

## **Impact of Silambam Training on Reaction Time and Cardio respiratory Endurance among Racquet Game Players**

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### **Abstract**

The purpose of this study was to investigate reaction time and cardiorespiratory endurance in practitioners of Silambam arts. The main objective was to examine reaction time of racquet game players by measuring simple reaction time (Yardstick reaction time scale) and cardiorespiratory endurance (12 min. run/walk test). Fifteen racquet game players from Pondicherry region were selected for this study. Eight weeks of Silambam Training programmes were conducted to the players, weekly five days from Monday to Friday on every evening 6.00pm to 7.00pm. The training group were measured the pretest and posttest on reaction time (RT) and cardiorespiratory endurance (CRE). Results indicated that there was significant improvement in reaction time ( $p > 0.05$ ) on racquet game players after 8 weeks of silambam training. And also found that silambam training group had shown an insignificant change on cardiorespiratory endurance when compare with pre-test and post-test. Furthermore, the silambam participants have faster reaction times to hand stimuli. These results are consistent with the physical aspects of the silambam arts.

**KEYWORDS:** Reaction time, Cardiorespiratory Endurance, Silambam, yardstick reaction time, 12 min. cooper test.

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### **INTRODUCTION**

An athlete's ability to react shows how quickly and effectively her or she can make decisions and initiate actions. Key strategies can accelerate the decision making process to give athletes an edge in competitive situations. Reaction time is the interval time between the presentation of a stimulus and the initiation of the muscular response to that stimulus. A primary factor affecting a response is the number of possible stimuli, each requiring their own response, that are presented. Reaction time itself is an inherent ability, but overall response time can be improved by practice. Coach and athletes need to analyse the type of skill and the requirements of their sport and decide where overall response gains can be made.

In sports it refers to an athlete's ability to sustain prolonged exercise for minutes, hours, or even days. Endurance requires the circulatory and respiratory systems to supply energy to the working muscles in order to support sustained physical activity. VO<sub>2</sub> max or maximal oxygen uptake is one factor that can determine an athlete capacity to perform sustained exercise and is linked to aerobic endurance. VO<sub>2</sub> max refers to the maximum amount of oxygen that an individual can utilize during maximal or exhaustive exercise. Cardiorespiratory endurance is the essential role of any long game activities which is influence to untried to the athletes.

There are so many historical evidences regarding Silambam. Our ancestors used very large swords and spears because of their physical and mental fitness. Silambam also develops our sense of timing, presence of mind, and helps us in essential breathing and for keen observation. It also develops intuition and self-defense. Silambam was the basis for Japan's Samurai and such other arts.

Reaction time and cardiovascular endurance are the key elements for racquet game players. The researcher made an attempt on innovative silambam training may influence in the reaction time and cardiorespiratory endurance on among players. The researcher may find the new kind of training area in research; it may the attempt to choose this topic.

### **Statement of the Problem**

The purpose of this study was to find out the impact of silambam training on reaction time and cardiorespiratory endurance among racquet game players, who are participated in the intermediate level of competition. Their age group 19 to 23 years.

### **Hypothesis**

It was hypothesized that there would be significant changes of silambam students on their reaction time and cardiovascular endurance.

## **METHODOLOGY**

### **Selection of Subjects**

This study was designed to impact on reaction time and cardiorespiratory endurance of silambam students. To achieve this purpose, fifteen Pondicherry region intercollegiate racquet game players were selected for this study. The players were selected from the games of Lawn Tennis, Table Tennis, Badminton and Ballbadminton, Their age ranged from 19 to 23 years. All were studying in the affiliated Colleges of Pondicherry University.

### **Selection of Variables**

The scholar reviewed the available scientific literature pertaining to silambam from books and journals and also discussed with the experts, feasibility, availability of instruments and equipment, the following variables are selected for this study.

#### **Variables**

1. Reaction time
2. Cardiorespiratory endurance

### **Administration of Test**

The dependent variables were tested with the following test items.

1. Reaction time - Yardstick reaction time scale (in milliseconds)
2. Cardiorespiratory endurance - Cooper's 12 Minute Run/walk test (in ml/kg/min)

### Training Programme

Eight weeks of Silambam training programmes were conducted to the players. The training was start from the basis movements to advance skills. Fifteen racquet game players from Pondicherry region were selected and they were practiced silambam techniques weekly five days from Monday to Friday on every evening 6.00pm to 7.00pm. The training schedule was distributed in 10 minutes stick warming up, 45 minutes silambam training and last 5 minutes warming down.

The Silambam Exercises were practiced by the training group are Guru Vanakkam, Long Stick, Double Short Stick, Chopper Knife, Sword & Shield, Spear fighting / Spear Swing, Maduvu (Deer Horns), Short and long stick, The steel-whip, Saber Sword Blade.

### Collection of Data

The training group were measured the pretest and posttest on reaction time and cardiorespiratory endurance. The pretest was measured two days before training start and posttest was measured after 8 weeks of training scheduled. The raw scores were taken from all the players and recorded. The reaction time noted with seconds in time and cardiorespiratory endurance was recorded with distance covered for 12 minutes run/walk in meters, and this was applied in the scientific formula to find the cardiorespiratory endurance.

### Statistical Analysis

The purpose of the study was to find out the impact of progressive silambam training on 15 male racquet game players. To find out the effectiveness of dependent variable by through independent variable, dependent 't' test as a statistical tool was used to bring out the results.

### ANALYSIS OF DATA

The statistical analysis applied on collected data and interpreted the results is presented in the below table.

**Table**

**Computation of Mean, Standard Deviation, Standard Error and 't' ratio of Reaction Time and Cardiorespiratory Endurance in Silambam Training Group**

Variable	Test	Mean	N	Std. Deviation	Std. Error	't' Ratio
<b>Reaction Time (in MilliSeconds)</b>	Pre Test	12.47	15	2.23	0.58	7.135*
	Post test	11.13	15	1.96	0.51	
<b>Cardiorespiratory Endurance (in ml/kg/min)</b>	Pre test	2.22	15	270.45	69.83	-0.695
	Post test	2.24	15	235.03	60.69	

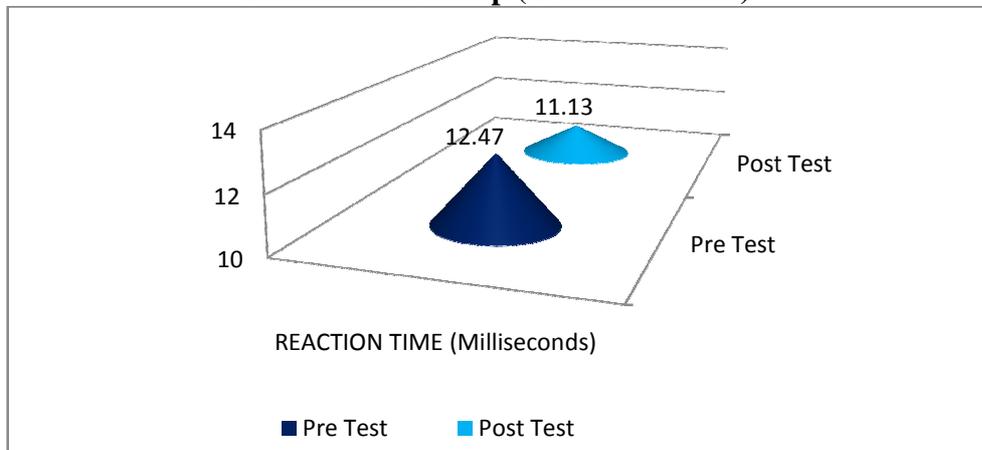
\*Significant at 0.05 level of confidence. Degree of freedom 13 is 2.05

The above table indicates that obtained pre and posttest means of reaction time of silambam group is 12.47 and 11.13 respectively. The 't' value required to be significant at 0.05 level of confidence at 13 degree of freedom is 2.05 and the 't' ratio calculated was 7.135, which was more significant than the tabulated value at 0.05 level of confidence. So, the hypothesis was accepted in this variable.

The above table also indicates that obtained pre and post-test means of cardiorespiratory endurance of silambam group is 2.22 and 2.24 respectively. The calculated 't' value is -0.695, it was found that no significant results between pre and post-test means. So, the hypothesis was rejected in this variable.

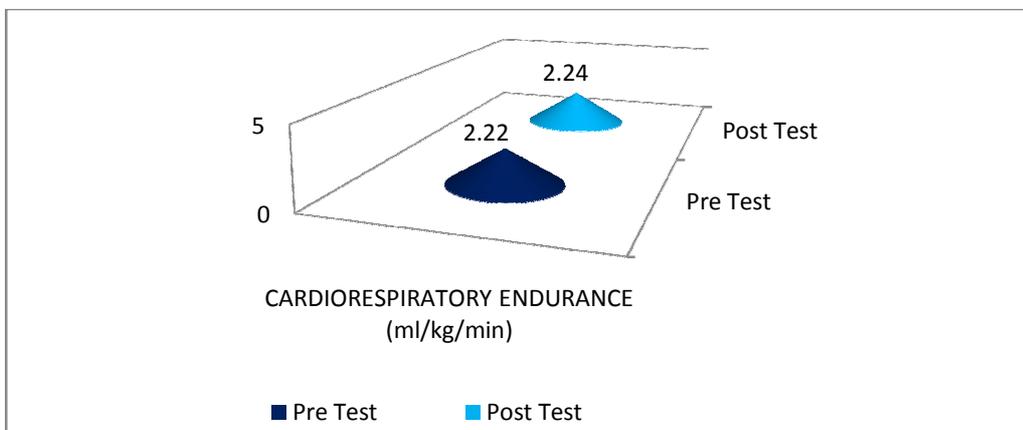
**Figure-1**

**Bar Diagram Showing the Mean Difference of Reaction Time (RT) In Silambam Group (in Milli Seconds)**



**Figure-2**

**Bar Diagram Showing the Mean Difference of Cardiorespiratory Endurance (CRE) in Silambam Group (in ml/kg/min)**



## CONCLUSIONS

Within the limitation of the study and on the basis of the obtained results, the following conclusions were drawn:

1. From the results, it was states that, there was significant improvement in reaction time after 8 weeks of silambam training for racquet game players.
2. The silambam training group had shown an insignificant change on cardiorespiratory endurance when compare with pre and post test.

## RECOMMENDATIONS

On the basis of the observations and conclusions made this study the following recommendations can be frame for coaches, trainers, players and research scholars.

1. This study was clearly focus on that, the silambam training would improve the reaction time for players.
2. This silambam training would improve quickness and hand stimulus to the racquet game players.
3. The reaction time is more essential components for any ball games, the trainees can include the silambam training in their practice session, and it may influence to improve the reaction time.
4. A similar study may conduct to different reaction ability games.

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