Reviewer’s report

Title: Data processing costs for three posture assessment methods

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Reviewer: Dwayne Van Eerd

Reviewer’s report:

Review of the manuscript entitled: Data processing costs for three posture assessment methods
by Catherine Trask, PhD, Svend Erik Mathiassen, PhD, Jennie Jackson, MSc, Jens Wahlström, PhD

Trask and colleagues have submitted a well written and very useful manuscript about data processing costs for posture assessments in workplace studies. The stated objective of the paper was to quantify and compare costs of three posture assessment methods and suggest a general cost model for use in these types of studies. This is an important addition to the scientific literature and will be of great interest to researchers who conduct epidemiologic and intervention research in the field of occupational health.

The paper presents a cost model based on research conducted in airline baggage handling. Specifically they examined the costs associated with data processing of three different postural assessment methods. The methods, data, and assumptions are well described so that the reader can determine if the situation applies to their research situation. The “simulated” data is a valuable addition to the paper. The manuscript is a companion to previous work by these authors describing the cost of data collection. The authors build upon the literature describing the challenges of sampling posture and behaviour data. There may be additional literature from occupational hygiene that may apply but the most directly relevant literature (much from the same group of authors) is noted. The cost model and the description of various scenarios are useful for researchers in this field.

Discretionary revisions:

1) Consider adding some reference to the occupational hygiene literature that explores the concept of sampling and costs for different exposures such as inhalation or skin contact. I am not up-to-date on this literature but believe, from a brief look at this literature in the late 1990’s that, it may apply here.

2) Consider adding a specific third objective addressing the comparison of total data processing costs. At present that aspect of the paper is covered by the overarching goal statement (but uses the term “study design” inappropriately, see below) and somewhat by the current second objective. I think it would strengthen the paper to include it as a specific objective.

3) In Methods - Inclinometer data processing section, first paragraph: consider
reporting on how long it took to examine and determine that the data files could not be used due to excessive noise. This may add to costs since often researchers will try to use all available data. Does this add to the variable costs??

4) Should equipment repair (including technical support) costs or equipment upgrade costs be considered somewhere? For me it came up in the Discussion section – Impact of fixed and variable costs (fifth paragraph) when noting replicated data collection. Perhaps this is already covered later in the Validity section where the general researcher costs are noted (second paragraph). If so, please consider adding it specifically.

Minor essential revisions:

1) Clarification of where the cost of statistical analysis should fall in your overall model of study costs. I would argue that statistical analysis is a data processing cost as rarely can the raw results of data processing be reported as they are. In fact, one could argue that it is often the statistical analysis that requires “translation” for end-user audiences. If you choose to keep it separate from data processing (as it is now) then I strongly suggest also keeping it separate from reporting/KT but specifying where these costs falls in the manuscript would be useful.

2) Your comment in the Discussion – Validity section, second paragraph about self-report data being not as easy to develop post-hoc research questions should be clarified (“Both the inclinometer and observation methods allow for post-hoc development of research questions via alternate processing strategies; this would be harder to perform with the self-report data.”) Well collected, standardized self-report data can be valuable for post-hoc analysis and question generation. Your comment is too general and I feel should be specific to the type of self-report data collected in the study you describe.

Major compulsory revisions:

1) The various scenarios presented in Table 1 and described in Methods – Simulations based on study costs section, first paragraph are not different “study designs”. The use of this term is potentially quite confusing to readers as this term is most commonly associated with how the study is conducted (case study vs cohort vs randomised trial) rather than the method of exposure assessment/measurement. Later in the manuscript, Discussion – Comparing cost of different methods section, second paragraph, you use the term “measurement method” and then later on “study scenario”. I feel that “measurement method” captures what you are describing best and that you use this term (or something similar) consistently throughout the manuscript.

Minor issues not for publication or Typos (that I noticed):

Introduction, paragraph 3: “The data processing phase includes all processing of the raw data [that] have been collected, ending with the creation of a summary exposure database in which exposure estimates are summarized and ready for statistical analysis”
Study Population section: ‘1’ should be ‘one’

Conclusion section: “This finding is in contrast to [the] notion that higher quality data is inherently more costly. Self-report was the cheapest methods [should be method] on all levels, however it produces very different output exposure variables than the other methods, and thus, it may be difficult to compare the informative value of the data obtained from the three methods.”

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests