PRINCIPLES OF STRENGTH TRAINING
Principles of Strength Training

- Training is a complex process guided by several principles.
- Training principles are fundamental guidelines that form the basis for the development of exercise programs.
- These principles help the coaches to design appropriate, specific, individualised and safe programs.
- To get optimum training adaptation, the principles must be followed.
1. Principle of Overload

- Most fundamental principle
- For a training effect to occur, overload training is required
- When a muscle is stressed beyond its normal demands, it reacts to that stress
- If the stress is greater than the normal, the muscle responds positively
- The most perplexing problem is to determine the correct amount of overload
Ways to apply overload

- Increase the weight lifted
- Increase volume of work
- Changing the exercise
- Modify the order of exercise
- Alter the rest interval
- Increase lifting velocity
- The degree of overload should be individually determined
- General overload is about 5%
2. Principle of Progression

- Progression is the change in overload in response to adaptation
- Progressive overload involves:
  
1. The exercise that are employed in training program (simple to complex).
   Regression – Progression
2. Total amount of work that is done in training:
   a. Increase the number of reps (volume)
   b. Gradually increase intensity
      i. Increase relative percentage of one RM (50, 60, 70% of IRM).
      ii. Use greater absolute loading with constant reps (50, 55, 60 Kgs)
3. RM Range (8-12 RM) - Add weight after reaching the RM range
3. Principle of Specificity (SAID Principle)

- Adaptations are specific to the load
- For maximum training benefit use specific exercises
- To bring specificity
  i) Muscles mostly involved in particular event.
  ii) Similar type contraction
  iii) Similar speed of contraction
  iv) Sports Specific energy metabolism
Movement patterns

- Movement velocity
- Exercise modality
- Free weight versus machine
- Open versus closed kinetic chain
- Unilateral versus bilateral
- Movement specific training (implement throw/plyometrics)
4. Principle of Variation

Variation is systematic process of altering one or more program variables overtime to allow the training stimulus to remain challenging and effective.

• Human body adapts rapidly stress and variation is critical for subsequent adaptation

• Systematic variation of volume and intensity is most effective long-time variation
Short-term variation

- Periodisation
- Alternation of training means, method, loading pattern etc.

Short-term variation

- Variation in the magnitude of load
- Variation of type of muscle contraction
- Variation of speed of contraction
- Variation of exercises (modalities)
5. Principle of Individualisation

- People respond differently to the same training stimulus
- Individualised exercise prescription for effective training adaptation
- Personalised exercise prescription should be based on:
  (i) fitness level
  (ii) age
  (iii) sex
  (iv) training goal
  (v) response to training
  (vi) nutritional status
  (vii) recovery from training etc
6. Principle of Diminishing Return

- When the athlete reaches his genetic potential, the strength gain decreases.
- Beginners will experience large strength gains.
- Highly trained will make small gains.
- Window of adaptation is small at later stages of training.
7. Principle of Reversibility

- When the training stimulus is removed the strength gains will revert back to the initial level.
- De-training, reduction in frequency, volume or intensity will result in performance reduction.
- The magnitude of strength loss depends on fitness of the athlete, length of training period before de-training and the duration of de-training.