# BHARATHIDASAN UNIVERSITY

Tiruchirappalli- 620024, Tamil Nadu, India

## Department of Physical Education and Yoga

**Course Title** :SCIENTIFIC PRINICIPLES OF SPORTS TRAINING

**Course Code** :21MPE31

## Unit- (II)

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# PRINCIPLES

- 1.Principles of continuity
- 2. Principles of progression of Load
- 3. Principles of individualization
- 4. Principles of  systematic training
- 5. Principles of general & specific preparation
- 6. Principles of  clarity
- 7. Principles of  cyclicity-  Micro – Meso & Macro
- 8. Principles of  ensuring results

# TRAINING LOAD

- Training Load :-
- Training load is the, psychological and physiological demands put on the organism through motor stimuli (movements) resulting in improvement or maintenance of performance capacity.
- External Load:
- It is the work done by the Sportsman. For example, the distance rum by a distance runner.
- Internal Load: It is the psyco- physiological reaction of sportsman to external load. The degree of internal load is judged by pulse rate, lactic acid concentration n the blood and various biochemical changes in the tissue and judged by various symptoms of fatigue..
- External and integral load are inter related. biological adaptations Internal load is a must and should be optimum since the individuals are differ and according to their need the external load must be applied to get optimum internal load.

# Principles of Progression of load

- Training Load
- External Load I Internal Load
- (The amount of work done) (Reaction of the organism)
- -Distance run - Heart rate - Number of Jumps/repetition - lactic acid concentration in blood
- Total duration of activity/play - oxygen conception :
- - Symptoms of fatigue

*•Principles of Training Load*

- 1. Principles of continuity and repetition of load
- 2. Principles of Optimum load
- 3. Principles of load and recovery
- 4. Principles of specificity of load
- 5. Principles of progression of load

# Important Components of Load (Intensity & Volume)

1. Intensity : It is the rate of doing work. In other words it is the pace at which physical activity is done.
- 2. In endurance training, the heart rate must. be above 140 beats/min.
- 3. In strength training for the beginners the intensity must be above 30%,but for advanced athlete 75%.
- 4. Density of load.

- The temporal relationship between load and recovery Phases in a training session is called density.

| Magnitude of Resistance | Intensity Zone | Speed | Heart Rate |
|---|---|---|---|
| 30 to 50 % of maximum weight lifted | Low | 30 to 50 % of maximum running speed | 130 to 140 Beats/ min |
| 50 to 70 | Light | 50 to 60 | 140 -150 |
| 70-80 | Medium | 60 to 75 | 150- 165 |
| 80-90 | Sub Maximum | 75 to 85 | 165-180 |
| 90-100 | Maximum | 85 to 100 | >180 |

# Volume

- The total amount of' work done in a training session. The total distance covered, total number of repetitions or the total duration of the activity is the volume. Like intensity, the volume should also be optimum in order to have some effect on the organism. (e.g: for the development of endurance, one should run continuously for at least - 30 minutes).
- The volume is usually the product of Duration of stimulus and Frequency of stimulus.
- Duration of stimulus:

- It is the time period for which a single motor stimulus act on duration is important to start the desired adaptation process. For e.g, for the development of acceleration ability, the duration of each repetition should be at least 6 seconds. In some activities duration the stimulus can be so short that it may not carry any significance for the calculation of load, e.g. in Jumps and Throws.
- Frequency of Stimulus:
- It is the number of times motor stimulus (repetition) is given. In swimming and running, there is only one long duration stimulus. In interval and repetition methods, it is the number of repetitions. In weight training, jumps, throws and free hand exercises it is the number of repetitions.