Rec 1040

The Foundations of Training

1. Principles of Training Overload
2. A system or tissue must be exercised at a level beyond what it is \_\_\_\_\_\_\_\_\_\_\_\_\_ to in order for a training effect to occur. Gradual adaptation to the overload takes place.

b. The overload is achieved by manipulating combinations of the FITT principle:

i. Frequency – How \_\_\_\_\_\_\_ the exercise is done.

ii. Intensity – How \_\_\_\_\_\_ the exercise is done.

iii. Time – How \_\_\_\_\_\_ the exercise is done.

iv. Type – \_\_\_\_\_\_ exercise is being done.

2. Principles of Training Specificity

1. The training effect is limited to the muscle fibres and the system being \_\_\_\_\_\_\_\_\_\_.

b. Specific exercise elicits specific adaptations, creating \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. Individual Differences

1. Every person responds \_\_\_\_\_\_\_\_\_\_\_\_\_ to training in a greater or lesser degree.

b. Training benefits are \_\_\_\_\_\_\_\_\_\_ when programs are planned to meet the \_\_\_\_\_\_\_\_\_\_\_\_ needs and capacities of the participants.

4. Detraining or reversibility

1. When overload is stopped the training effect is gradually \_\_\_\_\_\_\_\_

b. When workouts stop, are too far apart or are not stressful enough, performance may get \_\_\_\_\_\_\_\_\_\_\_.

5. Anaerobic System Changes with Training

1. \_\_\_\_\_\_\_\_\_\_\_\_ in resting levels of ATP, CP, C and glycogen.

b. Increases in the quantity and activity of the key \_\_\_\_\_\_\_\_ that controls the anaerobic phase of glucose breakdown.

c. Increases in the capacity for generating high levels of blood lactate as a result of increased levels of glycogen and “pain” \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_

6. Anaerobic Alactic System

a. ATP-CP System

b. Type of training – \_\_\_\_\_\_\_\_\_\_\_\_

c. Intensity – \_\_\_\_\_\_\_% of maximum work rate.

d. Work Time per rep – \_\_\_\_ seconds.

e. Work/Pause Ratio – 1:5 – 1:6

f. Set Volume – Max of \_\_\_\_ seconds.

g. Rest between sets – 3-10 minutes.

h. Session Volume – 2-8 minutes.

i. Sessions per week – max of 3.

j. Programs will be \_\_\_\_\_\_\_\_ weeks.

k. Use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ training.

7. Anaerobic Lactic System

a. Type of training – \_\_\_\_\_\_\_\_\_\_\_

b. Intensity \_\_\_\_\_\_\_\_\_% of max HR (220-age)

c. Work Time per rep – \_\_\_\_ secs to \_\_\_ mins

d. Work/Pause Ration – 1:5 to 1:6

e. Set Volume – Max of 3 minutes

f. Rest between sets – 10-15 minutes

g. Session Volume – 10-12 minutes.

h. Sessions per week – max of 3.

i. Programs will be \_\_\_\_\_\_\_\_\_\_ weeks.

j. Use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ training.

8. Aerobic Changes with Training

a. Cardiovascular and Respiratory adaptations

i. Increase in weight and volume of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ii. Decrease in resting and submaximal heart \_\_\_\_\_\_\_\_\_\_.

iii. Increase in heart stroke volume at rest and during exercise resulting in an

increase in maximal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

iv. Increase in O2 extraction from blood.

v. Reduction in both systolic and diastolic blood \_\_\_\_\_\_\_\_\_\_\_\_\_ at both rest and submaximal exercise.

vi. Increase in breathing volumes

vii. \_\_\_\_\_\_\_\_\_\_\_\_\_ in VO2 max

9. Aerobic Training

a. Type of training – Continuous

b. Intensity \_\_\_\_\_\_\_\_% of max HR for interval

c. 60-80% of max HR for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. Work Time per rep – \_\_\_\_ secs to \_\_ mins for interval

e. Work/Pause Ration – 1:2 to 1:3 for interval

f. Set Volume – \_\_\_\_\_\_\_\_ mins for interval

g. Rest between sets – 10-15 minutes for interval

h. Session Volume – 20-60 minutes for both.

i. Sessions per week – 3-6

j. Important as a \_\_\_\_\_\_\_\_ for anaerobic system

10. Changes from Strength Training:

a. Neural Changes:

i. Recruitment of more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

ii. Better synchronization of motor units.

iii. Happens \_\_\_\_\_\_\_\_ in training program.

b. Increase in muscle size

i. Hypertrophy – an increase in the cross sectional area of muscle fibres as a result

of increase in the number of myofibrils.

ii. Hyperplasia – an \_\_\_\_\_\_\_\_\_ in the number of muscle fibres.

11. Strength Training Basics

a. Use a progressive approach

b. Do \_\_\_\_ workouts per week.

c. Allow at least \_\_\_\_ hours between workouts for a specific muscle group.

d. \_\_\_\_\_\_\_\_ the workouts – as often as every week

e. Develop a muscular \_\_\_\_\_\_\_\_\_\_

12. Basic Phases of Strength Training:

a. Transition Phase

i. Purpose – To help the body adjust to the demands of resistance training.

ii. Duration – \_\_\_\_\_\_\_\_ weeks.

iii. Workout: 2 to 3 sets of \_\_\_\_\_\_ reps @\_\_\_\_\_\_\_% of 1 rep max

b. Hypertrophy Phase

i. Purpose – To increase the size of the muscle fibers.

ii. Duration – \_\_\_\_\_\_\_\_\_ weeks.

iii. Workout: 3-6 sets of 9-12 reps @\_\_\_\_\_\_\_% of 1 rep max

c. Strength Phase

i. Purpose – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ adaptations.

ii. Duration – \_\_\_\_ weeks.

iii. Workout: 4 to 8 sets of \_\_\_\_ reps @\_\_\_\_\_\_\_\_% of 1 rep max

13. Power Training

a. Power is a combination of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. Most sporting activities demand high levels of power and not just strength.

c. \_\_\_\_\_\_\_\_\_levels can be improved by \_\_\_\_\_\_\_% but \_\_\_\_\_\_ can only be improved by \_\_\_\_\_\_\_%.

d. Good strength levels should be reached before heavy power training is done.

14. Power Training

a. Resistance Exercises

i. \_\_\_\_\_\_\_\_\_\_\_ – neuromuscular adaptations directed at improving the speed of

movement.

ii. \_\_\_\_\_\_\_\_\_\_ – \_\_\_\_ weeks.

iii. \_\_\_\_\_\_\_\_\_\_: 3 to 5 sets of \_\_\_\_\_ reps @ \_\_\_\_\_\_\_\_\_\_ speed

b. Plyometrics

i. The muscle is stretched immediately \_\_\_\_\_\_ to contraction, making use of the

stretch reflex to increase the muscular force

ii. Examples: hopping, skipping, bounding and depth jumps

iii. Should only be done \_\_\_\_\_ high strength levels have been reached as it is very demanding on the body

iv. Should be done on soft surfaces such as mats or soft ground

v. Workout: 1 to 3 sets of 10-12 reps with at least \_\_\_\_\_\_\_ rest between workouts

15. Other Strength Training Methods

a. Isometric

i. Can result in both muscle hypertrophy and increase in strength.

ii. Strength gains are primarily developed at \_\_\_\_\_\_ muscle length or joint angle of the training

iii. Sometimes used in recovery from injuries causing a loss of strength at specific angles

iv. CAUTION: Valsalva maneuver can cause very high blood pressure.

b. Isokinetic Devices

i. Based on muscle producing maximum force throughout the full \_\_\_\_\_\_\_\_\_\_\_\_\_

ii. The speed in controlled usually by hydraulic cylinders (eg: HydraGym)

iii. No \_\_\_\_\_\_\_\_\_\_\_\_ contractions are possible

16. Basic Strength Training Program

a. 1. Transition Phase – \_\_\_\_Weeks

b. 2. Hypertrophy – \_\_\_\_ weeks

c. 3. Strength – \_\_\_\_\_ weeks

d. Rotate between steps 2 and 3 using progression and variety

e. Consider \_\_\_\_\_\_ prior to critical performances

Set aside some time each year for periods of rest during with only \_\_\_\_\_\_\_\_\_\_\_\_\_ workouts are done.

17. Flexibility (Range of motion about a joint)

a. Specific to the individual.

b. Specific to the joint.

c. Limited by muscles, tendons, joint capsule, ligaments and bones of the joint.

d. Can usually be increased by stretching the muscles and tendons acting around the joint.

18. Flexibility Training –

a. Passive Static Stretching

i. Athlete begins in neutral starting position

ii. Athlete moves body part to its maximum range of motion to a point where the muscle can be felt but there is no pain.

iii. This position is held for \_\_\_\_\_\_\_\_\_\_ seconds during which time the athlete must \_\_\_\_\_\_\_\_\_\_\_ try to relax the muscles.

iv. The starting position is returned to and then the sequence is repeated \_\_\_\_\_\_ times.

b. Active

i. Athlete begins in neutral starting position

ii. Athlete moves body part as far as possible.

iii. The body part is then \_\_\_\_\_\_\_ beyond this range of motion either by the athlete

or a partner until the muscle tension can be felt but there is no pain.

iv. The body part is held at this maximum range for \_\_\_\_\_ seconds during which time the athlete is consciously trying to relax.

v. The starting position is returned to and then the sequence is repeated \_\_\_\_\_\_ times per muscle group.

c. PNF Stretching

i. Athlete begins in neutral starting position.

ii. Athlete moves body part as far as possible

iii. The body part is then \_\_\_\_\_\_ beyond this range of motion either by the athlete

or a partner until the muscle tension can be felt but there is no pain.

iv. The partner \_\_\_\_\_\_\_ the body part at the maximum range of motion

v. The athlete actively contracts the muscle group \_\_\_\_\_\_ the partner’s resistance for \_\_\_\_ seconds.

vi. The athlete then \_\_\_\_\_\_ the muscle group as the partner gently pushes the joint to a \_\_\_\_\_\_ range of motion until a new stretch is felt. Athlete may also actively contract the antagonist muscle group.

vii. The sequence is repeated \_\_\_ times per muscle group

Static Stretching

Workout Basics

1. Complete a \_\_\_\_\_\_\_\_ before beginning.

2. Raise body temp. (close to a light sweat)

3. stretch

4. Order of exercises (3 methods)

5. Large muscles first

6. Alternating with antagonistic groups

7. Alternating upper body and lower body

8. Ensure adequate \_\_\_\_ between each set to allow complete recovery 2-5 mins. Average

9. Ideally all sets for one exercise should be done before moving on to the next exercise

10. To save time consider using \_\_\_\_\_ \_\_\_\_ of 2 or 3 exercises of different muscle groups

11. Encourage athletes to work with a \_\_\_\_\_\_\_\_

12. Train athletes on the \_\_\_\_\_\_\_ lifting techniques especially when using free weights.

13. Ensure that all equipment is in a good state of \_\_\_\_\_\_\_ before each workout.