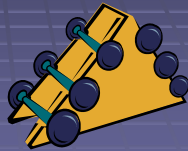


Resistance Training For Muscular Strength and Endurance

Guiding Principles for Designing a Program

- Progressive Resistance Exercise (Progressive Overload)
- Specificity
- Other Principles



Progressive Overload

Progressively placing greater-than-normal demands on the exercising musculature.

Comes from Selye's General Adaptation Syndrome (GAS)

G.A.S.

Three stage response to stress

The stages are:

- Alarm Phase
- Resistance Phase
- Exhaustion Phase

Alarm Phase

Physiologically

Immediate, full mobilization of the body's fight or flight responses to resist the stressor



G.A.S. Contd.

In terms I can understand

- When the body experiences a new or more intense stress
- May last several days, even weeks
- Soreness and stiffness
- Temporary drop in performance?

Stage of Resistance

Physiologically

After prolonged exposure to a stressor, the body attempts to adapt with a decreased, but still higher than normal, level of physiological arousal and a slow replenishing of stress hormones.

Resistance Phase Contd.

Or in other words...

The body adapts to the stimulus and returns to more normal functioning.

Sometimes called "*supercompensation*"

Exhaustion Phase

After continued exposure to stress, the body begins to breakdown with depletion of the body's resources.

Has been shown to cause death in laboratory animals

Overtraining



Some characteristics may include

- Plateau or decrease in performance
- Feeling of burnout or staleness
- Sickness
- Inability to sleep
- Increased heart rate

Specificity

Using the correct variables to achieve your goals.

Relates to:

- Exercises
- Sets and reps
- Rest times between sets
- Energy systems

Other Principles

■ Variation

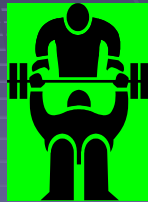
■ Diminishing Returns

Safety Considerations

- Ensure adequate level of health before you begin
- Dress appropriately
- Warm-up and cool-down properly
- Work into a program gradually
- Breathe correctly (Valsalva maneuver)
- Use spotter when necessary
- Use proper technique

Coaching Points to Remember

- Move weights in a controlled manner
- Go through a full range of motion
- Keep abdominals tight
- Maintain tight back
- Press off heel when squatting/lunging
- Never let knee go past toe



Exercise Rx for Weight Training

Important Terminology

- Repetitions (reps)
- Sets
- Load
- Repetition Maximum (RM)
- Intensity
- Volume

Frequently Misunderstood Terms

Weightlifting vs. Powerlifting

Strength vs. Power

Strength vs. Endurance

Progression Through a Program

3 Phases to an Initial Program

- Starter Phase
- Slow Progression Phase
- Maintenance Phase

Starter Phase

- Low intensity
- Low volume
- Two sessions per week
- Duration of phase is 1-3 weeks
- Avoid undue soreness

Slow Progression Phase

- Increase in frequency
- Increase in intensity
- Decrease in repetitions
- Duration from 4 to 20 weeks

Maintenance Phase

- Frequency may decrease back to 1-2 days
- Volume and intensity stay the same



Who wants to maintain though?

Periodization

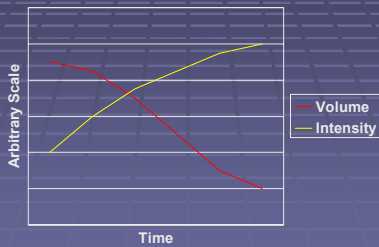
Varying training variables in planned periods or cycles within an overall program to continue improvements and lessen the likelihood of overtraining



Periodization Cycles

- Macrocycle
The entire training year
- Mesocycle
Phases during the year (months)
- Microcycle
Weeks and days

Relationship Between Volume and Intensity



Goals of Each Cycle

- General Preparation
- Hypertrophy
- Strength
- Peaking

How the Body Adapts

Physiological Changes

■ Neural Adaptations

■ Hypertrophy

Neural Adaptations

Motor Units-Neuron and the muscle fiber it innervates

Strength training increases the ability of the NM system to recruit more motor units

Responsible for strength gains developed at the beginning of a program

Hypertrophy

Increased muscle fiber size

Requires more than 16 training sessions to occur



Motivation to Continue

- Time management
- Make training fun
- Start slow
- Train with a partner
- Set process-oriented goals



Other Important Topics

- Rate of Adaptation
- Gender Differences
- Dietary Considerations While Training for Strength
