Effective Abstracts

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Function = a scaffold

“should be neither vague and general ... nor fussily detailed” (Zeiger)

An abstract is a mini version of your paper

Main sections mirror paper

- Summary of each of the main sections of a paper
  - Intro, Methods, Results, Discussion
- Identifies content of paper
- Highlights importance & relevance
- Should stand alone
- Generally, no citations, figures, tables

Important!

- Read most often or the only part read
- First impression
- Medline contains the abstract
  - others may use info found here to cite your work
- A poorly written abstract may result in rejection
What readers want to know -
A. Is the topic important & worth knowing about?
B. What is the purpose of the study?
C. What is the main outcome of the study?
D. Is the population relevant to me? Can I use these results in the care of my patients?
E. If statistically significant, do the results have clinical significance as well?

Also, should I read the article?
- If the study has been well designed and executed, would the results be important and interesting?
- If the study finds statistically significant differences, would this have clinical meaning?

You want people to read and cite your articles!

Traditions & Rules
- Check word length limits
- Accepted facts in introduction & conclusion = present tense
  - Gastroesophageal reflux disease (GERD) is the intermittent, retrograde movement of gastric contents into the esophagus, pharynx, or laryngeal area.
- Your work, methods, results = past tense
  - Using dual sensor pH monitoring, we found an increased number of reflux events in dysphonic children.

Rules
- Avoid jargon and abbreviations (unless defined within abstract)
  - No more than 3 abbreviations
- Never include information not in paper, grant, or presentation
- Check the format required by the journal

#366: Acronym Flood
### Abstract Formats
- Free-flowing
- Structured

### Mechanics
- Introduction (your question)
- Methods
- Results
- Conclusion (your answer)

These parts are in Structured Abstracts & Narrative (just not explicitly labeled).

### Introduction (Your question)
- One or two sentences of background
  - Highlight a controversy
- State question as purpose, question, or hypothesis

### Example Purpose Statement
- The purpose of our study was to evaluate fruit juice consumption and its effects on growth parameters during early childhood.

### Methods
- Name the material studied, organism, animal or human population
  - Condition (anesthetized?)
- State experimental approach or study design
  - Variables
  - Important details only of methods, materials

### Introduction
1. What interesting or important gap in knowledge or controversy does your study address?
2. What is the purpose of this research?
Results

- Include only the results that answer the question
- Give data only for important results
  * If at all
- Generally, no figures or tables

Signals

- Question + experiment
  * To determine whether
  * To test the hypothesis
  * We asked whether...
    to answer this question, we...
- Results
  * We found that...

Conclusion (Answer)

- State answer to question
  * Make sure that answers are to the questions asked
- Do not write vague statements such as "The cause of this response are discussed."

Conclusion

- Why is this important?
- What does it mean, or what may it mean?

Signals

- Answer & Implication
  * We conclude that...
  * Therefore...
  * These results suggest that...

The key

1. Use as few words as possible
2. Clearly state your questions, experiments, results, and answer to your question.
Example Introduction
A Development of pharyngeal muscle in nematodes and heart muscle in vertebrates and insects involves the related homeobox genes ceh-22, nkx2.5, and tinman, respectively. B The specific contributions of these genes to development is unknown. C To determine whether the nematode gene ceh-22 and the vertebrate gene nkx2.5 perform similar functions, D we examined the activity of the zebrafish nkx2.5 gene in transgenic C-elegans.

Example Results
E We found that ectopic expression of nkx2.5 body wall muscle directly activated expression both of the endogenous myo-2 gene, a ceh-22 target normally expressed only in pharyngeal muscle, and of a synthetic reporter construct controlled by a multimerized CEH-22 binding site. In addition, nkx2.5 efficiently prevented ceh-22 growth defects when expressed in pharyngeal muscle.

Example Conclusion
F These results indicate that ceh-22 and nkx2.5 perform similar functions. G Further these results suggest that an evolutionarily conserved mechanism underlies pharyngeal development in nematodes and heart development in vertebrates and insects.

Abstract Formats
What format do I use when submitting a journal article?

Each journal, granting agency, or scientific meeting call for papers has its own requirements.

Instructions for Authors
- Pull recent copy of journal at library
- Or, Google journal name, plus "instructions"
Grants have abstracts, too

> But, how can I write this? I don't have any results yet!!!

- For use in a grant:
- Instead of results, comment on importance or health relevance, or relationship to award or funding source
- I always end a grant abstract with a significance statement

Important! True for Grants also!

> Read most often or the only part read
> First impression
> "NIH Reporter" website contains the abstract
  - others will see this
  - Proprietary information caveat
> A poorly written abstract may contribute to poor grant score

Health Relevance Examples

> This research will result in development of a new technique for treating a serious medical problem in combat veterans. Effective methods for treating hypoxic wounds will promote healing of trauma sites, reduce the chance of infection, and reduce the risk of tissue death.
> The development of improved and efficient methods for health data collection in vulnerable and typically excluded populations, such as children, is an important outcome of this research.

Grant Abstract Formula

A. Background (1-2 sentences)
B. Controversy or gap statement
C. Preliminary Data statement (optional)
D. Hypothesis
E. Specific Aims
F. Significance Statement (1-3 sentences)
  - Health relevance

In the proposed research, we plan to use a progressive resistance tongue exercise program we have developed in awake rats to investigate the role of exercise in preventing or reversing age-related changes within the tongue and hypoglossal nucleus. Our hypothesis is that age-associated changes in the hypoglossal nucleus, together with denervation-reinnervation processes, are major contributors to lingual sarcopenia, and that these processes can be prevented or reversed by exercise.

^There is an overwhelming body of evidence that links sarcopenia, the age-related changes in muscle size, strength, and function, to anatomical and physiological changes within motoneurons, nerve-muscle connections, and the muscles themselves. In addition to skeletal muscle in the limbs, age-related changes undoubtedly occur in cranial muscles and the brainstem neurons that innervate them. Alterations in tongue muscle and hypoglossal motoneuron structure and function may contribute to the age-related decline in swallowing and speech. However, little is known about the pathophysiology underlying age-related changes in the cranial neuromuscular system. In our laboratories, we have found age-related changes in tongue muscles, the neuromuscular junction (NMJ), and in hypoglossal motoneurons and their serotonergic neuromodulatory inputs in a rodent model.

^Background, ^Controversy, ^Preliminary Data

D Hypothesis
The proposed research has 5 specific aims. In young, middle-aged and old rats, we will determine: (1) the degree to which behavioral tongue forces and muscle contractile properties change as a function of age and exercise, and morphological, biochemical, and molecular variables that are predictive of changes in tongue muscle contractile properties; (2) the effect of age and exercise on morphological and biochemical properties of tongue muscles; (3) the effect of age and exercise on morphology of nerve-muscle connections, (4) the effect of age and exercise on neuronal plasticity in the hypoglossal nucleus; and, (5) the role of neurotrophins in exercise-induced neuronal plasticity in young, middle-aged, and old rats.

This work is innovative and important because the mechanisms by which exercise may impact neuroprotective effects in the lingual motor system are largely unexplored. Our neuromuscular model is the first to evaluate the effects of a behavioral exercise program on cranial motoneurons and tongue physiology. Further, this work is highly significant in providing a basis for understanding mechanisms underlying the putative benefits of exercise as a therapeutic intervention for age-related changes in cranial muscles.

Abstract for Meeting
- Often due 6 months or more before meeting
- Tempting to report things in abstract that are not yet completed (or even started) because you will certainly have the data before the meeting
- Don't do this
- An integrity issue – goes against principles of responsible conduct of research

Sample Abstracts from Papers

Abstract 1
Note the unusual structure of the abstract to follow that is specific to this journal. ** It is Important to look up the abstract requirements!

CONTEXT: Although guideline-concordant depression treatment is clearly effective, treatment often falls short of evidence-based recommendations. Organized depression care programs significantly improve treatment quality, but employer purchasers have been slow to adopt these programs based on lack of evidence for cost-effectiveness from their perspective.

OBJECTIVE: To evaluate the effects of a depression outreach-treatment program on workplace outcomes, a concern to employers.

JAMA, 2007
DESIGN, SETTING, AND PARTICIPANTS: A randomized controlled trial involving 604 employees covered by a managed behavioral health plan were identified in a 2-stage screening process as having significant depression. Patient treatment allocation was concealed and assessment of depression severity and work performance at months 6 and 12 was blinded. Employees with lifetime bipolar disorder, substance disorder, recent mental health specialty care, or suicidality were excluded.

INTERVENTION: A telephonic outreach and care management program encouraged workers to enter outpatient treatment (psychotherapy and/or antidepressant medication), monitored treatment quality continuity, and attempted to improve treatment by giving recommendations to providers. Participants reluctant to enter treatment were offered a structured telephone cognitive behavioral psychotherapy.

MAIN OUTCOME MEASURES: Depression severity (Quick Inventory of Depressive Symptomatology, QIDS) and work performance (World Health Organization Health and Productivity Questionnaire [HPQ], a validated self-report instrument assessing job retention, time missed from work, work performance, and critical workplace incidents).

RESULTS: Combining data across 6- and 12-month assessments, the intervention group had significantly lower QIDS self-report scores (relative odds of recovery, 1.4; 95% confidence interval, 1.1-2.0; P = .009), significantly higher job retention (relative odds, 1.7; 95% confidence interval, 1.1-3.3; P = .02), and significantly more hours worked among the intervention (beta=2.0; P=.02; equivalent to an annualized effect of 2 weeks of work) than the usual care groups that were employed.

CONCLUSIONS: A systematic program to identify depression and promote effective treatment significantly improves not only clinical outcomes but also workplace outcomes. The financial value of the latter to employers in terms of recovered hiring, training, and salary costs suggests that many employers would experience a positive return on investment from outreach and enhanced treatment of depressed workers.

BACKGROUND: Adding insulin to oral therapy in type 2 diabetes mellitus is customary when glycemic control is suboptimal, though evidence supporting specific insulin regimens is limited.

METHODS: In an open-label, controlled, multicenter trial, we randomly assigned 708 patients with a suboptimal glycated hemoglobin level (7.0 to 10.0%) who were receiving maximally tolerated doses of metformin and sulfonylurea to receive biphasic insulin aspart twice daily, prandial insulin aspart three times daily, or basal insulin detemir once daily (twice if required). Outcome measures at 1 year were the mean glycated hemoglobin level, the proportion of patients with a glycated hemoglobin level of 6.5% or less, the rate of hypoglycemia, and weight gain.

Abstract 2

NEJM, 2007
RESULTS: At 1 year, mean glycated hemoglobin levels were similar in the biphasic group (7.3%) and the prandial group (7.2%) (P=0.08) but higher in the basal group (7.6%, P<0.001 for both comparisons). The respective proportions of patients with a glycated hemoglobin level of 6.5% or less were 17.0%, 23.9%, and 8.1%; respective mean numbers of hypoglycemic events per patient per year were 5.7, 12.0, and 2.3; and respective mean weight gains were 4.7 kg, 5.7 kg, and 1.9 kg.

CONCLUSIONS: A single analogue-insulin formulation added to metformin and sulfonylurea resulted in a glycated hemoglobin level of 6.5% or less in a minority of patients at 1 year. The addition of biphasic or prandial insulin aspart reduced levels more than the addition of basal insulin detemir but were associated with greater risks of hypoglycemia and weight gain.