Student peer review decisions on submitted manuscripts are as stringent as faculty peer reviewers

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Submitted 3 May 2010; accepted in final form 2 September 2010

Navalta JW, Lyons TS. Student peer review decisions on submitted manuscripts are as stringent as faculty peer reviewers. Adv Physiol Educ 34: 170–173, 2010; doi:10.1152/advan.00046.2010.—The International Journal of Exercise Science is the only student-centered peer-reviewed journal in its field. Upon graduation first author submissions, two student reviewers and one faculty reviewer are asked to review. On professionally submitted papers, two faculty peers are asked to assess the manuscript. The purpose of the present study was to determine whether graduate students returned similar decisions compared with faculty reviewers who evaluated the same manuscript. In addition, decisions of faculty peers reviewing student manuscripts compared with faculty-submitted manuscripts were compared. Mean comparison between groups were evaluated using independent t-tests with significance at \( P \leq 0.05 \). Graduate students (2.21 ± 0.69) and faculty peers (2.24 ± 0.66) returned similar decisions on student-submitted manuscripts \( (P = 0.84) \). Faculty decisions on manuscripts submitted by a professional primary author (1.86 ± 0.77) were not different compared with faculty peers reviewing student manuscripts \( (P = 0.06) \). Statistics revealed that graduate students are just as stringent in the peer review process as established reviewers. Additionally, faculty reviewers evaluated manuscripts equally regardless of submission type.

manuscript evaluation; peer review process; student appraisal; student versus faculty comparison

THE PEER REVIEW PROCESS associated with manuscript submission has the purpose of maintaining a high level of quality for scholarship in a particular field (3, 12). Within each area of interest, this peer review process helps to assure that the information being disseminated is accurate and based on sound research practices. However, peer review as a process does have limitations (19), such as relying on expert reviewers, who typically perform evaluations out of professional courtesy rather than monetary compensation (8). Because of this, journal editors often have difficulty in securing the important services of reviewers who are charged with maintaining quality control in their area of expertise.

In addition, the question of whether a peer reviewer has sufficient expertise is a legitimate issue. Many journals provide tutorials on the process to aid reviewers (2, 10, 13, 15). Schroter et al. (14) completed an investigation to determine if various forms of training had an effect on the quality of reviews returned by peer reviewers. Deliberate major and minor errors were introduced into already published papers and given to 190 reviewers, who were partitioned into 3 groups. One group received a full day of face-to-face training and was provided with written instructions on appraisal techniques, another group received a self-taught training program, and the final group served as controls. It was reported that both groups receiving training identified more major errors compared with the control group and that, when evaluated against the control group, the self-taught group returned higher qualities of reviews. However, upon a followup at 6 mo, the benefits of training for the intervention groups were no longer evident (14). While short-term training appears to have short-term effects with regard to manuscript review, Benos et al. (2) stated that the majority of evaluators attain their training not through instruction but rather by actually completing reviews. Given the available literature, opportunities to carry out peer review evaluations as students or early in one’s professional career may enable an individual to return higher-quality reviews at an earlier point.

To our knowledge, the International Journal of Exercise Science (IJES) uses a unique manuscript submission and peer review policy. The IJES only receives and considers manuscripts that include students in the authorship and prefers students as the primary author. The journal strives for a true peer review process; thus, on manuscripts in which a student is the first author, two like-level students are asked to serve as peer reviewers along with one professional, or faculty, reviewer. For example, upon graduate student first author submissions, two graduate student peer reviewers and one faculty reviewer are asked to review the manuscript. On the other hand, on papers submitted by a faculty scholar, two faculty peer reviewers are asked to assess the manuscript. Given the nature of our distinctive peer review process, we wanted to determine if a difference existed between student and faculty reviewers. Therefore, the purpose of this research was to
determine whether graduate students returned similar decisions compared with faculty reviewers who evaluated the same manuscript. In addition, the decisions of faculty evaluators reviewing graduate student- versus faculty-submitted manuscripts were compared.

METHODS

For the purposes of this study, all graduate student \((n = 33)\) and professional \((n = 12)\) manuscripts submitted to IJES between July 2007 and November 2008 were evaluated. Undergraduate student-submitted manuscripts were not assessed in the present study due to the small number of submissions received during this period \((n = 4)\). The authors had the opportunity of submitting a manuscript and being classified as a student if they were presently pursuing an academic degree or if the work was completed during the time in which they were still a student. Undergraduate students are considered to be individuals working toward either an associate or baccalaureate degree, whereas graduate students have earned an undergraduate diploma and are endeavoring to complete masters or doctoral programs. Faculty authors have completed a terminal degree (typically a PhD).

Regardless of the manuscript submission type (student or professional), IJES reviewers have three possible options when rendering a decision. Manuscripts that are scientifically sound, well written grammatically, and significantly add to the existing literature in the field may have an “Accept with minor revisions” decision. If the manuscript displays merit in the view of the reviewer but lacks critical components, the reviewer may opt to return a “Major revisions required” decision. Finally, a reviewer can return a “Reject” decision if the manuscript has significant shortcomings that are unable to be remedied with a major revision.

To assist with the quantification of reviewer responses, and to allow for a statistical comparison between graduate student and faculty reviewers, decision types were assigned a numerical value. If the reviewer’s decision was to “reject” the manuscript, it was coded using the number 1. The number 2 was used to code reviewer decisions that were returned as “major revisions required,” and the number 3 was used to code “accept with minor revisions” decisions.

To assess the purpose of the present study, two comparisons of interest were performed. First, the decisions of graduate student and faculty reviewers who evaluated graduate student-submitted manuscripts were compared. Next, decisions of faculty reviewers who evaluated graduate student-submitted manuscripts were compared with decisions by established reviewers on manuscripts submitted by peer professionals. Mean comparisons between groups of interest were evaluated using independent \(t\)-tests with significance accepted at \(P \leq 0.05\).

RESULTS

All results are expressed in terms of “code units” as means ± SD. Graduate students \((2.21 ± 0.69\) code units) and established reviewers \((2.24 ± 0.66\) code units) returned similar decisions on manuscripts submitted by primary authors who were graduate students \((P = 0.84;\) Fig. 1). Of the 33 student-submitted manuscripts evaluated, all reviewers (i.e., the faculty reviewer as well as both graduate student reviewers) returned the same decision 18% of the time (6 of 33 reviewers agreed). The faculty reviewer and one of the two student reviewers had a similar agreement on manuscript decisions 73% of the time (24 of 33 reviewers agreed), whereas both students differed from the established reviewer on nine occasions (27%). Table 1 shows the percentages at which student and faculty reviewers returned decisions to reject, require major revisions, or accept with minor revisions. Table 2 shows selected qualitative examples of the comments made by student and faculty reviewers.

Faculty decisions on manuscripts submitted by a professional primary author \((1.86 ± 0.77\) code units) were not different compared with established reviewers who evaluated student manuscripts \((P = 0.06;\) Fig. 2). However, as shown in Table 1, established reviewers tended to return a greater percentage of reject decisions and a lower percentage of revise decisions (both major and minor revisions) on peer-submitted manuscripts compared with those submitted by students.

DISCUSSION

The purpose of this investigation was to evaluate whether graduate student peer reviewers and faculty evaluators returned similar decisions on manuscripts submitted by students. Based on the results of this study, it can be concluded that graduate student and faculty reviewers rendered similar decisions on student-submitted manuscripts. These findings suggest that graduate student reviewers are capable of providing meaningful feedback to manuscripts submitted by their peers, which can help to improve the quality of their work. However, additional research is needed to determine whether the quality of the feedback provided by graduate student reviewers is comparable to that provided by professional reviewers.

Table 1. Review decisions by faculty and student reviewers evaluating student-submitted and professionally submitted manuscripts to the International Journal of Exercise Science between July 2007 and November 2008

<table>
<thead>
<tr>
<th>Reviewer Type</th>
<th>Total Number of Reviewers</th>
<th>Minor Revisions</th>
<th>Major Revisions</th>
<th>Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number of reviewers agreed</td>
<td>Percentage</td>
<td>Number of reviewers agreed</td>
</tr>
<tr>
<td>Faculty reviewers that evaluated student-submitted manuscripts only</td>
<td>33</td>
<td>12/33</td>
<td>36</td>
<td>17/33</td>
</tr>
<tr>
<td>Student reviewers (who only evaluated student-submitted manuscripts)</td>
<td>66</td>
<td>24/66</td>
<td>36</td>
<td>32/66</td>
</tr>
<tr>
<td>Faculty reviewers that evaluated professionally submitted manuscripts only</td>
<td>22</td>
<td>5/22</td>
<td>23</td>
<td>9/22</td>
</tr>
</tbody>
</table>
on 1 yr of manuscript submissions to IJES, our findings revealed that graduate students are just as stringent in the peer review process as established reviewers. In addition, we wanted to determine if faculty peer reviewers returned similar decisions on student-submitted manuscripts compared with work in which a professional was the primary author. We found that whereas established reviewers statistically evaluated manuscripts equally regardless of submission type, there was tendency to be more stringent on professionally submitted manuscripts.

To our knowledge, the peer review process that IJES uses is unique in that like-level students are asked to evaluate student-submitted work. The present policy of the journal is that one established reviewers is also asked to review student-submitted manuscripts. The policy was enacted at the inception of the journal to maintain scientific integrity, as the ability for students to perform peer review was uncertain. The results of the present study are somewhat unexpected. It was hypothesized that student peer reviewers, as novices, would return decisions that were less stringent compared with faculty reviewers evaluating the same manuscripts. As detailed above, graduate students and faculty reviewers returned decisions on manuscripts that were similar (graduate student peer reviewers = 2.21 ± 0.69 code units and faculty peer reviewers = 2.24 ± 0.66, P = 0.84).

There are a number of possible explanations for the results presented in the present study. The journal has a set of published guidelines detailing the review process for an original research article (15), and this resource is freely available to all students. In addition, we ask that each student who reviews a manuscript for the journal have a faculty mentor that can guide him or her through the process. In recent years, there has been an emphasis on teaching the peer review process in the classroom and simulating the journal review experience (7, 9, 11). It is possible that the incorporation of teaching strategies aimed at exposing students to the peer review process, along with tangible opportunities such as are provided by IJES, are enabling students to be better prepared when performing scholarly assessments.

While students may be better prepared and have greater resources to complete the peer review process, an examination of the faculty reviewers who performed reviews of student-submitted manuscripts is also warranted. It is possible that established reviewers and students were of the same peer review ability, and this led to the similarity between scores. The faculty reviewers who reviewed student-submitted manuscripts might not have been afforded similar mentorship, instruction, or early peer review opportunities compared with current students. Another possibility is that with the requirements of their academic positions, faculty reviewers took less

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**Table 2. Selected comments from student and faculty reviewers highlighting the similarities in the decisions to reject or recommend major or minor revisions**

<table>
<thead>
<tr>
<th>Decision</th>
<th>Example Comments From Student Reviewers</th>
<th>Example Comments From Faculty Reviewers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor revisions</td>
<td>Correlations do not imply causation; be careful drawing inferences from simple correlations, particularly when dealing with such small sample sizes.</td>
<td>The stats were very simple and not very robust. Consider using a multiple regression to evaluate which of your variables will best predict performance outcomes? (For an examples see: S.C Olivier, M.F. Coetsee Tests for predicting endurance kayak performance South African Journal for Research in Sport, Physical Education and Recreation. 2002. Vol 24 No.2 and N Takeshima and K Tanaka Prediction of endurance running performance for middle-aged and older runners Br J Sports Med. 1995 March; 29(1): 20–23). Do data regarding the type of free-living activities performed exist? This should be reported and used as a point of discussion. The differences in the way these devices quantify variables may help explain the discrepancies observed owing to the type of activity performed.</td>
</tr>
<tr>
<td>Major revisions</td>
<td>The free-living activities were not reported by the participants? This is an important variable that can modify the results of the study. The detail of such activities is relevant. Nevertheless, the most important issue under free-living condition was the comparison of the monitor measurement for energy expenditure.</td>
<td></td>
</tr>
<tr>
<td>Reject</td>
<td>• One selection criterion mentioned was the ability of the participant to be able to work at a selected intensity for at least five minutes. Therefore, the exercise time could have been lengthened to reach steady state. • When using a self-selected intensity, [heart rate] and [rate of perceived exertion] (two dependent variables) are now controlled for, diminishing any chance to see true change due to grip differences.</td>
<td>The discussion should focus on explaining the results of the study in context with other literature. This is difficult given that cardiovascular responses were studied in both individuals on medication and individuals who were not on medication. Because of this, it is impossible to tell whether the cardiovascular responses observed were due to treatment or an effect of the medication.</td>
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**Fig. 2. Comparison of established reviewer evaluations of student-submitted (n = 33) and professionally submitted (n = 12) manuscripts.**
time to perform a thorough review of a manuscript, for which they were not being compensated. Finally, it is possible that with the student-focused nature of the journal, faculty reviewers were unwilling or less likely to return reject decisions to students whose work merited such a response. This may have inflated the overall established reviewer score in the present evaluation of IJES reviewer decisions.

It is interesting to note that when we compared faculty reviewers who evaluated student-submitted manuscripts with faculty reviewers who assessed professionally submitted articles, there was a near statistical difference ($P = 0.06$). In this case, established reviewers tended to return more stringent decisions when evaluating manuscripts submitted by a professional (i.e., reject more often). There are two possible reasons for this observation. It may be that faculty reviewers were more sympathetic to students who submitted and, therefore, were more likely to return a decision for major revisions considering that it could be a learning experience for the student, where they would not necessarily extend this option to a fellow professional. Another explanation could be that the actual manuscripts that were submitted by established authors were of poorer quality compared with student submissions. If this was the case, faculty reviewers would naturally return a reject decision more often on professionally submitted manuscripts than on student-submitted work. It should be noted that as our analysis returned a statistically insignificant result, this trend should continue to be monitored.

While there is an abundance of literature on the peer review process (1, 4, 5, 16, 18), to our knowledge, the present study is the first to compare student and faculty reviewers. Tangentially, there are reports (6, 17) that have evaluated the effect of peer assessment of homework or assignments in the classroom. The consensus of these reviews are that students are capable of performing valid and reliable assessments of their peers and that, in many cases, the quality is equal to or better than teacher evaluations. The findings of the present study indicate that this phenomenon can be extended to the journal peer review process. Students are just as stringent in their evaluation and final decisions on manuscripts submitted by their peers as established reviewers.

**DISCLOSURES**

No conflicts of interest, financial or otherwise, are declared by the author(s).

**REFERENCES**