Reviewer’s report

Title: Feasibility of designing, manufacturing and delivering 3D printed ankle-foot orthoses: a systematic review

Version: 0 Date: 29 Oct 2018

Reviewer: Nathan Collins

Reviewer’s report:

Thank you for the opportunity to review this systematic review article. In general, I have found it to be an accurate and informative summary of the research literature as it stands in this emerging area.

I have summarised some small recommendations for changes below.

'Method' section:

Line 93 - comma required before 'EMBASE'
Line 94 - 'and' required before 'ProQuest'
Line 96 - 'manufacture' spelling error

'Study selection, data extraction and study quality' section:

Line 122 - no comma required after 'title'

'Orthotic details' section:

Line 199 - readability of this sentence may be improved by separating it into two sentences:

Three studies used Nylon 12 (PA2201, DuraForm PA, PA2200) [10, 11, 15]. A range of materials were used in the remaining studies including Rilsan D80 (Nylon 11) [11], DuraForm GF (Glass filled Nylon 12) [11], Accura 40 resin [12], DSM Somos 9120 Exposy Photopolymer [12], DuraFrom Ex [13], medical-grade polycarbonate [14], acrylonitrile butadiene styrene (ABS) [16, 17], polyamide 12 (PA12) [18], polyurethane [19] and polylactide (PLA) [20].

'Outcomes' section:

Line 209 - 'The reported outcomes included.....'
The reported mechanical properties included…'

This is a very long sentence. Readability is poor and may be improved, for example:

The material displacement of the AFO model was higher when mechanical properties were derived from test specimens compared to when mechanical properties were supplied from FEA software (SolidWorks 2016). This illustrates the need to use mechanical properties from 3D printed test specimens rather than default material properties.

'Conclusion' section:

I have some concerns that the conclusion of this review firmly states that 3d printing of AFOs is 'feasible' despite earlier discussion around mechanical failures of AFOs whilst being used by clients and structural issues when AFOs are exposed to UV light in some manufacturing techniques.

Considering this, I think the conclusion needs to highlight the current limitations of 3d printed AFOs, and to highlight that although feasible, 3d printed AFOs are not yet ready to be integrated in current clinical practice.

The conclusion in the abstract is more nuanced in its report of feasibility with its mention of 'potential benefits'.

'research is required to evaluate 3D printed AFOs in ….'

Kind regards,

Nathan Collins

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