

THE OFFICIAL HOMO SAPIENS OPERATOR'S MANUAL: PARTS AND OPERATIONS



TABLE OF CONTENTS

Tips for Teaching ARISE Life Management Skills.....	3
Performance Evaluation.....	5
Introduction.....	7
1. The Skeletal-Muscular System.....	9
2. The Circulatory System.....	14
3. The Digestive System.....	19
4. The Nervous System.....	25
5. The Respiratory System.....	30
6. The Reproductive System.....	33
7. The Lymphatic and Endocrine Systems.....	36
8. The Five Senses.....	39

Table of Contents continued on next page

THE OFFICIAL HOMO SAPIENS OPERATOR'S MANUAL: PARTS AND OPERATIONS

TABLE OF CONTENTS (CONT.)

LEARNER'S WORKSHEETS

Chapter One.....	45
Chapter Two.....	62
Chapter Three.....	78
Chapter Four.....	97
Chapter Five.....	111
Chapter Six.....	120
Chapter Seven.....	129
Chapter Eight.....	140

QUIZZES, ASSESSMENTS, ANSWER KEYS

Worksheet and Crossword Puzzle Answers.....	150
Quiz Answers.....	155

1

THE SKELETAL-MUSCULAR SYSTEM

Bones and muscles give our bodies their basic shape, move us from one place to another, and act as roll bars and bumpers to protect us in case of a crash.

WHAT THEY DO

Worksheet: *None*

1. Ask learners what they think our bodies' bones and muscles do. Give everyone a chance to respond. Explain that bones and muscles give our bodies their basic shape, protect internal organs—such as the heart—and move us from one place to another.
2. Inform learners that even though bones look and feel solid on the outside, they are actually porous, which means full of tiny holes. Bones constantly change to supply the body with calcium and phosphorus, make new blood cells, and destroy old ones. Bone marrow—tissue found in the center of the bone—also makes white blood cells and platelets.

SANDY SKELETON

Worksheet: *Pages 45 and 46*

Learner's Workbook: *Pages 2 and 3*

1. The body has 208 bones, which make up about 25 percent of each person's weight. The foot, for example, contains 26 bones. Babies are born with 350 soft bones, which join and harden as they grow. Boys' bones usually reach their full length by age 18; girls by 16.
2. Distribute worksheet pages 45 and 46, Learner's Workbook pages 2 and 3. Review the worksheets with learners, having them identify each of the bones listed with those in their bodies. (Answers are on page 151 of this manual.)

“Every human being is the author of his own health or disease.”

—*Buddha*

JOINT FIGURE

Worksheet: *Pages 47 and 48*

Learner's Workbook: *Pages 4 and 5*

1. Explain to learners that bones are connected by joints that allow them to move and bend, like hinges on a door. Joints are strengthened by connective tissue called ligaments. The end of each bone is covered with cartilage that acts as padding. A thick fluid produced in the joints keeps them well lubricated—like oil in a car—so that the bones move like parts of a smoothly running engine.
2. Distribute worksheet pages 47 and 48, Learner's Workbook pages 4 and 5. After learners have filled in the worksheets, review answers as a group. (Answers are on page 151 of this manual.)



JOINT SEARCH

Worksheet: *Page 49*

Learner's Workbook: *Page 6*

Have learners complete worksheet page 49, Learner's Workbook page 6. After everyone has finished, review answers as a group. (Answers are on page 151 of this manual.)

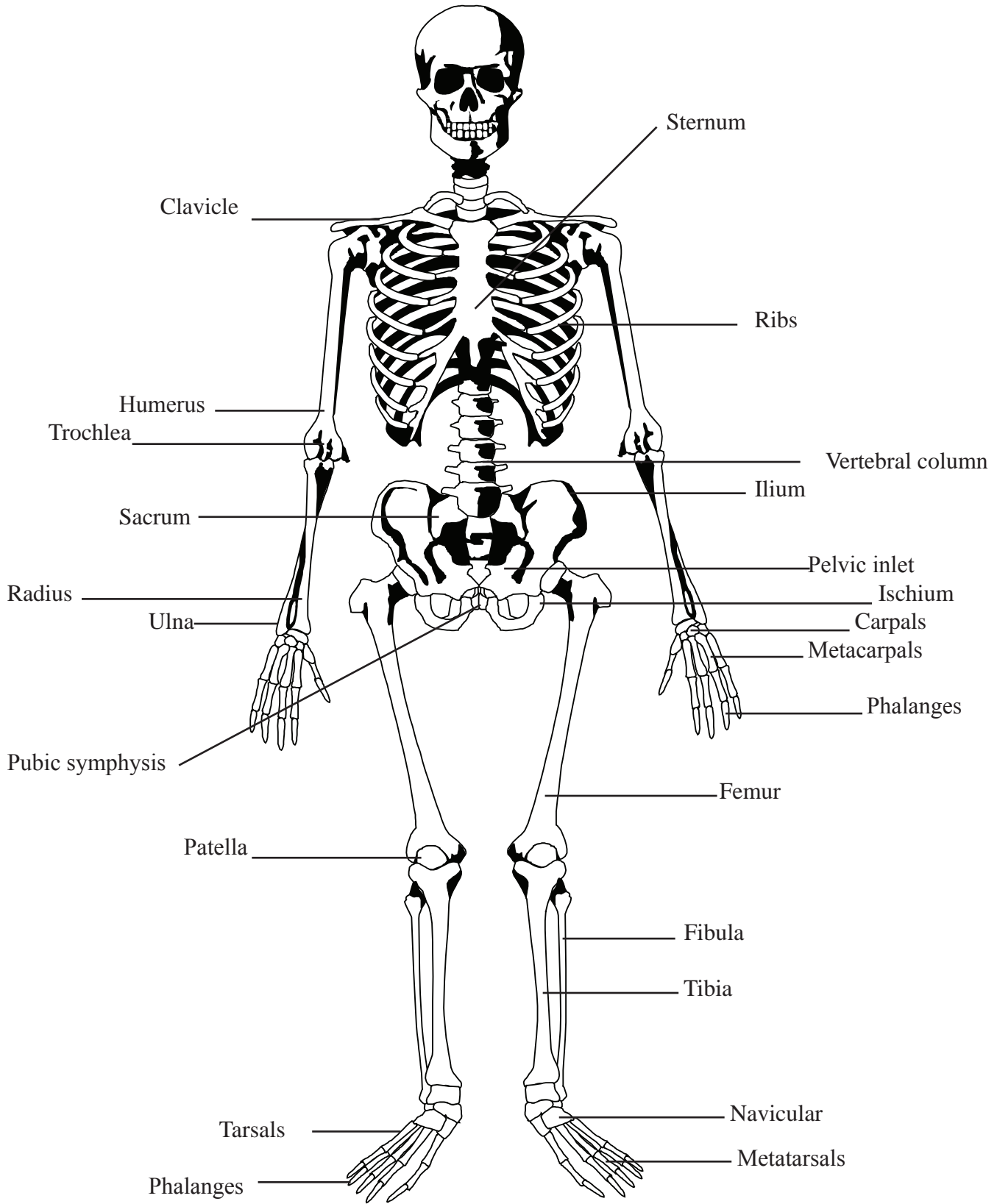
MUSCLE FACTS

Worksheet: *Page 50*

Learner's Workbook: *Page 7*

1. Ask learners how many muscles they think they have in their bodies. After a few guesses, tell the class that humans have more than 650 muscles made of elastic cells and fibers. Muscle accounts for about 42 percent of an average male's body weight and 36 percent of a female's body weight.
2. Ask learners if they know what their diaphragm does. After a few answers, explain that the diaphragm muscle contracts and expands to help the lungs breathe.
3. Have class members slouch down in their seats and try to take a deep breath. Then, have them sit up straight or stand up and try again. Ask learners which is easier. It should be easier to take a deep breath while sitting or standing straight because these positions give the diaphragm more room to expand.
4. Distribute worksheet page 50, Learner's Workbook page 7 and discuss it as a group.

“SANDY SKELETON”

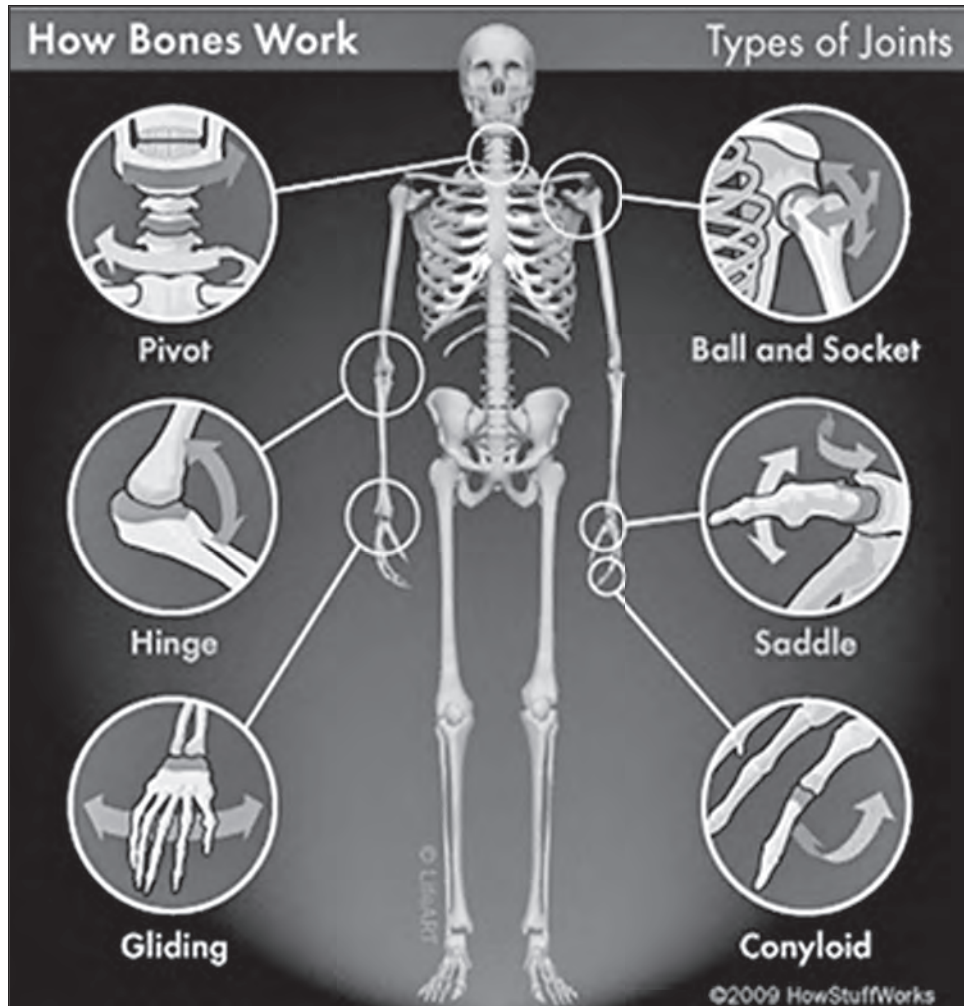


“SANDY SKELETON” (CONT.)

Fill in the blanks using the Sandy Skeleton worksheet.

1. The large bone that connects both sides of the ribs is called _____.
2. The upper arm bone is called _____.
3. The two bones that make up the forearm are called _____ and _____.
4. The elbow bone is called the _____.
5. The upper leg bone is called _____.
6. The kneecap bone is called the _____.
7. The two lower bones that make up the calf area are called _____ and _____.
8. The tips of the finger and toe bones are called _____.
9. The carpals and _____ make up the rest of the hand bones.
10. The tarsals and _____ make up the rest of the foot bones.

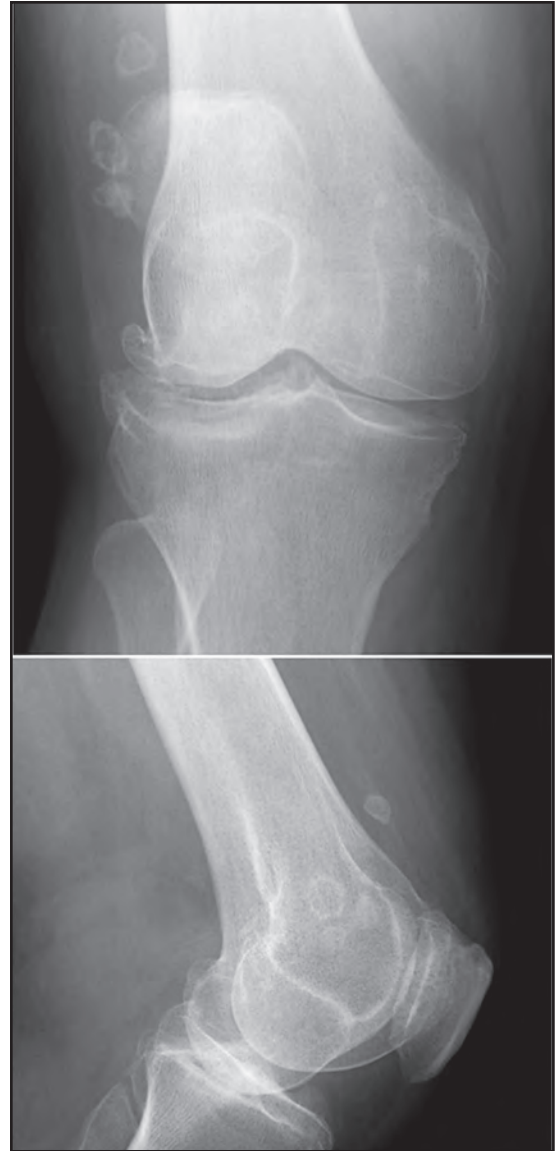
JOINT FIGURE



JOINT FIGURE (CONT.)

Fill in the blanks using the Joint Figure worksheet.

1. The _____ joint allows the head to turn from side to side.
2. The _____ joints let one stretch and bend; i.e., the elbows, knees.
3. The _____ joints let the hips and shoulders move backward, forward and sideways.
4. The _____ joints allow the wrists to move up, down, and sideways.
5. The _____ joints let the hands and ankles shift forward and backwards, and slightly side-to-side.
6. The _____ joints allow the fingers to bend forward.



JOINT SEARCH

Find the words in the word bank. Answers can be vertical, horizontal, or diagonal.

B	O	E	J	D	S	U	S	J	O	R	E	Q	K
W	A	L	B	T	N	R	Z	S	A	D	D	L	E
G	X	L	N	E	Y	S	J	L	U	B	H	U	G
K	T	I	L	R	N	C	Y	O	G	J	N	Q	N
O	O	P	L	A	J	D	B	A	S	J	W	Q	I
J	V	S	Q	H	N	E	R	Z	W	R	C	W	H
K	I	O	J	O	P	D	D	W	T	E	B	N	B
S	P	I	C	P	X	G	S	P	C	I	D	T	S
V	H	D	L	V	N	K	F	O	Q	U	M	I	A
T	Y	L	H	I	L	D	E	H	C	W	N	Q	S
J	C	R	D	N	V	I	A	N	R	K	Q	V	O
U	B	I	W	M	F	R	O	T	A	T	E	R	X
L	L	S	N	Y	N	D	D	P	V	L	W	T	H
G	H	C	O	S	A	H	V	J	V	M	P	P	A



WORD BANK

Ball and socket

Bend

Gliding

Joints

Pivot

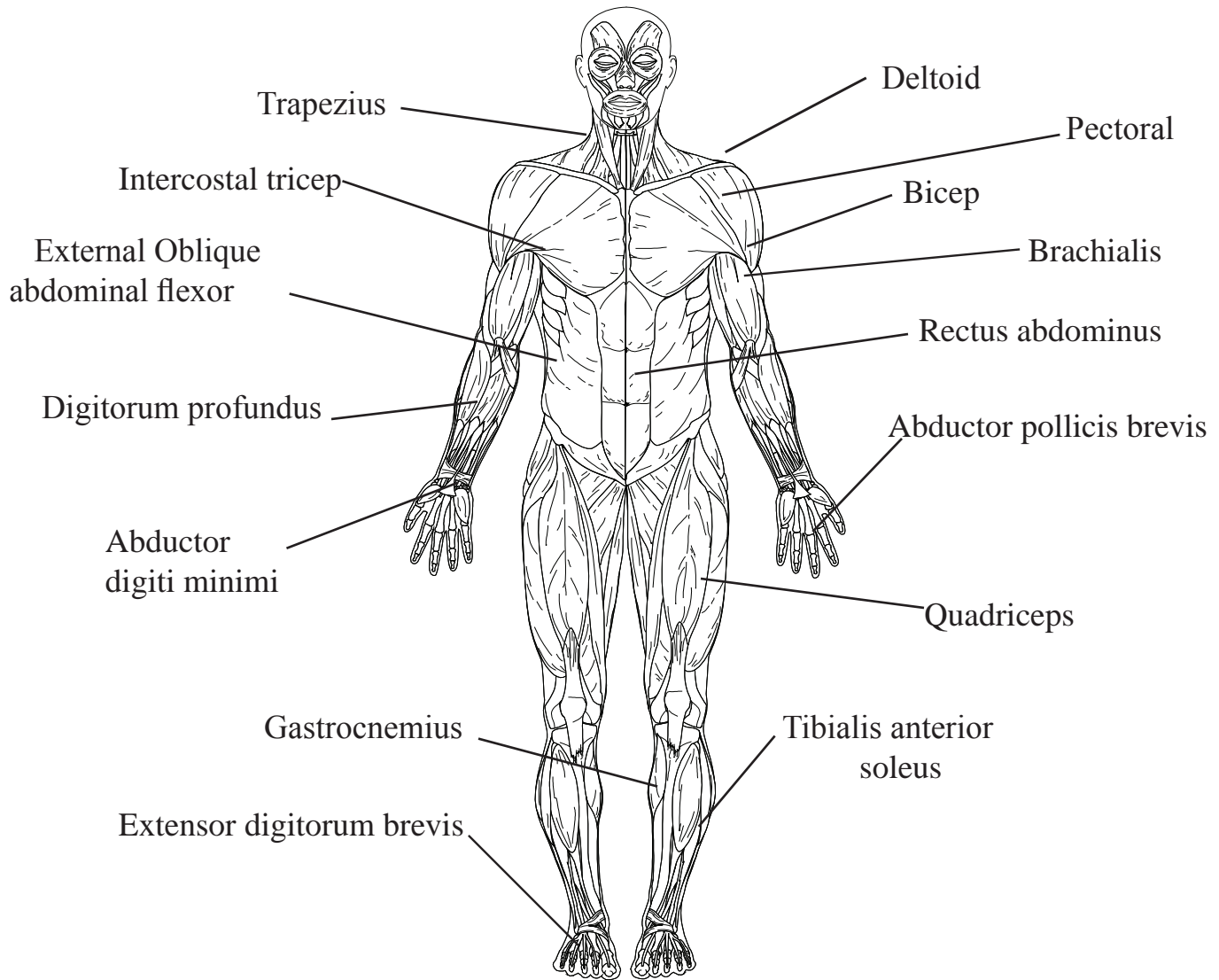
Hinge

Rotate

Saddle

Sideways

MUSCLE FACTS



- You use more than 200 muscles each time you take a step. The foot alone contains 26 bones, 107 ligaments, and 19 muscles.
- Muscles are attached to the bones by tendons. Movement happens when a muscle contracts, or fires, and pulls on the bone. Muscles work only by pulling, not by pushing, but they can move the bones in different directions because they work in pairs.
- Muscles get their energy from food and oxygen supplied by the blood. When you exert yourself and force your muscles to work hard, you pant. This makes the lungs inhale more oxygen. The heart begins to beat faster so that blood reaches the muscles more quickly.