

## Effect of Core Training on Selected Physical Fitness Components

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### Abstract

**Purpose:** The purpose of the study was to find out the effect of core training on selected physical fitness components. **Methodology/Design:** Experimental method was used for the study. For the study Single group pretest posttest design was used to test the hypothesis. Twenty male students age between 18-21 years were selected as samples for the study from Modern arts, science and commerce college Shivaji Nagar Pune by purposive sampling technique. The selected physical fitness components were abdominal muscular strength endurance, upper body strength and leg explosive strength. The above mentioned physical fitness components were measured by sit up, pushup and standing broad jump tests respectively. The duration of training period was of six weeks. Training was given on alternate day's means three days per week. Pretest was conducted prior to training on selected physical fitness components. After completion of six week training program posttest was conducted. **Research limitations:** Nutritional status, daily routine, eating habits and socio economic status of the subjects. **Values:** Results showed that mean and standard deviation of pretest of subjects on abdominal muscular strength endurance, upper body strength and explosive leg strength was ( $29.9000 \pm 6.24837$ ,  $30.1000 \pm 8.58947$ ,  $1.9175 \pm 0.20792$ ) respectively and mean and standard deviation of posttest of subjects on abdominal muscular strength endurance, upper body strength and explosive leg strength was ( $41.4500 \pm 8.13359$ ,  $39.3500 \pm 10.54951$ ,  $2.0775 \pm 0.18742$ ) respectively. **Findings:** The findings of this research suggested that core training was found effective in improving abdominal muscular strength endurance, upper body strength and explosive leg strength significantly. **Practical implications:** As per the results it can be concluded that six week core training was effective to improve abdominal muscular strength endurance, upper body strength and leg explosive strength. It can be concluded that core strength does have a significant effect on transfer of forces in the extremities. Therefore participation in core training would be effective to enhance sports performance.

**KEYWORDS:** Core training and selected physical fitness components

### Introduction

Core training refers to the exercises that specially target the muscle groups located around the abdomen, spine and pelvic areas or core training refers to exercising the stabilization muscles of the pelvis, abdominal region and spine (hips, abs and lower back). Core training works the deep muscles groups of the body. These are typically done to increase strength and flexibility throughout the body. These muscles when targeted during workouts also provide a strong foundation for improved movement across the rest of the body. The muscles typically exercised during core workout routines are the rectus abdominis, the erector spinae, external and internal obliques, the transverse abdominis, and the hip flexors. These muscles are where movements originate and it's also the

source of our stability. Whether you are running, lifting weights or picking up your toddler, these core muscles help keep your body stable and balanced.

Imagine a material artist, the only way he can put power behind his punch is to transfer energy generated by his legs through the trunk and into the shoulder turn, resulting in powerful movement of the shoulder, arm and fist. This translates to other sport movements as well. Almost every movement in sports requires a transfer of energy\_ from arm to arm, from arm to leg, from leg to arm or from leg to leg and core is the common denominator.

**Methods and materials:** Present study was experimental study in which single group pretest-posttest design was used. Subjects were selected purposively with the help of physical activity readiness questionnaire (PARQ). Twenty four subjects filled physical activity readiness questionnaire. After careful analysis of physical activity readiness questionnaire filled by the subjects, out of twenty four subjects, four subjects were excluded from the study as per demands of physical activity readiness questionnaire. The researcher selected 20 male students of 18-21 years of age using purposive sampling technique. The selected physical fitness components and their respective tools for measurement were abdominal muscular strength endurance \_ Sit-up test, upper body strength \_ pushup test and explosive leg strength \_ standing broad jump test. Duration of core training program was of six weeks. The selected subjects were pre tested before core training program. After completion of six week core training program subjects were post tested. Training was given on alternate days i.e. three days in a week. Duration of training for one day was one hour. The intensity of training was increased by increase in number of sets and repetitions and also by decreasing the rest period in between sets. The data collected was analyzed by Paired Samples Test. The level of significance was kept at 0.05 to test the hypothesis.

**Results and Discussion:** The obtained results were presents in the following tables which represents the result of descriptive analysis, Corealtion and comparison.

Table no.1

Descriptive statistics of abdominal muscular strength endurance, upper body strength and explosive leg strength in pretest and posttest of subjects.

Variable	N	Pretest(Mean& Std. Deviation)	Posttest(Mean& Std. Deviation)
Abdominal muscular strength endurance	20	29.9000 ± 6.24837	41.4500 ± 8.13359
Upper body strength	20	30.1000 ± 8.58947	39.3500 ± 10.54951
Explosive leg strength	20	1.9175 ± 0.20792	2.0775 ± 0.18742

Table no. 1 shows the mean and standard deviation in pretest and posttest of subjects in the selected variables.

Table no. 2

Variables	N	Correlation	Sig.
Abdominal strength endurance	20	0.314	0.178
Upper body strength	20	0.753	0.001
Explosive leg strength	20	0.882	0.001

Table no.2 shows that there was statistically significant correlation in upper body strength and explosive leg strength while in abdominal muscular strength there was no statistically significant correlation.

Table no. 3

Paired Samples 't' Test of abdominal muscular strength endurance, upper body strength and explosive leg strength

Variables	T	Df	Sig. (2-tailed)	Mean difference
Abdominal strength endurance	6.033	19	0.001	11.5500
Upper body strength	5.933	19	0.001	9.250
Explosive leg strength	7.291	19	0.001	0.1600

Table no.3 shows that mean difference of abdominal muscular strength endurance, upper body strength endurance and explosive leg strength in pretest and posttest when tested by Paired Samples Test, 't' value was found 6.033, 5.933, 7.291 at 19 degree of freedom respectively, all the three 't' values were found statistically significant at 0.05 level (P=0.001).this indicates that treatment program was found effective to improve the abdominal muscular strength endurance, upper body strength endurance and explosive leg strength.

**Discussion:** It was observed from the findings that the effect of core exercises on abdominal muscular strength endurance, upper body strength and explosive leg strength from table no.2; there was significant difference in pretest and posttest scores of subjects regarding above mentioned physical fitness components. This indicated that treatment program had positive effect on selected physical fitness components. These findings were supported by Sloan and Keen (1986) studied the effect of two program of circuit training on physical fitness of college rugby players. The physical fitness components were agility, lower back flexibility, strength, endurance and abdominal strength. They found all above stated measures were found statistically significant. Kwang (2010), who studied the effect of core muscle training on flexibility, muscular strength and driver shot performance in female professional golfers, he concluded that 12 week combined core training had positive effect on flexibility and strength of core muscles. Ferguson (February 2009); examined and evaluated the effectiveness of the medicine ball Super Arms protocol in improving college performance in the national foot ball leagues. The conclusion of the study was that the medicine ball Super Arms protocol as new training method for increasing upper body strength. Ademola, he studied the comparative effect of three modes of plyometric training on leg muscular strength of university male students. It was concluded that plyometric exercises with depth jumping and rebound jumping are best used in developing muscle strength of lower extremities. These findings were also supported by Shinkle (2010), he studied the effect of core strength on the

measures of power in the extremities. He concluded as per the results that core strength does have significant effect on the ability of an athlete to create and transfer forces in the extremities.

**Conclusion:** From the result of the study, it can be concluded that core training for the period of six weeks was effective to increase the abdominal strength endurance, upper body strength and explosive leg strength significantly.

Hence it can be conclude that core training strengthens the core muscles which are very important to create and transfer of forces to the extremities.

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