Scientific Writing in English:

a template-based approach to writing Conference Abstracts

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"Good prose is like a window pane." (George Orwell)

Outline

o   The template-based approach

o   Advantages and caveats

o   How to use it to write an Introduction

o   How to use it to write a Conference
    Abstract (CA)

BMJ – the pioneer

"It is unfortunate that in an environment in which so many individuals must publish, only a limited effort is made to understand **the structure of written papers. It is eminently teachable. Detailed, evidence–based guidance can be derived from a study of the structure of articles that are successfully published in leading Journals.**"

http://www.bmj.com/content/320/7244/1269.1

Research background

Genre-based teaching enables the non-native student to **access a way of communicating that has accrued cultural capital in professional, academic communities.**
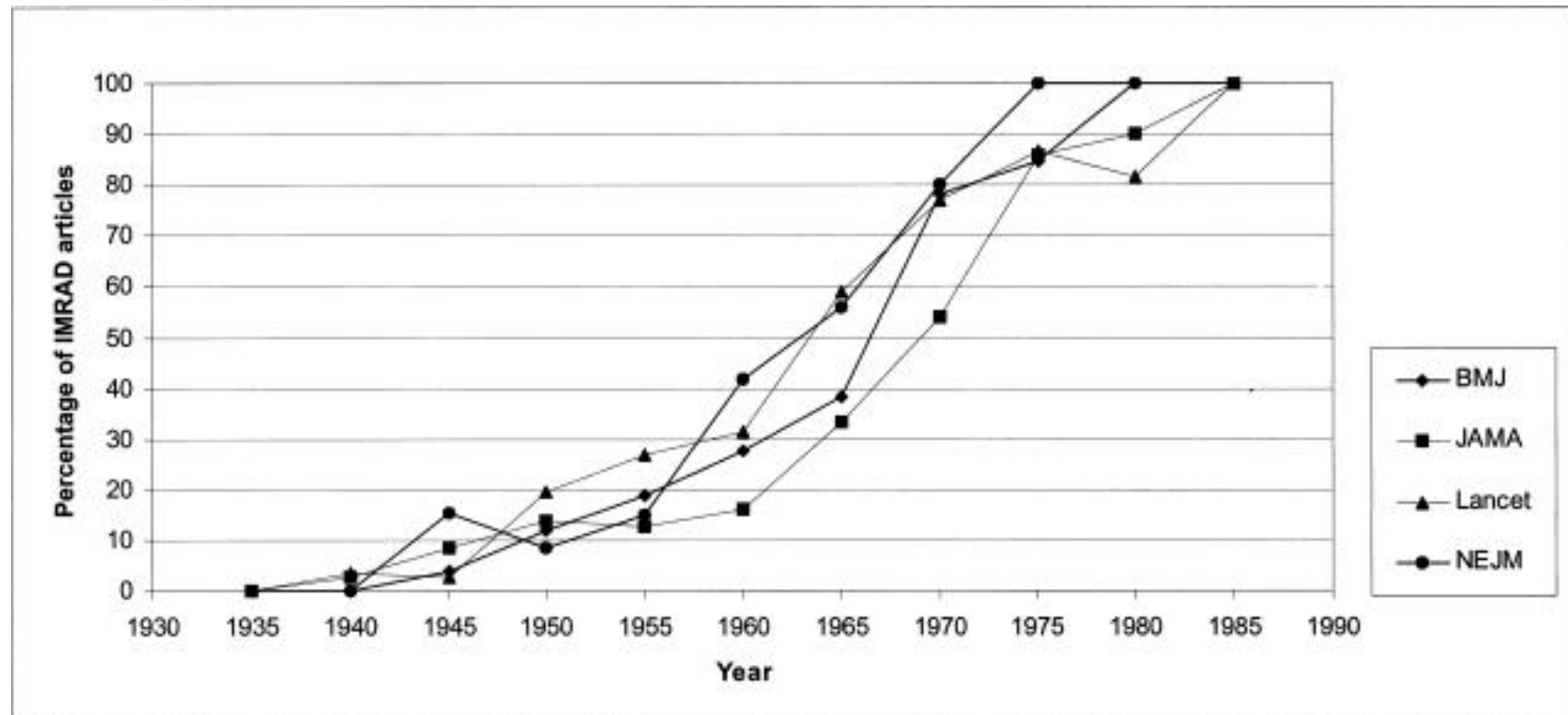
Hyland (2003)

Definition: The genre-based approach

IMRaD introduced as standard by American National Standards Institute 1979

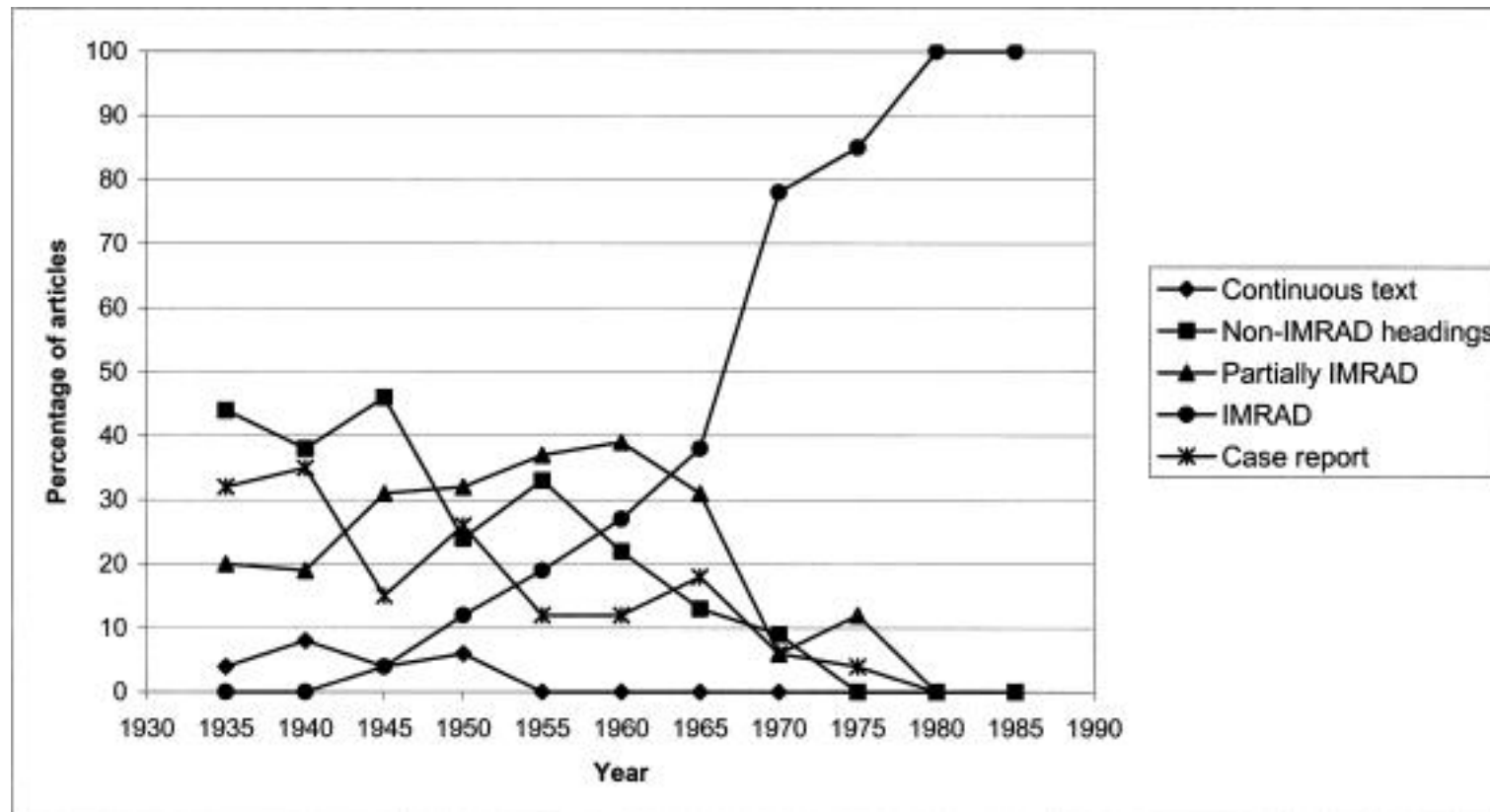Abstract

Abstract

Introduction

Method

Results

Discussion
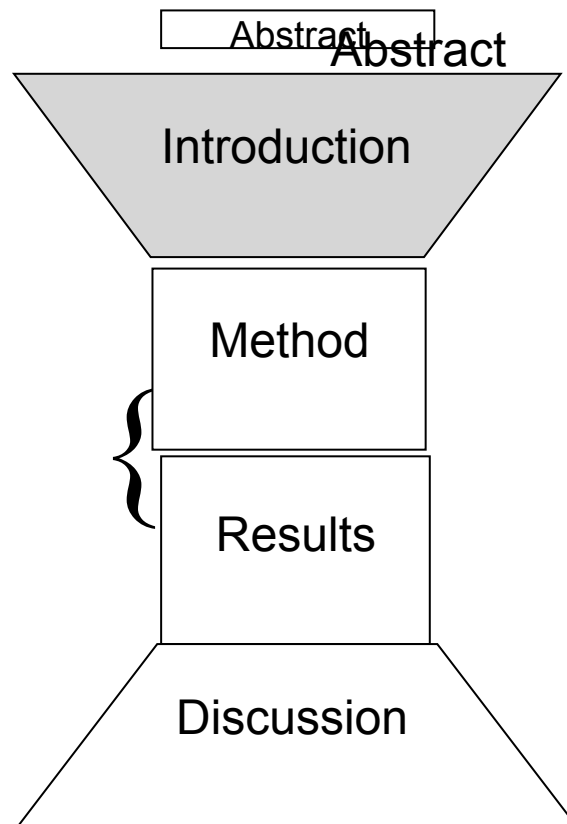
IMRAD Adoption

Proportion of IMRAD adoption in the *British Medical Journal, JAMA, The Lancet,* and the *New England Journal of Medicine,* 1935–1985

IMRAD Adoption

Text organization of published articles in the *British Medical Journal* from 1935 to 1985

Criticism/disadvantages of genre focus

o *restrictive* and *over-rigid*

o may result in *International English* or *dumbed-down* science writing

.... but these weaknesses ≡ the strengths

Unhelpful help

DISCUSSION

Highlight the most significant results, but don't just repeat what you wrote in the Results section. How do these results relate to the original question? Do the data support your hypothesis? Are your results consistent with what other investigators have reported? If your results were unexpected, try to explain why. Is there another way to interpret your results? What further research would be necessary to answer the questions raised by your results? How do your results fit into the big picture? End with a one-sentence summary of your conclusion, emphasizing why it is relevant.

TITLE

You title should describe the contents of the paper, but it should not be so technical that only specialists will understand. The title should be appropriate for the intended audience. The title usually describes the subject matter of the article.

http://www.columbia.edu/cu/biology/ug/research/paper.html

The template-based approach

'… painting by numbers guarantees immediate success and gratification, encouraging the painter to try …until feeling secure and confident enough to discard the training wheels of Paint by Numbers and (go) "solo" for the first time.'

http://www.hofcraft.com/paintbynumbersets.htm

Early attempts…….

pinestreetartworks.com
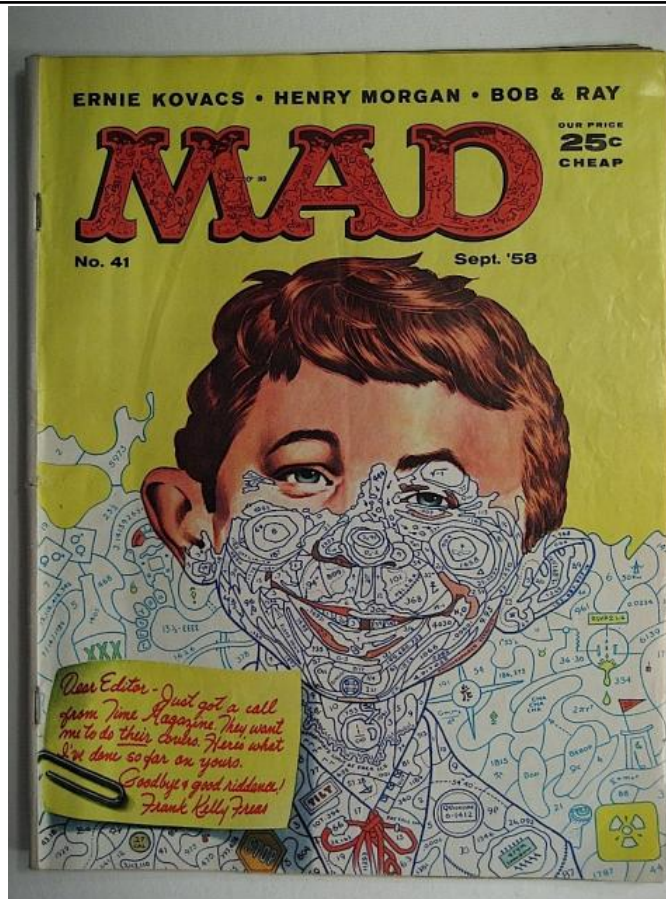
The process and its rhetorical and language benefits

The template-based approach

Mantras:

How it's done

➢ **Science writing is much easier than it looks.**

➢ **You only need to learn and master a limited segment of English (whoopee!).**

➢ **Conventional writing keeps you - and your NNS readers - safe.**

❖ Read edited/simplified RA/CA

❖ Build simple sentence-based model

❖ Identify and learn essential grammar

❖ Test/adjust model using target RA/CA

❖ Identify/learn vocabulary set

❖ Write, using model and vocabulary set

❖ Reinforce/develop with each RA/CA that you read

EXAMPLE INTRODUCTION

Polylactide (PLA) has received **much attention in recent years** due to its biodegradable properties, which **offer important economic benefits**. PLA **is** a polymer obtained from corn and **is** produced by the polymerization of lactide. It **has** many possible uses in the biomedical field[1] and has also been investigated as a potential engineering material.[2,3] **However,** it has been found to be **too weak** under impact to be used commercially.[4]

One way to toughen polymers **is** to incorporate a layer of rubber particles[5] and there has been extensive **research** regarding the rubber modification of PLA. For example, **Penney et al. showed that** PLA composites could be prepared using blending techniques[6] and more recently, **Hillier[7] established** the toughness of such composites. **However, although** the effect of the rubber particles on the mechanical properties of copolymer systems was demonstrated over two years ago[8], **little attention has been paid** to the selection of an appropriate rubber component.

The present paper presents a set of criteria for selecting such a component. On the basis of these criteria it then **describes** the preparation of a set of polymer blends using PLA and a hydrocarbon rubber (PI). This combination of two mechanistically distinct polymerizations formed a **novel** copolymer in which the incorporation of PI significantly increased flexibility.

Grammar and coherence

o **Verb tense**

They/we found that x occurred, which indicated that y was true.

They/we found that x occurs, which indicates that y is true

o **Linkage**

➢ Overlap/repeat

➢ Semicolon

➢ Pronoun/pro-form

➢ Signalling connector

Introduction Model

1	ESTABLISH THE SIGNIFICANCE OF YOUR FIELD PROVIDE BACKGROUND FACTS/INFORMATION PRESENT THE PROBLEM AREA/CURRENT RESEARCH FOCUS
2	PREVIOUS/ CURRENT RESEARCH AND CONTRIBUTIONS
3	IDENTIFY A GAP/PROBLEM IN THE RESEARCH DESCRIBE THE PROBLEM YOU WILL ADDRESS PRESENT A PREDICTION TO BE TESTED
4	DESCRIBE THE PRESENT PAPER

Towards the optimal design of a biologically-inspired flexible probe for soft-tissue intervention
Luca Frasson

Introduction

o Minimally-invasive percutaneous soft tissue intervention (need for curvilinear trajectories for brain surgery)
   Establish significance, supplying background information

o Other flexible probes
   Previous and/or current research

o Limitations of flexible probes
   General gap/problem

o Biological Inspiration → new flexible steerable probe (explain design and mechanism) *General scope and/or purpose of your work*

o Limitations of the new design (buckling, friction)
   Specific gap/problem

o Need for modelling (cross-sectional optimization and failure analysis)
   Specific scope and/or purpose of your work

o Structure of the paper
   Structure of the paper

Final version

I. INTRODUCTION

The adoption of minimally invasive approaches for different kinds of surgical procedure is growing in popularity because of clear advantages such as faster patient recovery, less risk of infection, less scarring, shorter hospitalization and lower cost. As a result, the development of novel, safer and more accurate surgical tools is a crucial issue, particularly in the field of percutaneous procedures, which include, for example, biopsies, localized drug delivery, brachyteraphy and blood/fluid sampling [1].

Current research is focusing on identifying new strategies and new devices for accessing curvilinear trajectories in soft tissue such as brain and liver, with the aim of reaching deep organ areas through safer routes, avoiding obstacles and critical areas [2]. However many technical challenges remain: from the limitations in manufacturing techniques to the maneuverability and controllability of small and flexible probes during percutaneous intervention.

To address these shortcomings, the ovipositor structure and function of certain parasitic wasps [3] has inspired the development of a novel flexible and steerable probe at Imperial College, London [4]. Fig. 1a shows the cross-section of the current probe prototype. The probe is composed of four interlocking segments able to slide independently with respect to each other, which is hypothesised will result in smooth soft-tissue penetration, while reducing the risk of the probe buckling inside tissue. In order to be driven in soft tissue along curvilinear trajectories (Fig. 1b), the flexible probe segments undergo significant deformations and displacements relative to each other, which may cause failure. Two main probe failure scenarios have been described by Frasson et al. [5]. The first describes the situation in which the flexible probe deviates from the desired trajectory, for example because of buckling into soft tissue. The second, which is the focus of this paper, occurs when the interlocking mechanism fails and two probe segments separate from each other irreversibly. It is evident that the geometry of the interlocking mechanism is a key element for preventing this kind of failure.

The purpose of this study is to define an optimization procedure for the design of the interlocking mechanism. This is aimed at understanding which geometrical features have the greatest influence on resistance to failure.

This paper describes the numerical model developed for the optimization of the interlocking mechanism geometry, the implementation of the optimization procedure and the experimental validation of the model of the optimum interlock geometry; corresponding results are presented and discussed.

A cover for the SPPPV

Results model

1	GENERAL OVERVIEW OF RESULTS
	REVISITING THE RESEARCH AIM/REVISITING EXISTING RESEARCH
	REVISITING/EXPANDING METHODOLOGY
2	INVITATION TO VIEW RESULTS
	SPECIFIC/KEY RESULTS IN DETAIL
	COMPARISON WITH RESULTS IN OTHER RESEARCH/MODELLED RESULTS/PREDICTIONS
3	PROBLEMS WITH RESULTS (NBD/NMF/GSA)
4	POSSIBLE IMPLICATIONS OF RESULTS

Discussion/Conclusion model

1	REVISITING PREVIOUS SECTIONS SUMMARISING/REVISITING GENERAL OR KEY RESULTS
2	MAPPING (RELATIONSHIP TO EXISITING RESEARCH)
3	ACHIEVEMENT/CONTRIBUTION REFINING IMPLICATIONS
4	LIMITATIONS CURRENT AND FUTURE WORK APPLICATIONS

Advantages

- no need to 'learn English' ☺
- better reading as well as better writing
- reliable academic culture input vs. 'creative writing' madness; saves time and head-scratching
- reduces reliance on supervisors and colleagues
- convention compensates for language errors
- helps with word limits – no rambling
- 'assisted imitation' creates a bridge between reading and writing that actively feeds writing with each iteration

Caveats and concerns

o diversity in journals, fields, subsections

o continual, fast growth of small discourse communities (such as Computing)

o globalized simplification vs. elegant nuance

Operating the strategy for writing Conference Abstracts (CAs)

o   Identify target CAs in your research area that are written by native speakers

o   Develop a basic sentence-by-sentence model and refine it using target CAs

o   Simplify your model into 3 – 6 recurring components; note their most common order

o   Identify grammar issues (verb tense/prepositional use/passive)

o   List useful recurring vocabulary for each component

Sample Abstracts

TIME-OF-DAY INFLUENCES THE ACUTE IGFBP-3 RESPONSE TO RESISTANCE EXERCISE

Pheasey, C., Halliwell, M., Grosset, J.F., Onambélé-Pearson, G.L   Manchester Metropolitan University

Sarcopenia affects a wide range of population groups from older to young limb immobilised persons. Exercise training is recognised as the most effective intervention to counteract muscle tissue loss, with research continuously aiming to identify ways in which to further improve the effectiveness of this therapy, including understanding the hormonal responses associated with exercise (1, 2). It is however unclear, with circadian rhythm being a significant factor in hormonal release, whether exercise-induced endocrine responses would be impacted on by time-of-day (TOD). Therefore, the aim of the present study was to investigate whether there is a TOD effect on the acute insulin-like growth factor-binding protein-3 (IGFBP-3) response to resistance exercise. Ten healthy male university students volunteered for the study. The mean ± standard deviation for age, body mass, and height were 20 ± 1.6 yr, 76 ± 6.0 Kg, and 176 ± 6.6 cm respectively. Participants had not taken part in regular resistance training for six months prior to the study. Each participant completed two resistance exercise sessions at 70% 1RM with at least 72h interval: one in the morning (8.15am) and one in the evening (6.15pm). Ten repetitions of each exercise were performed in the following order; seated leg press, chest press, Latissimus Dorsi pull down, and shoulder press. 5ml blood samples were collected 10 minutes immediately before and after the exercise sessions. Pre and post-exercise circulating levels of IGFBP-3 were determined by enzyme linked immuno-sorbent assay. Results showed a 14 ± 6.7 % ($p = 0.033$) significant increase in the change in IGFBP-3 from pre to post exercise in the evening compared to the morning exercise session. These results suggest that with a greater increase in IGFBP-3 following resistance exercise in the evening, IGF-1 stimulated activation of satellite cells could be greater through an increase in free IGF-1 available due to breakdown of the ternary complex. This would have implications for the hypertrophic response to chronic resistance exercise.

Model components

o   Background information – factual/historical
o   Establishing significance
o   Identify relationship with previous/current work
o   Gap/problem/aim/hypothesis
o   Method/treatment proposed (+ details) and why
o   Results (+ details) obtained or predicted
o   Implications
o   Marker of achievement
o   Mapping/conclusions
o   Work underway/future work suggestions

Reviewing process – actively/explicitly answer:

➢ Clear scientific merit/validity?

➢ Appropriate as a Conference Abstract?

➢ Clearly relevant to other work/theme of conference?

➢ Original?

➢ Interest level – how broad is it?

➢ Is there sufficient detail re. method and results?

➢ Progress level – how much has been completed?

➢ Do the conclusions clearly follow from the data?

➢ Will it help the conference to 'sell'?

Editing for word limits|

o   Use abbreviations/abbreviate second usage

o   Check for repeats or 'empty' language (words like *special*)

o   Crunch sentences together:

This study investigated the use of a novel water-soluble polymer blend as a coating to control drug release. (Combines what the study did, the method, the contribution (*novel*) and the overall aim) ***It was found that using an equal-parts blend of methylcellulose and a water-soluble copolymer significantly slowed the release rate of ibuprofen compounds in vitro and allowed for a more consistent release rate of 10-20% per hour.*** (Combines details of method and results/achievement)

o   Check whether tables/references/examples are included in word limits

Language issues

o Paragraphing

o Explain abbreviations/acronyms the first time you use them

o Verb tense

o Compound nouns

o Reference of it/they/these etc.

o Use of a/the

o Agentless passives

o Prepositions

Warnings:

- Wait until you have some data
- Don't go **even one word** over the limit
- Don't forget to give numbers/quantities etc.
- Identify the value and relevance of your work clearly
- Remember that you are marketing your work, not just reporting it
- Write the title *after* you write the Abstract

The title

o **Accurately describe/predict the content of the study**

Crack initiation in a pressurised pipe   (case study)

Crack initiation in pressurised pipes   (general survey)

o **Include key words to enhance SEO**

o **Watch your prepositions!**

*Time-motion analysis of handball players **for** practices and official games*

…is not the same as

*Time-motion analysis of handball players **during** practices and official games.*

*Sensory components **controlling** bacterial nitrogen assimilation*

….is much clearer than

*Sensory components **in** bacterial nitrogen assimilation*

Good luck!

"Writing is easy – you just stare at a blank sheet of paper until drops of blood appear on your forehead" (Gene Fowler)