

Comparison Of Cross-Fit And Traditional Training Program In Improving Health Related Fitness Components Among Cricket Players

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ABSTRACT

Background: Training serves a key role in physical conditioning, and performance attributes of players. CrossFit and traditional training are two distinct sports approaches that coaches and trainers employ to prepare their athletes. It is critical to ascertain training programs that suit the special requirements of cricket.

Objective: To compare the efficiency of CrossFit and traditional training in improving the health-related components of fitness among semi-professional cricket players. **Methodology:** Total 80 male cricket players were recruited and divided into 3 groups CrossFit (CF, n=20), Traditional (CL, n=20) and control Group (CG, n=40). The baseline data was obtained (Bench press for strength, Sit and reach for flexibility, BMI for body composition, Beep test for aerobic endurance, Push-ups for muscular endurance). The CF and CL were assigned to an 8 weeklong CrossFit and traditional training, while the 3rd group (control Group, CG) was let free to train at own. Post intervention data was acquired after 8 weeks. The data was analyzed with SPSS V 25. Statistical test, Shapiro-Wilk and Kolmogorov-Smirnov analysis, descriptive statistics, Paired T test, ANOVA and post hoc Tucky test were used. The value of significance was kept $P = < 0.05$. **Results:** The CF group showed greater gain in the domain of muscular endurance (pre 42.00 ± 3.16 post 49.30 ± 2.77), Cardiovascular endurance (pre $12.7 \pm .68$ post $13.9 \pm .62$) and Flexibility (pre 9.60 ± 1.50 post 13.85 ± 1.92) change of 17.38%, 44.27%, and 9.60% (respectively), while the CL group showed a significant upsurge in the Muscular strength (pre 43.00 ± 2.36 post 52.50 ± 3.73) and Body composition (pre $22.09 \pm .72$ post $22.72 \pm .68$) 22.09% and 2.85% respectively.

Conclusion: The study concludes that eight weeks both the CrossFit and traditional training intervention have significantly improved.

Keywords: CrossFit, Traditional Training, Strength, Body Composition, Flexibility Cardiovascular & Muscular Endurance.

Introduction

The main objective of sports training is to enhance individual efficiency in competitive environment and increase one's ability to succeed in the respective sport or optimize general health. Training Programs significantly enhance power output, lateral movement, speed, strength, agility, and stamina while eventually minimizing the

risk for injuries. Sports training involves physical, technical, tactical, psychological and cognition training. It is a system that incorporates several unique needs and improves the body structure of athletes, enhances the functioning of the organ system of each athlete, ensures the full development of sports quality, promotes,

and boosts sport output by a fair load action. Physical fitness plays a central and leading role in sports training. Fitness has been the quality of being able to operate to something like the best of one's ability. One may improve numerous talents precisely and effectively by developing various physical components of fitness including mobility, strength, coordination, elasticity, aerobic fitness, power, and balance of these total components. These aspects can be attained in a scientific and systematic manner. Modern sporting forces have attributed considerable importance to physical fitness, not merely to the advancement of formal theory; practical knowledge is also very rich. The goal of sports training is to attain optimum individual or team performance in a chosen sport discipline restricted by rules. It is not necessary to achieve optimum productivity of any operation over a day. Performance is influenced by several interrelated fields. Training strategies and procedures are known to make a significant contribution in the field of exercise related to

Likewise, CrossFit too is acknowledged as one of the speediest high-intensity functional fitness styles worldwide. CrossFit boxes are in 142 nations spanning over 7 continents of the world and more than 10,000 associates. This strength training curriculum is used to improve physical performance in ten exercise areas: (1) cardio/aerobic endurance, (2) muscular strength, (3) stamina (4) power (5) flexibility (6) speed, (7) agility, (8) co-ordination, (9) balance and (10) accuracy. CrossFit exercise is normally conducted with high-intensity, functional exercises dubbed "workout of the Day" (WOD). In these practice sessions, high-intensity workouts are performed quickly, repeatedly and with little to no rest time during sets.

Cricket, originally played in England, this game has spread globally and has had a significant effect on people's lives. Subsequently renowned as the "Gentleman's Game,". Cricket was introduced in south

sports activities. Sports related preparation has been the secret to achievement and, by these athletes, has excelled in their respective sports.

Traditional training is the basis for a healthy workout. Its preparation consists of activities that involve a specific part of the body with a single or mutli-joint action. Good example of those workouts would also include the following functional exercises: presses, row, fly, squat, aerobic, etc. This training technique is important to help you build your foundation. Without a solid basis, further exercises would be more daunting and sometimes unsuccessful. Before incorporating compound motions into the routines, one should use conventional fitness techniques and focus on the right form and technique. Incompetence to do all this can trigger the workouts to become messy as you try to combine compound motions which can lead to injury. Evidently, it is neither permissible nor safe for the individual and can hinder the achievement of your fitness level.

Asia by the British in their Indian colonial rule. That covered the region now established as Pakistan. Cricket is the country's most famous sport. It is a sport that historically does not consider fitness to be very important. every person is aware of the fitness that has risen to the stage when other individuals recognize that just being physically fit does not only mean possessing a solid body, but it also means being emotionally stable as well. It didn't need just years of experience, but also zeal and commitment. The value of fitness in almost any sport cannot be underscored. The smarter you are, the better you're going to do. Nevertheless, Cricket becomes the specific sport that measures the playing skills, mental ability, agility, and physical fitness.

Literature review

Sport is the most effective way to engage in physical activities. Furthermore, it is

beneficial to engage in sporting events on a routine basis beginning in early life. People who participate in sports receive greater strength and optimize their quality of life significantly. Furthermore, it is the most effective way to stay in shape. Sports and participation in various sports contests are the greatest behaviors that anyone can own these days. Cricket is amongst the most common sports in former British Colonial countries and regions. Despite its beginnings in the British Crown, Cricket has become a creed in South Asia, owing to the former's impact during their control (Majumdar & Brown, 2007). The sport is highly appealing across all socioeconomic classes and is therefore not restricted by age or gender. It is the pinnacle of veneration and is seen as a test of self-esteem not just for those participating, but also for those observing. The degree of emotional commitment to this activity has both positive and negative public health implications for the wider populace (Sheikh, et al., 2013). Physical fitness is defined as the sustainable growth of muscle endurance, speed, muscle strength, neuromuscular co-ordination, cardiovascular endurance, mobility, and flexibility, all of which are consequences of properly planned training. It is well recognized that the greatest strategy to develop these components is to establish a long-term exercise program (Donnelly et al., 2009). Physical fitness refers to a collection of health or skill-related characteristics that individuals have obtained and that are tested using specialized tests. Regular exercise has been shown to have favorable benefits on cardiovascular, metabolic, and neoplastic illnesses. In real sense, while exercising, your Cardio and circulatory framework transports oxygen and other nutrients to each and every tissue of the body. Improved blood supply indicates that your cardiovascular system will work more efficiently and effectively. It may increase your endurance and offer you with the

energy you require for the longer period of time. The influence of the cardiovascular system, lungs, core temperature stabilizers, body components, and musculoskeletal performance of an individual's capability results in improved athletic performance (Haff & Triplett, 2015). A good diet, regular exercise, and the avoidance of cigarette use are thought to avert a major percentage of cancer diagnoses (Lee, et al., 2003). In certain sports, sufficient standards of physical activity are needed to execute sport-specific activities effectively. During team sports competition, athletes require a large amount of cardiovascular ability, speed, and stamina, as well as maximum and explosive muscle strength to increase their productivity (Ziv, et al., 2010). Training is regarded as being among the key modifications to the efficiency of fitness (Jeukendrup & Martin, 2001). Anthropometrics of athletes educated us something about the physical attributes that leads to their higher success, and also helping team coaches by supplying information on fat ratio, muscle mass and bone size (Pant, et al., 2017). The enhancement of the physical, cognitive and psychological health results is linked to increased health related fitness particularly the body composition, aerobic capacity and muscle strength (Ortega, et al., 2013; Smith et al., 2014). The driving parameters for both the appropriate formulation and execution of a sports training program are the principles of sports training. In addition to specific motor function, tactical attributes, performing technique, seasonal time, individualistic and collective commitment, team sports success need psychological and physical well-being (Kumar, et al., 2014). Comprehensive fitness is determined by how effectively the body performs in each of the physical fitness components. Physical fitness helps us to reach our maximum capabilities. It is perhaps the biggest essential factor impacting athletic

performance (Karthi & Krishnakanthan, 2012). As a style of high-intensity functional fitness (HIIFT), CrossFit training has increased in popularity in recent years, with the count of CrossFit gyms or 'boxes' growing rapidly over the last decade, with more than 14,000 worldwide. (Feito, et al., 2019; Whiteman-Sandland, et al., 2018). CrossFit is a group based HIIT that combines endurance and strength workouts with a concentrate on responsive (multi-joint) motions, and that is one of these new "traits" or activities (Smith, et al., 2013).

Method and Materials

Experimental (RCT) research design was adopted in this particular study which included a pre and post assessment measure. An 8-week CrossFit and conventional training program was completed by the volunteers among the pre- and post-evaluations.

A total of 80 male semi-professional Cricket players were recruited, individuals were assigned randomly to three separate groups, CrossFit Training group (CF, n=20), Traditional Training group (CL, n=20) and Control Group (CG, n =40). Subjects in the CL and CF groups subsequently completed 8 weeks of controlled conventional training and CrossFit training routines, correspondingly, at a maximal rate of five practice sessions each week. These group

will consist of the following study respondents. The Sit & Reach, Shuttle run, Bench Press, push up were used for data collection of Flexibility, Cardiovascular Endurance, Muscular Strength, and Muscular Endurance respectively while BMI was used to assess the body composition of the respondents.

Pre-screening: selected Individuals were put through an initial fitness assessment and handed over an information document outlining the guidelines, sequence of events, commitment and dedication, outcomes of the proposed investigation. Each participant was evaluated for heart rate (HR), blood pressure (BP), and related potential medical issues using the PAR-Q. The Center for Science in the Public Interest (CSEP) recommends this as a routine screening test for healthy individuals preceding to participating in exercise program or evaluations.

Results

This section highlights the important results of all the participants recruited in the study. Initially the normality of study population was determined through the Kolmogorov-Smirnov and Shapiro-Wilk test and the data was normally distributed. Rest of the data analysis are as follow.

Table 1 Subjects Baseline Demographics Descriptive table.

Variables	CF n=20	CL n=20	CG n=40	P-value
Age (Years)	21.85 ± 1.98	22.20 ± 2.21	21.82 ± 2.21	.806
Height(cm)	173.45 ± 1.84	172.85 ± 2.13	173.87 ± 2.02	.182
Weight(kg)	65.85 ± 2.56	65.95 ± 2.11	67.90 ± 1.44	<.001
BMI	21.89 ± .71	22.09 ± .72	22.47 ± .68	.008

Table No. 1 shows the baseline statistics, which stats that there was a significant variation among the (groups) weight values

of the study population while there was non-significant change in value of Age, Height, and BMI.

To check the difference between pre and post intervention a paired T-Test was employed. With the T-Test, you may

compare and contrast the differences between two observations performed using the given subject.

Table 2 Complete, Pre and post descriptive statistics of CrossFit training group.

Variable	Pre	Post	P-Value
Weight	65.85 ± 2.56	66.0 ± 2.80	.643
Flexibility	9.60 ± 1.50	13.85 ± 1.92	<.001
Muscular Strength	43.15 ± 2.62	48.25 ± 2.38	<.001
Muscular Endurance	42.00 ± 3.16	49.30 ± 2.77	<.001
Body Composition	21.89 ± .71	21.94 ± .88	.611
Cardiovascular endurance	12.70 ± .68	13.92 ± .62	<.001

Results of the Descriptive statistics of CrossFit group indicated that there is a non-significant in Weight mean scores P= 6.43 which might have also responsible for the non-significant change

in the BMI value as well, which stood at P = .611 rest of the study variables observed significant mean difference in the Pre and Post-test values of CrossFit training group.

Table 3 Complete, Pre and post descriptive statistics of Conventional training group.

Variable	Pre	Post	P-Value
Weight	65.95 ± 2.11	67.85 ± 2.10	<.001
Flexibility	9.00 ± 1.16	11.80 ± 1.43	<.001
Muscular Strength	43.00 ± 2.36	52.50 ± 3.73	<.001
Muscular Endurance	38.95 ± 2.54	43.75 ± 2.61	<.001
Body Composition	22.09 ± .72	22.72 ± .68	<.001
Cardiovascular endurance	11.79 ± .78	12.59 ± .70	<.001

Table No. 3 indicates the Results of Pre and Post-test values of Traditional (Conventional) Training group, Stats shows

that their significant difference in mean of the study population P = <.001

Table 4 Complete, Pre and post descriptive statistics of Control group.

Variable	Pre	Post	P-Value
Weight	67.90 ± 1.44	68.65 ± 1.74	.023
Flexibility	9.57 ± 1.31	9.42 ± 1.29	.596
Muscular Strength	44.70 ± 6.71	46.42 ± 7.59	<.001

Muscular Endurance	39.00 ± 4.10	40.87 ± 4.12	<.001
Body Composition	22.47 ± .68	22.71 ± .67	.027
Cardiovascular endurance	12.03 ± .81	12.04 ± .80	.720

Results of the Descriptive statistics indicated that there is a non-significant difference in Weight Flexibility, Body Composition and Cardiovascular Endurance values with the P Values of

.23, .596, .027 and .720 respectively, while Muscular strength and Muscular endurance, showed a significant change with $P = <.001$ among the Control group.

Table 5 Complete table of ANOVA.

	Source	Df	Sum of Squares	Mean Squares	F-value	F-value
Body Composition	Between Groups	2	8.93	4.46	8.20	<.001
	Error	77	41.91	0.54		
	Total	79	50.84			
Muscular Strength	Between Groups	2	918.73	459.36	41.36	<.001
	Error	77	855.15	11.10		
	Total	79	1773.88			
Muscular Endurance	Between Groups	2	946.47	473.23	38.83	<.001
	Error	77	938.32	12.18		
	Total	79	1884.8			
Cardiovascular Endurance	Between Groups	2	47.45	23.72	43.19	<.001
	Error	77	42.30	0.54		
	Total	79	89.76			
Flexibility	Between Groups	2	273.22	136.61	59.92	<.001
	Error	77	175.52	2.27		
	Total	79	448.75			

Results of combined ANOVA table (see, table 5) showed that all the components of health-related fitness are significantly different as $p\text{-value} < 0.05$.

Discussion

Cricket is a highly strenuous sport that necessitates significant amounts of physical prowess, endurance, range of motion, and cardiovascular efficiency to demonstrate the

sport's highly contentious motions and tactics. Both athletes and trainers are consistently striving for the best practices to boost functionality. The time-consuming preparatory phase for competitors progress with training. Athletes may maximize their performance levels in their particular sports with the aid of adequate training. CrossFit as a training method is a more prevalent approach to enhancing fitness-

related health factors, including strength, endurance, and flexibility. But it's still uncertain if CrossFit is more beneficial than conventional sports training at enhancing cricket players' health-related factors. The sole aim and purpose of this study was to examine and to compare the efficiency of both the CrossFit and Traditional (Conventional) training on the health-related fitness attributes among semiprofessional cricket players. 80 male semiprofessional cricket players were recruited for this study including CF group (n=20) the CL group (n=20) and CG group was (n=40). Average age of the study population was 21.95 ± 2.14 years. Height in Cm was nearly identical as well, with an average of 173.51 ± 2.03 cm, whereas Average Weight in Kgs 66.90 ± 2.16 , though Results of the baseline statistics of BMI Test for Body Composition stats that the values of BMI, Average Score of the study population were $22.23 \pm .73$. The post result after 8 weeks of intervention of this specific study indicates that there was a significant change in the health-related components of Fitness among both the study groups. In the CrossFit training group, the values of muscular strength (pre 43.15 ± 2.62 post 48.25 ± 2.38), muscular endurance (pre 42.00 ± 3.16 post 49.30 ± 2.77), Cardiovascular endurance (pre $12.70 \pm .68$ post $13.92 \pm .62$) and Flexibility (pre 9.60 ± 1.50 post 13.85 ± 1.92) observed percentage change of 11.82%, 17.38%, 44.27%, and 9.60% (respectively) while the Body composition (pre $21.89 \pm .71$ post $21.94 \pm .88$) experienced a non-significant change of 0.25%. on the other hand, the Traditional (Conventional) training showed a significant upsurge in the post test values of the study group, where the Muscular strength (pre 43.00 ± 2.36 post 52.50 ± 3.73) increased by 22.09%, Muscular endurance pre 38.95 ± 2.54 post 43.75 ± 2.61 12.32% Body composition (pre $22.09 \pm .72$ post $22.72 \pm .68$) 2.85% cardiovascular endurance (pre $11.79 \pm .78$ post $12.59 \pm .70$) 31.11% and

Flexibility (pre 9.00 ± 1.16 post 11.80 ± 1.43) by 6.79%.

From the findings of this 8-week intervention study it was evident that both the Training programs contributed to enhancing performance of the cricket players but to be more precise the study demonstrates that CrossFit was more efficient by boosting the performance in the domains of Muscular endurance, Cardiovascular endurance, and Flexibility while the Traditional (Conventional) training showed a more positive surge in the Muscular strength and Body composition.

In contrast the benefits of CrossFit and Traditional (Conventional) training (Weiss, et al 2010), the investigation was to examine the influence of functional training on muscular strength and endurance, flexibility, agility, balance, and anthropometric parameters in comparison to traditional resistance training. 38 volunteers, ages between 18 to 32, were put in functional group (n = 19), and a traditional group (n = 19). Before and after the 7-week training study, individuals were evaluated, with the values of Push-ups (12.43), extension (16.94), 1-RM bench press (7.96), 1-RM squat (18.53), and flexibility via modified sit-and-reach (4.91), the functional group demonstrated significant (p 0.05). Tests include push-ups (12.43), 1-RM bench presses (7.96), and modified sit-and-reaches (4.91) to measure flexibility. The conventional training regimen also produced significant (p 0.05) mean variations between pre- and post-training for the following tests: body weight (1.37), push-ups (10.53), 1-RM bench press (9.35), and 1-RM squat (17.47).

A separate research investigation (Gerhart, et al., 2014) found substantial differences among groups with respect to fitness domains that include the makeup of the physique (p =.31), flexibility (p =.99), capacity for aerobic activity (p =.54), maximal strength (p =.03), and muscular endurance (p =.94). This suggests that, with

the sole exception of maximal strength, the two methods of training presented in this study, CF, and TAR, provide similar effects in total athletic performance.

The primary discoveries of another investigation of 6 weeks (Mcweeny, 2019) revealed that while CF improved aerobic power, whole-body muscular strength, upper body pull endurance, and lower body general endurance with time, this group also saw a substantial decrease in lower body anaerobic power between baseline and post-training. CF only produced bigger gains in upper-body muscular endurance and significant decreases in lower-limb anaerobic power when compared to TRAD.

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Conclusion: The CrossFit and Traditional training had significantly improved the health-related fitness components for 8 weeks study. However, Cardiovascular endurance, muscular endurance and flexibility were found more significant as compared to traditional group of the study. Moreover, muscular strength and BMI improved more in traditional group of training. Future research can explore more towards nutritional and sports medicine related aspects to enhance the fitness levels of cricket players.

Conflict of Interest: Author affirms no conflict of interest.

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