Impact of SAQ and Skill Based Training on Reaction Time and Coordination Among Male Football Players

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Abstract- The purpose of the present study was to find out the impact of SAQ and skill based training adaptations on audio reaction time and coordination among male football players. To achieve the purpose of the study, forty five male football players from Mannaniya College of Arts and Science, Pangode, Kerala were selected as subjects. The age of the selected subjects were ranged from 18 to 23 years. The selected subjects were classified into three equal groups of fifteen each at random. Group-I (n=15) underwent SAQ training, group-II (n=15) underwent skill based training for twelve weeks and three day per week (Monday, Wednesday and Friday), and group-III (n=15) which did not underwent any training during the period of study apart from their regular routine activities acted as control. The following variables namely audio reaction time and coordination were selected as dependent variable for the study. Audio reaction time was measured by administering Digital Chronoscope and coordination was assessed by alternative hand wall toss test. The result of the study shows that SAQ training and skill based training were remarkably enhanced the audio reaction time and coordination of male kabaddi players

Key Words: SAQ training, skill based training, audio reaction time, coordination and football

INTRODUCTION

Complex human movement can be seen in a variety of team sports at various granularities. According to Bloomfield *et al*. (2007), Gorostiaga *et al*. (2004), and Helgerud *et al*. (2001), physical conditioning of players is a complicated process since soccer players must do multiple movements that call for strength, power, speed, agility, balance, stability, flexibility, and endurance. A sprint every 90 seconds makes up 11% of the total activity in a soccer match, with each action lasting an average of 2 to 4 seconds and covering a distance of 15 metres (Stolen *et al*., 2005). Although quickness (acceleration speed during the first steps) is likely more crucial, speed is a highly significant component of fitness for a soccer player. This is due to the fact that sprints in soccer are typically completed over small distances while exerting maximum effort, even though the greatest lengths tend to be about 40 m and typically require many direction changes (Jovanovic *et al*., 2011; Rienzi *et al*., 2000).

Gambetta (1996) classified soccer's high-speed movements as needing agility, maximum speed, or acceleration abilities, whereas Chapman *et al*. (2008) defined soccer speed as consisting of running speed, response speed, and acceleration speed during the initial steps (referred to as quickness). These two classifications suggest that soccer fitness training might benefit from including the SAQ (speed, agility, and quickness) training technique (Pearson, 2001). In a typical SAQ session, rapid motions are used to go from basic movement patterns to extremely position-specific movements (Yap and Brown, 2000). In order to develop speed, agility, and quickness, it is believed that this type of training encourages the adaption of movement mechanics, step length and frequency, and increased hip height (Pearson, 2001).

While Jovanovic *et al*. (2011) discovered that a SAQ training programme was an excellent technique to increase some elements of power performance, they did not find that it improved the agility performance in young soccer players during the in-season period while training with and without a ball. Although these results were somewhat unexpected, they do not disprove the association between SAQ training and increased agility for both players with and without the ball. This is because the training programme may not have been adequate in terms of duration or volume to encourage appreciable improvements.

Given the nature of SAQ training, it seems sense that this kind of training would increase soccer players' agility both with and without the ball, albeit the exact form of the training and its length would determine this. In one such research, Rösch *et al*. (2000) came to the conclusion that top players, but not amateurs, were able to adjust their body postures as a consequence of SAQ training in order to perform

soccer actions with improved balance, strength, and control without sacrificing speed.

Athletes must have well-developed speed, physical strength and power, audio reaction time, and maximum aerobic power to compete in high-intensity, intermittent team sports. Team sports demand players to have well-developed physiological capacity, but they are also expected to have well-developed technical competence and decision-making ability. Athletes are frequently expected to exhibit these traits while under intense strain and exhaustion. Higher talented players regularly exhibit greater speed, muscular strength, and maximum aerobic power compared to their lower skilled counterparts, according to studies of team sports athletes. Similar substantial expert-novice disparities in pattern recognition, decision-making, dual-task performance, and anticipation have been seen in team sports environments (Williams & Little., 2006). Given the significance of these physiological and skill characteristics to team-sport success, coaches are keenly interested in learning the most efficient ways to help their athletes acquire these characteristics.

Athletes in team sports are increasingly using game-based training to increase their physical preparedness and talent. The idea behind using games for training is that when the physiological demands and movement patterns mimic those of the sport, performance will increase the most. There aren't many studies examining the effectiveness of game-based training, therefore many of the benefits and drawbacks that have been proposed are based on anecdotal information.

METHODS

The purpose of the study is to investigate the relative effect of SAQ training verses skill based training on selected audio reaction time and coordination of foot players. To achieve the purpose of the study, forty five male football players from Mannaniya College of Arts and Science, Pangode, Kerala, were selected as subjects. Their age ranged from 18 years to 23 years. The selected subjects were randomly assigned into three equal groups of 15 subjects each. Group-I underwent SAQ training, Group-II underwent skill based training and group-III acted as control. The training programme was carried out for three days (Monday, Wednesday and Friday) per week during morning session only (6 am to 8 am) for twelve weeks. Audio reaction time was measured by administering shuttle run test and coordination was assessed by alternative hand wall toss test. Before applying the experiment all the subjects of the SAQ training, skill based training and control groups were attended the pre-test, which was conducted a day prior to the commencement of the training and the data were collected on shuttle run and alternative hand wall toss test. After twelve weeks of training the post-test was conducted one day after the training period to find out any changes in the criterion variables.

The 't' ratio and analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the experimental groups and control group on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. Since there was three groups were involved in this study, the Scheffe̊ *S* test was used as pos-hoc test and it was shown in Table - I.

ANALYSIS OF DATA

The data collected prior to and after the experimental periods on audio reaction time and coordination on SAQ training group, skill based training group and control group were analysed and presented in the following table - I.

Table – I Paird't' Test Results and % of Changes on Audio Reaction Time & Coordination of Chosen Experimental and Control Groups

Group	Test	N	Mean	SD	DM	't' - ratio
Auditory Reaction Time						
SAQ Training Group	Pre	15	122.10	1.89	4.24	6.11*
	Post	15	117.86	1.56		
Skill Based Training Group	Pre	15	121.89	1.56	2.46	7.86*
	Post	15	119.43	1.41		
Control Group	Pre	15	123.00	1.48	0.03	0.87
	Post	15	122.97	1.11		

Coordination						
SAQ Training Group	Pre	15	12.83	0.92	1.97	18.39*
	Post	15	10.86	0.86		
Skill Based Training Group	Pre	15	12.22	1.46	1.91	8.21*
	Post	15	10.31	0.93		
Control Group	Pre	15	12.86	1.06	0.19	0.73
	Post	15	12.67	1.17		

*Table value for df 14 is 2.15(*significant)*

The pre and post values of both training groups differ considerably since the 't' values of SAQ (6.11) as well as skill based training (7.86) groups were greater than the table value (df14=2.15). After 12 weeks of treatment, SAQ and skill based training, group's audio reaction time performance enhanced considerably. The pre and post values of both training groups differ considerably since the 't' values of SAQ (18.39) as well as skill based training (8.21) groups were greater than the table value (df14=2.15). After 12 weeks of treatment, SAQ and skill based training, group's co-ordination performance enhanced considerably. By using ANCOVA statistics, the audio reaction time and co-ordination performance of all 3 groups were analyzed and exhibited in the following table - II.

Table – II ANCOVA Statistics Output on Audio reaction time and Coordination Performance of Experimental and Control Groups

	SAQ Training Group	Skill Based Training Group	Control Group	'F' ratio
Adjusted Post-test Mean	118.17	119.09	122.83	27.50*
Adjusted Post-test Mean	11.03	10.97	12.51	59.40*

*(Table value for df 2 & 41 is 3.23)*Significant (.05 level)*

In table – II, it was shown that the ANCOVA result proved about the adjusted post-test means (SAQ=118.17 SBT=119.09 & CG=122.83) on audio reaction time performance of all 3 chosen groups significantly differs, as the derived 'F' value (27.50) is better than the required value (*df 2 & 41* =3.23). The ANCOVA result proved that the adjusted final means (SAQ=11.03, SBT=10.97 & CG=12.51) on Co-ordination performance of all 3 chosen groups significantly differs, as the derived 'F' value (59.40) is better than the required value (*df 2 & 41* =3.23). As the adjusted final means is significant, the follow up test was applied as put on view in table - III.

Table – III Scheffe's Test Outcome on Audio reaction time and Coordination Performance of Experimental and Control Groups

Variable	SAQ Training Group	Skill Based Training Group	Control Group	Mean Difference	CI
Auditory Reaction Time	119.54	120.98		1.44*	1.41
	119.54		123.53	3.99*	1.41
		120.98	123.53	2.55*	1.41
Co-ordination	14.79	13.04		1.75*	1.03
	14.79		11.36	3.43*	1.03
		13.04	11.36	1.68*	1.03

**Significant (0.05)*

The adjusted post-test mean difference on auditory reaction time between SAQ training group and skill-based training group was 1.44, SAQ training group and control group was 3.99 and skill based training group and control group was 2.55 which was significant at 0.05 level of confidence. The adjusted post-test mean difference on coordination between SAQ training group and skill-based training group was 1.75, SAQ training group and control group was 3.43 and skill based training group and control group was 1.68 which was significant at 0.05 level of confidence.

CONCLUSION & DISCUSSION

The results of the study indicated that there is a significant improvement on psycho-physiological variables due to the effects of 12 weeks of SAQ training and game specific training among male football players. These results demonstrate that speed, agility and quickness training (SAQ), as part of the overall training process, can be considered a useful tool for the improvement of audio reaction time and co-ordination among male football players. Azmi, & Kusnanik, (2018) found greater increase in speed, audio reaction time and acceleration due to speed, agility and quickness training program. Further, Milanovic *et al*., (2014) found significant increase speed and flexibility in young soccer players due to 12 week speed, agility and quickness (SAQ) training program. Hence this form of training is thought to encourage the adaptation of movement mechanics, length and frequency of steps, and increased hip height in the pursuit of increased speed, agility and quickness (Pearson, (2001). Jullien *et al*., (2008)) demonstrated that a short-term SAQ training programme (3 weeks duration) improved agility test results. A study conducted by Sakthivel and Kumaresan (2020) also found significant improvement in physical fitness variables like audio reaction time, leg explosive power and muscular strength endurance and overall playing ability of inter university level male Kabaddi players due to specific kabaddi skill training.

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