

Effects of speed agility quickness training and plyometric training on selected physical fitness variable among college men Kho-Kho players

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Abstract

The purpose of the study was to find out the effects of SAQ training and plyometric training on selected physical fitness components of men KHOKHO players. To achieve the purpose forty five men kabaddi players were selected from Annamalai University chidambaram. They were divided into three equal groups, group I underwent SAQ Training Group II underwent plyometric training and control group. The training schedule was four days per weeks for six weeks, this was achieved by the application no ANACOVA, where in the final means were adjusted difference in the means were tested for significance. This significance of the paired adjusted final means was tested by scheffe's post hoc method. Physical fitness components significantly improved due to SAQ training and plyometric training for men kabaddi players.

Keywords: SAQ training, speed, agility

Introduction

Today world is a world competition and this is very true of sports and games. In fact it has become a prestige issue to win medals at the international level. This has resulted in countries sparing no effort to achieve the goal. Multimillions are spent on research project to invent new techniques and technology to achieve excellence.

The word 'training' has been a part of human language since ancient times. It denotes the process of preparation for some task. This process invariably extends to a number of days and even months and years.

Polman R the main objective of this study was to investigate the efficacy of both programmed [speed, agility, and quickness'; SAQ] and random [small-sided game; SSG] conditioning method on selected neuromuscular and physical performance variables. Twenty volunteers [21.1±4.0y, 1.71±0.09 m, 66.7±9.9 kg; mean±SD] completed the study. The study dosing used two physically challenging periodized experimental conditions. [SAQ and SSG conditions] and a non-exercise control condition participant's engaged in 12.2±2.1 n of directed physical conditioning. All participants had at least 24 h recovery between conditioning sessions, and each 1-h session included 15 min of general warm-up and a 45-min exercise session. Participants completed a battery of test [15-m sprint, isokinetic flex and extension, depth jump] before and following the training program. There was a 6.9% [95% CI;-4.4 to 18.3] greater improvement and in 5-m acceleration time and 4.3% [95% CI;-0.9 to 9.5] in 15-m mean running velocity time for the SAQ group compared with the SSG group. In addition increases in maximal isokinetic concentric strength for both the flexor and Extensor muscles, with the exception of 180 degrees flexion, were greater in the SAQ the SSG condition. The SAQ group also showed 19.5% [95% CI; 11.2 to 50.2] greater gine in mean gastronomies medal's activity in comparison with SSG. SAQ training

should benefit the physical conditioning programs of novice players performing invasion games.

Methodology

The purpose of the study was to find out the effects of SAQ = SPEED. AGILITY, QUICKNESS training and plyometric training on selected physical fitness components. Among college men kho kho players for this purpose, forty-five man kho kho players studying bachelors and master degree at Annamalai University, Cidambaram, were selected randomly subjects. The age range from 19 to 23 years the selected subjects were medically examined by the qualified physician and certified that they were medically and physically fit to undergo the selected training programme.

The selected subjects were randomly assigned to groups of fifteen each such as two experimental groups and a control group. The group I underwent SAQ training and group II underwent plyometric training for duration of six weeks with four days per week in addition to the regular schedule of the college, and group III acted as control which was asked to refrain from any special training except their leisure time pursuit as college students. A written consent was obtained from the subjects.

Findings and Discussion

The effects of independent variables on selected speed, agility and power were determined through the collected data by using appropriate statically techniques and the resulted below.

Speed

The analysis of dependent "t" test on the data obtained for the speed of the pre-test and post test means of SAQ training group and plyometric training group and control groups have been analyzed and presented in table 1.

Table 1: The Summary of Mean and Dependent “T” Test for Pre and Post Tests On Speed of SAQ Training Group and Plyometric Group and Control Group

| | SAQ Training Group | Plyometric Training Group | Control Group |
|----------------|--------------------|---------------------------|---------------|
| Pre Test Mean | 7.27 | 7.39 | 7.68 |
| Post Test Mean | 7.03 | 7.15 | 7.67 |
| “T” Test | 6.54 | 16.86 | 1.73 |
| Table Value | 2.15 | 2,15 | 2.15 |

*significant at 0.05 level.

[Speed performance in seconds]

[The table value required for 0.05 level of significance with df 14 is 2.15]

The table 1 shows that the pre-test mean value of SAQ training group and plyometric training group and control groups are 7.27, 7.39, 7.68 respectively and the post test means are 7.03, 7.15, 7.67 respectively. The obtained dependent t-ratio values between the pre and post-test means of SAQ training group, plyometric training group and control group are 6.54, 16.86 and 1.73 respectively. The table value required for the significant with df 1 and 14 at 0.05 level of confidence is 2.15 since, the obtained ‘t’ ratio value of experimental groups are greater than table value, it is understood that SAQ training group and plyometric group had significantly. The obtained t- value is less than the table value, as they were not subjected of any specific training.

The analysis of covariance on speed of SAQ training group and plyometric training group and control have been analyzed and presented in table 2.

Table 2: Analysis of Covariance on Speed of SAQ Training Group Plyometric Training Group and Control Group

| Adjusted post-test mean | | | Source of variance | Sum of square | df | Mean square | F-ratio |
|-------------------------|---------------------------|---------------|--------------------|---------------|----|-------------|---------|
| SAQ training group | Plyometric training group | Control group | | | | | |
| 7.19 | 7.20 | 7.45 | Between | 0.57 | 2 | 0.28 | 39.59 |
| | | | Within | 0.29 | 41 | 0.007 | |

[Speed performance in seconds]

[The table value required for significance at 0.05 with df 2 is 42 is 3.23]

The table 2 shows that the adjusted post – test mean of SAQ training group and plyometric training group and control groups are 7.19, 7.20 and 7.45 respectively.

The obtained F-ratio value is 39.59 which is higher than the table value 3.23 with df 2 and 41 required for the significance at 0.05 level. Since the value of F – ratio is higher than the table value, it indicates that there is significant difference among the adjusted post–test means of SAQ training, plyometric training and control groups. To find out which of the three paired means had a significant difference, the scheffe’s post-hoc test was applied and the results are presented in table 3.

Table 3: Scheffe’s Test for the Differences between the Adjusted Post Test Paired Means of Speed

| Adjusted post-test mean | | | Means differences | Confidence interval |
|-------------------------|---------------------------|---------------|-------------------|---------------------|
| SAQ training group | Plyometric training group | Control group | | |
| 7.19 | 7.20 | | 0.01 | 0.07 |
| 7.19 | | 7.45 | 0.25 | 0.07 |
| | 7.20 | 7.45 | 0.25 | 0.07 |

The table 3 shows that the adjusted post test mean difference in speed between SAQ training group and control groups and plyometric groups are 0.25 and 0.24 respectively which are higher than the confidence interval value of 0.07 at 0.05 level of confidence. The adjusted post test mean differences between SAQ training group and plyometric groups is 0.012 which is less than the confidence interval value 0.07 at 0.05 levels of confidences. This shows that there is no significant difference between SAQ training and plyometric training Group at 0.05 level of confidence.

The result of the study indicates that, both the experimental group were significantly differed when compared to control group. But the experimental groups were compared with each other and there existed no significant difference. It is revealed that the experimental groups namely SAQ training group I an improved speed when compared to control group plyometric training group II.

The mean values of SAQ training group, plyometric training group and control groups on were graphically represented the adjusted post test means values of SAQ training group, plyometric training group and control on speed were graphically represented in the figure 2.

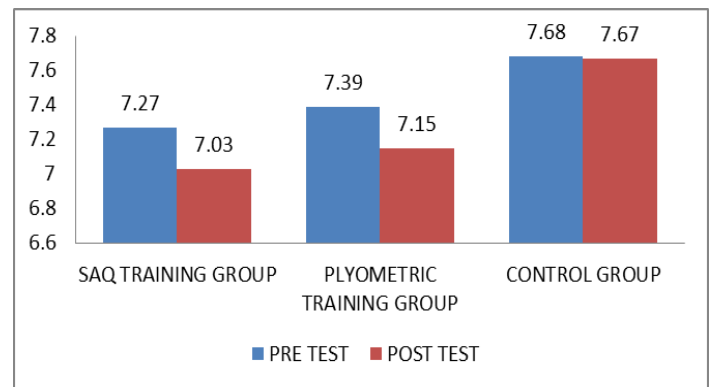


Fig 1: Mean Values of SAQ Training, Plyometric Training and Control Group Speed

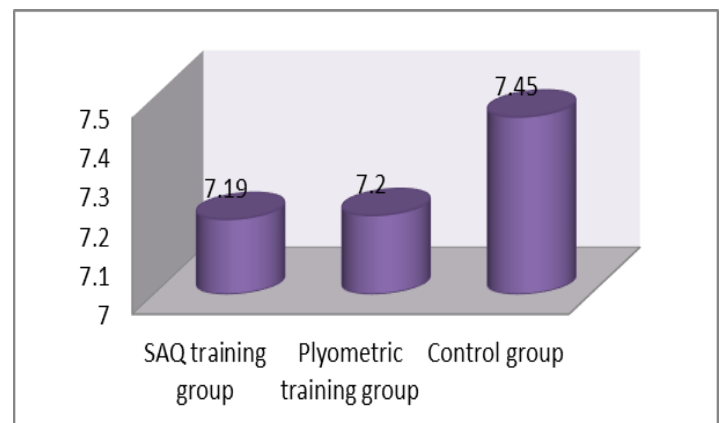


Fig 2: Adjusted Post Test Mean Values of SAQ Training, Plyometric Training and Control Group Speed

Agility

The analysis of different “t” test on the data obtained for the agility of the pre test and post test means of SAQ group and plyometric training group and control group have been analyzed and presented in table 4.

Table 4: The Summary of Mean and Dependent ‘T’ Test for Pre and Post Tests On Agility of SAQ Training and Plyometric and Control Groups

| | SAQ Training Group | Plyometric Training Group | Control Group |
|----------------|--------------------|---------------------------|---------------|
| Pre test mean | 8.88 | 8.84 | 8.71 |
| Post test mean | 8.62 | 8.55 | 8.71 |
| ‘t’ test | 11.68 | 11.67 | 1.26 |
| Table value | 2.15 | 2.15 | 2.15 |

*significant at 0.05 level.

[Speed performance in seconds]

[The table value required for 0.05 level of significance with df 1 and 14 is 2.15]

The table 4 shows that the pre-test mean value of SAQ training group and plyometric training group and control groups are 8.88, 8.84, 8.71 respectively and the post test means are 8.62, 8.55 and 8.71 respectively. The obtained dependent t-ratio values between the pre and post-test means of SAQ training group, plyometric training group and control group are 11.68, 11.67 and 1.26 respectively. The table value required for the significant difference with df 1 and 14 at 0.05 level is 2.15 since, the obtained ‘t’ ratio value of experimental groups are greater than the table value, it is understood that SAQ training group and plyometric group had significantly improved agility performance. However, the control group has not improved significantly. The obtained t- value is less than the table value, as they were not subjected of any specific training.

The analysis of covariance on speed of SAQ training group and plyometric training group and control have analyzed and presented in table 5.

Table 5: Analysis of Covariance on Agility of SAQ Training Group Plyometric Training Group and Control Group

| Adjusted post-test mean | | | Source of variance | Sum of square | df | Mean square | F-ratio |
|-------------------------|---------------------------|---------------|--------------------|---------------|----|-------------|---------|
| SAQ training group | Plyometric training group | Control group | | | | | |
| 8.54 | 8.52 | 8.81 | Between | 0.77 | 2 | 0.37 | 91.25 |
| | | | Within | 0.17 | 41 | 0.004 | |

*significant at 0.05 level.

[Speed performance in seconds]

[The table value required for 0.05 level of significance with df 14 is 2.15]

The table 5 shows that the adjusted pre-test mean value of SAQ training group and plyometric training group and control groups are 8.54, 8.52, and 8.81 respectively.

The obtained F-ratio is 91.25 which is higher than the table value 3.23 with df 2 and 41 required for the signification at 0.05 levels. Since the value of F – ratio is higher than the table value, it indicates that there is significant difference among the adjusted post–test means of SAQ training, plyometric training and control groups. To find out this of the three paired means had a significant difference, the scheffe’s post-hoc test was applied and the results are presented in table 6.

Table 6: Scheffe’s Test for the Differences between the Adjusted Post Test Paired Means of Agility

| Adjusted Post-Test Mean | | | Means Differences | Confidence Interval |
|-------------------------|---------------------------|---------------|-------------------|---------------------|
| SAQ Training Group | Plyometric Training Group | Control Group | | |
| 8.54 | 8.52 | | 0.02 | 0.06 |
| 8.54 | | 8.81 | 0.27 | 0.06 |
| | 8.52 | 8.81 | 0.29 | 0.06 |

*significant at 0.05 level.

The table 6 shows that the adjusted post test mean difference in speed between SAQ training group and control groups and plyometric training groups are 0.27 and respectively which are higher than the confidence interval value of 0.0602 at 0.05 level of confidence. The adjusted post test mean differences between SAQ training group and plyometric groups is 0.025 which is less then the confidence interval value 0.06 at 0.05 levels of confidences. Which shows that there is no significant difference between SAQ training and plyometric training Group at 0.05 level of confidence.

The result of the study indicates that, the experimental group were significantly differed when compared to control group. But the experimental groups were compared with each other and other existed no significant difference. It is revealed that the experimental groups namely plyometric group improved agility when compared to SAQ training group training group. The mean values of SAQ training group, plyometric training group and control groups on agility were graphically represented in the figure 3.

The adjusted post test means values of SAQ training group, plyometric training group and control on agility were graphically in the figure 4.

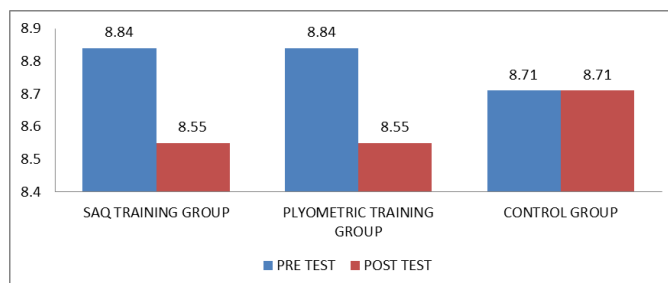


Fig 3: Mean Values of SAQ Training, Plyometric Training and Control Group Agility

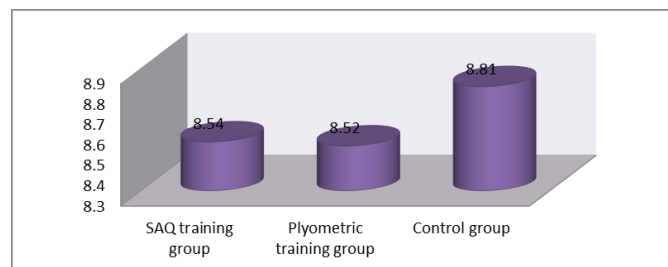


Fig 4: Adjusted Post Test Mean Values of SAQ Training, Plyometric Training and Control Group Agility

Power

The analysis of different ‘t’ test on the data obtained for the agility of the pre test and post test means of SAQ training group and plyometric training group and control group have been analyzed and presented in table 7.

Table 7: The Summary of Mean and Dependent ‘T’ Test For Pre and Post Tests on Power of SAQ Training Group and Plyometric and Control Groups

| | SAQ Training Group | Plyometric Training Group | Control Group |
|----------------|--------------------|---------------------------|---------------|
| Pre test mean | 1.87 | 1.93 | 1.86 |
| Post test mean | 2.12 | 2.07 | 1.84 |
| ‘t’ test | 6.26 | 5.56 | 0.90 |
| Table value | 2.15 | 2.15 | 2.15 |

*significant at 0.05 level.

[speed performance in seconds]

[The table value required for 0.05 level of significance with df 1 and 14 is 2.15]

The table 7 shows that the pre-test mean value of SAQ training group and plyometric training group and control groups are 1.87, 1.93, 1.86 respectively and the post-test means are 2.12, 2.07 and 1.84 respectively. The obtained dependent t-ratio values between the pre and post-test means of SAQ training group, plyometric training group and control group are 6.26, 5.56 and 0.90 respectively. The table value required for the significant difference with df 1 and 14 at 0.05 level of confidence is 2.15 since, the obtained ‘t’ ratio value of experimental groups are greater than the table value, it is understood that SAQ training group and plyometric group had significantly improved agility performance. However, the control group has not improved significantly. The obtained t-value is less than the table value, as they were not subjected of any specific training.

The analysis of covariance on speed of SAQ training group and plyometric training group and control have been analyzed and presented in table 8.

Table 8: Analysis of Covariance on Power of SAQ Training Group Plyometric Training Group and Control Group

| Adjusted post-test mean | | | Source of variance | Sum of square | df | Mean square | F-ratio |
|-------------------------|---------------------------|---------------|--------------------|---------------|----|-------------|---------|
| SAQ training group | Plyometric training group | Control group | | | | | |
| 2.15 | 2.10 | 1.83 | Between | 0.90 | 2 | 0.45 | 40.81 |
| | | | Within | 0.45 | 41 | 0.01 | |

*significant at 0.05 level.

[Speed performance in seconds]

[The table value required for 0.05 level of significance with df 2 and 14 is 2.15]

The table 8 shows that the pre-test mean value of SAQ training group and plyometric training group and control groups are 2.15, 2.10 and 1.83 respectively

The obtained F-ratio value is 40.81 which is higher than the table value 3.23 with df 2 and 41 required for the significance at 0.05 levels. Since the value of F – ratio is higher than the table value, it indicates that there is significant difference among the adjusted post–test means of SAQ training, plyometric training and control groups. To find out which of the three paired means had a significant difference, the

scheffe’s post-hoc test was applied and the results and presented in table 9.

Table 9: Scheffe’s Test for the Differences between the Adjusted Post Test Paired Means of Power

| Adjusted Post-Test Mean | | | Means Differences | Confidence Interval |
|-------------------------|---------------------------|---------------|-------------------|---------------------|
| SAQ Training Group | Plyometric Training Group | Control Group | | |
| 2.15 | 2.10 | | 0.05 | 0.09 |
| 2.15 | | 1.83 | 0.32 | 0.09 |
| | 2.10 | 1.83 | 0.27 | 0.09 |

*significant at 0.05 level.

The table 9 shows that the adjusted post test mean difference in power between SAQ group and control groups and plyometric training groups are 0.32 and 0.27 respectively which are higher than the confidence interval value of 0.097 at 0.05 level of confidence. The adjusted post test mean differences between SAQ training group and plyometric groups is 0.05 which is less than the confidence interval value 0.09 at level of confidences. This shows that there is no significant difference between SAQ and plyometric training Group at 0.05 level of confidence.

The result of the study indicates that there is significant difference among the entire paired mean difference on power. Both the experimental group were significantly differed when compared to control group. But the experimental groups were compared with each other and there existed no significant difference. It is revealed that the experimental groups namely SAQ group I an improved power when compared to the plyometric training group.

The mean values of SAQ training group, plyometric training group and control groups on power were graphically represented in the figure 5.

The adjusted post test means values of SAQ training group, plyometric training group and control on power were graphically in the figure 6.

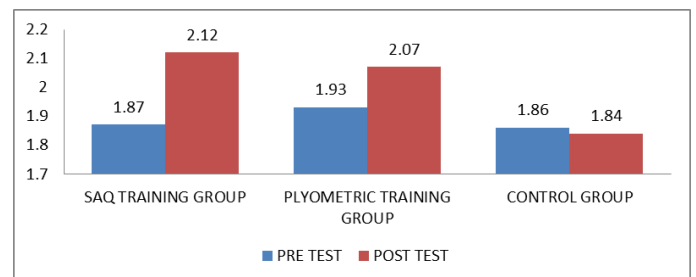


Fig 5: Mean Values of SAQ Training, Plyometric Training and Control Group Power

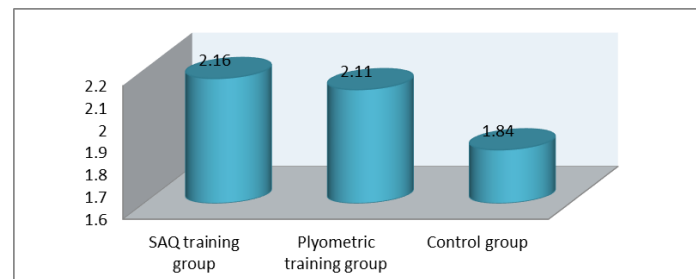


Fig 6: Adjusted Post Test Mean Values of SAQ Training, Plyometric Training and Control Group Power

Discussion on Findings

The result of the study indicates that the both the experimental groups namely speed, agility, quickness training and plyometric group had significantly improved selected dependent variables namely speed, agility and power when compared to the control group. It is also found that the improvement caused by SAQ was greater when compared to cause by plyometric training. However, plyometric training group had developed agility when compared to the SAQ training group.

The most of the important fundamental requirement for khokho is speed; agility, power and speed with power are all terms used freely in kho kho. Coaches and trainees alike they understand of the specific components involved in each and their trainability.

Discussion on Hypotheses

1. It was hypothesized at the beginning of the study that there would be significant improvement in speed, agility, power due to training for the two experimental groups as compared to the control group. The present study produced similar results. Hence the researcher's first hypothesis was accepted.
2. In the second hypothesis, it was mentioned that there would be a significant differences on speed, power for SAQ training would be significantly higher than plyometric training except in agility. Therefore the second hypothesis was accepted.

Conclusions

From the analysis of data, the following conclusions were drawn.

1. Two experimental groups namely SAQ training and plyometric training groups achieved significant improvement on speed, agility and power when compared to the control Group.
2. Significance differences were found between SAQ training and plyometric training on selected criterion variables such as speed, agility and power.
3. It was concluded that SAQ training group is found to better than plyometric training to increase speed and power performance.
4. It was also concluded that plyometric training group is found to better than SAQ training to increase agility.

Reference

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