

Milady Standard Cosmetology

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EDITION

14





Milady Standard

Cosmetology

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14TH EDITION

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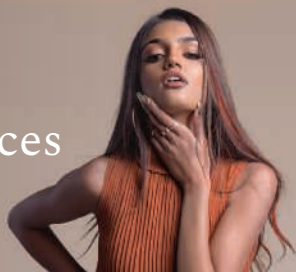
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Full-service procedures now include the estimated time to complete!

Use the average timing to check your progress and to help with appointment booking.

Length of hair may impact the time of service.

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Preface



Mr. Nicholas F. Cimaglia,
founder of Milady

Congratulations! You are about to begin a journey that can take you in many directions and that holds the potential to make you a confident, successful professional in cosmetology. As a cosmetologist, you will become a trusted professional—the person your clients rely on to provide ongoing services that enable them to look and feel their best. You will become as personally involved in your clients' lives as their physicians or dentists, and with study and practice, you will have the opportunity to showcase your artistic and creative talents for the entire world to see!

You and your school have chosen the perfect course of study to accomplish all of this and more. Milady Standard Cosmetology was the creation of Nicholas F. Cimaglia, founder of Milady Publishing Company, in 1927. The very first edition of Milady Standard Cosmetology was published in 1938, and since that time, many of the world's most famous, sought-after, successful, and artistic professional cosmetologists have studied this very course.

Milady employs experts from all aspects of the beauty profession—hair care, skin care, nail care, massage, makeup, infection control, and business development—to write for and consult on every product published. Since the field of cosmetology is always changing, progressing, and discovering new technologies, services, and styles, Milady keeps a close eye on its content and is committed to investing the time, energy, resources, and efforts to revising its educational offerings to provide the beauty industry with the most up-to-date and all-encompassing tools available.

So you see, by studying the Milady Standard Cosmetology, you have not simply opened a page, you've been adopted by a family of the most well-known and highly respected professional cosmetology educators in the world.

THE EVOLVING INDUSTRY STANDARD

Milady has been committed to quality education for beauty professionals just like you since our beginning. Tens of millions of licensed professionals have begun their careers studying from our industry-leading content.

Time has changed, but our dedication to evolving and raising the Standard has not. We at Milady continue to supply the most comprehensive learning solutions to serve you, today's learner. The newest edition of Milady Standard Cosmetology is available to you in multiple formats: the traditional print version, an e-book, and CIMA, our new interactive, digital learning experience complete with activities, learning tools, and newly updated video content. We know you are juggling life with learning and a variety of resources, in print or digital, provides you with options that meet your personal needs wherever or whenever you are learning.

Milady would like to thank the students, educators and professionals who took part in surveys and reviews ensuring that the changes needed to be made were inclusive of everyone's voice. We would also like to thank all learners, past and present, for being vocal about your needs and giving Milady the opportunity to evolve and provide you with the very best in cosmetology education.

We are grateful for your trust in us. Your passion, creativity, and devotion to your craft and to your customers combined with proven Milady content will set you on the path to a lifetime of opportunities and success. Congratulations on taking the first step toward your future as a beauty professional!

— **Sandra Bruce** SVP and General Manager, Milady



Featured Highlights

In response to the suggestions of the cosmetology educators and professionals who reviewed the Milady Standard Cosmetology and to those submitted by students who use this text, this edition has been updated to include many new features and learning tools.



LEFT-HANDED INSTRUCTION

Based on feedback from previous editions, Milady continues to include left-handed procedures in the haircutting and hairstyling chapters with full color photography. A great feature for left-handed students, as they will see professionals using their left hand to hold and manipulate the hair and tools.



CHECK IN QUESTIONS

Instead of placing review questions at the end of each chapter, Check In questions have been added to the end of the section that they cover. This allows you to check your understanding as you progress through a chapter as opposed to waiting until you have finished the chapter to simply check your memory. Check In questions also make it easier to find any answers you need help with.



QR CODES

Milady Standard Cosmetology has integrated QR Codes throughout the product to enhance your learning experience with additional material and multimedia content. To view full images and text, scan the QR Code in the +Bonus box. If using an iPhone, use the camera to scan the code and tap the pop-up notification. If you do not receive a notification, check to make sure you have the Scan QR Codes feature enabled in your Camera settings. If using an Android, use Google Lens or another app to scan the code and tap the pop-up notification. All of the content on the QR Code can also be accessed at the following website: ***bonus.milady.com/cos14***

Example:

	+ BONUS Scan or visit: bonus.milady.com/cos/p12-4
© 12-4: Blowdrying Short, Curly Hair in Its Natural Wave Pattern - left	

Featured Highlights

NEW ORGANIZATION OF CHAPTERS

The information in this text and that of Milady Standard Foundations, along with your educators' instruction, will enable you to develop the abilities you need to build a loyal and satisfied clientele. To help you locate information more easily, the chapters are grouped into five main parts.



PART 01: ORIENTATION

Orientation consists of chapters that cover the field of cosmetology and the personal skills you will need to become successful. Chapter 1, History and Career Opportunities, outlines how the profession of cosmetology came into being and where it can take you. The remaining Orientation chapters can be found in Milady Standard Foundations, including: Life Skills, Professional Image, and Communicating for Success.



PART 02: HEALTH SCIENCES

Health Sciences includes important information you need to know in order to keep yourself and your clients safe and healthy. The chapters provide essential information that will affect how you interact with clients and how you use service products and tools. See Milady Standard Foundations for your updated Infection Control content, as well as chapters on The Healthy Professional, Chemistry & Chemical Safety, and Electricity & Electrical Safety.



PART 03: HAIR SERVICES

Hair Services offers information on every aspect of hair, explores the ways hair can be sculpted to enhance a client's facial shape, and comes complete with step-by-step procedures for core cuts with fantastic new glamour shots to show the finished look.



PART 04: SKIN CARE SERVICES

Skin Care focuses on another area in which new advances have altered the way students must be trained. This part covers waxing, tweezing, and other popular methods of removing unwanted hair from the face and body. Facials and Makeup chapters offer the critical information you'll need for these increasingly requested services in the expanding field of esthetics.



PART 05: NAIL SERVICES

Nail Services contains completely revised chapters including Manicuring, Pedicuring, Nail Extensions and Resin Systems, Liquid and Polymer Nail Enhancements, and the Light-Cured Gels chapter, with expanded information on nail art.

Meet the Contributors

Milady recognizes the many gifts and talents of its contributors worldwide. It is with gratitude that we thank these very special contributors of the 14th edition of Milady Standard Cosmetology! Every great contributor is a unique educational resource and continues to expand their experience and achievements over time. We are pleased to share their current biographies and a glimpse into what they have accomplished by scanning the QR Code provided.



Scan or visit:

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Thank You

Milady recognizes, with gratitude and respect, the many professionals who have offered their time to contribute to this edition of *Milady Standard Cosmetology* and wishes to extend enormous thanks to the cosmetologists, schools, and product suppliers who have played an invaluable role in the creation of this edition. And the many reviewers who have weighed in at all stages of production. Without you this edition could not be what it is.



Milady Standard

Cosmetology

14TH EDITION



ORIENTATION



CHAPTER 01:

History and Career Opportunities

Learning Objectives

After completing this chapter, you will be able to:

- LO 1** Explain the benefits of learning cosmetology's history.
- LO 2** Outline how ancient civilization beauty practices influenced modern-day cosmetology.
- LO 3** Describe beauty and grooming during the Middle Ages.
- LO 4** List the Renaissance and Victorian age's beauty developments.
- LO 5** Describe the beauty industry's evolution during the early twentieth century.
- LO 6** Outline the mid- and late twentieth century's major beauty advances.
- LO 7** Describe important trends that defined cosmetology in the twenty-first century.
- LO 8** List career opportunities for licensed cosmetologists.



01

*I never dreamed
about success.
I worked for it.*

“

—
Estée Lauder

Cosmetics Pioneer,
Businessperson,
and Philanthropist



LO 1

Explain the benefits of learning
cosmetology's history.



Why Study Cosmetology History and Career Opportunities?

Cosmetology, also referred to as **appearance enhancement**, is the art and science of beautifying and improving the skin, nails, and hair, as well as the study of cosmetics and their applications. The term comes from the Greek word *kosmetikos*, meaning skilled in cosmetics use.

Although procedures, products, and styles have changed, beautification has been highly valued since the dawn of humankind. Cosmetologists should have a thorough understanding of cosmetology history and career opportunities because:

- Many older methods have evolved into techniques still used today.
- Knowing cosmetology history helps you understand beauty trends and their origins.
- You'll discover the wide range of possible cosmetology career paths available to you.



Check In

1. What is the definition of cosmetology?

**LO 2**

Outline how ancient civilization beauty practices influenced modern-day cosmetology.

Hair: Lauren Moser, Photo: Kristen Correa-Flint



Ancient Cultures

Ancient civilizations often used hairstyles and beauty techniques to convey status, wealth, age, and rank. Many modern beauty practices are rooted in African, Egyptian, Chinese, Greek, and Roman cultures.

The Africans

Braiding began in Africa with the Himba people of Namibia (circa 3500 BCE), who created cornrow braids. The Zulu tribes in South Africa first wore Zulu knots (also called Bantu knots). In many ancient African tribes, braid patterns and hairstyles indicated a person's tribe, age, marital status, wealth, power, and religion. Many tribes colored the hair with red earth and wore elaborate hairstyles and headdresses as stature symbols.

Fig. 1-1 Ancient African influenced hairstyle.

Braiding was and is a social art; because of how long it takes, people throughout history have used the time to socialize. Elders braided their children's hair, and the children watched and learned. This braiding and social bonding tradition has been carried for generations and quickly made its way across the world.

From the earliest images, African people's hair was a preeminent reflection of their well-being and existence in the world. Adorning the head with elaborate hairstyles was and still is a cultural art form in the African aesthetic (**Figure 1-1**).

The Egyptians

In North Africa, ancient Egyptian wall murals (circa 3100 BCE) depict figures wearing locs, box braids, and wigs. The Egyptians were the first to cultivate beauty in an extravagant fashion. As early as 2630 BCE, Egyptians used minerals, insects, and berries to create lip and skin makeup. Henna was used to stain the hair and nails a rich, warm red. Cosmetics use became part of their personal beautification habits, religious ceremonies, and burial preparation. Ancient Egyptians are credited with creating kohl makeup—originally made from a mixture of ground galena (a black mineral), sulfur, and animal fat—to heavily line the eyes, alleviate eye inflammation, and protect the eyes from the sun's glare (**Figure 1-2**).

Professional Hair and Makeup Artist
Shane Doucet



Fig. 1-2 Egyptian influenced makeup.

They were also the first civilization to use essential oils from plant leaves, bark, and blossoms as perfumes and for purification purposes. Ruins discovered near the Dead Sea suggest that Queen Cleopatra (circa 50 BCE) owned a perfume factory offering massages, essential oils, and other beauty treatments.

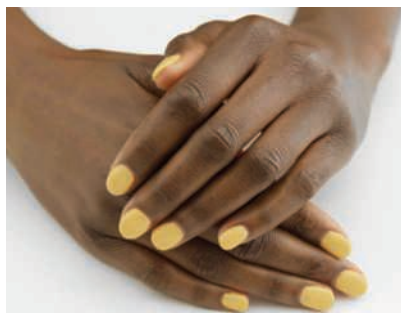
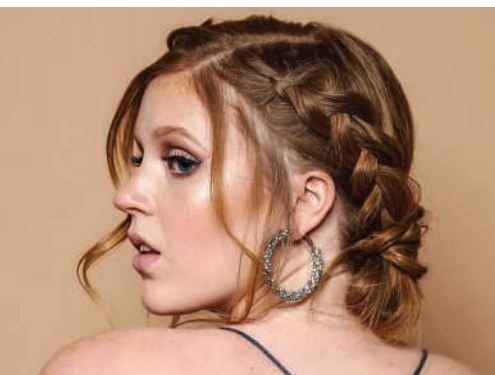


Fig. 1-3 Chinese influenced gold nails.

The Chinese

During the Shang Dynasty (circa 1600 BCE), Chinese aristocrats rubbed a tinted mixture of gum arabic, gelatin, beeswax, and egg whites onto their nails to color them crimson or ebony. Later, throughout the Zhou Dynasty, also known as the Chou Dynasty (circa 1100 BCE), gold and silver were the royal nail colors (**Figure 1-3**). During this early period in Chinese history, nail tinting was so closely tied to social status that a commoner caught wearing a royal nail color faced a punishment of death.



Hair: Haus Of Flint Photo: Kristen Correa-Flint

Fig. 1-4 Greek inspired hairstyle.



Eli Mancha

Fig. 1-5 The modernized Caesar haircut.

The Greeks

During the Golden Age of Greece (circa 500 BCE), hairstyling became a highly developed art. Early Greek sculptures show subjects wearing crown braids and chignons, two styles that have remained popular for more than a millennium (**Figure 1-4**).

The ancient Greeks lavishly used perfumes and cosmetics in their religious rites and for grooming and medicinal purposes. Greek women applied white lead preparations to their face; kohl around their eyes; and vermillion, a bright red color made from crushed cinnabar, on their cheeks and lips.

The Romans

Roman women lavishly used fragrances and cosmetics. Facials made of milk and bread or fine wine were popular. They used a mixture of chalk and white lead as a facial cosmetic. Women used haircolor to indicate class: noblewomen tinted their hair red; middle-class women colored their hair blonde; poor women dyed their hair black.

One of the most famous Roman hairstyles for men was named after its creator, Julius Caesar. Caesar hid his thinning hair by combing his sparse strands forward over the crown of his head to just below his hairline (**Figure 1-5**).

? Did You Know?

Throughout history, in almost every early culture, male hairstyles indicated social or other status. Here are a few examples:

- *Noblemen of ancient Gaul indicated rank by wearing their hair long.*
- *In ancient Greece, boys cut their hair upon reaching adolescence, while their Hindu counterparts in India shaved their heads.*
- *Celtic men wore their hair long, and valued blonde hair over darker hair, often cutting any captives' blonde hair to make wigs.*
- *West Nigerian men braided their hair to show war preparation, and therefore death preparation.*
- *Dane, Angle, and Norman men dressed their hair for beautification, adornment, and ornamentation before battle.*



✓ Check In

2. In many ancient African tribes, what did braid patterns and hairstyles indicate?
3. Why did ancient Egyptians use kohl makeup to line the eyes?
4. During the Zhou Dynasty, what punishment did commoners caught wearing royal nail colors face?
5. Early Greek sculptures depicted subjects wearing two styles that have remained popular for more than a millennium. What are they?
6. Why did Julius Caesar comb his hair forward in a style later named after him?

**LO 3**

Describe beauty and grooming during the Middle Ages.

Middle Ages

During the Middle Ages, or medieval times (476 CE–1450 CE), women of wealth wore splendid headwear and a variety of hairstyles, including braids, buns, and intricate headpieces (**Figure 1-6**). Medieval men wore short hair combed forward. As the Middle Ages progressed, male nobility would often wear long hair with a middle part.

Flaxen hair was desirable because the popular paintings of angels at the time were often depicted as blonde. Women achieved this look by applying a mixture of black sulfur, honey, and alum to their hair, then accelerating the lightening effect by sitting in the sun. Some women desired darker hair, achieved by creating a paste of walnut and chestnut left on the hair for at least two days.

An innovation in essential oil use in beauty and medicine occurred around 1000 CE, when a Persian alchemist named Avicenna refined the steam distillation process, ushering in the modern era of steam-distilled essential oils used today.



Check In

7. What significant innovation was introduced by a Persian alchemist in 1000 CE?

VCG Wilson/Corbis via Getty Images



Fig. 1-6

Medieval woman.

**LO 4**

List the Renaissance and Victorian age's beauty developments.



Fine Art Images/Heritage Images/Getty Images

Fig. 1-7

Anthony van Dyck's iconic facial hair.

Renaissance and Victorian Age

Developments during this time bridge the gap between the ancient cultures and the beginning of the beauty industry as we know it today.

The Renaissance

The Renaissance period (1450–1837) was pivotal for Western civilization, marking the transition from medieval to modern. During this period, both men and women took great pride in their physical appearance and wore elaborate, elegant clothing. Fragrances and cosmetics were used, although highly colored lip, cheek, and eye preparations were discouraged.

During the 1600s, the word *hairdresser* made its first appearance in Europe, and hairdressing became a recognizable profession. In 1636, Anthony van Dyke (or Van Dyck) painted a portrait of King Charles I of England, Scotland, and Ireland wearing what is now known as the Van Dyke beard. This beard design—which consists of a moustache and goatee with shaved cheeks—has remained popular for more than 400 years (**Figure 1-7**).



Age of Extravagance

The Age of Extravagance's (1755–1793) hallmark was the reign of Queen Marie Antoinette of France. Giant pompadour wigs and face powdering techniques were popular. Women of status bathed in strawberries and milk, and used lavish cosmetic preparations, such as scented face powder made from pulverized starch. They also used crushed geranium petals to color lips and cheeks pink and orange. Small silk patches were often used to decorate the face and conceal blemishes.

The Victorian Age

The reign of Queen Victoria of England (1837–1901) was known as the Victorian age. Dress and personal grooming fashions were drastically influenced by the social mores of this austere and restrictive period. To preserve the skin's health and beauty, Victorian women used beauty masks made from honey, eggs, oatmeal, and other natural ingredients. Rather than use cosmetics, they pinched their cheeks and bit their lips to induce natural color.

There were many notable industry contributions during this time period. In 1845, the metal hot comb was invented in France to temporarily straighten curly hair. In 1872, Marcel Grateau (a.k.a. François Marcel Woelfflé) invented the first curling iron with tongs heated by a gas burner (**Figure 1-8**). The first professional beauty magazine, the *American Hairdresser*, was published in 1877. Franz Ströher founded a German beauty company in 1880, later called Wella Professionals, the longest-lived professional beauty product company still in operation today.



Fig. 1-8 Marcel Grateau and his curling iron.

Topical Press Agency/Getty Images

Focus On

Pioneer Spotlight: Martha Matilda Harper

Toward the end of the nineteenth century, beauty emerged as one of the few occupations that allowed women to become entrepreneurs. Martha Matilda Harper is a prominent early example of the entrepreneurial female beautician.

Born in 1857, Harper learned about hair health from one of her employers, a physician, and later developed a hair tonic. In 1888, Harper opened the Harper Hair Parlour—the first hair salon in the Rochester, New York, area—and began training impoverished women in the art of business and healthy hair.

In 1891, she became the first person in America to introduce modern franchising. Former servants or women of little means owned these salons and operated them under the Harper Hair Parlour name. Harper created business systems for her franchisees and eventually provided them with a full line of her products for services and retail. At her peak, Harper had more than 500 franchisees in the United States and throughout the world. In 2003, she was posthumously inducted into the National Women's Hall of Fame.



Check In

8. What prompted the popularity of the Van Dyke beard?
9. What modern beauty practices originated in the Victorian era?

**LO 5**

Describe the beauty industry's evolution during the early twentieth century.

Early Twentieth Century

The early twentieth century saw greater societal acceptance of women's roles outside the home. As women began to frequent department stores and hold jobs, demand for beauty products started to grow.

The invention of motion pictures coincided with an abrupt shift in American attitudes. As viewers saw pictures of flawless complexions, beautiful hairstyles, and manicured nails, standards of beauty began to change; beauty applications began to follow trends set by celebrities and society figures (**Figure 1-9**).

1901–1910

At the turn of the twentieth century, Charles Dana Gibson's popular magazine drawings of "Gibson Girls" featuring women with pompadours or bouffants and impossibly tiny waists set a new standard of feminine beauty. The Gibson Girl was arguably the first national beauty standard for American women (**Figure 1-10**).

Men's fashions included wearing a handlebar or walrus moustache, and slicked back hair. Men's favorite hair grooming brands included Rowland's Macassar Oil (a compound of coconut oil) and Brilliantine, created by French perfumer Edouard Pinaud.

In 1904, Max Faktor emigrated from Lodz, Poland, to the United States. By 1908, he had Americanized his name to Max Factor and begun making and selling makeup. A few years later, he created thin greasepaint makeup for motion picture use that wouldn't cake or crack under hot studio lights.

In 1906, Charles Nessler invented the first perm machine that curled hair by supplying electrical current to metal rods. Hair was wrapped around the rods, and the heat and current resulted in permanent waves. In 1907, French chemist Eugene Schueller took para-phenylenediamine (PPD), which is still the base for many permanent haircolors, and created the first commercial haircolor. He called the new product Aureole, which was later changed to L'Oréal.

ullstein bild/Getty Images



Fig. 1-9 Marie Doro, American stage and silent film actress.

Hulton Archive/Getty Images



Fig. 1-10 The Gibson Girl.



Focus On

Pioneer Spotlight: Garrett Augustus Morgan

The first chemical relaxer was registered in 1909 by Garrett Augustus Morgan, an African American inventor and entrepreneur. He applied a chemical solution to wool fabric and noticed it became straighter. Morgan then tested his cream on his own hair. With the cream's success, he established G.A. Morgan Hair Refining Company and marketed his relaxer to African Americans. Morgan later created a black oil hair dye and the curved-tooth pressing comb.

Fotosearch/Getty Images





cristi180884/Shutterstock.com

Fig. 1-11 Early women's razor.

1911–1919

By 1915, the definition of femininity started to change. The very elegant dancer Irene Castle began twirling onstage wearing a shingled bob, hemlines were rising, and sleeveless dresses exposed underarm hair, which was quickly followed by the first women's razor (**Figure 1-11**).

In 1917, the first International Beauty Shop Owners Convention and Exhibition (now known as the International Beauty Show, or IBS) was held at the Waldorf-Astoria in New York City and attended by 15 exhibitors and 300 barbers. Innovations were introduced by companies such as Proline, which produced the first commercial “no lye relaxer” using potassium hydroxide. At the same time, Leo J. Wahl created the first electromagnetic clipper, which featured an alternating current (AC) motor that was quieter and lighter than the direct current (DC) clippers used at the time. Soon after, he established Wahl Clipper, which remains a salon industry favorite.

1920s

The best-known short haircut style for women in the 1920s was the bob. It particularly spoke to flappers, who felt emboldened by wearing this short, sassy style. Bobs were cut with razors and often worn straight with bangs or styled with deep waves and spit curls (**Figure 1-12**). Headbands were designed to complement the bob, and bobby pins were used to hold the hairstyle in place. A 1925 story from the *Washington Post*, “Economic Effects of Bobbing,” described how bobbed hair did wonders for the beauty industry; in 1920, there were 5,000 hairdressing shops in the United States, but by the end of 1924, there were 21,000 established shops. This era's men were also style conscious, typically appearing clean-shaven and having traded their slicked-back hairstyle for a shorter haircut with a center part.



Keystone-France/Gamma-Keystone via Getty Images

Fig. 1-12 1920s hairstyle.

The cosmetics industry grew rapidly during the 1920s, as did its advertising expenditures. At first, many women's magazines deemed cosmetics improper and refused to print cosmetic advertisements. By the end of the 1920s, cosmetics provided one of their largest sources of advertising revenue.

Focus On

Pioneer Spotlight: Sarah Breedlove (a.k.a. Madam C. J. Walker)

Sarah Breedlove (known as Madam C. J. Walker) was the daughter of former slaves. She suffered from a scalp condition and began to lose her hair, which caused her to experiment with store-bought products and homemade remedies. She soon sold her own scalp conditioning and healing treatments called “Madam Walker’s Wonderful Hair Grower”. She devised sophisticated sales and marketing strategies and traveled extensively to give product demonstrations.

In 1910, she moved her company to Indianapolis, where she built a factory, hair salon, and training school. In 1917, she organized a convention for her Madam C. J. Walker Hair Culturists Union of America—one of the first national conventions for businesswomen. By her death in 1919, she had established herself as a pioneer in the modern African American hair care and cosmetics industry and was the first female millionaire in the United States.

Addison N. Scurlock/Michael Ochs Archives/Getty Images





The 1920s were an era of change for cosmetology. Unionizing and barbering introduced new standards. In 1924, the Associated Master Barbers of America was organized. The name was later changed to Associated Master Barbers and Beauticians of America (AMBBA), and the organization represented barbershop and beauty salon owners and managers. By 1925, the AMBBA established the National Education Council to standardize requirements for barber schools and barber instructor training, establish a curriculum, and set state licensing laws. By 1929, AMBBA had adopted its Barber Code of Ethics to promote professional responsibility in the trade.

✓ Check In

10. At the turn of the twentieth century, what was the national beauty standard for American women?
11. What did French chemist Eugene Schueller use as a base to create the first commercial haircolor?
12. Who registered the first chemical relaxer in 1909?
13. Why did the AMBBA adopt its Barber Code of Ethics?



LO 6

Outline the mid- and late twentieth century's major beauty advances.

Mid- to Late Twentieth Century

1930s

In the 1930s, the major women's hairstyle trends were all about waves. Women wore loose to crisp waves and parts sweeping to the side or down the middle (**Figure 1-13**). At the beginning of the decade, short hair still reigned, but as the 1930s marched on, women started opting for shoulder-length hair. Bangs also took the spotlight.

The typical 1930s men's cut was neat and clean around the ear, tapered down to nothing at the nape, and blended up into a longer top length with a side part. This has morphed into what we now call the fade. This look was typically paired with a pencil moustache inspired by celebrities such as Clark Gable and Errol Flynn.

Chemists Ralph L. Evans and Everett G. McDonough pioneered a machine-free perm method in 1932 that used heat generated by chemical reaction. Small flexible pads containing a chemical mixture were wound around hair strands. When the clamps were moistened with water, the released chemical heat created long-lasting curls.

In this same decade, Charles Revson of Revlon fame marketed the original pigment-based nail polish—the first product we would recognize as nail polish today. This milestone marked a dramatic shift in nail cosmetics, as an array of nail lacquers were now available. Early screen sirens like Jean Harlow and Gloria Swanson glamorized this new nail fashion in the mid-1930s by appearing in films wearing matching polish on their fingers and toes.

In 1932, Lawrence Gelb, a New York chemist, introduced the first permanent haircolor product that penetrated the hair shaft, rather than just coating it, and founded a company called Clairol. In 1935, Max Factor created pancake makeup to make movie actors' skin look natural on color film. A few years later, pancake makeup became available to the general public. In 1938, Arnold F. Willatt invented the cold wave, the precursor to the modern perm, which used no machines or heat to curl hair.



Fig. 1-13 1930s hairstyle.



Michael Ochs Archives/Getty Images

Fig. 1-14 1940s hairstyle.

1940s

Soft waves, curls, and rolls defined this decade's look (**Figure 1-14**). Victory rolls were probably the most iconic women's hairstyle in this decade. Men's haircuts of the 1940s were influenced by the golden age of cinema, jazz, and World War II. The era's short-cropped military cuts, which were practical, neat, and easily maintained, paved the way for today's versions of buzz cuts, flat tops, and crew cuts. Pageboy and pixie haircuts were also popular.

In 1941, scientists developed another method of permanent waving using waving lotion. It was also called a cold wave because no heat was used. Modern versions of cold waves, usually referred to as alkaline perms, are still used today.

In 1941, pedicures and foot massages became salon services. The aerosol can was originally invented during World War II to spray troops with insect repellent to prevent malaria; a few years later, aerosol technology was used to introduce hair spray. In 1947, Maurice King invented Barbicide, a styling tool disinfectant.

1950–2000

The twentieth century's second half saw the introduction of tube mascara, improved hair and nail products, and the boom and then death of the weekly salon appointment. In the 1950s, redheads multiplied with the popularity of Rita Hayworth and Lucille Ball. Celebrities like James Dean, Little Richard, and Elvis Presley influenced men's styles.

In 1953, Marilyn Monroe starred in *Gentlemen Prefer Blondes*, which ignited a platinum blonde explosion that lasted well into the 1960s. In the mid-1960s, Vidal Sassoon turned the hairstyling world on its ear with his revolutionary geometric cuts (**Figure 1-15**). The hippie movement brought long, straight, center-parted hair and Afros for women and men. The natural hair movement began to take shape and is still growing today.

In 1977, Farrah Fawcett's long layered look became iconic. Although the length has changed, long layers remain popular today. This decade also experienced a major revolution in frosting and highlighting, and French hairdressers introduced hair weaving using aluminum foil.



Ronald Dumont/Daily Express/Hulton Archive/Getty Images

Fig. 1-15 Vidal Sassoon's geometric style.



Aaron Rapoport/Corbis/Getty Images

In the 1980s, makeup went full circle, from barely there to heavily made-up "cat eyes," and heavy use of eye shadows and blush. The 1980s also brought big, teased bangs, the bilevel haircut (including the mullet), and the Jheri curl. In the mid-1980s, industry-specific software hit the salon industry, and hairdresser Farouk Shami invented SunGlitz, the world's first ammonia-free lightener. The first North American Hairstyling Awards (NAHA) event was held in 1989. This event continues to allow hairdressers to compete and showcase their talents.

In the 1990s, haircolor became gentler, allowing more people to become blondes, brunettes, or redheads. The desire for smoother, richer styles; the trend toward healthier hair; and improved styling products and tools all contributed to the perms' decline in popularity. More natural-looking volume replaced the teased look of the 1980s. These straighter hairstyles prompted the introduction of the flat iron. In 1994, "The Rachel," the short, layered cut created by stylist Chris



KMazur/Contributor/WireImage/Getty Images

McMillan for Jennifer Aniston's character Rachel Green on the TV show *Friends*, was born. By 1995, men reportedly spent \$9.5 million on grooming. In 1998, Creative Nail Design introduced the first spa pedicure system.

✓ Check In

14. What did Max Factor create for movie actors in 1935 to make their skin look more natural in color?
15. What was the most iconic woman's hairstyle of the 1940s?
16. Who inspired a platinum blonde explosion in 1953?
17. Who invented the world's first ammonia-free lightener?



LO 7

Describe important trends that defined cosmetology in the twenty-first century.

Twenty-First Century

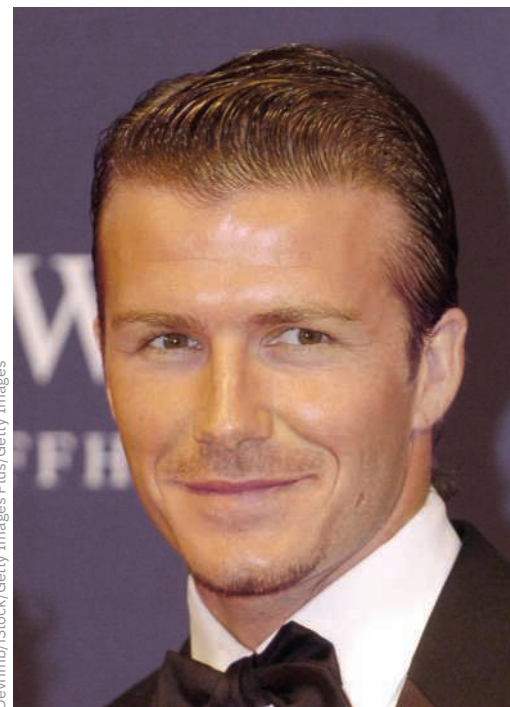
Styles are more diverse than ever before. Although there are still trends, they have grown to include a variety of lengths, colors, and textures so that all hair types can showcase their unique personalities and style.

Through the early 2000s, the focus was on chunky highlights, choppy layers, foil highlights, and natural texture. The advancement of hot tools allowed for blowouts that produced smooth, straight results for even the curliest hair. This gave clients versatility with natural textures and caused a sharp decrease in the use of chemical relaxers and traditional stove-heated Marcel irons.

In 2002, David Beckham inspired men to explore a more body-conscious style, which increased grooming services ranging from manicures and waxing to facials, cuts, and haircolor (**Figure 1-16**). This led to growth in men's spa services and a resurgence of traditional barber services such as chairside shaves and skin conditioning treatments (facials and scalp treatments), and basic hand and foot care (manicures and pedicures).

In 2009, Moroccanoil's success established a new beauty category—treatment oils—and numerous like-minded companies followed suit. In the mid- to late 2000s, ombré color became the latest haircolor art form. Many clients still wanted foil highlights, but the trend shifted toward balayage, a freehand style of creating custom-placed highlights and lowlights. Other trendy color techniques included color melting, babylights, and shadow root. Some of the classic styles (such as the asymmetrical bob, pixie cuts, fades, and pompadours) were reinvented for a modern look, often including brighter colors outside the usual haircoloring spectrum, such as blues, greens, pastels, and unicorn-inspired looks.

The beauty industry has also entered the specialization age. Cosmetologists can focus specifically on haircolor, texture, or haircutting. Nail technicians offer a full array of services or specialize in artificial nail enhancements, natural nail care, or even pedicures.



Devrimb/Stock/Getty Images Plus/Getty Images

Fig. 1-16 David Beckham and the body-conscious style.



There has never been a time in history when we were more connected as cosmetologists. The Internet and social media provide instant links to other professionals, video tutorials, and group pages where you can ask questions or share your knowledge with others, and tap into many other resources to advance your career. Social media has also become a rich source for new clients. We are truly living in the golden age of cosmetology. To learn even more about cosmetology's history and milestones, visit the QR code to view Table 1-1.



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**Timeline of Milestones
in the Professional
Beauty Industry**

✓ Check In

18. What is the most important hair trend of the twenty-first century's first two decades?
19. How have the Internet and social media impacted stylists' beauty careers?



Fig. 1-17 Specialty haircolor.

Eli Mancha

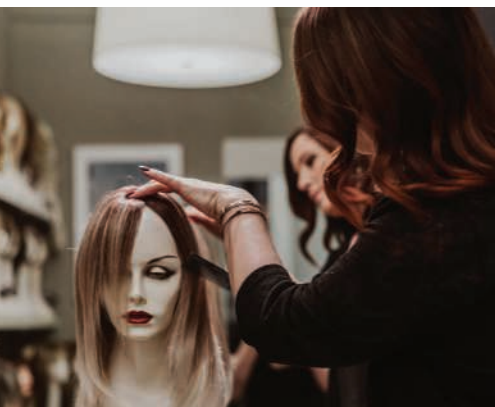
LO 8

List career opportunities for licensed cosmetologists.

Career Paths for Cosmetologists

Once you have completed your schooling and are licensed, you can find numerous opportunities within the industry such as:

- **Specialist.** You can choose to specialize in any service type covered by your license. The most common areas to specialize in are haircutting, texture, and haircolor (**Figure 1-17**). Becoming a specialist requires additional training and experience. This specialty training will allow you to perform top-quality services and present education opportunities inside and outside the salon.
- **Salon trainer.** Many companies, such as manufacturers and salon chains, hire experienced salon professionals and train them to educate others. This training can take many forms, from technical training to management and interpersonal relationship training. A salon educator can work with small salons, large organizations, and trade associations, to help develop salon personnel.
- **Manufacturer educator.** Most manufacturers hire their own educators to train stylists and salon staff to understand and use the company's hair care, haircolor and other chemical-service products. An accomplished educator who is a good public speaker can advance to field educator, regional educator, or platform educator, appearing on stage at shows in the United States and worldwide.
- **Artistic director.** This position establishes the standard for a salon or manufacturer's image. Artistic directors lead and inspire hairdressers and create trends. This takes experience, confidence, advanced technique mastery, and excellent communication and presentation skills. Successful artistic directors perform platform artistry at trade shows representing salons or manufacturers.





- **Education director.** An education director is the liaison between brand and hairdresser, setting the company's standards by creating education that drives sales. This position is available only to cosmetologists with five or more years of experience; a wealth of continuing education is a must. Some requirements include excellent hairdressing skills, leadership in prior career roles, effective communication and presentation skills, the ability to create budgets and work with spreadsheets, and product knowledge of the company's brand and competitors.
- **Cosmetology instructor.** Many instructors had fantastic careers in salons before dedicating themselves to teaching new professionals. If this career path interests you, spend time with your school's instructors and ask them why they went into education.

- **Film, theatrical, or editorial stylist.** These positions are fast-paced and often have long days. Working on magazine and Internet photo shoots, or on movie and TV sets, often starts with volunteering to assist. Even someone right out of school can volunteer by calling agencies, networking with photographers, and asking other hairdressers who work behind the scenes for advice (**Figure 1-18**).
- **Creative director.** This position is obtainable once you have 10 or more years of experience in all facets of hairdressing. Most manufacturers consider this an executive-level position and the driving force behind brand success. Responsibilities include overseeing, coaching, mentoring, and leading all of the company's educators to ensure professionalism standards.
- **Salon manager.** For this role you must have an aptitude for math and accounting and be able to read documents such as profit-and-loss statements. You should understand marketing—including advertising, public relations, promotions, and special events—and what makes these programs successful. Much of management involves the salon's business side—making it profitable, tracking inventory, educating—while keeping clients and staff members happy. Titles and the accompanying responsibilities vary widely from salon to salon; supplementing your experience with formal business education is the best path to success.



Fig. 1-18 Behind the scenes in the entertainment industry.

When determining which role is best for you, also consider the type of facility where you want to work. Many options are available including:

- Specialty salons
- Full-service salons (offering hair, skin, and nail services)
- Mobile services (where permitted)
- Day spas (offering services that emphasize both beauty and wellness)

All licensed cosmetologists have the opportunity to expand their careers. Keep developing your skills in the specialties that interest you, and you'll soon be building and enjoying an extremely creative and rewarding career.

? Did You Know?

If you want to work in the theater, television, or film industry, you may need to join a union. One of the largest is the Makeup Artists and Hair Stylists Union, also known as the International Alliance of Theatrical Stage Employees, Moving Picture Technicians, Artists and Allied Crafts of the United States and Canada, AFL-CIO, CLC (IA). You may also need to join the Makeup Artists and Hair Stylists Guild.

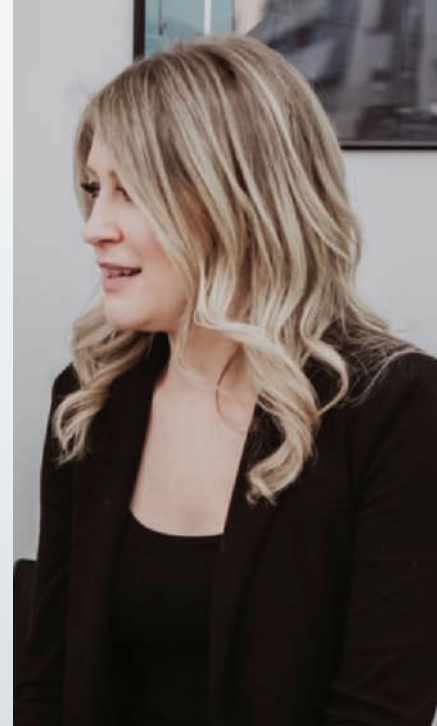


Activity

Interview a Specialist

As you learn more, the area of cosmetology that interests you most may change. To help determine the best specialty area for you, interview a salon owner or specialist in your area. Ask the following questions:

- *Why did you choose your specialty?*
- *What special skills are required?*
- *What type of training was required to become a specialist?*
- *How long did it take you to become proficient?*
- *What is the most exciting thing about your specialization?*



In-Demand Services and Opportunities

According to a study by the National Accrediting Commission of Career Arts and Sciences (NACCAS), salons employed around 1,683,000 professionals, and 53 percent of salons had job openings. Nearly three-quarters of salon owners with positions to fill could not find qualified applicants, even though about 38 percent of the jobs were for professionals with less than a year of experience.

While many factors, including the economy, affect the industry, the salon business usually withstands recessions much better than other industries. Focus on your studies, read trade publications, become a member of relevant online pro-beauty groups and trade associations, and attend workshops outside of school. Your license will unlock countless doors, but it is your dedication and passion that ultimately determine your success.



Check In

20. What are some of the career opportunities available to licensed cosmetologists?
21. What are a salon manager's duties?

Chapter Glossary

appearance enhancement <i>(uh-PEER-uhns en-hansment)</i>	p. 6	term used to encompass a broad range of specialty areas, including hairstyling, nail technology, and esthetics
cosmetology <i>(kahz-muh-TAHL-uh-jee)</i>	p. 6	art and science of beautifying and improving the skin, nails, hair and includes the study of cosmetics and their application



PART 02

HEALTH SCIENCES

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Port



02

CHAPTER 02:

General Anatomy and Physiology

Learning Objectives

After completing this chapter, you will be able to:

- LO 1** Explain the importance of anatomy and physiology to cosmetologists.
- LO 2** Describe the structure and division of cells.
- LO 3** List the four types of tissues in the body.
- LO 4** Explain the basic functions of the organs and body systems.
- LO 5** Outline the skeletal system's structures and functions.
- LO 6** Describe the muscular system's components and supporting structures.
- LO 7** Explain the nervous system's divisions and functions.
- LO 8** List the functions of the circulatory system's components.
- LO 9** Describe the lymphatic system's function.
- LO 10** Explain the integumentary system's function.
- LO 11** Outline the endocrine system's organs and their functions.



02

*Everybody
is different,
and every body
is different.*

“

—
Beverly Diehl

Writer



LO 1

Explain the importance of anatomy and physiology to cosmetologists.

Why Study Anatomy and Physiology?

This chapter will guide you through all of the body systems that need to work together to achieve healthy hair, nails, and skin. Start with **anatomy** (also called gross anatomy), the study of human body structures, how the body parts are organized, and the science of the interconnected structures of organisms, or of their parts. Whereas, **physiology** is the study of the functions or activities performed by the body's structures.

Cosmetology services affect the skin; muscles; nerves; circulatory system; and bones of the head, face, neck, shoulders, arms, hands, lower legs, and feet. Hair, skin, and nail health is affected by the functions of the body systems. Continue to educate yourself to stay informed on health, wellness, and safety. Having a circle of experts as a resource is also beneficial.

Cosmetologists should have a thorough understanding of anatomy and physiology because:

- Scalp manipulations, facials, manicures, and pedicures are all common cosmetology procedures that rely on an understanding of human anatomy.
- Recognizing healthy hair, skin, and nails is an important infection control step, as is identifying conditions that require referral to a healthcare professional. Remember, diagnosing or treating any illness is never within a cosmetologist's scope of practice.
- Working with the bones of the face and skull contributes to flattering haircuts, hairstyles, and makeup applications.



In this chapter you will learn that:

- Cells are the basic structure of all living things.
- Tissues are made up of cells that are organized into layers or groups.
- Organs are groups of tissues that form complex structures and perform certain functions.
- Body systems contain organs that perform similar functions.
- Organisms are formed by groups of body systems; for example, the human body.

✓ Check In

1. Identify three cosmetology services that require a basic understanding of anatomy and physiology.

LO 2 Describe the structure and division of cells.

Cell Structure and Functions

Cells are the basic units of all living things: Bacteria, plants, and animals—including human beings—all have cells. A cell is made up of the **protoplasm**, in which nutrients, mineral salts, and water are present. Most cells also include a nucleus, cytoplasm, and cell membrane (**Figure 2-1**).

Cell structures and functions include the following:

- The **nucleus** is the specialized structure in the center of the cell. It controls the growth and reproduction of the cell; it also contains the cell's genetic material.
- **Cytoplasm** is the watery fluid that surrounds the nucleus. It provides a structure for the cell parts so that they can move freely within the cell membrane. Enzymes in the cytoplasm help digest and break down other molecules for food.
- The **cell membrane** is the thin layer of tissue that surrounds the cell. It protects the interior of the cell from its surroundings. It is semipermeable, meaning it allows certain substances to enter the cell.

Mitosis is the process of cell reproduction that occurs when the cell divides into two identical daughter cells. Cells require favorable conditions to grow and reproduce, including an adequate food supply, oxygen, water, suitable temperatures, and the ability to eliminate waste.

Cells convert nutrients to energy through a chemical process called **metabolism**. There are two types of metabolism:

1. **Anabolism** is the process of simple molecules combining to form a complex molecule. Anabolism requires energy.
2. **Catabolism** is the process of breaking complex molecules down into simple molecules. Catabolism releases energy.

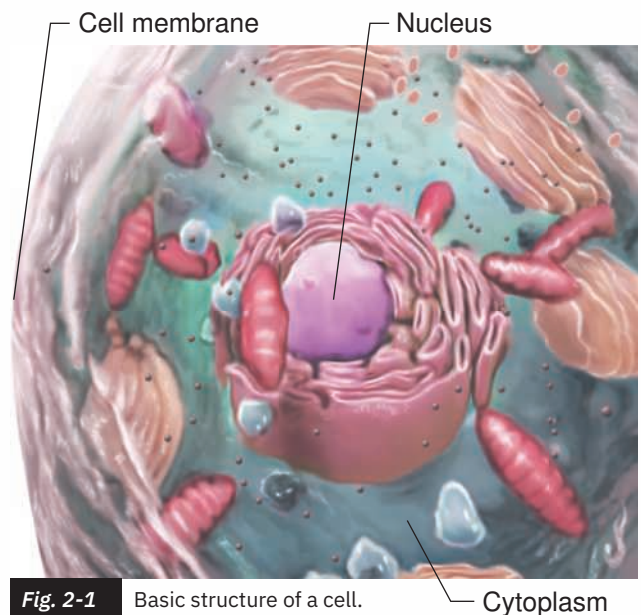


Fig. 2-1 Basic structure of a cell.

Focus On

Why is Cell Structure Important?

A client's response to different services and active ingredients in products will be influenced by the efficiency and speed of the cells' metabolism. Aging can influence the cells' metabolism, causing it to function less efficiently.

Check In

2. Describe the cell's basic structures.
3. What conditions are needed in order for cells to divide?

LO 3 List the four types of tissues in the body.

Tissues

A **tissue** is a group of similar cells that perform a specific function. There are four types of tissue in the body (Figure 2-2):

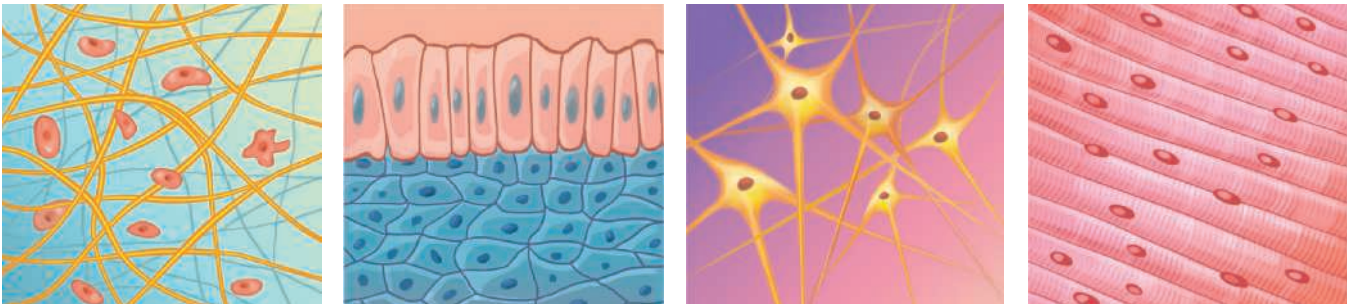


Fig. 2-2 Types of tissues.

Connective tissue is fibrous tissue that binds and supports other body tissues and organs.

Epithelial tissue provides a covering that protects the body and is found within many parts of the body such as skin, mucous membranes, digestive and respiratory organs, the lining of the mouth, the lining of the heart, and the glands.

Nerve tissue carries messages to and from the brain and controls and coordinates all bodily functions.

Muscle tissue contracts and moves various parts of the body.

Check In

4. List the four types of tissue in the body.

**LO 4**

Explain the basic functions of the organs and body systems.



Did You Know?

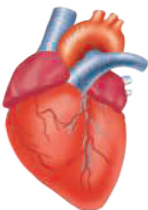

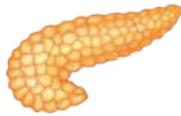
Systems, organs, tissues, and cells depend on each other to function properly. For example, if you become dehydrated, cells lose water causing tissue shrinkage, brain tissue fluid decreases, blood becomes thicker, and the body builds up wastes and acids causing headaches, muscle cramps, dizziness, rapid breathing, and confusion.

Organs and Body Systems

Organs are groups of specialized tissues that perform specific functions. Organs include the brain, heart, lungs, stomach and intestines, liver, kidneys, eyes, and skin. **Body systems**, also known as *systems*, are groups of organs acting together to perform one or more functions. **Table 2-1** outlines the body systems, indicating each system's functions and the major organs associated with that system.

Table 2-1

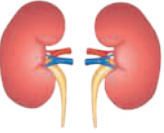
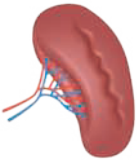

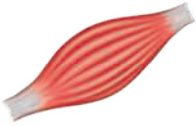


Body Systems, Their Functions, and Major Organs

BODY SYSTEMS	FUNCTION	MAJOR ORGANS AND RELATED STRUCTURES	WHY KNOW THIS?
Circulatory 	Controls blood movement throughout the body	Heart, blood vessels	Massage affects the circulatory system, and good blood flow affects hair growth. Facial services and shaving (if permitted) benefit from awareness of arteries and veins for safety.
Digestive 	Breaks food down into nutrients or waste for nutrition or excretion	Stomach, intestines, esophagus, salivary glands	Good nutrition allows optimum functioning of all body systems.
Endocrine 	Controls hormone levels within the body that determine growth, development, reproduction, and health of entire body	Endocrine glands, hormones	Hormones produced by the endocrine system directly impact hair and skin. Some skin and hair conditions are a result of hormones.



(Continued)

Table 2-1

Body Systems, Their Functions, and Major Organs

BODY SYSTEMS	FUNCTION	MAJOR ORGANS AND RELATED STRUCTURES	WHY KNOW THIS?
Excretory 	Eliminates waste from the body, reducing the buildup of toxins	Kidneys, liver, skin, large intestine, lungs	The excretory system eliminates toxic substances that can affect other body system functions.
Immune (lymphatic) 	Protects the body from disease by developing immunities and destroying pathogens and toxins	Lymph, lymph nodes, lymph vessels, spleen	The immune system protects the body from illness. Massage affects the lymphatic system.
Integumentary 	Provides a protective covering and regulates body temperature	Skin, oil glands, sweat glands, hair, nails	The skin is the body's largest organ and its first line of defense against illness. Cosmetology services are directly affected by the health of the integumentary system.
Muscular 	Covers, shapes, and holds the skeletal system in place; muscles contract to allow for movement of body structures	Muscles	Massage performed during cosmetology services affects the muscular system. A thorough understanding of the muscular system will also help prevent injuries during your career.
Nervous 	Coordinates all other body systems, allowing them to work efficiently and react to the environment	Brain, spinal cord, nerves, eyes	To provide safe and effective facial and nail services, cosmetologists need an understanding of the nervous system.
Reproductive 	Produces offspring and differentiates males from females as assigned at birth	Uterus, ovaries, penis, testes	The reproductive system and hormonal changes that occur with different life stages affect hair growth, hair loss, and the skin.

(Continued)

Respiratory 	Makes blood and oxygen available to body structures through respiration; eliminates carbon dioxide	Lungs, air passages	Adequate oxygenation of tissues allows optimum cell functioning; infection can be spread through respiration, affecting safety and cleanliness.
Skeletal 	Forms the physical foundation of the body; composed of 206 bones connected by moveable and immovable joints	Bones, joints	Important for protecting your own body mechanics when working, as well as knowing bone structure when providing treatments, including makeup applications.

Check In

- What are organs?
- Name the main body systems and their functions.



LO 5

Outline the skeletal system's structures and functions.

Skeletal System

The **skeletal system** forms the body's physical foundation and is composed of 206 bones that vary in size and shape. **Osteology** is the study of bones.

A **joint** is the connection between two or more bones. There are two types of joints:

- Movable—joints in the elbows, knees, and hips; allow movement
- Immovable—joints in the pelvis and skull; allow little or no movement (exceptions to this include during childbirth, when special hormones allow for flexibility of the pelvic joints)

Except for tooth enamel, bone is the hardest tissue in the body. It comprises connective tissue consisting of about one-third organic matter (cells and blood) and two-thirds minerals (calcium carbonate and calcium phosphate).



Did You Know?

Joint pain is usually caused by inflammation of the tissue surrounding the joint, not by the joint itself. You have more than 230 movable and semi-movable joints in your body.

The primary functions of the skeletal system are to:

- Give the body shape and support
- Protect various internal structures and organs
- Serve as attachments for muscles and act as levers to produce body movement
- Help produce white and red blood cells (one of bone marrow's functions)
- Store most of the body's calcium supply, as well as phosphorus, magnesium, and sodium

Focus On

Safety Considerations for the Skeletal System

An understanding of the skeletal system will help to protect your own body by using proper body mechanics when you work. It can also help determine placement of makeup during application and influence haircutting and hairstyling options according to your client's facial bone structure.

Skull Bones

The **skull** is the head's skeleton and is divided into two parts:

1. **Cranium**—an oval, bony case consisting of eight bones that protect the brain
2. **Facial skeleton**—the framework of the face; composed of 14 bones

Cranial Bones

Figure 2-3 shows the cranium's eight bones:

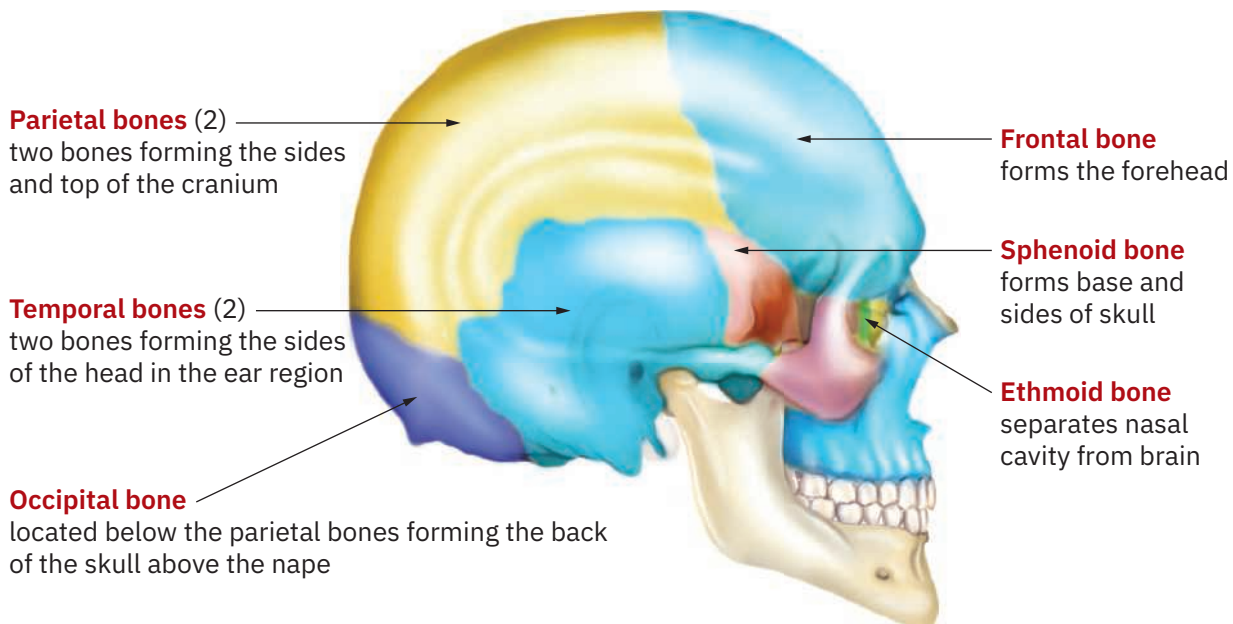


Fig. 2-3 Cranial and facial bones.

Facial Bones

The facial skeleton has 14 bones; **Figure 2-4** lists those most involved in cosmetology. The vomer, turbinate (2), and palatine (2) bones are the remaining bones in the facial skeleton and are not affected by cosmetology services.

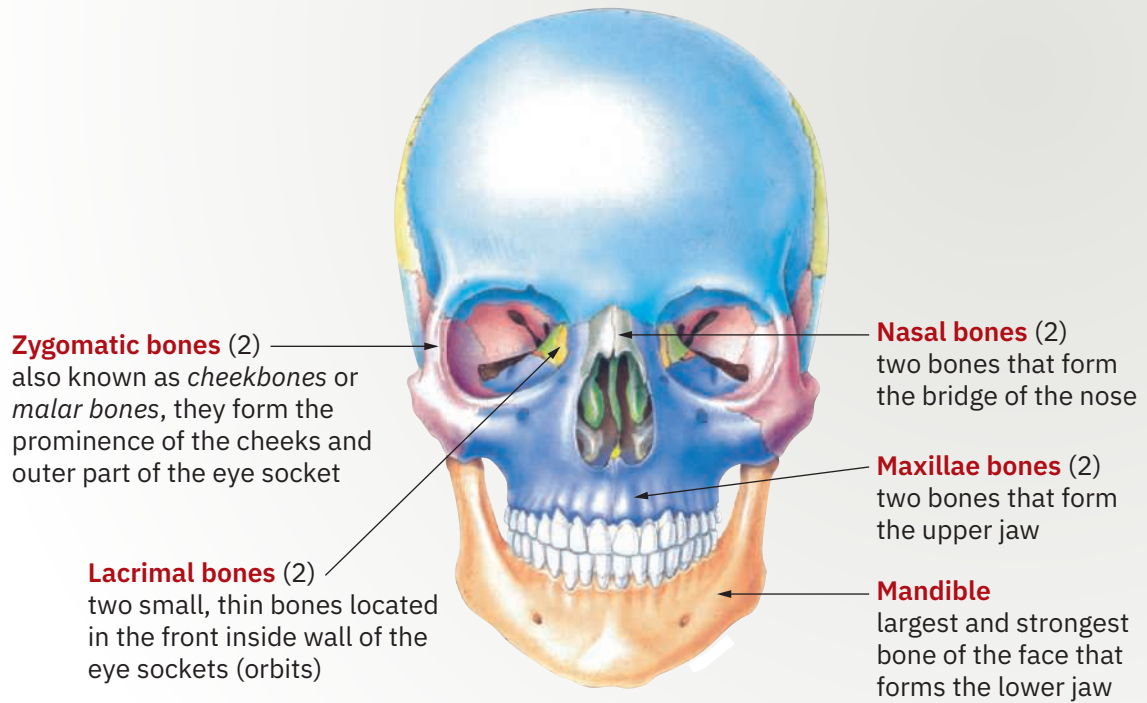


Fig. 2-4 Facial bones.

Neck Bones

The main neck bones are the following (**Figure 2-5**):

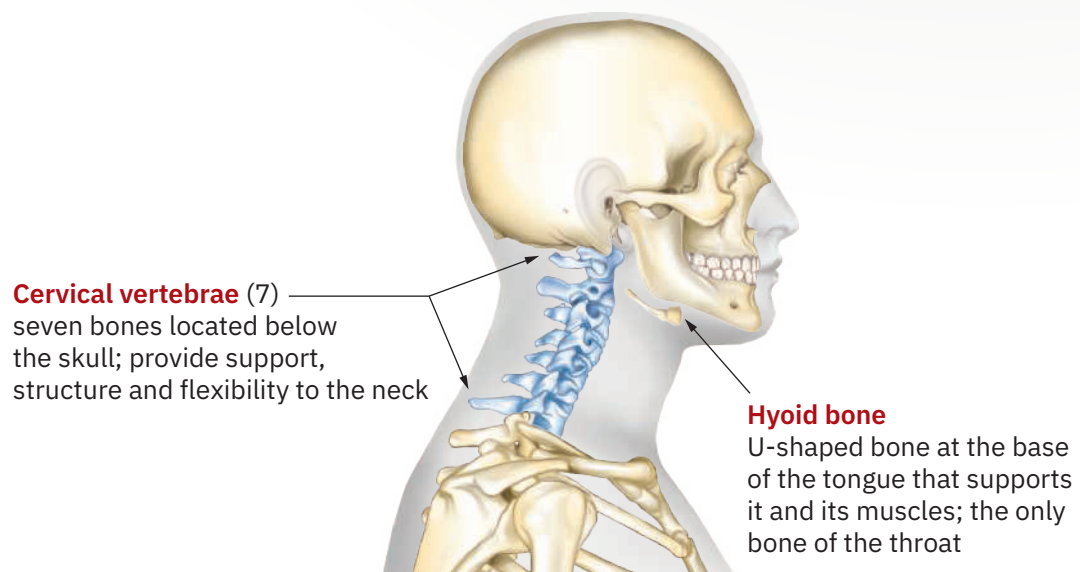


Fig. 2-5 Neck bones.

Chest and Shoulder Bones

Figure 2-6 illustrates the bones of the chest and shoulder that are important in our industry when performing full-body treatments, such as body wraps, as well as for massage to learn as body reference landmarks and prevent injury to these areas:

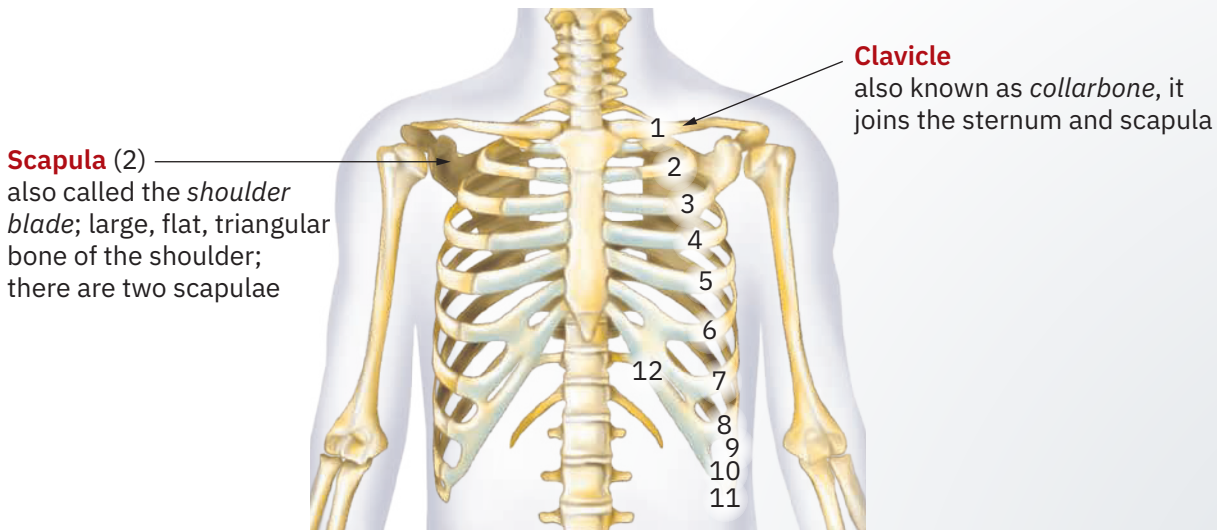


Fig. 2-6 Shoulder bones.

Arm and Hand Bones

Figure 2-7 lists the important bones of the arms and hands:

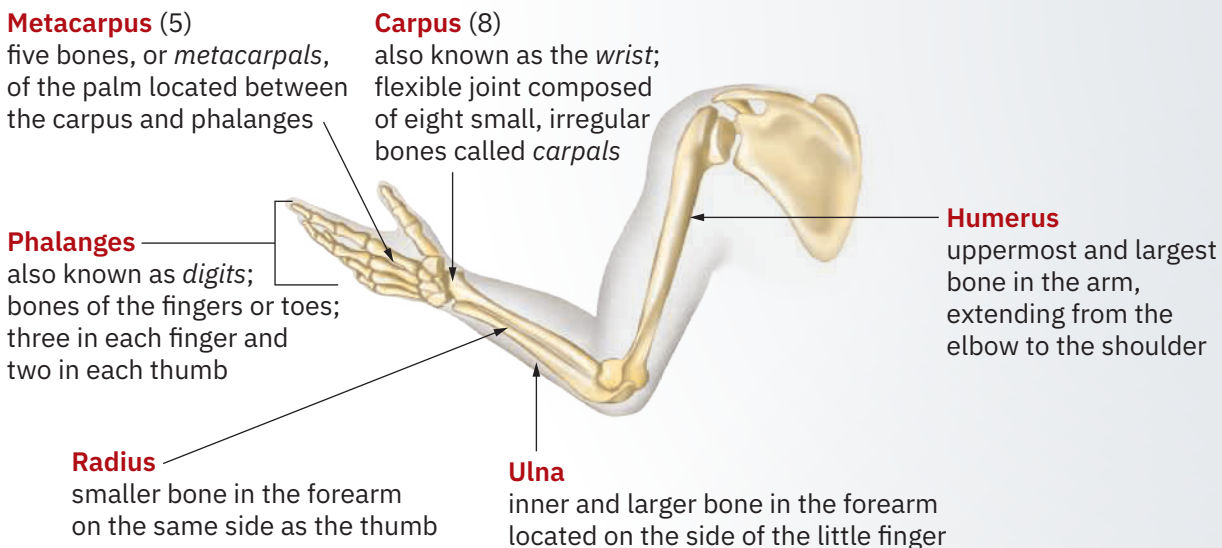


Fig. 2-7 Arm and hand bones.

? Did You Know?

Repetitive motions, such as excessive wrist flexing or locking it in a bent position, can cause painful inflammation in the carpus area. Keep the wrist straight to prevent these injuries. Understanding anatomy and ergonomics can help prevent strains and injuries throughout your cosmetology career.

Leg, Ankle, and Foot Bones

Figure 2-8 shows three leg bones:

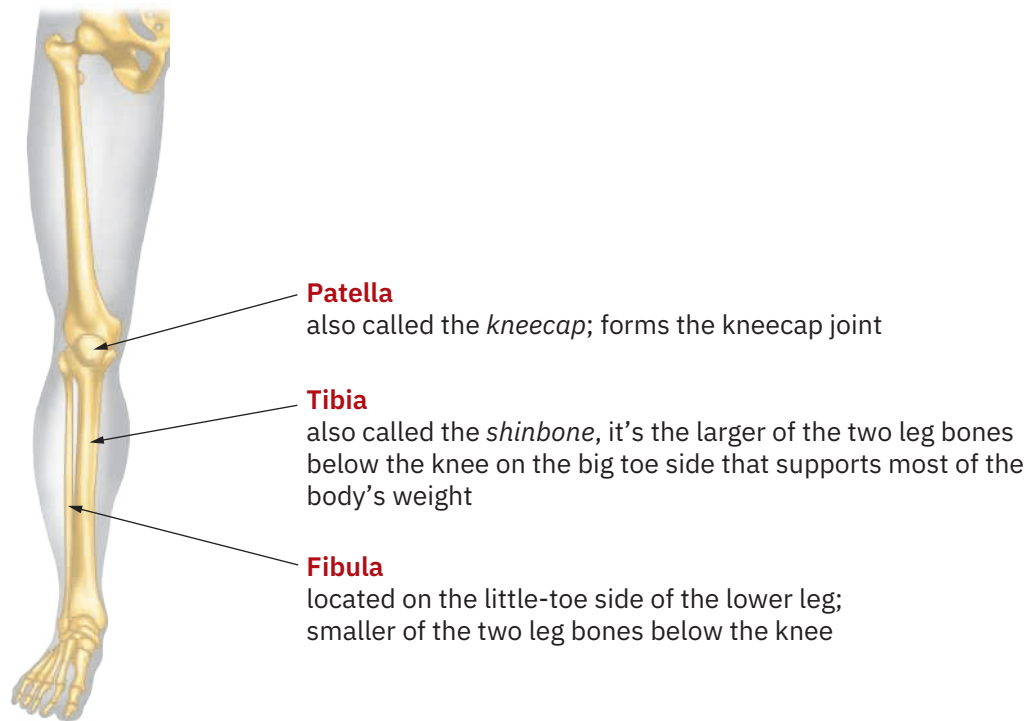


Fig. 2-8 Leg bones.

The ankle joint is composed of three bones: tibia, fibula, and talus. The ankle joint allows the foot's up-and-down movement (**Figure 2-9**). The foot has 26 bones subdivided into three categories: tarsals, metatarsals, phalanges.

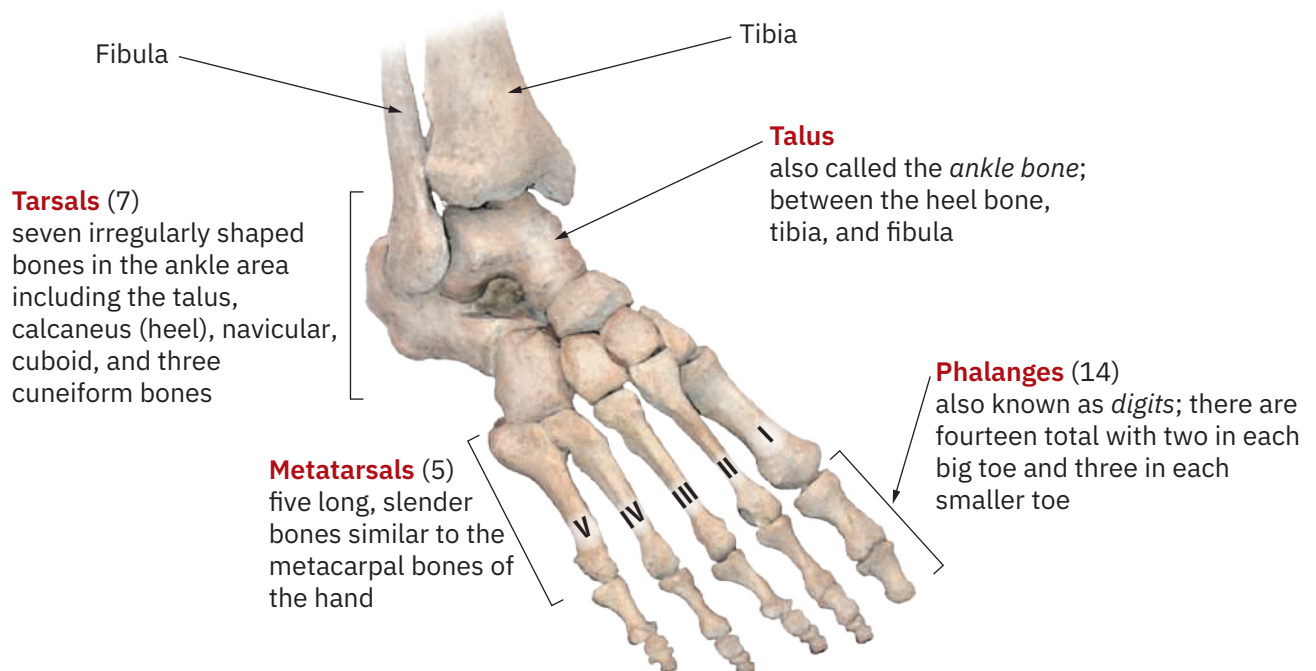


Fig. 2-9 Ankle and foot bones.

? Did You Know?

A broken phalange may leave a finger or toe with some range of motion, but it will likely lose its dexterity, making it difficult to pick up very small objects.

✓ Check In

7. List the skeletal system's primary functions.
8. Which facial bones are most involved in cosmetology services?



LO 6

Describe the muscular system's components and supporting structures.

Muscular System

The **muscular system** covers and holds the skeletal system in place and moves various body parts. Muscles are fibrous tissues that can stretch and contract according to body movements.

Some of the muscular system's functions are mobility, circulation, respiration, digestion, stability, and posture. **Myology** is the study of the structure, functions, and diseases of the muscular system.

There are more than 650 muscles in the body and three types of muscle.

1. **Cardiac muscle** is a type of striated muscle found only in the heart.
2. **Involuntary muscles** (nonstriated) are controlled by the autonomic nervous system and control body functions such as breathing and digestion.
3. **Voluntary muscles** (striated) are muscles that we control at will.



Focus On

Safety Considerations for the Muscular System

Cosmetologists should know voluntary muscles' locations and what they control. These muscles can become fatigued from excessive work or injury. Clients can benefit from the massage techniques you incorporate into nail and skin care services. Improper massaging may also result in negative effects for the client, so it is important to understand the muscles' locations.

A muscle has three parts (**Figure 2-10**):

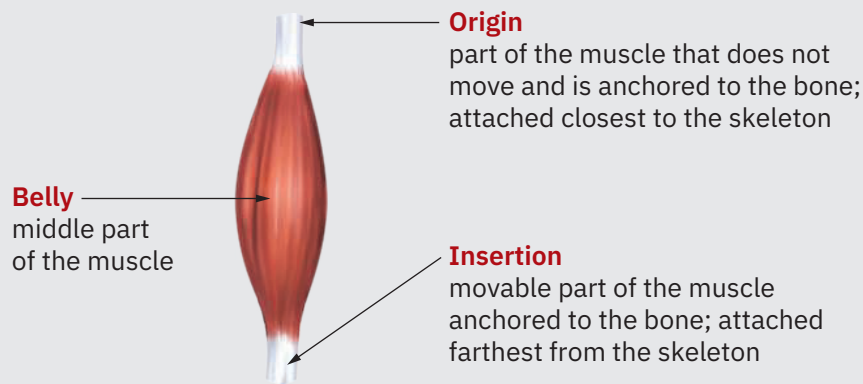


Fig. 2-10 Muscle origin and insertion.

Muscle tissue can be stimulated by:

- Massage
- Electric current therapy (see **Milady Standard Foundations Chapter 07, Electricity and Electrical Safety**, pp. 192–196)
- Infrared light
- Dry heat (heating lamps or heating caps)
- Moist heat (steamers or moderately warm steam towels)
- Nerve impulses (through the nervous system)
- Chemicals (certain acids and salts)

Scalp and Neck Muscles

Figure 2-11 illustrates scalp and neck muscles:

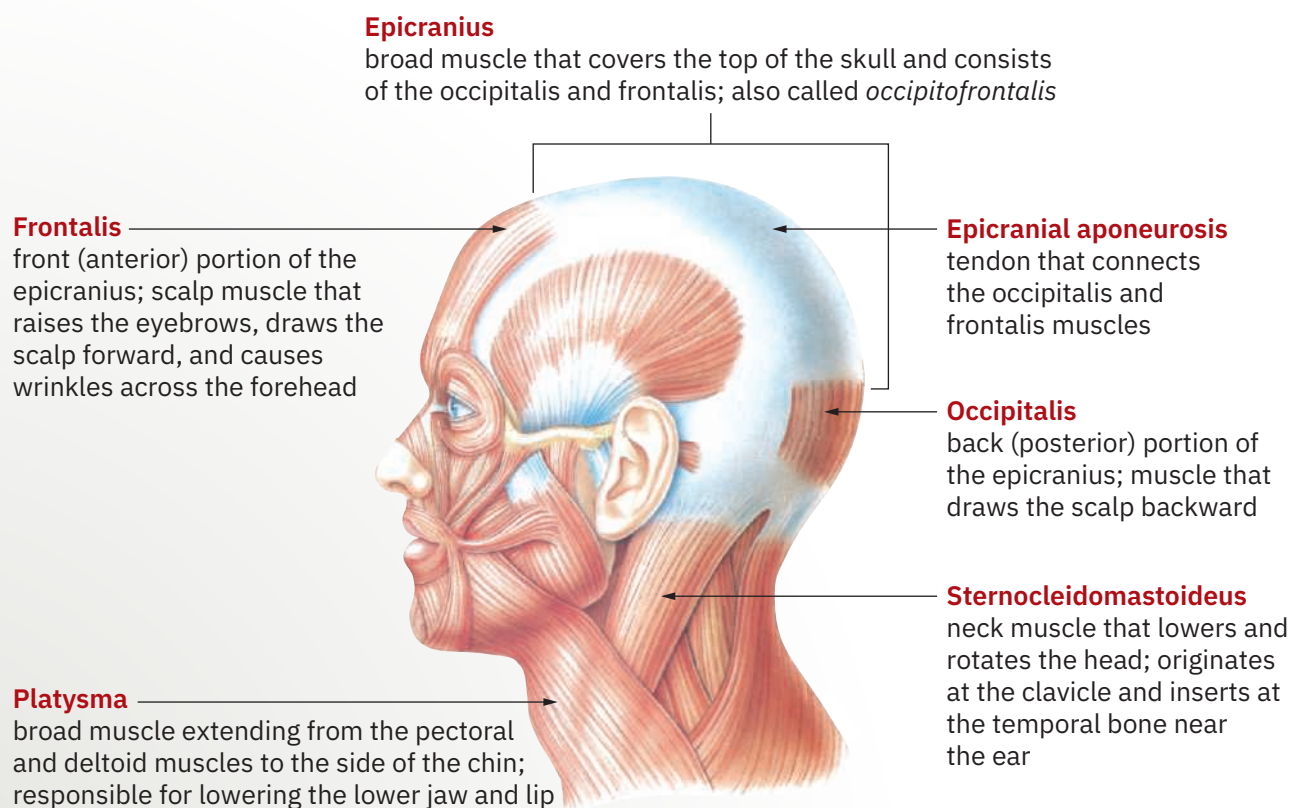


Fig. 2-11 Scalp and neck muscles.

Face, Nose, and Mouth Muscles

Figure 2-12 shows face, nose, and mouth muscles:

Corrugator

small muscle located between the eyebrows below the frontalis; draws the eyebrow down and wrinkles the forehead vertically

Temporalis

located near the temple, it opens and closes the jaw

Orbicularis oculi

ring muscle of the eye socket that closes the eyelids and assists in pumping tears

Levator labii superioris

muscle that surrounds and elevates the upper lip and dilates the nostrils, as when expressing distaste

Masseter

originates at the lower part of the zygomatic; moves the mandible, causing the mouth to close

Buccinator

muscle of the cheek between the upper and lower jaw that compresses the cheeks and expels air between the lips

Triangularis

muscle at the corner of the lip that extends over the chin and pulls down the corners of the mouth when frowning

Depressor labii inferioris

muscle that surrounds and lowers the lower lip and draws it to one side, as when expressing sarcasm

Procerus

muscle that covers the bridge of the nose, lowers the eyebrows, and causes wrinkles across the bridge of the nose

Levator palpebrae superioris

thin muscle that controls the movement of the eyelid

Levator anguli oris

muscle that raises the angle of the mouth and draws it inward

Zygomaticus minor

muscle that works with the zygomaticus major to make facial expressions

Zygomaticus major

muscle that extends from the zygomatic bone to the angle of the mouth; directs the lip outward and upward when laughing or smiling

Risorius

muscle at the corner of the mouth that draws it out and back, as when grinning

Orbicularis oris

muscle that circles the mouth and contracts, puckers, and wrinkles the lips

Mentalis

muscle at the tip of the chin that elevates the lower lip and raises and wrinkles the skin of the chin

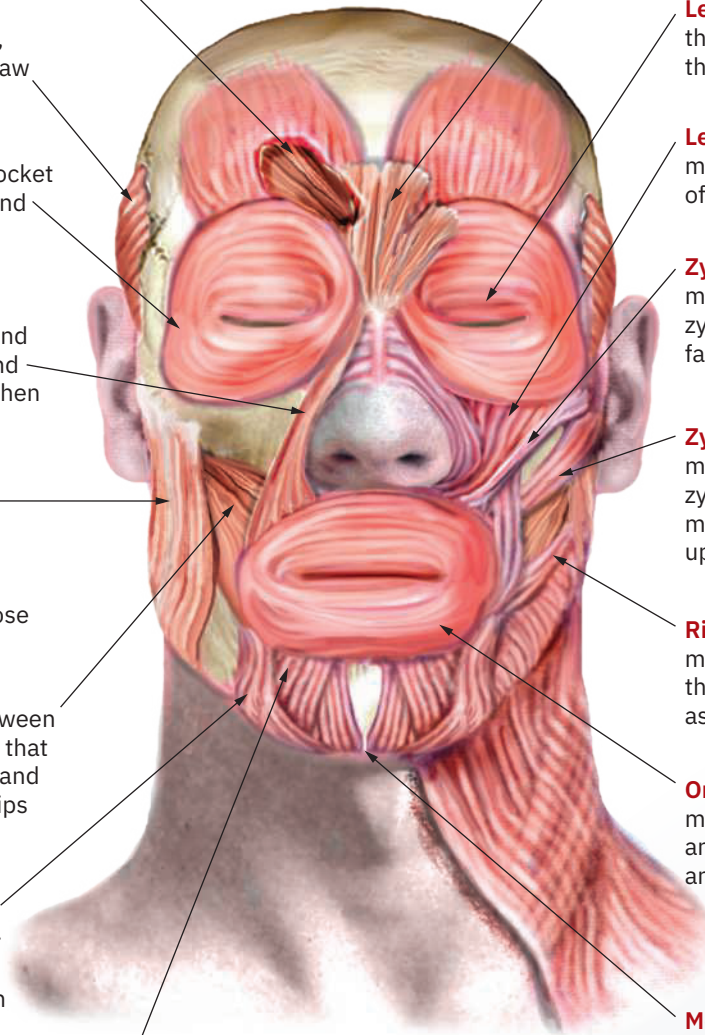


Fig. 2-12 Face, nose, and mouth muscles

? Did You Know?

About 40 to 50 percent of your body weight is in your muscles, with over 30 muscles in the face. These muscles control facial expressions and necessary motions such as **mastication**, which is the medical term for chewing. The primary mastication muscles are the temporalis and masseter.

Shoulder and Arm Muscles

There are three principal shoulder and upper arm muscles called the bicep, deltoid, and tricep (**Figure 2-13**). As a cosmetologist, you will mostly focus on and use the forearm which has a series of muscles and strong tendons.

Trapezius

covers the back of the neck as well as the upper and middle regions of the back; lifts and turns the head; raises the shoulders; controls swinging movements of the arm

Deltoid

large, triangular muscle covering the shoulder joint that allows the arm to extend outward and to the side of the body

Bicep

front of the upper arm; produces the contour of the front and inner side of the upper arm; lifts the forearm and flexes the elbow

Supinator

forearm muscle that rotates the radius outward and the palm upward

Pronator

muscle that turns the hand inward so the palm faces downward

Flexor

extensor muscle of the wrist involved in flexing or bending it

Tricep

large muscle covering the entire back of the upper arm that extends the forearm and straightens the elbow

Extensors

muscles that extend and straighten joints such as the wrist, hand, and fingers to form a straight line

Anterior or front

Posterior or back

Fig. 2-13 Anterior and posterior shoulder and arm muscles.

? Did You Know?

Specific terms can help describe a muscle's location:

- Anterior—in front
- Posterior—behind or at the rear
- Superior—above
- Inferior—below

Hand Muscles

The hand is one of the most complex body parts, with many small muscles that overlap from joint to joint and provide the flexibility and strength to open and close the hand and fingers.

Figure 2-14 shows important muscles:

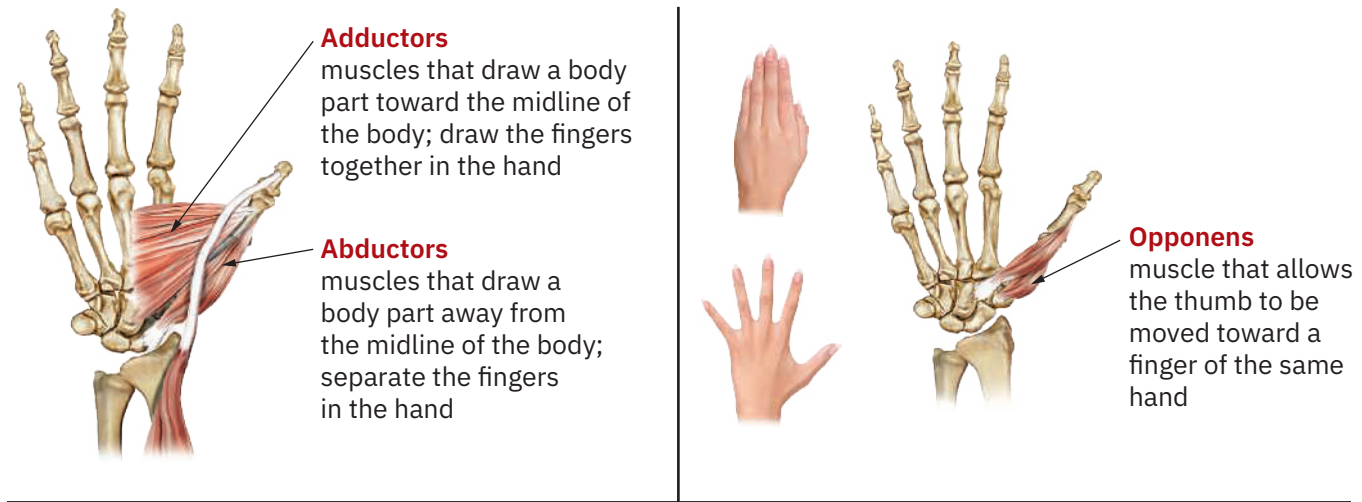


Fig. 2-14 Hand muscles.

Lower Leg and Foot Muscles

These muscles are small and provide proper support and cushioning for the foot and leg (**Figure 2-15**). Knowledge of the lower leg and foot muscles is helpful during a pedicure.

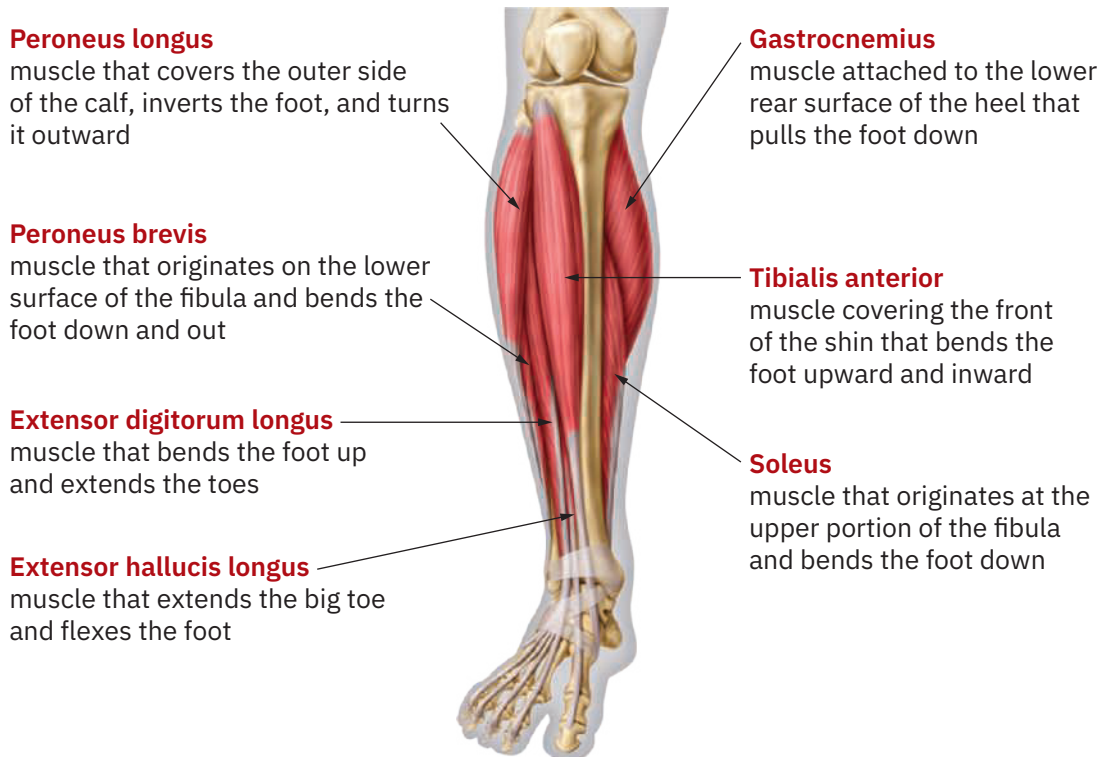


Fig. 2-15 Lower leg muscles.

Figure 2-16 illustrates foot muscles:

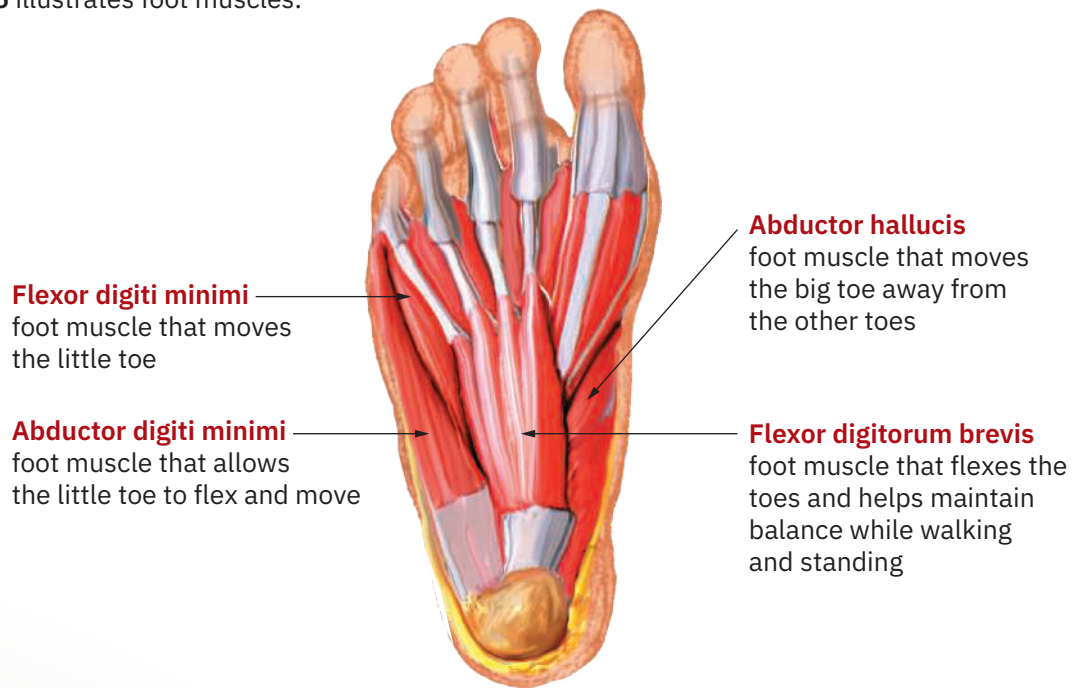


Fig. 2-16 Foot muscles (bottom).

⚠ Caution!

Massaging muscles properly can greatly benefit and relax a client. However, improper massaging may result in residual pain, nerve inflammation, and other negative effects. Direct massage pressure only from the insertion area to the origin.

✓ Check In

9. List the muscular system's basic functions.
10. Why do cosmetologists need knowledge of voluntary muscles?
11. What is the proper direction for massage?
12. What is the difference between striated and nonstriated muscles?



LO 7

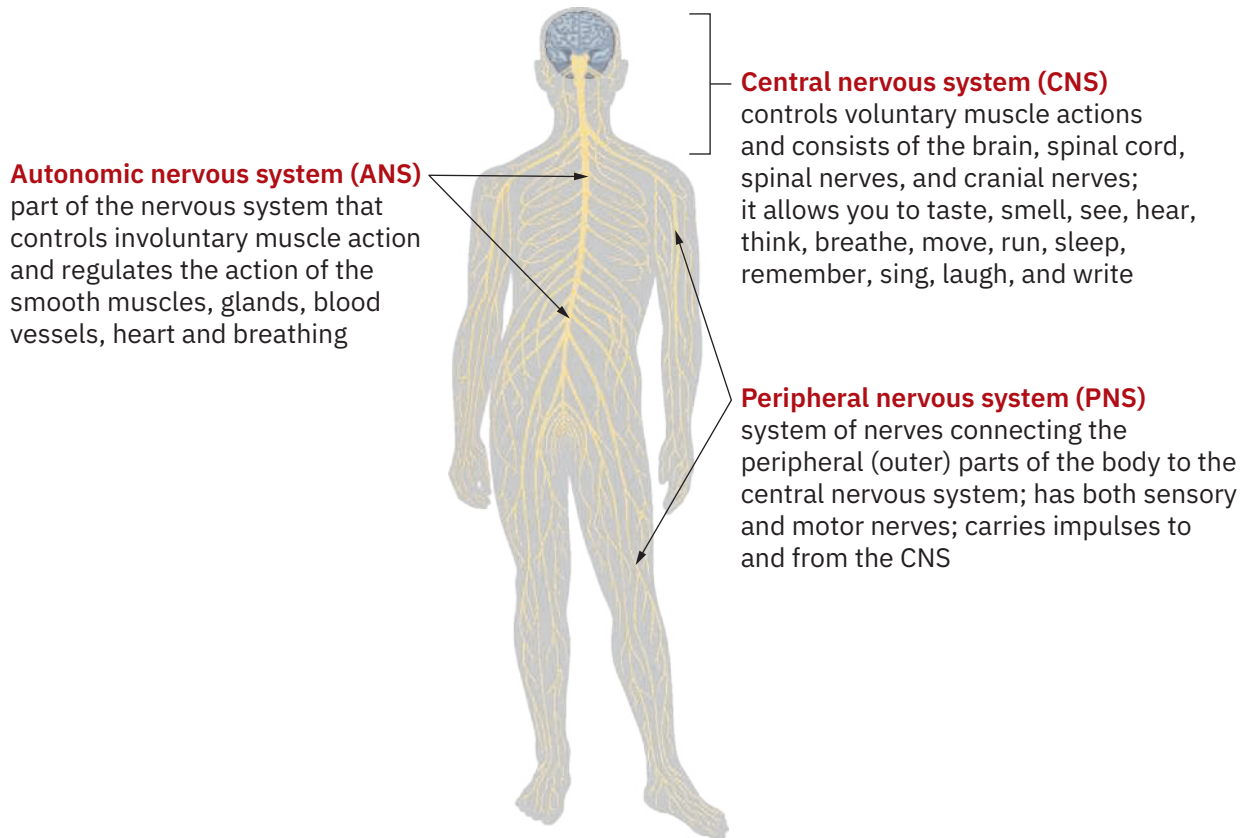
Explain the nervous system's divisions and functions.

Nervous System

The **nervous system** is a well-organized body system composed of the brain, spinal cord, and nerves. It controls and coordinates all other body systems. **Neurology** is the study of the structure, function, and pathology of the nervous system.

Nervous System Divisions

The nervous system has three main subdivisions which are the autonomic, central, and peripheral (**Figure 2-17**):



Autonomic nervous system (ANS)
part of the nervous system that controls involuntary muscle action and regulates the action of the smooth muscles, glands, blood vessels, heart and breathing

Central nervous system (CNS)
controls voluntary muscle actions and consists of the brain, spinal cord, spinal nerves, and cranial nerves; it allows you to taste, smell, see, hear, think, breathe, move, run, sleep, remember, sing, laugh, and write

Peripheral nervous system (PNS)
system of nerves connecting the peripheral (outer) parts of the body to the central nervous system; has both sensory and motor nerves; carries impulses to and from the CNS

Fig. 2-17 Nervous system divisions.

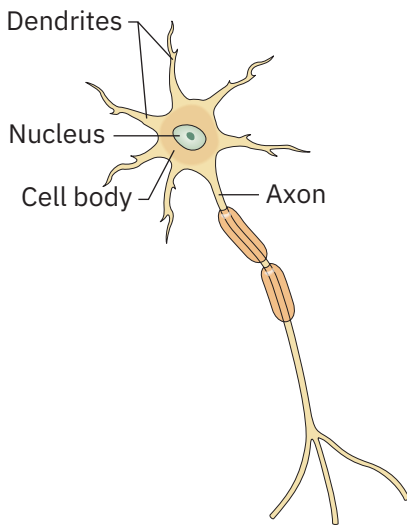


Fig. 2-18 A neuron or nerve cell.

The Brain and Spinal Cord

The **brain** is one of the body's most complex organs. It controls all the body's functions. The cranium protects the brain.

The **spinal cord** is the portion of the central nervous system that originates in the brain and extends down to the bottom of the spine. It is protected by the spinal column. There are 31 pairs of spinal nerves that extend from the spinal cord to the muscles, organs, and skin.

Nerves

Nerves are whitish bundles of nerve fibers that transmit impulses. They originate in the brain and spinal cord and send their branches to all parts of the body (**Figure 2-18**).

? Did You Know?

Ever had your little finger go numb when leaning on your elbow? This is due to localized inflammation around the ulnar nerve, often referred to as the funny bone, that runs along the bottom of the elbow. When hitting your elbow, the ulnar nerve impulse causes that “funny” tingling sensation.