

# CHAPTER 3

## Terminology for Healthcare Professionals

- **Lesson Purpose**

To give the student a clear understanding of language fundamentals, anatomical terms and related definitions, along with common diagnostic and procedural terms.

- **Lesson Objective**

Upon completion the student will:

- Learn basic chiropractic and medical language fundamentals
- Learn the body planes, anatomical positions, and movements
- Learn common diagnostic and procedural terms

***“It’s like learning a language; you can’t speak a language fluently until you find out who you are in that language, and that has as much to do with your body as it does with vocabulary and grammar.”***

*–Fred Frith*

### Language Fundamentals

The first step toward working in the chiropractic profession is mastering the language. It is imperative to acquire everyday familiarity with formal medical terminology, abbreviations, and acronyms. This chapter will introduce terminology typically used. As in traditional learning practices, the more time spent studying the material, the more comprehension and understanding you will gain. The goal of specialized vocabulary is to improve verbal and written communication, resulting in clearer information being communicated from doctor to staff and staff to patient. This section will explain common medical root words, prefixes, and suffixes. Most medical terminology comes from the root languages of Greek and Latin. Some translations are pure in form, while others are combined forms of Greek and Latin. Word sounds and basic phonetic concepts will assist you in knowing how and where to look up unfamiliar terms.

Listed on the following pages are many of the common Latin and Greek roots used in the chiropractic profession.

## Common Latin and Greek Word Roots

| <b>Root</b> | <b>Definition</b>  |
|-------------|--------------------|
| abdominus   | abdomen            |
| acantha     | spine              |
| acousia     | hearing            |
| acro        | extremity          |
| actin       | ray                |
| acuo        | sharp, sudden      |
| aden        | gland              |
| adeps       | fat                |
| adit        | entrance, approach |
| aer         | air                |
| al          | wing               |
| alba        | white              |
| alex        | to protect         |
| algia       | pain               |
| ama         | together           |
| ana         | to build up        |
| andro       | man                |
| anglo       | vessel             |
| anima       | soul               |
| ankylo      | loop, adherence    |
| anom        | irregular          |
| ansa        | handle             |
| antero      | before             |
| anthrop     | man                |
| antrum      | cavity             |
| anulus      | circular           |
| aqua        | water              |
| arche       | beginning          |
| archo       | anus               |
| arcus       | bow, arc           |
| arthro      | joint              |
| articulus   | joint              |
| astro       | star               |
| atom        | vapor, air         |
| atrophy     | a wasting away     |
| audio       | to hear            |
| auris       | the ear            |

## Common Latin and Greek Word Roots

| <b>Root</b> | <b>Definition</b> |
|-------------|-------------------|
| auto        | self              |
| bacter      | rod               |
| baro        | weight            |
| bary        | heavy             |
| basis       | foundation        |
| bilis       | bile              |
| blōs        | life              |
| blast       | germ              |
| bovine      | cow, ox           |
| brachlon    | arm               |
| brachium    | arm               |
| brachys     | short             |
| bradys      | slow              |
| brevis      | short             |
| bromos      | stench            |
| bronchus    | bronchial tube    |
| bubon       | groin             |
| bursa       | sac, pouch        |
| caco        | bad, poor, sick   |
| calor       | heat              |
| caput       | head              |
| cardio      | heart             |
| carno       | flesh             |
| cartilage   | gristle           |
| cata        | down              |
| cauda       | tail              |
| cavum       | cavity            |
| cele        | hernia            |
| celia       | abdomen           |
| entesis     | puncture          |
| cephal      | head              |
| chir(o)     | hand              |
| chole       | bile              |
| chondra     | cartilage         |
| chroma      | color             |
| chyle       | juice             |

## Common Latin and Greek Word Roots

| <b>Root</b> | <b>Definition</b>  |
|-------------|--------------------|
| cide        | to kill            |
| clast       | breaking down      |
| color       | hue                |
| cor         | heart              |
| corpus      | body               |
| costa       | rib, side          |
| crico       | ring               |
| cruces      | the cross          |
| cry         | cold               |
| crypt       | hidden             |
| cutis       | skin               |
| cyano       | blue               |
| cyna        | dog                |
| cyte        | cell               |
| dacry       | tear               |
| dactyl      | finger             |
| deca        | ten                |
| demo        | people             |
| dens        | tooth              |
| derma       | skin               |
| dexia       | on the right       |
| dexter      | right              |
| digit       | finger, toe        |
| diplo       | double             |
| dolor       | pain               |
| durus       | hard, lasting      |
| dynia       | ache, pain         |
| dys         | difficult, painful |
| ectasis     | dilatation of      |
| ecto        | without, outside   |
| ectopy      | displacement of    |
| embryo      | to grow within     |
| emia        | blood              |
| endo        | within             |

## Common Latin and Greek Word Roots

| <b>Root</b> | <b>Definition</b> |
|-------------|-------------------|
| ensis       | sword             |
| entero      | intestine         |
| equus       | equal             |
| erotic      | pulsation         |
| erythro     | red               |
| esthesia    | feeling, touch    |
| eu          | good, healthy     |
| exo         | outside, without  |
| febris      | fever             |
| femina      | woman             |
| fibra       | fiber             |
| fila        | thread            |
| flex        | bend              |
| galactia    | milk              |
| gastr       | the stomach       |
| gen         | to beget          |
| genu        | knee              |
| germen      | germ, sprig       |
| gingiva     | the gum           |
| glossa      | tongue, speech    |
| glycol      | sugar             |
| graph       | to write, record  |
| gravi       | weight, serious   |
| gyne        | women             |
| gyros       | circle            |
| hala        | breath, air       |
| helio       | the sun           |
| hema        | blood             |
| hepat       | the liver         |
| heter       | other, different  |
| hidro       | perspiration      |
| histo       | tissue            |
| homo        | like, same        |
| humerus     | shoulder          |
| hydro       | water             |
| hygea       | health            |
| hypno       | sleep             |

## Common Latin and Greek Word Roots

| <b>Root</b>         | <b>Definition</b>       |
|---------------------|-------------------------|
| <b>hyster</b>       | womb                    |
| <b>ichthy</b>       | fish                    |
| <b>idio</b>         | self                    |
| <b>ileum</b>        | hip bone                |
| <b>intestinum</b>   | intestine, entrail      |
| <b>ipso</b>         | same                    |
| <b>iso</b>          | equal                   |
| <b>jecur</b>        | liver                   |
| <b>juxta</b>        | near                    |
| <b>keras</b>        | horn, cornea            |
| <b>kine</b>         | motion                  |
| <b>lachryma</b>     | tear                    |
| <b>lact</b>         | milk                    |
| <b>later</b>        | side                    |
| <b>lati</b>         | broad                   |
| <b>lave</b>         | wash                    |
| <b>lipid</b>        | scale, scaly            |
| <b>lepsy</b>        | spasm, seizure          |
| <b>leuko</b>        | white                   |
| <b>lexia</b>        | word                    |
| <b>lien</b>         | the spleen              |
| <b>lingua</b>       | tongue                  |
| <b>lipa</b>         | fat                     |
| <b>lith</b>         | stone, calculus         |
| <b>logue</b>        | speech                  |
| <b>luna</b>         | moon                    |
| <b>lysis</b>        | to dissolve, break down |
| <b>macro</b>        | great, long             |
| <b>mal</b>          | bad, painful            |
| <b>malacia</b>      | softening               |
| <b>mamma</b>        | breast                  |
| <b>mania</b>        | madness                 |
| <b>mas</b>          | man, male               |
| <b>mast</b>         | breast                  |
| <b>medicamentum</b> | medicine                |
| <b>medio</b>        | middle                  |
| <b>mega</b>         | large, great            |

## Common Latin and Greek Word Roots

| <b>Root</b>     | <b>Definition</b>      |
|-----------------|------------------------|
| <b>melano</b>   | black                  |
| <b>meno</b>     | month                  |
| <b>mentis</b>   | mind                   |
| <b>meso</b>     | middle                 |
| <b>meta</b>     | between, after, beyond |
| <b>meter</b>    | measure                |
| <b>metro</b>    | the uterus             |
| <b>micro</b>    | tiny, minute           |
| <b>mis</b>      | bad, poor, dislike     |
| <b>mono</b>     | single, alone, one     |
| <b>morbus</b>   | disease                |
| <b>mortis</b>   | death, dead            |
| <b>muco</b>     | mucus                  |
| <b>multi</b>    | many                   |
| <b>musculus</b> | muscle                 |
| <b>myelo</b>    | marrow                 |
| <b>myo</b>      | muscle                 |
| <b>nano</b>     | dwarf                  |
| <b>naso</b>     | nose                   |
| <b>nasus</b>    | nose                   |
| <b>natus</b>    | birth                  |
| <b>necro</b>    | death                  |
| <b>neo</b>      | new                    |
| <b>nephr</b>    | kidney                 |
| <b>nervus</b>   | nerve                  |
| <b>neuro</b>    | nerve                  |
| <b>nidus</b>    | nest                   |
| <b>niger</b>    | black                  |
| <b>nocte</b>    | night                  |
| <b>nomen</b>    | name                   |
| <b>nosto</b>    | to return, go          |
| <b>novus</b>    | new                    |
| <b>nychia</b>   | nail of finger, toe    |
| <b>ob</b>       | against, obstructive   |
| <b>odont</b>    | tooth                  |
| <b>odor</b>     | smell                  |
| <b>lig</b>      | little, sparse, few    |

## Common Latin and Greek Word Roots

| <b>Root</b> | <b>Definition</b>  |
|-------------|--------------------|
| omni        | all                |
| onoma       | name               |
| oophor      | ovary              |
| ophthalma   | the eye            |
| ora         | mouth              |
| orch        | testicle           |
| ortho       | straight, regular  |
| os          | mouth              |
| osma        | odor               |
| osteo       | bone               |
| ot          | ear                |
| ovum        | egg                |
| pachy       | thick              |
| paleo       | old, ancient, past |
| pan         | all                |
| para        | to bear            |
| paries      | wall               |
| path        | disease, disorder  |
| pedi        | child              |
| pedis       | foot               |
| penia       | poverty, poorness  |
| pexy        | fixation           |
| phagy       | to eat             |
| pharmac     | medicine, drug     |
| phil        | to love            |
| phleb       | vein               |
| phobia      | morbid fear        |
| phone       | voice, sound       |
| photo       | light              |
| phrasia     | utterance, speech  |
| phren       | mind, head, skull  |
| phylaxis    | anti-infection     |
| physic      | nature             |
| plasia      | to form            |
| pnea        | to breathe, breath |
| pneumo      | lung               |
| podia       | foot               |

## Common Latin and Greek Word Roots

| <b>Root</b> | <b>Definition</b>  |
|-------------|--------------------|
| polio       | gray               |
| poly        | many, excessive    |
| procto      | anus               |
| pseudo      | fase, mimic        |
| psyche      | mind, soul, spirit |
| pteryg      | wing               |
| ptya        | sputum, saliva     |
| pulmo       | lung               |
| pulsus      | pulse, stoke, beat |
| puter       | rotten, putrid     |
| pyelo       | rough, basin       |
| pyo         | pus                |
| pur         | fire               |
| pyreto      | fever              |
| quadri      | four               |
| rachis      | spine              |
| ramus       | branch             |
| rar         | thin, rare, sparse |
| ren         | kidney             |
| rheo        | current            |
| rhin        | the nose           |
| ruber       | red                |
| salping     | tube               |
| salpinx     | tube               |
| sanguis     | blood              |
| sanitas     | health             |
| sapro       | putrid             |
| sarco       | flesh              |
| sarx        | flesh              |
| schist(o)   | to separate, split |
| schiz       | to divide, split   |
| sclera      | hard               |
| scopy       | observation of     |
| scota       | darkness           |
| sect        | to cut             |
| sial        | saliva             |
| sito        | food               |

## Common Latin and Greek Word Roots

| <b>Root</b> | <b>Definition</b>   |
|-------------|---------------------|
| soma        | body                |
| somnus      | sleep               |
| spasm       | seizure, convulsion |
| sphen       | wedge               |
| sphygma     | pulse, throb        |
| spina       | spine               |
| spiritus    | spirit              |
| splanchna   | organ, viscus       |
| spondy      | vertebra, spine     |
| squama      | a scale             |
| staphyl     | grape               |
| stasis      | stopping, checking  |
| stere       | solid               |
| steth       | chest               |
| stoma       | mouth               |
| stomachus   | stomach             |
| sudor       | perspiration        |
| super       | over, abnormal      |
| supra       | above               |
| tachy       | swift               |
| tact        | touch               |
| tend        | tendon              |
| teno        | tendon              |
| testis      | testicle            |
| tetra       | four                |
| thana       | death               |
| thenia      | strength, power     |
| theo        | god, deity          |
| therapy     | treatment           |
| therm       | heat, temperature   |
| thorax      | chest               |
| thrombo     | blood clot          |
| thyro       | shield, thyroid     |
| tocia       | childbirth          |
| toco        | childbirth          |
| tonus       | tone, sound         |
| tricho      | hair                |

## Common Latin and Greek Word Roots

| <b>Root</b>     | <b>Definition</b>    |
|-----------------|----------------------|
| <b>trophy</b>   | nutrition, growth    |
| <b>ula</b>      | gum                  |
| <b>ultra</b>    | over, beyond, excess |
| <b>unguis</b>   | nail                 |
| <b>unus</b>     | one, single          |
| <b>uria</b>     | urine                |
| <b>uter</b>     | womb                 |
| <b>vas</b>      | vessel               |
| <b>ven</b>      | vein                 |
| <b>vertebra</b> | spine, backbone      |
| <b>xanth</b>    | yellow               |
| <b>xero</b>     | dry                  |
| <b>xylo</b>     | wood                 |
| <b>zoo</b>      | animal               |
| <b>zymo</b>     | to ferment           |

## Basic Chiropractic and Medical Terminology

### Common Prefixes and Descriptions

|                 |                              |
|-----------------|------------------------------|
| a-              | without, not, absence of     |
| ab-             | from, away from, negative    |
| abdomin-        | abdomen                      |
| acid-           | sour                         |
| acou-           | hearing                      |
| acr-, acro-     | extremity                    |
| act-            | do, drive, act               |
| actin-          | ray, ray like                |
| acu-            | needle                       |
| ad-             | to, toward, on, near, beside |
| aden-, adeno-   | gland                        |
| adip-           | fat                          |
| aer-, aero-     | air                          |
| alb-            | white                        |
| all-            | other, different             |
| alve(o)-        | cavity, socket, channel      |
| ama-            | together                     |
| ambi-, amphi-   | both, around                 |
| an-             | without, absence of          |
| ana-            | up, back again, increase     |
| angi-, angio-   | blood vessel                 |
| ankylo-         | adherence, fusion            |
| anomalo-        | irregular                    |
| ante-           | before                       |
| anter-          | front                        |
| ant-, anti-     | against, counter             |
| arthr-, arthro- | joint                        |
| articu-         | joint surface                |
| auto-           | self                         |
| baro-           | weight                       |
| bary-           | heavy                        |
| bi-             | two, twice, double           |
| brachi-         | arm                          |
| brachy-         | short                        |
| brady-          | slow                         |
| burs-           | sac, pouch                   |

## Common Prefixes and Descriptions

|                          |                           |
|--------------------------|---------------------------|
| <b>cata-</b>             | down, under               |
| <b>caud-</b>             | tail, tail-like           |
| <b>cephal-</b>           | head                      |
| <b>cervic-</b>           | neck                      |
| <b>chondra-</b>          | cartilage                 |
| <b>circum-</b>           | around                    |
| <b>co-, com-, con-</b>   | together, with            |
| <b>contra-</b>           | against, opposite         |
| <b>cry-, cryo-</b>       | cold                      |
| <b>de-</b>               | down, away, removal       |
| <b>dermat-</b>           | skin                      |
| <b>di-</b>               | double, twice             |
| <b>dia-</b>              | through, apart, between   |
| <b>digi-</b>             | finger, toe               |
| <b>dis-</b>              | apart, away from          |
| <b>dors-</b>             | back, toward the back     |
| <b>dys-</b>              | difficult, bad, painful   |
| <b>epi-</b>              | on, over, upon            |
| <b>esthesio-</b>         | touch, sensation, feeling |
| <b>eu-</b>               | good, well, pleasant      |
| <b>ex-, exo-, extra-</b> | -away from, outside       |
| <b>flex-</b>             | bend                      |
| <b>gravi-</b>            | weight, serious, heavy    |
| <b>hemi-</b>             | half                      |
| <b>hetero-</b>           | other, different          |
| <b>histo-</b>            | tissue                    |
| <b>humer-</b>            | shoulder                  |
| <b>hydro-</b>            | water, fluid              |
| <b>hyper-</b>            | over, beyond, excess      |
| <b>hypo-</b>             | under, deficiency         |
| <b>idio-</b>             | self                      |
| <b>infra-</b>            | beneath, below            |
| <b>inter-</b>            | between, among            |
| <b>intra-</b>            | within, into              |
| <b>ipsi-</b>             | same                      |
| <b>iso-</b>              | equal                     |
| <b>kinesi-</b>           | movement, motion          |
| <b>later-, latero-</b>   | side                      |

## Common Prefixes and Descriptions

|                 |                           |
|-----------------|---------------------------|
| lip-, lipo-     | fat                       |
| macro-          | long, great, large        |
| mal-            | painful, bad, poor        |
| medi-, medio-   | mid, middle               |
| mega-           | great, large              |
| meta-           | beyond, change, between   |
| micro-          | small, minute             |
| mis-            | bad, dislike              |
| mono-           | one, single, alone        |
| musculo-        | muscle                    |
| myelo-          | marrow                    |
| myo-            | muscle                    |
| nervi-, nervo-, | nerve                     |
| neuro-          | nerve                     |
| noct-           | night                     |
| non-            | not, against              |
| ob-             | against, in the way of    |
| om-             | shoulder                  |
| ortho-          | regular, normal, straight |
| oste-, osteo-   | bone                      |
| para-           | near, by the side of      |
| ped-            | child                     |
| pedi-           | foot                      |
| per-            | through                   |
| peri-           | around                    |
| physi-          | nature                    |
| pod-            | foot                      |
| poly-           | many, excessive           |
| post-           | after, behind             |
| pre-            | before, in front of       |
| pro-            | affirmative               |
| quadri-         | four                      |
| retro-          | behind, backward          |
| semi-           | half, part                |
| soma-           | body                      |
| spasmo-         | seizure, convulsion       |
| spino-          | spine                     |
| spondylo-       | vertebra, spine           |

## Common Prefixes and Descriptions

|                   |                                |
|-------------------|--------------------------------|
| <b>sub-</b>       | less, below                    |
| <b>super-</b>     | over, above, excessive         |
| <b>supra-</b>     | above, upon, on                |
| <b>sym-, syn-</b> | together                       |
| <b>tact-</b>      | touch, sensation               |
| <b>tend-</b>      | tendon                         |
| <b>thera-</b>     | to heal, treat                 |
| <b>thoraco-</b>   | chest                          |
| <b>topo-</b>      | place, location, site, surface |
| <b>trans-</b>     | across, through                |
| <b>ultra-</b>     | over, excess, beyond           |
| <b>un-</b>        | not                            |
| <b>uni-</b>       | one                            |
| <b>vertebr-</b>   | vertebra, spine                |
| <b>pulsus-</b>    | pulse, stoke, beat             |

## Common Suffixes and Descriptions

|                  |                            |
|------------------|----------------------------|
| -algia           | pain, ache                 |
| -cele            | swelling, tumor, hernia    |
| -cyte            | cell                       |
| -ectomy          | surgical removal           |
| -emia            | blood                      |
| -genic           | origin, producing          |
| -gram            | picture, tracing           |
| -graph           | record, chart              |
| -ic, -ical       | pertaining to, relating to |
| -itis            | inflammation               |
| -kinesis         | movement                   |
| -kinetic         | motion, dynamic            |
| -lysis           | splitting, setting free    |
| -malacia         | softening                  |
| -odynia          | Pain, ache                 |
| -oid             | like, resembling           |
| -oma             | tumor, new growth          |
| -osis            | abnormal condition         |
| -ostomy          | opening for drainage       |
| -otomy           | to cut into                |
| -ous             | full of                    |
| -pathy           | disease                    |
| -plasty          | repair                     |
| -penia           | lack of                    |
| -phage           | eat, consume               |
| -plegia          | paralysis                  |
| -practic         | the practice of            |
| -ptosis          | drooping, falling          |
| -rrhage/-rrhagia | sudden flow                |
| -rrhea           | discharge, flow            |
| -scopy           | direct examination of      |
| -trophy          | nutrition                  |
| -tropy           | a turning, change          |

## Anatomical Terms and Related Definitions

### Bodily Planes

Planes are real or theoretical flat surfaces containing all the straight lines required to connect two points within them. In a two-dimensional reference system, the plane is simply divided into four quadrants by a perpendicular vertical line (called the Y axis) and a horizontal line (the X axis). A third axis (usually called the Z axis) can be added to expand the system to three dimensions. The Z axis crosses where the X and Y meet, and is perpendicular to both (SEE FIGURE 3.A). Anatomically, the body can be divided into planes of reference that correspond somewhat to typical X-Y-Z reference planes.

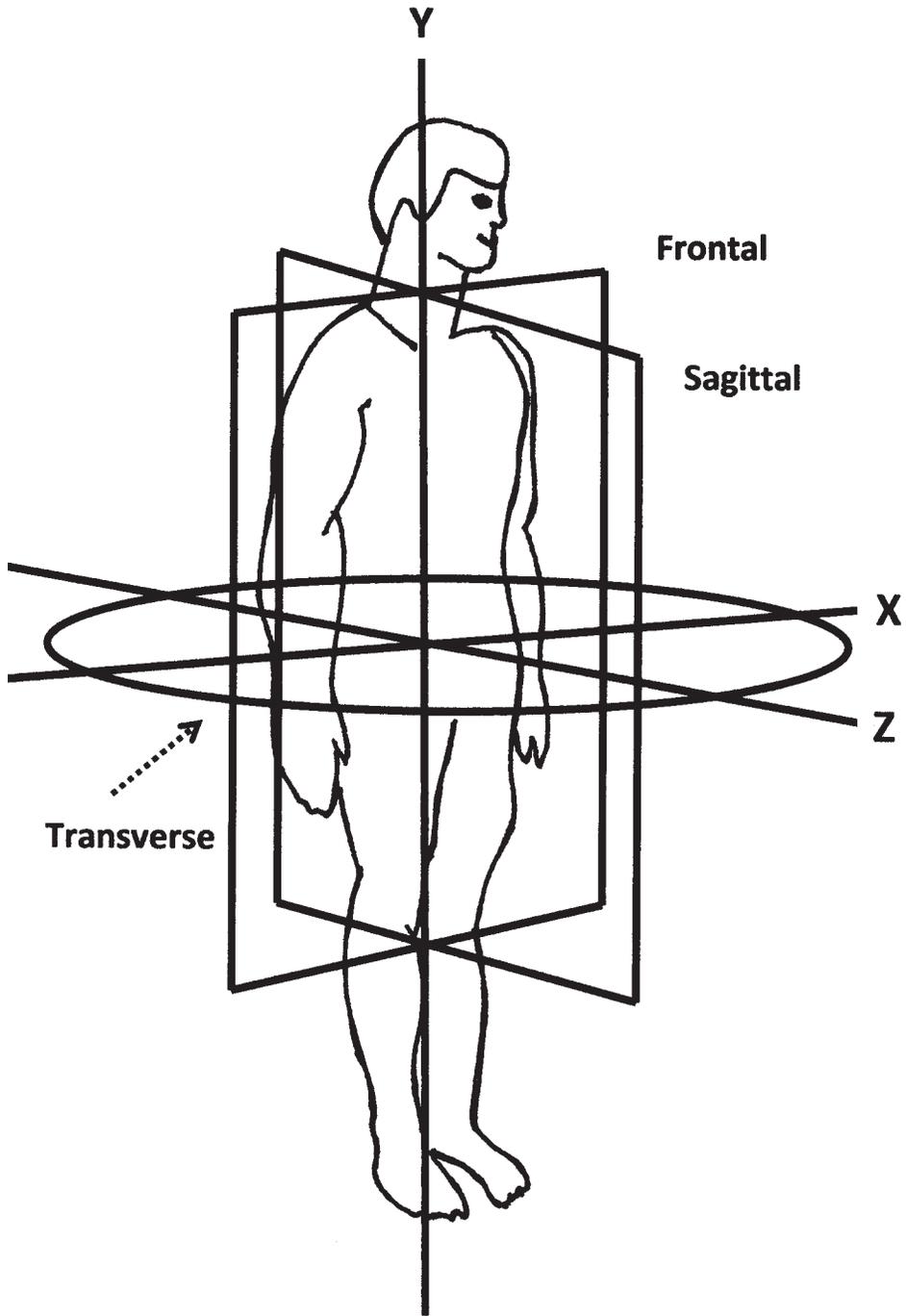
**The Median (or midsagittal) Plane** is a vertical plane that passes lengthwise through the midline of the body from front to back, *dividing it into right and left halves*.

**The Sagittal Planes** are any vertical planes passing through the body, dividing it into unequal right and left halves. These are also called the parasagittal planes.

**The Coronal Planes** (frontal) are any vertical planes passing through the body perpendicular to the median plane, dividing it into anterior (front) and posterior (back) portions.

**The Horizontal Planes** (transverse) are any planes passing through the body at right angles to both the median and coronal planes and is parallel to the ground. A horizontal plane divides the body into *superior* (upper) and *inferior* (lower) portions.

FIGURE 3.A BODILY PLANES



## Directional Positioning

### **Anterior**

Toward or nearer the front or belly/chest side of the body, also known as *ventral*

### **Posterior**

Toward or nearer the back or backside of the body, also known as *dorsal*

### **Caudad**

Toward the feet (or tail)

### **Cephalad**

Toward the head

### **Proximal**

Near the point of reference or origin. (Usually the body is used as the reference point)

### **Distal**

Away from the point of reference or origin

### **Inferior**

Below or caudad

### **Superior**

Above or cephalad

### **Lateral**

Away or farther from the midsagittal plane, right or left of the midline, or toward the side

### **Medial**

Toward or nearer the midline of the body or midsagittal plane

### **Ipsilateral**

On the same side

### **Contralateral**

On the opposite side

**Palmar**

Refers to the palm or *volar* surface of the hand

**Plantar**

Refers to the sole or *volar* surface of the foot

**Static Positions**

**Anatomical Position**

Refers to the position of reference for all anatomical descriptions. This descriptor assumes the body is in the standard position which is accepted worldwide. By using this position, any part of the body can be related to any other part of it. A person is in the anatomical position when he/she is standing erect with the head, eyes, and toes directed forward, heels and toes together, and the upper limbs hanging by the sides with the palms facing anteriorly. Since this is not a normal postural configuration, it must be remembered that the differences (and common points for confusion) are that, 1) the palms of the hands face anteriorly, and 2) the big toes touch and point forward. Many patient placements or presentation positions are also standard, and carry proper descriptive names as well.

**Adams Position**

Standing with the heels together, knees locked, and the spine fully flexed forward

**Knee-Chest Position**

Resting on the knees and upper chest

**Knee-Elbow Position**

Resting on the knees and elbows (also known as the Genucubital Position)

**Lateral Recumbent Position**

Lying on either side with one or both hips and elbows flexed

**Lithotomy Position**

Lying on the back with the hips and knees flexed at right angles. The feet are typically supported by stirrups.

### **Sims' Position**

Lying in a lateral recumbent position with one arm behind the back; the thighs are flexed, the upper more than the lower

### **Prone Position**

Lying face down

### **Supine Position**

Lying on the back, face up

### **Antalgic Position**

Any physical position assumed to gain some relief from pain

## **Movements**

The spine is a living, dynamic, and segmented structure that is in constant motion during activity, and every breath taken during rest. The terms previously described concerning position, direction, and location generally refer to a body that is apparently still. Given the body is a dynamic, moving structure that rarely is seen in a static plane of position, additional terms are necessary to describe specific directional movements of the body.

### **Motion**

Refers to a continuous change (displacement) of position

### **Kinetics**

Is the study of the relationship between a force acting on a body or body segment and the changes produced in the body motion.

*Kinetic* actions are expressed in amounts per units of time.

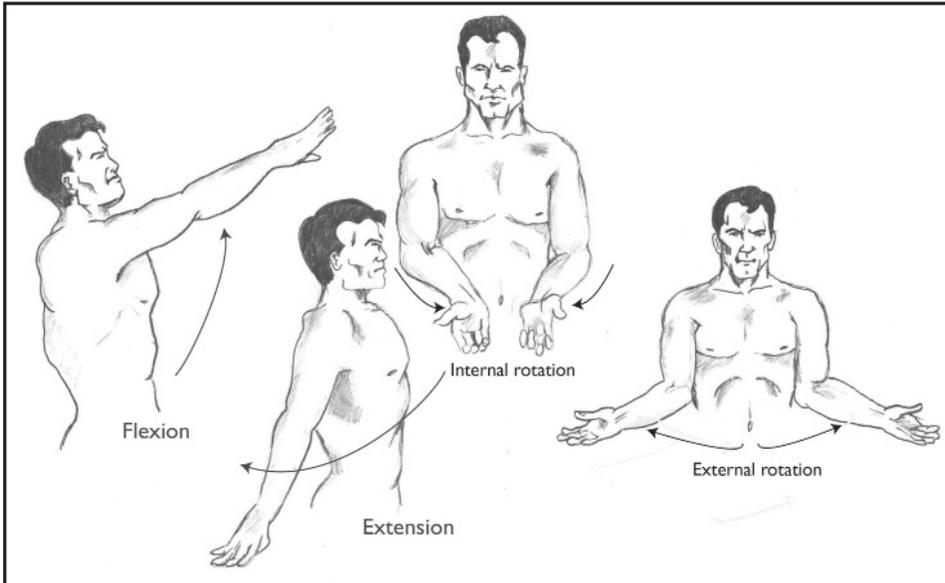
### **Kinematics**

Is the complex study of motions of the body parts and forces causing motion (with emphasis on displacement, acceleration, and velocity) that is mainly the result of muscle activity

### **Flexion and Extension**

Generally, when the angle of the joint becomes smaller than when it is in anatomical position, it is considered to be in *flexion*. For

FIGURE 3.B



example, when the elbow is bent, the angle of the joint decreases; therefore, it is said to be in *flexion*. The opposite of flexion is *extension*. When the elbow is fully straight, it is considered to be in full extension. Most joints in the body can flex and extend. When motion exceeds that which is considered normal, it is called hyperflexion or hyperextension (SEE FIGURE 3.B).

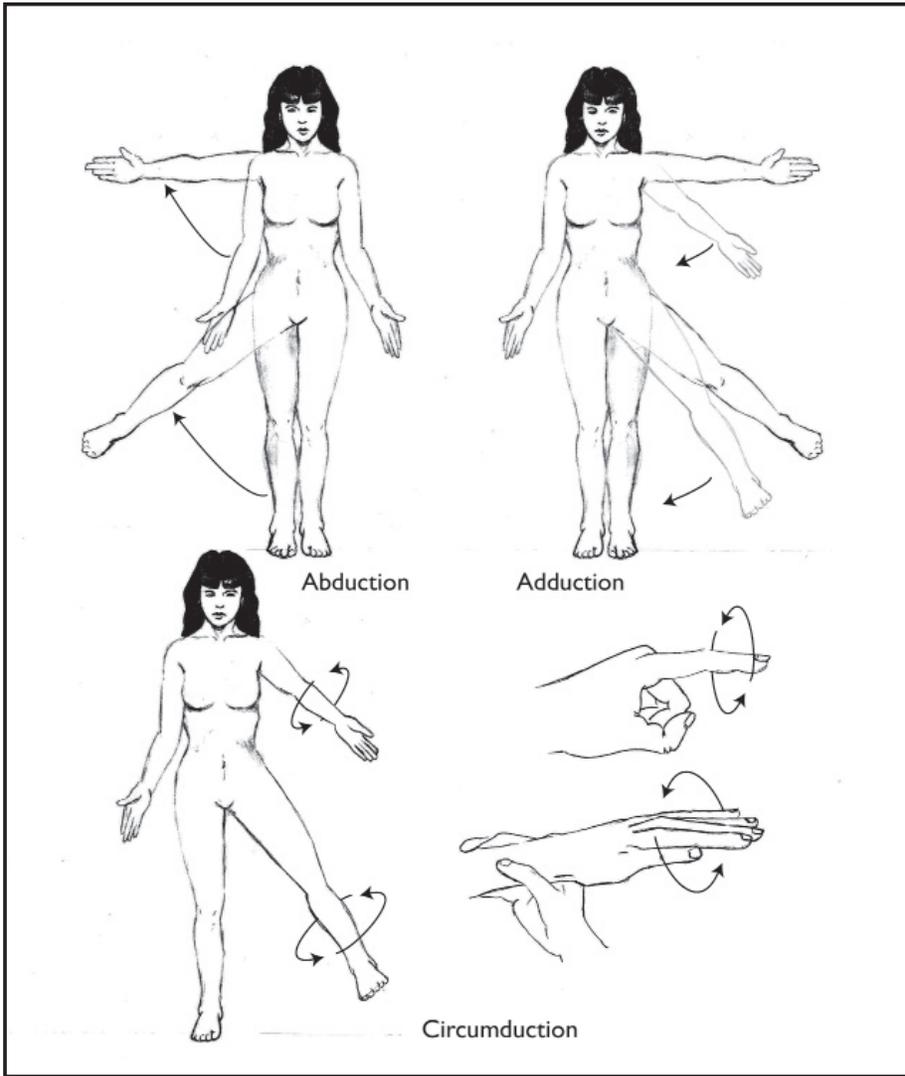
### Abduction and Adduction

When a body part is farther from the midline of the body than when in anatomical position, it is said to be in *abduction*. When it approximates or gets closer to the midline, it is said to be in *adduction*. These movements typically occur in the fingers, toes, shoulders, and hips (SEE FIGURE 3.C).

### Rotation (internal and external)

When a joint is capable of motion on its axis (rotating), it is said to be capable of rotation. Turning the anterior surface of a body part toward the midline is called *internal rotation*. The opposite of this motion is termed *external rotation* (SEE FIGURE 3.B).

FIGURE 3.C



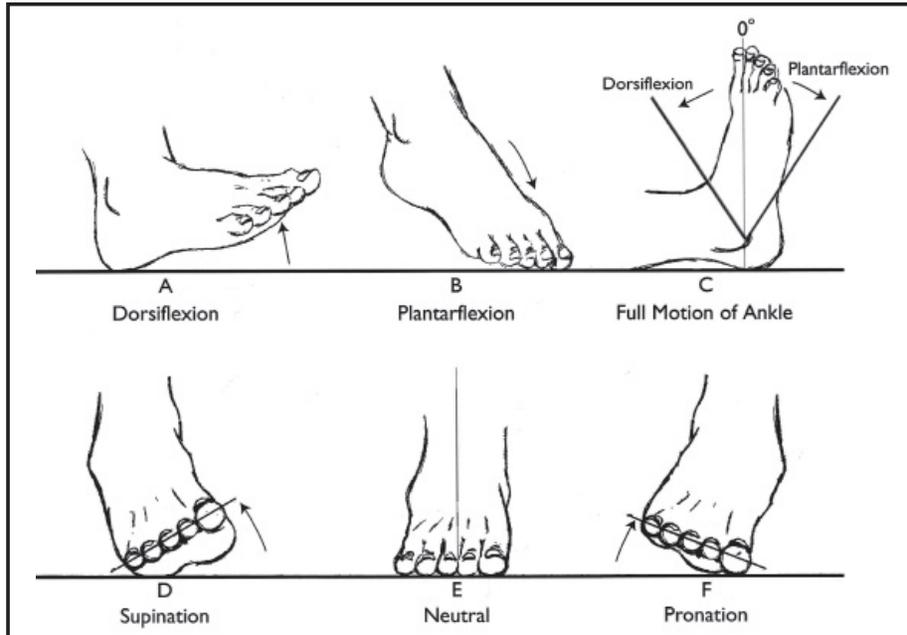
### Elevation and Depression

Raising a part from its normal (zero) position is called *elevation*. *Depression* means to lower a part from its normal position. Good examples of both are revealed in the shoulder.

### Circumduction

Movement of a joint in a three-dimensional, cone-shaped direction is called *circumduction*. This motion is a combination of many movements, typically including flexion, extension, abduction, and adduction (SEE FIGURE 3.C).

FIGURE 3.D



### Translation

Movement in a line when all parts of an object, at a given time, have the same direction of movement, much like a train on a track, or the body during walking.

### Pronation

The act of assuming the prone position. For example, to *pronate* the hand would mean to turn it inward at the forearm, turning the palm posteriorly, away from anatomical position (SEE FIGURE 3.D).

### Supination

The opposite of pronation. It is the act of turning the palm forward or upward or of raising the medial margin or longitudinal arch of the foot. Pronation and supination movements are seen at the forearm (rotation of forearm between the wrist and elbow, palm turning down or up, respectively) and in the foot. However, *inversion* and *eversion* are better terms to use for actions of the foot than pronation and supination (SEE FIGURE 3.D).

### Dorsiflexion/Plantar Flexion

Backward flexion, moving the part toward its dorsal surface (such as in hand or foot) is called *dorsiflexion*. The opposite of this movement is called *plantar flexion*. These movements typically occur at the wrist, ankle, fingers, and toes (SEE FIGURE 3.D).

**Inversion/Eversion**

A turning inward, inside-out, or reversal of the normal relation of a part is called *inversion*. Eversion is the opposite of inversion, referring to a position where the part in question is turned outward. These terms are typically reserved to describe motions of the foot.

**Range of Motion (ROM)**

The difference between two points of physiologic extremes of motion. Range of motion is measured in degrees.

**Qualifying or Interconnecting Terms**

**Accompanying**

Denotes companionship with, but not dependent upon or necessarily closely joined. *Accompanying* signs or symptoms may co-exist, but could be independent of the primary condition.

**Associated**

Denotes something that is closely joined, but not necessarily dependent upon.

**Attendant**

Denotes a sign or symptom that follows the original as a consequence of it.

**Concomitant**

Denotes that which accompanies or is attendant with the original.

**Consequent**

A sign or symptom that follows the original as a result of it.

**Predisposing**

Something that gives a tendency toward.

**Pre-existing**

That which exists before, but does not necessarily give a tendency toward.

## Common Musculoskeletal Diagnoses and Definitions

### Sprain

An injury to the ligamentous tissues of a given joint. Sprains are classified by their severity as follows:

- Grade 1* A simple sprain from mere overexertion of the ligaments. This injury is characterized by tenderness over the ligament(s) with swelling, other symptoms of inflammation, and no appreciable joint instability.
- Grade 2* A moderate sprain with a partial laceration or tear of the ligament. This injury is characterized by all the symptoms of a Grade 1 sprain, along with a lack of resistance to pressure over the ligament(s), and increased joint movement on tension or passive range of motion (PROM). PROM refers to motion that occurs without a muscle activation.
- Grade 3* A severe sprain with gross or complete laceration or tearing of the ligament(s). This injury is characterized by findings of a moderate sprain as well as a marked excess in joint motion.

### Strain

An injury that affects the muscular and/or tendinous structures. Clinically, a *strain* elicits pain on muscular effort, even without joint movement. Strains are classified similarly to sprains, with the symptoms and findings directed to musculotendinous structures instead of the ligaments.

### Myofasciitis

Inflammation of the muscle and its fascia (the skin-like covering). This is the most common form of myositis in response to trauma.

### Myositis Ossificans

The conversion of a muscular area to calcification, then to bone. This usually occurs due to trauma and resultant marked bruising of the muscle.

### Muscular Spasm

A full involuntary contraction of muscular tissue. Spasms can be either tonic (persistent), or clonic (alternating).

### **Muscular Hypertonicity**

An increased tone or tightening of a muscle. Hypertonicity is a more common entity than muscular spasm and is descriptive of palpable or visible alterations or differences of elasticity within muscular tissue or in comparison to surrounding or opposing musculature.

### **Tendonitis**

An inflammation of the tendons or muscle-tendon attachments. Tendonitis is most common in short tendons of the body that do not have tendon sheaths.

### **Tendonosis**

A chronic deterioration of a tendon.

### **Tenosynovitis**

An inflammation of tendon sheaths. This condition is more common than tendonitis, provided a muscular sheath is present.

### **Bursitis**

An inflammation of a specific bursa. This condition can progress to calcific bursitis, during which the bursa takes on calcium deposits.

### **Capsulitis**

An inflammation of a joint capsule. This condition can progress to adhesive capsulitis, during which the capsule takes on adhesions and restricts the motion of the joint.

### **Synovitis**

An inflammation of a synovial membrane. Tenosynovitis, capsulitis, and bursitis are all specific variations of this condition.

### **Fibrositis and Myofibrositis**

An inflammatory buildup of fibrous tissue, particularly of the muscle sheaths and fascial layers. If the condition is non-inflammatory, it is called *fibrosis*, and can be periarticular (if involvement is of the connective tissues surrounding the joint) or termed *myofibrositis* or *myofibrosis* if the involvement is of the musculature itself.

### **Radiculitis**

An inflammation of a nerve root. This typically produces pain over the distribution of a specific dermatome (an area of skin associated with a pair of dorsal roots from the spine.)

**Paresthesia**

An abnormal sensory awareness over a specific area. It is usually associated with minimal radicular irritation and radiates over a specific dermatome.

**Reflex Neuralgia**

Pain radiating along the course of a sensory nerve as a referral from another source along the course of the nerve. This differs from radiculitis in that it may not follow a specific dermatome.

**Neuralgia**

Pain in a nerve, usually extending along the course of one or more adjacent nerves.

**Neuritis**

Inflammation of a nerve. Inflammation can be of many or multiple sources, including mechanical, toxic, metabolic, or vascular.

## **Common Chiropractic Procedural Terms and Definitions**

According to the American Chiropractic Association, chiropractic is that branch of the healing arts which is concerned with human health and disease processes. Doctors of chiropractic are physicians who consider man as an integrated being, but give special attention to spinal mechanics, musculoskeletal, neurological, vascular, nutritional, and environmental relationships.

Chiropractic is based on the premise that the relationship between structure and function in the human body is a significant health factor and that such relationships between the spinal column and the nervous system are the most significant, since the normal transmission and expression of nerve energy are essential to the restoration and maintenance of health.

**Adjustment**

Any chiropractic therapeutic procedure that utilizes controlled force, leverage, direction, amplitude, and velocity which is directed at specific joints or anatomical regions. Chiropractors commonly use such procedures to influence joint and neurophysiological function.

### **Manipulation**

A manual procedure that involves a directed thrust to move a point past the physiological range of motion, without exceeding the anatomical limit.

### **Mobilization**

Movement applied singularly or repetitively within or at the physiological range of joint motion, without imparting a thrust or impulse, with the goal of restoring joint mobility.

### **Motion Segment**

A functional unit made up of the two adjacent articulating surfaces and the connecting tissues binding them to each other.

### **Spinal Motion Segment**

Two adjacent vertebrae, and the connecting tissues binding them to each other.

### **Subluxation**

A vertebral motion segment in which alignment, motion integrity, and/or physiological function are altered, although contact between joint surfaces remains intact.

### **Subluxation Complex**

A theoretical model of motion segment dysfunction (subluxation) which incorporates the complex interaction of pathological changes in nerve, muscle, ligamentous, vascular, and connective tissues.

### **Subluxation Syndrome**

An aggregate of signs and symptoms that relate to pathophysiology or dysfunction of spinal and pelvic motion segments or to peripheral joints.