Optimal Muscle Training

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LEARNING OBJECTIVES

After reading *Optimal Muscle Training*, the participant will be able to:

1. Understand an in-depth and educational review of effective treatments for weight training dysfunctions.

2. Identify the biomechanics of lifting for maximum growth and strength.

3. Recognize the three levels of functional muscle testing through screens and exams.

4. Understand the proper technique for over 100 exercises on various body parts.

5. Identify single joint and multi-joint compound exercises.

6. Recognize corrective training techniques, flexibility and strength exercises for optimal results.

7. Know the qualitative and quantitative scoring system to identify muscle dysfunctions.

8. Easily understand and identify all of the muscles functions during exercise.

9. Understand about pain free symmetrical strength while performing various weight training exercises.

10. Learn the protocols to determine an individual’s level of functionality for advanced strength training.

11. Identify the best isometric agonist–antagonist exercise and tubing exercises.
12. Recognize how to create a well-designed training program despite any limitations or injuries.

13. Understand the exact needs of refueling your muscles after strength training.

14. Identify the differences and advantages of exercise duration, and the number of training days per week to ensure training success.

15. Understand the specific roles of adenosine triphosphate as the primary source of fuel for the muscles.

16. Know how to determine the risk to benefit ratio of specific weight training exercise techniques.

17. Recognize structural aberrations such as scoliosis and the solutions required to design the programs needed for body alignment compensation.

18. Understand active PNF, and how normal neurological firing patterns occur through a dynamic range of motion under tension.

19. Understand functional anatomy and muscle biomechanics to make sure that muscles, joints and nerves are all working and have no dysfunction.

20. Know the safety, efficacy and positions of performance exercises according to current sports science research.
CEC/CEU TEST FOR:

Optimal Muscle Training

1. A weight training dysfunction is a _____ in a structure that affects how the body performs during weight training.
   a. Synergy
   b. Metabolism
   c. Abnormality
   d. Synthesis

2. A lack of recuperation that causes muscle damage is known as _____?
   a. Lactic Acid
   b. Thermogenisis
   c. PNF
   d. Micro-trauma

3. Muscle dysfunction occurs when muscles are damaged from _____?
   a. Scar tissue
   b. Muscle shortening
   c. Muscle de-conditioning
   d. All of the above

4. Biomechanical dysfunction occurs with over-training or a deficiency in_____?
   a. Nutrients
   b. Chloride
   c. Creatine phosphate
   d. Insulin
5. Which word refers to and is synonymous with scar tissue?
   a. Sheaths
   b. Bursa
   c. Adhesions
   d. Fascia

6. A tender localized hardening in a muscle is known as______?
   a. Trigger point
   b. Compression
   c. Torn
   d. Fiber bundles

7. Receptors in a joint that provide the body with information about position and pain are _____?
   a. Tendons
   b. Ligaments
   c. Mechanoreceptors
   d. None of the above

8. The adrenal gland produces two hormone pathways during training. One of them is _____?
   a. Epinephrine
   b. Cortisol
   c. Testosterone
   d. Pantothenic acid

9. The production of nor epinephrine depends on the levels of _____?
   a. Essential amino acids
   b. Thermogenisis
   c. Carbohydrates
   d. Cholesterol
10. A concept known as “functional differentiation” refers to_____?
   a. Growth
   b. Maintenance
   c. Replacement
   d. Performing the same exercises

11. Which one will help determine whether any problems or pain occur during weight training?
   a. The Exercise Test Scoring Sheet
   b. The Weight Training Readiness Screen
   c. The Muscle Test Scoring Sheet
   d. None of the above

12. A classic sign of a weight training dysfunction reveals that something is wrong with ______?
   a. A nerve
   b. A joint
   c. A muscle
   d. All of the above

13. Tingling or numbness revealed from the weight training readiness form indicates______?
   a. A central nervous system problem
   b. A neurological problem
   c. A synapse
   d. A dendrite problem

14. Numbness is the loss of sensation as a result of ______?
   a. A single joint or isolation exercise
   b. A compound exercise
   c. Nerve compression or tension
   d. A multi-joint exercise
15. How many types of contractions occur during a lift?
   a. One
   b. Two
   c. Three
   d. Four

16. During a lift, a muscle shortens with a/an _____ contraction?
   a. Isometric
   b. Concentric
   c. Eccentric
   d. Vertical

17. During a _____ contraction, the muscle contracts while lengthening?
   a. Eccentric
   b. Concentric
   c. Horizontal
   d. Isometric

18. What type of contraction occurs with no movement at the top and bottom of the exercise?
   a. Symmetrical
   b. Concentric
   c. Isometric
   d. Eccentric

19. The weight training readiness exam is a _____?
   a. Exercise test
   b. Self test
   c. Muscle test
   d. All of the above
20. The main criteria of the self-test is_____?
   a. Muscle strength
   b. Range of motion
   c. Flexibility
   d. Core assessment

21. How many levels are associated with a functional scoring system?
   a. Four
   b. Five
   c. One
   d. Three

22. How many levels of rehabilitative exercise can strengthen muscles and improve function?
   a. One
   b. Two
   c. Three
   d. Four

23. What type of exercises are static contractions of opposite muscles?
   a. PNF
   b. Isometric Agonist-antagonist
   c. Static resistance
   d. Neuromuscular facilitation

24. What type of exercises involves a range of motion with resistance forward and backward in an X pattern across the body?
   a. Assisted Tubing
   b. Restrictive tubing
   c. Isometric
   d. PNF
25. Functional muscle testing can help to determine what specific causes of muscle weakness are present?
   a. Adhesions
   b. Altered range of motion
   c. Nerve compression
   d. All of the above

26. Weak and strong are commonly used instead of normal inhibition and facilitation in _____ testing?
   a. Muscle
   b. Core
   c. Flexibility
   d. Plyometric

27. What type of therapy is energy that penetrates the skin and is absorbed by micro molecules in the body?
   a. Micro current therapy
   b. Cold laser therapy
   c. Myofascial therapy
   d. Percussion therapy

28. What type of therapy decreases the tension in bands of connective tissue that encases muscle throughout the body?
   a. Massage therapy
   b. Acupuncture
   c. Myofascial therapy
   d. Micro current therapy

29. What is a soft tissue system that treats problems with muscles, tendons, ligaments, fascia and nerves?
   a. Chiropractic therapy
   b. Electronic muscle stimulation
   c. Active release technique
   d. Ultrasound therapy
30. What type of therapy is used to increase blood circulation for soft tissues?
   a. Massage therapy
   b. EMS therapy
   c. Cold laser therapy
   d. Acupuncture therapy

31. Functional anatomy concepts help link the ______ to exercise movements?
   a. Joints
   b. Muscles
   c. Nerves
   d. Ligaments

32. For the bicep muscle to fully contract, which muscle needs to fully relax?
   a. Brachioradialis
   b. Brachialis
   c. Triceps
   d. Forearm flexor

33. The main action of the lateral deltoid is ______?
   a. Abduction of the humerus
   b. Adduction of the pectoralis major
   c. Flexion of the scapula
   d. Rotation of the supraspinatus

34. The main action of the posterior deltoid is ______?
   a. Dorsi-flexion of the subscapularis
   b. Humeral extension
   c. Isolation of the rotator cuff
   d. Contraction of the teres minor
35. Which shoulder muscle is trained frequently because of its involvement with chest workouts?
a. Anterior deltoid  
b. Posterior deltoid  
c. Acromion process  
d. Infraspinatus

36. Which of the following is an excellent isolation exercise for the shoulder?
a. Shrugs  
b. Dumbbell lateral raise  
c. Dickerson’s  
d. None of the above

37. All rotator cuff exercises should be done at the _____ of the workout?
a. Beginning  
b. End  
c. Only on off days  
d. Both B and C

38. The clavicular pectoralis major in the chest inserts into _____?
a. The pectoralis minor  
b. The pectoralis major  
c. The greater tubercle of the humerus  
d. The coracoid process of the scapula

39. The rotator cuff is comprised of how many muscles?
a. Two  
b. Four  
c. One  
d. Five
40. The main action of the subscapularis muscle is_____?
   a. External rotation of the humerus
   b. Shifting of the glenhumeral joint
   c. Shortening of the scapula
   d. Internal rotation of the humerus

41. What is the main action of the teres minor?
   a. External rotation of the arm
   b. Internal rotation of the arm
   c. Infraspinatus flexion
   d. None of the above

42. The subscapularis muscle prevent the head of the humerus from moving which way when bench pressing?
   a. Backward
   b. Forward
   c. Lateral
   d. Horizontal

43. A wide grip bench press increases the involvement of the _____?
   a. Posterior deltoid
   b. Front deltoid
   c. Anterior deltoid
   d. Radial tuberosity

44. The incline bench press puts more stress on the _____?
   a. Pectoralis Major
   b. Pectoralis Minor
   c. Clavicular pectoralis
   d. Sternal pectoralis
45. The short head of the bicep inserts on the _____?
   a. Brachialis
   b. Radial Brachialis
   c. Supinator
   d. Radial tuberosity

46. Standing bicep curls put the most amount of stress on which range of flexion?
   a. Midrange of flexion
   b. Last range of flexion
   c. First range of flexion
   d. Elbow flexion

47. The tricep is one muscle with how many heads?
   a. One
   b. Two
   c. Three
   d. Four

48. If the tricep becomes shortened, the range of motion of elbow flexion______?
   a. Increases
   b. Decreases
   c. Lengthens
   d. Stays the same

49. In a tricep extension without resistance, which head is always active?
   a. The long head
   b. The lateral head
   c. The medial head
   d. The short head
50. The tricep will isometrically contract the most at what degree of arm flexion?
   a. 45 degrees  
   b. 50 degrees  
   c. 90 degrees  
   d. 100 degrees

51. How many main muscles make up the forearm?
   a. Five  
   b. Three  
   c. Four  
   d. One

52. The main function of the extensor carpi radialis of the forearm is _____?
   a. Abduction of the wrist  
   b. Extension of the wrist  
   c. Flexion of the forearm  
   d. All of the above

53. When performing tricep extensions, strength is greater when your arm is _____ the shoulder?
   a. Level with  
   b. Below  
   c. Above  
   d. 45 degrees parallel to

54. Which head of the tricep is used especially for dumbbell kickbacks and also for overhead presses?
   a. Medial head  
   b. Long head  
   c. Short head  
   d. Lateral head
55. In the forearm, the main function of the brachioradialis is_____?
   a. Neutralize the elbow
   b. Adduction of the elbow
   c. Flexing the elbow
   d. Abduction of the elbow

56. The flexor carpi radialis in the forearm arises from which tendon?
   a. Flexor tendon
   b. Extensor tendon
   c. Distal tendon
   d. Metacarpal tendon

57. If you develop tennis elbow, pain occurs on the _____ side of the elbow joint?
   a. Proximal
   b. Medial
   c. Lateral
   d. Distal

58. To increase the stress on the flexor muscles at the top of a bicep curl, you should_____?
   a. Change the angle
   b. Increase the speed of the repetition
   c. Decrease the speed of the repetition
   d. Pronate the wrist

59. Which is NOT one of the upper back muscles?
   a. Trapezius
   b. Rhomboid
   c. Latissimus dorsi
   d. Erector spinae
60. The trapezius is a muscle composed of how many parts?
   a. One
   b. Two
   c. Three
   d. Four

61. The latissimus dorsi muscle can assist in_____?
   a. Internal rotation of the humerus
   b. Compression of the humerus
   c. External rotation of the humerus
   d. Both B and C

62. The main action of the rhomboid muscle is to elevate, retract and give stability to the_____?
   a. Thoracolumbar
   b. Scapula
   c. Thoracic spine
   d. Glenoid cavity

63. Weakness in the middle trapezius muscles gives a _____ shoulder appearance?
   a. Round
   b. Full
   c. Flat
   d. Heavy

64. To develop the upper trapezius, the best exercise is _____?
   a. Upright rows
   b. One-arm rows
   c. Lateral raise
   d. Dumbbell shrugs
65. To exercise the lower trapezius, the best exercise is_____?
   a. Bent-over dumbbell laterals
   b. Superman exercise on a Swiss ball
   c. Overhead shoulder presses
   d. Front lateral raise

66. The lower trapezius muscle is usually the _____ muscle in the back?
   a. Biggest
   b. Smallest
   c. Strongest
   d. Weakest

67. The most effective exercise for the latissimus dorsi is _____?
   a. The bar not raised all the way up
   b. Pulling the bar down behind the head
   c. Alternating pulling the bar behind the head and to the chest
   d. Pulling the bar down to the top of the chest

68. To work the rhomboids more effectively while doing a one-arm row, position the upper arm at _____degrees to the body?
   a. 90
   b. 75
   c. 50
   d. 10

69. Which of the following lower back and hip muscles are NOT involved in lifting?
   a. Psoas
   b. Flexor carpi radialis
   c. Tensor fasciae latae
   d. Erector spinae
70. The quadratus lumborum helps support the pelvis and the ____?
   a. Lumbar spine
   b. Gluteus maximus
   c. Gluteus medius
   d. Bicep femoris

71. The gluteus medius is the primary abductor of the______?
   a. Fibula
   b. Tibia
   c. Femur
   d. Radius

72. Weakness of the erector spinae decreases lumbar______ strength and causes instability of the lumbar vertebrae.
   a. Flexion
   b. Rotation
   c. Extension
   d. Adduction

73. Lumbar flexion can cause muscle spasms if which muscle is weak?
   a. Gluteus maximus
   b. Quadratus lumborum
   c. Psoas
   d. Upper rhomboid

74. If the gluteus maximus is hypertonic, this could lead to increased lumbar______?
   a. Lordosis
   b. Kyphosis
   c. Both A and B
   d. None of the above
75. Another name for iliotibial band syndrome is______?
   a. Knock knee syndrome
   b. Axial load syndrome
   c. Hyperextension
   d. Snapping hip syndrome

76. What is the main exercise for lower back and hips?
   a. Dead lifts
   b. Seated hamstring curls
   c. Walking lungs
   d. Adduction

77. What machine is excellent for increasing strength of the lower back and hips?
   a. Seated leg extension
   b. Hyperextension
   c. Lat pulldown
   d. Decline press

78. Which is NOT one of the four muscles of the quadriceps femoris?
   a. Rectus femoris
   b. Vastus medialis
   c. Bicep femoris
   d. Vastus lateralis

79. General weakness of the rectus femoris on one side may result in _____rotation of the ilium?
   a. Cross
   b. Posterior
   c. Internal
   d. External
80. What is the largest muscle in the quadriceps?
   a. Vastus lateralis
   b. Vastus medialis
   c. Vastus intermedius
   d. Rectus femoris

81. An example of a compound movement for training the quadriceps is a _____?
   a. Leg extension
   b. Leg press
   c. Donkey raise
   d. Hip Abduction

82. An example of an isolated single joint exercise is a _____?
   a. Dead lift
   b. Squat
   c. Leg extension
   d. Upright row

83. The hamstring muscle group is made up of _____ separate muscles?
   a. One
   b. Two
   c. Three
   d. Four

84. When the long head of the lateral hamstring contracts, it extends the thigh and _____ the knee?
   a. Stabilizes
   b. Holds
   c. Isolates
   d. Flexes
85. General weakness of the hamstring on one side may result in an interior rotation of which bone?
   a. Innominate  
   b. Tibia  
   c. Femur  
   d. Fibula  

86. The hamstrings have two major functions. One is knee flexion, and the other is______?
   a. Thigh flexion  
   b. Thigh isolation  
   c. Thigh extension  
   d. Thigh pronation  

87. What is the third most powerful muscle in the body?
   a. Pectoralis major  
   b. Quadriceps femoris  
   c. Trapezius  
   d. Gastrocnemius  

88. The main action of what muscle is plantar flexion of the foot?
   a. Achilles  
   b. Soleus  
   c. Gastrocnemius  
   d. Posterior tibialis  

89. The abdominal muscle group is composed of how many muscles?
   a. Four  
   b. Three  
   c. Two  
   d. One
90. If the transverse abdominis is weak, the abdomen relaxes at_____ degrees of lumbar flexion.
   a. 15
   b. 45
   c. 70
   d. 90

91. When initiating a risk-benefit analysis, the first step is to:
   a. Determine the person’s experience
   b. Determine the desired outcome
   c. Understand the individual’s biomechanics
   d. Review the body’s structural alignment

92. When performing a dead lift or a power clean, make sure the bar_____the body at all times?
   a. Is far away from
   b. Is a few inches from
   c. Touches
   d. None of the above

93. If you are at a beginner level of training (less than months) it is best to use_____?
   a. More repetitions
   b. Fewer sets
   c. Lower weights
   d. All of the above
94. If you do exercises with one to five repetitions at 85% to 100% of your 1RM, you are exercising at a _____ risk?
   a. Low
   b. Medium
   c. High
   d. Very high

95. Doing exercises where you can control all the movements at a slow to medium speed yields a _____ risk with _____ benefits?
   a. Low; low
   b. Medium; high
   c. High; high
   d. Low; medium

96. When creating a routine and modifying all the exercises, ideally it’s best to try to increase the stress on _____?
   a. Joints
   b. Ligaments
   c. Muscles
   d. Tendons

97. Using a wide grip on a bar bell bench press exercise is a _____ risk?
   a. Medium
   b. High
   c. Low
   d. None of the above
98. At what degree should the upper arm be at for the lowest risk when doing a barbell bench press?
   a. 30 degrees
   b. 45 degrees
   c. 60 degrees
   d. 75 degrees

99. What type of lat pulldown allows the scapula to retract maximally?
   a. Pulling the bar down behind the head
   b. Pulling the bar down to the front of the neck
   c. With the bar not raised up entirely
   d. Wrapping your thumbs around the bar

100. While doing tricep pushdowns and keeping your elbows flush and next to your body, the risk is _____ and the benefit is _____?
    a. High; medium
    b. Medium; medium
    c. Low; high
    d. High; high