CHAPTER III
METHODOLOGY

This Chapter describes in detail of the procedures adopted for selection of subjects, Experiment variables, Pilot study, Experiment design, Procedure, Training Programme, Criterion measures, reliability of data, test administration, collection of data and statistical treatment of data involved in the study.

3.1 SELECTION OF SUBJECTS

The study was designed to find out the effects of varied packages (Low, Medium and High intensity) of plyometric training on selected motor ability components and physiological variables among college Men students. For this purpose, One hundred and twenty untrained healthy college men students of M.G.R. College, Hosur, Krishnagiri District were selected as subjects at random and their age was between Eighteen and Twenty three years.

3.2 SELECTION OF EXPERIMENTAL VARIABLES

Based on the relevant literature reviewed and in accordance with views of professional experts in Physical Education, the following motor ability components and physiological variables were selected.
I. DEPENDENT VARIABLES
a. Motor ability components:

4. Speed

5. Leg Explosive power

6. Muscular Endurance

b. Physiological variables;

4. Resting pulse rate

5. Vo$_2$ Max

6. Anaerobic Power

II. INDEPENDENT VARIABLES:

Experimental group A : First packages of plyometric training. (Low intensity)

Experimental group B : Second packages of plyometric training. (Medium Intensity)

Experimental group C : Third packages of plyometric training. (High Intensity)

Group D : Control group

3.3 PILOT STUDY

A Pilot Study was conducted for the purpose of finalizing and deciding upon the intensity and duration of the various package of plyometric training programme. The Pilot study was conducted with fifteen subjects to know the suitability
of varied packages of plyometric training and to find out the
difficulties and short comings of the study. Further it helped to
ensure the accurate measurement of selected motor ability
components and physiological variables among college men
students.

3.4 SELECTION OF TEST

The present study was undertaken primarily to assess the
effects of varied packages of plyometric training, (Low, Medium &
High intensity) on selected motor ability components such as
Speed, Leg explosive power and Muscular endurance;
physiological variables such as Resting pulse rate, Vo₂ max and
Anaerobic power among college men students, as per the
available literatures, the following test were used to collect
relevant data on the selected dependent variables and they were
presented in the table - II.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Variables</th>
<th>Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speed</td>
<td>50 yards dash</td>
</tr>
<tr>
<td>2</td>
<td>Leg explosive power</td>
<td>Standing broad jump</td>
</tr>
<tr>
<td>3</td>
<td>Muscular endurance</td>
<td>Sit-ups</td>
</tr>
<tr>
<td>4</td>
<td>Resting pulse rate</td>
<td>Stethoscope / Bio monitor</td>
</tr>
<tr>
<td>5</td>
<td>Vo₂ max</td>
<td>Queen’s College Bench step up test</td>
</tr>
<tr>
<td>6</td>
<td>Anaerobic power</td>
<td>Margaria kalaman test</td>
</tr>
</tbody>
</table>
3.5 RELIABILITY OF THE INSTRUMENTS

3.5.1 Instruments Reliability

Instruments such as bio-monitor, stop watches, measuring steel tape, cone, plyometric box, medicine ball, take of board, were used for this study. All instruments were in good working condition. Their calibrations were tested and found to be accurate enough to serve the purpose of the study.

3.5.2 Subject Reliability

The intra class correlation value of the above test and retest also indicated subject reliability as the same subjects were used under similar conditions by the same tester.

3.6 COMPETENCY OF THE TESTER

The investigator learned the procedures and methods to handle and operate the instruments to administer the test. Measurements were taken by the investigator himself using bio-monitor, stop watches and steel tape. Services of qualified assistants were used for taking other measurements.

Bumgartner and Jackson (1991) have obtained that the repeated measurement of the individual on the same test was a univariate, not a bivariate situation. It is distribution of a single variable. Hence it makes sense, and it fit enough to use univariate statistics, like the Intra – class correlation co-efficient.
TABLE III

INTRA CLASS CORRELATION FOR ESTABLISHING TEST – RETEST RELIABILITY

<table>
<thead>
<tr>
<th>S.No</th>
<th>Variables</th>
<th>Reliability co efficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speed</td>
<td>0.98*</td>
</tr>
<tr>
<td>2</td>
<td>Leg Explosive Power</td>
<td>0.98*</td>
</tr>
<tr>
<td>3</td>
<td>Muscular Endurance</td>
<td>0.96*</td>
</tr>
<tr>
<td>4</td>
<td>Resting Pulse Rate</td>
<td>0.96*</td>
</tr>
<tr>
<td>5</td>
<td>Vo2 Max</td>
<td>0.97*</td>
</tr>
<tr>
<td>6</td>
<td>Anaerobic power</td>
<td>0.98*</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level of confidence

3.7 COLLECTION OF DATA

Low, Medium and High Intensity of plyometric training were given as per the training schedule of twelve weeks. The pre and post test data on the selected criterion variables were collected by administering the test as per the standardized procedures before and after the twelve weeks of the training programme.

3.8 EXPERIMENTAL DESIGN AND PROCEDURE

The study involved a single dimensional design with four groups assigned with different training batteries. To facilitate the study, one hundred and twenty healthy, untrained college men students of M.G.R College, Hosur, Krishnagiri District were selected as subjects at random and their age was between
Eighteen and twenty three years. They were divided into four equal groups namely experimental Group A.(First Package of Plyometric training) Group B. (Second Package of Plyometric training) Group C. (Third Package of Plyometric training) and Group D.(Control Group) did not involve in any training. The pre-test was taken from the subjects before administering the plyometric training. The subjects were involved with their respective packages of plyometric training for a period of twelve weeks under the personal supervision of the research scholar. At the end of twelfth weeks, the post – test was taken.

3.9 CRITERION MEASURES

By glancing the literature and in consultation with the professional experts, the following variables were selected as the criterion measures in this study for testing the hypothesis.

The criterion measures adopted for the studies measuring the motor ability components and physiological variables are given below.

3.9.1 Speed

Speed was measured by using 50 yards dash test. The measurement was recorded 1/100 of the seconds.
3.9.2 Leg Explosive Power

For measuring Leg Explosive Power, standing broad jump test was used and the unit of measurement was in meters.

3.9.3 Muscular Endurance

For measuring Muscular Endurance, sit-ups test was used and the unit of measurement was in counts.

3.9.4 Resting Pulse Rate

For measuring Resting Pulse Rate, Bio-monitor was used and the unit of measurement was in beats per minute.

3.9.5 VO₂ Max

For measuring VO₂ max, was tested by using queen’s college step test and the unit of measurement was recorded in ml/kg/min.

3.9.6 Anaerobic Power

For measuring Anaerobic Power was tested by using margaria kalaman step test and the unit of measurement was recorded in kgmeters/seconds.
3.10 ADMINISTRATION OF TESTS

I. Motor Ability Components

3.10.1 Speed (50 Yards Run)

Purpose

To measure the speed of the subjects.

Equipment

An area on track with a starting line and Finishing line with a distance of 50 Yards, two stop watches

Procedure

After a short warm-up period, the subjects take a position behind the starting line. Best results are obtained when two students run at the same time for competition. The starter used the command. “On your marks” and “go” along with a clapper and a signal to the timer by a down ward sweep of the arms. The students run across the finish line. Only in trial is permitted.

Scoring

The score is the elapsed time to the nearest tenth 1/100 second between the starting signal and the instant the subject crosses the finish line.
3.10.2 **Leg Explosive Power (Standing Broad Jump)**

**Purpose**

To measure Leg Explosive Power of the Subject.

**Equipment**

Measuring Tape – Outdoor – Broad Jump Pit

**Procedure**

The subject was asked to stand with feet apart and toes just behind the take off line. Prior to jumping, the arms are swing backward and the knees bent. The jump is done by extending the knees and swinging the arms forward simultaneously. Measurement is taken from the take off line to the heel or part of the body that touches the floor nearest the take off line. Three trials were permitted in succession. Best performance was taken in to account

**Scoring**

The distance of all jumps were measured to the nearest and the best one was recorded in meters and centimeters,
### 3.10.3 Muscular Endurance (Sit – Ups Test)

**Purpose**

To measure muscular endurance.

**Equipment required**

Stop watch and Mat

**Procedure**

The subjects perform the test with bent knees, feet at about 18 inches from the buttocks, and the hands touching the side of the head. A partner holds the subject’s feet as the exercise is performed. The subject touches the elbow to the alternate knee with each sit-up. The subject performs as many sit-ups in 1 minute as possible.

**Scoring**

One point was scored for each correct sit ups. The score was the maximum number of sit ups completed in one minute.
3.10.4 Resting Pulse Rate  (Bio-Monitor Test)

Purpose

To record the resting pulse rate of each subject per minute.

Equipment

A stop watch and biomonitor was used to measure the resting pulse rate

Procedure

The resting pulse rate of the subjects was monitored by the pulse monitor. The resting pulse rate for all the subjects were recorded in a sitting position, in the morning session between 8:30 a.m. to 9:00 a.m.

The subjects were asked to sit down on the bench and relax for 15 minutes prior to the test.

Scoring

The number of pulse beats per minute was recorded as the scores.
3.10.5 \( \text{Vo}_2 \text{ Max} \) \text{ (Queen’s College Step Test)}

**Purpose**

The purpose of the test was to find out the maximum oxygen consumption of the subjects.

**Equipments**

Stop watch, 18 inches high bench and metronome.

**Procedure**

After hearing the commend start from the investigator, the subjects stepped up and down on a bench of 18 inches high. All the time subjects stepped upon the bench with their body erect. The stepping process was performed in counts as follows.

- Left foot was placed on the Bench
- Right foot was placed on the Bench
- Left foot was placed on the floor
- Right foot was placed on the floor

The subjects were allowed to lead of with the same foot each time or to change the foot as she desired but the four counts was maintained. As the metronomes were not available the counting was done as “up” up and down, “down”. The subjects their step-ups when they heard the command “Stop” from the investigator.
The stepping exercise continued for three minutes in which each minute the subjects covered twenty-five steps – ups and at the completion of stepping the students remained standing.

To predict the maximal oxygen uptake (Vo$_2$ Max) by the step test formula was used.

Max Vo$_2$ = $111.33 - (0.42 \text{ step test})$ that is pulse rate for seconds.

**Scoring**

The Vo$_2$ max measured in kg/mts/seconds

3.10.6 **Anaerobic Power (Margaria-Kalaman Step Test)**

**Purpose**

The procedure of the test was to find out the anaerobic power of the subjects.

**Equipment required**

Stopwatch, timing mats (optional), measurement tape, flight of 12 steps with a starting line of 6 meters in front of the first step. Each step is approximately 17.5 cm high with the 3rd, 6th and 9th step clearly marked. The vertical distance between the 3rd and 9th step must be accurately measured of use in the (Mathew results formula 1991).
**Procedure**

The athlete’s weight is determined in kilograms. The athlete is given a few practice runs up the steps to warm up. The athlete stands ready at the starting line 6 meters in front of the first step. On the command “Go”, the athlete sprints to and up the flight of steps, taking three steps at a time (stepping on the 3\(^{rd}\), 6\(^{th}\) and 9\(^{th}\) steps), attempting to go up the steps as fast as possible. The time to get from the 3\(^{rd}\) step to the 9\(^{th}\) step is recorded (either using a stopwatch or using switch mats placed on the 3\(^{rd}\) and 9\(^{th}\) steps), starting when the foot was in first in contact with the 3\(^{rd}\) step, and stopped when the foot contacts the 9\(^{th}\) step. Allow three trials of the test, with 2-3 minutes recovery between each trial.

**Scoring**

Power was calculated by using the following formula

\[
P = \text{Power(Watts)}
\]

Where

- \(P\) = Power(Watts)
- \(W\) = the subject’s weight in kg
- \(D\) = the height in mts
- \(T\) = Elapsed time\((9.8\) is constant of gravity)
3.11 TRAINING PROGRAMME

The control group was not exposed to any specific Training. However, they were participating in their regular Physical activities. The experimental groups I, II and III were subjected to twelve week of Low Intensity (First Package), Medium Intensity (Second Package) and High Intensity (Third Package) of Plyometric training respectively. Then training was given for three days per week (alternative days). Every training session lasted for 40 to 60 minutes. The training program was scheduled for the morning between 6.00 am and 7.00 am.

The subjects underwent their respective programme under strict supervision prior to and during every session. Subjects underwent a 10 minutes warm up and warm-down exercises which included jogging, stretching, striding and push-ups. All the subjects involved in the training were questioned about their stature throughout the training period. None of them reported any injuries. However, muscle soreness was reported in the early weeks, but it subsided later.

Attendance was calculated for the training groups by dividing total member of training sessions by the number of session presented. It was 97% for group I (Low intensity) for 96%
group II (Medium Intensity Training) and 98% for group III (High Intensity Training).

Intensity is the effort involved in performing a given task. In plyometric, intensity is controlled by the type of exercise performed. Plyometric ranges from simple tasks to highly complex and stressful exercise. The Intensity of plyometric exercise can be increased by adding light weight in certain cases, by raising the platform height for depth jumps or simply by aiming at covering a greater distance in longitudinal jumps.

Exercise for Low Intensity, Medium Intensity and High Intensity training groups were designed based on the classification made by the experts. *(Baechle, 1994)*

**3.12 ADMINISTRATION AND ORGANIZATION OF TRAINING PROGRAMME**

The investigator conducted the plyometric training programme at the college stadium. The investigator could personally supervise and ensure proper execution of the plyometric training with the help of trained coaches.

**3.13 WARMING- UP AND WARMING - DOWN**

*Hardayal Singh (1991)* has recommended that the physical preparation for the training session is achieved through optimum warm up of the six exercises in a definite manner for
the purpose of warming of the physical and physiological systems of the organism. It leads to a) increase in muscle and body temperature, b) Raising the functional level of the heart and lungs, c) loosening of muscles, ligaments and joints, d) Facilitation of motor co-ordination, e) increase in readiness for training activity. General warm-up aims at general preparedness for the training activity. It consists of jogging and stretching exercises.

**TABLE IV**

**PLYOMETRIC TRAINING PROGRAMME DESIGN**

**LOW INTENSITY PLYOMETRIC TRAINING (FIRST PACKAGE)**

<table>
<thead>
<tr>
<th>S.NO</th>
<th>DETAILS</th>
<th>DURATION</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Number of weeks</td>
<td>12 Weeks</td>
</tr>
<tr>
<td>2</td>
<td>Number of sessions per Week</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Duration of Each session</td>
<td>1 hour and 30 minutes</td>
</tr>
<tr>
<td>4.</td>
<td>Total number of foot contact</td>
<td>80-200 No</td>
</tr>
<tr>
<td>5</td>
<td>Rest interval between Repetition</td>
<td>3 to 5 minutes</td>
</tr>
<tr>
<td>6</td>
<td>Rest Interval between Exercises</td>
<td>2 to 3 minutes</td>
</tr>
<tr>
<td>7</td>
<td>warm up and warm down</td>
<td>20 Minutes</td>
</tr>
</tbody>
</table>
### TABLE IV (A)

**FIRST PACKAGE PLYOMETRIC TRAINING PROGRAMME**

**LOW INTENSITY**

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Exercises</th>
<th>Repetitions</th>
<th>Contacts</th>
</tr>
</thead>
</table>
| I & II weeks| 1. Squat Jump  
2. Split squat Jump  
3. Two foot ankle Hop  
4. Plyometric sit ups  
5. Under hand throw | 2  
2  
2  
2  
2 | 8  
8  
8  
8  
8 |
| III & IV weeks | 1. Squat Jump  
2. Split squat Jump  
3. Two foot ankle Hop  
4. Plyometric sit ups  
5. Under hand throw | 2  
2  
2  
2  
2 | 8  
8  
8  
8  
8 |
| V & VI weeks | 1. Squat Jump  
2. Split squat Jump  
3. Two foot ankle Hop  
4. Plyometric sit ups  
5. Under hand throw | 3  
3  
3  
3  
3 | 8  
8  
8  
8  
8 |
| VII & VIII weeks | 1. Squat Jump  
2. Split squat Jump  
3. Two foot ankle Hop  
4. Plyometric sit ups  
5. Under hand throw | 3  
3  
3  
3  
3 | 10  
10  
10  
10  
10 |
| IX & X weeks | 1. Squat Jump  
2. Split squat Jump  
3. Two foot ankle Hop  
4. Plyometric sit ups  
5. Under hand throw | 4  
4  
4  
4  
4 | 8  
8  
8  
8  
8 |
| XI & XII weeks | 1. Squat Jump  
2. Split squat Jump  
3. Two foot ankle Hop  
4. Plyometric sit ups  
5. Under hand throw | 4  
4  
4  
4  
4 | 10  
10  
10  
10  
10 |

*Number of the Contacts = number set x Repetition*
3.14 FIRST PACKAGE PLYOMETRIC EXERCISES

(LOW INTENSITY)

SQUAT JUMP

Intensity level: Low

Starting position: Half-squat position (thigh parallel with the ground) with feet shoulder-width apart. Interlock fingers and place hands behind head.

Direction of jump: Vertical

Arm action: None
**Starting action:** Start movement by explosively jumping to maximum height.

**Descent:** Upon landing immediately go into half-squat position and without pause, repeat exercise.

**Volume:** The squat jump utilizes a deeper countermovement as compared to other jumps, so the amortization phase is the longest of all drills listed.

**SPLIT SQUAT JUMP**

**Intensity level:** Low

**Starting position:** Assume a stance with one leg extended forward and the other oriented behind the midline of the body as
in a lunge position. The forward leg should be almost fully extended.

**Direction of jump:** vertical

**Arm action:** None, or double arm action.

**Starting action:** Start with a countermovement of approximately in (1-25cm).

**Ascent:** Explosively jump off the front leg, using the calves (plantar flexion) of the back leg.

**Descent:** When landing, maintain the lunge position (same leg forward) and immediately repeat the jump.

**TWO-FOOT ANKLE HOP**

**Intensity level:** Low

**Starting position:** Stand with slight flexion in ankles, knees, and hips
**Direction of jump:** Horizontal

**Arm action:** Double arm action

**Starting action:** Stand with feet shoulder-width apart and the body in a vertical position.

**Action:** Using only the ankles for momentum, hop continuously in one place. Extend the ankles to their maximum range on each vertical hop

**Volume:** Short response

**PLYOMETRIC SIT-UP**

- **Starting position.**
- **Leg thrust.**
- **Leg lift.**
**Intensity level:** low

**Starting position:** lie on the back with legs slightly flexed and perpendicular to the floor. A partner stands with his feet on each side of the subject's head, facing the subject's ankles. And the subject grasps the partner's ankles.

Direction of the movements: vertical

**Starting action:** the partner thrusts the subject's leg towards the ground by rapidly extending the arms.

**Descent:** the subject provides slight resistance to the partner's push and allows the legs to slightly accelerate toward the floor.

**UNDER HAND THROW**

![Diagram of UNDER HAND THROW](image)

**Intensity level:** low

**Equipment:** A partner and medicine ball
**Direction:** Horizontal

**Start:** stand in a squat holding the ball close to the ground about three meters from your partner,

**Action:** keeping your back straight, raise straight up and throw the ball up and out to your partner, using the legs to provide momentum.

**TABLE V**

**PLYOMETRIC TRAINING PROGRAMME DESIGN MEDIUM INTENSITY PLYOMETRIC TRAINING (SECOND PACKAGE)**

<table>
<thead>
<tr>
<th>S.NO</th>
<th>DETAILS</th>
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<tbody>
<tr>
<td>1.</td>
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<tr>
<td>7</td>
<td>warm up and warm down</td>
<td>20 Minutes</td>
</tr>
</tbody>
</table>
TABLE V (A)
SECOND PACKAGE PLYOMETRIC TRAINING PROGRAMME
MEDIUM INTENSITY

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Exercises</th>
<th>Repetitions</th>
<th>Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>I &amp; II weeks</td>
<td>1. Pike Jump</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>2. Double Leg Tuck Jump</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>3. Standing Triple Jump</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>4. Medicine ball Sit up</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>5. Back ward throw with jump to box</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>III &amp; IV weeks</td>
<td>1. Pike Jump</td>
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<tr>
<td></td>
<td>5. Back ward throw with jump to box</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

Number of the Contacts = number set x Repetition
3.15 SECOND PACAKAGE PLYOMETRIC TRAINING

(MEDIUM INTENSITY)

PIKE JUMP

Intensity level: Medium

Starting position: Assume a comfortable upright stance with feet shoulder-width apart.

Direction of jump: Vertical

Arm action: Double arm action

Starting action: Begin with a rapid countermovement as in performing a vertical jump.
Ascent: Immediately explode upward. Keeping the legs straight, try to lift them to a position parallel to the floor and touch the toes (Pike position) with the hands.

Descent: Upon landing, immediately repeat this sequence, concentration on lifting the straight legs upward.

Volume: Perform the repetitions at the same semi rapid rate, emphasizing minimum contact time on the ground.

DOUBLE LEG TUCK JUMP

Intensity level: Medium

Starting position: Assume a comfortable upright stance with feet shoulder-width apart
**Direction of jump:** Vertical

**Arm action:** Double arm action

**Starting action:** Begin with a rapid countermovement

**Ascent:** Immediately explode upward. Pull the knees high to the chest and quickly grasp the knees with the hands and release

**Descent:** Upon landing, perform the next jump after minimal contact time on the ground.

**Volume:** Concentrate on flexing and pulling the knees upward in this drill.

**STANDING TRIPLE JUMP**

![Diagram of standing triple jump]

**Intensity level:** Medium

**Starting position:** Stand with feet 15 to 20 cm apart-arms, ankles, knees, and hips slightly flexed and upper body with a slight forward lean.
**Direction of jump**: Horizontal, with a vertical component as well.

**Arm action**: Double arm action

**Starting action**: Begin with a rapid countermovement and jump out and upward off of both feet. Try for maximum distance, as in a long jump.

**Ascent**: Prepare the right leg for initial contact with the surface.

**Descent**: Land on the right foot. Immediately jump off of the right foot and land on the left foot. Immediately jump off of the left foot and land on both feet.

**MEDICINE BALL SIT-UP**

**Intensity level**: medium
**Starting position:** the subject sits on the floor with the knees flexed 90 degree and the upper body leaning slightly backward. A partner stands 1.5 to 2 m in front of the subject.

**Direction of movement:** vertical

**Starting action:** the partner passes the ball to the subject at the subject’s chest level. The subject catches the medicine ball with arms slightly flexed.

**Descent:** The subject allows the force of the ball to push the upper body back and down. This movement causes an eccentric action of the abdominals.

**Ascent:** After the lower body back touches the floor, the subject immediately sits up and performs a chest pass to the partner at the completion of the sit-up.

**BACK WARD THROW WITH JUMP TO BOX**
Intensity level: medium

Equipment: A box 12 to 42 inches high and medicine ball.

Start: squat facing box and holding a medicine ball.

Direction of the movement: vertical

Action: lower the ball between your legs, then toss it up and back over your head. As you thrust upward to toss the ball. Push off the ground and land on the box. Step off the box and collect the ball for the next repetition.

**TABLE VI**

**PLYOMETRIC TRAINING PROGRAMME DESIGN**

**HIGH INTENSITY PLYOMETRIC TRAINING (THIRD PACKAGE)**

<table>
<thead>
<tr>
<th>S.NO</th>
<th>DETAILS</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Number of weeks</td>
<td>12 Weeks</td>
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<tr>
<td>2.</td>
<td>Number of sessions per Week</td>
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<tr>
<td>3.</td>
<td>Duration of Each session</td>
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<tr>
<td>4.</td>
<td>Total number of contact</td>
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<tr>
<td>5.</td>
<td>Rest interval between Repetition</td>
<td>3 to 5 minutes</td>
</tr>
<tr>
<td>6.</td>
<td>Rest Interval between Exercises</td>
<td>2 to 3 minutes</td>
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<tr>
<td>7.</td>
<td>warm up and warm down</td>
<td>20 Minutes</td>
</tr>
<tr>
<td>Weeks</td>
<td>Exercises</td>
<td>Repetitions</td>
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<tr>
<td>------------</td>
<td>----------------------------------------------------</td>
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<tr>
<td>I &amp; II weeks</td>
<td>1. Double Leg vertical Power Jump</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2. Multiple box to box squat jump</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3. stadium hops</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>4. Power drop</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5. low post drills</td>
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</tr>
<tr>
<td>III &amp; IV weeks</td>
<td>1. Double Leg vertical Power Jump</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2. Multiple box to box squat jump</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3. stadium hops</td>
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<td></td>
<td>4. Power drop</td>
<td>2</td>
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<tr>
<td></td>
<td>5. low post drills</td>
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<td>V &amp; VI weeks</td>
<td>1. Double Leg vertical Power Jump</td>
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<tr>
<td></td>
<td>2. Multiple box to box squat jump</td>
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<td>3. stadium hops</td>
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<td>4. Power drop</td>
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<tr>
<td></td>
<td>5. low post drills</td>
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<td>VII &amp; VIII weeks</td>
<td>1. Double Leg vertical Power Jump</td>
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<td>2. Multiple box to box squat jump</td>
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<td>5. low post drills</td>
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<td>4. Power drop</td>
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</tr>
<tr>
<td></td>
<td>5. low post drills</td>
<td>4</td>
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</tbody>
</table>

Number of the Contacts = number set x Repetition
3.16 THIRD PACKAGE PLYOMETRIC TRAINING

(HIGH INTENSITY)

DOUBLE LEG VERTICAL POWER JUMP

Intensity level: High

Starting position: Stand with the feet shoulder width apart.

Direction of jump: Vertical

Arm action: Double arm action

Starting action: Perform a rapid countermovement and jump as high as possible

Ascent: Thrust arms upward vigorously and reach as high as possible with one or two hands.
**Descent:** When the feet hit the ground, jump again immediately without a stutter step.

**Volume:** The jump is often performed against a wall or a free-standing device that measures jump height, with the athlete touching as high as possible.

**MULTIPLE BOX TO BOX SQUAT JUMPS**

![Multiple Box to Box Squat Jumps](image)

**Intensity level:** High

**Starting position:** Assume a comfortable upright stance with feet shoulder-width apart

**Direction of jump:** Vertical

**Arm action:** Double arm action

**Starting action:** Start with feet shoulder with apart and the body straight.
**Equipment:** Eight boxes of the same height (40 centimeter) placed in a row (box height according to measurement).

**Start:** Stand with feet shoulder width apart at the end of boxes (with their length spread out before you).

**Action:** Jump onto the first box, then off on the other sides, on to the second box, then off, and so on down the row. After jumping off the last box, walk back to the start for recovery.

**Volume:** Perform the repetitions at the same semi rapid rate, emphasizing minimum contact time on the ground.

**STADIUM HOPS**

![Image of stadium hops]

**Intensity level:** High

**Starting position:** Half-squat position (thigh parallel with the ground) with feet shoulder-width apart. Interlock fingers and place hands behind heard.
**Direction of jump:** Vertical

**Arm action:** Double arm action

**Equipment:** stadium steps.

**Starting action:** stand in a quarter squats at the bottom of the stairs, with hands on hips and feet shoulder width apart.

**Action:** Jump to the first step and continue jumps. Make landings light and quick; movement should be continuous up the stairs without pauses. Generally, the athlete should be able to take two steps at a time.

**Volume:** The squat jump utilizes a deeper countermovement as compared to other jumps, so the amortization phase is the longest of all drills listed.

**POWER DROP**
**Intensity level:** High

**Equipment:** A partner, a box 12 to 42 inches height, and a medicine ball.

**Direction of movement:** vertical

**Start:** Lie supine on the ground with arms stretched upward over chest. Partner stands on the holding the medicine ball at arm’s length.

**Action:** Partner drops the ball. Catch the ball and immediately propel the ball back to the partner. Repeat.

**LOW POST DRILL**

**Intensity level:** high
**Equipment:** A partner. A medicine ball and a basket ball goal.

**Direction of movement:** vertical

**Start:** stand with your back to the basket, about a meter to the front or side.

**Action:** your partner starts the by throwing you the ball in low post position. Catch it, pivot, and jump to touch the ball against the rim. Immediately after landing jump to touch the rim with the ball a second time. Finally pivot back toward your partner and pass the ball to him.

3.17 **STATISTICAL TECHNIQUES**

In this study, analysis of co-variance statistical techniques was used to find out the selected Motor ability components and Physiological variables among College Men students. When the adjusted post test was significant, the Scheffe’s post hoc test was used to find out the paired mean significant difference.