Reviewer’s report

Title: Passive Hallux Adduction Decreases Lateral Plantar Artery Blood Flow: a Preliminary Study of the Potential Influence of Narrow Toe Box Shoes

Version: 0 Date: 28 Jul 2019

Reviewer: Peta Tehan

Reviewer's report:

Thank you for the invitation to review this paper. Overall I found this manuscript easy to read and follow and it is well written. I commend the authors on investigating an interesting topic and I look forward to seeing future studies on this topic.

This is a cross-sectional pilot study of 45 participants, which aims to compare lateral plantar artery blood flow before and after passive hallux adduction, and secondly to compare blood flow with arch height.

Abstract

Well written and succinct. Could you please review your concluding statement - may I suggest your data shows an initial decrease in BF - also mention AI? and perhaps remove the reference to tissue health as your data doesn't support this just yet.

Introduction

Line 86: hyperpronation is not a common term used in podiatry in Australia and the UK. Could you please reconsider the use of this term - can I suggest - excessive pronation?

The final paragraph before the aims - line 111 - this entire paragraph needs referencing.

The aims are clear

Methods

You excluded participants who had injury etc - how did you measure this? i.e. did you use a standardised questionnaire to measure injury?

Can you insert your institutional ethics approval number please? either here or within the acknowledgements
In terms of your test conditions, you don't mention room temperature, caffeine intake prior to measurement and exercise - all of these can influence vascular measures

I commend you on the use of a single tester, however I note it was likely not possible to blind the tester in any way - this should be added to the limitations

Also in relation to your sonographer, there are issues around reliability given the operator dependency nature of the testing method. Was intra-tester reliability of the sonographer established? If not, this is a significant limitation and this should be considered for future, larger studies which you may be planning, and will need to be mentioned in the limitations section.

Results

Presented clearly

Table 1 would also benefit from descriptives on cavus and planus foot types - I can see the mean but it would also be interesting to know the foot types if you classified them?

The first figure (graph) - I can't interpret this clearly ? can you amend the title?

Discussion

line 275-277: This is a reasonable statement however I think you should think about/discuss this further. Your results don't show the impact of blood flow changes and healing capacity. Your results show an initial decrease, which is then almost fully compensated for, which is probably likely due to a reactive hyperaemia response and the use of collateral arteries. People can have substantial occlusions in their arteries and still facilitate healing through collaterals and other coping mechanisms such as vasodilation (hyperaemia). Note it generally takes a proximal occlusion of 75% to impact on blood pressure in the foot.

line 308 - this is an interesting finding. Given that your population are healthy controls (?), I think it is unlikely that the health of the artery is impacting on the variation in your findings. Were any of your sample smokers, have hypertension, hyperlipidemia etc, anything that would jeopardise the health of the artery? Otherwise I think you should be looking at neurological status as a potential source of the variation that you are seeing?

328 - (this is a comment only) agree wholeheartedly that this is likely the case. We have seen this as the case in some of the work completed in laser Doppler fluxometry. Might be worthwhile having a look at including this in future studies.
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Quality of written English
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