environment	1.9	1.9	1.5	1.6
Social organization	0.7	1.1	2.0	0.9
Work schedule	0.8	1.8	3.1	1.2

[a] Low = < median, high = ≥ median.
[b] Including deaths.

workers. Female auxiliary workers and male dump and transportation workers also often became receivers of disability pensions. For the subjects in mentally demanding work, such as physicians, the disability rates were low (table 7).

Those whose work contained many physical demands and hazards of the physical environment had the greatest risk of disability. These work factors increased musculoskeletal disability and added to the risk of cardiovascular disability. Among the men these factors also predicted mental disability. Poor social organization at work and work schedules predicted mental disability. On the other hand possibilities for development at work decreased the disability risk, particularly the risk of musculoskeletal disability (table 8).

Work features indicating physical demands, such as poor work postures and heavy muscular work, and factors describing the physical environment, such as poor physical climate, dirtiness and risk of accident, best predicted the incidence of work disability.

Workers with both coronary artery disease and mental disease had the highest risk of disability (table 9). Men reporting bronchitis or bronchial asthma were often disabled. A work ability index that was above average was associated with a low risk of work disability pension.

Table 9. Individual factors affecting the work disability of the men and women by disease.

Individual factor in 1981	Crude rate ratio for disability[a]			
	Musculo-skeletal	Cardio-vascular[b]	Mental	All[b]
Men				
Musculoskeletal disease	6.0	1.2	0.9	1.9
Upper back arthritis	3.0	1.6	0.5	1.9
Lower back arthritis, sciatica	3.8	1.1	1.6	1.7
Cardiovascular disease	1.4	3.7	1.2	1.9
Coronary heart disease	1.0	7.3	1.6	3.0
Mental disease	2.0	1.3	10.1	2.2
Accidental injury	3.2	1.5	1.4	1.8
Respiratory disease	1.7	1.6	1.7	1.7
Overweight or diabetes	2.0	1.9	3.0	1.9
Disease of ears or eyes	1.0	1.1	2.0	1.3
Work ability index	0.1	0.3	0.1	0.2
Marital status	1.2	1.6	2.9	1.7
Basic education	0.3	0.5	0.8	0.6
Life satisfaction	0.6	0.6	0.2	0.6
Cigarette smoking	1.8	1.7	2.6	1.8
Physical exercise	0.5	0.8	0.6	0.6
Age	3.8	1.6	2.5	2.6
Women				
Musculoskeletal disease	4.2	1.7	1.9	2.3
Upper back arthritis	3.5	2.1	2.6	2.2
Lower back arthritis, sciatica	3.1	0.9	1.2	1.9
Cardiovascular disease	1.7	6.4	1.5	2.8
Coronary heart disease	2.3	18.2	2.0	5.0
Mental disease	1.4	2.4	14.7	3.2
Accidental injury	3.1	1.6	1.7	2.2
Respiratory disease	1.5	2.0	2.1	1.6
Overweight or diabetes	2.0	1.8	1.2	2.0
Disease of ears or eyes	1.6	0.8	2.6	1.7
Work ability index	0.1	0.3	0.2	0.2
Marital status	1.1	1.2	0.8	1.3
Basic education	0.3	0.4	1.0	0.5
Life satisfaction	0.4	0.5	0.3	0.5
Cigarette smoking	2.0	2.4	1.2	1.7
Physical exercise	0.7	0.6	0.3	0.6
Age	4.6	2.0	2.2	2.8

[a] Low = < median, high = ≥ median.
[b] Including deaths.

Of the subjects with a low work ability index (see reference 11) every third, and of those with a high work ability index only one in ten, had become disabled during the follow-up period. The prognostic validity of the work ability index was analyzed also with respect to the incidence rates for different diagnoses (figure 1). The index best predicted disability caused by musculoskeletal diseases.

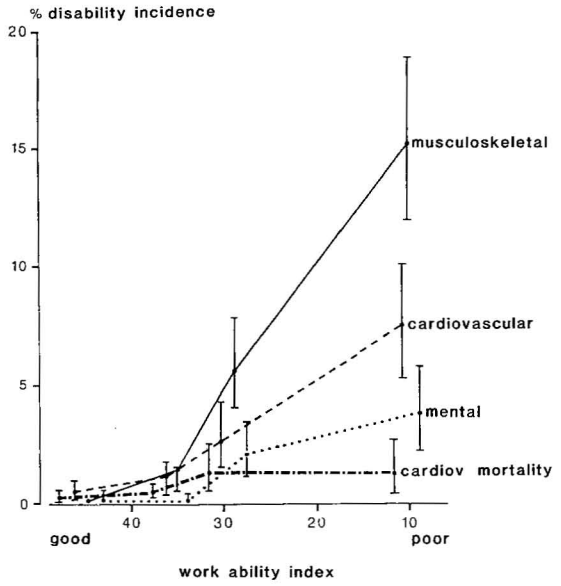

Figure 1. Cardiovascular (cardiov) mortality and the incidence rates of musculoskeletal, cardiovascular, and mental disability pensions and their 95 % confidence intervals during the follow-up from 1981 to 1985 by categories of the work ability index from 1981.

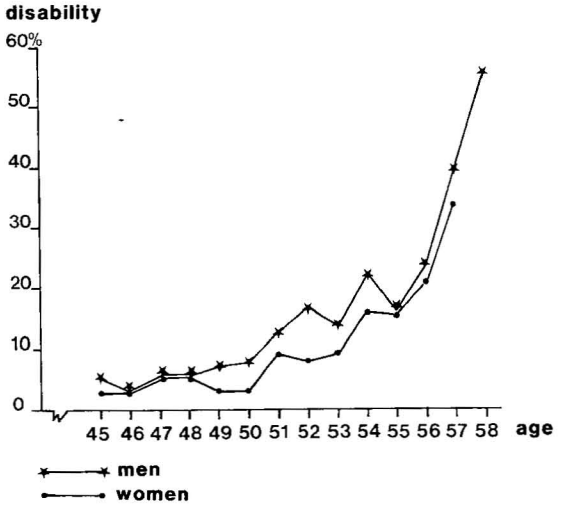

Figure 2. Incidence of disability pensions during the follow-up from 1981 to 1985 by the age (years) of the men and women in 1981.

For all diseases, but particularly for musculoskeletal and mental diseases, the proportion of retired persons began to increase markedly when the work ability index was below 30.

A good basic education decreased the risk of disability in all of the groups of diseases except mental disease. Life satisfaction predicted low risk, particularly the risk of mental disability. Physical exercise decreased, and cigarette smoking, as expected, increased, the risk of disability in all of the disease groups studied. Aging was associated particularly with disability caused by musculoskeletal diseases. Persons in the age range of 55—58 years were disabled five times more often than the 44- to 49-year-olds. The incidence of disability began to increase after the age of 55 years (figure 2).

Stress reactions were strongly associated with work disability. Workers who suffered from several stress symptoms at the beginning of the follow-up period had become disabled at least two times more often than workers who suffered from few stress symptoms. Table 10 shows the crude rate ratios for disability risk by stress reactions in different groups of diagnosis causing disability. Psychological stress reactions best predicted disability among the women with mental disability. Among the men psychological stress reactions also predicted musculoskeletal disability. As expected, musculoskeletal symptoms and immediate physical stress at work predicted musculoskeletal disability well. For the men with cardiorespiratory symptoms, surprisingly, the cause of disability was more often mental than cardiovascular. Sleep disturbances, mental symptoms, and aversion reactions were the most impairing stress reactions, and back pain and lower limb pain were the most impairing musculoskeletal symptoms. Symptoms of cardiovascular circulation were the most impairing symptoms of physical overload. (See reference 9.)

Change of occupation

During the follow-up period the men had changed occupation slightly more often than the women. The women doing mental work had changed occupation the most often among the women. The men doing physical work had changed occupation the most often among the men, and those doing mental work had made such a change the most seldom. The subjects who experienced a high work load had not changed occupation often. An exception was the women doing mentally demanding work. If, in addition, the work contained much muscular work, such as the work of day care center teachers, the women often changed occupations.

The workers who suffered from mental disease, congestive heart failure, rheumatoid arthritis, diseases of the digestive organs, or accidental injuries at the beginning of the follow-up period had changed occupation the most often. The men who suffered from these

Table 10. Symptoms affecting the work disability of the men and women by disease.

Symptoms in 1981	Crude rate ratio for disability[a]			
	Musculo-skeletal	Cardio-vascular[b]	Mental	All[b]
Men				
Immediate physical	2.3	2.1	1.6	2.4
Musculoskeletal	8.5	1.9	1.2	2.4
Cardiorespiratory	2.0	4.1	11.0	1.9
Psychological	3.6	1.8	3.3	2.3
Women				
Immediate physical	3.5	1.8	1.7	2.3
Musculoskeletal	4.7	1.7	2.4	2.2
Cardiorespiratory	1.8	4.6	4.8	2.3
Psychological	2.4	2.7	8.4	2.8

[a] Low = < median, high = ≥ median.
[b] Including deaths.

diseases had changed occupation more often than the women. Change of occupation had occurred also among the men with allergic eczema and diseases of the ears or eyes.

The men who had developed arterial hypertension or experienced accidental injuries of the back or limbs during the follow-up had also often changed occupation. However, for the women who developed disease during the follow-up, the rate of changing occupation was not increased.

The presence of different symptoms was not associated with a change of occupation. However, the men with few psychological but many cardiorespiratory symptoms and those with few psychological but many musculoskeletal symptoms had changed occupation about twice as often as the men experiencing an average of such symptoms. Generally, a change of occupation was associated with a high score for physical symptoms, but a low score for mental ones.

Furthermore, among the women, a change of occupation was linked with good health and work ability, and among the men it was associated with poor health and work ability. Change in occupation was not linked with age.

Discussion

During the four-year follow-up, 1 % of the 6257 subjects had died, 9 % had become disabled, and 5 % had changed occupation. These changes occurred the most often in physically demanding jobs. The highest disability rates were observed for the auxiliary, transportation, installation, and dump work groups. Mortality was highest among the men doing physical work. In addition a change of occupation was more common among the subjects doing physical work. High disease prevalences were found in the same occupations both in 1981 and 1985 (6, 11). Although during aging the selection of subjects out of worklife is higher for individuals in physically heavy jobs than for others, in our study the selection did not markedly improve the cross-sectional picture of health among subjects in physically demanding occupations. The aging workers doing physically demanding work had both poor health and poor work ability and high disability mortality rates. The most impairing work loads were muscular work, poor work postures, poor physical climate at the workplace, dirtiness, and risk of accidents. The diseases that most increased work disability were coronary heart disease, congestive heart failure, malignant tumor, mental disease, rheumatoid arthritis, and, among the men, bronchitis or bronchial asthma. Malignant tumors and coronary heart disease particularly increased mortality. The work ability index predicted musculoskeletal and mental disability particularly well, but its validity was not very good for cardiovascular mortality.

At the age of 55 years the incidence of disability began to increase strongly. At this age one should pay particular attention to how workers manage in their jobs. Because physical demands are harmful for those with a decreased physical work ability, the benefits of physical exercise should be tested. Physical exercise as a form of early rehabilitation can be useful for maintaining work ability during aging.

Surprisingly, mortality was lower among the men with both cardiovascular disease and musculoskeletal disease. This finding suggests that the presence of several diseases can "protect" elderly men because of decreased physical exertion and increased attention. However, suffering from several diseases or symptoms increased the work disability pension rates.

Generally, the mortality and disability rates of the subjects in municipal jobs were similar to those observed earlier for Finnish occupations with similar work demands (12, 13). The low SMR rates were due to the comparison with the general mortality rates of the Finnish population, which also includes people on disability pensions.

A change of occupation was the most frequent among workers doing physical work, but it was not linked with high work loads. Those who did not experience their work to be particularly loading changed

their occupation the most often. This finding can be explained by the health status. Particularly women had changed occupation if their health was good. This result might reflect the poor possibilities of elderly women in the labor market, only those having good health and a good work ability being able to take new jobs. Men had changed occupation often if they suffered from physical but not mental stress symptoms. Therefore a change of occupation among elderly workers seems to be linked with good mental resources.

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