Reviewer’s report

Title: The effects of a three-week use of lumbosacral orthoses on trunk muscle activity and their response to trunk perturbations.

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Reviewer: Hans-Rudolf Weiss

Reviewer’s report:

This is a very well written paper on a topic which seems of increasing importance. Low back pain degenerative scoliosis and spinal claudication are uprising diagnoses while lifestyle has changed drastically to sedentary during the last 30 years when Bernhard and Bridwell have published their study on the sagittal profile. Therefore brace treatment of chronic low back pain and spinal claudication will be increasingly important. In this paper the most important literature is cited, however it is not discussed, that in this literature most of bracing strategies have been prone to malcompliance.

Loss of lumbar lordosis correlates well with the incidence of chronic low back pain in adulthood [1,2]. Sedentary lifestyle contributes to loss of lumbar lordosis as well as scoliosis and thoracolumbar or lumbar kyphosis. Therefore this condition should be addressed by physiotherapy and braces, which improve the sagittal mal-alignment and essentially re-establish lumbar lordosis.

For adult scoliosis patients with chronic low back pain bracing should be indicated before spinal surgery is considered, but until now no investigations have established the effects upon pain reductions in the mid or long-term application of these treatments.

The success rate of such a treatment in general does not appear to be high and compliance is generally described as moderate or poor [3,4,5], however a significant pain reduction has not been reported upon in the literature [5,6].

I feel it is necessary to discuss more the problems with bracing in general and describe also different braces as used for the treatment of these conditions and additionally discuss, why specifically this brace has been tested and not another kind of braces.

Additionally I have no clue, how the authors come to the conclusions, that a 3 hr. period / day will have a significant influence. Was this brace wearing time chosen randomly or is that based on certain reasons?

A description of the brace to more extend would be helpful to understand brace action. Also some more figures from all four sides of the brace would help the reader to understand the specifics of this very brace.

Would the conclusions be the same when the brace would have been worn longer?

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 am currently acting as a scientific advisor for Koob-Scolitech and have developed some braces for the treatment of spinal deformities and low back pain.