Reviewer’s report

Title: A novel approach to mapping load transfer from the plantar surface of the foot to the walls of the total contact cast

Version: 1 Date: 16 October 2012

Reviewer: Shan Bergin

Reviewer’s report:

Major Compulsory Revisions.
There are several issues / questions the authors need to address before this paper is considered for publication. I have listed these below.

1. I don’t believe a study with 2 participants comprises a ‘pilot study’. I believe what you have performed is more a ‘proof of concept study’ in that you have shown you have technology that is able to measure the load applied through the walls of a TCC.

There is also no information included on where these participants were recruited from and how they were recruited. There is also no data on participant characteristics - were they the same height, weight etc as all has the potential to influence data collected.

From my understanding it would also appear that you have collected data from a series of different points along the cast wall only once at each point so again I am not convinced this is sufficient data to constitute a pilot study.

2. The fact that the cast was bivalved and removed and re-applied several times is problematic. Firstly a true TCC and a bi-valved TCC are considered two different modalities so in effect you have not collected data on a TCC and I think it is perhaps misleading to state this. I have to wonder also whether the bi-valve and the constant removal of the cast has the potential to impact on the integrity of the cast and its ability to manage load. Whilst it is mentioned that this was necessary in terms of placing sensors it’s impact is not discussed.

3. My biggest query with this study is whether it will have any impact on clinical practice. The reason behind ‘proving’ the ability to measure load along the cast wall in terms of future research or informing clinical practice is not discussed. We know that TCC off-loads the plantar area of the foot which is why it is used for wound healing but to what degree it off-loads….I am not sure that really matters?! To date the exact amount of pressure off-loading required to heal a foot wound has yet to be quantified and research indicates this exact measure is likely to differ significantly between individuals. For instance one person may only require a 20% reduction in load to obtain healing whereas another may require 80%. The authors need to be more clear about why this study is important / necessary.

3. The authors make the point that application of the TCC varies considerably yet
it is not discussed what, if any, impact on findings a different method of
application may have on the amount of pressure transferred to the cast walls. It
would perhaps have been more informative to measure the degree of off-loading
across a series of casts applied in different ways to assess whether one method
was superior.

4. Can I assume that once the cast was cut down and canvas cast shoes added
further measurements were taken? This is not clear. If so what was the aim of
measuring the cut down version?

Minor Essential Revisions

1. Please remove the italics from the text of the paper.

2. I am not sure the description "load between the cast wall and the lower limb" is
an accurate description as technically the space between the two is 'dead space'.
Perhaps something like the cast wall and leg "interface" would be more accurate.

**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.