

page
5

I(a) Kinesiology is the science which investigates and analyzes human motion. The sciences of physics, physiology and anatomy contribute basically to kinesiology. Kinesiology is a composite of these sciences.

pp. 7+
8.

(b) (1) Kinesiology attempts to integrate all the contributing fields of information through direct application to the problems of the teacher of swimming, of dance, of correctives, of sports, and of all other physical education activities.

(2) Kinesiology makes an analysis and evaluation of activities.

(3) Kinesiology, by analyzing and evaluating activities, makes for better and easier teaching. This analytical ability makes possible creative, individualized and effective teaching of motor skills.

(4) A knowledge of kinesiology has its social and psychological benefits, in that through an understanding of the problems of efficiency and economy of movement a new sensitivity to and confidence in poise and grace result. Too, a better understanding of problems of physiological cost, energy budgeting and muscular tiring result.

(5) Kinesiology should give a better appreciation of posture, for the basic principles which determine the standards for sitting, standing, walking, and body carriage in general are found in this study.

at
least
37
these
6

(6) The analysis of movement and understanding of standards should make the teacher more aware of irregular and unusual performance, and of abnormal structure.

II

Chap II
page 12

(a) The location of motion is in the articulations of the body.

Chap. III
p. 35

(b) The source of all bodily movement is in the muscles of the body.

III

Chap. II
p. 113

(a) diarthrodial, or freely movable. ~~joints~~
amphiarthrodial, slightly movable.
synarthrodial, immovable.

Chap II
pp. 13-15

(b)
(1) arthrodial, gliding joints. Ex. articular processes of the vertebrae
(2) condylloid, joint formed by a convex prominence gliding over an adjacent surface. Ex. articulations between the carpals and the first segment of the fingers.
(3) enarthrodial, ball and socket joint. Ex. shoulder joint.
(4) ginglymus, hinge joint. Ex. Elbow joint
(5) reciprocal reception, saddle joint. Ex. Found only in the thumb joint.

(6) trochoid, pivot joint. Ex. this type of joint is found in the head of the radius — where rotation is permitted.

IV

- Chap III p. 37 ↔ (1) Yes
- Chap III p. 36 ↔ (2) No
- " " ↔ (3) Yes
- " p. 35 ↔ (4) Yes
- Chap. III p. 35 ↔ (5) No
- Chap VIII p. 141 ↔ (6) No
- Chap IV p. 78 ↔ (7) Yes
- Chap IV p. 74 ↔ (8) Yes
- Chap IV p. 74 ↔ (9) No
- Chap IV p. 74 ↔ (10) Yes
- Chap. VII p. 115 ↔ (11) Yes
- Chap VII pp 123⁶ ↔ (12) No
- Chap VII p. 115 ↔ (13) Yes
- Chap II p. 24, ^{and} ↔ (14) No
- p. 31
- Chap II p. 22 ↔ (15) No
- " " p. 14 ↔ (16) Yes
- " " p. 15 ↔ (17) Yes
- " " p. 15 ↔ (18) Yes
- " " p. 14 ↔ (19) No
- " " " ↔ (20) No

V

Chap. VII
p. 115

(a) Equilibrium, in all activities, is an active muscular process to control the center of gravity of the body and of its parts with respect to the base of support.

Chap. VII
pp. 115-
117

(b) Newtonian Laws:

(1) The laws of inertia:

1. A resting body remains at rest if no external force operates upon it.
2. A body moving with uniform motion retains this uniform motion so long as no external force operates upon it.

(2) The laws of acceleration:

1. Acceleration is directly proportional to the force producing it.
2. Acceleration is inversely proportional to the mass of the body.
3. Acceleration is in the same direction as the force producing it.

(3) The law of reaction: Every force which meets resistance has an equal and opposite counterforce.

Chap. VIII p. 134

(c) (a) Hip, knee, and ankle. One's weight is lifted by extension at all three articulations. Extension can not naturally take place at any one of these articulations without also occurring at the other two. (N.B. for class uses an each description of this process would be advisable (see p. 134))

A Pony A Pony A Pony

A Pony We Want A Pony

We Want A Pony



VI

Chap. XIII
pp. 188-198

(a) Pushing, pulling, throwing, striking, (or others) such as kicking etc.

(b) 1. Those in which performer keeps contact with the object. Ex. pushing, pulling.

2. Those in which momentum is developed in an object and then released. Ex: All types of throwing.

3. Those skills in which momentum of a body part, or of a tool, is imparted to a stationary or moving object and it is either moved or accelerated in movement thereby. Ex: Serving a tennis ball, or a place kick in football, or striking a baseball, etc.

VII

Chap. XIV

pp. 203-207

- 225

(a) ~~In archery~~ ^{momentum} is developed in object and then released - as in throwing.

Archery calls for precision of movement. Its successful achievement depends largely upon the kinaesthetic perception of position and ability always to reproduce this desired position. While it belongs to the same class of skills as throwing, it involves the projection of the arrow by

a mechanical device rather than by muscular force. This ^{game} demands static rather than dynamic precision.

Chap XIV
pp. 207-209

↔ (b) In badminton, we have a type of the fundamental skills of striking. I. E. the type wherein the momentum of a tool or body part, is imparted to either a stationary or a moving object by an external force, and the object is moved thereby.

Badminton involves many striking techniques. While the game is similar in some respects to tennis, it differs definitely. The equipment is largely responsible for this. The lighter racquet is largely responsible for this and thus lacks the potential force of the tennis racquet. The compensation for this lack of force must be made in the greater speed of the stroke and in a different timing. From the standpoint of mechanics these drives are classified as either underhand or overhand.

Chap. XIII
pp. 189-190
(Pulling)

(c) In Jugo' War the performer keeps contact with the object, as in the fundamental skills of pushing or pulling.

In this sport, if the resistance is light arm action alone will suffice. When the resistance is greater, the force can be increased by leaning away from it. Leg extension and the back extensors may be brought into play. In moving backward, the back extensors fix or set the trunk.

VIII

In these couple balancing stunts the top couples ^{are} in each case ^{maintaining} the more correct positions because ^{they} conform more closely to the principles which govern balancing. First, the area of support is broader in the top figures. There must always be a center of support and the top performer should be placed so as to keep the weight line near this center. All balancing must be performed

Answer 8

with respect to the center of gravity of the person doing the balancing. As long as the center of gravity falls inside or behind the arc of the base of support upon which the balancing is being done the balancing will be stable. But the center of gravity of the one being balanced must not pass beyond that edge. In all balance events, the performers must have a thorough understanding of the rules of stability, dealing principally with the size of the base and the location of the center of the gravity with respect to the base. There is, however, the factor of rotary momentum to be considered. Rotary momentum is usually necessary to assume balancing positions. Therefore, in the drawings the weight is more easily supported by the top figures because height is easier to hold if the legs of the base are in a vertical position, unless the base figure is standing, then the legs may be widened to spread the area of support.

VIII

Chap XIX
p. 332 -

(1) It is a support for the weight of the trunk

(2) It is the solid point of attachment for most of the muscles anchoring and controlling the pectoral girdle, as well as the latissimus dorsi which moves shoulder joint.

(3) It encloses and protects the spinal cord and the nerves which lead to and from it. This requires a firm carefully articulated, and not too flexible column.

(4) It absorbs jolts and jars which come to the body even from such commonplace activities as walking, running, and jumping.

Chap XIX

p. 339

→ IX ←
(1) Hand lowering between shoulders. This exercise is good for round shoulders, kyphosis, and forward head.

p. 340

→ (2) Hanging from the horizontal bars. Passive hanging from the bar is economical of muscular effort

but is not good for round shoulders; but in active hanging, the muscles contract to hold the weight and thus transform an activity which is poor for round shoulders into one which is beneficial.

Chap. VII

p. 343

(3.) Standing with feet together, lift inner border of each foot but keep heels and toes on the floor, weight on outer borders of the feet.

The main value of this exercise is in strengthening these muscles which support the arch along its medial border.

Chap. VII

p. 339

(4.) Prone lying, arms extended sideward, palms down — raising of head, shoulders, and arms from floor.

This exercise when done properly is localized hyperextension of the thoracic region, with a little hyperextension of the cervical region. Care must be taken to localize the action in the thoracic regions, with no extreme tension in the lumbar region.

Chy. XIV
p. 338

Answer 11

(5) "Breaking chains." Elbows flexed, arms horizontal, ~~Backward~~ movement of arms in transverse plane.

This exercise is also excellent for round shoulders. It is also facilitated by an extension of the thoracic spine; and, by directly encouraging an erect position is good for kyphosis.

X

Chap XVIII
pp. 323-327

1. Stair Climbing
2. Reaching
3. Wringing or twisting movements
4. Hammering and chopping
5. Shoveling and sweeping -

THE UNIVERSITY OF KANSAS
LAWRENCE

ADVANCED STANDING COMMITTEE
OFFICE OF THE SECRETARY

February 11, 1944

Dr. F. C. Allen
Professor of Physical Education
University of Kansas

Dear Dr. Allen:

Mrs. Croce wishes to take an examination for credit in the courses listed on the attached blank. If you will prepare the examination questions for these courses, I shall be glad to give them here in the Advanced Standing office. She wishes to take the examinations sometime after March 1. Dean Lawson has set April 1 as the dead line for the grades to be in the College Office.

Very truly yours,

Emma J. Wagner
(Miss) Emma J. Wagner, Secretary

B

EJW:g

KINESIOLOGY

Examination Questions

- I. (a) Define kinesiology and give its general relationships to certain other sciences.
- (b) List at least three of its contributions to the betterment of teaching physical education.
- II. (a) Where, in the human body, is the location of motion?
- (b) Where, the source of bodily motion?
- III. (a) Name the three general classes of joints to which all articulations of the body belong.
- (b) Name and give one example each of the six types of freely movable joints.
- IV. Answer these questions yes or no:
- (1) A muscle can only pull; it never pushes.
 - (2) Whenever there is nervous stimulation the muscles relax.
 - (3) Every muscle has its two ends attached to different bones.
 - (4) All muscles are arranged in antagonistic pairs or groups.
 - (5) The smaller muscles are located where the greatest force is needed.
 - (6) The human machine has a high degree of efficiency.
 - (7) The primary factors in the physiological condition are fatigue, source of food substance, and removal of waste substances from the tissue.
 - (8) The muscles of the body are of three types, smooth, cardiac, and skeletal.
 - (9) The cardiac is the type directly responsible for motor activity.
 - (10) Muscle activity takes place through the regular processes of metabolism.
 - (11) Inertia is a property of all objects.
 - (12) The human body is stable when in a standing position.
 - (13) Gravity is a constant force acting on all bodies.
 - (14) The two articulating bones of the hip joint are the scapula and the humerus.
 - (15) The elbow joint is a ball and socket joint.
 - (16) The gliding type of joint is best exemplified by the articular processes of the vertebrae.
 - (17) The ball and socket joint is perfectly described by its name.

- (18) The saddle type of joint is a special arrangement found only in the thumb.
- (19) Adduction is a lateral movement away from the central plane of the body.
- (20) Abduction is a movement inward toward the central plane of the body.

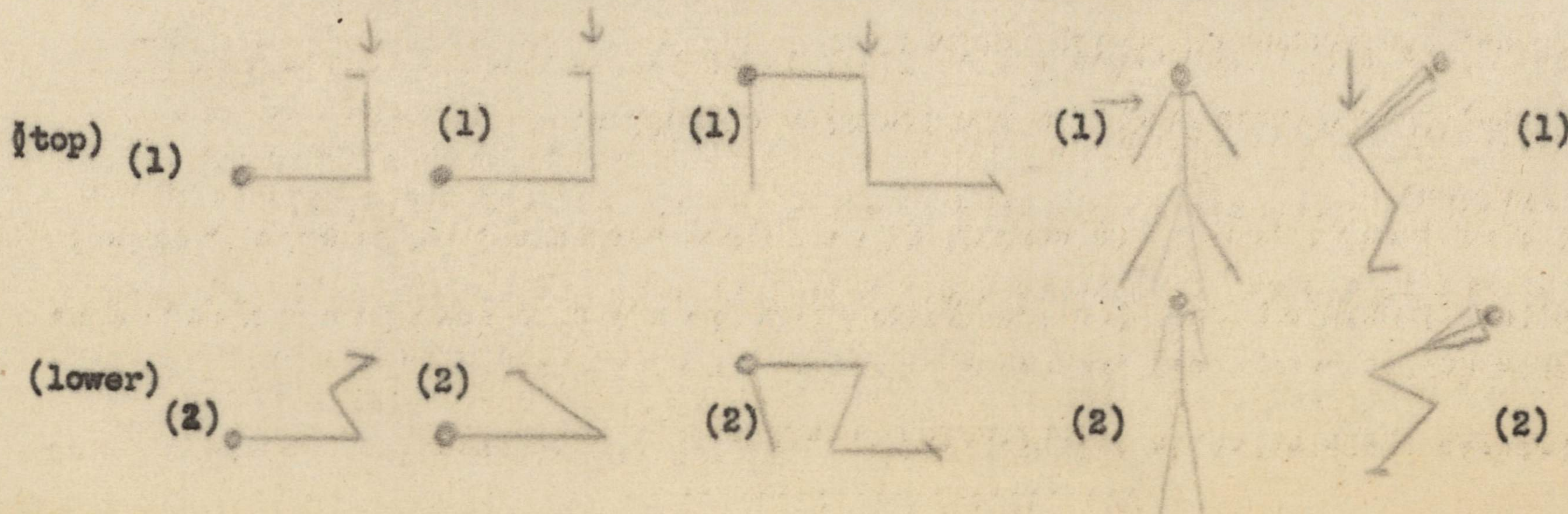
- V. (a) What do we mean by equilibrium? Give your most complete definition.
- (b) Since it is impossible to understand the physical principles of total body action without understanding certain governing laws of motion, please give in detail the Newtonian laws: (1) the laws of inertia; (2) the laws of acceleration; (3) the law of reaction.
- (c) The levers of the body frequently move in complete unison and with perfect timing in respect to their involved neighbors. For instance, when one climbs the stairs, one's weight is lifted by extension at three articulations simultaneously. Name the articulations and state generally what takes place in such activity at these articulations.

- VI. (a) List four of the fundamental manipulative skills.
- (b) Explain briefly the three principal types to which all manipulative skills belong.

- VII. In the field of selected sports state briefly the types of fundamental manipulative skills to which each of these sports belong, and give at least three general musts, either muscular or mechanical, for the successful performer of each sport. (If you prefer, substitute other sports with which you may be more familiar.)

- (a) Archery
- (b) Badminton
- (c) Tug o' War

- VIII. Each figure below represents the base for some couple balancing stunt. The arrow represents the weight line of the top performer. Why is the weight supported more easily by the top figure in each couple?



IX. (a) Since the spine is the keystone for the development of an upright posture, name four of its specific functions in this service to the human body.

(b) There are some 14 or 15 commonly recommended exercises for posture training. Name at least five such exercises and discuss briefly why each is effective.

X. List at least 5 home or occupational activities.

KINESIOLOGY - ANSWERS

pp. 5,7,8, Chap. I

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3. Kinesiology, by analyzing and evaluating activities, makes for better and easier teaching. This analytical ability makes creative, individualized and effective teaching of motor skills possible.

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6. The analysis of movement and understanding of standards should make the teacher more aware of irregular and unusual performance, and of abnormal structure.

(At least 3 of above 6)

p. 12, Chap. II

(a) The location of II.
motion is in the articulations of the body.

p. 35, Chap. III

(b) The source of all bodily movement is in the muscles of the body.

III.

P. 13, Chap. II

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Synarthrodial, immovable

pp. 13-15, Chap. II

(b) (1) arthrodial, gliding joints. Ex: articular processes of the vertebrae
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IV.

- (1) Yes
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V.

p. 115, Chap. VII

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p. 134, Chap. VIII

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VI.

pp. ~~188-198~~

188-198, Chap. XIII.

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p. 203, Chap. XIV.

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pp. 207-209, Chap. XIV.

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pp. 189-190, Chap. XIII

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IX-A.

p. 332, Chap. XIX.

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IX-B.

P. 339, Chap. XIX.

(1) Wand lowering between shoulders. This exercise is good for round shoulders, kyphosis, and forward head.

p. 340

(2) Hanging from the horizontal bars. Passive hanging from the bar is economical of muscular effort but is not good for round shoulders; but in active hanging, the muscles contract to hold the weight and thus transform an activity which is poor for round shoulders into one which is beneficial.

p. 343.

(3) Standing with feet together, lift inner border of each foot but keep heels and toes on the floor, weight on outer borders of the feet. The main value of this exercise is in strengthening these muscles which support the arch along its medial border.

p. 339, Chap. XIX.

(4) Prone lying, arms extended sideward, palms down - raising of head, shoulders, and arms from floor. This exercise when done properly is localized hypertension of the thoracic region, with a little hyperextension of the cervical region. Care must be taken to localize the action in the thoracic regions, with no extreme tension in the lumbar region.

p. 338, Chap. XIX.

(5) "breaking chains". Elbows flexed, arms horizontal, backward movement of arms

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X.

pp. 323-327, Chap. XVIII

1. Stair climbing
2. Reaching
3. Wringing or twisting movements
4. Hammering and chopping
5. Shoveling and sweeping.