Reviewer's report

Title: The effect of mental stress on lumbar position sense acuity

Version: 1 Date: 17 December 2004

Reviewer: Stein Knardahl

Reviewer's report:

General

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1.1 The methods rest on the assumption that the “electrical shock-threat stressor” produces activation of sympathetic nerve activity to the back muscles, i.e. that the procedures actually increase muscle sympathetic nerve activity (MSA) in the relevant muscles. Several studies of the regulation of regional circulatory responses to psychological challenges in animals and man, indicate that the MSA of the upper extremity is not elevated during psychological challenge. The data on the lower extremity indicate that MSA is elevated in some conditions, but that this may not be reflected in arterial vasoconstriction. However, there is little or no data on MSA of spinal muscles. Hence, there is an unresolved question whether MSA is elevated by psychological challenge. Furthermore, one does not know whether an increase in MSA include the innervation of the spindles. This raises serious doubts whether the experimental manipulation affects the spinal MSA at all. A part of this problem is briefly mentioned in one paragraph of the discussion, but since this is fundamental to the whole study, a thorough discussion is needed. Furthermore, the indicators of sympathetic activation of this study are all systemic and dependent on several other parameters than MSA.

1.2 The statement “.. a general increase in sympathetic nervous activity and blood pressure has no ..” is not merited since there is no documentation that “a general increase” of sympathetic nervous activity occurred.

1.3 The authors state that “The “inter-day reliability of … was moderate ..” There is a need for a discussion of the capability of the method to detect differences/effects.

1.4 The study is a “non-randomised design .., which is in line with other studies” (p 6). There are order-effects in resting cardiovascular parameters. Therefore, order effects should be discussed properly.

1.5 The subjects received standardised verbal instructions. Verbal instructions are potentially very influential in this experiment. It is important to the reader to see the instructions pertaining to “mental stress” and the control conditions.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

2.1 The term “novelty stress” of Fig 1 is not explained in the text.

2.2 The description of “electrical shock-threat stressor” does not state whether the “8 painful electrical shocks” to be received were supposed to be contingent on certain behaviors or responses.
2.3 The description of the position-sense tasks would benefit from mentioning the axis of movement (p 6, “horizontal rotations”).

2.4 P 12: What is “incoming behaviour”?

Discretionary Revisions (which the author can choose to ignore)

**What next?**: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

**Quality of written English**: Acceptable

**Statistical review**: No

**Declaration of competing interests**:

I declare that I have no competing interests.