Reviewer's report

Title: Foot pressure distribution during walking in young and old

Version: Date: 13 December 2004

Reviewer: Dieter Rosenbaum

Reviewer's report:

General

The paper unfortunately fails to state a clear problem that is being addressed. Therefore, I have difficulties to assess its scientific merit. The authors state in the abstract as well as in the introduction that they wanted to determine the effects of normal aging on foot pressure distribution. However, they do not provide a rationale why this information might be helpful for the elderly population.

Furthermore, as the authors mention in their limitations, the number of subjects was quite small. Therefore, it is not clear how from such a small sample generalized statements about foot pressure changes in the elderly population are warranted.

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

â€¢ Page 2, Results: This abstract is a bit confusing because the lower maximum pressure for the medial calcaneus mask are mentioned twice and the differences in the statements are not clear. What is the â€˜medial hallux maskâ€™? Was the hallux divided in a medial and lateral part?
â€¢ Page 3, 1st paragraph: Please provide a reference/references for the statement that â€˜age-related anatomical and physiologic changes â€¦ affect FPD during gaitâ€™.
â€¢ Page 3, 2nd paragraph: Plantar pressures are affected by foot shape differences (e. g. flat foot vs. high arch foot). Therefore, the authors should provide information about potential differences in the foot shape of the subject groups. This could be achieved, for example, with the arch index described by Cavanagh that can be determined from the contact areas of the mask evaluation (midfoot area divided by total foot excluding the toes).
â€¢ Page 4, 2nd paragraph: The authors used treadmill walking to control walking speed and keep it constant. While this approach makes sense from this point of view, our own experience has shown that treadmill walking may alter gait mechanics especially in elderly people who may have more problems to produced their normal walking pattern under these â€˜artificialâ€™ conditions. This should at least be discussed in more detail. On page 8 the difference of treadmill walking is acknowledged but the potential consequences are not stated.
â€¢ Page 6, 1st paragraph: The authors do not explain why they normalized all variables by body weight and mask area. As far as I know the literature, there is no clear relationship between body weight and plantar pressure values. Only in the extremes (young children and obese patients) an effect of body weight has been demonstrated. Therefore, I donâ€™t see the need for normalizing the parameters.
â€¢ Page 6, 2nd paragraph: The authors used the ANOVA for statistical comparisons. From my point of view, this approach is not valid since in such a small sample a normal distribution of the data is unlikely. Therefore, non-parametric tests (e.g. the Mann-Whitney U-test for unpaired comparisons) should be applied.
â€¢ Page 7, 1st paragraph: The normalized pressure values should also be stated as some measure
of force per area (e.g. %BW/cm2).

Page 7, 2nd paragraph: The last statement about the tendency for a higher relative load on the lateral mask is not really clear to me. It might help to provide values for the loads on the medial and lateral masks.

Page 9, 1st paragraph: The authors state that an arch-flattening phenomenon was not confirmed. They might want to provide some additional information like midfoot contact area to support this statement.

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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)

Table 1: The value for the swing phase for the "Old" is given as 0.04 s which appears too low. It should probably be 0.4 s.

Reference #4: The title of the Phillipson article is missing.

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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 limited interest

**Quality of written English:** Acceptable

**Statistical review:** No

**Declaration of competing interests:**

I declare that I have no competing interests