Results: Prostheses (Figure 2). Cracks started in the distal cement and progressed proximally until the prosthesis could no longer be supported by the cement. The patient specific loading and pore distributions served to generate a degree of variability in the results (Figure 3). However, applying a Wilcoxon rank sum test to the data at 10% damage revealed no significant difference between the two prosthesis designs.

Discussion: No significant difference was found between the two stem designs. The double tapered stem has good follow up data (97.3% at 10 yrs [1]), and the current study suggests that the triple tapered stem will match this with respect to cement mantle fatigue failure. Clinical studies have found no significance difference between these designs in terms of radioluency or migration after five years [6]. The triple tapered stem may have additional benefits as, in a proportion of cases, it has been observed to improve the quality of bone at the medial bone/cement interface [7].

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