

Artificial Intelligence is Capable of Generating Scientific Discussion Suitable for Publication in High-Impact Orthopaedic Journals

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INTRODUCTION:

The capabilities of Artificial Intelligence (AI) and the applications of these capabilities are advancing at an exponential rate in recent times. In the future, AI may play a central role in the composition and editing of scientific articles for submission and publication in high-impact journals. The aim of the current study is to assess whether AI is capable of generating scientific discussion suitable for publication in high-impact orthopaedic journals.

METHODS:

A current AI application with real-time internet browsing capability was used to generate a scientific discussion section and conclusion section, including citations, based on the introduction, results, and methods provided. The introduction, methods, and results of a recently published article were input into the AI application. The AI application was also provided with relevant citations for the discussion section and was then asked to generate a discussion and conclusion section with citations.

Six reviewers of high impact orthopaedic journals were involved in the study. All authors were blinded to the use of AI in the study and no author had read the full published manuscript prior to reading the AI-generated article. All authors were asked to allocate a score (out of 100) to all 5 sections of the article (Introduction, methods, results, discussion, conclusion). These values were expressed as a median and inter-quartile range (IQR). A one-way analysis of variance (ANOVA) was then used to assess for a significant difference between the median scores for the introduction, methods, results, discussion, and conclusion sections. All reviewers were then asked to recommend an overall decision on the article regarding its suitability for publication.

RESULTS:

The AI application with real-time internet access was able to compose a nuanced scientific discussion and conclusion section based on the introduction, methods, and results sections provided to it. The median score was 80 (IQR 70-90) for introduction, 77.5 (IQR 70-90) for methods, 82.5 (IQR 50-90) for results, 60 (IQR 40-75) for discussion, and 60 (IQR 40-80) for the conclusion. There was no significant difference in the median scores between all five sections ($p=0.37$) (Figure 1).

The majority of the reviewers (5/6, 83%) recommended “acceptance for publication after major revision.” One reviewer did recommend resubmission with major revisions. There were no recommendations to reject the article outright. All reviewers commented that the article could be published after revisions were made.

DISCUSSION AND CONCLUSION:

AI with internet browsing capabilities can now generate nuanced scientific discussion using citations provided. The quality of the article is indiscernible from a human author and is high enough to warrant publication in a high impact orthopaedic journal after revision.

Figure 1. BoxPlot detailing the median values and IQR for each of sections listed in an article

