Domain: Work ability

Recommended Citation: Takala, Esa-Pekka and Jorma Seitsamo (2015). "Domain: Work ability." It is the full report of the respective chapter in: Hasselhorn HM, Apt W (2015). *Understanding employment participation of older workers: Creating a knowledge base for future labour market challenges.* Research Report. Federal Ministry of Labour and Social Affairs (BMAS) and Federal Institute for Occupational Safety and Health (BAuA). BMAS/ BAuA, Berlin, 120 pages. Online available at: http://www.jp-demographic.eu/about/fast-track-projects/understanding-employment

Introduction[1]

Historical notes

In all societies people have somehow been expected to participate by "earning" the living of them and their family with "work". In the evolution of social systems and moral codes working has become a social norm; all members of the society have to participate into the building of the welfare of the community. Still the participation has been allowed to be lower, if the individual capacity does not reach the "standard" output of work. This release of work has been allowed to several reasons ("disabilities" with reduced functional capacity: young or old age, sickness, physical or mental impairment, etc.). With the growing welfare the societies have more and more taken care on these "disabled" individuals.

By development of insurance and pension systems social pacts were needed to fairly distribute the welfare. The individual performance affected by the disability had to be regulated by legislative rules to avoid unfairness in the distribution of benefits. Standard rules for these decisions have been based on age (age to start working, age of retirement), health condition (disease, impairments), or pregnancy and child-birth. Further, the social benefits have been broadened to conditions like unemployment, if the individuals have difficulties to gain their earning by usual work.

Another approach on ability to work has been in the recruiting of workers. The aim has been to find the best fit of workers to specific tasks from the potential candidates. Physical and mental capacities and skills have been the main aspects in the estimation work ability. In the recruiting process a health certificate has usually been demanded on the final step as the candidate already has been selected by the other criteria to be suitable to work.

Disability versus ability

Some insurance rules have handled health conditions by stating the rate of disability or invalidity; e.g. after accidental injuries blindness has been rated to cause 100% invalidity. However, today a blind person can be 100% capable to work.

In the social security rules the work ability has commonly been seen as disability related to demands of the work. The reference work has been either the usual work the person is doing (e.g. in the medical certificates for sick-leaves) or sometimes other work (e.g. in the vocational rehabilitation).

The health condition has been defined by medical conditions and the WHO international classification of diseases (ICD) has been one standard reference for the definition of disability (1).

[1] The authors of this report are Esa-Pekka Takala and Jorma Seitsamo of the Finnish Institute of Occupational Health in Finland. They were national representatives in the working group „Understanding employment participation of older workers" appointed by the Joint Programming Initiative „More Years, Better Lives – The Potential and Challenges of Demographic Change".

Domain: Work ability

Without a disability caused by disease the health related social benefits are not allowed to the person.

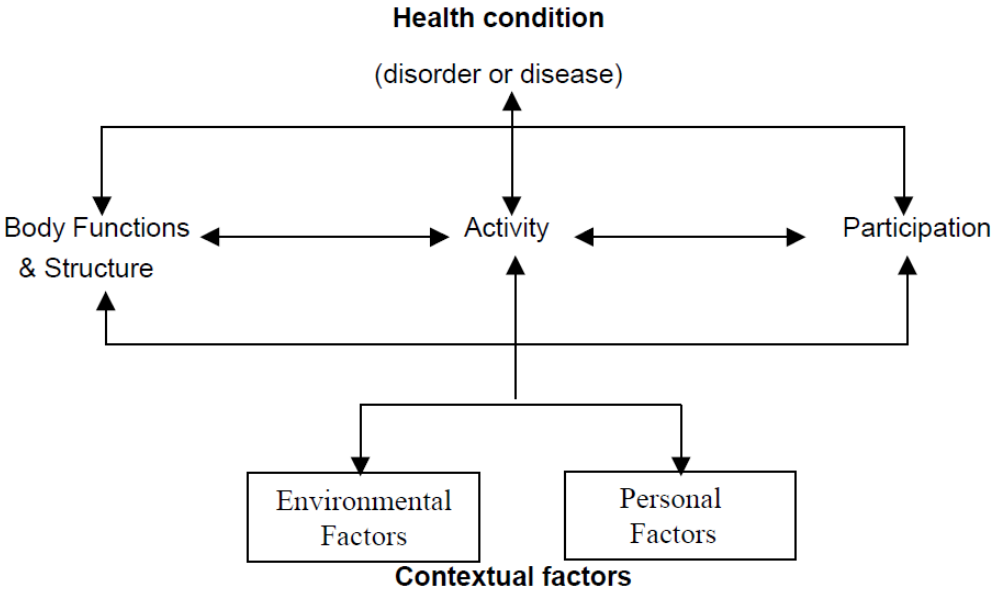
- This definition has analogy in the general definition of “health” by “the lack of disease”; similarly “ability” is “the lack of disability” (note the double negation in these definitions “lack of” AND “dis”)

Defining disability by diseases is problematic. In most countries the sick-leaves and disability pensions are due to two major groups of chronic diseases – musculoskeletal and mental diseases. Common to these health conditions is that there are scanty medical findings that can be stated to be objective. In mental diseases, the medical doctor makes the diagnosis mostly by the story of the patient. In musculoskeletal diseases, pain is the most common symptom but there is no ways to show objectively that a person has or does not have pain. Many musculoskeletal disorders are related to anatomic degenerative changes that increase in the body with age – and these changes are common in the population without any symptoms or disability. Often the course of these common chronic conditions fluctuates in periods with and without disabling symptoms.

Work capacity assessment with several functional tests has been one approach to define the work ability only by the lack of medical diseases. (2)

WHO introduced in 2001 The International Classification of Functioning, Disability and Health (ICF) to stress that the functions are more important than classical medical diseases in the evaluation of health (3). ICF framework has been shown to be beneficial in rehabilitation. A work is going on to combine ICF codes to the next version of ICD.

ICF observes the individual person by four faces: body functions, body structures, activities and participation, and environmental factors (see the figure below (3)). This broad scope seems to be a potential framework for the concept of work ability as well.



Domain: Work ability

Systematic reviewing of research literature

The heterogenic definition of work ability hinders the systematic searches in the research literature databases. E.g. in the English dictionaries “workability” (written as one word) refers to materials and tools to be capable of being worked or used feasibly. Thus using this as a search term gains lots of reports that are not related to work ability. In PubMed search (on Nov 18th 2014) the term “work ability” gained 955 references (742 during the past 10 years). Term "work disability" gained 1430 items (747 for the past 10 years). Only 50 references were common to these searches (36 in the past 10 years). With either of these terms (OR) the result was 2335 references (1453 in the past 10 years).

The findings clearly reflects the two conceptual approaches: definition by lack of disability or an attempt to define work ability as a separate concept.

With the limited resources in this project it was not possible to make a systematic analysis of all these references. Instead the reports already known or found in the national reports with identified related references in the database searches were the data for this domain report.

Work ability

In the literature of occupational health the discussion on the concept “work ability” started to grow up in 1990-ees by the work done in the Finnish Institute of Occupational Health (FIOH). The basic thinking of the concept “work ability” was the stress – strain –model and the comparison of the personal capacity of the worker to the demands of work; a good balance between these meaning good ability to work. This primary concept has been appended by the factors defining the personal capacity (health, physical and psychological capacity, skills, education and training, values, attitudes, and motivation) and characteristics of work (physical and psychological loading and demands, work organization and management). (4) A metaphor of a house has been used to describe the over mentioned items as the basements supporting the “work ability” on the top. External factors in the social environment and family stay around the house. (5)

Measures of work ability

A measure for work ability was developed in FIOH: the Work Ability Index (WAI). In a follow-up study among communal workers this measure was shown to be strongly associated with disability pensions. A decrease of work ability by age was shown especially among blue-collar workers (6). The work ability index has been translated into 25 languages and used as a measure of work ability in several studies. The reproducibility (reliability) of WAI has been good. It has also been associated with work participation of older workers, measured mostly as early retirement or intentions to stay at work (see e.g. (4, 7-12) and references in them). WAI includes seven dimensions: an individual’s (i) physical and (ii) mental demands in relation to his work, (iii) diagnosed diseases, (iv) experienced limitations in work due to disease, (v) occurrence of sick leave in the previous 12 months, (vi) work ability prognosis, and (vii) mental resources. However, using a single summary index of these items will obviously miss dimensions of the measure (13).

WAI was proposed to be used in occupational health and has been widely adopted especially in Finland. There are national differences in the occupational health practice as well as in the knowledge and understanding the concept of “work ability” (14). The national reports of this project show that work ability has not often been measured with WAI or a similar construct but mostly by early retirement due to disabilities. In some countries (e.g. Belgium) productivity has been used as a proxy for work ability and mainly in the economic literature. In a large Dutch study the ability to work

was studied with a single item of WAI that together with motivation and opportunity to work were seen as intermediate steps to early retirement (15).

Cut-off points of WAI have been recommended to classify work ability to four categories ("poor" – "excellent"). However, the cut-off points seem to depend on the objectives of screening and may be different for manual and office workers (9).

In several studies WAI has been used as an outcome measure of work ability and associations of items included to this index have been used in the "validation" of WAI. This kind of analysis (studying predictors that are already included into the construct of the outcome) will give too highs estimates of statistical associations. A single question on the worker's own estimation on her/his ability to work seems to be the strongest item in the index (16) and it has been clearly associated with future participation at work (17). Health (symptomatic diseases) and functional capacity together with the demands of work have strongly been associated with this subjective estimation (12, 18-20). In the national Health 2000 study in Finland low education was associated with lower work ability. But the association reduced, if the skills were sufficient in relation to the demands of work. Learning difficulties were also associated with lower work ability. The oldest group of workers had probably been selected to manual tasks due to these difficulties because the special education was very rare in their childhood. (18)

Concept of work ability

Based on his thorough conceptual analysis of work ability, Tengland (21) concludes that two definitions of work ability are needed. First, ability to specific jobs requires special training and competence in addition to the basic health and performance. Secondly, basic standard competence and health is needed to manage some kind of job. In many countries the social security system makes difference between these two definitions. In another analytic paper, Tengland (22) describes the items needed for questionnaire tools to assess work ability.

In many situations the concept of work ability has been understood as an on-off phenomenon; e.g. due to the illness you are totally capable for work or you should be totally out of work (on sick-leave). Partial work ability has been introduced into the legislation of several countries as an option to work part time without losing the job. In Finland the use of partial sickness benefit reduced the risk of full disability pension compared with full sick-leave (23). The experiences in Sweden have been similar (24). Part-time sick leave in the very beginning of an episode of musculoskeletal diseases was effective to reduce the total number of sickness days during the one year follow-up (25). In UK the "fit note" (Statement of fitness for work) was introduced to replace the old sick note in 2010 (26). The new practice demands medical professionals, workers and employers to change their orientation from disease and disability to the ability to work. Until now only qualitative research is available on the effects of this new legislation in UK.

Return to work from disability pension seems to be relatively uncommon especially among elderly workers, but still happens (27). For elderly workers with chronic disabilities this means mostly adapting the work by the capability of the worker.

The broad concept of work ability demands multidisciplinary skills for the professionals who make estimation of work ability. E.g. a medical condition and disability does not automatically mean work disability, if the work can be adjusted corresponding to the remaining capacity of the worker. For some high-demanding jobs (e.g. fire fighters, ambulance drivers, flight pilots, etc.) specific requirements for the worker's ability to work have been defined by physical, mental and psycho-social characteristics of work and specific testing has been applied to evaluate the work ability for

these jobs (28). Generally, the estimation of work ability is done by medical professionals but there is wide variation in their practice to estimate the duration of the need for sick leave (29). In addition, the longer the initial sickness absenteeism has been, the lower has been the probability to return to work. This stress the needs to study the interventions to shorten the initial periods of sick leave. Medical professionals have agreed that many non-medical factors determine the work ability (30).

Research conclusions

- The broad concept of work ability has been mostly used in Finland. The concept seems to be different in most other countries although the Work Ability Index or a single item of this index has been used in research. Using of a single measure of a complex phenomenon will, however, loose the dimensionality of the phenomenon.
- Theoretical analysis on the concept of work ability is scanty. Most studies don't express clearly the theoretical framework even though measures of work ability have been named in the research.
- Measures of work ability have well predicted early retirement or intentions to retire.
- Several studies have used work ability as an outcome to find factors reducing or enhancing it.
- Work ability together with motivation and opportunity to work can be seen as intermediate steps to early retirement.
- Health and individual capacity are associated with work ability. In the studies on the determinants of work ability the summary index can – however – give too high associations, if the outcome already contains the predictor under study. Therefore a single question or other independent measures of work ability should be used if the goal is in the predictors of work ability.
- Generally, work ability seems to reduce with age especially in jobs with physically strenuous tasks. This is probably related to the reduction of physical performance and health by age.
- Physical, environmental and organizational working conditions are associated with perceived work ability.
- Among elderly the low education and undetected learning difficulties have probably selected some workers to jobs where reduced physical performance due to the age or health problems limits work ability. The low education and poor learning skills hinder their rehabilitation to other jobs.
- The work ability of unemployed workers has been studied scarcely.

Domain: Work ability

References

1. International Classification of Diseases (ICD): World Health Organization. Available from: http://www.who.int/classifications/icd/en/.

2. Work Capability Assessment. Wikipedia. last modified on 10 November 2014

3. International Classification of Functioning, Disability and Health (ICF): World Health Organization. Available from: http://www.who.int/classifications/icf/en/.

4. Ilmarinen J. Work ability--a comprehensive concept for occupational health research and prevention. Scand J Work Environ Health. 2009;35(1):1-5.

5. Ilmarinen J, Tuomi K, Seitsamo J. New dimensions of work ability. International Congress Series. 2005;1280(0):3-7.

6. Tuomi K, Ilmarinen J, Seitsamo J, Huuhtanen P, Martikainen R, Nygard CH, et al. Summary of the Finnish research project (1981-1992) to promote the health and work ability of aging workers. Scand J Work Environ Health. 1997;23 Suppl 1:66-71.

7. Bethge M, Gutenbrunner C, Neuderth S. Work Ability Index predicts application for disability pension after work-related medical rehabilitation for chronic back pain. Arch Phys Med Rehabil. 2013;94(11):2262-8.

8. Roelen CA, Heymans MW, Twisk JW, van der Klink JJ, Groothoff JW, van Rhenen W. Work Ability Index as Tool to Identify Workers at Risk of Premature Work Exit. J Occup Rehabil. 2014.

9. Schouten LS, Joling CI, van der Gulden JW, Heymans MW, Bultmann U, Roelen CA. Screening manual and office workers for risk of long-term sickness absence: cut-off points for the Work Ability Index. Scand J Work Environ Health. 2014.

10. Alavinia SM, de Boer AG, van Duivenbooden JC, Frings-Dresen MH, Burdorf A. Determinants of work ability and its predictive value for disability. Occup Med (Lond). 2009;59(1):32-7.

11. El Fassi M, Bocquet V, Majery N, Lair ML, Couffignal S, Mairiaux P. Work ability assessment in a worker population: comparison and determinants of Work Ability Index and Work Ability score. BMC public health. 2013;13:305.

12. van den Berg TI, Elders LA, de Zwart BC, Burdorf A. The effects of work-related and individual factors on the Work Ability Index: a systematic review. Occup Environ Med. 2009;66(4):211-20.

13. Martus P, Jakob O, Rose U, Seibt R, Freude G. A comparative analysis of the Work Ability Index. Occup Med (Lond). 2010;60(7):517-24.

14. Coomer K, Houdmont J. Occupational health professionals' knowledge, understanding and use of work ability. Occup Med (Lond). 2013;63(6):405-9.

15. de Wind A, Geuskens GA, Ybema JF, Bongers PM, van der Beek AJ. The role of ability, motivation, and opportunity to work in the transition from work to early retirement - testing and optimizing the Early Retirement Model. Scand J Work Environ Health. 2014.

Domain: Work ability

16. Roelen CA, van Rhenen W, Groothoff JW, van der Klink JJ, Twisk JW, Heymans MW. Work ability as prognostic risk marker of disability pension: single-item work ability score versus multi-item work ability index. Scand J Work Environ Health. 2014;40(4):428-31.

17. Sell L, Bultmann U, Rugulies R, Villadsen E, Faber A, Sogaard K. Predicting long-term sickness absence and early retirement pension from self-reported work ability. Int Arch Occup Environ Health. 2009;82(9):1133-8.

18. Gould R, Ilmarinen J, Järvisalo J, Koskinen S, editors. Dimensions of work ability. Results of the Health 2000 Survey. Helsinki: Finnish Centre for Pensions, The Social Insurance Institution, National Public Health Institute, Finnish Institute of Occupational Health; 2008. Available from: http://www.etk.fi/fi/service/julkaisut/440/julkaisut?contentPath=fi%2Fjulkaisut%2Ftutkimusjulkaisut%2Ferillisjulkaisut%2Fdimensions_of_work_ability&pageOffset=0&firstTime=false

19. van den Berg TI, Alavinia SM, Bredt FJ, Lindeboom D, Elders LA, Burdorf A. The influence of psychosocial factors at work and life style on health and work ability among professional workers. Int Arch Occup Environ Health. 2008;81(8):1029-36.

20. van den Berg TI, Elders LA, Burdorf A. Influence of health and work on early retirement. J Occup Environ Med. 2010;52(6):576-83.

21. Tengland PA. The concept of work ability. J Occup Rehabil. 2011;21(2):275-85.

22. Tengland PA. A qualitative approach to assessing work ability. Work. 2013;44(4):393-404.

23. Kausto J, Solovieva S, Virta LJ, Viikari-Juntura E. Partial sick leave associated with disability pension: propensity score approach in a register-based cohort study. BMJ open. 2012;2(6).

24. Andren D, Svensson M. Part-time sick leave as a treatment method for individuals with musculoskeletal disorders. J Occup Rehabil. 2012;22(3):418-26.

25. Viikari-Juntura E, Kausto J, Shiri R, Kaila-Kangas L, Takala EP, Karppinen J, et al. Return to work after early part-time sick leave due to musculoskeletal disorders: a randomized controlled trial. Scand J Work Environ Health. 2012;38(2):134-43.

26. Collection Fit note: Department for Work and Pensions. Available from: https://www.gov.uk/government/collections/fit-note.

27. Laaksonen M, Gould R. Return to Work After Temporary Disability Pension in Finland. J Occup Rehabil. 2014.

28. Sluiter JK. High-demand jobs: Age-related diversity in work ability? Applied Ergonomics. 2006;37(4):429-40.

29. Kiessling A, Arrelov B, Larsson A, Henriksson P. Quality of medical certificates issued in long-term sick leave or disability in relation to patient characteristics and delivery of health care. Scand J Public Health. 2013;41(4):412-20.

30. Dekkers-Sanchez PM, Wind H, Sluiter JK, Frings-Dresen MH. What factors are most relevant to the assessment of work ability of employees on long-term sick leave? The physicians' perspective. Int Arch Occup Environ Health. 2013;86(5):509-18.

Domain: Work ability