Reviewer's report

Title: Kinematic and kinetic effects of external ankle support during a side step cutting task in netballers.

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Reviewer: Reginaldo Fukuchi

Reviewer's report:

General comments
This study investigated the effects of ankle brace on side step cutting task biomechanics in netballers. It is apparent that the authors put a great deal of effort to conduct this study and I would like to commend them for this. However I see some issues that need to be addressed prior considering this manuscript for publication.

Major compulsory revisions
In general, the introduction does not develop the question that is being asked by the researchers. It is credible that netballers may place higher loadings both in the knee and ankle joints when wearing ankle brace support. However, the underlying rationale for this hypothesis needs to be developed within a sound theoretical framework. For example, some references used to contextualize the problem did not even investigate the effects of ankle braces or the cutting task.

Regarding the methodology, the major flaw was the lack of control of gait speed as acknowledged by the authors. However, the authors should consider reporting these measured values to enhance the understanding about their influence on the dependent variables. Additionally, the description of the procedures taken to measure kinematics should be improved. For instance, it was not clear to me where exactly the malleoli markers were placed when the subject wore ankle braces. When did the anatomical calibration trial take place? In the beginning, in the end of the trial, both or it was never done and all markers remain during the dynamic trials? This information is important even though you referenced it. Were the malleoli marker placements reliable between conditions?

The discussion has too many assumptions and is sometimes too speculative, particularly when it refers to excessive knee joint loadings in netballers by directly comparing the present results with the literature. Due to the lack of a standard convention for measuring, scaling and reporting joint moments, any comparison of this variable across studies should be done cautiously.

The whole premise of the use of ankle braces was indeed to limit the mobility at the ankle joint but, particularly in the frontal plane and not in the sagittal plane that was found in the present study. Therefore, the use of previous studies [15,16] to support the present findings seem inappropriate. For instance, Mundermann et al. (2003) didn’t even study ankle braces but custom molded foot orthotics aimed to influence ankle frontal plane biomechanics.
The authors also focused on the fact that previous studies observing differences in frontal plane ankle kinematics have used different task to assess the effects of ankle braces such as vertical landings. Likewise, the present study also cited studies which investigated different tasks such as running in a straight line to compare with the present findings.

The authors suggested that the presumably reduced demand on the ankle joint to actively brake the movement during side cutting as opposed to other tasks. Was this statement based on any evidence? Why then side cutting was chosen as the targeted task? Wasn’t because it is demanding and there is a higher risk of ankle injuries?

Is it fair to compare absolute joint moment data with the literature? How comparable was your procedure (marker set, reference frames, joint moment expression, etc) to the [9,23,24]. I suggest highlighting this issue of comparing these parameters due to the lack of standardized procedures across studies.

The conclusion seems not to be fully supported by the present results.

Minor Essential Revisions

Line 89-91: these references do not fully support this statement either because they did not either investigated cutting maneuvers or study ankle brace support.
Line 104: What were the differences between joint moments and joint loadings?
Line 177: replace “Wallace” by “Wallis”
Line 184-185: Was this velocity obtained for what condition? How about the comparison between conditions? This would be very informative.

Methods

Was there any limb dominance effects?
How was the cutting direction at 45o controlled between conditions and across participants?
Was the foot orientation upon landing in the force plate monitored or controlled?
It’d be great if you report the foot progression angle (the angle of the foot in the global reference frame) between conditions to see whether the subjects were reliable placing their right foot between conditions.

Discretionary Revisions

I think if you include the joints that are being investigated, the title would be more informative

Line 87-88: reference needed

Tables

Line 550, pg 24: knee adduction/abduction is commonly used to described the movement of the knee in the frontal plane. Knee varus/valgus is often used to describe its alignment. Nonetheless, knee adduction should be correspondent to varus, shouldn’t it?

Line 553, pg 24: the measurement units need to be rewritten.
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.

Declaration of competing interests:
I declare that I have no competing interests