



Tribune

Orthopaedics or Orthopedics? Does the difference go beyond spelling?



1. Introduction

The OTSR editorial board is publishing an open discussion on the use of the spellings “orthopaedics” and “orthopedics”, led by Nikolaos Christodoulou, Rémi Kohler and Jean Soubrier. Greek surgeon and professor, Nikolaos Christodoulou, published a letter on the AAOS Now website in March 2018 (<https://www.aaos.org/AAOSNow/2018/Mar/YourAAOS/youraaos07/?ssopc=1>)¹, in which he explained why – in his opinion – it would be best to always use the spelling “orthopedics”.

It turns out that Christodoulou’s remarks go beyond mere spelling and touch on how this term corresponds with our current practice. As the inventors of the word “*orthopédie*”, we, the French, cannot stand on the sidelines during this debate. We know that, in 1741, Nicolas Andry was the first to coin the word “*orthopédie*”. He was undoubtedly referring to children based on the two Greek roots “*ορθός/orthos*” (= straight) and “*παιζ=παιδιον/pais-paidion*” (= child). Thus, “*orthopédie*” literally means “that which straightens a child”. The French spelling – “*orthopédie*” – has never been questioned.

Andry’s term – “*orthopédie*” – was then translated into every language. In English, it became *orthopaedics*, as indicated in the *Dictionary of the English Language* published in 1755 by Samuel Johnson, and then the *Oxford English Dictionary* – the accepted authority on the English language. In 1783, the newly independent United States of America wanted to differentiate itself from its British roots. One way to do this was through its language. Taking advantage of the lack of standardized English spelling, Noah Webster created the *American Dictionary of the English Language* to help build the new country’s identity, in part, by simplifying its spelling. Thus, *orthopaedics* became *orthopedics* across the Atlantic.

Over time, in France, the vast majority of our peers – including doctors themselves – forgot the etymological meaning of the word. But in Anglo-Saxons countries and in Greece – rightly or wrongly – the terms *orthopaedics* or, even more so, “*Ορθοπαιδική/Orthopaidike*” may be used mainly to refer to children, in the eyes of both doctors and patients. This results in some linguistic incongruities such as the pleonasm *paediatric orthopaedics* or the nonsensical term “adult orthopaedics” or even “geriatric orthopaedics”: a sort of modern variation of the riddle

the Sphinx posed to Oedipus: “What creature walks on four legs in the morning, two at noon and three in the evening?”

Professor Christodoulou – while acknowledging the initial paediatric concept – leads us along an etymological trail that would now have us use the American spelling “orthopedics” and the Greek “*Ορθοπαιδικός/Orthopedikos*”, as it fits better with what our surgical practice has become. Besides, we have seen increasing use of the spelling “orthopedics” in publications, even though the titles of the main international journals, including our own, feature “orthopaedics”. Should the term “orthopedics” come into general use? This is the leap that the Hellenic American Hippocratic Orthopedic Society wants us to take.

Rémi Kohler, a paediatric orthopaedic surgeon and member of the *Cercle Nicolas Andry* and Jean Soubrier, a linguist and English professor, bring their expertise to this debate in response to Christodoulou’s contribution. While they agree that the meaning of the word “*orthopédie*” has evolved so that it no longer corresponds to its etymology, they argue against the need to search for other etymologies to justify using the word *orthopedics*. In the end, both “orthopaedics” and “orthopedics” could be used.

We hope that these different points of view will enrich the debate.

2. “Which is correct: OrthopEdics or OrthopAEdics?” by Nikolaos Christodoulou

It’s time to establish a universally acceptable term. After many years of debate, the question of which term, orthopedics or orthopaedics, is correct remains unanswered [1].

The well-known English term “OrthopAEdics”, derived from the French term “*Orthopédie*”, originated in 1741 by Nikolas Andry. It refers to the prevention of deformities in children, based on the Greek words “*ορθός/orthos*” (straight) and “*paidion*” or “*paedion*” (child).

“OrthopEdics” (“*Ορθοπαιδική*” in Greek) is more inclusive of all age groups. Its roots are less well known, both to American orthop(e)dic surgeons, and also, unfortunately, to many modern Greek orthopedic surgeons. “OrthopEdics” is derived from the Ancient Greek word “*ορθός*” (straight) and the ancient Greek verbs “*πέδω/pEdo*” (prevent a distortion, hold strongly and steady) and “*ορθοποδώ/orthopodo*” (raising someone upright).

The term “*ορθοπαιδικός/orthopEdic-os*” was used in Greece in the early of 1900s to characterize doctors who attempted to raise upright bedridden patients using splints (“*πέδ-εζ/pEd-es*” in Ancient Greek) and “*im-ped-es*”, (“*εμπ-πόδ-ια*” in Greek) in limbs

¹ The “Which is Correct: OrthopEdics or OrthopAEdics?” letter to the editor, written by Nikolaos Christodoulou MD, PhD, was originally published in the March 2018 issue of AAOS Now, the official news magazine of the American Academy of Orthopaedic Surgeons.

and spine. These verbs are derived from the ancient Greek roots “πεδ/ped” and “ποδ/pod”). The Ancient Greek verb “πεδῶ/pedo” is found in the writings of Homer, the Ancient Greek poet and author of Iliad and Odyssey. In Iliad’s N435, the poet writes: “πέδησε δε φαίδιμα γυία/pedisse de faídima gyia” (he bound the brilliant members/limbs). Other related words in Ancient Greek are “Ορθό-πουζ/ortho-pous”, “Ορθο-ποδ-ητώ/ortho – pod – ito”, “Ορθο-ποδ-ίζω/ortho-po(e)dizo”, “πεδ-αίρω/ped-airo”, “πέδ-η/ped-i” (Bind, cuff) and “εμ-πὸδ-ιον/em-po(e)d-ion” (impede), “im-ped-io” in Latin.

Why do we consider the term “orthopAEdics”, derived from Andry’s term “orthopédie”, to be the self-evidently correct term? Why is the more inclusive “ορθοπεδικός/orthopEdics” with an “E,” considered incorrect? Up until 2000, the Greek orthopE(AE)dic society EEXOT used the term “ορθοπεδική/orthopEdics” exclusively, but changed it to “ορθοπαιδική/orthopAEdics” to be in accordance with the AAOS.

The writing/spelling of orthopedics with an “E” is the only definitive solution to a problem that has caused great confusion for many decades, especially in English-speaking countries.

Consider the following facts in support of orthopedics with an “E”:

- it is the main spelling in most languages in the world (Latin and many European languages in countries including France, Spain, Italy, Portugal, Russia, Belarus, Hungary, Bulgaria, Norway, Netherlands, Sweden, Finland, Romania, Croatia, Serbia, Latvia, Ukraine, Poland, Lithuania, Catalonia, Philippines, Esperanto, etc.);
- it is the spelling most used in modern electronic communication;
- it is visually similar to the initial term “orthopédie” of Andry’s book for children;
- it is similar to the ancient Greek roots “orthos” and “pedo” that express the im-pEd-ing and the correction of deformities in all patients, not only in children;
- We are not “paed-ics.” It would be “childlike” or “childish” for us to continue “OrthopAEdics” with “AE.”

3. Origin, meaning and spelling of the word “orthopédie” by Rémi Kohler and Jean Soubrier

We are grateful to Professor Nicolas Christodoulou for his original and interesting opinion piece—a plea for the variant spelling form: “OrthopEdics not OrthopAEdics”. It provides us with the opportunity to review the origin and meaning of the word “orthopédie” and to expand on a semantics question previously discussed in a historical essay about Nicolas Andry [2].

We would like to qualify his “spelling battle” by contributing to this debate, which will likely continue in future issues, both in our French journal, *Revue de chirurgie orthopédique et traumatologique* and its English version, *Orthopaedics and Traumatology–Surgery and Research*. In short, is there still a linguistic inconsistency in this word with two spellings, and, if so, should it be solved as our Greek colleague proposes?

3.1. How Nicolas Andry coined the word “orthopédie”

In his first two-volume book, published in 1741, *L’Orthopédie ou l’art de prévenir et de corriger dans les enfants les difformités du corps*, the author writes a long preface to explain the origin of the word “orthopédie”: “Since the meaning of the title *Orthopédie* may be beyond the grasp of some readers, I will start by explaining that the title in question is formed from two Greek words, *orthos*, which means straight or devoid of deformity, and *paidos*, which means child. From these two words, I coined the word *orthopédie*

to express in a single word what I have set out to do, namely, to teach several ways of preventing and correcting deformities in children. . .”

A bit further on, he mentions that this word is new, as two other neologisms—also based on Greek roots—had previously been suggested and rejected: “pédotrophie” (Scevole de Sainte Marthe, 1584) and “callipédie” (Quillet, 1656). This was followed by two other terms that failed to gain acceptance: “orthomorphie” (Delpuch, 1828), and “orthopraxie” (Heather Bigg, 1867).

The good fortune of “orthopédie” was no doubt linked to the fact that his book was an immediate success and was translated into English in 1743 as *Orthopaedia or the art of correcting and preventing deformities in children* and then into German in 1744. A chapter on surgery and orthopaedics published in the *Encyclopaedia* of Diderot and d’Alembert in 1763 likely also contributed to cementing this term. Furthermore, this concept is interesting because, in that era, the French population was relatively young, and the problems affecting the musculoskeletal system – whether acquired or congenital (rickets, club foot, scoliosis, limping due to leg length differences or due to hip dislocation, etc.) – mainly affected children and adolescents. Degenerative diseases in adults had not yet been documented as the life expectancy in 1750 was only about 25 years. Few people reached 50 years of age, and Andry, who died at 84 years, was clearly the exception that confirms the rule! Otherwise, his treatise was fairly superficial, sometimes amusing, yet hardly contributed any new information to the treatment, or even prevention, of these various ailments.

3.2. Evolution of the word’s meaning

The meaning of all words evolves. While it is interesting to know the etymology, we should not be a prisoner to it. Alain Rey, an eminent French linguist, believes that a language’s evolution is inherent to its vitality and that – in the end – usage prevails. The word “orthopédie” does not stray from this observation. The 19th century was still marked by the notion of “deformity”. Thus, “orthopaedic treatments” (also referred to as “conservative treatments”) flourished in “orthopaedic institutes” that were set up to treat scoliosis, club foot, hip dislocation and other diseases – with varying degrees of success (but always lucratively!).

At the turn of the 20th century, when spectacular progress in surgical practices also impacted our specialty, the field of orthopaedics was upended. After a transition period in the 1950s, during which combined “orthopaedic and paediatric surgery” departments were set up, these two specialities rapidly became independent. With adults now making up the vast majority of orthopaedic patients, their “surgical treatment” came to predominate. In everyone’s mind – and especially in that of the general public—adults became the target of orthopaedic surgery, a profession that treats musculoskeletal problems in patients of all ages. This is the current meaning of the word. Its etymological meaning is often lost on those who practice it, to the point where current language ignores the fact that “adult orthopaedics” makes no sense and “paediatric orthopaedics” is, strictly speaking, redundant. There is no need to be a purist, fighting to defend obsolete terms, especially since Andry’s memory remains very present thanks to the famous engraving of the “crooked tree” illustrating his work (p. 282), which has become the almost universal symbol of our specialty.

3.3. What about spelling?

This etymological foreword was needed to frame the subject of this debate: in English, should we continue using the generally accepted term “orthopaedics”, or should we replace it with “orthopaedics”? A few linguistic concepts will help clarify the debate. Originally, the letters AE appears in the form Æ, a grapheme

defined in various manners: ligature, bound letters, joined letters, bound ae, glued ae, etc [3]. These joined letters are found in multiple languages but somewhat rarely in French, where they are used mainly to transliterate words or phrases of Latin origin (e.g., *cæcum*, *et cætera*, *nævus*, *tænia*, *curriculum vitæ*). In French, this grapheme is invariably pronounced (é) [e] which contributes to competing written forms such as “nevus” or “ténia”. The word “orthopédie”, created by Andry, was immediately given this natural spelling, without resorting to æ or ae.

Conversely, in English, the Æ ligature tends to disappear in favour of the two non-bound letters “AE” which are used considerably more often than in French and are sometimes found in common words such as “encyclopaedia”. The broader dissemination of the AE written form in English is due to the fact that this language has stayed closer to the Greek or Latin etymology of the borrowed terms [4]. Andry’s use of “orthopaedia” during his English translation of 1743 was the natural writing that preserved the roots “pais/paidos” chosen by its author. Several other medical terms incorporating AE–haematology, anaesthesiology, etc. – are commonly used today with no paediatric connotation. But the use of AE is diminishing, especially in American English (as a concern for American efficiency!). It is increasingly being replaced by a simple “E”, as we see in scientific articles with “orthopedics”. The two spellings often coexist: for example, the British term “paediatrics”, is readily being written as “pediatrics” in the United States.

3.4. Both “orthopaedics” and “orthopedics” are correct

In light of our linguistic arguments, it is interesting to look at the occurrence of AE or E in the title of journals in our speciality. In a list of 77 indexed journals having an English title from *inCites Journal Citation Reports*, 17 have the word “Orthopedics/Orthopaedics” in their title (others do not, for example *Hand Surgery*). Among these 17 titles, only 2 use the E spelling (“Orthopedics”), such as “*Orthopedic Clinics of North America*” and “*Orthopedics*”, both of which are published in the United States. All the others use the AE spelling (“Orthopaedics”), such as: *International Orthopaedics*, *Clinical Orthopaedics*, *Journal of Orthopaedic Surgery* and course, *Orthopaedics and Traumatology: Surgery and Research* – OTSR!

The French word “orthopédie” – while keeping its original spelling – has seen its meaning evolve, from a narrow focus on paediatrics to a broad focus on adults and children, henceforth freed from its etymology. The two leading international paediatric orthopaedic journals *Journal of Pediatric Orthopaedics* (American) and *Journal of Children’s Orthopaedics* (European) use the AE spelling to conform to standard usage but specify “pediatric” or “children’s” in their title since it is no longer understood from the word “orthopaedic”. The SOFCOT is the body responsible for surgery on

the musculoskeletal system in France through all of its subspecialties, including the “paediatric” one associated with the SOFOP (French Society of Paediatric Orthopaedics) – which serves to reinforce this redundancy and make it official.

As for the spelling of this word in English, both the AE and E variants (which are both pronounced [i:]) can be used, without the first variant having to disappear in favour of the second for etymological reasons, which is now of secondary importance. As mentioned by Rey, language will no doubt continue on its path to simplification, with AE becoming E. But it is certainly not necessary to modify the titles of journals, especially our OTSR, which promotes orthopaedics in France—the country of Nicolas Andry. We feel there is no reason to change the spelling from “orthopaedics” to “orthopedics” in our title, even while aiming toward modernization, after having recently celebrated the journal’s 10-year anniversary!

Acknowledgements

The editorial staff wishes to thank all the participants in this forum and Antoinette Wolfe, a member of the OTSR translation team who helped to clarify certain aspects of the origin of the ‘ae’ grapheme and its transformation to ‘e’ across the Atlantic.

References

- [1] Christodoulou N. OrthopEdics, not OrthopAEdics: If it all Greek to you, let a Greek explain it. *BAOJ Ortho* 2017;2(2):13 <https://bioaccent.org/orthopaedics/orthopaedics13.pdf>.
- [2] Kohler R. Nicolas Andry de Bois-Regard (Lyon1658–1742), the inventor of the word « orthopaedics » and the father of parasitology. *J Child Orthop* 2010;349–55.
- [3] Wikipédia rubriques « AE » et « graphème » <https://fr.wikipedia.org/wiki/E>.
- [4] Amélie Depierre. Souvent HEAMA varie... Les dérivés du grec HEAMA en anglais: Étude de cas de variation. *Terminology* 13 2007;2:155–76.

Nikolaos Christodoulou^a

Rémi Kohler^b

Jean Soubrier^c, The OTSR editorial board^{d*}

^a Orthopedic department, Athens Medical Group/Iatriko Psychikou, Athens, Greece

^b Chirurgie orthopédique pédiatrique, université Lyon 1, 69000 Lyon, France

^c Université Lyon 2, 69000 Lyon, France

^d OTSR Editorial board, 56, rue Boissonade, 75014 Paris, France

* Corresponding author.

E-mail address: rco@sofcot.fr