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Interventional effect of circuit training and yogic asana on muscular strength of sports person with special reference to Prakriti (Psychosomatic constriction)

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Abstract

The purpose of this study was to find out the Interventional effect of circuit training and yogic asana on muscular strength of sports person with special reference to prakriti (psychosomatic constriction). Inter university male sports person age ranged 18- 28 years were divided into three groups, circuit training (Group I), Yogic asana (Group-II) and control group (Group-III). ANCOVA and “Paired T- Test” were applied to test the significant changes in the quantitative variables muscular strength. Level of significance was set 0.05.

Keywords: Circuit training, yogic asana, Prakriti (Psychosomatic constriction), muscular strength

Introduction

In the modern world the field of sports has become so popular that large number of young men and women participate in sports from all over the world. The standard of games and sports has improved a lot due to mechanical principles and modern training. A sports man or a player takes advantages of the training methods and he always changes from one process of training to another to be benefitted from them.

The word “training” means different things in different fields. In sports the word “training” is generally understood to be synonyms of doing exercise. In a narrow sense, training is physical exercise for the improvement of performance.

Circuit training method was developed by R.E. Morgan and G.T. Adamson in 1953 at the University of Leeds, England. This training method involves almost all the training factors. Circuit training can be designed to develop strength, muscular endurance, speed, agility, neuromuscular coordination, flexibility and cardiovascular endurance.

Yoga is the oldest known science of self-development, originated in ancient India. Yogic practice is a physical and mental exercises practiced throughout the world. Many past research studies have reported that yogic training improves the physical and mental fitness level as well as the performance of sports persons in various sports disciplines.

Prakriti is the unique feature of Ayurveda. It can be considered as psychosomatic constitution of an individual. Modern era is the era of personalized or individual medicine. In ancient time entire population was categorized into seven type (vata, pitta, kapha, vata-pitta, vata-kapha, pitta-kaph, and sama prakriti) depending on the physiological predominance of dosha (vata, pitta & kapha) for the purpose of health management.

Material and Method

Selection of subject

Sixty young and healthy, male university level sports persons of age between 18 to 28 years were selected for the present study. Prakriti of each player was determined by the standard Performa available in the department.

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Criterion measures

| S. No. | Name of test | Purpose | Equipment | Unit of score |
|--------|--------------------------|-------------------------------|-------------------------------|---------------|
| 1 | Standing broad jump test | To estimate Muscular strength | Long jump pit, Measuring tape | Meter |

Experiment Design

- Pre test in each group was done at the initiation of the study.
- Post test was done in each group after 12 weeks Circuit Training and Yogic Asana practices.
- Physical performance of sports player was observed at the initiation and after 12 weeks of training.
- Prakriti will be assessed at the time of registration in different group of volunteers.

Administration of Tests

The test was administered with the help of a team of testers and research assistants under the guidance and supervision of the expert and the investigator.

Standing broad jump: this test measures the explosive strength of legs in jumping horizontal distance and may be applied to children of both sexes aged seven years and above.

Equipments: Long Jump Pit, Measuring Tape, Chalk.

Test administration: a demonstration of the standing broad jump was given to a group of subjects to be tested. The subject is then asked to stand behind the starting line with the feet parallel to each other. The subject was instructed to jump as fastest as possible by bending knees and swinging arms to take off for the broad jump in the forward direction. The

subject was given three trials.

Scoring: the distance between the starting line and the nearest point of landing provides the score of the test. The best (maximum distance) trial was taken as the final score of the test.

Training program

For the purpose of the study 12 week training was given. In circuit training program total no of station were ten. Total no. of sets were three. Intensity of exercise was increased low to high according to the training week and yogasanas, 13 different Asanas were given to the sports person.

Collection of Data

In the experiment data was collected at initial and after 12 weeks of circuit training and yogic asana practices of 12 weeks duration.

Statistical Analysis

ANCOVA and "PAIRED T- Test" were applied to test the significant changes in the quantitative variables. Level of significance was set 0.05.

Observations and Results**Muscular strength**

Table 1: Group wise pre and post test comparison of subject showing effect of Circuit Training and Yogasana on Muscular strength (Standing broad jump in meters)

| Groups | Mean \pm SD | | Within the group comparison Paired t- test |
|-------------------------------|-------------------|-------------------|--|
| | Pre | Post | |
| Circuit training Group (N=20) | 2.472 \pm 0.117 | 2.575 \pm 0.107 | t=-11.946 p=0.000 |
| Yogasana Group (N=20) | 2.481 \pm 0.124 | 2.581 \pm 0.129 | t=-7.530 p=0.000 |
| Control Group (N=20) | 2.480 \pm 0.090 | 2.480 \pm 1.101 | t=-.360 p=.723 |

Table 1 shows, the mean value of Muscular strength in Circuit training Group from pre to post interventions that was 2.472 and 2.575 respectively. It was tested by paired t- test, which was found statistically significant. (p=0.000).

Similarly mean value of Muscular strength in Yogasana Group from pre to post interventions that was 2.481 and 2.581

respectively. It was tested by paired t- test, which was found statistically significant. (p=0.000).

Similarly mean value of Muscular strength in Control Group from pre to post interventions that was 2.480 and 2.480 respectively, and observed t- test value was (p=0.723).which was not found statistically significant.

Table 2: Pair wise Group Comparison of Subjects showing Effect of Circuit training and Yogasana Training on Muscular strength (Standing broad jump in meters)

| ANCOVA Muscular strength (Standing broad jump in meters) Pre Test : covariate, Group : Factor, post test: depended variables | | | | | | | |
|--|---|-----------------------|-------|----|-------|---------|-------|
| Group | Post Test marginal mean \pm Stander error | SV | SS | Df | MMS | F | P |
| Circuit training Group (N=20) | 2.580 \pm 0.011 | Muscular strength pre | 0.596 | 1 | 0.596 | 243.294 | 0.000 |
| Yogasana Group (N=20) | 2.579 \pm 0.011 | | | | | | |
| Control (N=20) | 2.482 \pm 0.011 | | | | | | |
| Pair wise group comparison | Circuit training v/s Yogasana p-1.000 | Group | 0.126 | 2 | 0.063 | 25.711 | 0.000 |
| | Circuit training v/s control p-0.000 | Error | 0.137 | 56 | 0.002 | | |
| | Yogasana v/s control p-0.000 | Total | 0.852 | 59 | | | |

Table 2 shows, between the groups comparison of post muscular strength applying ANCOVA taking pre value as a covariate. Showed statically significant difference between groups (F=25.711), (p=0.000). Further pair wise comparison

of groups resulted significant (p=0.000) difference between Circuit training group and Control group and also found statistically significant difference (p=0.000) between Yogasana group and control group.

Table 3: *Prakriti* wise Comparison of Subjects showing Effect of Circuit training and Yogasana Training on Muscular strength (Standing broad jump (meters))

| Groups | Prakriti | Mean \pm SD | | Within the group comparison Paired t- test |
|-------------------------------|--------------|-------------------|-------------------|--|
| | | Pre | post | |
| Circuit training Group (N=20) | Vata (N=05) | 2.390 \pm 0.096 | 2.490 \pm 0.097 | t =31.623 p =0.000* |
| | Pitta(N=10) | 2.510 \pm 0.134 | 2.603 \pm 0.111 | t =6.765 p =0.000* |
| | Kaph(N=05) | 2.480 \pm 0.057 | 2.604 \pm 0.074 | t =6.395 p =0.003* |
| Yogasana Group (N=20) | Vata (N=04) | 2.512 \pm 0.110 | 2.627 \pm 0.060 | t =4.540 p =0.020* |
| | Pitta(N=11) | 2.501 \pm 0.117 | 2.610 \pm 0.093 | t =7.954 p =0.000* |
| | Kaph (N=05) | 2.410 \pm 0.147 | 2.480 \pm 0.197 | t =1.723 p =0.160 |
| Control Group (N=20) | Vata(N=04) | 2.487 \pm 0.110 | 2.472 \pm 0.122 | t =1.260 p =0.297 |
| | Pitta (N=12) | 2.487 \pm 0.080 | 2.499 \pm 0.084 | t =0.688 p =0.506 |
| | Kaph (N=04) | 2.450 \pm 0.122 | 2.450 \pm 0.147 | t =0.000 p =1.000 |

Table 3 shows, Circuit Training Group- The mean value of Muscular strength, in Vataja prakriti of circuit training group at pre and post intervention was 2.390 and 2.490 respectively. This mean, when tested by paired t- test, was found statistically significant (p=0.000).

2- The mean value of Muscular strength, in Pittaja prakriti of circuit training group at pre and post intervention was 2.510 and 2.603 respectively. This mean, when tested by paired t- test, was found statistically significant (p=0.000).

3- The mean value of Muscular strength, in Kaphaja prakriti of circuit training group at pre and post intervention was 2.480 and 2.604 respectively. This mean, when tested by paired t- test, was found statistically significant (p=0.003).

Yogasana Group- The mean value of Muscular strength, in Vataja prakriti of Yogasana group at pre and post intervention was 2.512 and 2.627 respectively. This mean, when tested by paired t- test, was found statistically significant (p=0.020).

2- The mean value of Muscular strength, in Pittaja prakriti of Yogasana group at pre and post intervention was 2.501 and 2.610 respectively. This mean, when tested by paired t- test, was found statistically significant (p=0.000).

3- The mean value of Muscular strength, in Kaphaja prakriti of Yogasana group at pre and post intervention was 2.410 and 2.480 respectively. This mean, when tested by paired t- test, was not found statistically significant (p=0.160).

Control Group- There was no significant difference was found in control group among all group of prakriti.

Conclusion

- Pre to Post intervention in Physical Parameters such as Muscular Strength shows significant changes among the sports persons after the intervention (Circuit Training and Yogasana training).
- Post intervention (Circuit Training and Yogasana training) in Physical parameters such as Muscular Strength shows significant change in pair wise group comparison. Further pair wise comparison between different groups resulted in significant (p=0.000) difference between Circuit training group VS Control group and also found statistically significant difference (p=0.000) between Yogasana group VS control group. No significant difference (p=1.000) between Circuit training group VS Yogasana group.
- *Prakriti wise comparison* in physical parameters such as Muscular strength shows significant changes in *Vataja*, *Pittaja* and *Khaphaja Prakriti* individuals of Circuit training group. In *Pittaja Prakriti* more change was found in comparison to other two *Prakriti*.
- *Prakriti wise comparison* in Physical Parameters such as Muscular strength shows significant changes in *Vataja*, *Pittaja* and *Khaphaja Prakriti* individuals of Yogasana

group. In *Pittaja Prakriti* more change was found in comparison to other two *Prakriti*.

Discussion and Finding

The result of the study revealed that there was significant difference found in the muscular strength. It is well known that yogic exercises are quite different than the normal aerobic exercises done in the modern world. A significant difference was found between circuit training group and the control group which clearly indicates that circuit training definitely improves the muscular strength. Similar result has been found in the yogic group and the control group this may again due to the fact that, the sports person practicing yoga had to repeatedly perform different asanas that requires hard work from the muscles, and hence resulting into improvement in the muscular strength.

Rayat S. (2015) have reported, in their study on “Effect of yoga on selected physical and physiological variables of physical education students” there is significance difference were found between the means of physical variables of muscular strength of university sports players, as t value required to be significance is 2.021 and calculate value is more than the tabulated value.

Diswar S. K., Choudhary S., Dr. Mitra SDiswar S. K., Choudhary S., Dr. Mitra S. have reported, in their study on “Comparative effect of SAQ and circuit training programme on selected physical fitness variables of school level basketball players” that there is significant improvement were found in Explosive strength, pre to post intervention and also in between the circuit training and control group

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