Effect of Speed, Agility and Quickness Training on Speed and Reaction Time among Basketball Players

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Abstract

The primary objective of this research was to examine the impact of SAQ (Speed, Agility, and Quickness) training on speed and reaction time in basketball players. For this purpose, 24 male basketball players, aged between 18 and 24 years, were randomly selected from various basketball clubs in Tirunelveli District. The participants were equally divided into two groups: one experimental group and one control group, each consisting of 12 players. The experimental group underwent a structured SAQ training regimen for a duration of 12 weeks, training on alternate days (three days per week). Speed and reaction time were chosen as the dependent variables, measured through the 50-meter sprint and the snatch card drop test, respectively. A pre-test and post-test randomized control group design was employed for the study. Statistical techniques such as the dependent t-test and analysis of covariance (ANCOVA) were used to analyze the data. The results indicated that the experimental group showed significant improvement in both speed and reaction time after the training period, while the control group did not exhibit any notable changes. The difference between the groups was statistically significant at the 0.05 level.

Keywords: *SAQ training, speed, reaction time, basketball*

Introduction

SAQ training has gained considerable popularity among both amateur and professional athletes as an effective method to enhance athletic performance. As defined by Mario et al. (2011), SAQ stands for Speed, Agility, and Quickness, and it encompasses a set of dynamic exercises aimed at improving these physical attributes. According to Palaniswamy and Velmurugan (2012), integrating SAQ drills into training routines can produce comprehensive benefits by enhancing multiple physical capacities simultaneously. Remco, Jonathan, and

Andrew (2009) also emphasized that SAQ training systems are specifically designed to improve key performance factors such as hand-eye coordination, acceleration, explosive power, and reaction speed. These exercises vary in intensity and can be tailored to train specific athletic movements or improve overall fitness. Sharma and Dhapola (2015) further supported the role of SAQ training in developing a wide range of athletic abilities.

Purpose of the Study

The aim of this study was to investigate the effects of SAQ training on the speed and reaction time of basketball players.

Methodology

To fulfill the purpose of this investigation, a total of 24 basketball players aged 18 to 24 years were randomly selected from basketball clubs in Tirunelveli District. The participants were randomly assigned into two groups: an experimental group and a control group, each with 12 members. The experimental group participated in a SAQ training program for 12 weeks, performing the exercises on alternate days (three sessions per week). The variables selected for this study were speed and reaction time, measured through the 50-meter sprint and the snatch card drop test, respectively. A randomized control group design with pre- and post-tests was implemented. The collected data were subjected to statistical analysis using the dependent t-test and ANCOVA. The level of significance was set at 0.05.

Analysis of Data

Table 1: Summary statistics including mean, standard deviation, and results of the dependent t-test for speed and reaction time between the experimental and control groups of basketball players

Variables	Test	Experimental Group		Control group	
		Mean	Std. Deviation	Mean	Std. Deviation
Speed	Pre test	7.86	0.12	7.86	0.13
	Post test	7.46	0.12	7.83	0.12
	T-test	9.38*		0.67	
Reaction time	Pre test	50.25	1.60	50.83	1.75
	Post test	44.67	2.61	51.00	1.81
	T-test	17.85*		0.25	

*Significance level at 0.05 with df t11 is 2.20

The data presented in the table indicate that the calculated t-values for the experimental group in speed and reaction time were 9.38 and 17.85, respectively. These values exceed the critical t-value of 2.20 at the 0.05 significance level with 11 degrees of freedom, demonstrating a statistically significant improvement in both variables following the 12-week SAQ training program. In contrast, the control group did not show any notable changes in speed or reaction time, confirming that the improvements observed were a result of the training intervention.

Table 2: Summary of adjusted mean scores and corresponding F-ratios for speed and reaction time between experimental and control groups among basketball players

Variable	SS	df	MS	F Ratio
Speed	3.25	1	3.25	232.93*
	0.29	21	0.01	
Reaction time	1550.92	1	1550.92	465.07*
	70.03	21	3.33	

*Significance level at 0.05 with df f (1,21) is 4.32

The table above reveals that the calculated F-values for speed and reaction time are 232.93 and 465.07, respectively. These values are notably higher than the critical F-value of 4.32 at the 0.05 level of significance with degrees of freedom 1 and 21. This indicates a statistically significant difference between the experimental and control groups in both speed and reaction time among basketball players.

Discussion of Findings

The findings clearly demonstrate that the 12-week SAQ training program had a substantial impact on improving speed and reaction time in basketball players. Furthermore, the statistical analysis confirmed a significant difference between the experimental group and the control group in these performance variables.

These results are supported by previous research. For example, Jovanovic et al. (2011) explored the impact of SAQ training on power output in soccer players, reporting positive outcomes. Similarly, Milanovic et al. (2014) found significant improvements in speed and flexibility following a 12-week SAQ training program among young soccer athletes. Azmi and Kusnanik (2018) also noted that SAQ drills effectively enhanced speed, agility, and acceleration. Walker et al. (2010) highlighted the influence of agility training on

both physiological and cognitive performance, while Karthick, Radhakrishnan, and Kumar (2016) demonstrated improvements in physical fitness and kicking skills among school-level football players following SAQ training. Mohamed and Larion (2018) found that SAQ exercises led to significant enhancements in physical variables and overall performance in sabre fencing athletes.

Conclusions

1. The 12-week SAQ training program significantly improved speed and reaction time among basketball players.
2. There was a marked difference between the experimental and control groups in terms of speed and reaction time.
3. The control group did not show any notable improvement in either variable over the course of the study.

References

1. Azmi, A., & Kusnanik, N. W. (2018). The effect of speed, agility, and quickness training program on speed, agility, and acceleration. *Journal of Physical Education and Sport, 18*(1), 83-89.

2. Jovanovic, M., Sporis, G., Omrcen, D., & Fiorentini, F. (2011). Effects of speed, agility, and quickness training method on power performance in elite soccer players. *Journal of Strength and Conditioning Research, 25*(5), 1285-1292.

3. Karthick, R., Radhakrishnan, R., & Kumar, A. (2016). Effects of SAQ training on selected physical fitness parameters and kicking ability of high school level male football players. *International Journal of Physical Education, Sports and Health, 3*(6), 115-118.

4. Milanovic, Z., Sporis, G., Trajkovic, N., Sekulic, D., James, N., & Vuckovic, G. (2014). The effects of a 12-week SAQ training program on speed and flexibility in young soccer players. *Journal of Sports Science and Medicine, 13*(2), 420-428.

5. Mohamed, M., & Larion, A. (2018). Effect of SAQ training on certain physical variables and performance level for sabre fencers. *International Journal of Sports Science & Coaching, 13*(2), 271-280.

6. Palaniswamy, P., & Velmurugan, P. (2012). The effects of SAQ training on selected motor fitness components among collegiate football players. *International Journal of Physical Education and Sports Sciences, 2*(3), 51-58.

7. Remco, M., Jonathan, W., & Andrew, S. (2009). The impact of SAQ training on eye-hand coordination and reaction time. *Journal of Athletic Performance, 4*(2), 37-43.

8. Sharma, V., & Dhapola, A. (2015). Speed, agility, and quickness drills and their impact on reaction time. *International Journal of Sports Science and Physical Education, 6*(1), 22-27.

9. Walker, J. L., Lennemann, L. M., Doczy, J. A., Klein, M. T., Sidrow, K. M., & Harrison, T. M. (2010). Substituting agility training for traditional linear running: Effects on physiological and cognitive performance. *Journal of Strength and Conditioning Research, 24*(4), 941-947.

10. Yildiz, M., & Pinar, S. (2020). The impact of SAQ training on agility, speed, and reaction time in youth basketball players. *European Journal of Physical Education and Sport Science, 8*(1), 19-28.

11. Zivkovic, M., Djuraskovic, R., & Nikolic, I. (2019). The effects of speed, agility, and quickness training on motor performance in basketball players. *Journal of Sports Training and Performance, 7*(3), 145-158.