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The review process assumes a high standard of English at submission (American spelling and usage are preferred by Acta), and due to the increasing volume of submissions, acceptance or publication of your article may incur unnecessary delays if this standard is not met. Even so, during recent years Acta Orthopaedica has been allocating increasing amounts of time to editorial work in order to help authors express their message clearly and succinctly. We hope to serve authors and readers alike by communicating solid observations at the expense of empty phrases. This trend is a natural evolution of scientific expression, which is necessary in the stiffening competition for attention. This does not mean that we prefer short articles - only that most articles become relatively short after removal of redundant, repetitive material. Authors submitting a paper do so on the understanding that the work has not been published before in any language, is

not being considered for publication elsewhere, and has been read and approved by all authors.

Although reviewer selection is ultimately the decision of the Editor, authors are encouraged to provide the names and email addresses of potential reviewers. Previous or parallel publications on the same subject by the author(s) should be stated with the manuscript. This is necessary for two reasons, 1) to avoid double publications, and 2) to provide the reviewers with essential information.

Submission

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The manuscript should be prepared according to Uniform Requirements for Manuscripts submitted to [Biomedical Journals](#). Reports of randomized controlled trials should comply with the [CONSORT statement](#). Authors of systematic reviews and meta-analyses are advised to consult the [QUORUM statement](#).

Authors submitting a paper do so on the understanding that it has not been published and is not being considered for publication elsewhere. The author(s) should provide a statement about previous submissions and reports that might be regarded as duplicate publication of the same or a similar paper. Authors should provide a description of their individual contributions to the study at the end of the manuscript with the heading "Contributions of authors". Approval by the local ethics committee should be stated with date of issue and registration number.

All documents with original data of relevance to the submitted manuscript should be stored and be retrievable on request for a minimum of 10 years. Authors are encouraged to include a copy of raw data in electronic form and/or make these data available via the internet.

The Manuscript

The number of words should not exceed 3,300 (excluding title page, figure, and table legends and references but including abstract). Note word count on first manuscript page.

Title page

Acta prefers titles that are expressive rather than neutral. The title should include information on the scope of the investigation, e.g., the number of patients, the average follow-up, animal or cadaver experiments. The first name, middle initial(s), and last name of each author should be given with indication of departmental affiliations. The email address of the author responsible for correspondence regarding the manuscript must be given.

Abstract

The abstract should not exceed 250 words. The abstract should be structured in 4 parts: Background (the problem, i.e the reason for the study) and purpose, Methods, Results, and Interpretation.

Introduction

The nature of the problem should be briefly introduced with particular emphasis on the state of knowledge at the beginning of the investigation, followed by a clear description of the aims and the main hypothesis. The introduction should rarely exceed 1 typewritten page.

Patients and methods

It is important to specify exactly how, and during which time period, the patients were selected. The patients must be described in detail so that there will be no questions about uncontrolled variables. Explain why some patients were dropped from the follow-up and whether or not they were representative of the primary series. For animals, the species, sex, age, breed, and physiologic state should be given. Describe in detail how the measurements were made and the techniques used.

Reports of randomized controlled trials should comply with the CONSORT statement (www.consort-statement.org). The study protocol (e.g., the protocol approved by the ethics committee) and a completed CONSORT [checklist](#) and [flowchart](#) should be appended to the manuscript. All clinical trials submitted for consideration should have

been registered in a public trials registry. Authors of systematic reviews and meta-analyses are advised to consult the consensus statements QUORUM and MOOSE for randomized trials and observational studies, respectively (see JAMA 2000; 283: 2008-12 and www.consort-statement.org/QUOROM.pdf).

Ethics and registration

When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000. Papers including animal experiments or clinical trials must be accompanied by an approval by the local ethics committee with date of issue and registration number. The registration of a study in a public registry should be stated.

Results

The main outcome of the experiment or the observations should be reported with reference to tables and figures where the details are documented; information concerning significance and other statistical data should be given in the tables and figures.

Do not give the same data in more than one way. When summarizing the data, always include measures of variability and the number of subjects. Give the median and range-e.g., 60 (35-70) years, the mean and standard deviation-59 (SD 15) years-and the frequencies for nominal data. The results of matched data should be given in relevant form (e.g., the distribution of pairwise differences). Percentages should not be used if the sample size is less than 100.

Discussion

This section should contain a critical discussion of the results - e.g., the quality of the data (selection and information bias) and adequacy of the statistical analysis (confounding bias). It should also assess the relevant literature for or against the findings and if possible, the conclusions as regards clinical application or further research. Discuss, do not recapitulate, your results.

Contribution of authors

Describe in short what each author did.

Acknowledgements

Technical help and financial or other sponsorship may be acknowledged.

Conflict of interest and funding

Authors are responsible for recognizing and disclosing financial and other conflicts of interest that might bias their work. If any, they should be clearly stated in the manuscript on submission. When the manuscript is accepted for publication, authors are asked also to sign a conflict of interest statement. When a commercial company is involved it is important to declare whether the company planned the experiment, took part in data collection, analyses, interpretation of data or writing of the manuscript.

References

Acta Orthopaedica uses the Vancouver system of reference formatting. However, we prefer the references to be cited by name and year (chronologically) of publication in the article text instead of sequentially numbered references. Thus, the references should be ordered alphabetically.

The style and abbreviations of journals should follow the style used in Index Medicus, also accessible at <http://www.nlm.nih.gov>

All authors, not et al., should be given in the reference list.

References in the text

One author: (Penning 1968).

Two authors: (Coonrad and Pohlman 1969).

Three or more authors: (Ishiguro et al. 1978).

Article-Coonrad R W, Pohlman M H. Impacted fractures in the proximal portion of the proximal phalanx of the finger. J Bone Joint Surg (Am) 1969; 51 (7): 1291-6.

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Book-Penning L. Functional pathology of the cervical spine: radiographic studies of function and dysfunction in congenital disorders, cervical spondylosis and injuries. Excerpta Medica Foundation, Amsterdam 1968.

Chapter-Allieu Y. External fixation in osteoarticular surgery of the hand. In: The hand (Ed. Tubiana R). W. B. Saunders Co. Philadelphia 1985; 2: 525-34.

Statistics

General information

Statistical evaluation is a vital part of many communications. These guidelines have been written for the benefit of sound scientific work and to help authors prepare their manuscripts in accordance with good statistical standards. The guidelines are applicable to retrospective clinical studies as well as to experimental studies, randomized clinical trials and epidemiological studies. However, all aspects are not equally important for all types of studies. For instance, randomized clinical trials typically include a given number of patients based on calculations of statistical power. In exploratory experimental studies, the number of units studied may be based on other considerations, but may still be justified.

The following general principles should also be followed: The investigator should ensure that his data are of high quality. All data should also be stored and retrievable at request. The use of a statistical method presupposes appropriate knowledge and understanding. Presentation of statistical results should focus on their clinical, not statistical, importance.

Introduction

State clearly the aim of the study and the primary hypothesis.

Patients and methods

State the number of subjects studied and why this number was chosen. Describe the sources of subjects, how the subjects were selected and the inclusion or exclusion criteria that were employed. Present information on subjects who declined to participate, withdrawals and subjects with incomplete follow-up. Describe in detail how measurements were made and techniques used. All statistical methods should be mentioned and, when necessary, (for unusual methods) referenced; for every statistical result, the method used should be clearly described.

All tests should be two-sided, unless the use of one-sided tests is specifically justified. No data should be removed, imputed, weighted, adjusted or trimmed unless this action is specifically described and justified and its consequences are presented. Use non-parametric techniques when data have been measured on an ordinal scale or on an interval scale or non-normality is suspected and normality cannot be induced by transformation. In addition, for small unbalanced data sets with many ties or a poor distribution, exact methods may be needed to produce reliable result Matched data should be analyzed using conditional techniques, e.g. paired t-test, Wilcoxon's signed ranks test, McNemar's test or conditional logistic regression.

When measurements are repeated on the same subject, they should not be treated as independent observations; use repeated measures ANOVA or multilevel models. A possible alternative would be to summarize all values from each subject into an individual estimate of a clinically relevant entity, e.g. the magnitude of a peak value, area under curve, doubling time, etc., and then use these estimates as input in an analysis with one observation per subject. When multiple hypothesis testing is performed in a study with the aim of confirming a pre-specified hypothesis, care should be taken to avoid spurious significance by using techniques for simultaneous inference.

Randomized trials

Reports of randomized controlled trials should comply with the CONSORT statement (see www.consort-statement.org).

Think twice about using stepwise regression analysis

Background

Some statistical software packages include programmes for stepwise multiple regression analysis. In short, this is a technique for building statistical models automatically, by selecting variables from a pre-defined set of candidate variables using a test related criterion, e.g. F- or p-value. Two main selection procedures exist: forward and backward. The former alternative selects explanatory variables by consecutive inclusion, the latter by consecutive exclusion. The two procedures often produce different outcomes.

Statistical tests and parameter estimates

It is often argued that statistical testing is an important part of a scientific manuscript because p-values represent an objective method for assessing scientifically important differences in data. This is a nice idea, but it is false.

Statistical tests cannot be used to "assess" important differences. Statistical significance is used for checking if an observed difference or effect can be explained by chance alone. When this is the case, the observation should of course be interpreted with caution. However, a statistically insignificant hypothesis never indicates that a difference or effect "does not exist", because absence of evidence is not evidence of absence.

Furthermore, scientific importance is related to two different issues, which should not be confused: clinical and statistical significance. For example, whether a body temperature difference of 0.5 degree Celsius is clinically significant or not depends on biology. The difference may be significant when predicting ovulation but insignificant when predicting recovery after hip fracture. In contrast, statistical significance depends entirely on statistical issues; the 0.5 degree difference in body temperature may be statistically significant in a study of recovery after hip fracture with 400 subjects but not in one with 12.

In addition, statistical test results are not objective. The outcome of statistical tests depends on the characteristics of the sample. A true difference in revision risk between two sorts of prostheses may show up in one sample, but not in another one, because a risk difference can easily be confounded by association with other factors affecting revision risk.

It is therefore, at least in observational studies, always necessary to take possible confounding factors into consideration. Sex and age are two common confounders. If not adjusted for, differences in the distributions of sex and age can bias a risk estimate and produce an arti-factual risk where none exists or mask an existing one.

Building statistical models

Adjustment for confounding can be performed using statistical (regression) models. Programmes for fitting statistical models are generally available in commercial software packages.

The testing and parameter estimation performed using a statistical model clearly depends on the variables included in the model. It is therefore crucial for confounding adjustment that known clinically significant variables are included in the regression model. The statistical significance of an adjustment variable is, however, irrelevant. A clinically significant variable may well be an important confounder also when it is statistically insignificant.

Stepwise regression analysis

The common practice (1) to screen a dataset using simple hypothesis tests and include statistically significant variables in a multiple statistical model to find out if they are "really significant" is therefore inappropriate. This technique should be used neither for confounding adjustment, nor for prediction purposes.

Stepwise regression analysis also uses p-value related criteria for building a statistical model. This is thus also an inappropriate method (2-3). The technique can perhaps be used for generating hypotheses about completely unknown phenomena, but a sound strategy for selecting variables in clinical and epidemiological studies where some knowledge do exist, is to use clinical judgment.

In addition, stepwise regression have for many years been criticised by statisticians (4-6) for overestimating precision and producing biased regression coefficients. It seems, however, that little of this criticism has reached the medical society. Inappropriate use of stepwise regression analysis appears to be increasingly common in medical publications (7-8).

Other scientific journals like Annals of Internal Medicine have also recently included statistical guidelines to "avoid stepwise methods of model building" in their Information for Authors (http://www.annals.org/shared/author_info.html#multivariable-analysis, July 9, 2007).

In conclusion, there are good reasons for thinking twice about using this method in medical research. Our recommendation is always to avoid stepwise regression.

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3. Mickey RM, Greenland S. The impact of confounder selection criteria on effect estimation. *Am J Epidemiol.* 1989;129:125-37.
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5. Copas JB. Regression, prediction and shrinkage (with discussion) *JRSS* 1983;B45:311-354.
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7. Whittingham MJ, Stephens PA, Bradbury RB, Freckleton RP. Why do we still use stepwise modelling in ecology and behaviour? *J Anim Ecol* 2006;75:1182-1189.
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Results

When summarizing the data, always include measures of variability and the number of subjects. When presenting medians, describe also the range within parentheses, e.g., median age was 60 (35–70) years and when presenting means use standard deviation, e.g., mean age was 59 (SD 15) years. Present the frequencies for nominal data. Results from matched data should be presented in relevant form, e.g., the distribution of pairwise differences.

Hypothesis tests (p-values) should be used in combination with a defined effect size and when statistical power has been considered. Present p-values with real numbers if these are greater than 0.001 (1 digit except zeros), otherwise use 'p < 0.001'. Do not use 'ns', 'p > 0.05' or asterisks. Use 95% confidence intervals in exploratory analyses and when estimating effects or differences.

Discussion

The discussion section should, when it is relevant, contain a critical discussion about the results. Questions like the quality of the data (selection and information bias) and the adequacy of the statistical analysis (confounding bias) should then be addressed.

Tables and figures

General principles

Use a common word processor and put your manuscript in one file. Embed tables and illustrations in your word processor file for creation of a PDF file for online submission at <http://www.actaorthop.org>. After acceptance of your paper, a new upload of the revised manuscript illustrations will be required. Please save illustrations as separate files, e.g. EPS, TIFF or PSD. You should embed your illustrations in your Word file, but should later be able to submit the original clean files on request.

Diagrams

Use a graphics program that can export EPS-file for electronic submission. At first submission, embed your graphs in the word processor file, but save the EPS-files for final submission after acceptance. Note that Harvard Business Graphics and some other programs cannot export EPS and Microsoft EXCEL produces graphs that are fragmented and hard to convert to printable diagrams although they are good for display purposes.

Avoid frames around diagrams and diagrams with perspective drawing. Symbols should be consistent throughout a series of figures. Different types of connecting lines can also be used. Make diagrams in black-and-white or colors but avoid complex patterns.

Axes should be equal in length to make the diagrams square. Each axis should be horizontally labeled with a description of the variable it represents. Use capitals only for the first letter in the first word. Use SI units. Make liberal use of scale markings, directed outwards, but identify only a few with numbers. Axes should not extend beyond the last numeral and never be terminated by arrows. If an axis is not continuous, this must be indicated by a clearly demarcated interruption. The axes print well when they are 9 cm long and 1 p wide and the scale markings 0.5 p wide. Labels should be sans serif letters (Arial or Helvetica) in 18 p. Numbers at the scale markings should then be 14 p.

If black-and white drawings or graphs are originally on paper only, scan them using bitmap (1 bit TIFF) and if appropriate aim at a 70 x 70 mm scan with at least 800 dpi resolution. File size will be >600 KiB but can be LZ compressed without quality loss.

Illustrations

Digital illustrations should be used. Color illustrations should be used when available; the cost of color will be borne by Acta. A scanned picture or digital photo should usually be about 85 mm wide with a resolution of 300 dpi, which gives an uncompressed file size of 4.5 MiB in color and 1 MiB in gray-scale. Save them as TIFF or PSD files with CMYK colors. The resolution of WEB illustrations (gif) is usually too poor. A too small file/picture or a highly JPEG compressed file may look acceptable on screen but can never be restored and thus prints poorly. If a photo needs to be highlighted with marks, letters and arrows it is better to do this in the production step. You may show this on a temporary illustration keeping the original clean for later use. If you would like to add highlights to your pictures, we recommend doing it in Adobe Photoshop, keeping the text and marks in a separate layer and saving it as an PSD file. It can also be done in the word processor and this will be used as a guide for production.

Radiographs

Radiographs and other photographs should be cropped to present only what is essential. It is rarely necessary to show normal radiographs, even for purposes of comparison. Frontal and lateral projections should be in the same scale and density. Corresponding details—e.g., the joint space—should be at the same level. Radiological illustrations should be electronic. Aim at a picture size of approximately 50 x 70 mm with 300 dpi which gives an uncompressed file size of 500 KiB. Save this file for final submission after acceptance. Highlights, arrows and letters may be added but keep a clean version of the photo for the layout process. Acta prefers to add these as a separate layer.

Case Report

Most case reports present one of these topics: Unique features or diagnostic/therapeutic approaches of a disease or injury. An unexpected association between diseases or symptoms. An unexpected event in the course of observing or treating a patient. Findings that shed new light on the pathogenesis of a disease. A Case report should include new educational material. The report of a rare injury or disease that was easily diagnosed and for which the treatment was obvious is not accepted. The mere fact that a diagnosis was missed when it should have been considered on the basis of the patient's findings is not a reason for publication. Similarly, the report of yet another rare organism or tumor in a previously unsuspected location is seldom accepted for publication. The published Case Report has no Abstract and no Introduction. It starts with the case story and ends with a Discussion. However, a short abstract is required (for reviewer reasons) in the manuscript you submit.

Letter to the editor

Acta welcomes letters to the Editor commenting on recently published articles or on matters of general interest. Usually, the authors of the original article will be invited to submit a response. Letters should preferably be under 500 words and will be subject to selection and editing. Letters should be submitted directly to the Editor, anders.rydholm@med.lu.se

Supplements

Acta stopped printing doctoral theses as paper supplement in 2015; most doctoral theses nowadays are based on a series of already published articles. A series of accepted articles (e.g. from a scientific meeting) may be published as an on-line supplement. Authors are requested, as early as possible, to contact the Editor (anders.rydholm@med.lu.se) regarding details.

Short Author Guidelines

Submission of manuscripts

Manuscripts should be submitted online, www.actaorthop.org. Authors are encouraged to provide the names, addresses, and e-mail of potential reviewers. Note the following points:

- a.** The manuscript should be prepared according to Uniform Requirements for Manuscripts submitted to Biomedical Journals (www.icmje.org). American spelling is preferred.
- b.** Authors submitting a paper do so on the understanding that it has not been published and is not being considered for publication elsewhere. The authors should provide a statement about previous submissions and reports that might be regarded as duplicate publication of the same or a similar paper. Copies of that study should be submitted with the paper.
- c.** Authors should provide a description of their individual contributions to the study.
- d.** Reports of randomized controlled trials should comply with the CONSORT statement (www.consort-statement.org).
- e.** The study protocol (e.g., the protocol approved by the ethics committee) and a completed CONSORT [checklist](#) and [flowchart](#) should be appended to the manuscript.
- f.** All clinical trials submitted for consideration should have been registered in a public trials registry.
- g.** Authors of systematic reviews and meta-analyses are advised to consult the consensus statements QUORUM and MOOSE for randomized trials and observational studies, respectively (see JAMA 2000; 283: 2008; 12 and www.consort-statement.org/QUORUM.pdf).
- h.** All documents with original data of relevance to the submitted manuscript should be stored and be retrievable on request for a minimum of 10 years. Authors are encouraged

to include a copy of raw data in electronic form and/or make these data available via the internet.

Manuscript layout

Title

The title should include information on the results of the investigation, including the number of patients, average follow-up, and animal or cadaver experiments. The first name, middle initial(s), and last name of each author should be given with department affiliations as well as the name, complete address and e-mail of the corresponding author.

Abstract

The abstract should not exceed 250 words. It should consist of 4 parts: Background and purpose, Patients/material/animals and methods, Results and Interpretation.

Introduction

The introduction should focus on the state of knowledge at the beginning of the study. The aims and main hypothesis of the study should be stated clearly. Only in exceptional cases should it exceed one typewritten page. *Case reports*. These should be short, include the Case history and Discussion without an Introduction.

Patients/material/animals and methods

The selection of subjects and the inclusion or exclusion criteria should be described. Subjects who declined to participate, withdrawals and those with incomplete follow-up should be accounted for. Describe in detail how the measurements were made and the techniques used.

Statistics

All statistical methods should be mentioned. Unusual methods should be referenced. The tests should be two-sided, unless the use of one-sided tests is justified. No data should be removed, imputed, weighted, adjusted or trimmed unless they are specifically described and justified and its consequences are given. *Hypothesis tests (p-values)*. These tests should be used, in combination with a defined effect size and when statistical power has been considered. Give p-values with real numbers, if these are greater than 0.001 (1 digit except zeros), otherwise use $p <$

0.001. Do not use ns, $p > 0.05$ or asterisks. In most instances, the 95% confidence intervals should be given, especially in exploratory analyses and when estimating the effects or differences.

Ethics

Approval by the local ethics committee should be stated with date of issue and registration number.

Results

Do not give the same data in more than one way. When summarizing the data, always include measures of variability and the number of subjects. Give the median and range e.g., 60 (35–70) years, the mean and standard deviation 59 (SD 15) years, and the frequencies for nominal data. The results of matched data should be given in relevant form (e.g., the distribution of pairwise differences). Percentages should not be used if the sample size is less than 100.

Discussion

This section should contain a critical discussion of the results e.g., the quality of the data (selection and information bias) and adequacy of the statistical analysis (confounding bias). It should also assess the relevant literature for or against the findings and if possible, the conclusions as regards clinical application or further research. Discuss, do not recapitulate, your results.

Tables

Each table should be self-explanatory, with an adequate title and a logical presentation of the data. Abbreviate words in the columns and explain in footnotes. Each column heading for numerical data should include the unit of measurement. Use SI units. Avoid unnecessary decimals! It is seldom advisable to use more than 2 digits for biologic measurements.

Digital illustrations

Should be used. A scanned picture or digital photo should usually be about 50 × 70 mm with a resolution of 300 dpi, which gives an uncompressed file size of 2 MiB in color and 500 KiB in gray-scale. A black and white drawing or graph may be scanned in 800 dpi bitmap, i.e. 1 bit TIFF. A 70 × 70 mm graph gives a file size of 600 KiB The preferred

format is a TIFF-file. The resolution of web illustrations (gif) is usually too poor. Color photos should be in CMYK colors. The cost of color will be paid by Acta. Embed moderately JPEG compressed versions of your illustrations in your online submitted PDF file. These illustrations will not be used for production. Highlights, arrows and letters may be added to digital photos but keep a clean version of the photo for the layout process. Acta prefers to add these as a separate layer. For digital graphs, use a graphics program that can export EPS-files. Avoid frames around diagrams, diagrams with perspective drawing, and bar graphs or histograms (use tables). Symbols should be consistent throughout a series of figures. Each axis should be horizontally labelled, with a description of the variable it represents. Use sans serif letters (Arial or Helvetica). Make diagrams in black-and-white with gray or color areas, but avoid complex patterns.

Authors contributions

Describe in short what each author did.

Acknowledgments

Technical help and financial or other sponsorship may be acknowledged. Conflicts of interest, if any, should be clearly stated in the manuscript on submission. When the manuscript is accepted for publication, all authors are asked also to sign a conflict of interest statement.

References

We prefer the references to be cited by name and year (chronologically) of publication in the text instead of giving their numbers, i.e. one author, two authors or author et al. and year. Thus, the list of references should be given in alphabetical order.

Submission

Create an Adobe Portable Document File (PDF) of your full manuscript. You will need the Adobe Acrobat Writer Program or similar PDF creator program installed on your computer. We recommend that you write your manuscript as a Microsoft Word .doc and embed all images, tables, figures etc. within the one file. Now convert the Microsoft Word Document to a PDF file by choosing the appropriate icon in the task bar of the Microsoft Word Application. Alternatively, right hand click on the icon of your manuscript file and choose, convert to Adobe PDF. If you do not have the Adobe PDF writer installed on your computer, you can use the try it for free feature found on the Adobe website at this

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