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# Effect of yoga, Pranayama with natural diet on physical fitness variables among patients of coronary artery disease

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**Abstract**
The purpose of the study was to investigate the effect of yoga, pranayama with natural diet on agility and explosive power among patients of coronary artery disease. To accomplish the intention of the research 48 male patients of coronary artery disease were selected from kerala. The subjects were randomly assigned to three equated groups. Experimental group –I (N=20), underwent asana practices with natural diet (APWNT), experimental group –II (N=20) underwent Pranayama practices with natural diet (PPWNT) and control group (N=20) did not undergo any specific training. The experimental groups participated in yoga training schedule three alternative days in a week for the period of 12 weeks. The study variables including Agility and explosive power, The consequences showed with the intention of all the physical variables of agility decreased and explosive power increased the performance due to yogic practices variations of yoga, pranayama with natural diet on Agility and explosive power among patients of coronary artery disease and the control group were not showed any significant improvement.

**Keywords:** Suryanamaskar, Asana Practices with Natural Diet (SAPND)**,** Pranayama With Natural Diet (PWND)

## Introduction
The system of yoga has been recognized worldwide as a way of life to maintain optimum health and fitness of body and mind. The United Nations has declared 21st June as the International Yoga Day. In spite of the wide spread recognition of yoga, there may arise confusions in the mind of practitioners about what is true yoga – what is yoga and what it is not. Yoga is not about twisting the body and doing gymnastic feats. Neither has it to do with psychic powers and its display. Many uninformed people get deluded when they see tricks, magic and various siddhis (or supernatural powers) and associate it with yoga. This is wrong understanding of yoga. Yoga has nothing to do with these tricks, magic, psychic powers or gymnastics. Instead, Yoga is a systematic method to achieve harmony of body, breath, mind and soul.

## Hypotheses
1. It was hypothesized that Asana with natural diet significantly improve on selected physical variables of Agility and explosive power among patients of coronary artery disease.
2. It was hypothesized that Pranayama with natural diet significantly improve on selected physical variables of Agility and explosive power among patients of coronary artery disease.
3. It was hypothesized that Pranayama with natural diet significantly improve on selected physical variables of Agility and explosive power better than Asana with natural diet and control group among patients of coronary artery disease.
4. It was hypothesized that Asana with natural diet significantly improve on selected physical variables of Agility and explosive power better than control group among patients of coronary artery disease.

## Methodology

The research analysed by using the effect of yoga, pranayama with natural diet on agility and explosive power among patients of coronary artery disease. To accomplish the intention of the research 48 male patients of coronary artery disease were selected from Kerala. The subjects were randomly segregated by three equated groups. Group –I (N=25), underwent asana practices with natural diet (APWND), Group –II (N=25) underwent Pranayama practices with natural diet (PPWND) and Group -III control group (N=25) did not undergo any specific training. This study physical variable were selected and it was measured by shuttle run test and vertical jump test. The experimental groups participated in yoga training schedule three alternative days in a week for the period of 12 weeks. The study variables including agility were measured by shuttle run test and explosive power was measured by vertical jump test. The data were analysed by using 't' ratio, analysis of variance, Schefee's post hoc test.

## Result and Interpretation

**Table 1:** Significance of mean gains/losses between pre and post test of suryanamaskar, asana practices with natural diet physical variables of among patients of coronary artery disease.

| Variables | Pre Test Mean ± SD | Post Test Mean ± SD | Mean Diff. | 't' ratio |
|---|---|---|---|---|
| Agility | 15.52 ± *0.306* | 14.60 ± *0.910* | .921 | 3.38* |
| Explosive Power | 48.75 ± *7.057* | 51.56 ± *7.024* | 2.81 | 15.00* |

**Significance at 0.05 level*

An examination of Table -1 indicates that the obtained 't' ratios for pre and post test means difference in the selected variables were 3.38 for agility, 15.00 for explosive power, The obtained 't' ratios were statistically significant at 0.05 level of significance in the table value of 2.13 for the degrees of freedom (1 and 15) and found that they were greater than the required critical value, Results of this, positively and significantly confirm the effects of 12 weeks practice of suryanamaskar with asana practices with natural diet (SAPND) that produced a significant mean gains or losses in agility (0.92 ; $P < 0.05$), explosive power (2.81 ; $P < 0.05$),

**Table 2:** Significance of mean gains/losses between pre and post test of pranayama practices with natural diet on physical variables of among patients of coronary artery disease

| Variables | Pre Test Mean ± SD | Post Test Mean ± SD | Mean Diff. | 't' Ratio |
|---|---|---|---|---|
| Agility | 15.47 ± *0.97* | 14.83 ± *1.01* | 0.64 | 7.32* |
| Explosive Power | 49.19 ± *7.93* | 51.69 ± *7.77* | 2.50 | 12.25* |

**Significance at 0.05 level*

An examination of Table -2 indicates that the obtained 't' ratios for pre and post test means difference in the selected variables were 7.32 for agility, 12.25 for explosive power, The obtained 't' ratios were compared with the table value of 2.13 for the degrees of freedom (1 and 15) it was found the mean gains and means loss statistically improved. Results of this, positively and significantly confirm the effects of 12 weeks practice of Pranayama with Natural Diet (PWND) that produced a significant mean gains or losses in agility (0.66 ; $P < 0.05$), explosive power.

**Table 3:** Significance of mean gains/losses between pre and post test of control group on physical variables of among patients of coronary artery disease

| Variables | Pre Test Mean SD | Post Test Mean SD | Mean Diff. | 't' Ratio |
|---|---|---|---|---|
| Agility | 15.47 ± *1.01* | 15.39 ± *1.02* | 0.08 | 0.83 |
| Explosive Power | 48.88 ± *7.67* | 49.06 ± *7.91* | 0.18 | 1.16 |

**Significance at 0.05 level*

An examination of Table -.3 indicates that the obtained 't' ratios for pre and post test means difference in the selected variables were 0.83 for agility, 1.06 for explosive power, The obtained 't' ratios were statistically not significant at 0.05 level of significance in the table value of 2.13 for the degrees of freedom (1 and 15) since failed to reach the significant level. The obtained results clearly indicated that there was no significant improvement in the control group mean gains or losses in agility (0.08; $P > 0.05$), explosive power (0.23; $P > 0.05$),

**Table 4:** Analysis of variance on pre, post and adjusted post test means among sapnd, pwnd and cg on agility.

| Mean | SAPND | PWND | CG | Sources | Sum of Squares | DF | Mean Square | F-ratio |
|---|---|---|---|---|---|---|---|---|
| Pre –Test | 15.52 | 15.47 | 15.47 | B/G | 0.036 | 2 | 0.018 | 0.003 |
| | | | | W/G | 31.87 | 45 | 0.708 | |
| Post –Test | 14.60 | 14.82 | 15.39 | B/G | 3.44 | 2 | 1.72 | 4.28 |
| | | | | W/G | 31.87 | 45 | 0.708 | |
| Adjusted Post –Test | 14.83 | 14.31 | 15.39 | B/G | 3.48 | 2 | 1.74 | 13.36 |
| | | | | W/G | 5.73 | 44 | 0.130 | |

The adapted Illinois agility run test results are shown in table - 4 for the analyzed data on agility. The pre – test means of agility were 15.52 for SAPND group, 15.47 for PWND group and 15.47 for control group. The obtained 'F' value 0.003 was lesser than the table 'F' ratio 3.20. Hence the pre test means were found to be insignificant at 0.05 level of confidence for the degree of freedom 2 and 45.

The post - test means were 14.60 for SAPND group, 14.82 for PWND group and 15.39 for control group. The obtained 'F' value 4.28 was higher than the table 'F'ratio 3.20. Hence the post – test means were found to be significant at 0.05 level of confidence for degree of freedom 2 and 45.

The adjusted post – test means were 14.83 for SAPND group, 14.31 for PWND group and 15.39 for control group. The obtained 'F' ratio 13.36 was higher than the table 'F' ratio 3.20. Hence the adjusted post test means were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 44.

**Table 5:** The scheffe's test for the differences between Pared means on agility

| Sapnd (EG - I) | Pwnd (EG – II) | Control group | Mean difference | Confidence interval |
|---|---|---|---|---|
| 14.83 | 14.31 | | 0.52 | 0.36 |
| 14.83 | | 15.36 | 0.53 | 0.36 |
| | 14.31 | 15.36 | 1.05 | 0.36 |

Table-5 shows that the mean differences between the paired adjusted post test means of SAPND, PWND and CG on agility. The mean difference between SAPND – PWND, SAPND - CG and PWND – CG were 0.52, 0.53 and 1.05 respectively. The values of mean difference of adjusted post test means were higher than that of the required confidence interval value of 0.36, and it was significant.

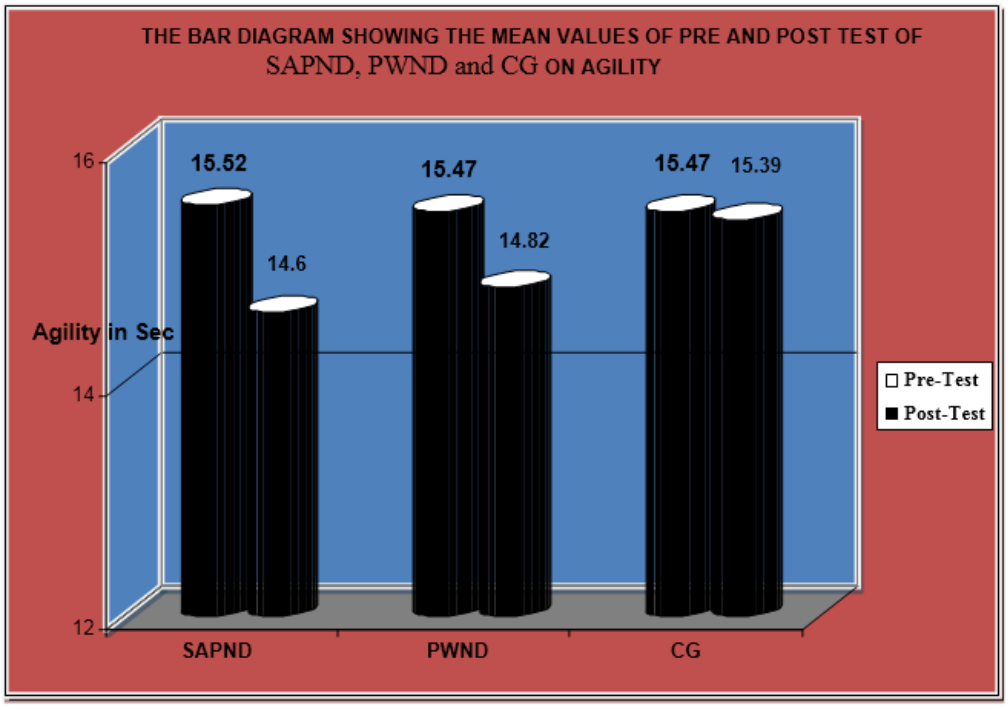


**Fig 1**

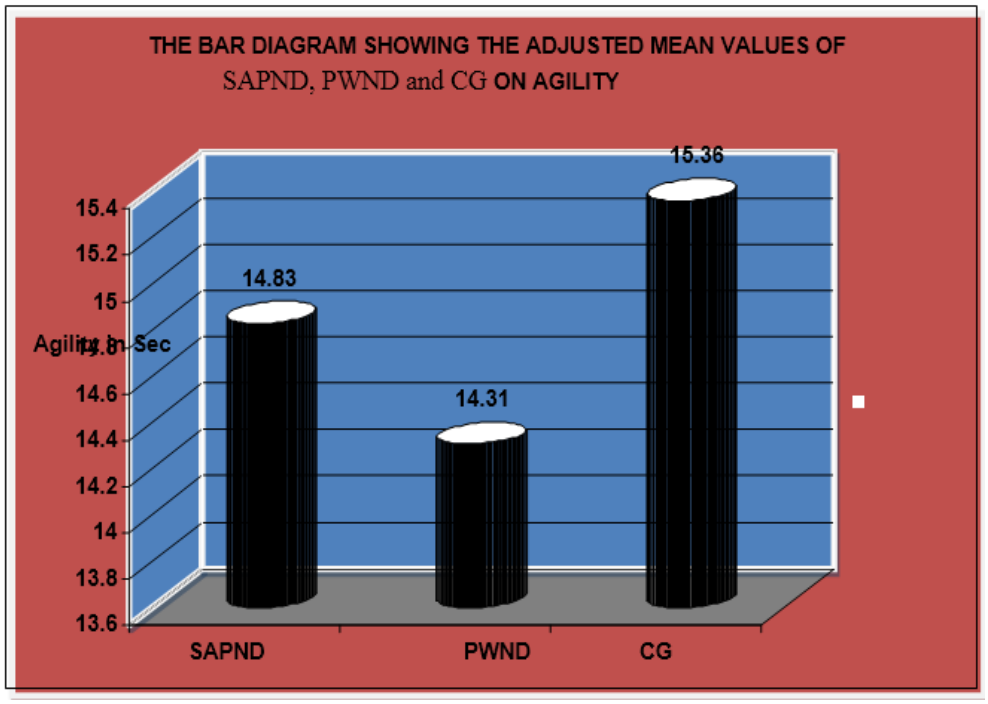


**Fig 2**

**Table 6:** The table shows the mean values of pre, post and adjusted post test of sapnd, pwnd and control group on explosive power

| Mean | SAPND (EG - I) | PWND (EG - II) | CG | Sources | Sum of Squares | DF | Mean Square | F-ratio |
|---|---|---|---|---|---|---|---|---|
| Pre –Test | 48.75 | 49.19 | 48.88 | B/G | 1.62 | 2 | 0.813 | 0.13 |
| | | | | W/G | 2775.19 | 45 | 61.67 | |
| Post –Test | 51.56 | 57.18 | 49.06 | B/G | 488.62 | 2 | 244.31 | 4.76 |
| | | | | W/G | 2310.18 | 45 | 51.33 | |
| Adjusted Post –Test | 52.75 | 51.44 | 49.56 | B/G | 44.81 | 2 | 22.40 | 44.92 |
| | | | | W/G | 21.94 | 44 | 0.499 | |

The adapted vertical jump test results are shown in table - 4.6 for the analyzed data on explosive power. The pre – test means of explosive power were 48.75 for SAPND group, 49.19 for PWND group and 48.88 for control group. The obtained 'F' value 0.13 was lesser than the table 'F' ratio 3.20. Hence the pre test means were found to be insignificant at 0.05 level of confidence for the degree of freedom 2 and 45.

The post - test means were 51.56 for SAPND group, 57.18 for PWND group and 49.06 for control group. The obtained 'F' value 4.76 was higher than the table 'F'ratio 3.20. Hence the post – test means were found to be significant at 0.05 level of confidence for degree of freedom 2 and 45.

The adjusted post – test means were 52.75 for SAPND group, 51.44 for PWND group and 49.56 for control group. The obtained 'F' ratio 44.92 was higher than the table 'F' ratio 3.20. Hence the adjusted post test means were found to be significant at 0.05 level of confidence for the degrees of freedom 2 and 44.

**Table 7:** The scheffe's test for the differences between pared means on explosive power

| Sapnd | PWND | CG | M.D | Confidence Interval |
|---|---|---|---|---|
| 52.75 | 51.44 | | 1.31 | 0.71 |
| 52.75 | | 49.56 | 3.19 | 0.71 |
| | 51.44 | 49.56 | 1.91 | 0.71 |

Table – 7 shows that the mean differences between the paired adjusted post test means of SAPND, PWND and CG on explosive power. The mean difference between SAPND – PWND, SAPND – CG and PWND – CG were 1.31, 3.19 and 1.91 respectively. The values of mean difference of adjusted post test means were higher than that of the required confidence interval value of 0.71, and it was significant. From this results it was found that, the 12-weeks training programme of SAPND group significantly improved in explosive power performance better than the PWND group and CG group. The graphical representation of adjusted post test means of SAPND, PWND and CG groups on explosive power was presented in figure - 4.

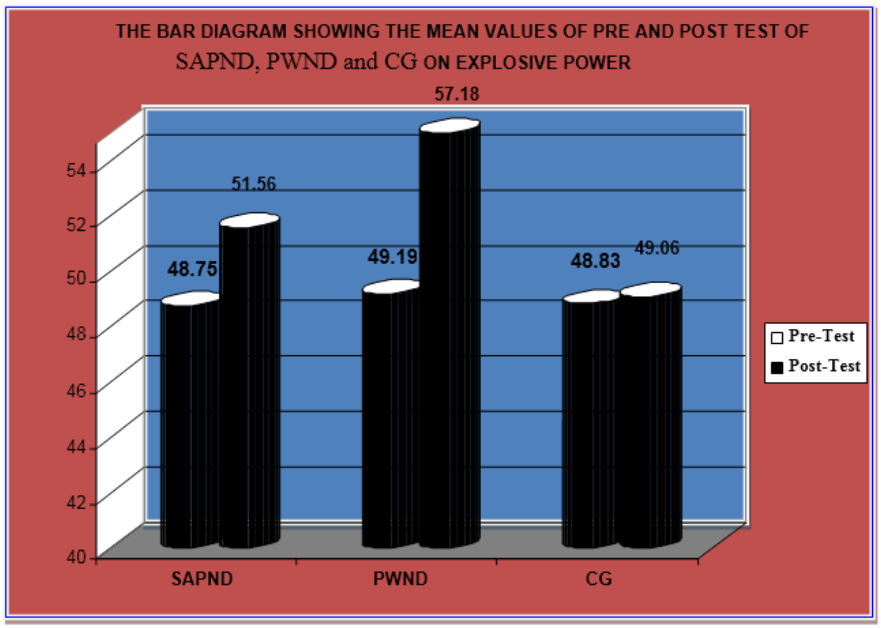


**Fig 3**

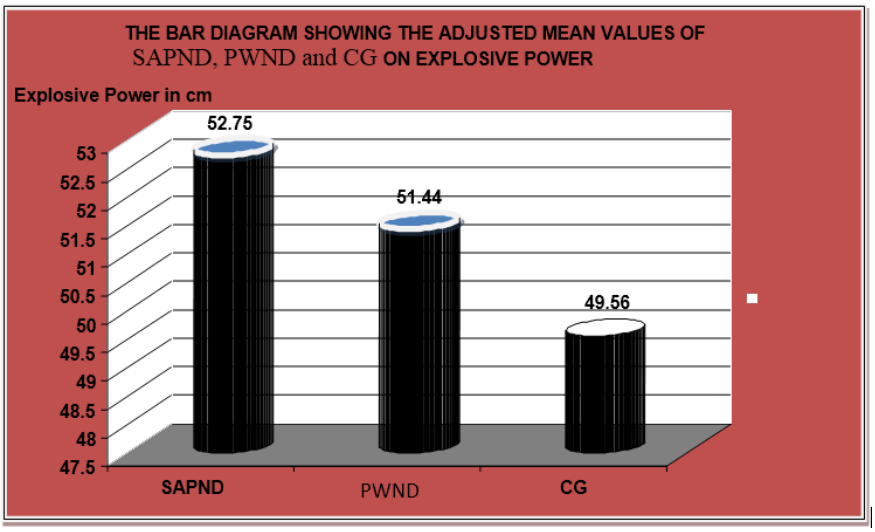


**Fig 4**

**Agility**

The Illinois agility test was used to measure agility. The pre test agility scores were as follows: SAPND Group = 16.52 ± 0.306; PWND Group = 15.47 ± 1.00; and Control Group = 15.47 ± 1.01. The post test score was discernibly larger than the pre test (t = 3.38, P<0.05) in the SAPND group. The post test score was discernibly larger than pre test (t=7.32, P<0.05) in the PWND group. This indicates that means differences between pre- and post-tests were in favor of post-tests. Hence the agility had improved significantly after 12 weeks of training. The improvements were as follows: SAPND Group = 5.93%; PWND Group = 4.21%; and Control Group = 0.52%. Between groups analyses showed pre- to post training increase in agility to be significantly (P<0.05) higher in SAPND programme compared with the PWND and CG programme.

**Explosive Power**

The vertical jump test was used to measure explosive power. The pre test explosive power scores were as follows: SAPND Group = 48.75 ± 7.06; PWND Group = 49.19 ± 7.93; and Control Group = 48.87 ± 7.21. The post test score was discernibly larger than the pre test (t = 15.00, P<0.05) in the SAPND group. The post test score was discernibly larger than pre test (t = 12.24, P<0.05) in the PWND group. This indicates that means differences between pre- and post-tests were in favor of post-tests. Hence the explosive power had improved significantly after 12 weeks of training. The improvements were as follows: SAPND Group = 5.76%; PWND Group = 5.08%; and Control Group = 0.39%. Between groups analyses showed pre- to post training increase in vertical jump to be significantly (P<0.05) higher in SAPND programme compared with the PWND and CG programme. The result of this study is in conformity with Weber *et al.* (1998) and Young *et al.* (1998).

**Conclusions**

1. It was concluded that that Pranayama with natural diet significantly improve on selected physical variables of Agility and explosive power better than Asana with

natural diet and control group among patients of coronary artery disease.

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