Reviewer's report

Title: Registry-based data of psychosocial working conditions and occupational groups as predictors of disability pension due to musculoskeletal diagnoses: a prospective cohort study of 24,544 Swedish twins

Version: 1 Date: 1 December 2012

Reviewer: Anne Juvani

Reviewer's report:

MAJOR COMPULSORY REVISIONS

#1 The main problem with the manuscript is the inadequate description on how the data on psychosocial working conditions was gathered. The authors derive job demands and control (and further job strain) from participants’ occupations by using JEM and refer to Karasek (1990) [25] and Fredlund (2000) [26]. However, reference #26 needs to be explained more detailed in order to readers to understand the exposure and to estimate the validity of the estimation for psychosocial working conditions. In other words, paragraph with heading "Occupational groups and psychosocial working conditions" needs major revisision and assessement for the exposure "psychosocial working conditions" needs to be explained more detailed in the methods.

#2 Because demands, control and social support (and further "type of job or job strain as I prefer/ suggest) were based on participants’ occupation and were not derived from a survey to study participants (but general values of Swedish employees in the same occupation), the exposure appears very proximate. Thus the results should be interpreted cautiously. Please discuss this in the Discussion part of the manuscript or provide data that clarifies the validity of the exposure in the Methods.

#3 Study sample was over 42,000, but the data was available for only 14,339 participants. What’s the reason for lack of data? Further, in the Title of the manuscript you give number 24,544 which I could not /easilly) find from the methods. Please revise all the numbers and provide only cinsistent numbers.

#4 Baseline/ beginning of the follow-up remains unclear. It should be stated more clearly. Further, the authors refer to long follow-up time in the Results and the Discussion. However, this is only true considering the risk of DP by occupations. Since the assessment of job strain was based on reference dated 2000, there probably is differences in follow-up time varying by the exposure (occupation, job strain).

#5 Please consider a possibility of an error in definition of type of jobs. The definition of demands was that high score indicated low demands, i.e. the scale for demands is inverse compared to control and sos. support. Based on the results (no association with high strain jobs), I assume that authors might have
used job demands in correctly (i.e. high strain was defined as combination of above median demands and median or below median control = low demands and low control= passive jobs). Writing out the definition of type of jobs (as described below), would help to decide if the error occurs or not.

#6 The last paragraph of the “Occupational groups and psychosocial working conditions” needs more clarification: 1) is the “type of job” used as an exposure for each individual participant? If so, it would be more clear to state for example: FOR EACH PARTICIPANT HIS/ HER OWN DEMAND AND CONTROL SCORES WERE USED TO CREATE A “TYPE OF JOB” (OR JOB STRAIN?) SCORE. AS A CUT POINT FOR LOW AND HIGH DEMAND AND CONTROL SCORES A MEAN OF ALL PARTICIPANTS WERE USED (XX (RANGE) FOR DEMANDS AND XX(RANGE) FOR CONTROL).

Please please, write open the definition of all types of job (high strain, passive, active, low strain and revise if the type of jobs used in the analyses are now generated correctly: median and below median (!) demands (= high demands) and median and below median control (= low control)=high strain etc.

#7 The authors emphasize (in Discussion and in Results) that adjustment by family factors did not affect the HRs and also that genetic background or shared environment of the twins does not affect the results. However, family factors may not be true confounding factors (but probably are mediating factors) since exposure of the psychosocial working conditions was based on participant’s occupation, which probably is decided prior to family factors (marriage and children) and thus do not affect the analyses. Childhood environment may likely affect the occupation but has a minor effect on DP. A confounding factor has to interfere with both the exposure and end-point.

#8 Please consider adjusting the analyses also by physical work load, since it may be an important confounding factor (also affecting the job strain).

MINOR ESSENTIAL REVISIONS

#1 I don’t see any scientific interest in showing that occupations that have heavy physical work load (such as transportation, mining, health care) have greater risk for DP due to MSD when compared to occupations with no heavy physical work load (administration).

# 2 I don’t see the relevance of the twin analyses (the shared family environment of the twins is part of the participants’ childhood and disability pension is likely only marginally, distantly and indirectly to be dependent on it) in the present study and would consider not using twin analyses at all. In consequence, the manuscript would be more concise and more readable.

If the authors want to leave the twin analyses to the manuscript, it might be relevant to study the association of the twins family background to the occupation (since decision on the occupation is made in early adulthood and is likely dependent on childhood family environment).
#3 Please provide more results (i.e. give specific HRs and CIs in the Results) briefly in the Results of the manuscript and leave the speculation (if decide to leave it to the manuscript) to the Discussion. In my opinion, the present discussion of the manuscript is not balanced with and fully supported by the data.

#4 Tables 1 and 2 need revision. Please, give labels (such as n, %, SD etc.) also in the columns and not solely in the headings of the tables

#5 Please, consider using term "job strain" instead of "type of jobs"

#6 There seems to be a problem on statistics- paragraph, line 3: ("The reference group was those individuals having no DP or DP due to any other reason"). As the DP is outcome it cannot be a reference group.

#7 Please, correct the error in title (register-based, not registry-based). The n given in the title is not found in the methods. Please consider using term “job strain” in the title instead of psychosocial working conditions, since you only study job strain and not any other psychosocial work conditions.

DISCRETIONARY REVISIONS

#1 Please consider dividing heading: “Occupational groups and psychosocial working conditions” in two and using subheadings for “psychosocial working conditions” (such as “Job control, Job demands and social support” and “job strain”) to make this section more readable.

#2 "Study population and data"- paragraph lines 12-14 belong to next chapter “disability pension”.

Level of interest: An article of limited interest

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests