

## ONLINE ACCESS TO RESEARCH PAPERS – CHANGES OVER TIME

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### INTRODUCTION

The successful implementation of Evidence Based Practice (EBP) depends significantly on practitioners' access to relevant research articles. It has been argued that the time consuming nature of EBP is a major detriment to its acceptance and widespread use,<sup>1</sup> and the logistical difficulties, like having to retrieve research publications of interest from the local university library, are likely to exacerbate this issue. In recognizing the associated adverse effects that this problem could present for knowledge generation and dissemination, the idea to make all research findings publicly available online led to the conception of the world wide web in the early 1990s.<sup>2</sup> However, many scientific journals that are slow to abandon their subscription-based business models hide their online content behind paywalls, charging article fees that are usually in the range between \$20 and \$40. Acknowledging the barriers to EBP that these fees can impose, we have previously compared different strategies for prosthetists and orthotists to maximize their free online access to relevant research literature. The respective data collection in the Spring of 2017 resulted in the finding that approximately 40% of search results in Google Scholar linked to freely available full papers, whereas the remaining 60% links offered only the abstract, but not the full paper, free-of-charge.<sup>3</sup> In light of the ever progressing efforts to improve public availability of research, such as the open-access publishing movement or the respective requirements mandated by research funding agencies, we hypothesized that the ratio of freely available online articles is increasing over time, and we repeated our data collection one year after the initial study.

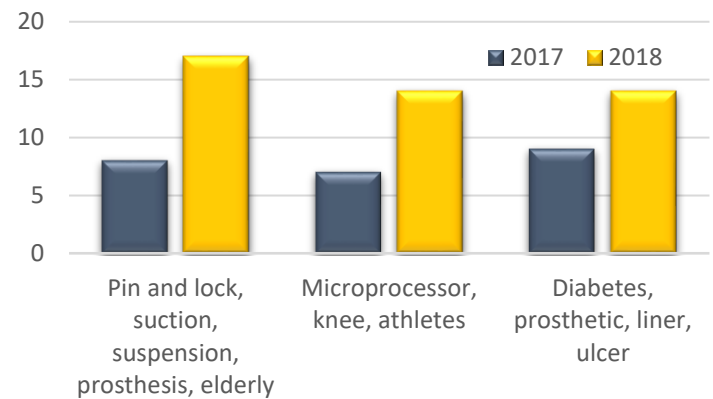
### METHODS

A total of three literature searches on the website scholar.google.com were conducted, once in the Spring of 2017 and once more in the Spring of 2018. The search terms, exclusion of patents and citations, and the publication time frame (from 2007 to 3/27/2017) were kept consistent between the two data collections. The first 20 results for each search were analyzed to

determine whether they contained a link that would allow full-paper access without charge. The number of such links were then compared across assessment times.

### RESULTS

Figure 1 shows the differences between assessment times. Overall, 75% of the top search results in 2018 contained links to freely accessible full papers.



**Figure 1:** Number of freely accessible research papers for three searches at scholar.google.com.

### DISCUSSION

Our hypothesis was supported by the finding that open access to articles on Google Scholar almost doubled within one year. There are different possible explanations for this, including a change in composition of the top 20 of the search rankings. As higher-impact articles are ranked higher in the search result listings, it is possible that articles that were cited relatively often over the past year have moved up and displaced other articles. This mechanism appears likely if it is assumed that articles that are freely accessible are read (and potentially cited) by more people than less easily accessible articles. Another factor at play may be an increased volume of full-paper articles that are being shared by their authors in online repositories, something that is often allowed with some restrictions by the publishing journal. The copyright rules on some materials may have been

changed as well. Only three literature searches and only 20 search results for each search were analyzed for this study. This may limit the generalizability of findings somewhat. However, it is likely that respective searches for EBP purposes are inevitably limited in scope, and that our protocol is therefore representative of realistic situations.

## CONCLUSION

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The percentage of freely-accessible research papers that can be found among the top search results on Google Scholar has substantially increased over the past year. This may be due to a combination of more highly ranked papers becoming freely available and more freely available papers becoming highly ranked.

## CLINICAL APPLICATIONS

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Practitioners in the field of prosthetics and orthotics often depend on freely accessible research papers to conduct EBP. The here described trend is beneficial in this context.

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