

## The Musculoskeletal System - Part 1

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### What Does the Musculoskeletal System Consist of?

- Bones
- Muscle Tissue
- Connective Tissue/Fascia
- Tendons
- Ligaments
- Cartilage

### What is the Function of the Musculoskeletal System?

The main function of the *skeletal system* is to provide support, protection, and movement of the body. The skeletal system also stores minerals such as calcium, phosphorus, manganese and magnesium, which are released as needed, produces blood cells in the red marrow of the bones and stores yellow marrow, which is an important energy source made up of fat/adipose tissue and other blood cells. We are born with about 350 bones, of which many fuse together in our first few years of life to form about 208 bones.

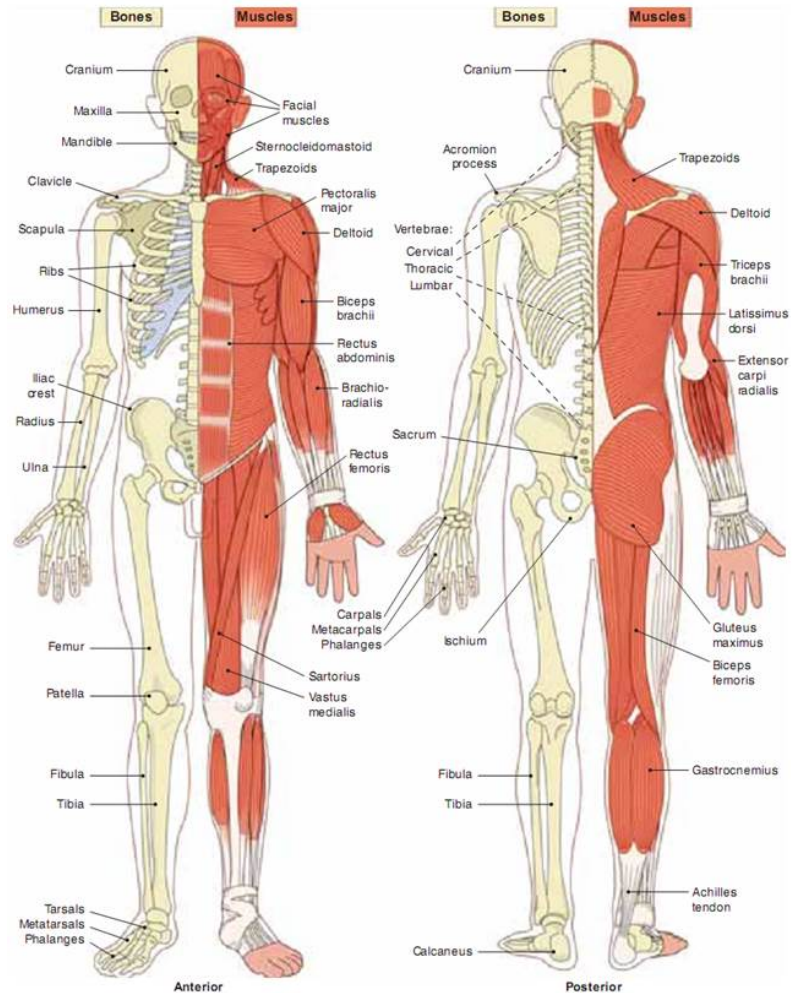


FIGURE 20.1. Cross-section of musculoskeletal system.

There are 3 types of muscle tissue in the muscular system: *skeletal*, *cardiac* and *smooth*. The *skeletal muscle tissue* are known as voluntary muscles which we can control and are attached to the bones. The *cardiac muscle tissue* is involuntary and makes up the heart while the *smooth muscle tissue* are found in abdominal organs and blood vessels and also attach hair follicles to the skin and are also involuntary. There are about 640 muscles in the body.

The *connective tissue or fascia* is a web of collagenous material that covers our entire body and is grouped into 2 categories: *superficial fascia* and *deep fascia*. Superficial fascia stores water and fat, provides an important role in intercellular communication by providing a pathway for nerves and blood to enter and exit muscles, helps to limit damage against traumatic blows and helps to hold our heat in our body. Deep fascia,

also referred to as visceral fascia, surrounds our muscles and secures our organs in place in our abdominal cavity. Fascia attaches muscle to muscle.

*Cartilage* is a firm, whitish, flexible connective tissue found in various forms in the larynx and respiratory tract, in structures such as the external ear, and in the articulating surfaces of joints. It is more widespread in the infant skeleton, being replaced by bone during growth.

The *tendons* are made of a fibrous connective tissue (mainly collagen) and their function is to connect the muscles to the bone. The *ligaments* are a fibrous connective tissue (mainly collagen) that attach bone to bone. Both the ligaments and the tendons contain no living cells and do not have a direct blood supply which can make healing very difficult.

### **Common Acute and Chronic Problems for Musculoskeletal System:**

Lower back pain	Fibromyalgia
Gout	Osteoarthritis
Rheumatoid arthritis	Tendinitis
Muscle cramps & spasms	Fractures
Sprains	Dislocations
Adhesive capsulitis	Bone spurs
Carpal tunnel syndrome	Rotator cuff tear
Bursitis	Muscular dystrophy
Myasthenia gravis	Lupus erythematosus
Plantar fasciitis	Bunions
Claw toe	Turf toe
Sesamoiditis	Heel spurs
Metatarsalgia	Hammer toe
Osteoporosis	Paget's disease
Osteogenesis imperfecta	Leukemia
Aplastic anemia	Lymphoma
Restless leg syndrome	Osteomyelitis

### **Herbal Applications for the Musculoskeletal System:**

Extracts	Liniments
Infusions	Teas
Salves	Ointments
Bath teas	Poultices

**Herbs for the Musculoskeletal System:***Adaptagens*Ashwagandha (*Withania somnifera*)*Alteratives*Black Cohosh (*Actaea racemosa*)Blue Flag (*Iris versicolor*)Burdock (*Arctium lappa*)Oregon Grape Root (*Mahonia aquifolium*)Yellow Dock (*Rumex crispus*)*Analgesics*Jamaican Dogwood (*Piscidia erythrina*)Meadowsweet (*Filipendula ulmaria*)Oak bark (*Quercus spp.*)Skullcap (*Scutellaria spp.*)Valerian (*Valeriana officinalis*)Willow (*Salix spp.*)*Anti-inflammatories*Aspen (*Populus tremuloides*)Birch (*Betula spp.*)Black Cohosh (*Actaea racemosa*)Blue Cohosh (*Caulophyllum thalictroides*)Feverfew (*Tanacetum chrysanthemum*)Goldenrod (*Solidago spp.*)Meadowsweet (*Filipendula ulmaria*)Mullein (*Verbascum thapsus*)Oak bark (*Quercus spp.*)Turmeric (*Curcuma longa*)Willow (*Salix spp.*)*Antispasmodics*Black Cohosh (*Actaea racemosa*)Crampbark (*Viburnum opulus*)Goldenrod (*Solidago spp.*)Lobelia (*Lobelia inflata*)Skullcap (*Scutellaria spp.*)Valerian (*Valeriana officinalis*)*Bone Specific*Boneset (*Eupatorium perfoliatum*)Comfrey (*Symphytum officinale*)Horsetail (*Equisetum spp.*)Mullein (*Verbascum thapsus*)Skullcap (*Scutellaria spp.*)*Muscle Specific*Goldenrod (*Solidago spp.*)Mullein (*Verbascum thapsus*)Poke (*Phytolacca americana*)Teasel (*Dipsacus sylvestris*)*Joint Specific*Homeopathic *Rhux toxicodendron*Horsetail (*Equisetum spp.*)Solomon's Seal (*Polygonatum spp.*)Sumach (*Rhus tyhina, R. aromatica*)White Pond Lily (*Nymphaea odorata*)*Tendon and Ligament Specific*Flax (*Linum usitatissimum*)Gravel Root (*Eupatorium purpureum*)Homeopathic *Rhux toxicodendron*Horsetail (*Equisetum spp.*)Solomon's Plume (*Smilacina spp.*)Solomon's Seal (*Polygonatum spp.*)*Connective Tissue / Fascia Specific*Goldenseal (*Hydrastis canadensis*)Wormwood (*Artemisia absinthium*)*Cerebrospinal Fluid Specific*Black Cohosh (*Actaea racemosa*)*Synovial Fluid Specific*Comfrey (*Symphytum officinale*)Pleurisy Root (*Asclepeus tuberosa*)Solomon's Seal (*Polygonatum spp.*)*Interstitial Fluid Specific*Boneset (*Eupatorium perfoliatum*)Gravel Root (*Eupatorium purpureum*)Mullein (*Verbascum thapsus*)

**Ways to Maintain Musculoskeletal System Health:**

- ~ Practice daily yoga or other gentle stretching to maintain or restore flexibility
- ~ Daily exercise for 20 - 30 minutes
- ~ Consume nourishing herbs that support and strengthen such as Nettles
- ~ Practice dynamic stretching
- ~ Get regular massages
- ~ Get adequate sleep
- ~ Try structural integration to address chronic and acute pain
- ~ Consume nutrients for the musculoskeletal system such as vitamin D3, magnesium citrate, and calcium (found in green leafy vegetables, broccoli, nettles infusions and dairy.
- ~ For injuries, choose MEAT (movement, exercise, analgesics, treatment) and heat over RICE (rice, ice, compression, elevation)

**Recommended Herbal Books (\*indicates available through library loan system):**

*General Musculoskeletal System Information*

- ~ The Gift of Healing Herbs : Plant Medicines and Home Remedies for a Vibrantly Healthy Life by Robin Rose Bennett\*
- ~ The Herbal Handbook: A User's Guide to Medical Herbalism by David Hoffmann
- ~ Herbal Medicine From the Heart of the Earth by Sharon Tilgner, N.D.
- ~ The Authentic Herbal Healer by Holly Bellebuono
- ~ Holistic Anatomy by Pip Waller
- ~The Encyclopedia of Medicinal Plants by Andrew Chevallier\*
- ~The Complete Medicinal Herbal by Penelope Ody\*
- ~The Holistic Herbal by David Hoffmann\*

*Musculoskeletal System*

- ~ Rogers' School of Herbal Medicine Volume 5 - The Musculo-skeletal System by Robert Dale Rogers

**Online Resources**

Rosalee de la Foret:

<http://www.herbalremediesadvice.org/human-musculoskeletal-system.html>

<http://www.herbalremediesadvice.org/musculoskeletal-system.html>

Herbs Hands Healing about the muscles and joints:

<http://herbs-hands-healing.co.uk/body-systems/joints-and-muscles#.VZFrmVzBzGc>

The top 5 ways fascia matters:

<http://breakingmuscle.com/mobility-recovery/the-top-5-ways-fascia-matters-to-athletes>

The truth about stretching:

[http://www.nytimes.com/2008/11/02/sports/playmagazine/112pewarm.html?\\_r=2&](http://www.nytimes.com/2008/11/02/sports/playmagazine/112pewarm.html?_r=2&)

Herb Health's page on the musculoskeletal system:

<http://www.herb-health-guide.com/bones-muscles-herbs.html>

David Hoffmann on the Musculoskeletal system:

[http://www.healthy.net/Health/Article/Herbal\\_Therapy\\_the\\_Musculo\\_Skeletal\\_System/1350](http://www.healthy.net/Health/Article/Herbal_Therapy_the_Musculo_Skeletal_System/1350)

jim mcdonald on back pain:

article: <http://www.herbcraft.org/backpain.html>

audio: <http://herbmentor.podbean.com/e/herbs-for-back-pain-with-jim-mcdonald/>

### Notes

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