



# Evaluating relation terms and comparison in *Terminologia Anatomica*: a study on supreme

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**Abstract:** The terms of relationship and comparison, which consist of 44 elements grouped as general terms in *Terminologia Anatomica*, describe the location of anatomical structures and facilitate communication between health professionals and students. During a review in *Terminologia Anatomica*, the term ‘supreme’ was found in various structures. However, it is not part of the general terms, which could create confusion when describing and comparing anatomical structures. For this reason, this study aimed to analyze the relevance of supreme and its possible relationship with the superior term. A review of *Terminologia Anatomica* was conducted to identify structures designated by the adjective “supreme” or its Latin equivalent, *suprema*. The term was then categorized based on anatomical context. An etymological analysis of supreme and superior revealed that both terms stem from the Latin root *super*, meaning above or over. However, over time, each term evolved with distinct meanings. In *Terminologia Anatomica*, ‘superior’ is used as a comparative adjective for a higher position relative to another structure. ‘Supreme’ is a superlative adjective that indicates the highest level and the designation of structures in a principal position relative to others. Due to inconsistent usage, we suggest including ‘supreme’ in *Terminologia Anatomica* and unifying its application. Specifically, it should be limited to structures where terms such as superior, middle, and inferior are applied and when describing structures that occupy a principal position relative to others. In this sense, we suggest changing the supreme, superior and inferior nuchal lines to superior, middle and inferior nuchal lines, respectively.

**Key words:** Anatomy, Terminology, Terminology as topic, Turbinates

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## Introduction

The study of human anatomy requires a specific clinical vocabulary that defines the position, movements, relationships, and reference planes of anatomical structures [1]. To

facilitate the description of the location of anatomical structures and to provide a clear frame of reference that allows health professionals and students to effectively communicate the spatial relationships between them, a series of terms have emerged that are referred to in different ways in different bibliographic references, such terms of relationship and comparison [2, 3], terms to describe location [4], general terms of anatomical direction and situation [1, 5], general terms of orientation and position [6], terms related to anatomical position [7], among others. The definitions of these are addressed in the introductory chapters, as they are used not only in human anatomy but also in practical medicine and comparative anatomy [6]. Therefore, it is clear that without clear and accurate terminology, the interpretation of ana-

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tomical information could lead to confusion and errors in clinical practice.

Building on this, the latest edition of *Terminologia Anatomica* [8] includes 44 elements grouped as general terms (*Termini generales*), within which are the terms mentioned above. These are characterized by being organized as adjectives arranged in pairs of opposite words, such as example, superior and inferior, posterior and anterior, medial and lateral, superficial and deep, etc. However, when searching within *Terminologia Anatomica* [8], the term ‘supreme’ was found in different structures despite not being included in the list of general terms. In addition to the above, our analysis revealed that the terms supreme and highest are used interchangeably in different structures in *Terminologia Anatomica* [8], generating numerous naming inconsistencies. Considering that students’ knowledge and understanding of the terms of relationship and comparison corresponds to one of the initial challenges in the teaching-learning process of human anatomy [9], the presence of this term as well as the different translation proposals could generate ambiguities in the description of specific structures and with other terms present in *Terminologia Anatomica* [8].

In this context, the use of the adjectives superior (term in force through numerical code 18) and supreme could be confusing because both terms share a general concept related to an elevated or higher position [10]. This similarity can generate ambiguities in their interpretation by students or health professionals, especially if they do not clearly understand their differences, which makes it difficult to integrate them into precise and error-free communication within the anatomical field. Therefore, the objective of this work was to analyze the relevance of the term supreme, as well as its possible relationship with the term superior.

Materials and Methods

A search was performed in *Terminologia Anatomica* [8] for the terms supreme and its respective Latin equivalent *suprema* to identify the anatomical structures designated with these terms and their possible synonyms. Next, to determine whether there was a relationship between the terms superior and supreme, we identified structures where the use of both terms was frequent. Subsequently, we classified the use of the term supreme in the different anatomical contexts present in

**Table 1.** Term supreme or *suprema* and the anatomical structures where the adjectives superior and supreme are commonly used, as outlined in *Terminologia Anatomica* [8]

|      | Latin term                                   | Latin synonym                       | UK English                       | US English                     | English synonym                                               | Other                                                                     |
|------|----------------------------------------------|-------------------------------------|----------------------------------|--------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------|
| 570  | <i>Linea nuchalis<br/>suprema</i>            |                                     | Supreme nuchal<br>line           | Supreme nuchal line            | Highest nuchal line                                           | <i>Linea suprema nuchae;</i><br><i>Linea nuchalis<br/>supraterminalis</i> |
| 571  | <i>Linea nuchalis<br/>superior</i>           |                                     | Superior nuchal<br>line          | Superior nuchal line           |                                                               | <i>Linea superior nuchae;</i><br><i>Linea nuchalis<br/>terminalis</i>     |
| 733  | <i>(Concha nasalis<br/>suprema)</i>          |                                     | (Bony supreme<br>nasal concha)   | (Bony supreme nasal<br>concha) |                                                               | <i>Endnote 104</i>                                                        |
| 734  | <i>Concha nasalis<br/>superior</i>           |                                     | Bony superior<br>nasal concha    | Bony superior nasal<br>concha  | Superior nasal turbinate                                      | <i>Concha nasalis superior<br/>ossea</i>                                  |
| 3147 | <i>Concha suprema<br/>nasi</i>               | <i>Concha nasi<br/>suprema</i>      | Highest nasal<br>concha          | Highest nasal concha           | Highest nasal turbinate                                       | <i>Concha nasalis suprema;</i><br><i>Concha Santorini</i>                 |
| 3148 | <i>Concha superior<br/>nasi</i>              | <i>Concha nasi<br/>superior</i>     | Superior nasal<br>concha         | Superior nasal concha          | Superior nasal turbinate                                      | <i>Concha nasalis superior</i>                                            |
| 4609 | <i>Arteria<br/>intercostalis<br/>suprema</i> |                                     | Supreme<br>intercostal<br>artery | Supreme intercostal<br>artery  | Highest intercostal artery                                    |                                                                           |
| 4618 | <i>Arteria thoracica<br/>superior</i>        |                                     | Superior thoracic<br>artery      | Superior thoracic<br>artery    | Highest thoracic artery;<br>Supreme Thoracic artery           | <i>Arteria thoracalis<br/>suprema; Arteria<br/>thoracica suprema</i>      |
| 4682 | <i>Arteria descendens<br/>genus</i>          | <i>Arteria genus<br/>descendens</i> | Descending<br>genicular artery   | Descending genicular<br>artery | Highest genicular artery                                      | <i>Arteria genu suprema</i>                                               |
| 4791 | <i>Vena intercostalis<br/>suprema</i>        |                                     | Supreme<br>intercostal vein      | Supreme intercostal<br>vein    | Highest intercostal vein; First<br>posterior intercostal vein |                                                                           |

*Terminologia Anatomica* [8] to evaluate the uniformity in its application. Finally, an etymological search was carried out on the terms superior and supreme to clarify their origins and evolution.

Results

In *Terminologia Anatomica* [8], seven terms were identified that included the adjective supreme. In the case of the superior thoracic artery (4618), we found that one of the proposed English synonyms is the supreme thoracic artery. Furthermore, for most of these terms, including the one mentioned above, the English translation or proposed synonyms for the Latin adjective *suprema* is highest. Likewise, for the descending genicular artery (4791), in the English synonym column, there is the term highest genicular artery and in the other section, used to include related terms, eponyms, directional notes, and references to endnotes, there is the Latin term *Arteria genu suprema* as can be seen in Table 1. On the other hand, in certain anatomical structures, the terms ‘superior’ and ‘supreme’ were commonly used, as shown in Table 1, where the structures that also use the adjective ‘superior’ are highlighted in bold. However, in most cases, only the term ‘supreme’ appeared. We conclude that how this adjective is used in anatomical structures corresponds to different anatomical contexts, as illustrated in Table 2, which identifies four specific anatomical categories.

Finally, regarding the definitions found for the terms superior and supreme in the etymological dictionaries presented in Table 3, it was evident that the term superior refers

to a comparative adjective used to describe structures above others. On the other hand, the superlative adjective supreme covers more diverse meanings, ranging from structures in the highest position to relationships with deities, supremacy, etc.

Discussion

Anatomy forms the foundation for the practice of medicine and other disciplines within the healthcare field. As a result, students in this field need to acquire a broad knowledge and understanding of basic anatomical terms. These include the terms of relationship and comparison, which appear in *Terminologia Anatomica* [8] as part of the general terms of chapter I, entitled General Anatomy (*Anatomia generalis*). Although *Terminologia Anatomica* [8] is a systematic, coherent, and specialized compendium of terms used to describe the structures of the human body [11] that is constantly subject to updates and discussions of the relevance of its content [12], there are currently specific inconsistencies and discrepancies regarding particular terms, among which are those of relationship and comparison [9]. The term supreme, a superlative adjective used in different anatomical structures as a main term, is not found in the list of general terms, which can make the teaching-learning processes of basic anatomical terms challenging and generate confusion both in the communication and interpretation of information, as well as with the spatial location of the structures and the relationships that can arise between them. For this reason, we suggest incorporating the Latin term *suprema* into the list of general terms, as shown in Table 4. Considering that the above would require modifying established terminology, we recommend submitting this case for analysis by the International Federal Committee on Anatomical Termi-

**Table 2.** Classification of the use of the supreme term in *Terminologia Anatomica* [8]

|      | Latin term                                              | Case |
|------|---------------------------------------------------------|------|
| 570  | <i>Linea nuchalis suprema</i>                           | 1    |
| 571  | <i>Linea nuchalis superior</i>                          |      |
| 572  | <i>Linea nuchalis inferior</i>                          |      |
| 3147 | <i>Concha suprema nasi</i>                              | 2    |
| 3148 | <i>Concha superior nasi</i>                             |      |
| 3149 | <i>Concha media nasi</i>                                |      |
| 3151 | <i>Concha inferior nasi</i>                             |      |
| 4191 | <i>Arteriae intercostales posteriores</i>               | 3    |
| 4609 | <i>Arteria intercostalis suprema</i>                    |      |
| 4610 | <i>Arteria intercostalis posterior prima</i>            |      |
| 4749 | <i>Vena intercostalis superior dextra</i>               | 4    |
| 4750 | <i>Venae intercostales posteriores dextrae</i>          |      |
| 4759 | <i>Venae intercostales posteriores sinistrae mediae</i> |      |
| 4790 | <i>Venae intercostales anteriores</i>                   |      |
| 4791 | <i>Vena intercostalis suprema</i>                       |      |

**Table 3.** Definitions of the terms superior and supreme

| Dictionary                                                           | Superior                                             | Supreme                                              |
|----------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Oxford Latin dictionary [10]                                         | Higher in position, upper.                           | Highest in position, the uppermost part of, topmost. |
| A smaller Latin-English dictionary [15]                              | Comparative adjective, that is above, upper, higher. | Highest, greatest, supplicium.                       |
| Etymological dictionary of Latin and the other Italic languages [16] | Higher, stronger.                                    | Highest, last.                                       |
| Collins etymological dictionary [17]                                 | Higher, one higher or more excellent.                | Highest, the highest and greatest being.             |

**Table 4.** Terminological proposal for inclusion in *Terminologia Anatomica*

|                                                                  |     | Latin term                     | Latin synonym | UK English           | US English           | English synonym     | Other                                                       |
|------------------------------------------------------------------|-----|--------------------------------|---------------|----------------------|----------------------|---------------------|-------------------------------------------------------------|
| Current terms in <i>Terminologia Anatomica</i> [8]               | 570 | <i>Linea nuchalis suprema</i>  |               | Supreme nuchal line  | Supreme nuchal line  | Highest nuchal line | <i>Linea suprema nuchae; Linea nuchalis supraterminalis</i> |
|                                                                  | 571 | <i>Linea nuchalis superior</i> |               | Superior nuchal line | Superior nuchal line |                     | <i>Linea superior nuchae; Linea nuchalis terminalis</i>     |
|                                                                  | 572 | <i>Linea nuchalis inferior</i> |               | Inferior nuchal line | Inferior nuchal line |                     | <i>Linea inferior nuchae; Linea plani nuchalis</i>          |
| Proposal of terms for inclusion in <i>Terminologia Anatomica</i> |     | <i>Suprema</i>                 |               | Supreme              | Supreme              |                     |                                                             |
|                                                                  |     | <i>Linea nuchalis superior</i> |               | Superior nuchal line | Superior nuchal line |                     |                                                             |
|                                                                  |     | <i>Linea nuchalis media</i>    |               | Middle nuchal line   | Middle nuchal line   |                     |                                                             |
|                                                                  |     | <i>Linea nuchalis inferior</i> |               | Inferior nuchal line | Inferior nuchal line |                     |                                                             |

nology since its mission includes the continuous adaptation of anatomical terminology to advances in morphological sciences and the changing needs of medicine, biomedical sciences, and other health professions.

In addition to the points outlined above, the present study shows that the term ‘supreme’ is used in various anatomical contexts and, in some cases, alongside the terms superior, middle, and inferior. This term appears in the context of the nuchal lines, with the hierarchical order: supreme, superior, and inferior (case 1). It is also applied to identify four related structures (case 2), as seen with the nasal conchae (supreme, superior, middle, and inferior). Since the different editions of *Terminologia Anatomica* [8] show a clear tendency toward greater precision and consistency, which is crucial in clinical practice [13], the use of the term in question—without an established standardization—deviates from a uniform terminology, essential for the study of anatomy [14]. Therefore, we propose unifying the use of this adjective, limiting it to structures where the terms superior, middle, and inferior are already applied, as shown in Table 4. In this way, the term *Linea nuchalis suprema* would be modified by *Linea nuchalis superior* and *Linea nuchalis superior* would be replaced by *Linea nuchalis media* as seen in Table 4.

Regarding the terms *Arteria intercostalis suprema* (4609) and *Vena intercostalis suprema* (4791), which belong to cases 3 and 4, respectively, it was identified that, unlike cases 1 and 2, these are not related to the adjectives superior, middle and inferior. The use of the adjective supreme for cases 3 and 4 is associated with the naming of structures that occupy a principal position relative to another set of anatomical structures,

which aligns with the definitions found in the etymological dictionaries consulted [10, 15-17], so we consider that its use is justified. However, the terms linked to these structures may be a cause for discussion. For example, in the case of the term *Arteriae intercostales posteriores* (4191), its counterpart, which would be the anterior intercostal arteries, is not listed; instead, the term *Rami intercostales anteriores arteriae thoracicae internae* (4586) is used. Since standardization and alignment of anatomical and clinical terms are undoubtedly complex processes, we suggest that these terms could be subject to review in future studies.

On the other hand, although in *Terminologia Anatomica* [8], the official terms are in Latin, the respective equivalents in English are provided. In the case of the Latin adjective *suprema*, two recognized translations are used: highest and supreme. Although only Latin terms should be used as a basis for creating lists of equivalent terms in other languages [8], the different translations proposed in English generate a large number of options, which can cause confusion and is an obstacle both for terminological standardization and unification and for the translation of scientific texts [18]. Different authors have proposed that translation constitutes a fundamental element in the communication process [19, 20] and that, in order to achieve complete univocity in scientific communication, a term should correspond to a single translation in another language [21, 22]. The various translations used for the term supreme may be due to the fact that it is not included as an official term in *Terminologia Anatomica* [8]. For this reason, we recommend that when including the term supreme, the only valid translation is supreme, as shown in

Table 4. This proposal is justified by the fact that the translation of the Latin term *suprema* into English is supreme [23].

About the definitions found for the terms superior and supreme, it was evident that both share a common Latin root, 'super,' which generally has the following meanings: above, beyond, and over [12]. However, over time, each term has evolved and acquired its meaning. On the one hand, the term superior is used as a useful comparative adjective to designate a superior position compared to another. Meanwhile, supreme is a superlative adjective that, in addition to indicating the highest level, has also been linked to deities, supremacy, etc [10, 15-17]. Research into the origin and peculiarities of the development of anatomical terms is a useful exercise that can contribute to the understanding of current anatomical terminology, both for students and teachers, as well as satisfying the need for periodic updates [19, 24]. The etymological analysis carried out facilitated the understanding of the differences and similarities between both terms, helping to establish clear distinctions in their use within *Terminologia Anatomica* [8] and to improve the precision in their application in the anatomical context, thus reducing confusion and promoting a more uniform and coherent use.

Finally, in the search carried out in various bibliographic references commonly used by health students for the study of anatomy [1-7], it was found that, in addition to listing the terms of relationship and comparison, these references also include their definitions. However, none of the sources consulted offer a definition for the term supreme. The absence of this definition could make it difficult to accurately understand anatomical concepts, which may lead to incorrect interpretations. Considering this aspect and the importance of using *Terminologia Anatomica* [8] in both theoretical and clinical medicine [25], the need arises to reinforce the correct use of *Terminologia Anatomica* [8] in all areas [26]. It is suggested that future works in the field of theoretical anatomy, particularly the books used in the study of this, review and adapt their contents to ensure that key terms are clearly defined and understood by students and health professionals.

In conclusion, the Latin term *suprema* appears in various anatomical structures and contexts despite not being included in the list of general terms in *Terminologia Anatomica* [8]. Therefore, we recommend incorporating this term into the general terms list. Furthermore, we propose unifying the use of this adjective by limiting it to structures where the terms superior, middle, and inferior are applied and where its use refers to structures occupying a principal position relative to

another set of anatomical structures. In this context, we also suggest modifying the supreme, superior, and inferior nuchal lines to name them superior, middle, and inferior nuchal lines, respectively.

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