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A STUDY OF EFFECT OF CONCURRENT-TRAINING ON SELECTED PHYSICAL VARIABLES OF MALLAKHAMB PLAYERS

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ABSTRACT

Concurrent training was basically a new concept in intercollegiate Mallakhamb players, investigator being a player had attempted to study the effect of concurrent training on selected physical variables among Mallakhamb players. In Mallakhamb coaching literature is very limited; more over very limited number of researches had been done on the Mallakhamb, which motivated investigator to take up study. In this study, the random group research design was adopted. The data gathered from the groups prior to and after the experimental treatments on chosen Physical characteristics were statistically evaluated using the analysis of covariance statistical approach (ANCOVA). The study's findings suggest that when compared to the control group, the concurrent training group and specific game training group performed much better in all of the specified physical activities. As a result, twelve weeks of concurrent training and specific game training improved cardiovascular endurance, explosive strength, flexibility, and muscular strength among mallakhamb players in experimental groups.

Keywords: Mallkhamb players, physical fitness, cardiovascular endurance, explosive strength, flexibility, and muscular strength

INTRODUCTION

Everyone is concerned about their physical health in the current climate. While the Centers for Disease Control defines health as a set of traits that people possess or achieve that are related to their capacity for physical activity, the World Health Organization defines health as a state of total physical, mental, & social well-being, not just absence of illness and infirmity, and fitness as the capacity to carry out muscular work satisfactorily.

There are numerous and varied traditional types of physical education that may be employed in its socialisation educational process. Traditional in this context encompasses more than just standard educational practises (usually associated with unattractive & emotionally & intellectually undemanding). Kirk [1990] believes that students in schools should be taught traditional games like croquet as well as contemporary ones like curling in order to highlight the concept of culture (physical culture), even though it is challenging to characterise the entirety of what may be referred to as physical culture. The introduction of "special" sports and training methods may lead to resistance to conventional sports, and participation in them presents students with a task they would not otherwise face, although offering a variety of possibilities.

Today, the values that were formerly planned and meant for the upper classes have been amalgamated with those that are indicative of the less noble & financially independent strata. Sports have changed in character as a result of their broad appeal, reflecting social advancements in the field of "culture of physical exercise." What was previously a sport, leisure, or pastime activity is now something that is viewed on television thanks to recent technology

advancements. As a result, it is possible to wonder if any activity (for example, one without a physical component) may be recognised as a part of physical culture. I'm not sure, but we all have a general understanding of how people view things that come to them easily: "easy come, easy go." Will physical exertion have the same effect? If not now, then perhaps in 30 to 50 years.

Physical activities are very important in anyone's life, and games are meant to bring enjoyment and amusement. The person's total progress is determined by the physical motions performed. Children have a predisposition to acquire their language via games. They must sing or hear songs while playing, and as a result, their ability to grasp language grows.

Wrestling, Jallikattu, Vazhukkamaram, and other ethnic sports are popular among the South's rural people. Some cowherd caste members from both the South and the North are well-known for their abilities in Silambam (stick fighting) and Pike staff play. Football, hockey, and volleyball were imported from the West, while others, such as polo, were introduced from the East. Despite its players becoming entangled in scam after scam, cricket remains a popular sport among the populace. Curiosities such as cock fighting and bull and ram fighting are still prevalent in various groups and localities.

MALLAKHAMB

There is art in the Mallakhamb. One of the oldest forms of physical culture is known as mallakhamb. Willpower or strength combined with ideal physical fitness increases a person's motivation to succeed in fulfilling his or her responsibilities on earth and promotes excellent health. It is a methodical, scientific approach to developing a good body and mind. Our ancestors fully comprehended and practised this fundamental truth of a healthy body and mind from the moment they assessed the human race. One of the primary causes for connecting all those attributes and values is the mysterious mallakhamb culture, which emphasises the monkeys' unbreakable unity (ape, man, Hanuman, with this divine art). In the Indian sport of mallakhamb, the participant strikes postures and pulls out feats while suspended on a vertical wooden pole. Mallakhamb is also name of the pole that is utilised in the game.

The word mallakhamb is comprised of Mallakhamb – Mallar Khambam – Malla – Mallardenotes – man of strength (power) – veeran – Gymnast. Khamb which is denotes in wooden pole. Therefore translated as a gymnast pole (Mahesh Atale. R, 2003)

Mallakhamb, improves energy muscular endurance, over strong power and stamina, balance, flexibility, agility, coordination, and enhances cardio vascular system. The way body is moved, twisted, stretched, and balanced on Mallakhamb captivates audience. Playing on Mallakhamb improves one's speed, reflexes, focus, and cohesion. Mallakhamb training aids in the training of many other sports such as wrestling, judo, gymnastics, athletics, horseback riding, tennis, and so on.

Shoulder vaulting' on Mallakhamb will help the wrestler's throw. The Mallakhamb is mostly used for shadow training by wrestlers. The majority of workouts in Mallakhamb are designed with wrestling in mind.

Mallakhamb for Roman Ring practice will strengthen a gymnast's shoulder girdle. Mallakhamb also contributes in the development of abilities like as flexibility, elegance, agility, and rhythm, all of which are essential for a skilled gymnast. Mallakhamb, an athletics coach, assists competitors in developing the endurance, strength, and stamina required for competition.

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Basketball and badminton are both popular sports. The Mallakhamb ladder will help to strengthen the muscles in the shoulder girdle and forearm. If also increases flexibility (Cricket, Hockey and Football) of the wrist joint. A cricketer will learn to dive from a side diving catch on the Mallakhamb, while a football or hockey goalkeeper will learn to save a goal. Swimming. A diver learns to dive while horseback riding by dismounting from a mallakhamb. The fundamental grip is extremely useful for horse riders since the grasp is same in all scenarios. The horse mount of Mallakhamb is identical to the genuine horse mount.

OBJECTIVE OF THE STUDY

To find out the effect of concurrent training on selected physical variables among intercollegiate Malakhamb players of North Maharashtra

LITERATURE REVIEW

Siva Muthu (2008) investigated the effect of certain mallakhamb exercises on javelin throw performance in physical education male students. The forty men students from Alagappa University College of Physical Education Karaikudi were separated into two groups of twenty each & assigned as the control group & experimental group. For six weeks, experimental group received solely the experimental therapy. The control group received no fitness training, and their initial and ultimate javelin throw performances were measured before and after training. The't' ratio was derived using data analysis and interpredation of results. The following conclusions were reached, which considerably improved javelin throw performance and enabled improvements in muscle strength, muscular power, and speed.

Natarajan (2010) studied the effects of rope asana & mallakhamb exercise on hematological, physiological, & psychological factors in college males. The subjects for this study were from Department of Physical Education at Annamalai University. These subjects were chosen out of a total of sixty options. These individuals were assigned to one of two groups at random: Experimental group I & Experimental group II. Six weeks of instruction were offered to the control group. The individuals' ages varied from 20 to 24 years. The following hematological, physiological, and psychological variables were used for this study: hemoglobin, red blood cells, blood pressure, respiratory rate, assertiveness, and mental imagery. The changes in beginning and end scores in selected hematological, physiological, and psychological variables were statistically treated, with Analysis of Covariance (ANCOVA) used to determine if mean differences were significant. In all situations, the significance was tested at the 0.05 level of confidence, which was deemed suitable. The mallakhamb group outperformed the rope asanas group in terms of hematological, physiological, and psychological factors.

According to Ambethkar (2011), study was meant to investigate effect of mallakhamb training on cardiovascular endurance & leg strength. Thirty male mallakhamb performers from the Tamilnadu Mallakhamb Association in Villupuram were chosen at random as subjects for this study. They were sorted into two groups of equal size. Each group had fifteen participants. For twelve weeks, Group I received mallakhamb instruction three days a week. Group II served as the control group & received no extratraining. As criteria variables, the following variables were chosen: cardiovascular endurance and leg strength. All individuals in both groups were evaluated on chosen dependent variables before & after training session. The

analysis of covariance was done to determine whether or not there was a significant difference b/w groups. The.05 level of confidence was used as level of significance for testing 'F' ratio derived by analysis of covariance, which was deemed adequate. The following conclusionswere reached based on study's findings. There was a substantial difference in cardiovascular endurance and leg strength b/w the mallakhamb training group & the control group. The mallakhamb training program resulted in a considerable improvement in chosen criteria variables such as cardiovascular endurance and leg strength.

Kagathara et al. (2012) investigate the development of physical fitness in schoolchildren through mallakhamb skill training. To meet the study's goal, 60 male pupils from Laxman Gyanpith School in Amdavad were chosen, ranging in agefrom 10 to 15 years. The chosen participants weredivided into two equal groups of 30 each. The first was designated as the experimental group, & second as the control group. The experimental group was required to practice fundamental mallkhamb skills five days a week for eightweeks, whereas control group received no instruction. Both groupswere subjected to pre- & post-testing. The AAPHERD exam was required for measuring physical fitness variables as well as seat and reach flexibility. The 't' test was used to calculate difference between each group's pre-test and post-test means. It was determined that mallkhambh skills training resulted in a substantial improvement in variable of physical fitness in the experimental group compared to the control group.

Thangaraj (2012) compared the specified physical fitness factors between mallkhamb and gymnast participants. Mallkhamb and gymnast topics from Dr. Sivanthi Aditanar College of Physical Education, Tiruchendur, & Ayya Nadar Janakiammal College of Arts and Science, Sivakasi, Tamilnadu, India, were purposefully chosen as subjects for the study. They varied in agefrom 18 to 24 years. As criterion factors, the following physicalfitness variables were chosen: flexibility and grip strength. By assessing standardized test items, data were obtained on a week difference of respective locations, Tiruchendur and Sivakasi. The data gathered from the individuals during the delivery of the tests was statistically analyzed using the independent't' test procedure at.05 level of confidence. Mallakhamb and gymnast participants will have significantly different flexibility and grip strength.

Mullerpatan et al. (2013) investigated the finding that institutional ethical review board permission was obtained. Following signed informed permission, 29 Mallakhamb players (24 females & 5 men; mean age 15 years) & 29 healthy participants (24 females & 5 males; mean age 14 years) participated. Foot structure was studied utilizing CSI in standing & plantar pressure distribution while walking (particularly midfoot) with an unique pedar system to determine its response to static and dynamic loads. CSI was calculated using a static foot-print taken while standing. Peak pressures were measured over seven areas of the foot during level walking at a self-selected tempo using an average of five mid-gait steps from 3 trials: lateral heel, medial heel, midfoot, lateral forefoot, medial forefoot, hallux, & toes. Plantar pressure data from 18 patients were excluded from further analysis after it was discovered that the raw data (*sol files) were corrupted owing to high foot moisture. Foot function was evaluated in terms of gait speed, calf muscle endurance, and ankle mobility. Active ankle range of motion in the sagittal plane, which was recorded using Silicon coach software, was used to quantify ankle mobility. The purpose of the calf lift test is to assess calf muscle endurance. Individuals walked three trials between two calibration sticks spaced one metre apart while gait velocity was

recorded using a digital camera with a sample rate of 25 Hz. With threshold ofsignificance set at $p \leq 0.05$, allvariables on both right and left sides werecompared across groups using an independent sample t test.

The effect of Mallakhamb & Silambam practises on the speed & flexibility of u-19 female Kho-Kho players was studied by Ganesh Babu and Chandrakumar in 2015. 45 female district level Kho-Kho players were selected at random from Dindugal city schools to complete the study's objectives. They were then divided into threegroups of fifteen each as the experimental group-I, experimental group-II, and control group. The experimental groups and control group were subjected to standard routine Kho-Kho practices, as well as Mallakhamb and Silambam practices for one hour in morning sessions. The control group received no extra instruction. The training lasted eight weeks, with 3 days each week on alternating days. Before and after training phase, data on specified dependent variables were gathered. The data was evaluated statistically using Analysis of Covariance (ANCOVA) & Scheffe's post hoctest. To determine relevance. The degree of confidence was set at 05. According to the findings of the study, Mallakhamb and Silambam practices considerably increased the speed & flexibility of district level Kho-Kho players.

Srinivasan and Sri Mahesh Babu (2016) conducted a study to determine the effect of mallakhamb exercise on selected physical fitness indicators in college males. To meet the study's goal, 15 subjects were chosen at random from Ramakrishna Mission Vivekananda University's Faculty of General and Adapted Physical Education & Yoga. A pre-test on chosen physical fitness characteristics such as strength, agility, flexibility, and balance was performed. After six weeks of training, a post-test on chosen physical fitness variables such as strength, agility, flexibility, and balance was performed. The paired 't' test was employed to analyze gathered data. After six weeks of mallakhamb training, experimental group demonstrated a substantial difference in strength, agility, flexibility, and balance. The study indicated that an eight-week mallakhamb exercise training program resulted in a significant change in some variables. As a result of the findings, the mallakhamb exercise appears to be significant for the development of strength, agility, flexibility, and balance in college males.

Thangapandiyan and Mahaboobjan (2018) investigated the effect of pranayama practices on athletic agility & muscular strength. Thirty male players from the department of physical education at Bharathidasan University in Tiruchirappalli, aged 18 to 25, consented to take part in study. They were divided into two groups at random: Group A (PP- Pranayama Practices) (N=15) & Group C (Control) (N=l5). Group A individuals were put through a 12-week Pranayama trainingprogram. For independent data, Student's t-test was utilized, and for dependent data, the Post-Pre differences were assessed using Student's t-test. The significance threshold was set at $p<0.01$. Whencompared to control group, Group Y's agility and muscular strength improved dramatically. Yoga asana training may be suggested to develop agility & muscular strength, as well as to improve athletic performance.

Saraboji et al. (2018) investigated effect of Mallkhamb training on selected physical fitness indicators in college-aged guys. For this reason, fifteen college-aged males from Ramakrishna Mission Vivekananda University's faculty of general and adaptive physical education and yoga in Coimbatore were chosen. The subjects' ages varied from 18 to 25 years old, and they were chosen using a genuine random group design. There are 15 people in

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the experimental group. The experimental group received malkhamb training for six weeks and individuals were assessed before and after the training. The selected factors were tested using standardized tests. The data were statistically examined using the paired t ratio to see if there weresignificant differences b/w pretest & posttest scores. The experimental group improved significantly on specified physical fitness measures, namely strength and flexibility, after six weeks of malkhamb training.

Mr. S. Ramachandiran and Dr. R. Saravanan's (2020) study aimed to investigate influence of particular core & yoga training on mallakhamb players' kinesthetic differentiating ability. Backward ball throw test was used to examine the selected dependent variable's kinesthetic differentiating capacity before & after the training programme. The analysis of covariance wasperformed to evaluate whether there was asignificant difference b/w pretest & posttest on chosen dependent variables.

ANALYSIS AND INTERPRETATION OF THE DATA

TABLE 1 ANALYSIS OF COVARIANCE OF THE DATA ON CARDIOVASCULAR ENDURANCE OF PRE, POST AND ADJUSTED POST TESTS SCORES OF EXPERIMENTAL AND CONTROL GROUPS (IN METERS)

TEST	CTG	SGTG	CG	SOV	SS	DF	MS	F-RATIO
Pre-Test								
Mean	2143.252	2166.253	2159.565	**B.M**	3358.972	2	1679.482	0.923
SD(±)	33.044	45.635	47.607	**W.G**	59856.05	33	1813.825	
Post –Test								
Mean	2275.234	2415.366	2143.617	**B.M**	443243.797	2	221621.893	27.602*
SD(±)	144.585	40.632	39.145	**W.G**	264967.296	33	8029.317	
Adjusted Post-Test								
Mean	2279.112	2412.434	2142.662	**B.S**	434913.015	2	217456.507	26.798*
				W.S	259726.36	32	8116.447	

*significant at 0.05 level of confidence
(The table values required for significance at 0.05 level of confidence for 2 & 33 and 2 & 32 are 3.29 and 3.30 respectively).

CTG – Concurrent Training Group
SGTG - Specific game training Group
CG- Control Group
SV – Sum of Variance
SS - Sum of Squares
Df – degrees of freedom
MS - Mean Square
B.M – Between Means
W.G – Within Groups
B.S – Between Sets
W.S – Within Sets

The pre-test mean values for cardiovascular endurance for the concurrent training group, specific game training group, and control group are 2143.252, 2166.253, and 2159.565, respectively, as shown in table 1. The computed 'F' ratio of 0.923 for pre-test scores was less than the table value of 3.29 for df2 and 33 for significant at 0.05 level of confidence in cardiovascular endurance. Post-test mean cardiovascular endurance values for the concurrent training group, specific game training group, and control group are 2275.234, 2415.366, and 2143.617, respectively. The computed 'F' ratio of 27.602 for post-test scores was larger than the table value of 3.29 for df2 and 33 for significant at 0.05 level of confidence for cardiovascular endurance. The adjusted post-test means for the concurrent training, specific game training, and

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control groups are 2279.112, 2412.434, and 2142.662, respectively. The computed 'F' ratio of 26.798 for adjusted post-test means was larger than the table value of 3.30 for df2 and 32 necessary for significance on cardiovascular endurance at 0.05 level of confidence. The study's findings revealed a significant difference in cardiovascular endurance between the adjusted post-test averages of the concurrent training group, the specific game training group, and the control group. Because the acquired 'F' ratio value was significant, the scheffe's test was used to determine the paired mean difference, as shown in table 2.

TABLE 2 THE SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN PAIRED MEANS ON CARDIOVASCULAR ENDURANCE

CTG	SGTG	CG	MD	CI
2279.112	2412.434	---	133.322*	118.105
2279.112	---	2142.662	136.450*	
---	2412.434	2142.662	269.772*	

*Significant at 0.05 level of confidence.

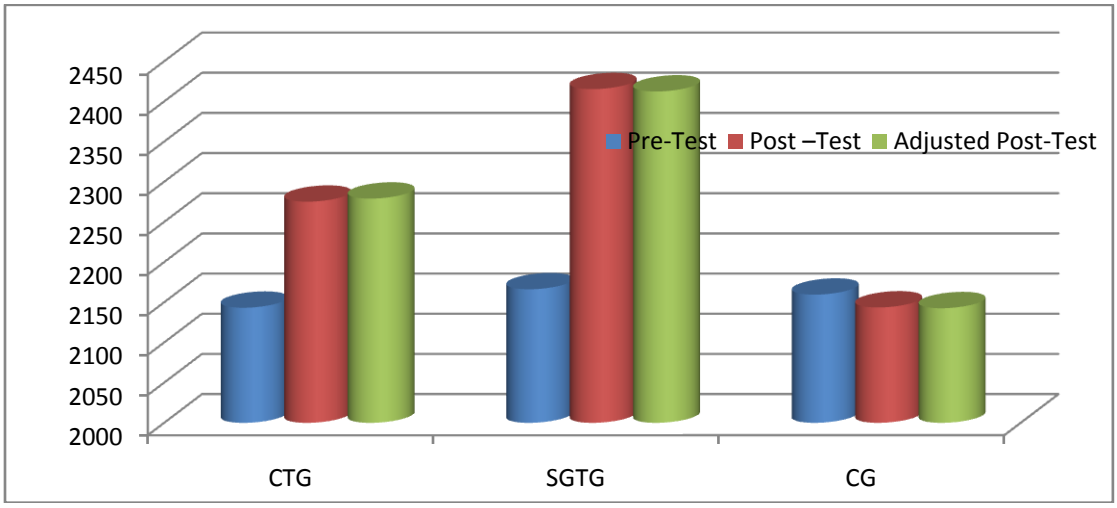

FIGURE 1: THE GRAPHICAL REPRESENTATION OF THE PRE, POST AND ADJUSTED POST-TEST MEANS VALUES OF CONCURRENT TRAINING GROUP, SPECIFIC GAME TRAINING GROUP AND CONTROL GROUP ON CARDIOVASCULAR ENDURANCE

The mean difference values between the concurrent training group and the specific game training group, the concurrent training group and the control group, and the specific game training group and the control group are 133.322, 136.450, and 269.772, respectively, which are greater than the confidence interval value 118.105 at the 0.05 level of confidence. The study's findings revealed a substantial difference in cardiovascular endurance between the concurrent training group and the specific game training group, the concurrent training group and the control group, and the specific game training group and the control group.

Figure 1 depicts the pre, post, and modified post-test means values of the concurrent training group, specific game training group, and control group on cardiovascular endurance.

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TABLE 3 ANALYSIS OF COVARIANCE OF THE DATA ON EXPLOSIVE STRENGTH OF PRE, POST AND ADJUSTED POST TESTS SCORES OF CONTROL AND EXPERIMENTAL GROUPS (IN CENTIMETERS)

TEST	CTG	SGTG	CG	SOV	SS	DF	MS	F-RATIO
Pre-test								
Mean	1.994	1.963	1.991	**B.M**	0.0062	2	0.0031	0.686
SD(±)	0.073	0.067	0.065	**W.G**	0.148	33	0.004	
Post-test								
Mean	2.094	2.162	1.993	**B.M**	0.173	2	0.082	21.232*
SD(±)	0.061	0.049	0.075	**W.G**	0.138	33	0.004	
Adjusted Post-test								
Mean	2.093	2.165	1.992	**B.S**	0.169	2	0.086	20.382*
				W.S	0.135	32	0.004	

*significant at 0.05 level of confidence
(The table values required for significance at 0.05 level of confidence for 2 & 33 and 2 & 32 are 3.29 and 3.30 respectively).

The pre-test mean values for explosive strength for the concurrent training group, specific game training group, and control group are 1.994, 1.963, and 1.991, respectively, as shown in table 3. The resulting 'F' ratio of 0.686 for pre-test scores was less than the table value, 3.29 for df2, and 33 for significant at the 0.05 level of confidence for explosive strength. The mean post-test explosive strength values for the concurrent training group, specific game training group, and control group are 2.094, 2.162, and 1.993, respectively. The resulting 'F' ratio of 21.232 for post-test scores was more than the table value of 3.29 for df2 and 33 for significant at 0.05 level of confidence for explosive strength. The adjusted post-test means for the concurrent training, specific game training, and control groups are 2.093, 2.165, and 1.992, respectively. The computed 'F' ratio of 20.382 for adjusted post-test means was more than the table value of 3.30 for df2 and 32 necessary for significance on explosive strength at 0.05 level of confidence. The study's findings revealed a significant difference in the adjusted post-test averages of the concurrent training group, specific game training group, and control group for explosive strength. Because the acquired 'F' ratio value was significant, the scheffe's test was used to determine the paired mean difference, as shown in table 4.

TABLE 4 THE SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN PAIRED MEANS ON EXPLO SIVE STRENGTH

CTG	SGTG	CG	MD	CI
2.093	2.165	---	0.072*	0.064
2.093	---	1.992	0.101*	
---	2.165	1.992	0.173*	

*Significant at 0.05 level of confidence

The mean difference values between the concurrent training group and the specific game training group, the concurrent training group and the control group, and the specific game training group and the control group are 0.072, 0.101, and 0.173, respectively, which are greater than the confidence interval value of 0.064 at the 0.05 level of confidence, according to table 4. The study's findings revealed a substantial difference in explosive strength between the

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concurrent training group and the specific game training group, the concurrent training group and the control group, and the specific game training group and the control group.

Figure 2 depicts the pre, post, and modified post-test means values of the concurrent training group, specific game training group, and control group on explosive strength.

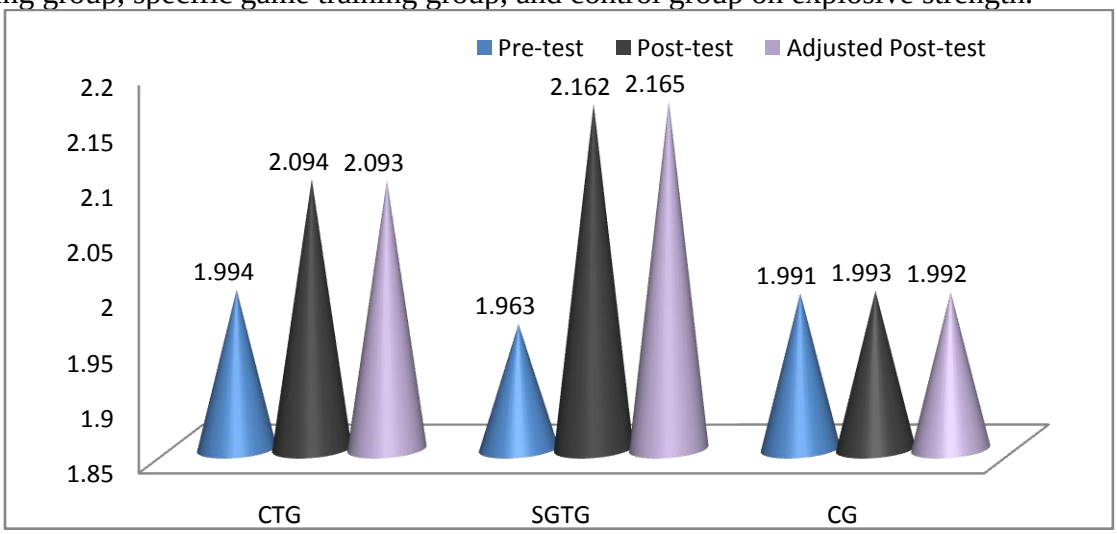

FIGURE 2: THE GRAPHICAL REPRESENTATION OF THE PRE, POST AND ADJUSTED POST-TEST MEANS VALUES OF CONCURRENT TRAINING GROUP, SPECIFIC GAME TRAINING GROUP AND CONTROL GROUP ON EXPLOSIVE STRENGTH.

TABLE 5 ANALYSIS OF COVARIANCE OF THE DATA ON FLEXIBILITY OF PRE, POST AND ADJUSTED POST TESTS SCORES OF CONTROL AND EXPERIMENTAL GROUPS (IN CENTIMETER)

TEST	CTG	SGTG	CG	SOV	SS	DF	MS	F-RATIO
Pre-Test								
Mean	20.252	20.155	20.342	**B.M**	0.208	2	0.103	0.464
SD(±)	0.516	0.453	0.451	**W.G**	7.468	33	0.222	
Post –Test								
Mean	21.593	23.105	20.406	**B.M**	44.067	2	22.034	28.238*
SD(±)	0.917	0.512	1.116	**W.G**	25.758	33	0.784	
Adjusted Post-Test								
Mean	21.595	23.103	20.404	**B.S**	42.806	2	21.405	26.597*
				W.S	25.749	32	0.803	

*significant at 0.05 level of confidence
(The table values required for significance at 0.05 level of confidence for 2 & 33 and 2 & 32 are 3.29 and 3.30 respectively).

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The pre-test mean values on flexibility for the concurrent training group, specific game training group, and control group are 20.252, 20.155, and 20.342, respectively, as shown in table 5. The resulting 'F' ratio of 0.464 for pre-test scores was less than the table value, 3.29 for df2, and 33 for significant at the 0.05 level of confidence on flexibility. The post-test mean flexibility values for the concurrent training group, specific game training group, and control group are 21.593, 23.105, and 20.406, respectively. The computed 'F' ratio of 28.238 for post-test scores was more than the table value of 3.29 for df2 and 33 for significant at 0.05 level of confidence on flexibility. The adjusted post-test means for the concurrent training, specific game training, and control groups are 21.595, 23.103, and 20.404, respectively. The computed 'F' ratio for adjusted post-test means of 26.597 was larger than the table value of 3.30 for df2 and 32 necessary for significance at 0.05 level of confidence on flexibility. The study's findings revealed a significant difference in flexibility between the adjusted post-test averages of the concurrent training group, the specific game training group, and the control group.

Because the acquired 'F' ratio value was significant, the scheffe's test was used to determine the paired mean difference, as shown in table 6.

TABLE 6 THE SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN PAIRED MEANS ON FLEXIBILITY

CTG	SGTG	CG	MD	CI
21.595	23.103	---	1.508	1.125*
21.595	---	20.404	1.191	
---	23.103	20.404	2.699	

*Significant at 0.05 level of confidence.

The mean difference values between the concurrent training group and the specific game training group, the concurrent training group and the control group, and the specific game training group and the control group are 1.508, 1.191, and 2.699, respectively, which are greater than the confidence interval value of 1.125 at the 0.05 level of confidence, according to table 6. The study's findings revealed a substantial difference in flexibility between the concurrent training group and the specific game training group, the concurrent training group and the control group, and the specific game training group and the control group.

Figure 3 depicts the pre, post, and modified post-test means values of flexibility for the concurrent training group, specific game training group, and control group.

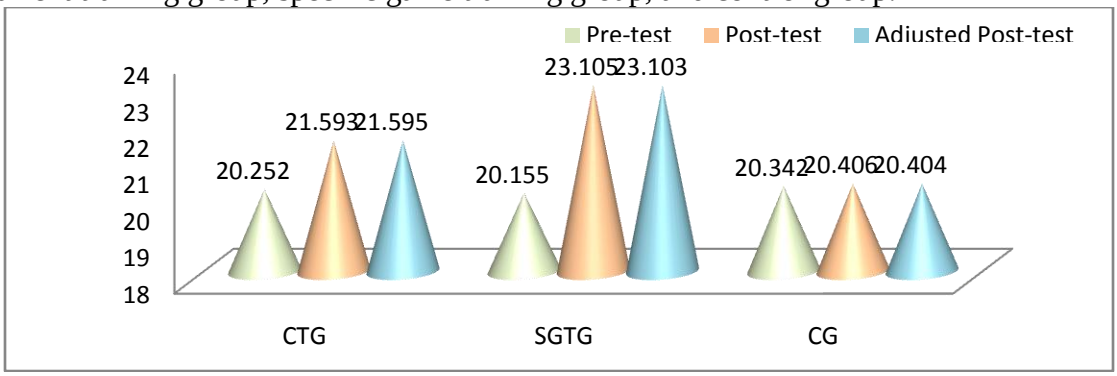

FIGURE 3: THE GRAPHICAL REPRESENTATION OF THE PRE, POST AND ADJUSTED POST-TEST MEANS VALUES OF CONCURRENT TRAINING GROUP, SPECIFIC GAME TRAINING GROUP AND CONTROL GROUP ON FLEXIBILITY.

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TABLE 7 ANALYSIS OF COVARIANCE OF THE DATA ON MUSCULAR STRENGTH OF PRE, POST AND ADJUSTED POST TESTS SCORES OF CONTROL AND EXPERIMENTAL GROUPS (IN COUNTS)

TEST	CTG	SGTG	CG	SOV	SS	DF	MS	F-RATIO
Pre-Test								
Mean	35.643	35.352	35.617	**B.M**	0.633	2	0.319	0.385
SD(±)	0.757	0.812	1.105	**W.G**	27.142	33	0.828	
Post –Test								
Mean	38.265	40.177	36.108	**B.M**	99.518	2	49.759	23.895*
SD(±)	1.673	0.546	1.774	**W.G**	68.708	33	2.028	
Adjusted Post-Test								
Mean	38.175	40.347	36.038	**B.S**	109.404	2	54.701	36.523*
				W.S	47.923	32	1.496	

*significant at 0.05 level of confidence
(The table values required for significance at 0.05 level of confidence for 2 & 33 and 2 & 32 are 3.29 and 3.30 respectively).

The pre-test mean values for muscular endurance for the concurrent training group, specific game training group, and control group are 35.643, 35.352, and 35.617, respectively, as shown in table 7. The computed 'F' ratio of 0.385 for pre-test scores was less than the table value of 3.29 for df2 and 33 for significant at 0.05 level of confidence in physical strength. The mean post-test muscular strength values for the concurrent training group, specific game training group, and control group are 38.265, 40.177, and 36.108, respectively. The resulting 'F' ratio of 23.895 for post-test scores was larger than the table value of 3.29 for df2 and 33 necessary for significance on muscular strength at 0.05 level of confidence. The adjusted post-test means for the concurrent training, specific game training, and control groups are 38.175, 40.347, and 36.038, respectively. The resulting 'F' ratio of 36.523 for adjusted post-test means was larger than the table value of 3.30 for df2 and 32 necessary for significance on muscular strength at 0.05 level of confidence. The study's findings revealed a significant difference in muscular strength between the adjusted post-test averages of the concurrent training group, the specific game training group, and the control group. Because the acquired 'F' ratio value was significant, the scheffe's test was used to determine the paired mean difference, as shown in table 8.

TABLE 8 THE SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN PAIRED MEANS ON MUSCULAR STRENGTH

CTG	SGTG	CG	MD	CI
38.175	40.347	---	2.172*	1.557
38.175	---	36.038	2.137*	
---	40.347	36.038	4.309*	

*Significant at 0.05 level of confidence

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The mean difference values between the concurrent training group and the specific game training group, the concurrent training group and the control group, and the specific game training group and the control group are 2.172, 2.137, and 4.309, respectively, and are greater than the confidence interval value of 1.557 at the 0.05 level of confidence. The study's findings revealed a substantial difference in muscular strength between the concurrent training group and the specific game training group, the concurrent training group and the control group, and the specific game training group and the control group.

Figure 4 depicts the pre, post, and modified post-test means values of muscular strength for the concurrent training group, specific game training group, and control group.

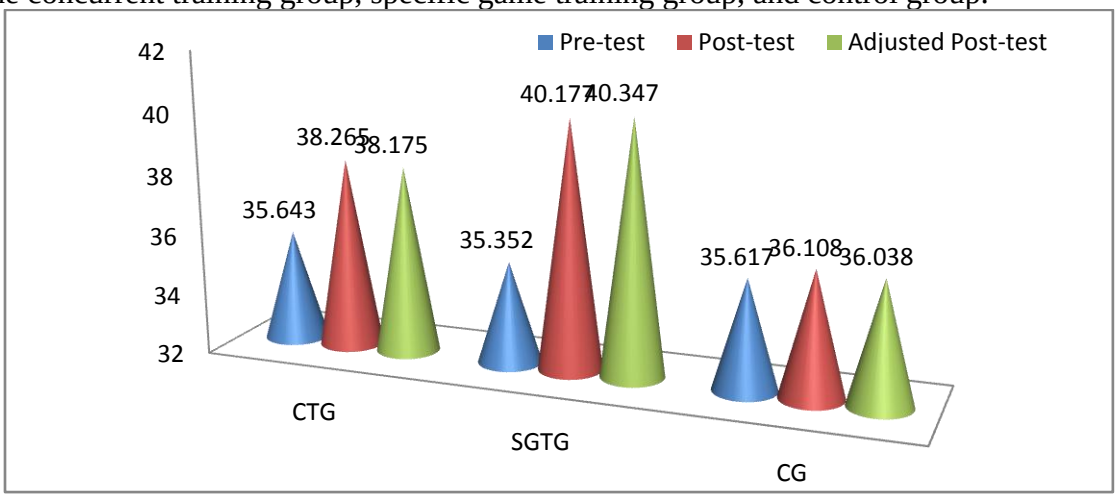

FIGURE 5.4 THE GRAPHICAL REPRESENTATION OF THE PRE, POST AND ADJUSTED POST-TEST MEANS VALUES OF CONCURRENT TRAINING GROUP, SPECIFIC GAME TRAINING GROUP AND CONTROL GROUP ON MUSCULAR STRENGTH

CONCLUSIONS

The study's findings suggest that when compared to the control group, the concurrent training group and specific game training group performed much better in all of the specified physical activities. As a result, twelve weeks of concurrent training and specific game training improved cardiovascular endurance, explosive strength, flexibility, and muscular strength among mallakhamb players in experimental groups. When the two experimental groups were compared at the same time, the specific game training group showed substantial improvement in all physical characteristics. As a result, the specific game training regimen affected performance in all physical factors. As a result, the effect of twelve weeks of specific game training was far bigger than the effect of concurrent training among mallakhamb players.

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