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Guest Editorial

Statistics: all together now, one step at a time

The Physiological and Pharmacological Societies in the UK have been aware for some time that statistical testing and data presentation in our journals can fall short of the high standards that we wish to maintain. Over recent years other medical and life science journals have made substantial efforts to address similar problems. For example, the BMJ set out to improve reporting in medical journals through a sustained campaign of education and guidance[1]. Among basic life science journals, the American Physiological Society notably has tried to improve statistical reporting in its journals[2,3]. A more recent initiative was a series of revealing 'worked examples', starting in 2007[4]. Physiological and Pharmacological Societies in the UK recently endorsed the ARRIVE guidelines for reporting experiments involving animals[5], which repeat the same advice on statistical reporting. Nevertheless, in many instances the quality of data presentation and statistical analysis can be poor, and this despite the widespread availability of books, articles, websites and easily used statistical packages. We feel that these messages, which are often a plea for simplicity, have not reached a critical mass of authors, and more needs to be done to raise reporting standards.

To meet this need, we are publishing a series of short articles to provide clear non-technical guidance for authors on best practice in statistical testing and data presentation. Several other life science journals share our concerns and are also publishing the articles to broadcast the message as widely as possible. The articles will appear monthly over the next 15 months.

Authorship of the series was a key question in early discussions. To get the project up and running we asked local authors to generate articles and get the project started. One of us, Gordon Drummond, Senior Statistics Editor for *The Journal of Physiology*, has had the help of a qualified medical statistician, Sarah Vowler (Cancer Research UK), in writing these articles. Others may become involved with future articles. We invite comment on the articles, as we are well aware that there is no single path, and valid differences of opinion should be considered.

We recognise that in some fields, special means of data presentation and statistical treatment are required. We intend to address some of these fields and we would be happy to receive suggestions for topics. We may not explore these topics in depth, because the over-riding aim is to keep the articles simple to encourage easy reading and widespread application. The prime aim is to illustrate good practice and illuminate the perils and problems that often trap the unwary.

The articles will be published under a non-exclusive licence to enable free re-use and duplicate publication in multiple journals. They will be published simultaneously in *The Journal of Physiology, Experimental Physiology, The British Journal of Pharmacology*, the American Physiological Society's *Advances in Physiology Education, Clinical and Experimental Pharmacology and Physiology*, and *Microcirculation*. We have adapted our Guidelines for Authors to reflect the advice given in the articles and will collate the articles in virtual collections as a resource for authors, students and teachers.

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