



The development of a stage-I risk filter for physical workload

The application of stage-II risk assessment tools, like NIOSH, is time consuming. Especially SME's may not have the time for this. To motivate employers to perform a risk assessment they need a quick and simple stage-I risk filter, a checklist.



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AIM

The aim of this project is to develop a stage-I risk filter for employers (laymen) that identifies possible hazards with respect to physical workload and indicates on which aspects a stage-II risk assessment tool should be applied. The result is a web tool.

METHODS

The development process consists of the following activities:

1. collect existing stage-II risk assessment tools;
2. select from the stage-II risk assessment tools suitable parameters for the stage-I risk filter, the checklist;
3. develop the alpha version of checklist, including algorithms in Excel;
4. determine concurrent validity between the checklist and the stage-II risk assessment tools;
5. adjust the beta version checklist and test it;
6. build the release version of checklist, the web tool.

ASPECTS OF PHYSICAL WORKLOAD COVERED IN THE CHECKLIST

- Lifting and carrying (whole body)
- Pulling and pushing (whole body)
- Hand/arm tasks
- Awkward postures (whole body)
- VDU work
- Whole body vibrations
- Energetic loading
- Physical inactivity
- Work related musculoskeletal disorders

RESULTS

Results wordt: By July 2010 the actions 1 to 3 are completed. Actions 4 to 6 will be carried out from September to November 2010.

The development of the **lifting and carrying** part of the checklist is described here as an example. Checklist questions were based on the stage-II risk assessment tools NIOSH and KIM. **Critical risk factors** from these tools are: load mass; horizontal distance between load and lower back; duration of exposure; and body posture. The checklist questions aim to **distinguish between acceptable situations (green and somewhat orange) and non-acceptable ones (fairly orange and red)**. In the latter case, a stage-II risk assessment tool is recommended. The figure below shows the Excel version of the checklist, filled out

for a hypothetical situation. Algorithms (not shown) connect the checklist questions (upper part) and the summary assessment (lower part).

Erase all input
Summary

1 Lifting & carrying Erase

Is during the working day a task present in which more than 3 kg is lifted and/or carried? Yes No

Is the object weight more than 15 kg (men) or more than 7.5 kg (women)? Yes No
15 kg equals the weight of one full bucket of water and one half filled bucket

Is the time spent on lifting and carrying tasks more than 2 hours per working day? Yes No
Please take the gross time spent on lifting and carrying tasks, and not the net time spent on the lifting and carrying actions. The latter is always a part of the first, except when the task involves continuous lifting and carrying.

Is the frequency of lifting and/or carrying more than 4 times per minute? Yes No

Is the initial position of the load below knee height or above shoulder height or is the end position of the load below knee height or above shoulder height? Mark 'yes' if at least one of the four situations occurs; mark 'no' if none of the situations occurs Yes No

Is the load carried against or close to the body? Yes No

Does the trunk have significant axial rotation or sideward bending during lifting, carrying or putting down the load? The answer is 'yes' if trunk rotation or sideward bending is the characteristic posture during manual handling. If the rotation or sideward bending only occurs occasionally while the characteristic posture is a straight trunk, the answer to this question is 'no'. Yes No

Do you assess both lifting and carrying? Yes No

Summary assessment Back to input

LIFTING & CARRYING RISK FACTOR	POSSIBLE RISK
Mass	Yes
Duration	No
Frequency	No
Load position	Yes
Horizontal distance	Yes
Asymmetry	No
Lifting and carrying	No
Total score	2
Advice	Score 1 to 4; there's a risk for physical overload because of lifting; you are advised to apply the NIOSH tool

ALGORITHMS FOR LIFTING AND CARRYING ON SEPARATE HANDOUT

REFLECTION

For four topics stage-II risk assessment tools are lacking: awkward postures, whole body vibrations, energetic loading and physical inactivity. Thus, checklist questions had to be based on other sources. For awkward postures, we are developing a stage-II risk assessment tool, which will be ready in December 2010. For whole body vibrations, we performed experiments to determine if and what easily acquired information can validly represent the vibration categories of the European Guideline (2002). For energetic loading and physical inactivity, we based our questions on existing stage-I risk filters and simple web-based self evaluations. Future validation and use by employers will demonstrate whether our stage-I risk filter is suitable to identify possible hazards with respect to physical workload.

REFERENCES

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- National Institute for Occupational Safety and Health (1994) NIOSH Publication No. 94-110: Applications Manual for the Revised NIOSH Lifting Equation, <http://www.cdc.gov/niosh/docs/94-110/>
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