

# A Need for Logical and Consistent Anatomical Nomenclature for Cutaneous Nerves of the Limbs

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The system of anatomical nomenclature needs to be logical and consistent. However, variations in translation to English of the Latin and Greek terminology used in *Nomina Anatomica* and *Terminologia Anatomica* have led to some inconsistency in the nomenclature of cutaneous nerves in the limbs. An historical review of cutaneous nerve nomenclature reveals that there are two general naming conventions: one primarily American and one primarily British. The American convention presents cutaneous nerves of the limbs in the format “medial brachial cutaneous nerve,” while the British convention presents the same nerve as “medial cutaneous nerve of the arm,” thereby translating “brachii” to “of the arm.” If logically and consistently applied throughout the body, the British convention would rename the sural nerve to the “nerve of the calf,” the brachial artery would become the “artery of the arm,” the femoral nerve would be “nerve of the thigh,” and femur would be “bone of the thigh” or “thigh bone.” The British convention leads to many other nomenclatural inconsistencies, which would seem to make learning anatomy more difficult for the beginning student. In this era of contracting anatomy curricula, every effort should be made to keep anatomical nomenclature simple, logical, and consistent. *Anat Sci Ed* 2:126–134, 2009. © 2009 American Association of Anatomists.

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## INTRODUCTION

Anatomy teachers know that the primary task that confronts the student of gross anatomy is the acquisition of a new vocabulary of human body structure. At one time, prior to the establishment of international nomenclatural rules, anatomical terminology as presented in textbooks contained a morass of descriptive terms and eponyms. Colorful terms, such as the musculospiral nerve for the radial nerve (Gray, 1858) and Poupart's ligament for the inguinal ligament (Gray, 1858), may have been memorable, but without international standards, nomenclature varied considerably from text to text. With the establishment of the Basle *Nomina Anatomica* in 1895 (His, 1895), anatomy nomenclature was placed on a path of regulation and standardization. There have been

numerous adjustments to the system of anatomical terminology, culminating in 1998 with the publication of *Terminologia Anatomica* or TA (FCAT, 1998). In this guide, Latin/Greek terms are accompanied by English equivalents. However, it is the English equivalent that presents a problem. In the preface to TA, it is stated that Latin terms would be “accompanied by a term in current usage in English-speaking countries” (FCAT, 1998). The problem arises as to which terms are considered to be in current usage in English-speaking countries.

Unfortunately, the Latin anatomical terminology in TA can be translated in various ways, and the resulting variation in terminology can, and almost certainly does, cause confusion for the beginning student of anatomy. Most of the variations in translation occur in the terminology for the cutaneous nerves of the limbs. As an example, TA offers two acceptable English equivalents for “*Nervus cutaneus brachii medialis*”: “medial brachial cutaneous nerve” and “medial cutaneous nerve of the arm.” To the seasoned anatomist, these are obviously alternate translations. However, to the beginning student of anatomy, the relationship between these terms may not be clear at all. To investigate the source of this potential confusion, we have undertaken an historical review of the terminology used for cutaneous nerves of the limbs. In the hope of saving future students from unnecessary

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sources of confusion, we propose a modification to our system of nomenclature that employs logic and consistency.

## MATERIALS AND METHODS

One hundred and fifty-two anatomy books and atlases in the holdings of the authors and the University of Michigan Medical Library were reviewed to discern the type of terminology used for the cutaneous nerves of the limbs. These extensive holdings, while not comprehensive, represent a reasonable sampling of anatomy textbooks and atlases used during the past century and a half. The year of publication, affiliation(s) of the author(s), and classification of the terminology were recorded. Five categories of terminology were determined. Category 1 was termed “unclassified,” and these books did not follow TA or *Nomina Anatomica* (IANC, 1983). Category 2 was termed “untranslated,” and these books retained the original Latin terminology. Category 3 was termed “American,” and these books used the format “medial brachial cutaneous nerve.” Category 4 was termed “British,” and these books used the format “medial cutaneous nerve of the arm.” Category 5 was termed “both,” and these books used both American and British systems at various locations within the limbs. As seen in the results, Category 3 was termed “American” because the majority of authors using this terminology had affiliations with U.S. schools. Similarly, Category 4 was termed “British” because authors in this category were most commonly affiliated with British schools. The relationship between terminology category and affiliation is treated in greater depth in the results section.

## RESULTS

Table 1 shows the classification data of the anatomy texts used in the present study. Five books were placed in Category 1, the “unclassified” category. Three of these (Bell, 1834; Gray, 1858; Wilson, 1858) predated the Basle *Nomina Anatomica* (His, 1895), while the most recent “unclassified” text was on surgical anatomy (Piersol, 1923). Nine books were in Category 2, “untranslated,” meaning that Latin terminology was used, and most of these texts were English editions of German texts (i.e., Anson, 1950; Anson and Maddock, 1952; Pernkopf, 1964, 1980; Spalteholz, 1900; Spalteholz and Spanner, 1967). In Category 5, 13 books used “both” the American and British nomenclature in various locations. (DiDio, 1970; Tobin, 1973; McMinn et al., 1984; Gosling et al., 1985; Martin, 1985; Callas, 1994; Ger et al., 1996; Backhouse and Hutchings, 1998; Putz and Pabst, 2000; Lumley et al., 1995, 2002; Rohen et al., 2002; Abrahams et al., 2003). For most of these, the British system was used in the upper limb while the American system was used in the lower limb. For several books, the “lateral femoral cutaneous nerve” was the only exception to an otherwise British rule. One of the “both” books was atypical in presenting the British nomenclature with the American nomenclature in parentheses.

Seventy-five books were placed in Category 3, using the American nomenclature system, while 50 books were placed in Category 4, the British nomenclature system (refer to Table 1). The first book to use the American nomenclature appeared in 1906 (Sobotta and McMurrich, 1906) while the first book to use the British nomenclature appeared in 1937 (Pauchet and Dupret, 1937). The historical data are summar-

ized in Figure 1. It is not at all surprising that all but 12 of the authors of American nomenclature books had affiliations with American schools, but it is somewhat surprising that none of the 12 with non-American affiliations were British. On the other hand, 16 of the books using the British nomenclature system had authors with American affiliations, and 28 were not affiliated with British schools. Of the 16 books using the British nomenclature system by authors with American affiliations, 7 were published within the past decade, and 5 within the past 4 years. The first text by an American author using the British nomenclature system appeared in 1959 (Francis, 1959). Unfortunately, it was not always possible to discern the place of training of authors, and undoubtedly this may have influenced the choice of nomenclature systems. Of the 12 authors using the British nomenclature system with affiliations at schools other than British or American, there were eight authors with affiliations in Canada, and one each from France, Australia, India, and the Netherlands.

## DISCUSSION

As teachers of anatomy, we strive to make our subject accessible for our students. The most difficult task in learning anatomy is mastering the huge new vocabulary of the human body. It should be our goal, then, to present anatomical terminology in the most comprehensible manner possible. We suggest that a logical and consistent translation of the Latin that serves as the foundation of anatomical terminology is our duty as anatomy educators. Confusion results when the Latin terminology is not translated consistently and logically. In the British nomenclature system, Latin translation occurs in one manner for cutaneous nerves, and in another manner for other structures. Hence, in the British system, “arteria femoralis” is “femoral artery,” and “nervus femoralis” is “femoral nerve,” but “nervus cutaneus femoris lateralis” is “lateral cutaneous nerve of the thigh.”

The conflict of logical and consistent translations is particularly evident where the limbs meet the trunk. Here, in the upper limb, we find the intercostobrachial nerve communicating with the medial brachial cutaneous nerve or, if the British system is logically applied, the medial cutaneous nerve of the arm communicates with the intercostal nerve of the arm. In the American system, the anterior thigh is innervated by the lateral femoral cutaneous nerve, anterior femoral cutaneous branches of the femoral nerve, and the femoral branch of the genitofemoral nerve, whereas in a consistent application of the British system, this region is supplied by the lateral cutaneous nerve of the thigh, anterior cutaneous branches of the thigh nerve, and the thigh branch of the genital thigh nerve.

The *Terminologia Anatomica* itself exhibits inconsistency in translation. As an example, the “os femoris” is translated as “thigh bone,” while “corpus femoris” is “body of femur” and “caput femoris” is “head of femur.” If translation to English equivalents were consistent, “corpus femoris” would be translated to “thigh body” and “caput femoris” would be “thigh head.” As noted earlier, “n. cutaneus femoris lateralis” is translated in TA to “lateral cutaneous nerve of the thigh,” while “n. cutaneus surae lateralis” is translated to “lateral sural cutaneous nerve” and “n. suralis” is “sural nerve.” For the nomenclature system to be consistent and logical, this should be “lateral cutaneous nerve of the calf,” and “n. suralis” should be “calf nerve.”

**Table 1.**

Anatomy Texts Classified by Nomenclature System

Author(s)	Publication date	Title
<b>Category 1: Unclassified nomenclature</b>		
Bell	1834	The Anatomy and Physiology of the Human Body, Vol.1
Gray	1858	Anatomy, Descriptive and Surgical
Pick and Howden	1901	Anatomy, Descriptive and Surgical
Piersol	1923	Human Anatomy
Wilson	1858	A System of Human Anatomy
<b>Category 2: Untranslated nomenclature</b>		
Anson	1950	An Atlas of Human Anatomy
Anson and Maddock	1952	Callander's Surgical Anatomy
Callander	1933	Surgical Anatomy
Callander	1939	Surgical Anatomy
Pernkopf	1964	Atlas of Topographical and Applied Human Anatomy
Pernkopf	1980	Atlas of Topographical and Applied Human Anatomy
Spalteholz	1900	Hand-Atlas of Human Anatomy
Spalteholz and Spinner	1967	Atlas of Human Anatomy
Wolf-Heidegger	1962	Atlas of Systematic Human Anatomy
<b>Category 3: American nomenclature system</b>		
Agur	1991	Grant's Atlas of Anatomy
Agur and Dalley	2005	Grant's Atlas of Anatomy
Anson	1966	Morris' Human Anatomy
Arnold	1968	Reconstructive Anatomy

**Table 1.**

(Continued)

Author(s)	Publication date	Title
Beck	1982	Mosby's Atlas of Functional Human Anatomy
Brantigan	1963	Clinical Anatomy
Christensen and Telford	1966	Synopsis of Gross Anatomy
Chung	1991	Gross Anatomy
Clemente	1975	Anatomy: A Regional Atlas of the Human Body
Clemente	1985	Gray's Anatomy
Clemente	1997	Anatomy: A Regional Atlas of the Human Body
Colborn and Skandalakis	1993	Clinical Gross Anatomy
Crafts	1966	A Textbook of Human Anatomy
Crafts	1985	A Textbook of Human Anatomy
Crouch	1972	Functional Human Anatomy
Dawson	1996	Basic Human Anatomy
Frick et al.	1991	Human Anatomy
Gardner and Osburn	1973	Structure of the Human Body
Gardner and Osburn	1978	Anatomy of the Human Body
Gest and Schlesinger	1994	Medcharts: Anatomy
Goss	1954	Gray's Anatomy of the Human Body
Goss	1959	Gray's Anatomy of the Human Body
Goss	1966	Gray's Anatomy of the Human Body
Gottlieb	1964	Anatomy Review
Gray	1948	Anatomy of the Human Body
Hall-Craggs	1990	Anatomy as a Basis for Clinical Medicine

**Table 1.**

(Continued)

Author(s)	Publication date	Title
Hansen	1998	Essential Anatomy Dissector
Healey	1969	A Synopsis of Clinical Anatomy
Hollinshead	1969	Anatomy for Surgeons
Hollinshead	1974	Textbook of Anatomy
Hollinshead and Rosse	1985	Textbook of Anatomy
Huber	1930	Piersol's Human Anatomy
Jackson	1914	Morris's Human Anatomy
Jacobs	1989	Shearer's Manual of Human Dissection
Kahle et al.	1992	Color Atlas and Textbook of Human Anatomy. Vol. 1 Locomotor System
Kanagasuntheram et al.	1987	Anatomy: Regional, Functional, and Clinical
Langebartel	1977	The Anatomical Primer: An Embryological Explanation of Human Gross Morphology
Langman and Woerdeman	1978	Atlas of Medical Anatomy
Leeson and Leeson	1972	Human Structure: A Companion to Anatomical Studies
Leonard	1995	Human Gross Anatomy
Lewis	1918	Gray's Anatomy of the Human Body
Lewis	1936	Gray's Anatomy of the Human Body
Lewis	1942	Gray's Anatomy of the Human Body

**Table 1.**

(Continued)

Author(s)	Publication date	Title
Lopez-Antunez and Gasparo	1971	Atlas of Human Anatomy
Mizeres	1981	Human Anatomy: A Synoptic Approach
Moore	1992	Clinically Oriented Anatomy
Netter	1987	The Ciba Collection of Medical Illustrations
Netter	1989	Atlas of Human Anatomy
Netter	2006	Atlas of Human Anatomy
Olson and Pawlina	1996	A.D.A.M. Student Atlas of Anatomy
O'Rahilly and Müller	1983	Basic Human Anatomy: A Regional Study of Human Structure
O'Rahilly	1986	Anatomy: A Regional Study of Human Structure
Pansky and House	1975	Review of Gross Anatomy
Philo et al.	1985	Guide to Human Anatomy
Quiring and Warfel	1960	The Extremities
Rarey et al.	1994	Human Anatomy: Manual of Human Dissection
Rosse and Gaddum-Rosse	1997	Hollinshead's Textbook of Anatomy
Schaeffer	1942	Morris' Human Anatomy
Slaby et al.	1994	Gross Anatomy in the Practice of Medicine
Sobotta and McMurrich	1906	Atlas and Text-Book of Human Anatomy

(Continued)

**Table 1.**

(Continued)

Author(s)	Publication date	Title
Sobotta and McMurrich	1928	Atlas of Human Anatomy
Sobotta and McMurrich	1936	Atlas of Human Anatomy
Spence	1986	Basic Human Anatomy
Stern	1988	Essentials of Gross Anatomy
Tank	2008	Grant's Dissector
Tank and Gest	2008	Lippincott Williams and Wilkins Atlas of Anatomy
Thiel	1997	Photographic Atlas of Practical Anatomy
Van De Graaff	2002	Human Anatomy
Vidić	1984	Manual of Dissection
Vidić	1984	Photographic Atlas of the Human Body
Wilson and Wilson	1978	Human Anatomy
Wilson	1988	Dissection Manual
Wischnitzer	1972	Outline of Human Anatomy
Woodburne and Burkel	1994	Essentials of Human Anatomy
Zuidema	1980	The Johns Hopkins Atlas of Human Anatomy
<b>Category 4: British nomenclature system</b>		
Aitken et al.	1956	A Manual of Human Anatomy III
Akesson et al.	1990	Thompson's Core Textbook of Anatomy
Anderson	1978	Grant's Atlas of Anatomy
Anderson	1983	Grant's Atlas of Anatomy
Basmajian	1976	Primary Anatomy
Basmajian and Slonecker	1989	Grant's Method of Anatomy

**Table 1.**

(Continued)

Author(s)	Publication date	Title
Boyd et al.	1956	Textbook of Human Anatomy
Brash	1957	Cunningham's Manual of Practical Anatomy
Cartmill et al.	1987	Human Structure
Drake et al.	2005	Gray's Anatomy for Students
Ellis	1960	Clinical Anatomy
Ellis	1999	Human Sectional Anatomy
Ellis et al.	1966	Clinical Anatomy
Francis	1959	Introduction to Human Anatomy
Gosling et al.	2002	Human Anatomy Color Atlas and Text
Grant	1958	A Method of Anatomy
Grant	1962	An Atlas of Anatomy
Grant and Basmajian	1965	Grant's Method of Anatomy
Green and Silver	1981	An Introduction to Human Anatomy
Hamilton	1976	Textbook of Human Anatomy
Jacob	2002	Atlas of Human Anatomy
Jamieson	1939	Illustrations of Regional Anatomy
Jamieson	1950	A Companion to Manuals of Practical Anatomy
Lachman	1965	Case Studies in Anatomy
Last	1955	Aids to Anatomy
Lockhart et al.	1959	Anatomy of the Human Body
McMinn and Hutchings	1977	Color Atlas of Human Anatomy
McMinn and Hutchings	1988	Color Atlas of Human Anatomy

**Table 1.**

(Continued)

Author(s)	Publication date	Title
Melloni et al.	1988	Melloni's Illustrated Review of Human Anatomy
Mitchell and Patterson	1967	Basic Anatomy
Moore and Dalley	2006	Clinically Oriented Anatomy
Morton et al.	2004	Dissection Guide for Human Anatomy
Netter and Dalley	1997	Atlas of Human Anatomy
Netter and Hansen	2003	Atlas of Human Anatomy
Pauchet and Dupret	1937	Pocket Atlas of Anatomy
Rogers	1992	Textbook of Anatomy
Romanes	1964	Cunningham's Textbook of Anatomy
Romanes	1986	Cunningham's Manual of Practical Anatomy, Vol. 1: Upper and Lower Limbs.
Sahana	1962	Human Anatomy
Sauerland	1984	Grant's Dissector
Schade	1970	Introduction to Functional Human Anatomy
Sinclair	1961	An Introduction to Functional Anatomy
Snell	1978	Atlas of Clinical Anatomy
Snell	1995	Clinical Anatomy for Medical Students
Srebnik	2002	Concepts in Anatomy

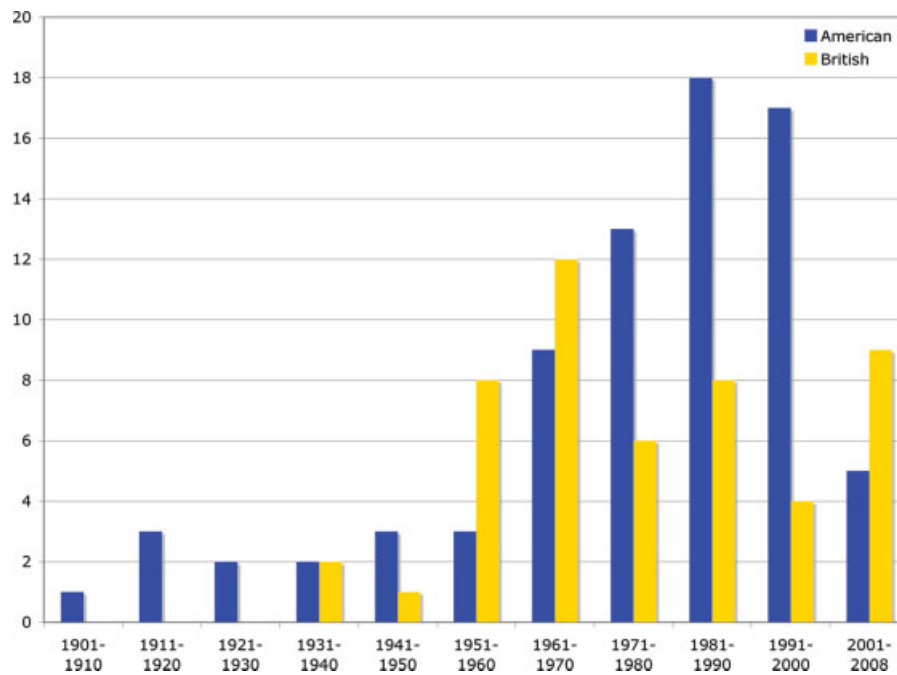
In some texts, a combination of American and British terminology styles is used (DiDio, 1970; Tobin, 1973; McMinn et al., 1984; Gosling et al., 1985; Martin, 1985; Callas, 1994; Ger et al., 1996; Backhouse and Hutchings, 1998; Putz and Pabst, 2000; Lumley et al., 1995, 2002; Rohen et al., 2002; Abrahams et al., 2003). This usually takes the form of the British style being used for the upper limb, and the American style being used for the lower limb. This would seem to aid in confusing the

**Table 1.**

(Continued)

Author(s)	Publication date	Title
Standing et al.	2005	Gray's Anatomy
Thompson	1977	Core Textbook of Anatomy
Thompson	2002	Netter's Concise Atlas of Orthopedic Anatomy
Thorek	1962	Anatomy in Surgery
Zuckerman	1961	A New System of Anatomy
<b>Category 5: Both nomenclature systems</b>		
Abrahams et al.	2003	McMinn's Color Atlas of Human Anatomy
Backhouse and Hutchings	1998	Clinical Surface Anatomy
Callas	1994	Manual for Human Dissection
DiDio	1970	Synopsis of Anatomy
Ger et al.	1996	Essentials of Clinical Anatomy
Gosling et al.	1985	Atlas of Human Anatomy
Lumley	2002	Surface Anatomy
Lumley et al.	1995	Essential Anatomy
Martin	1985	Introduction to Human Anatomy
McMinn et al.	1984	Color Atlas of Applied Anatomy
Putz and Pabst	2000	Sobotta's Atlas of Human Anatomy
Rohen et al.	2002	Color Atlas of Anatomy
Tobin	1973	Basic Human Anatomy

beginning student, who may be searching for logic within the nomenclature. A true morass of nomenclature was found in one book in the current review (Lumley, 2002). The cutaneous innervation of the lower limb contained the "femoral branch of the genitofemoral," the "lateral cutaneous nerve of the thigh," the "intermediate femoral cutaneous," "medial cutaneous nerve of the thigh," "lateral cutaneous nerve of the leg," "musculocutaneous," "sural," and "anterior tibial" (Lumley, 2002).



**Figure 1.**

Numbers of anatomy textbooks and atlases using American and British nomenclature systems, by decade.

If the British system of Latin equivalents for cutaneous nerves is consistently applied to all structures of the body, the system of anatomical nomenclature fails, and this failure might lead to catastrophic consequences. For example, “A. femoris” becomes “thigh artery,” “N. femoris” becomes “thigh nerve,” and anatomical terminology becomes common terms at the expense of precise communication of structures. Imagine the physician working on a gunshot wound to the thigh in an emergency room. Since there are at least several arteries in the thigh, imagine how rapid and accurate communication regarding ligating “A thigh artery” or “THE thigh artery” would be affected. Anatomical terminology exists to provide a precise, efficient, and intelligible description of human structure. It is our duty as anatomy educators to make anatomical nomenclature precise, logical, and consistent, so that our students can acquire their foundation in anatomy with the least amount of difficulty.

In his book, *The Tipping Point*, Malcolm Gladwell discusses the fact that before the battles of Lexington and Concord, two riders warned of the British coming: William Dawes and Paul Revere (Gladwell, 2002). One of these two men had little effect in mobilizing the militia and is not remembered, while the other succeeded in spreading his message. We hope that this article can be more like the later. We are not advocating a nomenclatural revolutionary war, but we hope that consistency and logic will tip the Battle of the Cutaneous Nerves.

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## LITERATURE CITED

- Abrahams PH, Marks SC, Hutchings RT. 2003. *McMinn's Colour Atlas of Human Anatomy*. 5th Ed. New York, NY: Mosby. 378 p.
- Agur AMR. 1991. *Grant's Atlas of Anatomy*. 9th Ed. Baltimore, MD: Williams & Wilkins. 650 p.
- Agur AMR, Dalley AF. 2005. *Grant's Atlas of Anatomy*. 11th Ed. Philadelphia, PA: Lippincott, Williams & Wilkins. 848 p.
- Aitken JT, Causey G, Joseph J, Young JZ. 1956. *A Manual of Human Anatomy III*. 1st Ed. Edinburgh, Scotland: E. & S. Livingstone. 135 p.
- Akesson EJ, Loeb JA, Wilson-Pauwels L. 1990. *Thompson's Core Textbook of Anatomy*. 2nd Ed. Philadelphia, PA: Lippincott, Williams & Wilkins. 586 p.
- Anderson JE. 1978. *Grant's Atlas of Anatomy*. 7th Ed. Baltimore, MD: Williams & Wilkins. 600 p.
- Anderson JE. 1983. *Grant's Atlas of Anatomy*. 8th Ed. Baltimore, MD: Williams & Wilkins. 700 p.
- Anson BJ. 1950. *An Atlas of Human Anatomy*. 1st Ed. Philadelphia, PA: W.B. Saunders. 518 p.
- Anson BJ. (ed.) 1966. *Morris' Human Anatomy*. 12th Ed. New York, NY: McGraw-Hill. 1623 p.
- Anson BJ, Maddock WG. (eds.) 1952. *Callander's Surgical Anatomy*. 3rd Ed. Philadelphia, PA: W.B. Saunders. 1074 p.
- Arnold M. 1968. *Reconstructive Anatomy*. 1st Ed. Philadelphia, PA: W.B. Saunders. 529 p.
- Backhouse KM, Hutchings RT. 1998. *Clinical Surface Anatomy*. 2nd Ed. London, UK: Mosby, Wolfe. 138 p.

- Basmajian JV. 1976. *Primary Anatomy*. 7th Ed. Baltimore, MD: Williams & Wilkins. 405 p.
- Basmajian JV, Slonecker CE. 1989. *Grant's Method of Anatomy*. 11th Ed. Baltimore, MD: Williams & Wilkins. 615 p.
- Beck EW. 1982. *Mosby's Atlas of Functional Human Anatomy*. 1st Ed. St. Louis, MO: Mosby. 310 p.
- Bell C. 1834. *The Anatomy and Physiology of the Human Body*. Vol. 1. 6th American Ed. New York, NY: Collins and Co. 613 p.
- Boyd JD, LeGros Clark WE, Hamilton WJ, Yoffey JM, Zuckerman S, Appleton AB. 1956. *Textbook of Human Anatomy*. 1st Ed. New York, NY: St. Martins Press. 1022 p.
- Brantigan O. 1963. *Clinical Anatomy*. 1st Ed. New York, NY: McGraw-Hill. 421 p.
- Brash JC. 1957. *Cunningham's Manual of Practical Anatomy*. 12th Ed. London, UK: Oxford University Press.
- Callander CL. 1933. *Surgical Anatomy*. 1st Ed. Philadelphia, PA: W.B. Saunders. 1115 p.
- Callander CL. 1939. *Surgical Anatomy*. 2nd Ed. Philadelphia: W.B. Saunders. 858 p.
- Callas G. 1994. *Manual for Human Dissection*. 1st Ed. Norwalk, CT: Appleton and Lange. 203 p.
- Cartmill M, Hylander WL, Shafland J. 1987. *Human Structure*. 1st Ed. Cambridge, MA: Harvard University Press. 448 p.
- Christensen JB, Telford IR. 1966. *Synopsis of Gross Anatomy*. 1st Ed. New York: Harper and Row. 248 p.
- Chung KW. 1991. *Gross Anatomy*. 2nd Ed. Media, PA: Harwal Pub. 377 p.
- Clemente CD. 1975. *Anatomy: A Regional Atlas of the Human Body*. 1st Ed. Philadelphia, PA: Lea and Febiger. 320 p.
- Clemente CD. 1985. *Gray's Anatomy*. 13th American Ed. Philadelphia, PA: Lea and Febiger. 1676 p.
- Clemente CD. 1997. *Anatomy: A Regional Atlas of the Human Body*. 4th Ed. Baltimore, MD: Williams & Wilkins. 576 p.
- Colborn GL, Skandalakis JE. 1993. *Clinical Gross Anatomy*. 1st Ed. Pearl River, NY: Parthenon Pub. 581 p.
- Crafts RC. 1966. *A Textbook of Human Anatomy*. 1st Ed. New York, NY: Ronald Press. 752 p.
- Crafts RC. 1985. *A Textbook of Human Anatomy*. 3rd Ed. New York, NY: Wiley. 906 p.
- Crouch JE. 1972. *Functional Human Anatomy*. 2nd Ed. Philadelphia, PA: Lea and Febiger. 649 p.
- Dawson HL. 1996. *Basic Human Anatomy*. 1st Ed. New York, NY: Appleton, Century, Crofts. 332 p.
- DiDio LJA. 1970. *Synopsis of Anatomy*. 1st Ed. St. Louis, MO: Mosby. 530 p.
- Drake RL, Vogl W, Mitchell AWM. 2005. *Gray's Anatomy for Students*. Philadelphia, PA: Elsevier. 1058 p.
- Ellis H. 1960. *Clinical Anatomy*. 1st Ed. Oxford, UK: Blackwell. 369 p.
- Ellis H. 1966. *Clinical Anatomy*. 3rd Ed. Oxford, UK: Blackwell. 381 p.
- Ellis H, Logan BM, Dixon AK. 1999. *Human Sectional Anatomy*. 2nd Ed. London, UK: Hodder Arnold. 245 p.
- FCAT. 1998. *Federative Committee on Anatomical Terminology, Terminologia Anatomica: International Anatomical Terminology*. 1st Ed. Stuttgart, Germany: Thieme. 292 p.
- Francis C. 1959. *Introduction to Human Anatomy*. 3rd Ed. St. Louis, MO: Mosby. 548 p.
- Frick H, Leonhardt H, Starck D. (trans. Meyer). 1991. *Human Anatomy*. 1st Ed. New York, NY: Thieme Medical Publishers. 1396 p.
- Gardner ED, O'Rahilly RO, Müller F. 1986. *Anatomy: A Regional Study of Human Structure*. 5th Ed. Philadelphia, PA: W. B. Saunders. 809 p.
- Gardner WD, Osburn WA. 1973. *Structure of the Human Body*. 2nd Ed. Philadelphia, PA: Saunders. 516 p.
- Gardner WD, Osburn WA. 1978. *Anatomy of the Human Body*. 3rd Ed. Philadelphia, PA: Saunders. 563 p.
- Ger R, Abrahams P, Olson TR. 1996. *Essentials of Clinical Anatomy*. 1st Ed. New York, NY: Parthenon Publishing Group. 544 p.
- Gest TR, Schlesinger J. 1994. *Medcharts: Anatomy*. 1st Ed. New York, NY: ILOC. 309 p.
- Gladwell M. 2002. *The Tipping Point*. 1st Ed. New York, NY: Little, Brown and Company. 304 p.
- Gosling JA, Harris PF, Humpherson JR, Whitmore I, Willan PLT. 1985. *Atlas of Human Anatomy*. 1st Ed. London, UK: Gower Medical. 310 p.
- Gosling JA, Harris PF, Whitmore I, Willan PLT. 2002. *Human Anatomy Color Atlas and Text*. 4th Ed. Edinburgh, Scotland: Mosby. 377 p.
- Goss CM. 1954. *Gray's Anatomy of the Human Body*. 26th Ed. Philadelphia, PA: Lea and Febiger. 1480 p.
- Goss CM. 1959. *Gray's Anatomy of the Human Body*. 27th Ed. Philadelphia, PA: Lea and Febiger. 1458 p.
- Goss CM. 1966. *Gray's Anatomy of the Human Body*. 28th Ed. Philadelphia, PA: Lea and Febiger. 1448 p.
- Gottlieb MI. 1964. *Anatomy Review*. 2nd Ed. Flushing, NY: Medical Examination Publishing Company. 210 p.
- Grant JC. 1958. *A Method of Anatomy*. 6th Ed. Baltimore, MD: Williams & Wilkins. 879 p.
- Grant JC. 1962. *An Atlas of Anatomy*. 5th Ed. Baltimore, MD: Williams & Wilkins.
- Grant JC, Basmajian JV. 1965. *Grant's Method of Anatomy*. 7th Ed. Baltimore, MD: Williams & Wilkins. 777 p.
- Gray H. 1858. *Anatomy, Descriptive and Surgical*. 1st Ed. Philadelphia, PA: Blanchard and Lea. 754 p.
- Gray H, Goss CM. (eds.) 1948. *Anatomy of the Human Body*. 25th Ed. Philadelphia, PA: Lea and Febiger. 1478 p.
- Green JH, Silver PHS. 1981. *An Introduction to Human Anatomy*. 1st Ed. New York, NY: Oxford University Press. 424 p.
- Hall-Craggs ECB. 1990. *Anatomy as a Basis for Clinical Medicine*. 2nd Ed. Baltimore, MD: Williams & Wilkins. 593 p.
- Hamilton WJ. (ed.) 1976. *Textbook of Human Anatomy*. 2nd Ed. London, UK: Macmillan. 753 p.
- Hansen JT. 1998. *Essential Anatomy Dissector*. 1st Ed. Baltimore, MD: Williams & Wilkins. 191 p.
- Healey JE. 1969. *A Synopsis of Clinical Anatomy*. 1st Ed. Philadelphia, PA: Saunders. 324 p.
- His W. 1895. *Die anatomische Nomenclatur*. (Basel) Nomina Anatomica. 1st Ed. Arch Anat Phys Anat Abth Suppl. Leipzig, Germany: Veit. 180 p.
- Hollinshead WH. 1969. *Anatomy for Surgeons*. 2nd Ed. New York, NY: Hoeber Medical. 619 p.
- Hollinshead WH. 1974. *Textbook of Anatomy*. 3rd Ed. New York, NY: Harper and Row. 985 p.
- Hollinshead WH, Rosse C. 1985. *Textbook of Anatomy*. 4th Ed. Philadelphia: Harper and Row. 1041 p.
- Huber GC. (ed.) 1930. *Piersol's Human Anatomy*. 9th Ed. Philadelphia, PA: Lippincott. 2104 p.
- IANC. 1983. *International Anatomical Nomenclature Committee, Nomina Anatomica: A Revision by the International Anatomical Nomenclature Committee Approved by the Eleventh International Congress of Anatomists in Mexico City, 1980*. 5th Ed. Baltimore, MD: Williams & Wilkins. 86 p.
- Jackson CM. 1914. *Morris's Human Anatomy*. 5th Ed. Philadelphia, PA: P. Blakiston's Son.
- Jacobs JJ. (ed.) 1989. *Shearer's Manual of Human Dissection*. 7th Ed. New York, NY: McGraw-Hill. 288 p.
- Jacob S. 2002. *Atlas of Human Anatomy*. 1st Ed. New York, NY: Churchill Livingstone. 252 p.
- Jamieson EB. 1939. *Illustrations of Regional Anatomy*. 2nd Ed. Edinburgh, Scotland: E. & S. Livingstone. Section VI: 42 p. and Section VII: 52 p.
- Jamieson EB. 1950. *A Companion to Manuals of Practical Anatomy*. 7th Ed. New York, NY: Oxford University Press. 736 p.
- Kahle W, Leonhardt H, Platzer W. 1992. *Color Atlas and Textbook of Human Anatomy. Locomotor System*. Vol. 1. 4th Ed. Stuttgart, Germany: G. Thieme Verlag. 435 p.
- Kanagasuntheram R, Sivanandasingham P, Krishnamurti A. 1987. *Anatomy: Regional, Functional and Clinical*. 1st Ed. Singapore: P G Publishers. 649 p.
- Lachman E. 1965. *Case Studies in Anatomy*. 1st Ed. New York, NY: Oxford University Press. 238 p.
- Langebartel DA. 1977. *The Anatomical Primer: An Embryological Explanation of Human Gross Morphology*. 1st Ed. Baltimore, MD: University Park Press. 510 p.
- Langman J, Woerdeman MW. 1978. *Atlas of Medical Anatomy*. 1st Ed. Philadelphia, PA: Saunders. 523 p.
- Last RJ. 1955. *Aids to Anatomy*. 11th Ed. London, UK: Baillière, Tindall and Cox. 379 p.
- Leeson CR, Leeson TS. 1972. *Human Structure: A Companion to Anatomical Studies*. 1st Ed. Philadelphia, PA: Saunders. 383 p.
- Leonard RJ. 1995. *Human Gross Anatomy*. 1st Ed. New York, NY: Oxford University Press. 437 p.
- Lewis WH. 1918. *Gray's Anatomy of the Human Body*. 20th Ed. Philadelphia, PA: Lea and Febiger. 1396 p.
- Lewis WH. 1936. *Gray's Anatomy of the Human Body*. 23rd Ed. Philadelphia, PA: Lea and Febiger. 1381 p.
- Lewis WH. 1942. *Gray's Anatomy of the Human Body*. 24th Ed. Philadelphia, PA: Lea and Febiger. 1428 p.
- Lockhart RD, Hamilton GF, Fyfe FW. 1959. *Anatomy of the Human Body*. 1st Ed. Philadelphia, PA: Lippincott. 697 p.
- Lopez-Antunez L, Gasparo LA. 1971. *Atlas of Human Anatomy*. 1st Ed. Philadelphia, PA: Saunders. 366 p.
- Lumley JSP. 2002. *Surface Anatomy*. 3rd Ed. Edinburgh, Scotland: Churchill Livingstone. 135 p.



- Lumley JSP, Craven JL, Aiken JT. 1995. *Essential Anatomy*. 5th Ed. Edinburgh, Scotland: Churchill Livingstone. 592 p.
- Martin AH. 1985. *Introduction to Human Anatomy*. 1st Ed. New York, NY: Thieme-Stratton. 572 p.
- McMinn RMH, Hutchings RT. 1977. *Color Atlas of Human Anatomy*. 1st Ed. Chicago, IL: Year Book Medical Publishers. 352 p.
- McMinn RMH, Hutchings RT, Logan BM. 1984. *Color Atlas of Applied Anatomy*. 1st Ed. Chicago, IL: Year Book Medical Publishers. 214 p.
- McMinn RMH, Hutchings RT. 1988. *Color Atlas of Human Anatomy*. 2nd Ed. Chicago, IL: Year Book Medical Publishers. 358 p.
- Melloni JL, Dox I, Melloni HP, Melloni BJ. 1988. *Melloni's Illustrated Review of Human Anatomy*. 1st Ed. Philadelphia, PA: Lippincott. 268 p.
- Mitchell GA, Patterson EL. 1967. *Basic Anatomy*. 2nd Ed. Edinburgh, Scotland: E. & S. Livingstone. 623 p.
- Mizeres NJ. 1981. *Human Anatomy: A Synoptic Approach*. 1st Ed. New York, NY: Elsevier. 341 p.
- Moore KL. 1992. *Clinically Oriented Anatomy*. 3rd Ed. Baltimore, MD: Williams & Wilkins. 917 p.
- Moore KL, Dalley AF. 2006. *Clinically Oriented Anatomy*. 5th Ed. Philadelphia, PA: Lippincott, Williams & Wilkins. 1209 p.
- Morton DA, Peterson KD, Albertine KH. 2004. 1st Ed. *Dissection Guide for Human Anatomy*. Philadelphia, PA: Churchill Livingstone. 466 p.
- Netter FH. 1987. *The Ciba Collection of Medical Illustrations*. Vol. 13. 1st Ed. Summit, NJ: CIBA-GEIGY Corp.
- Netter FH. 1989. *Atlas of Human Anatomy*. 1st Ed. Summit, NJ: CIBA-GEIGY Corp. 550 p.
- Netter FH, Dalley AF. 1997. *Atlas of Human Anatomy*. 2nd Ed. East Hanover, NJ: Novartis. 525 p.
- Netter FH, Hansen JT. 2003. *Atlas of Human Anatomy*. 3rd Ed. Teterboro, NJ: Icon Learning Systems. 590 p.
- Netter FH. 2006. *Atlas of Human Anatomy*. 4th Ed. Philadelphia, PA: Saunders. 640 p.
- Olson TR, Pawlina W. 1996. *A.D.A.M. Student Atlas of Anatomy*. 1st Ed. Baltimore, MD: Williams & Wilkins. 492 p.
- O'Rahilly RO, Müller F. 1983. *Basic Human Anatomy: A Regional Study of Human Structure*. 1st Ed. Philadelphia, PA: Saunders. 566 p.
- Pansky B, House EL. 1975. *Review of Gross Anatomy*. 3rd Ed. New York, NY: Macmillan. 508 p.
- Pauchet V, Dupret S. 1937. *Pocket Atlas of Anatomy*. 3rd Ed. London, UK: Oxford University Press. 368 p.
- Pernkopf E, Ferner H, Monsen H. (eds.) 1964. *Atlas of Topographical and Applied Human Anatomy*. 2nd Ed. München, Germany: Urban & Schwarzenberg. 777 p.
- Pernkopf E. 1980. *Atlas of Topographical and Applied Human Anatomy*. 3rd Ed. Wien, Austria: Urban & Schwarzenberg. 778 p.
- Philo R, Bosner MS, LeMaistre A, Linner JG, Venger BH. 1985. *Guide to Human Anatomy*. 1st Ed. Philadelphia, PA: Saunders. 335 p.
- Pick TP, Howden R. (eds.) 1901. *Anatomy, Descriptive and Surgical*. 15th Ed. London, UK: Longmans, Green. 1096 p.
- Piersol GA. (ed.) 1923. *Human Anatomy*. 8th Ed. Philadelphia, PA: Lippincott. 2104 p.
- Putz R, Pabst R. 2000. *Sobotta's Atlas of Human Anatomy*. 13th Ed. Philadelphia, PA: Lippincott Williams & Wilkins. 833 p.
- Quiring DP, Warfel JH. 1960. *The Extremities*. 2nd Ed. Philadelphia, PA: Lea and Febiger. 120 p.
- Rarey KE, Romrell LJ, Pawlina W, Rosenberg JJ. 1994. *Human Anatomy: Manual of Human Dissection*. 1st Ed. Gainesville, FL: Gold Standard Multimedia. 258 p.
- Rogers AW. 1992. *Textbook of Anatomy*. 1st Ed. Edinburgh, Scotland: Churchill Livingstone. 779 p.
- Rohen JW, Yokochi C, Lutjen-Drecoll E. 2002. *Color Atlas of Anatomy*. 5th Ed. Baltimore, MD: Lippincott Williams & Wilkins. 500 p.
- Romanes GJ. 1964. *Cunningham's Textbook of Anatomy*. 10th Ed. New York, NY: Oxford University Press. 1014 p.
- Romanes GJ. 1986. *Cunningham's Manual of Practical Anatomy. Upper and Lower Limbs*. Vol. 1. 15th Ed. New York, NY: Oxford University Press. 240 p.
- Rosse C, Gaddum-Rosse P. 1997. *Hollinshead's Textbook of Anatomy*. 5th Ed. Philadelphia, PA: Lippincott-Raven Publishers. 902 p.
- Sahana SN. 1962. *Human Anatomy*. 1st Ed. Calcutta, India: Central Book Agency. 1244 p.
- Sauerland EK. 1984. *Grant's Dissector*. 9th Ed. Baltimore, MD: Williams & Wilkins. 187 p.
- Schade JP. 1970. *Introduction to Functional Human Anatomy*. 1st Ed. Philadelphia, PA: Saunders. 189 p.
- Schaeffer JP. (ed.) 1942. *Morris' Human Anatomy*. 10th Ed. Philadelphia, PA: Blakiston. 1641 p.
- Sinclair D. 1961. *An Introduction to Functional Anatomy*. 2nd Ed. Oxford, UK: Blackwell. 447 p.
- Slaby FJ, McCune SK, Summers RW. 1994. *Gross Anatomy in the Practice of Medicine*. 1st Ed. Philadelphia, PA: Lea and Febiger. 699 p.
- Snell RS. 1978. *Atlas of Clinical Anatomy*. 1st Ed. Boston, MA: Little, Brown. 530 p.
- Snell RS. 1995. *Clinical Anatomy for Medical Students*. 5th Ed. Boston, MA: Little, Brown. 898 p.
- Sobotta J, McMurrich JP. 1906. *Atlas and Text-Book of Human Anatomy*. Vol. 3. 1st Ed. Philadelphia, PA: W.B. Saunders. 342 p.
- Sobotta J, McMurrich JP. 1928. *Atlas of Human Anatomy*. 2nd Ed. Philadelphia, PA: W.B. Saunders. 785 p.
- Sobotta J, McMurrich JP. 1936. *Atlas of Human Anatomy*. Vol. 3. 4th Ed. New York, NY: Stechert. 350 p.
- Spalteholz W. 1900. *Hand-Atlas of Human Anatomy*. 3rd Ed. Leipzig, Germany: S. Hirzel. 902 p.
- Spalteholz W, Spanner R. 1967. *Atlas of Human Anatomy*. 16th Ed. Philadelphia, PA: F.A. Davis Co. 904 p.
- Spence AP. 1986. *Basic Human Anatomy*. 2nd Ed. Menlo Park, CA: Benjamin/Cummings Pub. Co. 688 p.
- Srebnik HH. 2002. *Concepts in Anatomy*. 1st Ed. Boston, MA: Kluwer Academic Publishers. 239 p.
- Standring S, Ellis H, Healy JC, Johnson D, Williams A. 2005. *Gray's Anatomy*. 39th Ed. Edinburgh, Scotland; New York, NY: Elsevier Churchill Livingstone. 1627 p.
- Stern JT. 1988. *Essentials of Gross Anatomy*. 1st Ed. Philadelphia, PA: Davis. 795 p.
- Tank PW. 2008. *Grant's Dissector*. 14th Ed. Philadelphia, PA: Lippincott, Williams & Wilkins. 288 p.
- Tank PW, Gest TR. 2008. *Lippincott Williams & Wilkins Atlas of Anatomy*. 1st Ed. Philadelphia, PA: Lippincott, Williams & Wilkins. 432 p.
- Thiel W. 1997. *Photographic Atlas of Practical Anatomy*. 1st Ed. Berlin, Germany: Springer. 417 p.
- Thompson JS. 1977. *Core Textbook of Anatomy*. 1st Ed. Philadelphia, PA: Lippincott. 431 p.
- Thompson JC. (ed.) 2002. *Netter's Concise Atlas of Orthopaedic Anatomy*. 1st Ed. Teterboro, NJ: Icon Learning Systems. 320 p.
- Thorek P. 1962. *Anatomy in Surgery*. 2nd Ed. Philadelphia, PA: Lippincott. 904 p.
- Tobin CE. 1973. *Basic Human Anatomy*. 1st Ed. New York, NY: McGraw-Hill. 342 p.
- Van De Graaff KM. 2002. *Human Anatomy*. 6th Ed. Boston, MA: McGraw-Hill Higher Education. 840 p.
- Vidić B. 1984. *Manual of Dissection*. 1st Ed. St. Louis, MO: C.V. Mosby. 118 p.
- Vidić B, Suarez FR. 1984. *Photographic Atlas of the Human Body*. 1st Ed. St. Louis, MO: C.V. Mosby. 464 p.
- Wilson DB, Wilson WJ. 1978. *Human Anatomy*. 1st Ed. Baltimore, MD: Williams & Wilkins. 454 p.
- Wilson E, Gobrecht WH. (eds.) 1858. *A system of human anatomy*. 7th Ed. Philadelphia, PA: Blanchard and Lea. 616 p.
- Wilson JL. 1988. *Dissection Manual*. 2nd Ed. New York, NY: Igaku-Shoin Medical Publishers. 244 p.
- Wischnitzer S. 1972. *Outline of Human Anatomy*. 1st Ed. Springfield, IL: Thomas. 392 p.
- Wolf-Heidegger G. 1962. *Atlas of Systematic Human Anatomy*. 1st Ed. New York, NY: Hafner Pub. Co. 635 p.
- Woodburne RT, Burkel WE. 1994. *Essentials of Human Anatomy*. 9th Ed. New York, NY: Oxford University Press. 687 p.
- Zuckerman S. 1961. *A New System of Anatomy*. 1st Ed. London, UK: Oxford University Press. 579 p.
- Zuidema GD. 1980. *The Johns Hopkins Atlas of Human Anatomy*. 2nd Ed. Baltimore, MD: Johns Hopkins University Press. 115 p.