Reviewer's report

Title: Splint: The efficacy of orthotic management in rest to prevent equinus in children with cerebral palsy, a randomised controlled trial

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Reviewer: Elizabeth Asztalos

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Title: Splint: The efficacy of orthotic management in rest to prevent equinus in children with cerebral palsy, a randomised controlled trial

Summary of Trial: This is a manuscript outlining the study protocol for the evaluation of splints (KAFOs) either fixed or dynamic in design compared to no splints in children with cerebral palsy. The study protocol appears to be in place over a year with the children. The primary outcome measure will be ankle dorsiflexion at full knee extension, measured with a custom designed hand held dynamometer. Secondary outcome measures will be i) maximal knee extension in stance during gait, ii) knee extension in midstance during gait, iii) ankle dorsiflexion in midstance during gait and iv) gross motor function. Furthermore, to gain more insight in the working mechanism of the orthotic management in rest, morphological parameters like Achilles tendon length, muscle belly length, muscle fascicle length, muscle physiological cross sectional area length and fascicle pennation angle will be measured in a subgroup of 18 participants a 3D imaging technique. The design of the trial is a single blind randomised controlled trial with 66 children with spastic CP, divided over three groups with each having 22 participants. Two groups will be treated for 1 year with orthoses to prevent a decrease in range of motion in the ankle (either with static or dynamic knee-ankle-foot-orthoses) and a third group will be included as a control group and will receive usual care (physical therapy, manual stretching). Measurements will be performed at baseline and at 3, 6, 9 and 12 months after treatment allocation. children with spastic CP divided over three groups with each 22 participants. Two groups will be treated for 1 year with orthoses to prevent a decrease in range of motion in the ankle (either with static or dynamic knee-ankle-foot-orthoses) and a third group will be included as a control group and will receive usual care (physical therapy, manual stretching). Measurements will be performed at baseline and at 3, 6, 9 and 12 months after treatment allocation.

Summary of Paper: It is not clear to this reviewer why this question is being asked and why the investigators feel that they need to test the use of KAFOs at night in children with cerebral palsy. They include the limited amount of literature in this area but do not explain why that is the case. There is also not a very clear reason why this should be done at night. Are there potential proposed benefits that warrant this exploration? The inclusion criteria are not clear. Are they planning to include children with varying degrees of cerebral palsy as determined
by the GMFCS score? Children with a GMFCS score of 2 or less may have a
totally different response than those with GMFCS score of 3, 4, or 5. In addition,
age and growth are not taken into consideration

I realize that this is a project currently or possibly underway in the future but
justification as to why this is being proposed would be helpful. KAFOs are used in
the general management of children with cerebral palsy for a variety of reason
and the reasons vary depending on the capabilities of the child. In this study, it is
not clear as to whether a specific group of children are included however; a
clearer justification would be most valuable

**Level of interest:** An article of limited interest

**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'