

Commentary on *Spreadsheets for Analysis of Controlled Trials*

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The updating of the spreadsheets for analysing controlled trials to include adjustment for a single covariate represents a genuine advance in Will Hopkins' mission to provide robust yet user-friendly analysis tools for the non-expert. Even in a relatively large randomised controlled trial (RCT), there may be chance imbalances across the trial arms for an important covariate. This potential problem applies also to chance imbalances at baseline for the primary outcome variable. Hence, in pretest-posttest RCTs a spreadsheet that permits the inclusion of the pre-test score as the covariate is a valuable tool. (As Hopkins points out, differences between intervention and control groups in the mean value of a covariate may be due also to poor randomization or selective drop-out of participants.) Further, Hopkins makes a key point that is often under-appreciated in the analysis of RCTs: when the covariate interacts with the treatment, including the covariate in the analysis may improve the precision of estimation of the mean intervention effect, even in the absence of substantial differences in the mean for the covariate between trial arms.

All of the modifications to the spreadsheets detailed in the article enhance the usability of

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the analysis tool. Among these enhancements, the correction of the standardized effects for the small sample bias of the standard deviation stands out as an important advance. This correction uses an appropriate modification of a formula presented by Becker. A further highlight is the inclusion of qualitative inferences based on the width of the confidence interval for the experimental effect against the thresholds defined a priori for the minimum clinically or practically important difference (for benefit and harm).

In the article the obvious limitations of the spreadsheet are acknowledged. Clearly, the tool does not offer the flexibility and analytical power of a sophisticated software package like SAS. However, the resource implications of using the latter (primarily the degree of technical and statistical expertise required) indicate the genuine need for simple yet conceptually and analytically robust tools like these spreadsheets. In sum, the Hopkins has provided a very valuable addition to the data analysis armoury of sport and exercise and other scientists.

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