

출판윤리

영어로 생의학논문 쓰기

국립중앙의료원

민 양 기

영문의학논문 작성을 위한 영문분석
 ☞ 의학영어와 일반영어는 다르다

2

명사에 대한 적합한 형용사의 사용방법

scanty discharge	profuse discharge
slow reaction	fast reaction
poor prognosis	good prognosis
little or low possibility [probability]	great or high possibility [probability]
weak or low association(s)	strong or high association(s)
slight improvement	marked improvement
low rate, incidence, dose, intensity, activity, significance	high rate, incidence, dose, intensity, activity, significance

☞ 무의식적으로 **mild, severe**를 사용하는 사람이 많다

3

비교문장의 병렬구조(Parallelism in Comparison)

than 다음에 **대명사**, 전치사, 대동사 혹은 조동사를 필요로 할 경우가 있으니 주의해야 한다.

The decrease in A was larger **than that** obtained for B.
 Higher concentrations were found **in** substance W **than in** substance T.
 Sugar **gave** a lower swelling temperature **than (did)** an equal quantity of compound A.

대비서상을 **simple word**로 ①주어 ②목적어 ③보어의 위치에 놓는다.
 예) ① The **breath/length ratio** of group A was greater than that of group C. (X)
 → The **breath/length ratio** was greater in group A than in group C. (O)
 ② The **correlation between CP and AP** was stronger than that between CP and XP. (X)
 → CP more strongly correlated with AP than with XP. (O)

[특수구분] Blood flow to the thyroid gland is about one-third of the renal blood flow.(X)
 → Blood flow to the thyroid gland is about one-third of **that to** the kidney.(O)

4

형용사의 어순

순서	카테고리	예
class 1	관사, 소유격[Article]	a, an, the, this, my
class 2	수량 형용사 [Number]	three, 7, the 12th, many, few, multiple
class 3	대소 [Size]	small, big, little, great, giant, large
class 4	성질, 정도를 나타내는 형용사 [Shape]	careful, dangerous, heavy, rare, strong, useful, weak, healthy, helpful
class 5	신구 [Age]	young, old, acute, chronic
class 6	색깔 [Color]	white, red, black, grey

these 3 small expensive new black Italian cars
 예) 1. compact 32 stars (X) → 32 compact stars (O)
 2. internal multiple foci (X) → multiple internal foci (O)
 3. a safe effective treatment (X) → a **safe and effective** treatment (O)
 a safe effective and convenient treatment (X) →
 a **safe, effective, convenient** treatment (O)
 [Class가 같은 형용사가 여러 개 있을 때는 짧은 어구가 앞에 온다]

☞ 형용사의 **affinity for noun**: asymptotic **giant branch stars**
 new large Magellanic cloud

☞ **opinion adjective + fact adjective**: effective **basic processes**
 delicious **hot coffee**

불가산명사(Uncountable)/가산명사(Countable Noun)

한국어에 없는 불가산명사(Uncountable Noun):

(1) 복수형으로 쓸 수 없다.
 (2) few, many 대신에 little, much로 수식한다.
 information *n*[U] 정보, data, literature, knowledge, percent, research, evidence, permission, childhood 등
 예) Little data was available. 2 pieces of evidence (2개의 증거);
 plasma *n*[U] land *n* [U] eclipse *n*[C] convection *n*[U,C]

☞ 단어의 의미에 따라 uncountable noun일 수도 있고, countable noun일 수도 있다. ▶ hair *n*[U,C] clover *n*[U,C]

disease *n*[U,C] cancer *n*[U,C] carcinoma *n*[C]

명사(Noun)

영어문장에서는 명사를 중복해서 사용하지 않는다.

(1) Table 1 and Table 3 → **Tables 1 and 3**
 (2) Fig. 2 and Fig. 5 → **Figs. 2 and 5**
 ▶ Fig. 2A Fig. 3, A and C Fig. 4; A, B and E Fig. 5, A and D to F

(3) between the control and experimental **groups n**[C]
 between the second and the third **incubation n**[U]

동사(Verb)

• 수동태(Passive Voice)를 잘못 사용한 문장

(1) Similar changes were occurred in other disorders. (X)
 [수정] were occurred → **occurred**

(2) Their ages were ranged from 25 to 62 (years). (X)
 [수정] were ranged → **ranged** [이 문장에서 years는 대개 생략함]

(3) All tissues of the body are originated from the germ cell of the female. (X)
 [수정] are originated → **originate**

(4) Subjects were consisted of 25 healthy mice varying in age from 20 to 29 months. (X)
 [수정] were consisted → **consisted**

(5) Of the remained 6 rats with papillomas involving the soft palate, 2 rats required multiple excisions. (X)
 [수정] remained → **remaining**

• 영어는 동사를 기본으로 하는 언어이므로 동사로 표현한다.
 Injection of Tris solution was **done** (0점)
 → Tris solution was **injected**. (100점)

주어부의 명사를 동사로 바꾸어 표현해야 하는 경우

(1) 일반동사(be done, be performed, occur, take place, show, cause, produce, be achieved, be observed, be noted, be made 등) 이 동사에서 유래 된 다음과 같은 동작 명사와 함께 있는지를 살펴본다.
 -tion : prolongation, inhibition, formation, administration 등
 -ment : measurement, assessment 등
 -ence : occurrence, existence 등
 -al : removal 등
 예) • Injection of 2 mL of lidocaine was **done**.(x)
 → Two milliliters of lidocaine was injected.(O)
 • Evaporation of ethanol from the mixture **took place** rapidly.(x)
 → Ethanol evaporated from the mixture rapidly.(O)

(2) "increase", "decrease" 등이 주어 속에 사용되고 있는지를 살펴 본다.
 예) • An **increase** in heart rate **occurred**. (X)
 → Heart rate **increased**. (O)

의인법 문장

사물, 사상을 주어로 하는 의인법을 사용하면 세련된 영어 표현이 된다.

(1) By MTT assays, the grade was identified as 61% of NASCETs.
 → MTT assays **revealed** that the grade was identified as 61% of NASCETs.

(2) Recombination of these electrons and holes **produces** thermoluminescence.

(3) Adoption of this average value **introduces** no significant error in the resulting calculated critical mass.

(4) Knowledge of this value **enables** us to calculate the remaining unknowns.

(5) The **necessity** [call] for efficient reactor operation at high temperatures has recently **raised** interest in the study of refractory compounds.

(6) Therefore, complicated competition occurs around 1.0 MeV.
 → This **causes** complicated competition around 1.0 MeV.

(7) Gather et al. have measured this fast neutron spectrum and found the currently well-known 2.3 keV scattering resonance dip.
 → ..., **which led to the finding of the**

부정관사의 용법

『정관사와 부정관사의 사용구분은 (1) 특정한 것인가? 불특정한 것인가? 에 따라 (2) 독자들이 이미 알고 있는 것인가?에 따라 결정된다.』

(1) 대상 사물이 그 논문에 처음 등장

- In **a** previous report, the authors pointed out that
- **An** experimental study was performed on

(2) 지자가 임의로 결정된 사항

- A distance of 7.3 cm was maintained between the poles.
 [a, an + 명사 + of + 숫자]

(3) 'one'을 뜻한다.

- The measurements were made at **a single** institution.
a single investigator (D.S.C.) 여기서 **single**은 부정관사를 강조한다.

(4) 배분단수 (distributive singular): 배분적인 뜻을 갖는다.

- **We** have **a** nose.
- samples with **central defects** vs. samples with **a central defect**

정관사의 용법

(1) 대개 정관사가 필요한 경우: the+ technique, method, maneuver, test, procedure, approach/scale, score, ratio, rate/classification, system, assay/theory, hypothesis/ effect, response, process, pathway [독자들이 이미 알고 있는 사상]

(2) Non-contrast and contrast-enhanced T1-weighted images of the orbit were acquired using the fat-suppression MR technique.

(3) 신체의 부분, 장기(organ) 이름 앞에서 사용합니다.(이 때 두 번째부터 the를 생략)
예) The aforementioned physical factors exert adverse effects in the liver, spleen and stomach.

(4) 잡지이름, 신문이름
예) The Nature, The New England Journal of Astronomy and Astrophysics, the Journal of the European Astronomical Society, the Korea Herald the New York Times

(5) most of the-, all of the-, all-, each of the-, many of the-, some of the- 중에서 사용
예) most (of the) planets all (of the) specimens

(6) [of + 명사]가 상하게 수식하는 한정구가 있을 때 정관사 the를 사용한다
예) The velocity dispersion profiles of Ursa Minor and Draco Dwarf spheroidal galaxies at large angular separations.
☞ In the analysis (During analysis) of biological samples of plutonium, insufficient adsorption of Pu on the anion exchange resin is frequently observed.

12

(6) 유일무이한 존재
• The earth is a planet of the sun.

(7) 동일 논문 중에 이미 등장한 사물
• We present a method for deriving an approximate solution for point reactor regulation. The merits of the method are as follows.

(8) 형용사 next, entire, final, last, present, same, whole, only, chief, very, following 앞에 정관사 the를 붙인다.
• The next consideration is how long should prophylaxis be provided after the procedure.
• The present study did not involve long-term therapy
• They should be treated in the same manner as other patients with bronchitis.
• Cold compresses of the whole quantity of milk may help to relieve acute sunburn.


(9) 부정관사 a (an)와 정관사 the를 모두 사용할 수 있는 경우는 다음과 같다.
• Regardless of the antifungal agent prescribed, repeated courses over the [a] period of months are usually required to eradicate this infection.
• The [A] mixture of histidine hydrochloride solution and cobalt hydrochloride solution presents a rose-red color at the pH value of 3.2.

고유명사의 소유격 vs. 형용사 역할을 하는 고유명사

인명이 소유격으로 사용될 때는 고유명사로서 무관사가 된다.
The diffusion coefficient is estimated from (—) Gilliland's equation.
Valsalva's maneuver the Toynbee maneuver
Dalton's law the Henry law

[예] In the rationalized MKS system, the Maxwell equations are $y = Ax + B, z = Mx - N$ and (—) Ohm's law.
여기서 Maxwell은 형용사 역할을 하므로 정관사 the가 붙는다. Ohm's은 인명의 소유격이기 때문에 관사가 붙지 않는다.

☞ 과학논문에서는 technique, method, maneuver, test, procedure, approach, scale, score, ratio, rate, classification, system, assay/theory, hypothesis, effect, response, process, pathway 앞에 고유명사가 자주 사용된다



약어(Abbreviation, Acronym) 앞에 사용하는 부정관사 a/an

· 3글자 까지는 the first letter가 발음되는 소리에 따라 a/an을 붙인다
(예) an FAC an HOT an SCI an MD an MRI
an SBP of 120 mm Hg a DBP of 80 mm Hg

· 4 글자 이상 일 때는 단어 (word)로 읽어서 첫소리가 자음으로 발음되면 a를 붙이고, 모음으로 발음되면 an을 붙인다
(예) a FACH a SCIE

☞ There is no general rule without some exceptions.
(예) an FRCT an SPSS

15

Negative sentence (부정문)를 만들 때 주의사항

(1) 부분 부정문과 완전부정문을 구별하여 사용해야 한다.
예) 부분 부정문: All fluconazole-susceptible isolates have no V404I mutation.
완전 부정문: None of the fluconazole-susceptible isolates have V404I mutation
예) 부분 부정문: Immunosuppressant was not used in all animals.
완전 부정문: Immunosuppressant was not used in any animals.
예) 부분 부정문: There was no class III/III homozygote in all subjects.
완전 부정문: There was no class III/III homozygote in any subjects.

(2) 이중 부정(double negative)은 긍정 사용하지 않는다.
예) not abnormal[→ normal]
예) Our result is not inconsistent [→ consistent] with the previous hypothesis.
예) Rheumatologic symptoms were not uncommon [→ common].
☞ 이중부정은 한국 연구자와 일본 연구자의 심각한 증상이다. [negative thinking]
"ABC test를 시행해야 한다. [positive thinking]

(3) 단어 and를 부정문에 사용하지 않는다.
예) The methylation cycle did not correlate with age and sex. (X)
→ The methylation cycle did not correlate with age or sex. (O)

(4) 단어 also는 부정문에 사용할 수 없다.
예) No expression of IL-8 was also detected. (X)
→ No expression of IL-8 was detected either. (O)

(5) 결과를 기술할 때 "-할 수 없었다" 대신 "-하지 못했다"로 표현한다.
예) We could not observe the enzyme.(X)
We did not [failed to] observe the enzyme.(O)

숫자 풀어쓰기(Spelling Out Numbers)

의학 논문에서는 모두 아라비아 숫자로 표기하는 것이 원칙이나, 다음과 같은 예외에서는 단어로 풀어 쓴다

(1) sentence, title, subtitle 의 운두
Three patients were identified: 2 had hypertension and 1 had diabetes.

(2) 분수 (common fraction)
We require a two-thirds majority for consensus.
▶ [예외]: mixed fraction (혼합분수) The surgery lasted 3¼ hours.

(3) 속어, 관용적 표현(idiomatc expressions)
• Please include one or two of the following scales.
• During one of the laboratory runs, it was observed that samples from cases 3 and 9 had faint electrophoretic bands due to suboptimal DNA quality.
Cf> in 1 of (the) 17 patients.

(4) first 부터 ninth까지의 서수사: The third patient was not available for reevaluation.

(5) Consecutive Numerical Expressions: 수가 연속될 때 앞의 것을 풀어 쓴다
• In the cohort of fifteen hundred, 690 were men.
• The envelope contained 3 copies of the manuscript and one 3.5-in diskette.
▶ [예외] 9 이하와 10 이상이 섞여 있을 때
Children in the 5th and 12th grades were included in the survey.
☞ group A, B, C ...》 group 1, 2, 3 ... [뒤에 숫자가 올 수 있으므로] 17

차원(Dimension)의 기술

“길이 1 cm의 바늘”은 ① a needle of 1 cm length [기본문형] ② a 1-cm-long needle [한정용법] ③ a needle 1 cm long [서술용법] 로 표현할 수 있다. 수치를 나타내는 차원(길이 등)에는 “명사 어간” 과 “형용사 어간”을 사용할 수 있다.

- (1) An ion exchanger resin of 100 mesh was packed in a column of 8 mm diameter and 30 cm length. [기본문형]
 - (2) An ion exchanger resin of 100 mesh was packed in a 8-mm-diameter, 30-cm-long column. [한정용법]
 - (3) An ion exchanger resin of 100 mesh was packed in a column 8 mm diameter and 30 cm long. [서술용법]
- The investigators gave its average dimensions as 4-5 cm long (anteroposterior), 2.5-3 cm high and 0.5 cm wide.

“~을 사용하여”의 표현 방법

“수단의 의존성”에 따라 강한 순서로부터 설명하면

- (1) by using
This difficulty was obviated **by using** [D>with] ethanol as solvent. Measurements were made **by using** [D>with] an X-ray detector.
- (2) using
This phenomenon has been the subject of study by many experimenters **using** [D>with/by means of] various methods. Measurements were made **using** [D>with/by means of] an X-ray detector.
- (3) by the use of
The fission neutron flux was estimated **using** the above formula by **using** the following values of cross section.
By the use of HPLC, we were able to identify indole-3-carbinol as one of the products. This difficulty was obviated **by the use of** ethanol as solvent.
- (4) by means of
The fission neutron flux was estimated **by means of** the above formula.
- (5) by ~
The author proposes a method for calculating reactor excursions **by** [=that is based on] modal expansion.
- (6) with ~
It is of vital importance to ascertain the limits of safe storage **with** appropriate methods of cooling.

19

영어의 두음법칙

• 수 (numeral), 서수 (ordinal number), 부호, 기호, 단위, 소문자를 문두에 두지 않는다.

- 3 → Three 또는 The 3 ~
- + → Plus 또는 The + ~
- mRNA → Messenger RNA ~ ^{99m}Tc EDC → Tc-99m EDC
- 65 mg of ampicillin were ~ ~
→ Sixty-five milligrams of ampicillin **was** ~ ~

▶ And, But도 문두에 두지 않음:
And → In addition, Additionally, Furthermore,
Moreover, Also ☞ Besides는 구어체에 사용함
But → However, Nevertheless, Nonetheless,

20

단위, 소문자, 부호, 숫자가 문두에 나타나는 것을 방지하는 방법

- (1) 단위, 소문자, 부호를 전부 풀어 쓴다.
- (2) 문두에 한두 단어로 머리를 씌운다.
예1) g [-> The symbol g 또는 In addition,] is generally used for representing the acceleration of gravity.
예2) 7,321 [-> A value of 7,321] is taken as the parameter n .
예3) 0.02 g [-> A mixture 또는 A solution containing 0.02 g of 20% FBS] was added.
예4) 1995 [-> The year 1995] marked the 50th anniversary of the bombing of Hiroshima.
- (3) 구문을 고쳐 쓴다.
예1) ^{128I} is a good example of such short-lived isotopes.
→ A good example of such short-lived isotopes is ^{128I}.
예2) 12 fruits and 14 vegetables were included in the study.
→ There were 12 fruits and 14 vegetables in the study. The study population comprised 12 fruits and 14 vegetables.
예3) 2 mg of haloperidol was administered at 9 PM, followed by 1 mg at 3:30 PM.
→ At 9 PM, 2 mg of haloperidol was administered, followed by 1 mg at 3:30 PM.

§ 장소전치사 at on in

- (1)어디에 (2)어디로부터 분리되어 (3)어디로 이동하여
- 지점: (1) **at** the local clinic
(2) **(away) from** the umbilical port
(3) **to** a general ward

선, 평면: (1) **on** the skin
(2) **off** the vessel wall
(3) **onto** the mouth floor

공간: (1) **in** the operating room
(2) **out of** the peritoneal cavity
(3) **into** the hepatic artery

KTX trains stop () Daejeon City.

We live () Sunwha-Dong.

☞ All patients were actively followed **in** the allergy clinic of the Department of Internal Medicine **at** Kansas Medical Center.

22

§ Case와 Patient

Case는 사물이고, Patient는 사람이므로 사용법이 다르다

[병명] the first reported case **of** angiofibroma a 47-year-old patient **with** breast carcinoma
▶ 3 cases with profuse nasal discharge [증상, 징후]

[수술/검사항] ☉ Cholecystectomy was performed **on** 30 patients with gallstones.
☉ Cholecystectomy was performed **in** 30 cases of gallstones.

[추적관찰] ☉ Patients were **followed up** [observed]. Cases were **followed**.
☉ The patient **died**. The case **ended fatally**.
☉ The patient **recovered**. The case **ended in recovery**.

[증례보고] ☉ We describe [= report] herein a **case of** unilateral tongue angioedema **that** was induced by enalapril.
☉ We present [describe, report] herein **(the case of) a 3-year-old boy who** presented with a midline neck mass that showed radiologic calcification.

23

§ Determine, Investigate, Examine, Assess, Evaluate/Rate, Grade

Determine, Investigate, Examine, Assess, Evaluate
 사람과 사물의 특성이나 성질 또는 가치나 효과를 평가 • 조사할 때 사용한다.

- The objective of this study is to **determine** the safety of cefprozil.
- Here we **investigate** how molecular lines can be used to deduce the magnetic and thermal structure of sunspots, starspots and cool stars.
- We exhibit the complexity of the supermembrane ground state and **examine** various truncations of these models.
- The U-disequilibrium method was utilized to **evaluate** [assess] the alteration of rocks in the Corumbatai River basin, São Paulo state, Brazil.

Rate, Grade
 정해진 척도에 의해 평가하거나 점수(score)를 매기는 경우에 사용한다.

- The intensity of pain was **rated** [graded] on a 5-point scale.

24

§ Exist와 Present

Exist: 어떤 **현상, 법칙, 논쟁, 사물**이 우주에 존재한다

- [Continuing] **controversy exists** regarding the role of long-term anticoagulant therapy in lowering the incidence of recurrent myocardial infarction.
- Certain definite **contraindications** to early surgical repair **exist**.

Present: 의학연구를 위한 **실험** 중에 나타나는 **물질, 증상, 징후** 같은 **data**에 대해서는 **present**를 사용한다. 명사형 **presence**와 **existence**도 같은 **nuance**를 가진다

- If **shock is present**, suitable measures to combat it should be instituted immediately.
- ☞ 강조의 정도에 따라 **be present < be situated < be located**
 One of the roots is **present** [situated; located] on the imaginary axis, while others are present [situated; located] at symmetrical points on both sides thereof.
- The analysis revealed the **presence** of GM-CSF.

25

§ from ~ to ~, from ~ through ~와 between ~ and ~

to 다음에 오는 숫자는 포함되지 않으나, through 다음에 오는 숫자는 포함된다

- **from** March 1, 2011 **to** April 20, 2012 **inclusive**
 2011년 3월 1일부터 2012년 4월 20일까지
- **from** March 1, 2011 **through** April 20, 2012
between March 1, 2011 **and** April 20, 2012
 2011년 3월 1일부터 2012년 4월 20일까지

26

§ Range(-)와 Approximately (~)

기호 (-)는 범위를 나타내며, 기호 (~)는 "약"이라는 의미로 사용된다.

- The efficiency of this process is **100-1,000** times higher than that of degenerate TPA.
- The purpose of this section is to analyze the variations of emerging parameters on the velocity and concentration fields in Figs. **2-5**.
- The natural degradation involves the whole thickness of the linen (~**345 μm**).
- The flood-plain and subaqueous delta depos account for **~75%** of the estimated fluvial sediment discharge.

27

§ This 와 That

This [these] 와 that [those]은 지시대명사 또는 지시형용사 역할을 하며, 언어적 지시(linguistic reference)와 상황적 지시(situational reference)의 두 가지 용법을 갖는다.

언어적 지시
 This와 these는 앞에서 언급된 내용의 전부나 일부를 지시한다.

- (1) The range of hemoglobin levels is greater in older than younger subjects. **This** suggests that the subjects who had disease other than those common to the aging process were included. [여기서 this는 앞 문장 전체를 반을]
- (2) An open mind, a desire for accurate knowledge, confidence in the procedures for seeking knowledge, and the expectation that the solution of problems will come from the use of tested and proved knowledge—**these** are among the "scientific attitudes."

That와 **those**도 앞에서 언급된 내용의 일부나 전부만을 지시하는 경우에 사용된다.
 In the hot sun, the surface of the road seems wet, but **that** is only an illusion.
 (더운 날에는 도로가 축축한 것처럼 보이지만, 그것은 환상에 불과하다.)

▶ 앞서 언급된 내용을 가리킬 경우 **this** [these]는 문어체이고, **that** [those]는 구어체이나, 따라서 과학논문에서는 주로 **this/these**를 사용한다.

28

How to Improve English Expressions
 English-Language Editing for Non-English Speaking Researchers

[1차 교정] Linguistic Editing
 Corrections for grammar, spelling, and typographical errors (문장, 문단)

[2차 교정] Scientific Editing
 Manuscript preparation according to the biomedical manuscript format
 (논문의 내용과 구성): 과학논문은 **format**과 문법이 문과논문과 다르다.

▶ Manuscripts to be edited:

- (1) Manuscripts submitted SCI journals
- (2) Thesis
- (3) Abstracts and Posters for international congresses
- (4) **English presentation** at international congresses (**presentation script**)
 ⇒ 교정 의뢰 >>> 명역 의뢰 [전문영어가 어렵기 때문에]
 ☞ 검증된(evidence-based), 정형 있는 (recognized) on-line editing service에 의뢰하기

[Korea] 서울영어논문컨설팅 seoulmpc.com
 [Japan] Edanz Editing edanzediting.nl
 [Australia] Sciencedit sciencedit.com
 [Ireland] International Science Editing internationalsciencediting.com

29

영문의학논문작성 신화실기과정

- 1. 일 시: 5.17(토) 5.25(일) 6.14(토) 7.5(토) 1:00 pm-6:00 pm
- 2. 대 상: 임상진료과 단위로 또는 연구소 단위로 교수, 임상강사, 전문의사, 레지던트, 연구원이 참석함
- 3. 내 용: 영문의학논문작성 요령 + 영문 교정 및 첨삭 실습
- 4. 강 사: 이비인후과 민양기교수
- 5. 인 원: 30명 ☎ 서울대학병원 교육연구부 (02)2072-3214
- 6. 목적: 소규모 그룹을 대상으로 영작문요령과 실제 영문분석을 함께 진행하는 과정으로 강사와 교육생 간의 원활한 커뮤니케이션을 통해 교육효과를 높인다.

Seeing is believing << The proof of the pudding is in the eating.

Responses:

- (1) 영문의학논문작성법 교실강의 내용이 암기하기 어려웠는데 실기과정(세경 중료연간학원특집게 과외) 이수 후에 짧은 시간에 모두 암기하여 활용할 수 있었다.
- (2) 영어에 관해 자신감이 생겨서, 혼자 힘으로 영어논문을 작성하여 SCI역술지에 투고할 수 있었다.

