

## PDF - RESEARCH CORNER: GRANT WRITING: TOWARD PREPARING A SUCCESSFUL APPLICATION

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The objective of this study is to compare, in children with cystic fibrosis (CF), the effectiveness of the most widely accepted airway clearance technique, postural drainage and percussion, with three recently introduced techniques: autogenic drainage, Flutter, and PEP mask. Furthermore, determination of the "optimal" treatment technique with respect to patient age and disease severity will be undertaken. We hypothesize that the newer techniques will be more effective in improving regional ventilation, mucus expectoration, and lung function than postural drainage and percussion. We further hypothesize that the effectiveness of each of these newer techniques will be dependent on patient age and disease severity. A change in regional ventilation in response to a specific treatment technique is the primary outcome measure and will be determined by digital acoustic breath sound analysis and single breath He tests. Secondary outcome measures include mucus expectorated and pulmonary function tests. This information will contribute to efficacious treatment by improving clinical decision making when prescribing an airway clearance technique in the CF population. Figure 7 .

The title and abstract must be descriptive and well written because they are the components of a grant that are most widely read.

**Administrative Section** In this section, the funds that you project are going to be needed to accomplish your research plan are presented and justified. Additionally, the resources available to you, such as space and shared equipment are indicated.

**Budget** As you plan your budget, it is important to ensure that your budget is consistent with experiments that are proposed. Often an investigator is tempted to pad the budget, but this strategy is often faulty. The reviewers are quite familiar with the finances that are required to perform experiments, and therefore it is often advantageous to request the minimum amount necessary to do your research. This is especially true if you are a recently independent investigator, an agency may be more willing to provide a smaller amount whereas they may be hesitant to fund an application requesting considerable revenue. A successful budget is one that is financially consistent with the proposed experiments, and requests a realistic amount of funding with each item clearly justified. The largest portion of your budget is usually salary. Plan to commit between 20% to 50% of your effort to the project. Less time may not convince the reviewer that you are dedicated to the project, and more time is often unrealistic, especially if you are in a tenure track position. If your project requires assistance, choose well-qualified people and indicate precisely each person's expertise and the contribution they will make to the project. All requested equipment should be well justified, indicating which experiments it will be used for. Attempt to design experiments to minimize your use of supplies and optimize your use of labor. Attention to detail in this section of the budget demonstrates your familiarity with the supplies essential to perform the proposed experiments. Consistency is essential, be sure that the budget planned for the year agrees with the experimental schedule in that year. Travel assistance is usually restricted to one meeting for one investigator. Resources Reviewers will be concerned whether or not sufficient resources are available for the investigator to perform and complete the proposed research. In this section the space allocated by your institution

(whether it be office space, treatment area, laboratory space) as well as all other contributions to your project (such as release time or equipment availability) should be identified. Funding agencies are more favorable to a project when a facility has endorsed your research efforts. Use of human subjects Physical therapy research will often involve human subjects. Most granting agencies require assurance that any human subjects will be protected. Therefore, project approval by the Institutional Review Board (IRB) is often requested to accompany the grant application. Generally these committees meet monthly, therefore it is essential to have your proposal submitted and approved at your institution in advance of the grant deadline. Use of vertebrate animals In many instances, research questions applicable to physical therapy involve animals. As with human subjects, the granting agencies require that the Institutional Animal Care and Use Committee (IACUC) provide assurance that the animals will be protected. Ensure that sufficient time is allowed for obtaining the IACUC approval from your institution. Biographical sketch In the biographical sketch you present the education and expertise of yourself and your personnel. This allows the reviewers to determine if the personnel have adequate experience with the techniques proposed to complete the research project.

### THE ARTS AND CRAFTS OF GRANT PREPARATION: WRITING AND FORMATTING

The rule of thumb is to focus on writing the grant so that it is succinct and easily readable by those very knowledgeable in the field as well as persons only familiar with the area. Use short, simple sentences and write in the active voice rather than using the passive voice. Many times it is beneficial to use the exact wording of the sponsor when addressing required topics or questions. Separating the proposal into sections and subsections often improves the readability and provides an opportunity to use headings to facilitate organization for the reader. Using bold, italics, and numbering also enhances the organization of the sections of the proposal. Including figures and tables within the body of the text breaks up pages and pages of print. Make sure the figures are well described and include a legend that is very clear. Spell check and proofread the document.

care72 Cardiopulmonary Physical Therapy Vol 11 v No 2 Why Proposals are Rejected

A. Problem

- 0 Problem not of sufficient importance (33%)
- 0 Research is based on a hypothesis that rests on insufficient evidence (9%)
- 1? The problem is more complex than the investigator realizes (8%)
- 0 Problem fails to fall within the general field of health-related research (5%)
- 0 Problem is scientifically immature and warrants only a pilot study (3%)
- 0 Research is overly involved (3%)
- 0 Research is without a clear aim (3%)

B. Approach

- 0 Proposed tests, methods, scientific procedures are unsuited to the objective (35%)
- 0 Description of the approach is lacking in clarity to permit adequate evaluation (29%)
- 0 Overall design has not been carefully thought out (15%)
- 0 Statistical aspects of the approach have not been given sufficient consideration (8%)
- 0 Approach lacks scientific imagination (7%)
- 0 Controls are either inadequately conceived or inadequately described (7%)
- 0 The material that the investigator proposes to use is unsuited to the objective of the study or is difficult to obtain (4%)
- 0 Number of observations is unsuitable (3%)

C. Investigator

- 0 Investigator does not have adequate experience or training for this research (33%)
- 0 Investigator appears to be unfamiliar with recent pertinent literature or methods (14%)
- 0 Investigator's previously published

work in this field does not inspire confidence (13%) 0 Investigator proposes to rely too heavily on inexperienced associates (5%) 0 Investigator is spreading himself too thin; he will be more productive if he concentrates on fewer projects (4%) 0 Investigator needs more liaison with colleagues in this field or collateral fields (2%) D. Other 0 Requirements for equipment or personnel are unrealistic (10%) 0 It appears that other responsibilities would prevent devotion of sufficient time and attention to this research (3%) 0 Institutional setting is unfavorable (2%) 0 Research grants to the investigator, now in place, are adequate in scope and amount to cover the proposed research (2%) Derived from Science 1960;132:1532-1534 and reported in The Proposal Writer's Guide.<sup>4</sup> Figure 8 . Occurrence rates of common pitfalls observed in the statement of the problem , the choice of experimental approach, and the qualities of the investigator. fully. Most grants have page limits that should be strictly adhered to. Be kind to your reviewers-use a 12 point font that is easy to read. If the page limits and font sizes are not as requested, grants are often returned to the investigator. Attempt to finish writing in enough time to send the grant by express mail several days prior to the deadline, and be sure to verify that it has been received. Remember to do everything that you can to make the review process pleasant for the reviewer, your work will be more favorably received. Problems Why Proposals are Rejected It is worthwhile to be familiar with the most common problems with grants that end up causing them to be rejected. Armed with this knowledge, you may closely examine your own work to determine if any of the common pitfalls are present (Figure 8). If you are not funded... don't get discouraged. Presently, it is not unusual to have to revise a grant and resubmit. Before revising, read the reviewer's comments carefully and objectively. When preparing the revision, take the reviewer's comments seriously, and when you have adequately addressed the concerns, resubmit the grant at the next available deadline.

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**Regards!!!**