The scientific format helps to insure that at whatever level a person reads your paper (beyond title skimming), they will likely get the key results and conclusions.
Humanities vs. Scientific writing

<table>
<thead>
<tr>
<th>The Humanities:</th>
<th>The Sciences:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active voice</td>
<td>Passive voice</td>
</tr>
<tr>
<td>Flexible conventions for structure</td>
<td>Strict adherence to preset, structural conventions</td>
</tr>
<tr>
<td>• Transitions, rather than headings, are commonly used to demarcate subsections</td>
<td>• For example: the Abstract, Introduction, Methods, Results, &amp; References sections of a lab report</td>
</tr>
<tr>
<td>Reliance on text, rather than visual elements, to convey main ideas</td>
<td>Use of multiple visual elements, such as charts or graphs, to demonstrate important concepts</td>
</tr>
</tbody>
</table>
## Humanities vs. Scientific writing

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<thead>
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<th>The Humanities:</th>
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<tbody>
<tr>
<td>Transitions generally signify changes in or emphasize particular aspects of the author’s position</td>
<td></td>
</tr>
<tr>
<td>• Ex: “therefore,” “furthermore,” “in any case”</td>
<td>Clear procedural transitions signal particular steps in an experiment</td>
</tr>
<tr>
<td>Use MLA (Modern Language Association) or other appropriate style to cite sources</td>
<td>• e.g.: “first,” “second,” “third”</td>
</tr>
<tr>
<td>Use a discipline-appropriate scientific style of citation</td>
<td></td>
</tr>
</tbody>
</table>
## The Sections of the Paper

<table>
<thead>
<tr>
<th>Experimental process</th>
<th>Section of Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>What did I do in a nutshell?</td>
<td>Abstract</td>
</tr>
<tr>
<td>What is the problem?</td>
<td>Introduction</td>
</tr>
<tr>
<td>How did I solve the problem?</td>
<td>Materials and Methods</td>
</tr>
<tr>
<td>What did I find out?</td>
<td>Results</td>
</tr>
<tr>
<td>What does it mean?</td>
<td>Discussion</td>
</tr>
<tr>
<td>Who helped me out?</td>
<td>Acknowledgments (optional)</td>
</tr>
<tr>
<td>Whose work did I refer to?</td>
<td>Literature Cited</td>
</tr>
<tr>
<td>Extra Information</td>
<td>Appendices (optional)</td>
</tr>
</tbody>
</table>
Title, Author, Abstract, Keywords

Introduction
- What is the context for this project?
- How does it fit in with other research on the topic?
- What is the research question?

Methods
- What did the author(s) do to answer the research question?

Results
- What was the answer to the question?
- This is often shown in tables and figures.

Discussion/Conclusion
- What is the significance of this project?
- How does it fit in with what else is known about the topic?

References
- Materials the author(s) cited when writing this paper.

Why?

How?

What?

So What?
Title, Author, Abstract, Keywords

- Descriptive information that lets readers search for an article.

Introduction

- What is the context for this project?
- How does it fit in with other research on the topic?
- What is the research question?

Methods

- What did the author(s) do to answer the research question?

- What was the answer to the research question?
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- What was the answer to the question?
- This is often shown in tables and figures.

- What is the significance of this project?
- How does it fit in with what else is known about the topic?

- Materials the author(s) cited when writing this paper.
INTRODUCTION: What is known? (Our understanding of the world)

What is unknown? (What's the gap we want to fill?)

How and why should we fill the gap? (Your rationale and purpose/hypothesis)

METHODS: What did you do?

RESULTS: What results did you get?

DISCUSSION: How do the results fill the gap?

CONCLUSION: What does this mean for us going forward?
1. INTRODUCTION: What is known? (Our understanding of the world)

2. What is unknown? (What's the gap we want to fill?)

3. How and why should we fill the gap? (Your rationale and purpose/hypothesis)

4. METHODS: What did you do?

5. RESULTS: What results did you get?
QUESTION
What is a problem or observation?

RESEARCH
Learn about the topic – what have others found out?

HYPOTHEITIZE
What do you think will happen?

EXPERIMENT or STUDY
Collect data to test the hypothesis?

ANALYZE
Summarize the results of the experiment or study?

INTERPRET
Do your results support the hypothesis?

COMPARE
How do your results compare to those of other studies?

CONTEMPLATE
What is the next question to be answered?
The function of the Introduction is to:

- Establish the **context** of the work being reported. *This is accomplished by discussing the relevant primary research literature (with citations) and summarizing our current understanding of the problem you are investigating.*

- **State the purpose** of the work in the form of the hypothesis, question, or problem you investigated; and,

- Briefly explain your **rationale and approach** and, whenever possible, the possible outcomes your study can reveal.

- **Explains the motivation and importance of the research.**
What was I studying?
Why was it an important question?
What did we know about it before I did this study?
How will this study advance our knowledge?
Do I understand the background information?

Do I need to look up references for more information?
Structure

• The broadest part at the top representing the most general information and focusing down to the specific problem you studied.
• Organize the information to present the more general aspects of the topic early in the Introduction, then narrow toward the more specific topical information that provides context, finally arriving at your statement of purpose and rationale.
• A good way to get on track is to sketch out the Introduction backwards; start with the specific purpose and then decide what is the scientific context in which you are asking the question(s) your study addresses.
• Once the scientific context is decided, then you'll have a good sense of what level and type of general information with which the Introduction should begin.

Example Introduction Paragraph

Most people rarely find a mentor to guide them. In the story, “Drummer Boy” by R. Bradbury, the general gave a great deal of guidance to Joby. (1) The general’s father like character, (2) his willingness to share his emotions, and (3) his clear definition of the role of the drummer boy gave Joby the courage he needed to face battle with confidence.
• Malaria is a bad disease
• Sterilization of male mosquitoes could prevent malaria
• Mating plug seals sperm and is crucial for fertility – tranaglutaminase 3 is crucial
• Transglutaminases are crucial enzymes that cross-link proteins
• Cys323 is an active site
• **Hypothesis:** Mutation of Cys323 can disrupt transglutaminase activity and prevent formation of mating plug
Establish the context by providing a brief and balanced review of the pertinent published literature that is available on the subject.

Begin your Introduction by clearly identifying the subject area of interest.

What literature should you look for in your review of what we know about the problem?

Be sure to clearly state the purpose and/or hypothesis that you investigated.

Provide a clear statement of the rationale for your approach to the problem studied.

Content Formatting

- Use the past tense or present perfect tense in the Introduction to refer to past events
  - Past Tense: Sanchez (2000) presented similar results.
  - Present Perfect: Since that time, several investigators have used this method.

- Use the past tense to describe the Method and Results

- Use the present tense to Discuss the results and to present the conclusions
Begin your Introduction by clearly identifying the subject area of interest.

- Do this by using key words from your Title in the first few sentences.
- This insures that you get to the primary subject matter quickly without losing focus, or discussing information that is too general.
- For example, in the mouse behavior paper, the words hormones and behavior would likely appear within the first one or two sentences of the Introduction.
Establish the context by providing a brief and balanced review of the pertinent published literature that is available on the subject.

- General review of the primary research
- For example, in the mouse behavior paper, you would begin the Introduction at the level of mating behavior in general.
- Then quickly focus to mouse mating behaviors and then hormonal regulation of behavior.
Level of mating behavior in mouse

Hormonal modulation of behavior

Role/effects of reproductive hormones (estrogen) in modulating specific sexual behaviors of mice.
What literature should you look for in your review of what we know about the problem?

- Primary research journals - the journals that publish original research articles.
- Review articles

Review Article

- Controversies & debates
- Unanswered questions
- Must-read articles
Be sure to clearly state the **purpose** and /or **hypothesis** that you investigated.

- "The purpose of this study was to...." or "We investigated three possible mechanisms to explain the ..."
- It is most usual to place the statement of purpose near the end of the Introduction
- It is not necessary to use the words "hypothesis" or "null hypothesis"
Provide a clear statement of the **rationale** for your approach to the problem studied.

- State briefly how you approached the problem.
- Why did you choose this kind of experiment or experimental design?
- What are the scientific merits of this particular model system?
- What advantages does it confer in answering the particular question(s) you are posing?
- Do not discuss here the actual techniques or protocols used in your study.
If you are using a novel (new, revolutionary, never used before) technique or methodology, the merits of the new technique/method versus the previously used methods should be presented in the Introduction.
WHAT WE KNOW

WHAT WE DON’T KNOW

WHY WE DID THIS STUDY
We know:

- How to process packets in a switch
- How to route packets in the network
- How to send packets reliably

We don’t know:

- How fast to send
XY is an important issue

For example, it has these effects, and these other effects

These have been investigated in a number of ways

Author A came up with this explanation

Author B proposed an alternative explanation

To date, it is unknown what the role of the phenomenon Z is.

Phenomenon Z could be important because of this, that, and something else.

Specifically, we addressed three aims:
• First, we tested whether...
• Second, we compared our findings...
• Third, we applied our insights to...
During the last two decades, with the miniaturization of the devices, paediatric endourology has always been moving towards the invention of less invasive approaches. The treatment of kidney stones is another area which is searching for the optimal minimally or non-invasive modalities and therefore the competition between percutaneous nephrolithotomy (PNL), flexible ureteroscopy (URS) and shock wave lithotripsy (SWL) have dramatically decreased the numbers of open surgical procedures \[1-3\].

The ‘all seeing needle’ which is an optical system through a special puncture needle has recently been introduced as a novel instrument which can be safely used to obtain an optimal renal access prior to PNL \[4\]. It has been suggested that this system may facilitate the initial access and therefore helps the urologists to overcome one of the most important steps of the procedure. Subsequently this optical system was used for single step PNL which is then called the ‘microperc’. Desai et al. have successfully performed renal stone fragmentation in 10 cases through this 4.85 fr needle and demonstrated the first feasibility and efficacy of microperc in select patients \[5\].

In this study, we aimed to elucidate the applicability and safety of microperc in the treatment of paediatric kidney stones. To our knowledge this is the first report of microperc specialized to paediatric population.
Deep brain stimulation (DBS) is a highly effective surgical therapy for helping people with movement disorders re-establish control over their motor function. Much of its success has been based on long-term experiences with surgical ablation for managing hyperkinetic and hypokinetic states. These procedures not only provided the impetus to develop a stereotactic apparatus for targeting deep brain structures, but they also imparted critical knowledge of what brain regions are involved in the expression of motor signs for various movement disorders. Intraoperative electrical stimulation was recognized early on as an important pre-lesion targeting tool, capable of augmenting or suppressing motor signs depending on the frequency and amplitude of stimulation. In 1960, Hassler et al. reported that low frequency stimulation (LFS, <25 Hz) in the globus pallidus elicited contralateral tremor in parkinsonian patients, whereas high frequency stimulation (HFS, 25–100 Hz) applied to the same location suppressed tremor. Since then, similar stimulation-dependent effects have been reported in other nuclei and for other clinical indications (Fig. 1). DBS offers important advantages over the immutable effects of ablative procedures, including the reversibility of the surgical outcome and the ability to adjust stimulation parameters post-operatively to optimize therapeutic benefit for the patient while minimizing adverse side effects. Thousands of DBS implants are now performed each year for a growing number of movement disorders. However, despite the clinical successes of DBS, we still lack a fully formulated theory for how DBS works.
Since the inception of DBS as a clinical therapy, its mechanisms have been the focus of intense scientific study and debate. In this review, results from electrophysiological experiments, biochemical analyses, computer modeling, and imaging studies are integrated to provide an up-to-date understanding of DBS mechanisms. Our discussion will focus on three questions essential to understanding the mechanisms of DBS: 1) how does DBS affect individual neurons in, and axonal elements passing through, the region around the active electrode(s); 2) how do these neural responses translate into observable benefit in motor symptoms; and 3) how do these effects depend on the particular site of stimulation? Significant progress has been made in recent years in addressing these questions, but there are notable gaps in the literature. A better understanding of the physiological processes underlying what makes DBS an effective therapy will allow us to improve the efficacy of current applications, simplify methods of optimizing stimulation parameters for patients currently receiving the therapy, and provide the rationale for developing new applications and new technology.
A complement-dependent balance between hepatic ischemia/reperfusion injury and liver regeneration in mice
Songqing He, Carl Atkinson, Fei Qiao, Katherine Cianflone, Xiaoping Chen and Stephen Tomlinson

Statement of the problem:

Introduction
Liver resection has become an increasingly safe procedure, but certain procedures remain high risk, such as massive liver resection and small-for-size (SFS) liver transplantation. Massive hepatic resection is the only option for some patients....

Background:
The failure of a partial liver to regenerate is considered a critical contributing factor in postsurgical primary liver dysfunction and liver failure, and minimal viable liver volume required for regeneration, following either massive liver resection or SFS transplantation, is an important concept...

Rationale:
Thus, although the studies outlined above indicate that complement inhibition represents a potential therapeutic strategy to protect against hepatic IRI, the important role of complement in liver regeneration would appear to be a contraindication for such a strategy in the context of liver resection and SFS liver transplantation, even though IRI is associated with impaired regeneration...

What was done:
In the current study, we investigated the role of complement in the relationship between hepatic IRI and liver regeneration using 3 murine models: a warm total hepatic IRI model (similar to the Pringle maneuver), a 70% PHx model, and a combined IRI/PHx model designed to recreate clinical massive liver resection under the Pringle maneuver. In these studies, we used the complement inhibitor CR2–complement component...
Alzheimer's disease is a rising threat to public health. It is distinguished from other dementias by abundant extraneuronal deposits of Amyloid-β. Research shows that neuronal alterations can be induced in the brains of amyloid precursor protein (APP) transgenic mice by supraphysiological concentrations of synthetic Amyloid-β peptides, by Amyloid-β species secreted by cultured cells, or by mixtures of Amyloid-β assembly forms.

Although these findings show that Amyloid-β can alter synapse physiology in experimental models, the nature of the pathogenic species from the human brain and demonstration of neurobiological effects haven't been shown.

Our experiment was designed to take soluble Amyloid-β oligomers directly from the cerebral cortex of deceased subjects with Alzheimer's disease to induce Alzheimer phenotypes in normal adult rodents, measuring the effects on synaptic Long Term Depression and Long Term Potentiation as well as dendritic density.

We hypothesized that soluble A-β isolated directly from human Alzheimer's diseased brains would potently impair synapse structure and function, specifically by the actions of A-β oligomers and dimers.
Regulate Use of Cell Phones on the Road

When a cell phone goes off in a classroom or at a concert, we are irritated, but at least our lives are not endangered. When we are on the road, however, irresponsible cell phone users are more than irritating: They are putting our lives at risk. Many of us have witnessed drivers so distracted by dialing and chatting that they resemble drunk drivers, weaving between lanes, for example, or nearly running down pedestrians in crosswalks. A number of bills to regulate use of cell phones on the road have been introduced in state legislatures, and the time has come to push for their passage. Regulation is needed because drivers using phones are seriously impaired and because laws on negligent and reckless driving are not sufficient to punish offenders.
Section 1  The cat reminds me of Garfield. He reminds me of Garfield because he is orange. They lookalike!

Additionally, there are other ways that the cat looks like Garfield. Both the cat and Garfield have brown stripes and green eyes. They are identical!

Transition Phrase

Section 2  Above all, Garfield and the cat are alike in more ways than just looks. They are both lazy! It is like they’re twins!
PREPARATION OF MANUSCRIPTS FOR MOVEMENT. HEALTH & EXERCISE (MoHE)

The Effect of Different Music Tempo on Pain among University Athletes

Samir MP, Rosli Hasni

Faculty of Sports Science and Recreation
Universiti Teknologi MARA, Shah Alam

Email: farisamsir@gmail.com

Abstract

Music considered as one of cognitive coping strategies to redirect attention away from pain or to reinterpret the pain experience. Enjoyment and relaxing during listening to music seems give distraction to pain according to many previous studies. Yet, not so many studies focus on being aware of certain type of music like the tempo’s, either fast or slow do they prefer. This study investigated the different of music tempo on pain in 51 healthy university athletes. They performed all intervention methods; fast tempo music, slow tempo music and without music. Top 20 Spotify music were listed and all participants had choices two, in control element of preference. Two minutes of cold pressor task was used as a pain-inducer and the pain score using NRS-11 were collected after the time gives. Heart rate were monitored in associated with pain. After participants received. Paired t-test were being used for compare three sessions. Results indicated significantly used on pain for fast tempo music and slow tempo music comparing to the control group (no music) (p < 0.05) and there was a significant difference between fast tempo and slow tempo music on pain score (p < 0.05) where slow tempo music showed better reduced on pain score. In conclusion, music apparently effective in reduced pain either fast or slow tempo, and slow tempo music seems give more relaxing compare to fast tempo music, where pain score was significantly difference.

Keyword: music, fast tempo, slow tempo, cold pressor pain.

Introduction

The cold pressor task (CPT) is an experimental instrument technique for inducing pain in humans. The CPT has the advantage of being free from the influence of potentially confounding factors such as nausea, fatigue, and anxiety related to illness and painful medical procedures often found in the clinical setting (von Baeyer, Pila, Chambers, Trapanotto, & Zeltner, 2005). In line with the limited capacity model of attention (Shiffrin & Schneider, 1977), much of the early work on distraction focused on difficult mental tasks as likely to consume greatest attention, thereby being more potent in distract the pain sensation (McCull & Malott, 1984).

The use of music for pain management has been termed ‘audio-analgesia’ or ‘music-induced analgesia’: the ability of music to attenuate pain perception (MacDonald et al., 2003). In the search for alternatives to pharmacological analgesia, music offers a potential method of coping with pain through distraction, relaxation or enhancement of quality of life (Mitchell, MacDonald, Knussen, & Serpell, 2007). Fast tempo of music is defined as music that has 120-140 beats in a minute (Calcote et al., 2014; Fredenburg & Silverman, 2014; Simavli, Gumas, et al., 2014). While the slow time is less than 50-70 beat per minute (Calcote et al., 2014; Cole & Llolliduco-wood, 2014; Korhan et al., 2014; Simavli, Kaygusuz, et al., 2014).
The influence of angiotensin I-converting enzyme (ACE) I/D gene polymorphism on cardiovascular and muscular adaptations following 8 weeks of isometric handgrip training (IHG) in untrained normotensive males

AUTHORS: Hafizani Ahmad Yunuf; Abdul Rashid Aziz; Ahmad Musirin Che Muhammad

1 Lifestyle Science Cluster, Advanced Medical and Dental Institute, Universiti Sains Malaysia, Pulau Pinang, Malaysia
2 Sport Physiology, Sport Science & Medicine, Singapore Sports Institute, Singapore, Singapore

ABSTRACT: We examined the association between the angiotensin I-converting enzyme (ACE) I/D gene polymorphism and isometric handgrip (IHG) training on cardiovascular and muscular responses among normotensive males. Thirty (I = 15, ID = 10, and DD = 10) normotensive untrained males underwent IHG training at 30% of their maximal voluntary contraction 3 days per week for 8 weeks. Cardiovascular and muscular variables were measured before IHG, after a session of IHG and after 8 weeks of IHG. No significant interaction effect was found between ACE I/D genotype and IHG training on all dependent variables [all p > 0.05]. There was a significant main effect of IHG training session on systolic blood pressure (SBP) (p = 0.003), mean arterial pressure (MAP) (p = 0.013) and handgrip strength (HGS) (p = 0.001) scores, while no difference in diastolic blood pressure (DBP), pulse pressure, or heart rate scores was found. A greater improvement in cardiovascular parameters following 8 weeks of IHG training was observed in participants with the D allele than the I allele (SBP reduction: ID = D genotype group (I = 52 ± 4.2 mmHg) vs. II genotype group (I = 52 ± 3.9 mmHg); MAP: ID = D genotype group (I = 3.4 ± 5.7 mmHg) vs. II genotype group (I = 3.4 ± 5.3 mmHg)). Eight weeks of IHG training improved cardiovascular and muscular performances of normotensive men. Reduction in SBP and HGS scores in I allele carriers compared to allele carriers indicates that the ACE I/D polymorphism may have an influence on IHG training adaptation in a normotensive population.


INTRODUCTION: Resistance exercise training, which has not been previously recommended for blood pressure (BP) management in hypertension patients [1], has been shown to lower resting BP in normotensive and hypertensive individuals [2-5]. Reductions of 3 to 4 mmHg in resting systolic and diastolic BP were observed following four weeks of resistance exercise training [5]. Meanwhile, in another meta-analysis study conducted by Cornish and Smart [6], the largest reductions in resting BP were reported following the isometric resistance exercise training (systolic: -2.0 ± 2.85 mmHg, diastolic: -2 ± 3.34 mmHg) compared to other endurance (systolic: -3.5 ± 6.01 mmHg, diastolic: -3.7 ± 3.92 mmHg) and dynamic resistance exercise training (systolic: -1.8 ± 4.85 mmHg, diastolic: -2.5 ± 3.29 mmHg). It has been suggested that an isometric exercise training program consisting of four sets of 2-minute handgrip [7, 8] or leg contractions [9] at 50-50% of maximal voluntary contraction (MVC) [2, 10] with 1-4 min intervals of passive rest between each contraction [2, 7] performed 3-5 times per week for 4-10 weeks [11, 12] is more effective in lowering resting BP than endurance and dynamic resistance exercise training.

Although the benefit of isometric exercise training for the management of hypertension has been well documented [13], it has remained unclear how factors [14-16] that can influence BP, such as sex and genetics, may influence the efficiency of this isometric exercise program. Indeed, several studies using twins as subjects reported that BP is controlled by genetic factors [15, 16]. Given the fact that BP has a genetic basis, research efforts have been directed towards identifying the candidate genes involved in BP regulation [17, 18]. Among the proposed candidate genes, the angiotensin I-converting enzyme (ACE) gene has attracted much attention due to its role in the neprilysin-angiotensin system (RAS), which is the body’s primary physiological system that regulates BP [19-21].

Within the ACE gene, the ACE I/D gene polymorphism showed a strong link with the level of ACE [22] in the RAS and accounted for 47% of the total phenotypic variance of ACE [23]. Rijal et al. [23]
TENSES

* Describing methods and results = past tense

* Present tense = for accepted facts, eg: background information

* Present tense = when you discuss results and conclusions
Content Formatting

- Use the past tense or present perfect tense in the Introduction to refer to past events
  - Past Tense: Sanchez (2000) presented similar results.
  - Present Perfect: Since that time, several investigators have used this method.

- Use the past tense to describe the Method and Results

- Use the present tense to Discuss the results and to present the conclusions
Possible exercises:

Collect the introductions from several published papers

Analyse these introductions:

Do they follow a clear structure?

Which introductions lead you clearly to key aims? Which take big detours?

Do you think those detours are useful (because they add depth), or are they a distraction?

Why?

After the introduction, are you inspired to read the rest of the paper?

Are the aims clear — do you know what’s coming?
Thank You

Very Much!