Measuring the growing impact of BOSEM: halfway there or living on a prayer?

Patrick J Owen,1 Daniel Ludovic Belavy,2 Diana Gai Robinson,3 Nash Anderson,4 Amy Harwood,5 Yorgi Mavros,6 Nicola Sewry,7 Evert Verhagen*8

Comparison is often cited as the thief of joy. However, in academic publishing, comparing the quality and impact of scholarly journals through metrics can help you choose the most impactful journal to entrust your scientific work. Naturally, the quality and impact of a journal cannot be captured in a single value; consequently, various metrics exist. For example, BMJ Open Sport and Exercise Medicine (BOSEM) ranks 36th out of 218 journals in the field of Physical Therapy, Sports Therapy and Rehabilitation; we have a CiteScore of 4.6 and a Source Normalized Impact per Paper (SNIP) of 1.294.1 Another way of looking at our impact is to consider the number of visitors our Open Access content draws. So far this year (January to June 2022), we welcomed 349 629 page views. This foresees again an increase compared with 2021 (647 451 page views) and 2020 (517 858 page views). Are you starting to get dizzy yet? We have not touched on arguably the most important metric, the Journal Impact Factor (JIF). You may have noticed that BOSEM, as yet, has not been awarded this metric. The BOSEM Editorial Board would like to explain why, as well as measure the growing impact of BOSEM via our own ‘unofficial’ JIF calculation.

A JOURNAL IMPACT FACTOR

The JIF is a metric awarded and upgraded annually by Clarivate in their Journal Citation Report.2 The JIF represents the annual number of citations of published manuscripts over the two preceding years. The 2020 and 2021 JIFs were calculated using the following formulae3:

\[
\text{2020 Journal Impact Factor} = \frac{\text{Citations in 2020 to items published in 2018} + \text{Citations in 2021 to items published in 2019}}{\text{Number of citable items in 2018} + \text{Number of citable items in 2019}}
\]

\[
\text{2021 Journal Impact Factor} = \frac{\text{Citations in 2021 to items published in 2019} + \text{Citations in 2022 to items published in 2020}}{\text{Number of citable items in 2019} + \text{Number of citable items in 2020}}
\]

The JIF is considered a proxy for the importance of a journal in its field. After all, important and impactful publications will be cited more often in other scientific work. In reality, there is some controversy around the JIF.4 5 Yet, for now, it remains the metric most editorial teams eagerly look out for each year.

A JOURNAL’S JOURNEY TOWARDS AN IMPACT FACTOR

While 192 journals received a JIF for the first time in June 2022,6 this was not the case for BOSEM. Acquiring a JIF is not given. Journals that receive a JIF are typically the most consistently high impact in their scientific disciplines; consequently, the bar is set high. So, what is the process of acquiring a JIF? First, after 2 years of publication history, a journal can apply to be listed in the Web of Science Core Collection. The journal is then evaluated against stringent quality criteria, including editorial board strength, transparency and quality of editorial processes and scientific and content quality of published manuscripts. When a journal passes this initial evaluation, it is accepted in the Emerging Sources Citation Index and indexed in the Web of Science Core Collection. After 2 years, the journal is re-evaluated, and a JIF is awarded if it is deemed of high quality for its field. Despite BOSEM being around since 2015, we are yet to receive a JIF. We applied for this process 4 years ago and we are now heading into the second year of our listing in the Emerging Sources Citation Index. We are hopeful to be re-evaluated to receive a JIF in 2023.
Despite not obtaining an official JIF yet, we performed our own calculation to enable comparison to other journals in the sport and exercise medicine field. Per Clarivate protocols,3 we searched the Web of Science Core Collection on 29 June 2022 using the following search string: SO=(BMJ OPEN SPORT EXERCISE MEDICINE). We then refined document types to articles and review articles only. We extracted all documents from 2018 (n=139; online supplemental file 1), 2019 (n=113; online supplemental file 2) and 2020 (n=121; online supplemental file 3). We then extracted total citations in: (a) 2020 for articles published in 2018 (n=363) and 2019 (n=234), and (b) 2021 for articles published in 2019 (n=429) and 2020 (n=375). Using the Clarivate JIF formulae, we calculated the 2021 and 2020 JIF for BOSEM:

\[
\text{2020 Journal Impact Factor} = \frac{363 \times 2018 + 234 \times 2019}{139 \times 2018 + 113 \times 2019} = \frac{977}{252} = 3.869 \\
\text{2021 Journal Impact Factor} = \frac{429 \times 2019 + 375 \times 2020}{113 \times 2019 + 121 \times 2020} = \frac{804}{234} = 3.436.
\]

**Table 1** Official 2020 and 2021 Journal Impact Factors (JIF) for journals identified as Q1 in Sports Science in the 2021 Journal Citation Reports, and our calculated 2020 and 2021 JIF for BMJ Open Sport Exercise and Medicine (BOSEM)

<table>
<thead>
<tr>
<th>Journal</th>
<th>2020 JIF</th>
<th>2021 JIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Journal of Sports Medicine</td>
<td>6.203</td>
<td>7.010</td>
</tr>
<tr>
<td>Arthroscopy</td>
<td>4.772</td>
<td>5.973</td>
</tr>
<tr>
<td>Biology of Sport</td>
<td>2.806</td>
<td>4.606</td>
</tr>
<tr>
<td>BOSEM</td>
<td>2.369</td>
<td>3.436</td>
</tr>
<tr>
<td>Exercise and Sport Sciences Reviews</td>
<td>6.246</td>
<td>6.642</td>
</tr>
<tr>
<td>Exercise Immunology Review</td>
<td>6.308</td>
<td>11.067</td>
</tr>
<tr>
<td>International Journal of Sport Nutrition and Exercise Metabolism</td>
<td>4.599</td>
<td>4.619</td>
</tr>
<tr>
<td>International Journal of Sports Physiology and Performance</td>
<td>4.010</td>
<td>4.211</td>
</tr>
<tr>
<td>Journal of Science and Medicine in Sport</td>
<td>4.319</td>
<td>4.597</td>
</tr>
<tr>
<td>Journal of Sport and Health Science</td>
<td>7.179</td>
<td>13.077</td>
</tr>
<tr>
<td>Journal of Strength and Conditioning Research</td>
<td>3.781</td>
<td>4.415</td>
</tr>
<tr>
<td>Journal of the International Society of Sports Nutrition</td>
<td>5.159</td>
<td>4.948</td>
</tr>
<tr>
<td>Medicine and Science in Sports and Exercise</td>
<td>5.411</td>
<td>6.289</td>
</tr>
<tr>
<td>Psychology of Sport and Exercise</td>
<td>4.785</td>
<td>5.118</td>
</tr>
<tr>
<td>Qualitative Research in Sport Exercise and Health</td>
<td>6.736</td>
<td>7.591</td>
</tr>
<tr>
<td>Sports Health</td>
<td>3.843</td>
<td>4.355</td>
</tr>
<tr>
<td>Sports Medicine</td>
<td>11.140</td>
<td>11.928</td>
</tr>
<tr>
<td>Sports Medicine—Open</td>
<td>4.830</td>
<td>6.766</td>
</tr>
</tbody>
</table>

**Figure 1** Difference (%) in 2021 JIF compared to 2020 JIF. BOSEM, BMJ Open Sport Exercise and Medicine; JIF, Journal Impact Factor.

**How do we compare to other journals in the field?** We extracted the 2020 and 2021 JIFs for the 20 journals identified as Q1 for Sport Sciences by 2021 Journal Citation Reports (table 1). With a 45% increase from the previous year, our calculated unofficial JIF placed us fourth for the highest percentage difference compared with these journals (figure 1). We, in part, attribute this meteoric rise to the dynamic nature of our diverse editorial board, which brings together a broad range of future...
funding agency in the public, commercial or not-profit sectors. When we compare ourselves to other Q1 Sports Science journals, we compare favourably, and our calculations support the notion that BOSEM has marked potential to be a leading journal within the field with continued expected growth. We acknowledge that despite a strong position based on our own calculations and perceptions, nothing is a given. Yet, we won’t stop believin’ and eagerly await our re-evaluation, which hopefully recognises us with an official JIF.

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