

Academic Writing in English

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This book began to emerge in 1985, based on the wisdom of my original mentor in Finland, Jean Margaret Perttunen (1916-2016). From Day 1, she offered me advice, revealing the problems that Finnish scientists face when writing in English. Peggy's lengthy, all-encompassing writing guide, first appearing in that year, was *The Words Between*. It immediately became backup for the University of Helsinki's first English writing course for scientists, which I had the honor of initiating.

My next mentor was Swedish, Björn Gustavii, MD, PhD. His small but enchanting book, *How to Write and Illustrate a Scientific Paper*, then our frequent emails, followed by his unique guide to compilation theses were so valuable that I cite him here often. When he was 87, his colleagues wrote, "Björn was a visionary, a forerunner, a goal-oriented pioneer and a tireless researcher in several fields of research. He was also an exemplary, meticulous author of scientific articles. We who were on the fetoscopy team at the Women's Clinic in Lund miss him." Björn was still busy revising his books with Cambridge University Press when we lost him.

The European Association of Science Editors (EASE) has since 1997 provided me with access to conferences featuring international journal editors and expert author-editors, from whom comes advice. The EASE journal, *European Science Editing*, has published articles based on Helsinki in-classroom "action research." My course participants thus benefit from EASE data and reciprocate through their responses and innovations. Nordic Editors and Translators (NEaT) now exists—further enlightening us on standards and trends—thanks to my colleague Julie Uusinarkaus. I also thank, for decades of TLC: tender, loving care, the kind and loyal staff of the Language Services of the University of Helsinki, particularly Leena Evesti.

Note: such a complex and lengthy course book, evolving since 1986 through ideas from mentors, colleagues, and students, cannot avoid some repetition and novel juxtapositions. It thus provides an index allowing readers to track down items of interest throughout its pages.

The newest edition will always be accessible at the link on the resources page; it is also available, by author's full name or by its title, on line. Overseas DIY, do-it-yourselfers, note the page-76 footnote.

Carol Norris
2022

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Advice for modern academic writing

In some fields, young scholars may imitate the often-outdated style of their professors or of decades-old journal articles. Nowadays, style is evolving, because of widening internationalization and also increased printing costs.

The KISS Rule is “Keep it Short and Simple,” and less politely: **“Keep it Simple, Stupid!”**

At a conference of the Association of European Science Editors (EASE), the editor of the *British Medical Journal* demanded:

<p>clarity readability non-ambiguity</p>

He also urged that articles be as short as possible. Rather than “Count every word,” **“make every word count.”** Remove every useless or extra word from paper and screen; our time is precious.

Teacher-editor-author Ed Hull wants “reader-friendly” scientific writing. Authors must realize that they are no longer in school; teachers demand performances greatly different from the role of texts to inform busy readers seeking only “nuggets” of precious information.

Even years ago, in the EASE quarterly *European Science Editing* (ESE) (1998, 24, 1; 7-9), Frances Luttikhuisen criticized “exaggerated use of **the passive voice** and Latin-based words . . . [that] belongs to the formal style of the 17th century. It **weakens** scientific writing. The active voice is much more forceful than the passive . . . For linguistic as well as cultural reasons, scientists who have English as a second language . . . tend to feel more comfortable writing in a more formal style.” Despite this fact, ageless advice is that **“Readers of scientific papers do not read them to assess them, they read them to learn from them . . . What is needed is more simplicity, not more sophistication!”** Aim **“to inform, not to impress.”** (Emphasis added.)

General advice for non-native writers

Never translate. Of course, use your own language to take notes and write outlines. But word-for-word translation into English means that anyone’s mother tongue causes interference. This will damage your English grammar and vocabulary. I find that Finns in particular can rapidly write letters and stories in correct, charming English, but when they write a text first in Finnish and then translate it, the result is usually awkward, unclear, and full of errors.

Accept total responsibility for being clear. If any of your sentences requires an intelligent reader to re-read it, the Anglo-American attitude is not to blame the reader, but to blame you, the writer. This may contrast with the practice of directing blame in your own culture. Only consider: Who has the time to re-read sentences? Moreover, careful **editing** will **shorten your texts, thus making them more publishable.** One writer wisely said, “If I had had more time, I would have written you a shorter letter.”

The worst sin is ambiguity. Being ambiguous means accidentally expressing more than one meaning in a phrase, as in: “Women like chocolate more than men.” Does this mean that, given the choice between a nice Fazer chocolate bar and a man, a woman will prefer the chocolate? Or do you mean that “Women like chocolate more than men **do**”? Let’s hope, for the survival of humanity, that it’s the latter!

Trust your ear. English grammar rules include endless exceptions. At the Nordic language level, depend instead on what you have **heard all of your life from TV and films in English—idioms especially. Your ear will tell you** when an **odd-looking phrase sounding right is indeed right** (“aim **to** survive,” “aim **at** success”). My long experience shows that such trained ears are trustworthy. **Read all your written texts aloud to yourself. Eyes out-perform ears.**

English is not logical. The most **logical choice of words is often not what a native speaker would say.** (Which is logical: “hang up,” “ring off,” or “close the phone”? How about “For the 20 last years” versus “for the last 20 years”?) In English, the most nearly logical system is punctuation, but even our punctuation differs considerably from Finnish punctuation.

Finno-ugric versus Anglo-American Style

Finns, from a homogeneous, well-educated society, may view all of their readers as informed colleagues who will work hard to understand a text. Anglo-American writers may seem to be “packaging” or even “marketing” their texts when they are trying to write so clearly that a busy, tired, easily bored reader can absorb their full meaning in only one rapid reading.

The Anglo-American writer leads the reader by the hand, but the Finnish writer often expects readers to find their own way. In Finland, be Finnish, but **Finns wishing to publish in English in journals with Anglo-American editors and reviewers must use a reader-helpful style.**

For instance, **make the strategy of your text clear, not implicit.** Present important points first, rather than gradually “sneaking up on them.” Let your readers know immediately what is going on.

Note: This book benefits from a collection of essays gathered by Professor George M. Hall entitled *How to Write a Paper*, 2nd edition, 1998 (British Medical Journal publishing group). Hall and his other expert contributors I will cited as contributing to “Hall.”

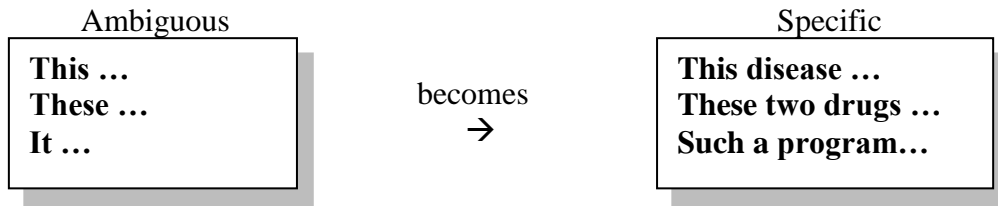
Basic methodology I: Process writing

Write the first draft

- **Never translate** whole sentences from your mother tongue.
- **Avoid trying yet to organize content.** Rather, first get your ideas out in front of you, fast.
- **Pour out** your thoughts in **English**, in the casual language of **speech**.
- Write **short, simple sentences**.
- **Mention the vital items** early, key words, rather than creep up on them.
- **Write “long”:** Produce a 1,000-word text that will end as 600 words. **Cutting is fun.**
- **Allow** yourself to use the **passive voice** (see section on passives) whenever comfortable.
- Let yourself **use the spoken forms** “there is / are / was / were.”
- **Use simple verbs** such as “to be / have / get / find out” Precise verbs come later.

State promptly and clearly all the main items involved, ones including your **key words**.

Then, when referring to these items use “this / these / such,” and offer more than just the pronoun:



Save words by adding data: “This extremely effective program / model.”

Make the text talk about the text itself.

English loves signposts, connectives, in texts or talks, aiding in the reception of new information.

Use not only “First ... second ... third . . . ,” but other types of signposts:

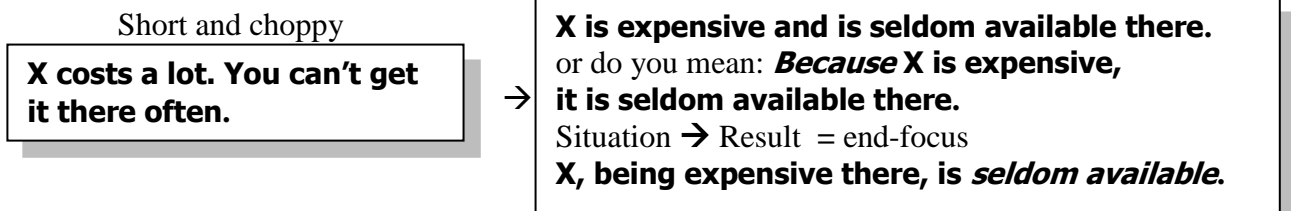
“On the other hand” “Considering this from another angle”

“Similar to the last point is” “Conversely” “Equally serious is”

Edit to avoid series of short—and thus choppy—sentences:

Link some and embed others within their neighbors.

Elegant (linked and embedded)



Choose your **shortest sentences** for your **strongest statements**: “**Every mouse died.**”

Cut out every extra word that performs no task.

There is / are X.

X exists.
X occurs.
X appears.
X arises.
X emerges.

Note: All are Active Voice, on page 44

Avoid repeating FACTS. Planned repetition of WORDS helps linkage. Confusion results from synonym-use. Make yourself clear by choosing **one term**. Do not indulge in overuse of a synonym dictionary (thesaurus). For instance, “**Method / methodology / procedure / system**” must never mean the same thing. **We will assume that they mean four different things.**

One paper labeled one group of infants in six ways: “neonates / newborns / infants / babies / patients / subjects.” These seem like six different groups. Instead, choose two terms such as “neonates” and “infants” and then use “They / These” and other pointing words to refer to them.

SYNONYMY IS A SIN!

Convert most verbs from passive to active voice.

Avoid ever ending sentences with passive verbs. Your idea dies, points nowhere, so replace hem with active voice. In Methods, a few passives can go in the middle of their sentences:

To X, Y *was added*.

Y *was added* to X.

Change some passive verbs into adjectives:

Passive verb

Adjective

X could be seen.
X was always used.
All two-year-old children *were studied*.

→

X *was evident/apparent/visible*.
X *always proved* useful.
All children *studied* were age two. (Note end-focus in each)

Change the verb itself:

Patients *were operated on*.
Sixty *were used* as controls.
Each participant *was given* X.

→

Patients *underwent* surgery.
Sixty *served as* controls.
Each participant *received* X.

Omit useless passive constructions:

It *has been found* that X causes Y (Aho 2001).
We found that Y *was produced* by X.

→

Aho (2001) *found* that X causes Y.
X *causes* Y (Aho 2001).
Y *results from* X. X *leads to* Y.
X *produced* Y. Y *was a product of* X.

The citation shows who (Aho) found X. Journals tire of these useless “found” phrases.

Condense your own findings even in the active voice: “**~~We found that X produced Y.~~**” Simply write “**X produced Y.**” Such past tense shows that this is your finding. Present tense is for others’ generalizations: “**X produces Y**” (16). (Tenses are on page 40.)

Use **MAGICAL inanimate agent**, a non-thinking / non-living thing performing an action.

Table 3 shows
Figure 5 illustrates
Our results indicate
This hypothesis predicts X.
Opinions among us vary.

Note all
in active
voice!

Upgrade most rough-draft common verbs to become more **precise verbs** (see verb pages)

be
have
get
find out

→

exist
observe
assess
measure
determine
possess
assess
confirm
characterize

Note how much
precision comes
with such verbs!

For elegance and formality, specify meanings of “get” (“receive?” “become?” “understand?”).

Change colloquial, spoken (*puhekieli*) expressions to more formal ones (see verb pages)

Colloquial

if
like
a lot of, lots of, plenty
big

becomes
→

Formal

whether (or not)
such as
many, several
large, great

Never omit “**such**” with “**as**.” (“Treatment *as-such as* chemotherapy”)

Beware of vague “**so**.” “*So* (thus?) X occurred?” “It was *so* fast.” (How fast?)

Avoid “**too**,” especially at the end of a sentence.

He died,
***too*.**

becomes
→

He, *too*, died.
He died, *as well*.
He *also* died.

And how hot is “too hot?”

Strengthen negatives

“Not” is so common **in speech** that it **frequently loses a letter**, becoming a contraction such as “can’t / don’t / wouldn’t.” It is doubly contracted in “dunno” for “I don’t know.”

In writing, “**not**” is always a weak word. Murder the word “not” in three ways:

Substitute negatives OR

Substitute negative prefixes OR

Change to negative verbs or use negative adjectives

Strong negatives

Weak

Stronger

no
none
never

There was *not any* X.
Not one patient survived.
They had *not seen* X
before.

No X existed / appeared.
None of the patients survived.
Never had they seen X before.

→

(Note: Beginning a sentence with a negative is powerful.)

Strong prefixes

Weak

Stronger

un-
in-
im-
non-
dis-

The cause is *not* known.
The text was *not* coherent.
The task was *not* possible.
Results were *not*
significant.
This drug *isn't* made
anymore.

The cause is / remains
unknown.
The text was *incoherent*.
The task was *impossible*.
Results were *non-significant*.
This drug has been
discontinued.

Verbs / adjectives

Weak

Stronger

fail
lack
absent
insufficient
incomplete

The plan did *not* work.
The solution *didn't* have X.
X was *not* in the samples.
Controls *didn't* have *enough* X.
The test was *not finished*.

The plan *failed* (to succeed).
The solution *lacked* X.
In the samples, X was *absent*.
Controls had *insufficient* X.
The test was *incomplete*.

If X is “**missing**,” call the police!

Your final step in revising is to check to whether **each verb agrees with its subject in number.**

1. **Locate every verb** (Good sentences have only one or two.)
2. **Scan to the left to find its subject** (often located far away).

Read this too-complex and difficult practice-sentence with its **five substantives in bold.**

Which one is the subject of the verb?

“The actual **reason** for these **changes** in **policy** that seem to alter the newest reorganization **plans** for these **hospitals** is/are surprising.”

In these two sentences with widely separated subject and verb, find the subject (agent) and the verb that shows its action. Revise and reorganize so that these come closer together, and information arrives in a more logical, clear order. Note the undesirable passives in italics.

Examples adapted from Duke University, (my alma mater!) *Scientific Writing Resource*, 2013

Eggs, nuts, shrimp, mushrooms, milk and other foods containing lactose, and some species of tree and grass pollen *are often found to act as* allergens.

Mapping of open chromatin regions, post-translational histone modification, and DNA methylation across a whole genome is now *shown to be* feasible, and by RNA sequencing, new non-coding RNAs *can be* sensitively *identified*.

Finns tend to over-use the adjective "present" and the verb "perform." The latter has soared in popularity in medical writing in the last 40 years. EASE leader Elise Langdon-Neuner illustrates these "fiends of academic writing: imprecision, wordiness, overuse of abstract / nominalized nouns, and the passive voice" with this sentence:

Administration of H(2) receptor antagonists *was performed* in patients.

Slay these fiends "at the stroke of a pen." (*European Science Editing*, February 2015).

Similarly, slay (kill) **The presence of a nucleus in each cell *can be observed*.**

Basic methodology II: passive vs. active voice

Active and passive—like major (*duuri*) and minor (*moll*) keys in music—are the two types of voice. Tenses are unrelated to voice; tense indicates time.

Note the **difference between tenses**—present, past, and perfect—and voice. The English passive always includes two to four verbs and allows the addition of “**by**” someone / something.

• Present tense, active voice: “he finds.”	Passive : “it is found” (by X)
• Past tense, active : “he found.”	Passive : “it was found” (by X)
• Present perfect active : “she has found.”	Passive : “it has been found” (by X)
• Past perfect active : “she had found.”	Passive : “it had been found” (by X)

And even a **future passive** is possible—though horrible: “The test will have been given”!

As recently as 1997, Paul Leedy insisted, in his book *Practical Research, Planning and Design*, that “the researcher . . . should be anonymous. The use of the first-person pronoun or reference to the researcher in any other way is particularly taboo. . . . **All of the action within the drama of research revolves around the data; they, and they only, speak.**” (Emphasis mine, throughout.)

My response: Then why not let the data speak? Here, Leedy himself elegantly states that “the action . . . revolves.” IN ACTIVE VOICE! He also has “data . . . speak” in active voice. These are fine inanimate agents—non-living causes of actions. If such agents serve as subjects, we have no need for personal pronouns like “I” or “we.”

Leedy continues, “**The passive voice . . . is used to indicate [Why not “the passive voice indicates”?] that no identifiable subject is performing the act. It is a kind of ghostly form of the verb that causes events to happen without any visible cause being present.**” Then, “**Note the passive voice construction in this sentence: ‘A survey was made of the owners of the Rollaway automobiles’ or ‘The researcher made a survey of the owners of Rollaway automobiles.’ . . . Here we have [an] . . . intrusion of the researcher. . . . The best research reporting does not use it.**”

Instead of the passive verb or “the researcher made,” why not “A survey of the owners . . . showed that . . .”? All surveys producing results have already been “made.”

In the active, this is both shorter and stronger.

He adds that passive voice verbs can even “suggest events . . . in the future without any indication of who will do them by using the **future passive** form of the verb . . . ‘The test *will have been given* before the students *are permitted to read* the novel.’” These two passives consume eight words.

Because all tests, once finished, “have been given,” why not: “After the test / after taking the test, the students will / can then read / will be able to read the novel”? Active voice and short.

Do you fear that journals may reject papers written mostly or entirely in the active voice?

Nature Medicine, years ago, published its Methods all in **active voice**. **This is rarely possible to maintain throughout Methods**, but their authors freely used “We, we, we” in lines like

“We processed the samples. Then we rinsed the residue in a solution of”

Here are additional empirical data (Note: The word “data” is often plural in science in the UK.)

Way back in 2001, biologist Rupert Sheldrake queried **55 journals in the biological and physical sciences**. **Only two still required use of the passive voice**. “Most scientific journals accept papers in the active voice,” he said, “and some . . . positively encourage it.” (*New Scientist*, 21 July 2001)

The British Medical Journal's “House Style” certainly does; it demands that we

“Write in the active and use the first person where necessary.”

Even in active voice, however, “I/We” first-person pronouns are usually unnecessary.

(Interestingly, “our” seems acceptable, even when a writer avoids “we.”)

The valuable INANIMATE AGENT allows you to avoid these pronouns for active voice.

The *mice* each *received / ingested* 20 mg daily. (Nonhuman agent)
The *reason* for X *remains* unclear.
***Results indicate* that our hypothesis is correct.**
The *evidence suggests* an alternative cause.
All *data came* from X. (We know they did not walk there on their own feet.)
Our *laboratory provided* urine samples.

Save passive verbs for times when they do, in fact, prove essential, merciful, or comical.

In one death notice, “Some of us *will greatly miss* Professor Aho.” This, however, implies that some may be pleased at this death. Avoid sending this sentence to his/her widow/widower!

Instead, “(The late) Professor Aho *will be missed*.” (“Late” is a polite adjective for deceased.)

To be gentle:

“You’re fired / sacked” becomes “Your candidacy / position *is revoked / eliminated*.”

Similarly gentle, “Your breast *must be removed*.” “Your results will arrive after tests *are run*.”

To maintain anonymity: “The suggestion *was made* today that nurses should go on strike.”

Comedy: “When my great-grandmother status *is achieved*, greater respect *will be required*.”
 (Nancy Alexander, 1919-2015)

Basic methodology III: the end-focus technique

End-focus makes sentences concise (shorter), clearer, and--when linked--flowing.

"The result may be excellent, as shown by our study" we re-write twice: with end-focus, it is "As shown by our study, the result may be excellent." Put into active voice, it becomes "Our study shows that the result may be excellent."

Only one word in this sentence is important—only "excellent" provides new information.

Every sentence should present its **background information first**, the **WHO, WHERE, WHEN (HOW, WHY)**. These **data orient** (UK "orientate") the reader. Then **end-focus** on the **WHAT**.

- The **beginning of a sentence**—regardless of what some teach—is **only the second most important location**. **Most important is the end**: the fresh, new information.
- In any sentence, **find the most vital word or two**—a key adjective, substantive, or a numerical value of interest. **Put a period/full stop after it; it ends the sentence**.
- Moreover, be sure that **each sentence ends with words that lead you to the next point**, creating intra-sentence **linkage**; this makes the next sentence almost **predictable (=flow)**.

Remember: FOCUS and LINK

A to D's first and second sentences show end-focus with linkage (each italicized). Choose, from among sentences 1 to 6, the best-linking third sentence for each:

- A. Finland has the world's highest incidence of type 1 *diabetes*. *This disabling disease and its treatment constitute a drain on the state's finances.* (continue)**
- B. The world's highest incidence of type 1 diabetes occurs *in Finland*. *Finnish diabetes researchers now discover some of the field's most interesting new data.* (continue)**
- C. Regarding type 1 diabetes, Finland's annual incidence is the world's *highest*. *Its figure for 2008 was 60/100,000.* (continue)**
- D. Finland has the highest incidence of type 1 diabetes *in the world*. *One nation's mean incidence in 2008 was actually below 1/100 000, which means that Finland's was 60-fold greater, though no one knows why.* (continue)**
- 1. One important area of investigation is diabetes-associated *nephritis*.**
 - 2. Is sugar consumption unusually *high*, or is this rate mainly related to *genetics*?**
 - 3. Finland must continue to battle this *key medical problem*, despite *research costs*.**
 - 4. The Finnish state KELA covers medical care and supports those *unable to work*.**
 - 5. Such an incidence requires funding of the country's *top researchers*.**
 - 6. Patients' longevity is *increasing*, but what about their *quality of life*?**

Observe a struggle with rough draft sentences. Four passive-voice verbs are italicized. You see no end-focus. Assume that we have already heard about drug X.

Nothing *was known* about what happens to children who *are given* drug X. It *was found* that adults often have diarrhea if they *are given / administered* drug X. (3).
(27 words)

I first edited this by removing useless, wasted words and changing to active voice, end-focused.

Active voice required three inanimate agents: “effect,” “evidence,” and “X.”

For clarity, these sentences needed “however” or “whereas,” but not in the vital first position.

(The *BMJ* and I both avoid wasting the first-word position on “however” or “therefore.” These words become stronger as they move right, with maximum power when “however” serves as end-focus. Remember, “however” travels carrying two suitcase-like commas!)

The effect of drug X in children is *unknown*. In *adults*, however, *evidence* indicates that X frequently leads to *diarrhea*.
(20 words)

A clever student noticed that these sentences lacked linkage; the first sentence failed to flow into the second. I therefore sacrificed the best end-focus in the first sentence (“unknown”) and instead placed the focus on my second choice (“children”). Note good linkage with only 17 words.

The effect of drug X is unknown in *children*. In *adults*, however, X frequently leads to *diarrhea* (3).



Another student then noticed that I was violating a major rule—to observe **strict chronology**. Always describe events in **chronological order**—the order in which they occur or the order in which we learned about them. Now all of these data fit into one 14-word sentence.

X frequently leads to diarrhea *in adults* (3), whereas *in children*, its effect remains *unknown*.

#1

X frequently leads to diarrhea *in adults* (3); *in children*, however, its effect remains *unknown*, *however*. (Which location is better for “however,” #1 or #2?)

#2

Writing a first draft with end-focus as well as with sentence-to-sentence linkage is, however, almost impossible. Instead, first throw words onto paper; then move words and phrases around.

Start all of your writing with a fast, disorganized rough draft, because such “bad” texts are the easiest to improve by means of passive-to-active-voice changes, end-focus, and linkage.

- **Find the most vital, novel word** in each sentence, the one showing the newest information.
- **After this word, put a period** (full-stop).
- **Move all the words following this end-focus word back** to the left.
Often the best place to insert words is after a “that” or “which,” as below:

She does fine work **that** may win her a Nobel Prize *within a few years*. WHAT TOPS A NOBEL?

She does fine work that, within a few years, may earn her a *Nobel Prize*.

Highlight key numbers:

“Periodontitis was apparent in **30%**, with infected teeth ranging from **one to five**; sites per mouth were rarely more than **two**, amounting to only **4%**.”

(End-focus here falls on each of **four** key numbers!)

Now carry out these steps on sentences adapted from actual medical research articles. These have no grammar errors, just awful style.

1. In ulcerative colitis, a predisposing state for colorectal cancer, reduced TATI expression has been seen in affected areas.

18 words

2. If enough protection is used during this procedure, infection is low, studies show.

13

Shrinkage and revision of a paragraph.

This text is intentionally silly, so ignore the fake science; concentrate only on its language.

- First, locate and repair **four errors** frequent among Finnish writers.
- Then **reduce its length from 114 words**; aim at a **third** of its present length.
- Replace its **10 italicized verbs in passive voice**; choose **all active-voice** verbs.
- **Freely omit, alter, or rearrange words**. Each of you will edit this differently.
- Finally, **COUNT every word (and quantity) in your version**. Length record = 26 words

The effectiveness against narcolepsy of caffeine *was tested* on humans by our group. It was effective, as *was previously shown* by Smith (Smith 2006) when mice, that *were found* to be narcoleptic *were given* caffeine when they demonstrated signs of narcolepsy. Therefore, an experiment *was carried out* by our group. We had 100 male narcoleptics. The initial test dose of caffeine that *was chosen* was 300 mg two times every day. In these subjects a history of narcolepsy *had been confirmed*. When they *were administrated* a dose of 600 mg two times every day, the lowering of their symptoms of narcolepsy to a level that *is considered* in literature to be normal *was accomplished*.

A wise order in which to write article sections

- | | |
|-----------------------------------|-----------------------------|
| 1. Rough version of the abstract | 5. Results |
| 2. Rough tables and figures | 6. Discussion |
| 3. End (your aim) of Introduction | 7. Rest of the Introduction |
| 4. Methods | 8. The final abstract |

Vital rule: almost immediately create all tables and figures; do this always before starting to write your Methods or Results.

The rough **Abstract** can, at this stage, be only an outline meant to keep you on track. Structure it as on page 19, even if the target journal prefers a non-structured abstract. This prevents your forgetting and omitting nothing. This draft will be far from your polished Step-8 abstract.

Having any **tables and figures** close to their completed form so early helps avoid lengthy descriptions in **Methods** and **Results** texts. See the horrible example on page 78, #4. .

Your **Discussion** contains citations. Which ones belong here and which in your **Introduction**? Those closest to your own work, pro and con, go here. No background facts belong here, so the most general sources belong in your **Introduction**, in Moves II and III.

Note: Gustavii reminds us that editors of journals and your readers have the right to ask to examine your raw data—even 5 or 10 years after your publication of results! Never discard any raw data.

Case Reports / Case Studies

A case report may **formulate a testable hypothesis**.

Present that single, deliciously unusual case. . . at a departmental seminar, says Gustavii.

A case report may also prove useful—and thus deserve publication—if it **reports a new diagnostic tool or a new treatment**.

A case report usually occupies **no more than two pages** (double spaced) of running text and contains about **five references**. Since it is too brief to constitute a literature review, do not label it as one.

A case report seldom requires more than two authors, as surely only one would perform the observation of the patient. Once, an editor's query caused a surgical case-report's author-list to shrink from seven authors to only two! (With thanks again to Björn Gustavii's first book.)

The article Abstract

The Abstract (now generally considered the same as a summary) is **the first thing seen**. It may be the **only part of your article that readers closely read**.

The abstract “floats free,” appearing in various databases and on the internet.

For easier electronic retrieval, front-focus the title and if possible, line 1 of the Abstract.

According to Professor Lilleyman (Hall), an Abstract should reveal:

- “**why what was done was done**
- **what was done**
- **what was found**
- **what was concluded”**

And . . . the abstract must be “**the most highly polished part of the paper.**”

His rules: **Include no lines that will appear again in the Introduction.**

Avoid minor aspects of Methods.

Never end an abstract with the vague, useless line: “the findings are discussed.”

Do include confidence intervals (CI) and **P-values**.

I add, from other sources:

Short sentences

No repetition of data that is clear in the article title

No references or study limitations

Abstracts must stand alone and be clearly understandable without the text.

Always obey length-restrictions; 250 words? Write 600 words and shrink it by use of Process Writing. If the journal instead provides a box to fill, choose short words!

Abbreviations in abstracts

These must be few, and **each full term plus abbreviation goes into the abstract.**

Write it out again when it first appears in the Introduction or later.

Never abbreviate a short, single word. Never use “ETX” for “endotoxin” or “AR” for “arousal,” says the American Thoracic Society (ATS), but the ATS accepts “LAM for lymphangioleiomyomatosis.”

Surely no one will ever need an explanation for pH, DNA, AIDS, or UN. (Note: No dots.)

Check journal instructions; **some abbreviations are so common** in your specialty **that they need no explanation**; one example is “coronary heart disease (CHD)” for a circulatory journal. One way to **avoid abbreviating** is to **refer to only part of the long term**.

One example: For “IRL,” meaning “inspiratory resistive load,” the ATS says, that after giving the entire term once, then “simply write ‘load’.”

An abbreviations list is useful, following the abstract, if you need many abbreviations.

Such a list is, however, no substitute for the required in-text explanations.

Structured Abstracts

Many target journals require **structured Abstracts, with subheadings** for each section. These **help the author to structure** the Abstract so that it **maintains the most logical order** and **omits nothing**. I thus suggest that you write every Abstract with subheadings. Which does your target journal require? If it wants unstructured Abstracts, remove subheads and make into complete sentences the incomplete sentences that most structured Abstracts allow in order to save space. Popular **subheadings** include

- **Background:** “**Incidence of X has been rapidly rising in Nordic countries—**” or **Hypothesis tested:** “**This study tested whether X correlates with latitude.**”
- or **Objective / Aim:** “**Our aim was to compare X incidence above and below 60 degrees north latitude.**”
- **Study design and setting**
- **Samples / Subjects**
- **Methods / Interventions**
- **Measurements, Statistics, P values, CIs, SDs**
- **Results**
- **Conclusions** (Notice: instead of a Discussion, and no Summary; see below)
- **Implications** (answering “**So what?**”)

Conclusions differ from summaries. Merely as a memory aid, here is a comical **SUMMARY ▼** of research into diet and health:

The Japanese eat very little fat and drink very little red wine, yet they suffer fewer heart attacks than do the British or Americans.
The French eat much fat and drink much red wine, yet they, too, suffer fewer heart attacks than do the British or Americans.

Its **CONCLUSION ▼** (with clear **IMPLICATIONS!**)

Eat and drink whatever you like. It is speaking English that kills you!

Informative abstracts cover all of these categories, with sufficiently detailed results.

Indicative abstracts introduce your work and describe what you did. These are useful for conferences, when abstracts may be due many months before you have any results. You later present orally the results lacking before the abstract-submission deadline.

Review-article abstracts include
Purpose, Data-identification
and -extraction methods,
Findings,
Data synthesis,
Conclusions

Because journals now seek review articles to raise their impact factor, even young researchers should consider a review—perhaps as a condensation of their



thesis Literature section.

Objective: To determine the influence of body weight throughout the life course on the development of clinical hand osteoarthritis (OA).

(Again, journals want either **Background** or **Aim / Objective**, not both.)

Methods: A British national survey was used to perform a prospective cohort study of 1,467 men and 1,519 women born in 1946. Weight was measured at birth and at subsequent follow-up visits through childhood and adulthood. The main outcome measure was the odds ratio for the presence of hand OA at the age of 53.

Results: OA was present in at least one hand joint in 280 men (19%) and in 458 women (30%). Hand OA was significantly associated with increased weight at ages 26, 43, and 53 years and with decreased weight at birth in men. Birth weight and adult weight showed independent effects, such that men at highest risk for OA represented those who had been heaviest at age 53 and lightest at birth. These findings were not explained by grip strength. No significant relationship appeared between weight and hand OA for women.

Conclusion: Our results show that increased adult weight is associated with, and may precede, development of hand OA, but only in men. This relationship between hand OA and lower birth weight is a new finding concerning adult joint structure and function that may reflect the persisting influence of prenatal environmental factors.

(This is a more concise, end-focused version of a 2003 abstract in *Arthritis & Rheumatism*. Its citation is in Appendix II, along with a version of its Introduction.)

Repeating abstract lines in the rest of the article. One writer created an excellent abstract and then copied it piecemeal throughout his article: Two lines from his abstract began the Introduction, more lines from his abstract began Methods, some lines appeared in Results. The Discussion ended with exactly the same lines as in the Abstract. **I call this not plagiarism, just laziness. Some members of the European Association of Science Editors (EASE) disagree. You write a good line, said one, so why not use it again? But the abstract is unique, comes first, and who enjoys reading repetition? We learn nothing more on the second reading.**

Key words go here, below the abstract. Remember, **each journal states its own limit on number of key words. Usually separate them with commas and use no capitalization.**

Some journals ask you to avoid choosing as key words any words already in the title.

Key words in **Vancouver style** must be **alphabetical** and may come from any index of subject headings in your field that your target journal recommends.

No one can say this often enough:

Always study each journal's instructions extremely carefully. Obey all of the instructions.

Titles & authors

Professor Lilleyman (Hall) reminds us that **even before reading the abstract, we read the title**. A poor title may result in immediate prejudice against the author. He prefers that the title be **descriptive and tell only what the article is about—neither why you wrote it, what you found, nor the conclusions** you reached. He might prefer the very first title on this page.

Björn Gustavii would disagree; rather than a **descriptive title**, he prefers to give a suggestion of the outcome with a **declarative title**.

Titles ARE ALWAYS in present tense Not too general:

Trends in living alone among elderly Finns

nor too detailed:

Figures for living alone among 3000 men and women aged over 65 years in southern Finland from 1950 to 2000 rise from 17 to 37%

(Improper in a title, this is end-focused on “rise from 17 to 37%,” with specific figures from the Results. Front-focus all titles; avoid specific numbers.) **Age** and **living alone** are the vital items.

Verb or no verb? Write a full-sentence title with a temporal (tense-showing) verb? Check the reference list for each article or for the thesis that you are writing. Do you find many whole-sentence titles like “X causes Y” versus “X as a cause for Y”? These mean the same thing.

Descriptive: Influence of aspirin on human megakaryocyte prostaglandin synthesis

Compare this to the **declarative title** of the classic article by Nobelist John Vane (*Nature*, 1971):

Inhibition of prostaglandin synthesis as a mechanism of action of aspirin-like drugs

(Notice that this title needs no verb, because again, a powerful “as” here means “is.”)

Showing **front-focus**, the tile concerning lonely elderly Finns can improve even more:

Living alone among those over 65 in southern Finland: a comparative demographic population-based study of trends, 1950-2000 (descriptive) **OR**

Increased solitary living among the elderly of southern Finland, 1950-2000: A population-based study (more declarative, based on its first word)

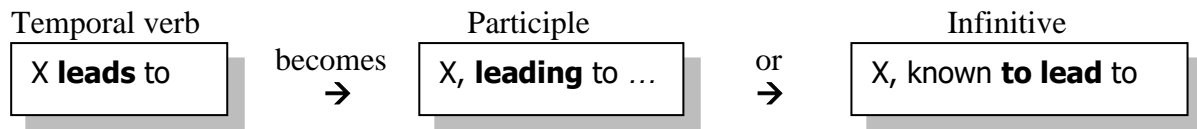
These are professional, and the colon (:) is popular. We have reduced this from 25 to 14 words and moved the focus forward. To be very concise, we could reduce it to 12 or even to 8 words.

Living alone among Finland’s elderly: Trends toward an increase, 1950 to 2000 **OR**
The elderly in Finland: solitary living, 1950-2000

Avoid articles in titles, except “**the**” for unique items (the “only / usual / best / elderly X”).

Capitalization? Titles here are “down”—with only their first word capitalized (more UK). All of this book’s section-titles are “up and down”—their main words capitalized (more USA).

To avoid sentence-titles, **change temporal verbs into participles, or even into infinitives.**



ERROR: Using past tense in a title in English. Media headlines in some languages may translate into logical past tense: “Man survivED wreck.” English: “Man surviveS wreck.”

Unlike Finnish newspaper practice, all verbs that do appear in titles must be in present tense, although choice of tense in the text itself is difficult. See page 40.

Title / subtitle: “X treatment ~~succeeded~~ **succeeds** in Y disease.” → **”Success of X in Y”**

No abbreviations in titles. Unless it for pH, DNA, AIDS . . . write out each term in a title.

“Magnetic resonance imaging in infants”

When the above term again occurs, probably in the abstract, write it again in words, with its abbreviation in parentheses: “(MRI).” Repeat this clarification once, in the body of an article or thesis. Then use the abbreviation only, unless at the start of the Discussion.

Authors

Editors usually require a **declaration of participation**, stating each author’s contribution. You must thus **justify the actual contribution of every author listed**: Original idea? Planning? Data collection? Statistics? Journals often now print, with the article itself, this list of roles. This serves to discourage an authors’ list extending to 50, even more than 100 names!

Often each author must sign a statement agreeing to be an author and accepting responsibility for all article content. This discourages the vice of listing some authors who may never have read the text and accept no responsibility, especially not for scientific fraud or plagiarism.

“Contributors” at the end of the article—if included—can include those who provided aid, but **insufficient aid to be called authors**. Thank other individuals in **Acknowledgements**.

Closely follow **journal style for authors and for degrees, if included:**

In English, degrees never precede names.
Nor do we use both title and degree

(Note the commas around degrees.)

~~MD Antti Aho~~

~~Dr. Antti Aho, MD~~
~~Master A Aho, MS~~

Aho, A.
A. Aho
Aho, Antti
Antti Aho, MD, PhD
Dr. Antti Aho

How does your target journal, on a title page, link authors’ names with their institutions? With superscripts (a, b, c, 1, 2, 3)? These guide the reader to footnotes stating their institutions.

Tables & figures and their titles & legends / captions

Use **telegraphic title style without verbs or articles**:
(These are descriptive titles)

Enzyme X levels in melanoma European Union rules: Their influence on Finnish medical services
--

- **Avoid repeating the table title or figure legend in the text.** In a text, a sentence like “Table 6 shows the condition of molars for 10 years as assessed by the Wibble Method” should never appear in an article or thesis close to that table, entitled “Table 6. Condition of molars during 10 years as assessed by the Wibble Method.” Instead, describe some Wibble results and add the table / figure number in parentheses:

This particular method predicted 78% of third-molar caries (Table 6).

OR These data suggest a trend toward a 2% annual rise (Table 6).

One table per 1000 words is appropriate, laid out tall & narrow --not wide & flat.
--

Journals avoid printing a wide table across two pages; rows may fail to line up exactly.

- **Number** all tables/ figures **in the order of their appearance** in the text. **Mention each one, preferably only in parentheses** (Table / table 6), (Figure 3 / fig. 3), (**Fig**s. 3-4).
- **Avoid tables containing fewer than six or eight numbers.** In the text itself write “Of the **ten** patients, **one** lived for **6** years, **one** for **8**, **three** lived for **10**, **five** for **11**.” These few data (eight figures) need no table. Note alternating **word-vs.-number style**.
- Similarly, avoid telling us in the text more than three or four findings from a table. Just generalize as to what is most important, is the highest or lowest, or is significant.

My absolute rule: Always create tables / figures before writing Results (page 17).

- **Because most readers study tables and figures first**, you must never make them search through the text to understand any term or any abbreviation in a table or figure.

To do this, explain each term or abbreviation in a footnote. Alternatively, give the abbreviation in parentheses in the title / legend (“Figure 1. Three Populations of obese (OA) and lean adults (LA) in Finland, 2005”) or add abbreviations to column headings.

- **Omit from the table title, however, any words appearing** (so nearby), **identically, as headings for that table’s columns. Remember, each word costs publishers money.**

- **Avoid heavy repetition in tables of any words, phrases, abbreviations, numbers.**

If your table includes columns of many (more than five) identical words or figures, re-think its layout.

No column should contain a stack of identical words or numbers.

Omit repeated items entirely.

- Omit identical words where possible.

Indent subordinate items with a tab and single-space them.

Gustavii says that the only **single-spaced** lines in an article manuscript should be these **indented** second-line subheadings.

Stage 1
Stage 2
Stage 3

Obesity
in children
in adults

No lists of “%.” Above column / before row, write “(%)” Give only each number, no “%.”

In a table, **each column must be worthwhile.** Replace some data by footnotes or by words in the title? As for **layout**, Gustavii feels that numbers being compared are easier to read if they **follow down the columns, not across.** (Columns are vertical, rows horizontal.)

- State the **number of items or subjects in every title / legend or in a column heading.** Replace any column of identical figures with—perhaps in the title—“(n = 20).”
A small “n” means a portion of the total; only the one grand total earns “N.”
- Columns containing mostly **identical P-values** are **unnecessary, as are repeated “NS.”** Insert footnote symbols into other columns for any significant P-values, and below the table give P-values and mention the statistical tests providing those values.
Example: * All P < 0.001 (Mann-Whitney U-test)
- **Two horizontal lines** at the top of each table that separate levels of specificity are usual, with one line across the foot of the table. Separate items by spacing, not by lines.
Never use vertical lines in a table or as a figure background. Journals dislike grids.
- Into each blank space in a table add a **space-filler** (—) to guide our eyes across columns.
- Ensure that **multiple-part figures or tables have clear numbers or letters** nearby (1, 2, 3; A, B, C), with letters consistent in case, upper (A, B, C) or lower case (a, b, c).
- In figure legends, **show your actual symbols** or print them on the figure itself.

Write “The men (■) numbered 16” in the legend or put “Men – ■” on the figure itself. The latter is now preferable. Otherwise, is this symbol a “filled,” “black,” or “solid square”? Is “o” “unfilled,” “white,” or “open”? Editors dislike symbol synonyms.

- If you give **names instead of examples for lines on a graph**, write “broken” or “dashed” (- - -), “unbroken” or “solid” (—), or “dotted” (. . .) lines.

Never vary both lines & points except in cases of their close overlapping.

For overlapping curves, you might lengthen the intervals on the vertical axis.

Gray areas are “shaded.” Dotted areas are “stippled”

Write “hatched” for // or “cross-hatched” for XXXX. Or just show examples.

- As **footnote superscripts**

Vancouver style prescribes *, †, ‡, §, ||, ¶.

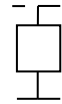
When you need more, you start doubling them, as in: **, ††.

Avoid odd symbols such as dollar (\$) or pound (£)! **Check target-journal style!**

Many now prefer as superscripts “a, b, c, d.” P-values usually have * and ** and ***.


If the journal uses superscript Vancouver citation form, never confuse us by choosing numbers as superscripts for anything else—like footnotes as numbers (“1, 2, 3, 4”).

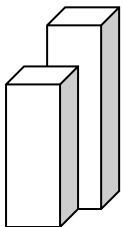
Statisticians complain that **whiskers alone mean nothing**. If a figure includes them, the figure legend must state what the whiskers represent. Do they mean **Maximum and minimum? SD? CI?**



Histograms show frequency distribution.

Avoid using more than five or six vertical (sometimes horizontal) bars. Label them clearly below the axis, above them, or on them, or add a key showing each pattern / color of a bar. Choose clearly contrasting colors or shade of gray, or hatching or stippling.

The bars should be 2-dimensional:  Be clear, not decorative; no “city skyscraper” **cubes**.



↓ **Bad**

Which corner of these 3-dimensional bars would show its value on either axis?

Limit such **3-dimensional bars** to figures **demonstrating three variables**:

vertical (↑) plus horizontal (→), plus values running front-to-back.

Pie-charts show percentage distribution. They require strong contrast in colors or patterns.

Gustavii’s books (see Resources) cover tables and graphs well, describing a pie chart thus:

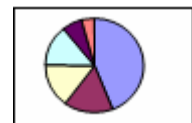
“(1) the **largest segment begins at 12 o’clock**;

(2) it continues with **proportionally smaller portions in a clockwise direction**;

(3) the number of segments does **not exceed five**; [in my models, six!] and

(4) **labels are placed outside** the circle.

For emphasis, **one sector can be separated slightly.**”



I myself find it easier to read a pie in **3 dimensions, set at a slight tilt**.



Recipe for an Introduction

A good Introduction, according to John Swales, usually comprises four “moves” (or strategies):

MOVE I

Establish the field: Assert briefly how significant, relevant, and important is your chosen topic. This usually requires no citation.

Those smart enough to read this publication would not demand evidence.

The world’s highest incidence of type-1 diabetes occurs in Finland.

MOVE II

Summarize your predecessors’ more general research:

On this question, Soto’s 1993 report was the earliest.

MOVE III

Focus in on your own research project. In this “however” move, indicate a gap in knowledge to be filled, a question to answer.

Seldom has this issue arisen. Data on this are few.

MOVE IV

Introduce your own research by stating the question you wish to answer, what you hope to discover, what hypothesis you will test. Novel methods can earn a brief mention, but rarely will an Introduction include any results. Check your target journal on this.

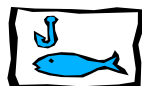
This study tests the hypothesis that X **is** Y.
To discover whether X correlates with Y, we examined . . .
[perhaps adding] . . . by use of a new method for

The answer to this question, your discovery or confirmation—yes/no—will begin the Discussion, where the citations closely related to your own work (arguments pro and con) also belong. I dislike meeting low-numbered citations AGAIN in the Discussion.

An Introduction mentions (in Move II) general works relevant to yours, showing that you know what has been done in this area. You need not “start with the Romans.” **Omit facts known to every scientist.** Never march over us with a long parade of facts.

Introductions are shrinking; abstracts seem to be lengthening.

Richard Smith (*BMJ* editor) in Hall, concludes thus: “**Know your audience, keep it short**, tell readers **why you have done the study** and explain **why it’s important, convince them that it is better than what has gone before**, and try as hard as you can to **hook** them in the first line.” (Emphasis added.)



Methods

Referees seem to focus half their criticism here. Although they demand sufficient data to allow others to replicate your work to confirm its findings, **this section must be brief.**

Some journals use **reduced font size for Methods**. Some **provide all their methods in lengthy figure legends / captions**. Some put your **specific Methods details only on the net**.

- **Observe strict chronology:**

Report **each step / event in a clear time-order**, in the order in which each occurred.

Never “We did X **after** Y” or “**Before** X occurred, Y did.” Write “**We did Y, then X.**”

- **Stay in the past tense. Write long, and then cut, cut, cut** out all useless, wasted words.
- Methods will be **list-like**. If you refuse to use “we,” Methods **may require** some **passive-voice verbs, but not at sentence-end**, where they lead nowhere (“For X, the value of Y **was used**” → “Y **was used** as the X value.” Good **Active**: “Y **served** as the X value.”)
- **From** sentence end (focus position!), move passive verbs back; **hide them in the middle of the sentence, or substitute adjectives or nouns**. (See Process Writing.) Revise thus:

With **adjectives**: “X was detected in Y.” → “X was **detectable** in Y / was **evident** in Y.”
 With **nouns**: “X was **the choice** for Y.” “For Y, our **selection of X proved** best.”

- **Attempt end-focus, but linkage in a list-like Methods section is often impossible.**
- **Present** all that the reader needs to know: **Study target-journal Methods sections.**
- **Conventions for describing materials suppliers are on page 61, at #25.**
- **Say who did what to whom. When, and precisely how? Define** all terms.

For “high X,” “delayed X,” or “prolonged X,” say how high, delayed, or prolonged.

Avoid numbers or letters for groups. “**Groups A and B**” gain **descriptive labels**: (“Milk-” versus “No-Milk children”; “Term-” versus “Pre-term infants.”)

In **abbreviating authors’ names in the text**, use dots between letters. The reason why?

Miika Raimo Ilves or Ilpo Virta are men, not techniques, Carol **H. Doe** is no disease.

“An experienced radiologist (M.R.I.) and cardiologist (C.H.D.) performed cardiac MRI.”

Observe standard (see journal instructions) **rules concerning animal treatment** and approval by an “**ethics** committee.” This means a **committee ON ethics**. Though some journals may still print it, “**ethical**” would mean that all your committee members are angelic. For all other uses, such as in “**ethical** standards / principles / review,” “ethical” is, however, correct.

If subjects gave their **signed informed consent**, was this **before or after enrollment**?

- **Explain in detail all randomization** procedures. Sealed envelopes? Computer program?
- **How many** were screened and **how many excluded**?
- **How many dropped out** and **why**? **How many were lost to follow-up** and **why**?
- **Define any blinding** (of whom and how?).
- **Describe controls** or control samples **as thoroughly as you describe your study—or test—population**.

This is essential to justify your claims to randomization. How did you find / select / match controls? Incredibly, the only information provided may be

“Controls were from the general population.” Who? Strangers walking past your laboratory?

Björn Gustavii provided these points and stresses the need to “**calculate sample size needed to demonstrate a difference, if it exists**.” He wants this calculation reported in the paper and warns that the **number needed** is never the number of those originally enrolled, but **the number completing the trial**. (So subtract the drop-outs.)

If you have **complex populations or results** with complicated numbers, try to illustrate them with a **flow-chart** or **Venn diagram**. Like genealogical charts, these are clear at a glance with their so-visible boxes or circles. **Be creative**. Reviewers often prefer flow-charts for data hard to comprehend in a text, and for large quantities of data. Study flow charts in prestigious journals.

End Methods with statistics. In the statistics description, state what you consider to be **your** (statistically) **significant P-value**. “Significance was set at 0.05” or is “at >0.05” sufficient? Avoid repeating “X was **statistically significant**,” unless this is versus **clinical significance**.

Avoid repeating quantities. For adults, omit “years”—it is the default age-unit.

“Respondents were (age / aged) 40 to 60.” Omit “**years old**” or “**years of age**.”

“Ages were 40 to 60.” “Adults 40 to 60 took part.” “Men over 50 / under 50 died sooner.”

But note: “Children enrolled were from 14 months to 5 years old / of age.”
“Follow-up times ranged from 6 months to 2 years.”

In English, we **expect readers to recognize figures and words meaning years or months**. We thus write merely “in 1999” or even “in 1066.” And just “in June.”

Such (ok English) phrases as Finns’ “In **the** year 1999 / until **the** month of June” sound like lawyer-language, too dramatic. (Note ↑ required use of “the ↑” preceding the unit.)

“**The**” goes, however, **before any superlative or unique word**: “**The third of May / the last day**” (see page 51). For **further relevant tips**, see the section “**Handling numerals--**”.

Results

If you have table(s), figure(s), or both, **avoid Double Documentation**—Never repeat in the text much that appears in tables and figures, because most readers examine these first of all.

According to Professor John Norman (Hall), with emphasis added:

“What you must avoid is what any reader, editor, or assessor dreads: ‘The **results are presented in Tables I to V and in the figures.**’ This does not guide the readers into discovering what you want them to find but actively encourages them to find things you do not think important.
“You must lead your readers into following your thoughts.””

He adds that **in the Results you show the statistical significance** of your findings, and **in the Discussion, their practical significance**. He warns that if your findings do not support your original hypothesis—and even if they refute it—you must report all findings.

What is the **answer to the question you asked?** Or **did you disprove the null hypothesis** with a P-value less than 0.05? What is the **power of the study?** How likely is a false negative? It is always wise to **seek aid from a statistician**.

The Results state—in the **past tense**—selected data, the most interesting results, the highest, lowest, or “not shown.” (Why are they “not shown,” in fact?) **Avoid passive voice**; let **inanimate agents** (“study / work / results”) do the showing and producing. Or use “we,” or at least “our.” **“Tests showed babies to be--” / “We tested babies” / “Our babies tested positive.”**

Do not evaluate here. No “remarkably” (strong emotional term for “greatly / considerably / markedly”) or “Its efficiency was greater than expected.” No emotional “Surprisingly.”

End Results without a summary, because in Anglo-American journals, the Discussion now almost always begins with a brief statement of your main findings. Some journals now force authors to do this by dividing their Discussion sections into two sub-sections labeled **“Findings”** and **“Comment.”** A structured Discussion is even emerging. See the next section. Perhaps the journal publishing your work even combines Results with Discussion: lucky you!

Sample lines to distinguish Results style from Discussion (referral) style:

Results

Of the 366 staff responding, those approving the plan numbered 89 (24%).

The Whammo Method performed well for our patients less than one-third of the time.

Absenteeism among the nursing staff of small hospitals from 2010 to 2015 compared to 2000 was four-fold. Older nurses, over age 50, were absent for fewer days annually (10 days) than were younger nurses (18 days).

Discussion

That only a quarter of the staff approved the plan seems surprising.

The Whammo Method’s ineffectiveness may stem from its untested premises.

Such a large increase in absenteeism involving so many younger nurses in small hospitals supports the suggestion of Piik (2016) that hospitals of this size may benefit more from our innovations than would larger hospitals.

Recipe for a Discussion

These suggestions come from *How to Write and Illustrate a Scientific Paper*, 2008, from Cambridge U. Press, by Professor Björn Gustavii (See Resources), the editor of *Acta Obstetricia et Gynecologica Scandinavica* from 1986 to 1994 who taught scientific writing from 1980 at Lund University, Sweden. His book on Nordic compilation theses appeared in 2012. He died in 2019 at 87.

After the 1980s Swales recipe for an Introduction, we have waited a long time for a similarly convincing scientific Discussion recipe. Quotations are from Gustavii, with my emphasis added.

1. **“Main message.”** This, says Gustavii, **“answers the question** posed in the Introduction [in Swales’s Move IV] and includes the main supporting evidence.”

Example: These findings show that / support the hypothesis that X contribute**S** to Y; its mode of action **IS** Z.

Be careful with present / past tense throughout any Discussion (Tense, page 40).

Next, critique your own study. (Or move this critique to later in Discussion.)

2. **“Critical assessment”** will discuss “any shortcomings in study design, limitations in methods, flaws in analysis, or validity of assumptions.”

My own term for this is the “Unfortunately” part.

Now readers will want to know whether others agree.

3. **“Comparison with other studies”** may be organized as:

Your main finding

Other studies’ findings in agreement with it, differing from it, contradicting it.

Your secondary findings (if your project is complex)

Other studies’ results agreeing or differing with or contradicting these, and so on.

Next comes my own **“So what?”** stage. **“Conclusions”** means that here you state your results’ **implications** and suggest **further research**. You need no summary of findings here. They are in the abstract, are implied in Results, and start off the Discussion. (See page 19.)

Here you reveal the value or consequences of your findings.

Avoid priority claims such as “This is the **first report** of X” or “We are the **first to do this**,” because others may publish similar findings before your findings appear, 6 to 12 months after their first submission. Your editor will then receive the blame!

Gustavii wisely comments that “most studies could be designated ‘the first,’ because most of them have a design of their own.” In my own personal view, to modify a claim thus: **“To (the best of) our knowledge, this may be / seems to be** the first report of Y” seems safe. The two modifiers even make this sound rather modest.

One opponent at a thesis defense asked why a researcher would want to claim priority. Could it even be the case that no one else was stupid enough to carry out such research? Let the findings speak for themselves, or merely say they “**represent interesting and unusual findings.**”

Avoid promising to publish more; you may go under a tram before you publish the findings!

In close agreement with Gustavii’s Discussion pattern, the *Scandinavian Journal of Primary Health Care* has offered “Instructions for Authors,” providing a structure for a Discussion section with these subheads:

- “1. **Statement of principal findings;**
2. **Strengths and weaknesses of the study;**
3. **Strength and weakness in relation to other studies, discussing particularly any differences in results;**
4. **Meaning of the study: possible mechanisms and implications for clinicians or policymakers;**
5. **Unanswered questions and future research.”**

Reference list

- **Prefer reviews and the earliest and best articles. Omit poor, weak papers.**
- **Check and recheck all references and keep a copy of each reference cited.**

Errors in references (incorrect or inconsistent order of items, punctuation, upper- versus lower-case letters, abbreviations) **are signs of carelessness.** Errors often occur in half a work’s citations. Nor is the net reliable; it too makes mistakes in spelling, dates, or pages. Such errors disillusion editors and reviewers and—publicly—irritate your opponent!

- **Study the style of your target journal or the style recommended for university theses.** Language revisers’ tasks rarely include editing references, so you are on your own! (See page 16 for an overview of Harvard and Vancouver styles.)
- **Each reference mentioned must appear in the list,** and you should have read them all. Opponents—and reviewers/referees (often unfairly) may expect to see their work cited, but one wise opponent, at the defense, praised a Finnish candidate’s **honesty** when her thesis cited no article of his; nothing of his was, in fact, closely relevant to her thesis.
- For “**personal communication**” data, **obtain the permission** of the “communicator.” Provide **in the text** full details concerning the source, stating whether it was “oral” or “written.” **No personal communications** go into your reference **list.** List anyone’s submitted **and** accepted work as “in press.”
- **In citing material from the web,** give in parentheses **the date when you accessed it.** Gustavii reminds us that data appearing on each site evolve and change. His example: “Cited Dec.4, 2002; available from: www.nlm.nih.gov/pubs/formats/internet.pdf.”

Submit manuscripts with their reference lists double-spaced to allow space for editorial revision; **obey limits on maximum number of references** (30?). Finns are often **too inclusive.**

PhD theses / dissertations

All nations and universities differ, so here are only a few tips on the summary / overview / *yhteenveto* for a compilation Ph.D. thesis. (Caution: In the UK, “dissertation” means MA / MSc thesis, so a safer term for both is “thesis.”) Note: see Björn Gustavii’s 2012 book listed on p. 75.

Title page: See title section. For your big day, write “**12 noon**,” not “12 o’clock noon.”

Table of Contents: As in titles, avoid full sentences and most articles. **Avoid five-place numbering** (“3.1.2.5.1”); even three places seems odd to us non-Finns. Finally, you and your computer must ensure that all subtitles in your table of contents and in the text itself **match**.

Your original publications: You must request and receive **permission from the publishers** to reprint these at the end of your *yhteenveto*. If they are “**Accepted**,” they are not printed yet, so say “printed by permission of . . .” If “**Submitted**” only, do not mention the journal; you need no permission. Any **letter or short report** should appear here, says Gustavii, if vital to your thesis; he reminds us that the double-helix Watson & Crick 1953 was just a “short report”!

I call these **articles or papers** “**Study I**” or “**Study IV**,” **capitalized**, because “study” is such a common word. Then use “**(I)**” or “**(IV)**.” In a general context, “study” is uncapitalized:

“For the first **study**, we . . .” “All five **studies** showed invasion, **Study II** showing the least.”

Reproducing parts of anyone’s work—even your own articles--in your *yhteenveto* / summary / overview, for instance, tables or figures, whether in full or as “adapted” or “modified,” requires publishers’ permission. If you relinquished copyright, you no longer own your own words; the publisher does (page 39; Plagiarism section). **A permission line by the copyright holder must appear, word for word, on each table / figure.**

Rules on this become stricter every year. Ethics was central for two EASE conferences even before EASE Tallinn, 2016. Almost half the presentations and workshops involved plagiarism.

Journals are not publishers. **Publishers** include Elsevier, Springer, Wiley—reachable via the net.

“Reproduced by permission of the *Lancet*” requires article title, authors, page numbers. A required permission line may thus be longer than the table title or the figure legend. If you retain copyright, however, you need no permission line. You must, however, inform readers of its source: “. . . appearing originally in [journal name, issue, page, and date].”

Artwork from your own lab requires a credit line to the artist, even if the artist is you. “Figure drawn by Anu Mäki,” “Figure / Photo by the author.”

One clever Finnish neurosurgeon decided to take so many radiographs that she could publish some and put others, with no publishers’ permission necessary, into her dissertation.

From the net, if in the “public domain,” say so. Or “from Wikipedia Commons.”

Tables created specifically for the thesis itself—never published—need no credit line.

Referring readers to your original articles with “(See Study III, Table 6, p. 888)” saves effort and space, but **e-theses omit the original articles**. Unless they are easily accessible, tables and figures should probably be reproduced in the *yhteenveto* (summary) itself, **but with permission!**

Rules for permissions change rapidly. One student in 2010 wrote for me this adventure story:

“1.) One article had a link to the ‘Rightslink’ service where you click permissions/copyright on the webpage. You need to register for the rightslink service, but you can do that from the same link. Apparently some things they charge for, but I got permission to use my articles in my thesis using this link, just by filling out the information (that I am an author and that the manuscript would be reprinted in my thesis).

“I looked up the article that I used a figure from by using the same link, signed in, and clicked on the relevant boxes. (One figure, thesis, and so on). They charged me nothing, and gave immediate consent. I just have to acknowledge in the manuscript using a specific sentence (‘Adapted from –’).

“2.) One journal automatically (when you go to the article and click on permissions/request) grants you permission to use their manuscripts freely for non-commercial use.

“3.) One of the journals was discontinued, but luckily (thank you, google!) I found the volume of this journal (in which the article that I used a figure from appears) on Google Scholarly. On the first pages of this volume (not in the article itself), they stated that all material is public and can be used freely (for non-commercial use). I wasn’t able to print this directly, but I copied the screens of these first pages of this volume into paint and then printed them.

“Yugh. This won’t prevent me from getting a Ph.D., but **I sure wish I’d done this ages ago.**”
For more on permissions, see pages 39 and 70 to 73.

She still had to obtain or create permission lines when permission was required, and if not required, to state the source, even Creative Commons on line.

One **journal once refused permission** for the candidate to reprint his article in his thesis. He could reprint only a photocopy of the first page of its reprint, showing journal name, dates, and Abstract.

Literature section:

This may be the most difficult part to write. **Never plagiarize lines from others’ or your own published articles** (see above, and Plagiarism section). Close the book / journal and create fresh wording (a paraphrase) or put irreplaceably elegant lines between quotation marks. For an example, see how carefully I quote and paraphrase to avoid plagiarizing from Björn Gustavii in “Recipe for a Discussion” on page 30.

No cutting & pasting. Italics? Expensive and difficult to use consistently. I avoid them.

Aims: Avoid repetition: End the introductory line (“The aims of this project / study / work are the following:”) with enough words so that each aim in the list contains only new information. Your **aim** is not to **investigate** a topic but to **discover** truth. Avoid synonyms like “to investigate / to explore / to determine / to assess,” or you sound like a thesaurus. You are writing science, not writing poetry. **In all scientific manuscripts, synonyms are a sin / syn!**. (See pages 5 and 6.) Use blank spaces, numbers, or **black bullets** (●) – an old printers’ term) beside each aim, or number them. **No French lines** (—). We do not recognize what they are; do the French?!

Make all **AIMS grammatically parallel:** with all infinitives, all participles, or all nouns.

Model Aims:

The main aim was to discover the effects of drug X on Y disease.

Specific aims were to discover the

- effect of long-term X treatment of Y-affected patients on their cell-mediated immunity (I)
- long-term efficacy and safety of X in Y-affected patients (II, V)
- pharmacokinetics and long-term safety of X for infants under age 2 (III, IV).

Methods and Results:

In **Methods**, try to avoid much **cutting and pasting** of Methods from your original articles. Paraphrasing biochemical methods is, however, so difficult that some techniques can usually be carried over from your articles with little alteration. See page 61, #25, for suppliers' addresses.

In **Results**, definitely avoid plagiarizing passages. Any identical phrasing should appear between quotation marks. State the facts in your own fresh words. Years have probably passed since you wrote your articles. You have matured, and your thinking and language mature, as well. Re-state what you found. Paraphrase yourself as you paraphrased others' lines.

Now, in the Helsinki medical faculty, "**cut and paste**" is illegal. Do not imitate theses from years ago which lack permissions and do plagiarize. Constantly picture your thesis as an **ethesis**, flying by net around the world. Its most eager readers will be those from whom you will feel tempted to plagiarize. Beware. Sanctions and academic blacklisting are steadily becoming more frequent.

Try to create new tables and figures synthesizing or consolidating study data from several or all of your studies. Opponents seem delighted with such syntheses. Opponents, reviewers, and editors appreciate **flow charts** and **diagrams**. A picture is worth thousands of words.

One opponent praised a thesis because, after reading the original articles, he did not meet the same lines again, cut and pasted into the *yhteenvedo* (summary)! **Its language**, he happily told me, **was "fresh."**

A student's tip: Conclude sections or subsections with lines providing a "**take-home message.**"

Discussion:

In a **thesis** summary or a thesis monograph, you may **start the Discussion with background**. You need not state your findings first, as in an article.

Beware, however, of repeating the Literature, which is more general or historical. Try to avoid citing many or even any of the same works from your Literature section in your Discussion. As in an article, discuss your results / findings, rather than repeating each in much detail. Remember that yours and others' theorizing takes the present tense. (See Tense Choice, page 40.)

Conclusions:

These must be parallel to your list of Aims. Each aim has its answer or result in each Conclusion. Based on the Aims at the top of this page, we learn in the Conclusions:

The effects of treatment on immunity.

Efficacy and safety data related to X.

The pharmacokinetics and long-term safety of X in babies.

Acknowledgements

Acknowledgements, essential in theses and also appearing briefly at the end of some articles, may be left until too late and thus receive zero editing. Everyone, however, reads these pages attentively, particularly while sitting in the hall, awaiting the start of your defense. This reality means . . .

Be exquisitely polite. Failing in politeness can be risky; some errors can even be hilarious.

A native English-speaker can most accurately **judge the between-line connotations** of words or phrases. Unedited text may include startling phrases that you innocently considered okay.

Beware: “**I acknowledge NN.**” This is merely a **cool nod of the head**: it means that NN exists. Similarly, the adjective “competent” describes minimal ability; it is almost negative.

Never call yourself kind, as in “I **kindly** thank her.” Very bad! **Others kindly aid YOU.**

Suppose that A did far more for you than did B, but B is of higher rank. Or you must praise G, whom you dislike. One solution is to **praise that person’s skills**—“NN has great expertise in X and Y.” Here, you **avoid stating that NN used any of these great skills for your benefit!**

Actual examples that required rescue:

“NN **serviced / satisfied** all my needs” sounds like master to servant—or worse!

“Thanks for all the educational experiencess during nights in the lab.” What fun! (Omit“-s.”)

“I appreciate all their excellent **implications.**” Whatever did they imply (hint at)?

“I thank Professor Blit for her **relentless** aid that made the topic truly **pellucid.**” Relentlessness is harsh and merciless; “pellucid” is rare, a fancy term for translucent.

“My little **sun** brightened my days.” Presumably “son”? “Our son,” unless traumatically divorced?

“**I want to/wish to** thank N,” is an expression that I dislike, because it seems to mean “But I cannot, because . . . N ran off with my wife / husband!” Write only “I thank N.”

Avoid the task of creating a **dozen splendid phrases** like:

“Heartfelt thanks go to / My deepest appreciation / I am deeply indebted to / I warmly thank / my sincere gratitude goes to / X deserves thanks / X earns my thanks / my gratitude overflows—”

Instead, collect helpful individuals into cohesive groups.

Use one gratitude phrase at the beginning of each group’s paragraph.

One phrase or line per person then shows why you are grateful to each:

“My warmest appreciation goes to A for his constant wise guidance, to C for her humor and cheery encouragement, to D for his aid with statistics, to E, G, and K for their faithful support, and to L and M for excellent laboratory assistance.”

Avoid giving both title and degree(s): “~~Professor~~ Timo Koponen, ~~Ph.D~~” Omit one of these, unless forced (usually as on page one of the thesis) to use both. My preference is for thanking “Professor Koponen” and “Docent Vehkalahti,” with no degrees, because **those ranks require a PhD**.

In English, degrees never precede names. Never write “~~MD~~ Antti Aho” or “~~PhD~~ Carol Norris.”

I prefer **omitting all degrees** like “MS / MSc,” “MD” (lääk. lic.), or “PhD” (tohtori, doctorate).

Gustavii is of the same opinion, saying bluntly that **no degrees belong in article acknowledgements. I would extend his advice to theses**, as well.

For those **without professorships or docentships**, organize the names so you can write “My deep gratitude goes to the **young doctors** in our group: Antti, Tero, Esko, and Lisa.”

“To **my co-authors** not elsewhere mentioned, I offer my sincere thanks, to Pasi Aho”

For **technicians**, “We all depended on the expert staff of the lab, especially Timo Ui and Vivi Pyy.” Adding “Mr.” and “Ms” or “Mrs.” seems rather insulting. You seem to be trying to **conceal the fact that some people hold no degrees**. Do you call your parents “Mr.” and “Mrs.”?

No one ever provides the academic degrees of parents, siblings, or spouses. That never implies that your family members have earned no academic degrees.

Usually acceptable to all—**degree-holders or not—with or without their family names**, is

“I could not have succeeded without my invaluable / precious / irreplaceable **neighbors** Elli, Enni, Jyrki, Johanna, and Mari; nor without Sari, Harri, and Jenni of the **running gang**.”

The usual **order of persons honored** is department head, director(s), special mentors, co-authors, reviewers, language reviser, colleagues, technicians, close friends, less-close friends.

Then build backwards, from distant relatives, closer ones, child(ren), spouse / partner.

No one regrets giving generous thanks, but you might regret being too stingy.

Should you include your **siblings**? Of course. Avoid, however, thanking someone for “nursing” your baby (means with breast milk). Write “cared for my [poor neglected] baby”!

Thank **in-laws**? (Yes.) **Very young children**? Yes! Children grow up to examine their parents’ theses. Treat all of your offspring equally. Infants cause joy as well as exhaustion.

Please vary the so-frequent “Little Aksel reminds me of what is truly real / important in life.”

Yes, how about thanking your faithful **dogs or cats**? Think how much time with you they lost!

Why fear **emotion**? Why avoid **humor** or even **personal, private allusions**? This event occurs once in your lifetime, and even big, tough guys can write four pages of Acknowledgements full of grateful affection and humor.

Thank all **funding agencies** and remember “**the**” in front of almost all of them. Read these aloud to check them by ear. “The Finnish Medical Society, the Generosity Foundation,” but “Turku University,” “Helsinki University Funds /FundING.”

Model Acknowledgements

This is a disguised actual Acknowledgements in one University of Helsinki medical thesis, adapted and slightly shortened for this book with the author's permission.

Start with something like **“My warmest gratitude goes”** continuing:

. . . to Professor NN for her positive and encouraging approach regarding this research.

to my supervisors Professor NN and Docent MM. Professor NN suggested the topic of this study and had trust in my capability to complete the work even at times when I myself had none. As head of the Department of X, he has been my supervisor in clinical work as well. Docent M's supportive attitude and quick responses to any questions concerning this study have been invaluable [note that this deceptive adjective means almost too wonderfully valuable to describe].

to the official reviewers DocentS / ProfessorS MM and PP for constructive critiques [**note plural in titles for >1**].

to Professors QQ and RR, my clinical supervisors, for their collaboration. Professor Q has always provided me with prompt information when needed. R's help, especially in the very start of the study but also later, has been irreplaceable. R is also my coworker at the X Department and an admirable person and expert to work and have discussions with.

to SS for reviewing the language of my thesis and TT for her author-editing and her useful English courses.

to all the participants in this study.

to all of my colleagues and present and former fellow workers at the Department of X. Twelve years ago I knew nothing about X, specific or otherwise, but from the very beginning I felt appreciated and accepted as I was and received so much support and friendliness that it still carries me along. You have all taught me so much. In contact with each person, adult or child, new things evolve, and we along with it.

to my wonderful parents-in-law, A and B. We have had many great times together and will hopefully have many more.

to my loving parents C and D, my adorable big brothers and my dear little sister and best friend E and their spouses and children. We live in close contact, especially during summer, in the lands of our ancestors in our leisure time paradise in X, which has been the root of my being and well-being since childhood. I am very fortunate; I realize that.

to my F [husband] and our lovely children G, H, I, and J, I am ultimately grateful for our love and companionship. Both being medical doctors has turned out positive in our relationship, and F's hard work has enabled me to work part-time, be available to the children, and do some research somewhere in between. Our best creations ever are our children, who have loyally put up with my recurrent absentmindedness and bursts of bad temper, and helped me place things in the right order of importance by their mere existence. I will also have to mention our little dog G who has numerous times during this process healed my wounded pride and self-worth with her ever-ending affection and approval.

This work has been financially supported by H, I, J . . . to whom I am sincerely grateful.

Thesis dedications

These appear on the first free page and have ranged over my decades in Finland from

“Dedicated to my Saviour Jesus Christ” down to

“In memory of my beloved cocker spaniel who led me into veterinary medicine.”

Gustavii, in his book on compilation theses, warns against printing Great Thinker quotations at the beginning of the thesis. At least avoid lines that have become clichés, or lines that could apply to any thesis. He says, “I have only found one citation that illustrated the essence of the actual findings.” And that line was “formulated by the graduate student himself.”

So choose, if you must, some words very relevant . . . maybe those of a noted scholar in your field . . . or from your beloved mom, dad, or child. Or quote yourself, perhaps from your conclusions.

Article acknowledgements

Remember to **ask permission to acknowledge**. Anyone disagreeing with your findings may prefer that his / her name be omitted; **otherwise you are indicating the person’s endorsement** of your study and its findings.

Example: “We thank Ilpo Aho of Oulu University for the X samples, Sara Kohn for statistical analyses, and the Tivoli Company of Copenhagen for the reagents.”
(Note to Finns: Neither “the reagents ~~used~~” nor dangerous old “~~used~~ needles”!)

No degrees included, but writing “Professor Blim of Oxford University” is okay if she donated essential specimens or provided learned advice.

New journal rules may ask you to specify the contribution of each co-author. Because of the huge proliferation of authors (up into the hundreds for some papers!), those who aid you, but not sufficiently to earn co-authorship, can receive acknowledgement at the article’s end,

Some journals now refuse to publish any personal acknowledgements, particularly for aid in the laboratory or language revision, sometimes even for assistance with statistics.

To repeat: If you gave up copyright to the publisher, you need copyright-holder’s permission to reprint your or others’ material in your thesis summary. You cannot reprint **your own table or figure without permission and including a permission line. If not, you are plagiarizing.**

Even reprinting your own lines without quotation marks around them is self-plagiarism. Some very complex methods may, however, be carried over from attached articles. (See your faculty’s current rules and see, here, the plagiarism section.) My own article in *European Science Editing* in years past required, to be reprinted in this book you are reading, that I print on it a permission line from *ESE*, because I did not hold copyright on it.

Permission and citation in theses and articles

1. You **borrow** more than one phrase or sentence but **rewrite** it completely **in your own words**. This, action, called **paraphrasing**, is frequent in science writing. No need for quotation marks; just fully cite the source of the facts appearing as a paraphrase: Human facial expressions resemble those of other animals and fulfill the same purposes (Darwin 1872).

(I assume that each reference cited will appear in your reference list / bibliography.)

2. You **borrow** a sentence or phrase **verbatim** (word for word) from a work of a publisher that owns the copyright for them. Put the words between **quotation marks** and fully cite their source. Recommended for incomparably well-written lines: "I sometimes liken the study of sleep to oceanography. Like the ocean, sleep is little charted in its depths and is stunning in its vastness." (Dement, 1999)
3. You **borrow**—for a table or elsewhere—**data**, not lines, from a published source. Because these data themselves are not copyrighted, only the way in which the user presented them, they are available for use **without permission**. But if you include these data or even use them to calculate new data, cite the source: (Data from Smith, 2012).
4. You **use**, perhaps in a table or figure, data from an **unpublished source**. You must request and receive **permission from the data owner**. That person or you will create a permission line, like (Unpublished data used with permission from Mary Jones, University of X . . .)
5. You **reproduce a whole figure or table**. If the source publication **owns the copyright**, you need **permission** from its **publisher** (not from the journal, maybe *BMJ* or *Lancet*, but from its publisher, maybe Elsevier, Wiley, Springer). This is easier each year to obtain quickly on line.

Example: Reprinted / Reproduced (here) with the publisher's permission.
with permission of [name of publisher], from Smith, JC,
"Pancreatitis can be fun," *Medical Comedy* 2010; **73**(1):

Some think that a small **alteration in a figure or table** allows its reprinting **without permission**. **No!** You must add "Adapted from . . ." or "Modified from . . ." and **still request and receive permission**. (Perhaps a publisher will ask to see the adapted/modified version. What did you alter?) **Alas, academic fraud increases, so rules grow more strict, and editors grow more suspicious. Most editors run submissions through plagiarism-checking programs. Check your ms. first!** With no adaptation/modification, **reprint all items exactly as copyrighted, without any revision.**

Further Possibilities:	Reprinted with permission from the website owner. From Creative Commons. Permission to reproduce granted under BioMed Central's general terms. Photos reprinted with the kind permission of the author / artist. Photograph by the author. Image / Design / Artwork: Mary Maro. Table with kind permission from Springer © 2011 Japan Pediatric Society © the authors
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Thanks to Andrew Davis via the European Association of Science Editors (EASE), who provided the list based on writing guidelines and the Harvard law school guide, plus his 30 years of experience.

Tense choice

Present tense

1. **Established knowledge:** “Finland *has* the world's highest rate of X infection.”
2. **Others' general findings:** “Aho **found** that no evidence for X *exists*.”

This verb can be in the present tense as well, if it sounds logical (“found” → “finds,”) but usually for a living author: “Aho **suggests / states** that X *is* Y.”
3. **Your own goal** in the introduction or abstract: “This study *attempts / will attempt / attempted* to discover whether X *falls* when Y *rises*.”
4. **Yours or anyone's theorizing:** “We **hypothesize** that X *is*—” “Results *may* depend on population size.” “It *seems* that mice very seldom *die* from over-eating.”
5. **Contents of tables or figures:** “Table 2 *includes* further details.”

Past tense

1. **Specific details in yours or others' published work (be alert to mention of quantities)**

“We / Aho **found** that the two years with the highest rates *were* 2002 and 2004.”
“Only six of the mice *survived* (Aho 1999).” (past tense) **But generalize to:**
“showing that, under these conditions, very few *survive*.” (present tense)
2. **Others' general findings if logic demands**, often in a list of findings: “At this temperature, most mice *died* (8), but after immediate air-cooling, those that *died* were few (9), and when immersed briefly in cold water, all *survived* (10).” (Note **end-focus x 3!**)
3. **All of your own current work:** “Subjects *stated* their ages.” “X *formed* a Y.”
“None of them *arrived*,” except for things truly permanent: “The city *is* in Savo; its trees *were* mainly birches.” (Cities do not move, but trees die.)
4. **What others have said:** Aho (1999) **predicted** that this test will become the **gold standard**.
Present tense “**predicts**” is also acceptable here; see under present tense, #2.

When I see present tense for your own methods or results, I assume that you cannot be discussing your own work. I thus seek a citation, but no citation, of course, appears.

Perfect forms are fine for data most similar to yours in topic or findings: “We found that mice **died** at -20 degrees, and in Smith's work (2006), mice *have died* at a similar temperature.”

The present perfect tense is useful: “X *has never survived* where Y *is* a common virus (6).”

The perfect brings events **up to the present**, “No one *has shown* [and still haven't] X to be true.”

If I cannot decide between past and present tense, I choose **non-temporal forms (ones indicating no time)**—such as **participles and infinitives** (see page 22 in Titles for examples).

Citations and layout

Avoid repeating the same citation several times with no intervening citations, even if it is given only as “3” or “(3)” or a superscript.³

Do this by using pronouns to link findings back to their source article:

“Brown *et al* (1998) found X. **They** continued with Z. In **their** study, A was B; **their** findings also showed that Y was Z, although Smith *et al* (2000) have disagreed with **their** conclusions.”

Never repeat—in **Harvard style**—parenthetically any citation data already present:

“Aho **found** that X *is* Y (Aho 1991).” Write “X is Y (Aho 1991).”

Choices: “**Brown (1991) suggests** that X is Y” or “X is Y (**Brown 1991 / Brown, 1991**).”

Sentence-final citations in parentheses save words, with no effect on end-focus. Devoting the **Sentence beginning—its second most vital position—to a name is wasteful**; instead, start with an important word. For instance, begin the sentence powerfully: maybe with “**Never**” or “**Only**.”

Keep multiple cited **names in chronological order**, starting with the earliest date. For ones in the **same year, alphabetize them**: (Laos 2000, Kerkel 2007, Laane 2009, Mare 2009, Bo, 2010)

And for **multiple works**: “(Aho *et al* 1991, 1993, 2006).”

If, however, you agree closely with Brown, you know Brown personally, or if Brown is your professor, reviewer, or opponent, then the name as the subject of the sentence might be wise!

For **names outside parentheses**, journal editors now seem to favor, rather than “***et al.***,” writing

“... Smith **and co-workers** (1991) succeeded.” “Brown **and colleagues** (2000) found X.”

Choose only one of these and use it throughout. Synonyms always confuse or irritate readers.

“Collaborators”? Maybe okay, but it sounds to us like those who are aiding a criminal!

Avoid the too-common Nordic use of “***e.g.***” in citations: “(~~*e.g.*~~, Aho 1980).”

Because **Vancouver style** never allows “It ended.^{eg 6},” or “ended [*e.g.* 6],” or “ended (*e.g.* 6),” bravely select the best work to cite. We know that other sources exist. Only occasionally will you need something like:

“(As best shown by Aho 1999)” or “(Reviewed in / by Aho, 2000).”

Saving words:

“This ***is*** true of measles (Pop 1991), smallpox (Pip 1994), and typhoid (Pup 1999).”

(In present tense, because these three papers are published, and this sounds like a generalization.)

Or “... of diphtheria (5), yellow fever (7), and malaria (8).” Or “Oho [3] and Ton [7], like Iho [9], found these diseases ***to be*** widespread.” (Note the tense-free infinitive).

Font issue: italics or not

Obey your target-journal style when deciding whether to use italics. Use them for Latin (not only for *in vivo* but also for *e.g.*, *i.e.*, and for every *et al.*). You must also use italics for foreign terms like *laissez faire*, any foreign word, and for genera and species. I find italics to be decreasing in popularity and suspect that they are expensive. For your thesis, the choice is all yours.

You do need italics to distinguish genes from other abbreviations. Here is an authoritative quote provided by a student as to italics for genes and proteins:

"Non-human oncogenes are usually written as uncapitalized three-letter words in italics (e.g. *myc* - *italics*) while their protein products are written in roman font with an initial capital (e.g. *Myc*). To make matters more confusing, human genes follow a different nomenclature, so that the human *myc* [italics] gene is denoted as *MYC* [italics] and its protein product is written as MYC."

Cited from the book "The biology of cancer" by Robert A. Weinberg, 2007.
I note that he does not italicize "e.g."

Layout

Do not copy your target-journal's layout. Gustavii recommends using for submitted articles:

a. **Times New Roman font 12**

b. **Headings with three levels:**

1. bold **UPPERCASE**

2. bold **lower case**

3. *italics*

c. **No split words.** Computer programs split the same word at different points, and opinion even differs as to where syllable-breaks occur, even among scholars who are all native English-speakers. Dictionaries also differ regarding syllable-breaks.

As I recall, "democratization" can be divided into syllables in about ten different ways, a few of these are "de / mo; dem / o, and cra / tiz; crat / iz." So do not try this (at home)!

Because most journal instructions say avoid splitting words, never justify right margins. Justify the left side only; as in this book, leave the right side ragged.

Full, both-margin justification necessitates splitting words, which slows our reading pace and also produces illogical horizontal spacing and gaps in lines.

Verbs for academic scientific writing

Your own **research field supplies** enough **substantives**. Most need a **greater stock of verbs**. For first drafts, use boring common verbs (“to be / have / get / find out”), then be more specific.

Verbs are muscular; they move ideas along. Always, however, check connotations in an English-to-English dictionary. Avoid pompous or rare words. **Be specific, not fancy**. Below, UPPER case indicates the stressed syllable; “+” means that this verb, spelled thus, can also serve as a substantive.

to look at

obSERVE
view + / reVIEW +
perCEIVE
reGARD +
appROACH +
be aWARE of
STUDy +

o compare

conTRAST +
match +
CHARacterize
probe +
reLATE
CORrelate +
asSOciate +
differENTIate
disTINguish

to be finding out

learn
see
search +
surVEY, (SURvey +)
inSPECT
inQUIRE
QUERy +
ascerTAIN (= check)
exPLORE
inVESTigate
iDENTify
aGREE
check +
deTECT
unCOVER
deTERmine
asSESS
ANalyze (vs. anALysis!)
CALculate

to balance

eVALuate
conSIDer
SPECulate
deCIDE
conCLUDE
acKNOWledge
ADvocate +
deFEND
conCEDE

to test

disCERN
inFORM
conFIRM
FALsify
enSURE
esTABlish
subSTANtiate
VERify

to show

INDicate
sugGEST
DEMONstrate
point out
exHIBit +
reVEAL
disCLOSE
disPLAY +
ILLustrate
exEMplify
make EVident
conTRAST+
apPROXimate
COMment on
afFIRM
asSERT
TEStify (to)
inTERpret
deFINE

to cause—from outside, something to decrease

reDUCE
curTAIL
cut +
deGRADE
dePRESS
diMINish
drop +
imPAIR
LESsen
Llimit +
MINimize
MODerate
resTRICT
WEAKen

to cause—from outside, something to increase

raise +
adVANCE +
AGgravate
AMplify
aROUSE
ELevate
enHANCE
enLARGE
enRICH
exCITE
FOSter
HEIGHTen
imPROVE
inFLATE

inTENSify
lift +
MAGnify
proMOTE
proVOKE
STRENGTHen

I consider the verb deTERiorate to be always intransitive, so that nothing can “deteriorate X.” X can, however, itself “deteriorate” or decrease.

Note: things cannot reduce themselves, nor can a thing “increase / decrease” anything transitively.

(See the Words Confused and Misused section.)

Groups of useful or problematic verbs

“**ImPLY**” and
“**impliCATION**” are
common & safe,
but “**IMplicate**”
always shows
blame or guilt.

To end-focus on a digit,
use “**number**” as a verb
or “**figure**” as a noun:

“Girls **NUMBERed** 71;
the **FIGure** for boys
was 11.”

“X **accounted for** 5%;
Y **amounts to** 29%.”

Beware!

To “**prove**” anything is
For **naive amateurs**;
it means proven forever, everywhere,
thanks to brilliant you!

Failure to prove is okay,
as is **DISprove**, meaning **FALSify**.

“**X clearly shows / undoubtedly is**”
 (“This **proved / has proven effective.**”
This “**prove**” means **shown with some evidence
and is safe.**)

“**Answer**” → “**reply / resPOND**” (respondents);
“**give**” → “**proVIDE / supPLY / FURnish.**”

“**ConSIST**” is for ingredients (cake) and “**conTAIN**” for contents (of a pill).
“**InCLUDE**” implies less than 100%. “It **comPRISED** 80 men” means 100%.
“It **was comprised of** 80 men” is correct but uselessly wordy.

Upgrade spoken-English
“**There is / was / were X**”
to “**X exISTS / ocCURS /
apPEARED / aROSE / eMERGED.**”

These verbs do differ.
Things **EXIST** permanently,
OCCUR regularly / usually,
APPEAR suddenly,
ARISE theoretically,
EMERGE from out of something.

These serve well to replace
passive voice verbs..

Handy words
if all else fails:
reGARD/ inVOLVE / conCERN.

“**Regarding** this item”
“She **regarded** it as complete.”
“**In regard(s)** to this issue”
“**Involving** her was wise.”
“It **involved** effort.”
“**Concerning** this danger”
“The problem **concerns**
funding.”

Formality levels

Colloquial spoken, first-draft words with some synonyms, in order of increasing formality

<u>Avoid these</u>	<u>Choose among these</u>
a bit	a little, slightly, somewhat
a couple	two, a pair, a duo (for people, “couple” implies man and woman)
a lot, a lot of, lots of	several, many, multiple (see “plenty of”)
anyhow	in any case, in any event, nevertheless, nonetheless
anyway	although, thus, however
besides; too	also, in addition, likewise; furthermore, moreover
enough	sufficient (insufficient is also useful)
fix (verb)	arrange, manage, handle OR repair, renovate, recondition
give (verb)	supply, furnish, offer, provide, yield
gone; none	lacking, absent; missing (think cops)
hard	difficult, demanding, laborious, time-consuming, taxing
let (v)	allow, permit, give permission for
little (= few)	few, insufficient, lacking, rare, scarce, sparse
look for (v)	try to find, seek (sought), search for
make	produce, construct, form, compose, build, create, originate, constitute
plenty of	abundant, ample (vs. sparse), numerous, frequent (occurring over time)
pretty; quite	somewhat, almost, moderately, not uncommon, not infrequent
quite X	very (a weak word), rather, considerably, noticeably, notably, markedly, greatly (I would avoid “remarkably” as too emotional.)
so	therefore, thus, hence
start (v)	begin, initiate, undertake
take (v)	adopt (100%), adapt (with changes), transfer, possess
think X is	consider X to be, judge X to be, deem X to be
though	even though, although, notwithstanding
too	also, in addition, as well as, likewise
try (to)	attempt to / endeavor to
turn out (v)	prove/proven to be X (show by evidence; “It proved to be a wise choice.”)
way	means, approach, method, procedure, manner
work out (v)	solve, resolve, determine, devise, OR clarify, elucidate

(Sources include *The Words Between*, JM Perttunen, 2000, and many author-editors.)

Words confused and misused

amount and number: “Number” goes with **countables**, as does “fewer”: Fewer cells.
Less sugar (uncountable). “Each” and “any” often prove useful to **maintain the singular**: “Of the 10, **each** patient received 3 g of the drug.”

any: This is handy to allow you to use the singular and to include zero. **Any = 0** → ∞

“We sought correlations between age and enzyme X levels.(They surely existed.)
We sought any correlation between age and enzyme X level.” (Maybe nonexistent.)

chance vs. change: “Their first **chance to change X** will be in 2009.” Careful; they sound alike.

chapter: Finns use this for almost everything! Wrong choices are extremely confusing.

1. **paragraph** = an often-indented unit usually covering one major point.
2. **section** = such as Introduction, Methods, Results, Discussion.
3. **chapter** = a long portion of a book, comprising many pages. (*Moby Dick!*)

contrary to: Overused. “**On the contrary**” (French influence, *au contraire?*) is argumentative!

Instead, write “**Contrary to X** is Y.” “**In contrast**, X seems preferable.”
“**Conversely**, our mice survived X.” “We chose **the opposite**.” “**The reverse** is true.”

control: (*säätää ohjata*) Use monitor / check / follow(-up) (*valvoa, tarkistaa, seurata*).

“ConTROL” (always second syllable) goes with hand-cuffs, ropes, dog-leashes, tempers.
Doctors **monitor** patients, **follow** them in a follow-up study, **check** them.

different: Avoid over-use; all things differ. Why “Six different men shared a ward”?

Perhaps to stress wide differences, “Six widely **differing** viral species thrived.”

“**Differ**” is a good, strong verb: “These patient populations **differed** in ethnicity.”

economical: “Economic” has to do with the economy. “Economical” is rare and suggests a saving of money (*säästäväinen*). An econOMical person eCONomizes.

effect and affect: “EfFECT” is almost always a **noun** and “afFECT,” a **verb**.

Learn: “**We affect its effects**.”

The rare noun “**Affect**” (capitalized) refers to emotions. “He is lacking in Affect.”

The rare verb “**efFECT**” means to establish. “We hope to effect changes here!”

gold standard: Never “golden standard,” because this is **monetary**—££, \$\$. It is a **metaphor contrasting a nation’s gold reserves with silver reserves**.

More usual in medicine is “**X of choice**” usually “**treatment of choice**.”

health vs. healthy: She is **healthy** (adjective). **She is in good health** (noun).

increase, decrease: These apply only during a **specified time-period**. They occur “**from inside,**” on their own, as in a **lesion healing, versus—from outside—being cured**.

Occurring within: “His pain **increased.**” “Values **increased / rose / soared.**”
“Levels **decreased / fell / dropped / deteriorated.**” (Verbs, page 43, bottom.)

By outside forces: “Aspirin **reduced/raised / elevated / enhanced / promoted / X.**”

Or it “**reduced / lowered / diminished/ X.**” Or “**Y caused a decrease** in X.”

Or is X merely “**higher / lower**” or “**larger/ smaller**” than is Y?

“As the length of the neonates **decreases,** their relative heart weight grows.” (Babies shrink?)
Accurate: “The **shorter** the baby at birth, the greater (is) its relative heart weight.”

Never write “When mountains **increase** in size, their number of species rises.”

Write “The **larger** the mountain, the greater (is) its number of species.”

incidence (vs. prevalence): Gustavii calls these “the total number of cases of a disease or condition existing at a specific time” vs. “the number of new cases that develop over a specific time,”

Incidence = how many develop it annually. “16.3 /100 000 develop it annually.”

Prevalence = how many now have X disease. “Prevalence is 213 / 100 000.”

In print, in press: “**In print**” means **being sold**; “**out of print**” means **sold out**, unavailable.

In press—more useful to authors—means now being printed, soon to appear,
Or (mainly non-academically) “**forthcoming.**” No phrase “out of press” exists.

keep vs. give: “I will ~~keep~~ a talk.” No! You will do the opposite: “I will **give** a talk.”

But we do “**hold** a meeting / a conference”; we “**give—or throw—a party.**”

lend vs. borrow: **Lend** goes out—from you; **borrow** comes to you. Finns generously **lainavat**.

next: Near a day, we say “See you **this coming** Monday.” “**Next** Monday” may be in 10 days?

other: “**On the one hand,** and **on the other hand,**” doubles contrast strength and is okay, but never use 2x “other” to refer to two related items. **Dangerously confusing.**

Never “On **the other hand, X . . .** but on **the other hand, Y . . .**” or, without hands,

“**The other patient lost weight, and the other gained weight.**” NO. Finnish error!

Write “**One** patient lost weight, and **the other** gained (weight).”

She was blind in the other eye” =totally blind! “**Other**” always means **second of two**.

own: Always preceded by a **genitive:** “**her / his / Oulu's / their own X.**”

parameter: This is overused and mispronounced! Say “paRAMeter” (not “pair of meters”) and reserve it for mathematically derived values like means, CIs, SDs, or constants. Instead, use “**characteristics / variables / measurements**”. Similarly, avoid “**PARadigm**,” sounding like “pair of dimes.” Model? Pattern? Ideal?

prevalence: See “incidence.”

range: From smallest to largest figure, use “**range / ranging**.” “His temperature ranged from 36 to 40 C. Prevalence, ranging from 20 to 30/100 000, is sure to rise.” (See “vary,” below.)

risk: Most academics seem to prefer “**at risk for X**” (X is something not inevitable), rather than “risk of,” which seems lay-person’s language. We can then write “The **risk of** over-eating **for** obesity.” But always “**risk of death**,” a thing inevitable.

significant: Unless you have no P-values in your manuscript, use **only for a statistical difference** (P-value), not for achievements or for human relationships. Many **drop** “**statistically**” after using it once, unless “**clinically significant**” is relevant.

Avoid “almost / highly significant.” Instead, give the P-value. (See “Handling Numerals—”)

similar, same, identical: These words are **not interchangeable**. “Same” and “identical” are more similar than is “similar.” Brothers and sisters are **similar**, but only **identical** twins, being monozygotic, are genetically exactly the same.



since, as, while: Beware! Each of these can also have a **time-sense**.

“**Since / As** he came to live here, he has been studying Finnish.” (Because, or in 2001?)

“**Since / As / While** I am busy in surgery, you look after our family.” (Huh?)

(For “**since**” and for “**as**,” we therefore **often substitute** “**because**.”)

“X accumulated in the nucleus, **while** tabulin was cytoplasmic” means **whereas or when**?

(For any “**while**” not meaning “**at the same time as**” please **substitute** “**but**” or “**whereas**.”)

vary: Less often appropriate than “range,” discussed above. “Vary” means to go up and down. “The patient’s temperature varied hour by hour.” Often it includes no figures.

weigh vs. weight: We **weighed** (verb) the neonate. Because her **weight** (noun) was only 1000 g, her mother felt **weighted** (participle) down with fear. The Mafia gang **weighted** (verb) the corpse in cement before throwing it overboard.

worth x; worthy of x: Finns may write: “That is **worth of X**.” The correct alternatives are: “That **is worth studying**,” or, more formally, “That **is worthy of study**.”

Confusing plurals: Unusually, the **longer form** is the **singular: criterion / criteria; phenomenon / phenomena**. Two words, **species** and **series**, serve **either** as singular or plural: “Aho’s two **series are** larger than **is** our first **series**.” “One **species occurs** here, but **five species occur** in Sweden.”

Words never plural: equipment**S**, advice**S**, information**S**. I dislike research**es**.

A sample of preposition problems

- absent **from**
- added **to**, not into; an addition **of** sodium
- apply **for** (money), but apply ointment; **apply to** the university **for** money
- approve/ disapprove **of**
- agree/disagree **with**
- ask him, never ask **from** him (“Ask him **for** information.”)
- associate **with** (and **correlate/consistent with**, but **relate to, characteristic of**)
- **at** this level (Use **AT** for **precise stopping-points**: point, age, temperature, stage, level, dose, dosage.) I prefer **“AT risk FOR.”**
Finns have problems with “at” and with “by” (authorship).
- **on** average (“On average, earthquakes there occur every 12 years.”)
- call (phone) her, never call **to** her (British: “Ring her, and when finished, ring off.”)
- compare **with** = seek likenesses and differences; often in the USA, **compare to**.
 Use “compared to / with” early in the sentence, with no comparative degree:
 “Compared to rats, mice thrived.” “Finland, compared to the USA, is safer.”
But with comparative degree, with an -er modifier; I prefer “than”: “X is less than Z, smaller than Y.” Avoid the lengthy “smaller compared with / to Z.”
- correlate **with**, associate **with**, connect **with** (unless electrically!) but relate **to**
- introduce **to** the audience a speaker. Wrong: “I introduce you Dr. Ilo.” (We say that to Ilo.)
- different **from** (always!) **US**, commonly **“different than”**; **UK**, commonly **“different to.”**
- dissolved **in**, but extracted **from**
- the effect/influence **of** statins **on** cholesterol / **of** nurses **on** doctors
- essential **to**
- exclusive **of**
- fill **in** (USA also fill **out**) a form; **complete** a form
- foreign **to**
- grateful **to** her **for** the gift
- an increase **in** (not of) X (size?) a reduction **in** cost; **an** increase in weight
- independent **of**, dependent **on**
- isolate **from**
- **at** a **mean** height / weight / level
- **participate in** (always **“in,”** except when final: “Glad you could participate.”)
- prefer X **to** Y
- prior **to**
- (in) pursuit **of**
- **in** the range **of**
- similar **to**
- substitution of x **for** y (where y is what leaves)
- representative **of** (. . . of this syndrome, of this class of drugs)
- varies **with** (. . .weight, age)

Double-check each “to,” perhaps influenced by Finnish –lle forms

PLEASE ACCEPT MY APOLOGIES FOR THE TOTAL ILLOGICALITY OF ENGLISH, especially of prepositions!

Academics work **at** the university, **in** the department of X, **in** Helsinki.

Patients **in** a hospital have doctors who work **on** their floor, or **in** a clinic **of** / **at** that hospital.

Students, once accepted **by** a university, then study **at** that school. When **in** school, they study.

Participle problems

“**Using**” often dangles: “Using lasers, the patients’ eyes were studied.” (Eyes use lasers?)

“The disease was identified using the latest technology.” (A clever disease!)

“The children were studied using MRI.” (Technically advanced children!)

Change “using” to “**with**” or “**by**”: “**With**” an instrument, or a substance (As the instrument becomes more complex and more automatic, however, one can use “**by**”: by a method or technique, or a complex instrument (even “**by means of**” or “**by use of**” something).

“The patients were warmed **with** blankets.” “**By** this method, we succeeded.”

“Results were calculated not **by** computer, but **with** a slide rule.”

“**Using**” is okay **with an agent**: “Aho, using X, did Y,” even “These cells, using sodium as a—”

“Using” can also serve as a **substantive**, called a **gerund**, as in “**Swimming is good exercise.**”

“Use of / Using soap is wise.”

“**Used**” is one of my enemy words, like “**not**,” “**so**,” “**get**.” All of these are vague and weak, especially when “**used**” is the passive verb at sentence-end. (See Process Writing section.)

An often-ignored rule in English is the genitive before a participle. “HER arriving early was considerate,” Not “SHE arriving.” “This drug’s being expensive is unfortunate.”

(I will forgive those who forget this rule, however.)

Be careful with all participles ending in “-ing.”

These may become “**dangling modifiers**.” Native English-speakers use them for jokes. Visualize:

“Lying across the colon, the surgeon saw the lost dressing.”

“Hanging from the ceiling, the elderly nurse suddenly noticed an electrical cable.”

Repair both by flipping them so that the modifying phrase comes last, next to what it modifies.

“The surgeon saw the suture lying” and “The nurse noticed a cable hanging”

As with subject and its verb

Put things that go together close together.

(See page 9 for examples.)

A sample of article-use guidelines

A / An / no article

Use with an **unspecified, singular, countable noun**.

“An individual arrived” (not specified; any individual).

“Use lemon juice in water to remove rust” (none is a countable).

Note: “AN” precedes a vowel **sound** (**an** uncommon, **an** FBI man, **a** unique, **a** European).

The

1. When an item has **already** been **specified**: “**The** study” means one already mentioned.
For good linkage backward: “**This** study / **These** studies. **Such** studies.”
2. When an item is **about to be specified**:
“We carried out three experiments; **the** experiment involving mice”
3. When an item is **otherwise known** to the reader:
“**The** teeth were intact.” (You mentioned skulls, and all know that skulls have teeth.)
4. When a countable is **unique**:
“**The** best / opposite / normal / chief / first / following / present / same,”
or unmodified: “**the** sun / horizon / sea / water / menopause”
And “**The** Greek president . . .” but never “~~The~~ Nature” (but **the** environment).

English allows you to **avoid repetition** by using **THE**:

“We captured mice in Lapland. **The**/These animals were healthy.” You can avoid writing “**The** animals ~~used~~ were healthy,” or an error such as “~~the~~ ~~used~~ needles,” old needles from which you can become HIV-positive! “Used” before a noun means not new; think of a used car.

Special cases: **Body organs**—the heart, the liver, the brain, the arm, **the** kidneys, **the** bones

Institutions and organizations—the Finnish Academy, the FCS, but Oulu University,
and words unmodified: the sick, the old, and the former, the latter; the elderly, the blind.

No articles for: both, noon, midnight, winter, childhood, pregnancy, birth, youth, death,
biology, history, malaria, oxygen, Ireland, Monday, June, fifteen, Table 1, Figure 3.

Note verb: **commit** suicide / murder, always without “the.” **Murder** is a verb; **suicide** is not.

None in addresses: Department of Art, University of Texas; Joan Aho, Editor

None for above sea level, below zero, by accident, at once, at present, in case, by chance,
in addition, in brief, in contrast, in detail, in effect, in full, in fact, on time, on purpose,
within reach, beyond reach, without doubt, without warning

Many singular nouns need no article. Judge them by ear by creating a simple sentence:

“**Incidence is rising.**” “**Nature can heal a patient.**” “**Treatment cured her.**”

But “**THE study / patient / dose was—**” Can you hear whether an article is usual?

RULE OF THUMB: Usually “the” means 1 of 1; “a / an” means 1 of >1.

Chief uses of the comma

TYPE OF COMMA	PROBLEM	EXAMPLES
1. List-commas	Final comma before “and.” Often comma before “or.”	a, b, c, and d a, b, c, or d
2. “Fetal parentheses” (always paired)	A commenting or a defining unit?	Doctors __who constantly overwork__ need higher pay. The timer__which broke__ will never work. (Test these two, with and without commas.)
3. Subject + verb and, or, but subject + verb	Clarity	Loss of signal correlates with concentration of contrast agent and relative blood volume is calculated by the X method. (Why must we read this sentence twice?)
4. Introductory word or phrase	Does an oral pause follow?	First, tell me Finally, finished reports arrived. In May, is the test complete?
5. Dependent clause (always use if initial)	Is the clause dependent?	Whereas 251 cooperated, 17 withdrew. If you wish, the doctor will call.
6. Adjective series	A comma goes where “and” could appear.	It is a tall, broad, dark oak tree. The fit, lean Arab patients survived.
7. Apposition (paired)	Identical, not defining	Paula, our director, arrived. But: Our director Paula arrived.

Punctuation terms

(US / British form)

period / full stop	.	Piste
comma	,	Pilkku
semicolon	;	Puolipiste
colon	:	Kaksoispiste
hyphen	-	väliviiva between linked words
“n” dash / "m" dash	–	between words, units / ajatusviiva (p. 57)
dot (for the net)	www.helsinki.fi	Use also for initials in names, C.B.N.
decimal point	2.5	
parentheses / brackets	()	Sulut
brackets / square brackets	[]	Hakasulkeet
braces / curly brackets	{ }	Aaltosulkeet
exclamation mark	!	Huutomerkki
question mark	?	Kysymysmerkki
slash, slant line, diagonal, stroke, virgule	/	Kauttaviiva
backslash	\	Kenoviiva
apostrophe	heittomerkki ’	it’s = it is , a contraction; genitive: its lung one rat’s heart; six rats’ hearts
quotation marks	“US” ; ‘UK’	Lainausmerkki
ellipsis dots	...	When final, add final mark: “.../?/!./”
asterisk (not comic Asterix!)	*	
superscript	soon ¹⁵	
subscript	H ₂ O	

Exercise in punctuation

All punctuation in this passage is absent, except for two full-stops (periods) after the two paragraphs. Punctuate it. In some locations, three or four options will each be suitable.

Non-native English speakers find that rules governing the use of articles are particularly tough to negotiate in technical contexts a common error that an editor may encounter in medical papers is omission of articles before the names of body parts the rule is simple and easy to follow the definite article the should precede the names of body parts such as the heart or the lungs when the names of body parts are provided in a list however an article is necessary only before the first name such as in the heart lungs and brain.

Appropriate capitalization for terms that have been derived from proper nouns is a controversial topic editors are unsure whether to capitalize Petri dish and Gram stain the popular rationale is that terms derived from proper nouns should be in lower case the adjectival form whereas terms should be capitalized for the proper noun itself thus Gram stain vs. gram positive bacteria and parkinsonian gait graafian follicle and luciferase we do capitalize Southern blotting the technique discovered by Edward Southern who was born ironically in northwest England northern and western blots are in lower case being based merely on the naming of the Southern blot.

On Punctuation: the only logical system in English

Commas cause the most difficulty for everyone—native and non-native.

Commas mark speech pauses (“By winter, her symptoms may disappear”), but not always.

Although speakers do generally pause before each verb, no comma belongs in this sentence: “The population near this river flowing across the continent_are in danger from a rare disease.”

Although you had to breathe before “are,” we are limited by this rule:

Never place one comma—a single comma (,)—between a subject and its own verb.

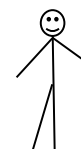
I categorize commas as either single or paired—calling them **wed or unwed commas**.

Single—or “unwed”—commas

The **final list / serial comma** before “and” and sometimes before “or”—always popular in America—is now a requirement of the *British Medical Journal* (BMJ) and *Lancet*, even in this era of expensive printing when other punctuation symbols (such as my beloved hyphen) are threatened.

Beware, “Mothers recognize that prevention of dental caries requires check-ups a mess! and restriction of sugary snack food, soft drinks and toothbrushing.”

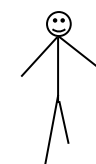
In the picture is a “two-legged clause.” Each such clause can stand alone. **Unwed commas** should always **separate independent clauses joined by and, or, or but.**



This prevents confusion: A comma warns you that a new subject and verb are coming, rather than more of the first clause such as an additional object. Study this sentence:

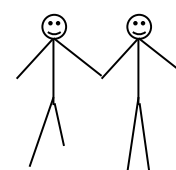
“Joe has three cats and seven dogs of many breeds, large and small, live next door to him.”
Does Joe have three pets or ten? Note the shock of unexpectedly meeting that second verb, **live.**
He has three, so help readers by placing a comma after “cats.”

Unwed commas also set off **introductory words & phrases**. “In time, children learn.”
“Surprisingly, it worked.” “Now, test the reagent.” “First, tilt the flask.”



I call a dependent clause one-legged. It never forms a complete sentence.

A two-legged clause can support, with a comma, a one-legged clause, →
and generally does so when the one-legged (dependent) clause comes first.



“If it rains, you'll be wet.” (But “You'll be wet if it rains” is okay.)

“While the sun shines, rest.” (But “Rest while the sun shines” is okay.)

Any “whereas” clause is dependent, needing a comma: Fish swim, whereas birds fly.”

To distinguish an independent from a dependent clause, **say it aloud**. If a puzzled listener says, “So? **Go on!**” or “Are you **crazy?**” then it was a **dependent** (one-legged) clause.

Unwed commas also separate **adjectives in series** (“New, well-educated, enthusiastic nurses”). But they go **only** in a space that **could contain an “and”** (“A well-educated Filipino nurse”).

Put single commas **after all places and dates**. “The conference begins on 20 July, 2004, in Beijing, China, and lasts for one week.”

Note the two pairs of commas →

Paired—or married / partnered—commas

These go around “**comment**” clauses and phrases—ones that are **nonessential**, meaning just side remarks that do not alter or limit the sentence meaning.

They **never** go around “**definition**” clauses / phrases essential to identify what comes before.

This rule causes **difficulty for Finns**, because a **comma is required before “joka”/ “että.”**

One safe rule is that **no comma ever goes before “that,”** but a comma does go before “**which.**”
Scientists seem, however, to favor “which,” either with or without a comma.
 (“That” seems to me, also, to be uncomfortable, to tie words too tightly together.)

My name for **commas that surround comments** is “**fetal parentheses.**”

The commas required around “a tough field” could “grow up” to be parentheses or dashes:

“Neuroradiology (a tough field) is her choice.” “Neuroradiology—a tough field—is her choice.”

Scientific papers require many parentheses (for citations, quantities, p-values), so use parentheses sparingly; limit, also, the number of dramatic pairs of dashes.

How does one recognize a **parenthetical comment**? **Say the sentence aloud, whispering** the words which may be either comment or definition. If the sentence **fails to make sense** without the whispered words, you have a **definition**. If it still **makes sense**, the words were a **comment**.

After a comment, a singular verb will not even change: “Juha, in addition to Outi, **has** come.”

Test yourself: One sentence shows she has one sister, but the other shows more than one.

Which is a **comment**, and which is a **definition**?

“Her sister, who is her identical twin, arrived.” “Her sister who is her identical twin arrived.”

Special case If a parenthetical comment stands by itself (two-legged) as a complete sentence, then, instead of putting commas around it, use two **dashes** or **parentheses**:

“These cells (**see** Figure 1) divide rapidly.” “Many topics—HIV-AIDS **was** one—led to debate.”

No punctuation goes before parentheses unless the parentheses contain a complete sentence.

Paired commas also **set off appositives**, acting like words following “**i.e.**” “Ted, my uncle, left.”
 But “My Uncle Ted left.” “Mari Storpellinen, a UK college graduate, visited.”

Semicolons (;) are too seldom used by Finns, though they offer an extra choice of pause. They link **closely related but independent clauses**, allowing a dramatic pause (“Many treatments followed; none succeeded.”) They solve the problem of deciding between one long or two shorter sentences.

They also indicate stronger breaks in a series of items that also need commas, such as“(mean, 60 years; range, 42-71).” Below, instead of nine commas, find five commas + three semicolons:

“The dietician provided apples, tasty, soft ones; sweet, ripe naval oranges from Spain; big, firm bananas; and red, seedless grapes.”

Colons (:) mean “viz” or “thus” and introduce a **list** (“... are the following:”) or announce an **explanation** (“The wreck was terrible: injured people, glass all over the road.” “It was terrible: No one survived.”).

Avoid use of a colon between a verb and its object. Write “The three best cities in the world were Zurich, Vancouver, and Helsinki,” or “. . . those top cities: Zurich, Vancouver, and Helsinki—”

Dashes The “em-dash”—like the ones around these seven words—is the width of an “m.” Dashes create a **gasp-like sudden break**. In formal writing, I would avoid using more than one or two pairs of dashes per article. “We prescribed Marevan, Emconcor—both low in price—and two expensive antibiotics.” **A dash can be single**: “Her drug is inexpensive—warfarin.”

An **intermediate-length dash**, the “en-dash,” is the width of an “n,” and often connects pairs or ranges such as “The calcium–sodium combination” or time such as “the period May–July.”

Note the three lengths: hyphen, n-dash, and m-dash.

Hyphens (-) **link words**, when several words stack up as **pre-modifiers of a head word**.

“Carefully built, long-lasting, color-coordinated ward furniture” has “furniture” as **head word**, and shows that “-ly” itself serves as a hyphen. **Never add a hyphen after any-ly adverb**.

What a hyphen can do: “**Beer containing** lemonade” vs. “**beer-containing** lemonade.” Different?

Note: Pre-modifying paired words need a hyphen only if they precede their “**head word**.” “A well-known **method** is well known” has one head word, so it needs only one hyphen.

With **head words** bolded; do you want one or two hyphens? “Every level of toxin neutralizing **IgG antibodies** in the X serum samples was / were high.” “The disease causing **mutation** in”

“A well-known **method** is well known” has only one head word, so it needs only one hyphen.

“A 6-mete**R rod**” vs. “a rod 6 meter**S** long,” “3-da**Y test**” vs. “a test lasting 3 day**S**.”

“Each was 3 ml.” vs. “3-ml **samples**.” Note two hyphens in “waist-to-hip **ratio**.”

Reversed position for a hyphen: “drug-independent and -dependent **patients**.”

Anticipatory hyphens in “5- to 10-yea**R periods**,” and “fire- and water-resistant **fabric**.”

No hyphen in: “Group-~~A~~ comprised 111 mice”; **hyphen in** “Group-A **mice** were thinner.”

Can you guess my **hyphenation rule for numbers above one**? **Note** plurals and singulars. Hyphens act like crutches for s-less plurals.

And even if many toxins are involved, use singular with a hyphen: “a toxi**N**-detection **test**.”

A final rule: an “-ly” on an adverb ties it to any following adjective, so “-ly” **acts like a hyphen**. “An attractively furnished **room** is nicer than a half-empty **room**.”

The *BMJ* discourages most hyphen-use, but this 2009 quote in the European Medical Writers' journal *The Write Stuff* (vol. 18, no. 3, p. 177) originated in a *BMJ* office: “**You are being invited to take part in a non-invasive and ionizing radiation free arteriovenous fistulae surveillance study.**” Is the sole hyphen here even useful? Can the hyphenated word just become one word? Don't we desperately need two or three word-to-word hyphens? Where?

Slashes (/), also called slant lines / diagonals / strokes / virgules), can mean “**per**,” “**and**” or “**or**,” as in 10 mg/day, 11 meters/second. Avoid slashes for **ratios**; write “**X to Y**” or “**X:Y**.”

Avoid “Many (231/536; 43%) died.” Write “Of 536, 231 (43%) died.” Or “(231 **of** 536).”

No spaces go around slashes. **My breaking this rule in this book is for better visibility!**

Apostrophes (') indicate the English **genitive** or indicate **contractions**.

Singular genitive: “Smith's research,” “Jones's ideas.” “Finland's health service.”

Plural genitive: “All the doctors' pay,” but “children's cups” and “Men's stress levels.”
With joint ownership, use only one apostrophe: “Stephen and Maria's children.”

Use **no contractions** (“don't, couldn't, we're, I've, time's up!”) in medical articles and theses.

Use **no apostrophes in plurals** (“The Smith's— Smiths are coming”), except for numbers and symbols. “MRI's, 5's,” and “UFO's” are, however, evolving into “MRIs, 5s,” and “UFOs.”

Decades have grown shorter: “the 1930ies” → “the 1930's” → “the 1930s” → “the Thirties.”
(Be sure to make clear in what century!)

Parentheses / Brackets (()) always go inside final punctuation marks: “ended (5).”
Never place any punctuation in front of any parenthesis.

Never: “Tests were thorough, (6) and they were also frequent.”

Instead, “Tests were thorough (6), and they were also frequent.” (Note end-focus x 2.)

Brackets / Square brackets ([]) allow insertion of words into quotations to add data or clarify, or with “[sic],” meaning “thus,” to point out errors: “The Winter War of 1949 [sic] occurred on the [Finnish] border.” Quotations are sacred; **mark omitted words with . . .** and at the end of a shortened sentence, three dots plus the final punctuation mark: a . or a ? or a !

Quotation marks (“ ” / ‘ ’) go around **all borrowed words / phrases**, and around **words** themselves: “Moi' is also French” in the USA; most Britons write “Moi” is also French.”

Notice their single quotes outside, double inside. Order of punctuation also varies: For most Britons, **all** marks go outside if not part of the quotation. (Did he say “Never”? but “They shouted “Help!”) In the USA, commas and periods always go inside, and location of semicolons, colons, exclamation marks, and question marks depend—as with the British—on sentence meaning.

(See Lynne Truss's best-selling and hilarious punctuation guide, *Eats, Shoots and Leaves*.)

Handling numerals, numbers, and other small items

1. **Numbers:** Check your target publication for its preferred style. Generally, **write numbers as words for items with no units** (patients, treatments) **up to 11**. Use **number figures from one / 1, and thereafter** for items with standard units (ml, mg, km).
2. **For numbers with unit symbols** (kg, m, or C, or the percentage sign, %), if you write out a number under 11, usually write out the unit, as well (6 kg, six kilograms).

Note British: “six **per cent**,” but USA: “six **percent**.” (But always per day, per week.)

3. **Avoid mixing words and numerals** for the **same** item in the **same sentence**.

“Of the 81 countries, only ~~eight~~ 8 sent athletes”.

“~~Thirty-three boys and 11 girls~~ arrived”--> “Of the 44 arriving, 33 were boys (and 11, girls. A comma replaces the second “were.” Or mention only one of a repeated pair.

4. Use **ordinals** up through ten (“first . . . to tenth, then 11th. . . 160th, 161st, 163rd”).
5. **Never add a space between number and percentage sign:** “**6%**,” never “~~6-%~~.”
Do insert a space before **any amount:** “3 mg; 10 ml.” One okay oddity is “120 mmHg.”
6. **Use numerals for figures and tables** and never add an article or a period / full stop.
“Figure 3 is attached,” **not** “~~the~~ Figure 3. is attached.”

In the actual caption: “Fig. 3. Costs for Health Care, 2000-2008 in Finland.”

Some journals use Roman numerals (I, II, III) for article figures

7. **As dates,** “**14 May 1998**” or “**14/5/98**” is generally preferable. I meet “14.05.98” only in Finland. Internationally, this is recommended: 1998-05-14, but rare.

In the USA, nonscientists use “May 2, 1998,” which is confusing when abbreviated in **US style** as “**5/2/98**,” because this could mean either **February 5 or May 2**.

8. **Sentences never begin with numerals** A short word (“Six / Ten studies”) is acceptable. Otherwise, rearrange the sentence:

Start with the magic preposition “**Of**.” Change “**32** of the 76 men attended”→

“Of the 76 men, 32 attended.”) Or link related sentences with a semicolon :“A few are gone; 158 are left.” If desperate, write

“A total of 21 men” (I dislike “Altogether”) or “The year 1939 saw the start of war.”

9. **The decimal in Anglo-US texts** is a **point (5.75)**. This point may be raised in some **British** texts (**5·75**). Other European countries, like Finland, accept the comma (5,75).
10. **Zero before decimal point:** A zero here is easier to see (0.21), although some journals use no zero here in text / figures. Or they drop zero only in P-values—being always less than 1.
11. **A decimal rule:** Show values under 0.01 to only two decimal places. From 0.01 to 0.001 show values to only three decimal places.

12. **Large numbers: Group your digits into trios** (12 345 000), with spaces. **No periods / dots.** Or, in an older style, **commas** can go (12,345,000) between the trios.

We usually insert no space into four figures, unless they appear in a column or are in comparison with larger figures: “We sent 1500.” Clearer: “We sent 1 500, not 15 000.”

Can your “**2014** mice” be mistaken for a year? Do we know whether “the **2014 mice**” were that **many**, were animals **in that year’s project**, or **were born** in that year?

13. **P-values:** Gustavii says that, because $P > 0.05$ means “**unpublishable**,” give **exact P-values** ($P =$ rather than $P <$) for values **above 0.001**, using “ $P <$ ” **only for 0.001 or less.**

Check each journal’s preference for the symbol **P / p** or **P / p** and for spacing inserted.

14. **We have no plural word for percent.** No **percents** exists; use “percentages.” Usually “days,” “weeks,” and “months” should be written out as words.

15. **Ratios** can appear as 10:1, to mean “per” or 10 to 1. We can separate items as “per” with a slant line or slash, as in “cases/year,” but some advise us never to place more than one slash in a series (not “cases/year/country,” but “cases/year per country”). (See under “Slash”). In text, though perhaps not in tables, “6/18” may confuse; write “6 of 18.”

16. **Cite sources according to target-journal style.** Check how the journal, in **Vancouver** style, spaces citation numbers either on the line or as superscripts (**6, 8-11** or **6,8-11**).

In **Harvard** style, check for **comma (Aho, 1999)** or **no comma (Aho 1999)**.

17. **Superscript figures go outside the punctuation** in US style: . . . ended.^{6,8,9}

The **British** (not the *BMJ*) **often** use the **reverse order:** . . . ended^{7,11,14,16,21,28}.

18. **For readability, some prefer spaces around** =, -, +, ±, <, >, P. Check the journal.

19. **Always state** (vital for **credibility**) the total **number of items in your data, the "N,"** then comes the **"n"** for each subgroup. Then comes the **percentage in parentheses:**

“The **53 (17%)** who survived” To write merely “17% survived” means little. Was that 17% of 10, of 100, or of 1000?

20. Remember: **The shorter item goes into parentheses. Never separate a percentage from its figure:** not “~~45 of the 60 (75%) survived.~~” **Change to** “Of the 60, 45 (75%) survived.”

21. **Prepositions before numbers require “and” or prepositions between figures:**
“**Between** two **and** ten sites”; “**from** 16 **to** 18 days”

In text, I prefer “aged 40 **to** 50,” but you can **omit “to”** in parentheses or in tables or figures.

“Men were older (40-50).” Or in a table, “Men, 21-65.” “**Year**” is our **default AGE.**

I can live with “Patients enrolled (**in**) 2000-2010 were older,” but only with “in” or nothing.

22. Gustavii suggests that **for numbers under 25, offer no percentages at all.**

Then, at **25 to 100, no decimal places in percentages (7%)**

At **100 to 100 000, one decimal place (7.2%).**

Above that, two places (7.21%).

Hall feels, however, that even **in numbers under 100, percentages are never relevant.**

23. **For numerals or words and their units of measure, hyphenate:** “a 6-ml sample” or “six-part sessions.” The confusing “4 4-mg doses” should be “four 4-mg doses.”

Use a singular verb for a quantity viewed as **one** unit: “3 ml **was** best.”

24. **Avoid French lines (–)** for items in a list or to indicate speech; most non-Finns have never met them. In lists, use numbers (1, 2, 3), letters (A, B, C), or black balls—“**bullets**” (●).

Quoted words in English take quotation marks: “Help!” (US) or ‘Help!’ (UK).

25. **Suppliers of materials:** Use the manufacturer’s **name and address at first mention, then only the name.** Include **company, then city + country, or city + state + country or city + province + country.**

Examples: “(Smart Systems Oy, Turku, Finland),” then only “(Smart Systems).”

“(Sigma Chemicals, Inc., St. Louis, MO, USA),” then only “(Sigma).”

(US states use 2-letter abbreviations.) But **omit “USA”** in articles **for US journals.**

26. **Now banned as unclear:** “Pain **and/or** fatigue.” Write “Pain **or** fatigue **or both.**”

27. **Strongly discouraged: “respectively.”** AVOID “Levels in the heart, brain, and liver were 11, 21, and 28%, respectively” or “. . . were a respective 11%, 21%, and 28%.”

These **require two readings.** A version **only one word longer** requires **only one reading.**

And note how the **number of words per item decreases**—here, from five to four to three.

“The level in the heart was 11%, in the brain, 21%, and the liver, 28%.”

But if you must use several sets of the same pattern “A, B, and C were 1, 2, and 3,” use “respective / respectively” only **once**—for the first set. Readers grasp the pattern!

28. Remember: **Italics for book- and journal titles, film—or ship—names; quotation marks** are for titles of **shorter** works: book chapters and article-, story-, play-, and poem titles.

Italics are **always** the requirement for Latin **genera and species:** *Helicobacter pylori*.

29. **Italics are, however, expensive and difficult to use consistently.** If you **use any**, you must **use them for all Latin terms and all foreign words:** *i.e.* / *e.g.* / *et al.* / *in vivo* / *laissez-faire* (also see page 42). Check whether your target-journal uses any italics.

30. **Latin abbreviations:** Finns, I notice, use *i.e.* (*id est*; that is; Finnish *eli*) well:

“**Our leader, *i.e.* the director** of this study, arrived early.”

Finns greatly overuse *e.g.* (*exempli gratia*; for example / for instance; Finnish *esim*), which is correct only for an example following the name of the group it belongs to.

“**Large countries, *e.g.* France and Germany—**”

Commas go before, rarely also after *e.g.* and *i.e.*, just as in “**X, for example, won.**”

Never, therefore, begin a sentence with “*e.g.*” (“~~*E.g.*, malaria was common~~”).

Nor begin a citation with “*e.g.*” (“~~*e.g.*, Smith 2005~~”). Substitute “**for example / for instance / such as.**” Why not . . .

31. **Create an OPEN SERIES:** “Symptoms of concussion (**headache, nausea, dizziness**) may occur.” The absence of “**and**” or “**or**” shows that these three do not comprise 100%.

Etcetera / etc. (jne.) is too informal for articles or theses. End with “among others”?

32. **Avoid sexism.** Instead of “Everyone took his dose” (or the ungrammatical “Everyone took their dose”) or “took **his / her** dose.” Why not the plural: “**All** took **their** doses.”

Avoid the genitive entirely? “Everyone took **the** required dose.” “**Each** took that dose.” Rather than “found in **Man / man**,” write “found in **human beings**.”

“**Female**” is fine as an **ADJECTIVE**. Avoid it as a **NOUN**. “**Female patients**” is fine, but if over age 17, “females” are “women.” The same goes for **males vs. male subjects**. And if more than genitals or hormones are relevant, consider using “**gender**,” not “**sex**.”

33. **Avoid long noun clusters as pre-modifiers.**

The American Thoracic Society Publications says that because “the goal is clarity, not brevity,” instead of “**cultured sheep pulmonary artery endothelial cells**,” write “**cultures of endothelial cells from the pulmonary artery of sheep**.”

34. **Comparisons with “times” + comparative vs. times “as”:**

Assuming that patients’ recovery-time was 6 days; then notice what you are saying:



A. “**Controls took three times longer to recover**”= Controls took **24** days.
(Patients’ recovery time is the bottom book. You added 3 **times** that value.)

B. “**Controls took three times as long to recover.**”= Controls took **18** days.



With “**times**,” always use “. . . **as**.”

I recommend “**fold**,” which goes both up and down.

“**The increase was almost five-fold.**” “**In the 20th century, incidence fell 12-fold.**”

Take-home messages

Every event comes in chronological order.

Avoid synonyms.

Ask a research question and answer it.

Avoid long sentences.

Write junk and edit it gradually.

Every wasted word goes out.

Never translate into English.

Follow every journal's instructions EXACTLY.

Ask a friend to read your texts.

Read your lines aloud.

Trust your ear, not rules.

Avoid identical lines in one text.

Use mainly active voice.

Use inanimate agent

Trust this book more than computer grammar-checkers.

End sentences with vital words.

Link all sentences in a paragraph.

Spell as journals prefer – US **OR** UK style, never a mixture.

Sample professional cover letter

- **Be careful. Avoid begging, boasting, or pressuring the editor.**
- **Keep cover letters brief and cool**, because journals need manuscripts.
- **Does on-line submission require a standard cover letter?**

NEVER “Dear Dr. James Shaw.” Write “Dear Dr. Shaw.”

(We like our names, but **give only family name**, *sukunimi*, here, unless gender is unclear (Kim, Lee). No “Ms–Jane Shaw.”(If unsure of degree, use “**Dr.**”)

“Thank You for Your kind aid” should be “Thank you for your kind aid.”

Never capitalize “you / your” unless you are writing to God/god!

“Please find enclosed a manuscript entitled “X in Y,” reporting my / our / research into Y, for consideration by *Nature*. Its findings indicate that A may be a cause of B.”

(Your **title** goes in **quotation marks**; a journal deserves honor = an **italicized title**.)

The words “**publish**” or “for **publication** in” seem to me **too intimate and too obvious**. The editor can certainly guess what you are seeking!

“The material presented is based on the original research of the author[s] and is not being offered for publication elsewhere. This is the third of five articles based on the same series and methods; I enclose copies of the other articles, one already published, one in manuscript.

“Correspondence regarding this article should be directed to NN. [Perhaps adding] We / I **look forward** to your reply / We **look forward to** your / We await your response.”
(And pregnant women are expectant, not waiting.)



“We are waiting for X” is **rude**. Remember, **never confuse “wait” with “expect”!**

Always add the journal's own **disclaimers**, lines in lawyers' precise language, usually provided in the journal's “Instructions to Authors.” Copy them exactly. Some samples:

“**All authors contributed substantially** to this work.”

“This manuscript is **not submitted elsewhere**.”

“**It duplicates no portions of other texts by the author(s)**.” (If it does, be sure to enclose reprints or manuscripts of those texts.)

“**No financial support** was received from anyone benefiting from these results.”(Meaning **no conflict of interest**).

“This project **followed accepted humane and ethical practices**.”
Which ones? From which (Helsinki, of course!!) declaration?

Journals also usually advise that you list all financial sources on the title page.

Enclose manuscript **copies of all unpublished sources** that you cite.

Enclose **permission letters for material you reprint, such as figures or tables.**

See PhD thesis pages, 32 to 33, 39, and plagiarism and permissions, pages 71 to 73.

Describe any revision / author-editing by a native English-speaker, in order to neutralize any prejudice against your English that your having a foreign name or address or both may still inspire.

News flash:

Some important medical **journals** like the *BMJ* now **require you, the author, to reveal whether your submitted article has already been rejected by another journal.** The recipient editor may demand to read the comments made by the reviewers / referees of the rejecting journal(s), and also to read all of your responses.

This requirement may discourage many from submitting to these major journals. It should make them submit their work **first** to the **most prestigious journal** that would conceivably accept it.

This requirement aids the journal. It saves time and money. But this rule prevents you, upon a second or third submission, from concealing the fact that your manuscript has already been rejected.

Warning: Never risk disobeying this rule!

I suggest that you thus do indeed **submit initially to the highest-quality journal** that might accept it.

One of my students, facing this rule, created an excellent statement to the editor who next received his manuscript—at the *BMJ*:

“The work was originally offered to the *NEJM*. After respectful and positive comments from two external reviewers, this work was rejected due to editorial policies, however. We have attached to this submission the letter from that editor and the reviewers’ comments, have revised our manuscript significantly now, and we sincerely hope that you appreciate the value of this study.”

(If you borrow this, alter it considerably if you, too, send it to the *BMJ*!)

Second-submission cover letter after review

Sample lines useful for the body of this letter

Thank you for considering / taking into consideration our paper / article, entitled “X in Y.”

The reviewers’ / referees’ suggestions will much improve our text / article / presentation.

We have made [Add: “to the best of our ability”?] all of the revisions suggested, and these are explained point by point in / on the following pages / in the accompanying file.

You can also compliment the reviewers / referees by calling them “helpful / wise / thorough,” But never direct your comments to the reviewers; **your response goes to the editor’s desk.**

If a reviewer criticizes your English, you must seek native-speaker language aid (again?!).

Repeat what you said in any revised first submission, writing something like this:

This version has been revised by a native English speaker
(Give the name? Add, if true, “. . . trained / experienced in the field of [say what].”)

As well as revision of the re-submitted manuscript, ask a language expert to revise your crucial—and very respectful—responses to the referees.

End the letter with something like “We hope that you will find this version more acceptable.”

See Handling Reviewers, page 68.

Layout and lines for formal letters on paper

On stationery with a pre-printed letterhead (*logopaperi*), appearing at top center in the design below, center the date just below the letterhead.

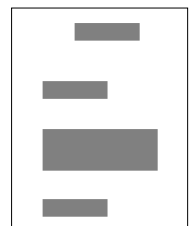
Otherwise, type your own 2- to 3-line address in the upper right corner, then the date below it. Your address may even sit at the left margin, if every line of the letter begins at the left.

Phone and fax numbers and email address go below your name at the bottom, not at the top.

The **recipient’s address is a list at the left margin**, with locations stacked as shown here:

Professor Joan White, Editor
The Journal of Applied Cleverness
Department of Brains
University of South Cerebrum
1600 Pons Lane
Bedford, XY3 LM7, UK

Dr. Mark Phoey, Director
Department of Biogenetics
Super Genes Company
1616 23rd Street N.E.
Oleander, Florida, 26731
USA



More lines to borrow from this book

Because I am interested in participating **in** the X Conference held **12 to 15 August** in Vienna, I am requesting an application form and instructions concerning submission of an abstract for a poster / talk. Please send the relevant information **at ~~Your~~ your earliest convenience** [Never say “Send it soon”] to the address above / below.

I would **like to apply for a position at / in** the X laboratory. (This means a **job/post.**)

Would it be possible for me to obtain a sample of Y / advice on Z / information on **accommodation(s)**?

“Accommodation(s)”—2 c’s + 2 m’s, means a **place to stay.**

“Room & board” means bed & food.

I am planning to visit Rome this summer. Because my current research project is in many respects similar to ~~Yours~~ yours, I would find it extremely rewarding to visit your institute to consult with ~~You~~ you.

As underlined above, **compare yourself (up) to experts—never experts (down) to you:**

~~“Aho’s 2007 findings agree with ours.”~~ “Our findings agree with those of Aho (2007).”

Excuse my **late submission** of this abstract; I have been ill.

Belatedly [= I am late], I send payment for X / send **reimbursement** [pay-back] **of** your expenses.

I trust that the **check enclosed / amount enclosed** is sufficient / funds are proper.

(We avoid saying or writing “**MONEY.**” Alternatives: “funding / support / expense(s) / grant.”)

Please **accept our sincere regrets for our inability to attend X / do X.**

We send our **heartfelt sympathy for your loss/ our hearts go out to you** (death).

Thank you **for your time / effort / concern / interest / support / aid.**

Thanking you in advance (for your kindness in doing / sending X).

Never call yourself “**kindly,**” as in “I kindly send you—” Compliment the other person.

“Will **you kindly** aid us?” “Dr. Stephens **kindly** provided the cells.”

Sincerely yours, / Sincerely, / Yours, / With best regards. (Only first word capitalized.)

Repeat nothing here that is in the letterhead (*logopaperi*). Below this complimentary close go

Your signature(s)

your typed name, title, department, work-place and address

phone, fax?, email address

Email suggestions

Choose a **subject line** that **clearly** informs the recipient of the **topic**. Vast numbers of emails are—in self-defense—deleted unread. Yours is not spam, so make sure your message is identifiable.

Reading **long sentences** on screen is almost as **difficult** as understanding long sentences in an oral presentation. **Keep sentences short—and simpler than in a letter** on paper.

Use **active voice**.

Email is less formal than posted letters, Though I often omit a greeting, Kate Kellaway of *The Observer* in England has recommended this practice. British people are polite. A compromise—in Finland—may be just a simple “Hi!” But for editors, “**Dear Dr. Brown.**” No first name. Unless your email is going to a total stranger or to someone you greatly respect, use a style close to that of first-draft writing, meaning **almost spoken English**. Kellaway describes email as

“**Like writing on water**”; email style is halfway between written and telephone language

Most, and soon perhaps all article submissions will be on line. Elegant phrases (“I await your answer,” “at your earliest convenience,” “pardon my belated submission”) may be overkill.

End with a brief closing such as “(Best) regards,” your name and contact data.

Double-check before you copy or forward anything. Some copying and forwarding requires permission. **Avoid putting into email anything you would not write on a picture postcard.**

Handling reviewers / referees and editors

Before manuscript (ms.) submission, **three people should read it: one naive person** who does not know your field, **one who is your scientific equal (peer)**, and **one expert**.

All co-authors should examine the ms. carefully and sign the cover letter and all disclaimers. **Never rush to submit.**

After submission, your manuscript **surely will come back with criticism** from the editor and from reviewers / referees. **Almost never is any manuscript accepted without changes.**

Resist any rage or despair; have faith and say to yourself: “**We are all on the same team.**”

In 99% of all cases, everyone at / with the journal is struggling to improve your manuscript.

The most valuable thing you can receive is fair and honest criticism.
Invite such criticism, welcome it, utilize it. Karl Popper, philosopher of science

When you submit a rejected manuscript elsewhere, **follow that journal’s instructions** equally carefully. As Hall says, “It is **a grave** [as in burying yourself alive] **mistake to submit a paper in the style of another journal**; this suggests that it has been rejected recently.” (But see p. 65.)

Rarely will reviewers ask you to cite their own or the journal's articles just to enhance their reputations or raise that journal's impact factor. Even more **rarely** will a reviewer **hold an ms.** for an extraordinarily long time, or—horrible to contemplate—will **steal data** from it.

All authors experience shock and shame over criticism. Non-native English-speakers must also decipher **referees' language**. Often even native English-speaker referees / reviewers make grammar (“between you and I”) and spelling errors (“library, Febuary,”). Your **overburdened, unpaid** reviewer may be writing the report at three o'clock in the morning after a heavy day. They use slang and unusual idioms (“expand on / shed / shrink X”); ask a native-speaker for aid.

Reply directly to the editor, not to the reviewers--who may never see responses. Give each criticism in full. Never force your editor to search through papers or net files for reviewers' comments in order to understand your responses. In author-editing authors' responses, I always need to see reviewers' comments in full. Your responses should be almost as elegant as is the ms.

Never attack a reviewer! Take all **blame** upon **yourself**. **Always be polite** to the editor and polite regarding your reviewers. (On the same team, remember?)

Obey, or fully explain why you cannot:

“Procedure X is not an option / not according to general policy, here.”

“I must have been unclear: Because we used no X, we can provide no photograph of X.”

Reviewers often disagree among themselves. Politely explain to the editor why you prefer one opinion to the other. Rarely, with extreme reviewer error, you might dare say, “Perhaps this is not his/her precise area of expertise.”

Editors may send a manuscript to an **extra reviewer**. A top journal may expose your article to eight reviewers. Uninformed, prejudiced, or careless reviewers may receive no more manuscripts (mms.)

How to respond to reviewer comments

“As advised / suggested / pointed out, I have reworded / added / deleted / revised / corrected X.”

“Altered lines are highlighted / italicized in the text itself.”

(Avoid underlining / underscoring unless requested to. Underlining hides most punctuation.)

Frequently, journals ask you to write out fully—inside your responses—all altered phrasing and all new lines added . . .

and also ask you to highlight these new lines in the text. Be sure that lines in the responses and the same lines in the body of the text are identical.

(Again, I stress: a skilled non-native or native English-speaker should edit your revised manuscript and edit your responses and all editorial correspondence such as cover letters.)

Famous authors can argue; **young authors must be cautious**. Was your **journal choice unwise?**

If the silence is very long, write briefly to ask whether your manuscript safely arrived. If the editor confirms its receipt, be very careful. Wait six months more? Ask your professor for advice or someone who is familiar with this journal or even in contact with this editor.

From *European Science Editing* in 2019 (thanks go to Andrew Davis) emerged information concerning for whom journal reviewers / referees work. Legal experts agreed that a reviewer has a contract with a journal and should do nothing beyond providing a report to the journal. Reviewers and authors should never contact each other without the journal's explicit permission.

Some journals have invited authors to suggest one or more referees for peer review. Evidence had indicated that journal editors tended to choose **at least one** of the referees suggested. (For anyone suggested, **provide full contact information.**) **Because of publication fraud's having increased, however, with fake reviewers doing peer reviews—even an article's own author's acting as a referee, expect fewer opportunities—or none at all—to influence reviewer choice.**

For some comfort, here is how Björn Gustavii described the life of **Hans Krebs**, born in **1900**. Krebs first published at age 23 and had his MD and PhD and 16 publications by 30. The next year, he published on the urea cycle. In 1933, he could flee the Nazis, thanks to an invitation from Cambridge University, and he later was at Oxford.

When Krebs was 37, in **1937**, his article on the **citric acid (“Krebs”)** cycle received a rejection from *Nature*. This work did appear later in *Enzymologia*. **In 1953**—at only **53** years old—he won the Medicine and Physiology **Nobel Prize**.

Words to the Wise

Nature (2013;497;433-434) published CG Begley's “Six red flags for suspect work.” As summarized in *European Science Editing* (2013;39,3:82) by Anna Maria Rossi, these are

“Were experiments performed blinded?
 Were basic experiments repeated?
 Were all the results presented?
 Were there positive and negative controls?
 Were reagents validated?
 Were statistical tests appropriate?”

Ask these questions of your papers. And add, “Are all the lines my own, if not in quotation marks?”

Permission, notification, and redundant publication

Before you reprint—exactly, or as an adapted / modified table or a figure, or a major portion of one—in your own publication, you must request and receive the publisher’s permission. You must **print in your article or thesis, below the borrowed material, the exact line that the publisher supplies**, such as “Reprinted here with the permission of Elsevier / Springer / Wiley, Inc.” The journal is not the publisher. Think of a movie: its director is not the same as its producer. (See this book's thesis section, particularly page 39, for more details.)

Cutting very thin the data from one project to produce a maximum number of articles is called “**salami publishing**” or **redundant (repeated), prior, or fragmented publication**. Such action resembles slicing one project (like a chunk of luncheon meat) into very thin slices (many articles). Students and even professor candidates may **salami publish** to earn degrees faster or to pad c.v.’s.

To avoid this, one author sent her editor **a list** of all published articles with data from her group’s single large project, showing that her own paper was fresh, with minimal overlap (*päälkkäisyys*).

Journals usually now require that each article submitted be accompanied by **reprints of or the manuscripts of** any of **your other articles that overlap** with the new one, especially texts with data based on **material, methodology, or controls identical to those of your current submission**.

Radiology specifically defined **redundant publication** as one or more authors in common for a work which also has populations, methods, and results the same or similar. A report is also redundant if it has **already appeared in another language**; ask both editors' permission for its publication in English. Possible redundancy requires “**an accompanying letter informing the editor of any potential overlap** with other already published material or material being otherwise evaluated for publication . . . also . . . [stating] **how the manuscript . . . differs substantially** from this other material. The provision of copies of such material is **required**.” (Emphasis mine.)

The *British Journal of Surgery* net instructions similarly explain: “Please submit with your manuscript **copies of any other papers (including abstracts)—published, in press, or submitted** to consideration elsewhere—that **relate in whole or in part to the same data set**; this is essential to allow [our] assessment of any potential overlap.” (Emphasis mine.)

Every journal wants fresh, unique data only. Receiving redundant (repeated) data, some journals threaten not only to **reject the manuscript** but also to **inform your institution**. If you fool the journal into printing your redundant data, the editor may **announce your sin** in their next issue and **refuse to consider future articles** of yours or even of your group or institute. This **blacklisting is serious censure**. Ensure, therefore, that **each manuscript is fresh and worthwhile on its own**.

Another crime usually leading to blacklisting is **multiple submission—submitting the same article to more than one publication simultaneously**. Because much effort and cost go into assessing an article, no author can survive withdrawal of a submitted—or even accepted!—ms.

Cancer Cell: “**If excerpts from other copyrighted works are included in your manuscript**, you must **obtain written permission** from the copyright owners and **credit the sources in the article**. . . . If you have **adapted a figure** from a published figure, please check with the copyright owners to see if permission is required and **include a complete citation/reference** for the original article. **Obtaining permissions can take up to several weeks. . . lack of appropriate permissions can delay publication**.” (Emphasis mine.) **Editors surely hate enduring all of this!**

PhD theses deserve to follow publication ethics as closely as do journals. They are not schoolwork. They become theses that will be read worldwide.

Plagiarism

Customs vary, but in Anglo-American cultures, **using other scholars' exact published lines—even with citations but with no quotation marks—is stealing. The term is “plagiarism.”**

The style of a text must not bounce back and forth between the author's own writing level and splendid “Oxbridge” language. That screams “Plagiarism!”

Although we all describe the views and findings of others, **merely citing the source** “(Smith 1995),” **gives you no right to present Smith's lines as if they are your own creation.**

The original author struggled to create those lines and must not meet them in your pages, masquerading as your lines. To quote a few lines (between quotation marks) and with a citation is, however, sophisticated practice and is a compliment to the author, who may be happy with it.

You no longer own published lines that you yourself have written, if the publisher holds the copyright. Editors thus consider self-plagiarism as unethical—against copyright law.

Stuart Handysides, MD, of the European Association of Science Editors (EASE) says “Elsewhere [than in Methods] simple cutting and pasting from earlier work might suggest that the **writers have stopped thinking about their subject, as the new data should be the prime focus** of the discussion and change the context at least somewhat. If not, what was the work for?”

The most **frequent plagiarizers** are non-native English speakers writing in English. I sympathize. **Paraphrasing** (putting ideas in your words) is truly difficult, even for native speakers.

Beware plagiarism—including self-plagiarism—in a thesis; e-theses travel worldwide. The Helsinki medical faculty now forbids use in theses of your own lines or of your tables or figures.

- **Place quotation marks around all borrowed phrases or lines (quoting). This might, for instance, be a vital, difficult definition of some object/process.**
- **Close the book and put the facts into your own words (paraphrasing).**
- **Give source and write “says/states/reports,” then quote a bit without “. ”**

This anonymous news item is adapted slightly from *Nature*, number 422, 13 March, 2003.

Emphysema is a lung disease that is predicted to become one of the top five causes of death and disability worldwide by 2020. Cigarette smoking is the greatest risk factor for this disease. Despite this correlation, however, only about 15 to 20% of cigarette smokers develop emphysema. The fact that these susceptible individuals are generally clustered into families hints that there may be certain genes that predispose people to smoking-induced emphysema.

Unlike asthma, in which the flow of air through the lungs is temporarily obstructed, emphysema is characterized by a progressive airflow restriction that results from permanent enlargement of the lungs' peripheral air spaces and loss of lung elasticity.

Exercise in plagiarism hunting

I have attributed this anonymous news story to an author with the invented name “Thoraksman.”

These five passages make use of the *Nature* news item on page 72. Where is plagiarism, and where are the data presented well? Fix the unethical/illegal passages so that they will become ethical/legal.

1. **Our patient was diagnosed with emphysema, a progressive airflow restriction that results from permanent enlargement of the lungs’ peripheral air spaces and loss of lung elasticity (Thoraksman 2003).**
2. **Thoraksman in 2003 considered rather low the 15 to 20% incidence rate for emphysema among cigarette smokers. He warns, however, that emphysema may, by 2020, become one major worldwide cause of disability and death.**
3. **The figure of “15-20%” for the incidence of emphysema among “cigarette smokers” seems low to Thoraksman (2003), who continues: “there may be certain genes [perhaps the X gene?] that predispose people to smoking-induced emphysema” (Thoraksman 2003).**
4. **Concerning cigarette smokers with emphysema, the fact that these susceptible individuals are generally clustered into families suggests that there may be certain genes that predispose folks to smoking-induced emphysema (Thoraksman 2003).**
5. **Although pulmonary emphysema, as we read in *Nature*, may “become one of the top five causes of death and disability worldwide by 2020” (Thoraksman 2003), not everyone believes that heavy cigarette smoking offers a serious risk for emphysema.**

If your **director / language reviser aids you** in writing up your work, this is ethical. Lines you two create are unpublished. **But having someone write your entire paper is unethical ghostwriting.**

Plagiarism can no longer escape detection. With plagiarism-checking programs, reviewers and editors discover whether all your phrases are actually yours. They can search billions of documents in minutes, highlighting matching passages. **Most journals now run every submission through a plagiarism checker. Check your own manuscript before submission.**

(Helsinki University requires the Urkund plagiarism checking program for some medical theses.)

(**Medics are not alone** in their sins. The Institute of Electrical and Electronics Engineers, IEEE, admitted plagiarism in its journals soaring from 14 cases in 2004 to 26 in 2005, and in 2006 to 47.)

Impact factors

In The European Association of Science Editors (EASE) *Science Editors' Handbook* section “Journal impact factor,” Jane Moody, in November 2005, discussed impact factors, developed by the Institute for Scientific Information (ISI) in the 1960s. “The impact factor (IF) of a journal is calculated by dividing the number of citations in a year by the articles (source items) published in that journal during the previous two years.” Some of the problems that Moody notes:

- Multiple authors all citing their own articles will affect the impact factor.
- Impact factor differences are not credible unless differences reach about 22%.
- Frequent citation may occur because of negative responses to an article, and criticism of it, because “it is simply quantity that is being measured, not quality.”
- Review articles are often cited; therefore, the more review articles a journal publishes, the higher its impact factor. (See page 19, bottom.)
- The earlier in the year something is published, the longer the time it receives citations.

“Artificial manipulation of the impact factor can be unethical” according to the Committee on Publication Ethics (COPE), at www.publicationethics.org.uk, an organization established to provide aid in regard to authors’ and editors’ ethics questions and problems.

For example, one editor arranged for that journal’s own referees to “insert citations” of that journal’s articles into submitted papers. Authors were afraid to refuse. The COPE declared that this “manipulation had been ‘wicked practice’ [an extremely strong term], and the editor was reprimanded [severely scolded].” In other cases, editors have agreed to cite each others’ journals, gaming the system to raise IF.

Mention this to any senior staff who still consider IF to be holy & sacred. Universities or employers who hire, rate, pay, and fund authors based mainly on IF, they are being naïve. The journal earns—honestly or otherwise—its IF.

As Björn Gustavii states, “The impact factor ranks journals; it does not evaluate individual papers.” regardless of journal. Other ranking systems exist. Look for them.

Update

European Association of Science Editors (EASE) members have been debating issues around impact factors, including their manipulation and their over-use in academic hiring- and promotion decisions. Impact factors rate—more or less accurately—a journal’s status, but not the value of one particular paper in that journal. Many papers are accepted, and even praised in the media, despite errors that reviewers miss, and even despite fraudulent practices. They may attract citations, making a journal’s impact factor misleading.

One hoax recently demonstrated that a totally imaginary project and its resultant fake report could fool experienced reviewers and could fool a good journal into publishing it.

When academic crime-rates rise, academics must fight back. Honest Finns, beware!

Valuable resources, in order of relevance

Gustavii Björn. 2003, 2008, 2019. *How to Write and Illustrate a Scientific Paper*. 2nd ed. Cambridge, New York: Cambridge University Press, CUP. New edition forthcoming in 2019

Gustavii Björn, 2012. *How to Prepare a Scientific Doctoral Dissertation Based on Research Articles*. CUP

(Gustavii, a physician/journal editor/professor at Lund. University, Sweden, is clear, witty, brief, and especially excellent on tables and figures).

Goodman Neville and Edwards Martin, 1999. *Medical Writing: a Prescription for Clarity*. Cambridge: CUP. (Doctor-authors battle passive voice, pomposity, misuse of words)

Perttunen J. M. 2000. *The Words Between*. 4th ed. Helsinki: Medical Society Duodecim. (For Finns in biology/medicine, Finnish focus) Huge, but out of print; ask a library.

Hall George M, ed. 1998. *How to Write a Paper*, 2nd ed. London: BMJ Books (by doctors)

Truss Lynne, 2003 and thereafter, various publishers, *Eats Shoots and Leaves: The Zero Tolerance Approach to Punctuation* (Hilarious, on British punctuation errors)

Uniform Requirements for Manuscripts Submitted to Biomedical Journals (Vancouver Document, International Committee of Medical Journal Editors) at <<http://www.icmje.org/index.html>

The Cobuild Dictionary (for learners), any edition (Inductive, not prescriptive, essential for natives and non-natives, with idioms, verb + preposition pairs, US versus British usage. Explanations are simple; actual examples numerous and authentic). Check the net and CD-ROMs.

Suomi/Englanti/Suomi Sanakirja, Ilkka Rekiaro and Douglas Robinson, Gummerus, Jyväskylä/Helsinki (Brit + US; modern, idiomatic)

The Collins Thesaurus in A-Z Form, 1990, Collins, UK.

Useful addresses :

[Academic Writing in English, Carolyn Brimley Norris](#) updated annually, also googleable

www.ease.org.uk/esecont.htm The Association of European Science Editors (EASE) journal

<http://www.ease.org.uk/publications/author-guidelines-authors-and-translators> in 28 languages!

http://www.ease.org.uk/wp-content/uploads/ease_guidelines-2015.pdf English original

<https://www.lex tutor.ca/cgi-bin/conc/write/?lingo=English>

This takes you to Concord Writer. Ask for the medical corpus, which gives you lists of your word used in actual texts. Good for tasks such as preposition choices.

Vocabulary: [Etymonline.com](http://www.etymonline.com)

[Affixes.org](http://www.affixes.org)

[Just-the-word.com](http://www.just-the-word.com)

www.howjsay.com Spoken English, with medical terms galore with UK and US pronunciation

Appendices with exercises*

Appendix I Find approximately 75 problems here (many resulting from Finnish interference).

1. 35 females and 11 men of age over 90 years old were studied. It was shown by this study, that elderly can, despite of their old age, get improvements by participating a weight training program, etc.
2. Based on one criteria, informations indicate their equipments are the finest ones.
3. The aims include e.g.: 1) to control the patients for 1 year, 2) discovering non-compliance, 3) a search for ways to monitor patients compliance with doctors' orders.
4. In 1994, in a survey in X province it was reported that the prevalence of diabetes was 3 % in the 30-60 years old age group (See the Table 7.). It's prevalence rose up to 6 % in the age 30-60 population in 1997, as shown by the present study.
5. Eighty-seven per cent (131/150) of the patients, who had lymphoma diagnosed improved with this treatment, after a period of sixteen weeks had past. The majority of them was males.
6. Also Aho's 2007 results are more impressive compared to Bix's findings (Bix 2001). Bix's results are different to/than our study.
7. Her income was 70.000 € at a tax-rate of 48,5 % a rate she wieved as far too high.
8. On other hand, these two series contain remarkably interesting phenomenon, but on other hand resemble those of Smith, *et al.*'s whose so-called QRX series was published in 2009.
9. John Jones discusses about this data shortly in her third articles' result's chapter.
10. Other article soon will appear in the "Nature," its now in print.
11. However, during the recession as much as every ninth nurse was remaining unemployed; studied hospital districts comprised of Helsinki, Lahti and Tampere.

* Those outside Finland can receive 30 pages of answer keys to Exercises I to VII and inside-book exercises, on request, electronically, from carol.norris@helsinki.fi

Appendix II Introduction exercise

First, glance through “**Recipe for an Introduction.**”

I chose a real Introduction from an important journal and split sentences and rearranged clauses to provide practice in reconstructing a Swales type of Introduction (page 26). Consider this a rough draft that you might write, pouring your thoughts onto page or screen. Locate here, in pieces, the actual four Swales Introduction moves. **Tips:** Find Move IV: it is now in two pieces. Then find the most general Move, which will come first, as I. The rest will make up Moves II and III. Can you separate them and see where citations would be? (Line-numbering allows for easier discussion.)

1. **In the mechanism underlying the association between increased body weight**
2. **and OA, mechanical loading across joints is probably involved. However,**
3. **evidence is inconsistent from cross-sectional surveys for a link between**
4. **obesity and hand osteoarthritis (OA). In the longitudinal Tecumseh**
5. **Community Health Study, adult obesity associated with incident hand OA**
6. **in men and women ages 50-74 years was suggested. Therefore, the**
7. **relationship between birth weight, childhood growth, adult weight and hand**
8. **OA should be examined. Obesity is the strongest risk factor for knee**
9. **osteoarthritis (OA), and the relationship is not known between OA and body**
10. **weight in early life. Prospectively collected data from a large population-**
11. **based birth cohort was used to explore this issue in our study. However, the**
12. **force across hand joints is not necessarily greater in persons who are**
13. **overweight, and metabolic factors associated with obesity have been**
14. **implicated; some of these factors, e.g. impaired glucose tolerance, are also**
15. **linked to low weight at birth.**

Modified for teaching from “Weight from Birth to 53 Years: A Longitudinal Study of the Influence on Clinical Hand Osteoarthritis,” A. Aihie Sayer, et al., *Arthritis & Rheumatism*, Vol. 48, No. 4, April 2003, p.1030.

Appendix III Editing exercises

1. For this exercise from Gustavii, 2005 (adapted from Kelsing, 1958!), shrink these four sentences, making their 53 words into one short sentence. Omit no vital information.

Our research, designed to test the fatal effects of PGF2 α on dogs, was carried out by intravenously introducing the drug. In the experiments, a relatively small quantity, 30 mg, was administered to each animal. In each case, PGF2 α proved fatal. All 10 dogs expired before a lapse of 5 minutes after the injection.

2. **It is shown in this randomized double-blind case-control study that intravenous X has no renal protective effects in patients operated for coronary heart disease.**

(Find the vital “what.” Move the “who,” “when,” & “where” to precede the end-focused “what.”)

3. End-focus in these three variants differs. What would follow?

- **For disease Z, X may become the treatment of choice, because X is well tested and causes *few side-effects*.** (continue)
- **Drug X, because it is well tested and has few side-effects, may become the treatment of choice for *disease Z*.** (continue)
- **For disease Z, drug X, well tested and with few side-effects, may become the *treatment of choice*.** (continue)

4. Improve focus and change from passive voice → active (from a recent thesis)

1. **Destruction was caused by proteolytic enzymes produced by macrophages.**
2. **Stability in the implant was not achieved.**
3. **In 40%, radiological changes were observed.**
4. **Not any permanent damage was detected.**
5. **One fusion had to be performed.**

5. Nice English, bad **Results** description. Show all these data in one clear figure? Sketch one?

To study for dementia Vantaa residents over age 85 in 1991, we recruited 601 individuals. Examinations were clinical and covered 92%, of whom 61% were non-demented. Before being examined, however, 36 died. Those refusing the examination numbered 11, and one could not be contacted. The demented and non-demented became two groups: of the 203 demented individuals who died by 2001, 60% had an autopsy; of the non-demented 61%, one moved away. Of the other 337, 231 remained non-demented. The others showed incident dementia. Of the former, 211 died by 2001, and of the latter, 92. Autopsies on the deceased numbered a respective 99 (47%) and 60 (65%). The overall total autopsies for the 506 who died by 2001 was 281 (51%). Results shown by autopsies were the following: cortical Lewy bodies in 42, severe amyloid pathology in 178, severe NFT pathology in 128, and both of the latter two in 110.

Appendix IV Passive to active in Methods

Rewrite this awful Methods section by changing its passive-voice verbs to active voice. It has 15 passive verbs. Reduce its length by half. Reorganize it? (Remember the essential exclusions for patients.)

Can you avoid many—or even **any**—“we” pronouns?

A retrospective review of all cutaneous melanoma patients treated for local recurrence in our hospital was performed. Cases with other cancers present or unknown primary were excluded. The information was gathered from the patient database of the Department of XXX, Turku University Central Hospital (TUCH), consisting of 5859 cutaneous melanoma patients. All the patient records in the database were reviewed, and those patients with local recurrence of melanoma were selected to be included in this study. A total of 506 patients were found. They had been treated between 2008 and 2013 for local recurrence in the excision scar or for in-transit metastasis. Factors predicting outcome after local recurrence were analyzed. Patient records were analyzed for patient, tumor, and treatment characteristics. Details on tumor characteristics were obtained from pathology reports, and all pathology reports were re-examined by a specialist in pathology to obtain all information on the primary tumor. Surgical and radiological reports were analyzed for follow-up data on patterns and timing of local recurrence. Furthermore, possible development of lymph node or distant metastases was recorded. The ABCD staging system from 2003 was used for grouping patients according to their stage of the primary disease.

(15 passive verbs in 194 words)

Appendix V Proofreading exercise and course review

This rough draft of a Methods section lacks any authenticity, so ignore the medical data. Repair the extremely **common style errors** overlooked by many young writers. Its imaginary author has, by frequent variation in almost all terminology, failed to **obey any target-journal's instructions**. (Numbering of lines is for easier discussion.)

1 **139 men and 125 females were in the study. The XYZ procedure was performed in**
2 **44.7% (118/264) cases. 1/3rd (90/264) of these cases were under 60-years-old, and 66 %**
3 **(174/264) were over the age of 60-years and under 80 years in age. Their disease was**
4 **considered benign in 62,5 % (165/264) and malign in 31,4% (83/264). In statistical**
5 **analysis, PLI was associated with poor prognosis (p=0.002). In addition were tumor**
6 **stage (p<0.0001), prevalence of GHI (p < 0.0001), distant metastasis (P<.001), tumor size**
7 **(P<0.0001), tumour site (p = 0.0001), patient age (P = 0.004) and noncurative operation.**
8 **Two of the authors (DNA and ICU) determined which patients were candidates for**
9 **experimental drug LPE. LPE treatment was organized by the county hospital district**
10 **where the ethical committee gave it's consent to the study procedure because they had**
11 **proved it to be the golden standard of care.**

Appendix VI Discussion

Similar to Appendix II for Introduction moves, refresh your knowledge of the Björn Gustavii recipe for a Discussion (page 30). These paragraphs come from the lengthy Discussion of a student's published article- Minor language errors remain. **Reorganize these paragraphs** into Gustavii's order.

1. There were 831 new eye injuries among adults in 1 year in an urban and rural area with a population of safety eyewear aged 17–60 (Statistics Finland PX-Web 1983–2015). This represents all adult eye traumas referred to ophthalmology care in the area serving 1.5 million population as the HUEH is practically the sole secondary or tertiary referral ophthalmology hospital. Hospitalization incidence in our study was 6/100 000, (n = 57), very similar to other studies (4.9–15.2/ 100 000) (Tielsch et al. 1989; Klopfer et al. 1992; Fong 1995; Desai et al. 1996a,b; Negrel & Thylefors 1998; Chen et al. 2006; Cillino et al. 2008).

2. In contrast to other studies (Kuhn et al. 2006; Mowatt et al. 2012), the firearm eye injuries were rare (0.5% versus 6.8% and 3.2%). This is somewhat unexpected because of the high number of guns in Finland (1.5 million licensed firearms; Ministry of the Interior). Tools caused 4% of all eye injuries, but 26% of permanent impairments. A serious tool injury was as common at home as at work. Interestingly, tools were the main cause of OGI (n = 6, 40%). This reflects both the popularity of do-it-yourself home, garden and forestry work in Finland, and the lack of care or attitude towards protecting one's own eyes when working with tools. On the contrary, fireworks caused only one injury, contusion, due to the change in the legislation of handling fireworks in Finland in 2010 (Kivela 2014).

3. The limitation of our study is a three-month follow-up time restricting especially the evaluation of developing glaucoma in contusions and longstanding diplopia in orbital fractures. However, obvious permanent injuries can be seen during the study's follow-up.

4. Further studies on long-term outcome of eye injuries are needed. The current study is unique in the sense that it is the first comprehensive Nordic epidemiological population-based study describing all eye injuries among people aged 17–60. It provides accurate data on causes, findings and the cause–outcome relationships. In sum, the prevention of eye injuries should focus on education about the high number of assault and alcohol-involved eye injuries. Protective eye-wear use should be encouraged in high-risk activities, especially during sports and in using work tools not only at work but also at home.

5. To our knowledge, the Helsinki Ocular Trauma (HOT) Study is the first comprehensive population-based eye trauma study in Finland or in Scandinavia. This study reports the epidemiology, clinical findings, diagnosis, treatments and outcomes of ocular trauma in urban and rural southern Finland and uniquely analyses the outcome in relation to the cause of the eye injury.

6. Most permanent impairments were caused by body parts (17), sports equipment (8) (Leivo et al. 2015) and work tools (8). Body parts caused 60% of orbital fractures, 20% of contusions and OGIs and 25% of optic nerve injuries. The commonest body part injury was a fist punch. On the whole, behavioural aspects irrespective of protective eye wear use are notable in eye injuries: assault was involved in 11% of all and in 16% of permanent eye injuries, alcohol in 10% of all and in 27% of permanent injuries. The number of alcohol-involved injuries is an underestimate, as all patients do not report their alcohol usage.

Appendix VII Table exercise

In a Results section, on the same page with this table, we read these lines:

1. **“In Table 1 is presented the responses found in mice in their haemoglobin and in enzyme X after they ate the HSF diet and the LC diet, and are shown the respective responses for control mice on a normal diet.”**

Why is this a useless and stupid sentence to be in an article’s Results **text**? Where do journals print tables and figures, although, yes, you submit all of them in a stack after the article text?

2. Identify errors in this terrible table (created, upon her request, by a student of statistics)—ones ranging from macro to nearly invisible. Revise its title and all its contents, starting with the most egregious (worst) ones (see pages 23-24).

Table 1. The responses that were found in haemoglobin and enzyme X before and after the feeding of mice on the HSF diet, the LC diet, and a normal diet for 15 days and 30 days.

Diet Group Type	Time of blood sample	Length of the diet	Numbers of studied mice	Male mice	Age	Hemoglobin	p values	Enzyme X	P-value
HSF diet	Before diet	15 days	18	11/18	2.0	8.6	NS	0.41 µg	NS
LC diet	Before diet	15 days	18	12/18	1.9	8.5		.37 µg	
Normal diet	Before diet	15 days	18	10/18	2.2	8.50		0.39 µg	
HSF diet	After diet	15 days	18	11/18	2.0	8.70	NS	0.43 µg	NS
LC diet	After diet	15 days	18	12/18	1.9	8.9		0.42 µg	
Normal diet	After diet	15 days	18	10/18	2.2	10.10		0.41 µg	
HSF diet	Before diet	30 days	18	9/18	1.5	8.3	NS	0.41 µg	NS
LC diet	Before diet	30 days	18	10/18	2.1	8.50		.38 µg	
Normal diet	Before diet	30 days	18	12/18	1.8	8.4		0.41 µg	
HSF diet	After diet	30 days	18	9/18	1.5	9.1	< 0.03	.44 µg	NS
LC diet	After diet	30 days	18	10/18	2.1	9.3		0.42 µg	
Normal diet	After diet	30 days	18	12/18	1.8	14.1		0.41 µg	

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