Reviewer's report

Title: Identification of the occurrence and pattern of sleep bruxism using EMG and accelerometer systems

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Reviewer: Takafumi Kato

Reviewer's report:

This paper describes a study that assesses jaw movements during sleep in adult subjects using accelerometers, EEG and EMG. On the basis of their results, the authors conclude that accelerometer is useful for the detection of jaw movements during sleep. In addition, authors proposed normal physiological range of jaw motor events.

Although interesting for its topic, this paper contains many flaws in the methods and in the format of the text.
- Inclusion and exclusion criteria of the subjects
- Description of the subjects (eg, were they bruxers?)
- Calibration data of the accelerometer when measuring jaw movements
- Purposes of the use of EEG and video (eg, no sleep data was presented)
- Reasons for using 5% MVC criteria for detecting ‘bruxism’
- Validation data on the bruxism-analyzing software
- Actual number of motor events (before normalized as %)
- Lack of statistical evaluation to validate the ACC analysis and to assess physiological range
- Methodological information in the results section, and repetition of results in the discussion

These flaws make it difficult for the readers to understand the significance of the physiological range of ‘bruxism’. The inter-subject variation of the data could be due to heterogenous sample collection and sleep conditions.

Authors used automatic detection for muscle activity with threshold criteria (even though artifacts associated with body movements were rejected). Muscle activities detected should contain many jaw motor events. Thus, the reviewer suggests that the words ‘sleep bruxism’ should be replaced by ‘masseter muscle activities during sleep’ or ‘jaw movements during sleep’ in the title.

Over years, many papers on the techniques for detecting bruxism have been published, and most of them have come from Japan (the authors’ country). The reviewer suggests that the authors should acknowledge the previous works and include them in the introduction and the discussion. In addition, the authors should update information on the definition of sleep bruxism, causal effects on
temporomandibular joint and muscle disorders. Surprisingly, no reference was cited in the discussion!!

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

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