Research on research funding: An imperative for science and society

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Research in medicine and public health is essential for the future wellbeing of society. In sports medicine, research has, for example, shown that psychological, social and contextual factors all influence recovery processes after sport-related injuries.¹ Such an understanding is central to optimise rehabilitation and improve outcomes and quality of life.

Many members of the BJSM community are well versed in the research funding world. In research funding, peer review of grant applications is considered the best practice for deciding which projects or scholars are funded. There are, however, concerns about the validity of peer review and research evaluation. A recent systematic review indicated that grant peer review in the health sciences suffers from biases, conservatism and is a weak predictor of future research performance.² We acknowledge that maximising effectiveness and fairness of public research funding is challenging and in this editorial, we argue that research on research funding is required to reduce biases and conservatism and increase the efficiency of grant review.

Does peer review of grant proposals work?

There are inherent weaknesses in grant review, which raise the question if it is the best method for allocating research funding. As funding organisations only recently have begun to investigate their review processes, most evidence on these challenges is anecdotal. Additionally, not much is known about how challenges can be addressed to improve evaluation and decision-making.

Biases in grant review refer to the potential influence of factors on funding decisions that are unrelated to the actual quality of grant applications. Biases can be conscious or unconscious and stem from the applicant's or the reviewer's characteristics, including their institutional affiliation, research field, nationality, gender, age, or ethnicity. Potential discrimination against female scientists is the most frequently studied bias. The Swiss National Science Foundation (SNSF) recently found that male applicants received more favourable scores from peer reviewers than female applicants.³ Male reviewers awarded higher scores than female reviewers, particularly for male applicants ([Figure 1](#)). The Swiss data support the 'gender matching hypothesis', where male peer reviewers give higher scores to male researchers, and female reviewers do the same for female applicants. However, the data are observational, and other explanations than bias against women exist. Indeed, differences were attenuated after adjusting for potential confounders.³

Figure 1. Gender differences in external peer review scores by gender of the main applicant and gender of the expert reviewer. Scores range from 1 (worst) to 6 (best). Mean overall scores with 95% confidence intervals are shown.

Data from 38 250 external peer review reports used for project funding at the Swiss National Science Foundation, 2006-2016. Adapted from Severin et al.³

The limited efficiency of grant review in selecting the best research or people is another challenge. A study from the Finnish Research Council for Health found that the discussion of proposals by evaluation panels, which are expensive and time-consuming, did not improve the reliability of the evaluation compared to merely using the mean score of external reviewers.⁴

Conservatism relates to grant review putting innovative and risky grant proposals at a disadvantage. While most evidence on conservatism is anecdotal, interviews with panelists at the European Research Council revealed that, because funding budgets are limited, reviewers tend to select proposals where the research is more likely to succeed, rather than rewarding ambitious, innovative ideas.⁵ This is also referred to as incrementalism. At the National Institutes of Health (NIH), there is concern about the falling numbers of innovative and risky grant proposals. Indeed, competitive pressures and low success rates may lead to conservative applications that focus on short-term success.⁶

A call for research on research funding

The body of knowledge on peer review comes from studies that cannot control for the difficult to measure factors that influence funding decisions, including the reputation of the applicants, or

their field of research. We call on funding agencies to invest in innovative experimental and observational studies that may allow causal inferences and can inform policy to reduce bias and conservatism and increase efficiency. Such studies may include randomised or quasi-randomised experiments, simulations, and approaches such as inverse probability weighting in longitudinal studies, for example of cohort studies of the impact of career funding among scholars, regression-discontinuity designs, or matching, for example of funded and rejected proposals close to the funding line.

Similar to clinical research, funders could randomise grant proposals to treatment groups with experimental review and a control group following the standard approach. For example, the effectiveness of *blinding reviewers* to the identity of applicants and their affiliations in reducing biases related to reputation, research field, nationality, gender, age, or ethnicity could be examined. Such randomised studies have been done for journal submissions⁷, but not for grant proposals.

A recent collaborative study by researchers and the Canadian Institutes of Health Research (CIHR) produced quasi-experimental and hence robust evidence that gender gaps in grant funding at the CIHR were attributable to the less favourable assessment of track records of women, and not of the quality of their proposed research.⁸ Other research should, for example, examine how the bias against *interdisciplinary* or risky proposals can be reduced, the role of *lottery* approaches to selecting proposal for funding, or the potential of *training* panel members or peer reviewers.

It is time for research funders to tackle the limitations inherent in peer review and grant evaluation that prevent promising research from being funded. This will take dedicated funding. If there are national research funding panels for cancer research, genetics research and physical activity research, why are there no panels for research to make grant funding more equitable and effective? Funders – for sports medicine grants and beyond – must be creative when investigating the merit of different evaluation strategies. We call for research and for letting those research findings guide funding reforms to promote grant review that supports the best research.

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