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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/13497

DOI URL: <http://dx.doi.org/10.21474/IJAR01/13497>



RESEARCH ARTICLE

THE QUIET EYE- ITS ROLE IN SQUASH

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Manuscript Info

Manuscript History

Received: 31 July 2021

Final Accepted: 31 August 2021

Published: September 2021

Abstract

Three areas about the role of vision in hitting a squash ball were investigated- the fixation timings (early or late), the fixation location (ball centre, not the centre of the ball) and the area the ball landed. Intermediate and semi professional squash athletes were asked to wear an eye tracking device and hit a straight drive on either side as close to the sidewall as they could, while someone was repeatedly feeding them the ball. Three succeeding Quiet Eye periods were observed- racket preparation (when the athlete moved his racket in preparation of the shot), racket extension (when the athlete swung his racket to hit the ball) and ball hit (once the athlete hit the shot till it touched the wall).

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Introduction:-

The quiet eye refers to a gaze behaviour observed immediately prior to movement in aiming tasks. For example during a basketball free-throw, before the individual prepares for his/her shot, he/she generally pauses with his/her eyes steady on the target before initiating the movement of the shot. The final pause where their gaze remains steady on a particular location before the movement is defined as the quiet eye. Research shows the Quiet Eye of elite performers (in sports such as tennis, golf and volleyball) is significantly earlier and longer than that of lesser adept athletes.

We chose the drive shot in squash to conduct the experiment because it was the most played shot in the sport. The selection of the drive shot was also inspired by the top professional athletes who always managed to hit extremely tight lines, stuck to the sidewall elevating the game played to a higher level.

This experiment was conducted to see whether the quiet eye is a phenomenon only distinct in the elite athletes or is also seen in lower skilled athletes. It was also carried out to test out the relevance of the quiet eye in squash.

Location of fixations

The location of the fixations have been determined to be mainly on the ball, and the area on the front wall, along with occasional fixations on the racket and body of the opposition hitting the ball as well as their own racket.

Three types of visions have been identified by a study done by Yin Li and Alireza Fathi- gaze centric, body centric, and head centric. Although all three are usually important in the execution of a squash shot, the concentration was on gaze centric vision. When applied to a drive, gaze centric vision occurred when the Quiet Eye was located on the squash ball, as opposed to other locations.

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Since QE training studies that had emphasized focusing on the centre portion of an object had led to improved performance, it was expected the ego-centric control of the gaze on the centre of the ball would be a characteristic of better performance.

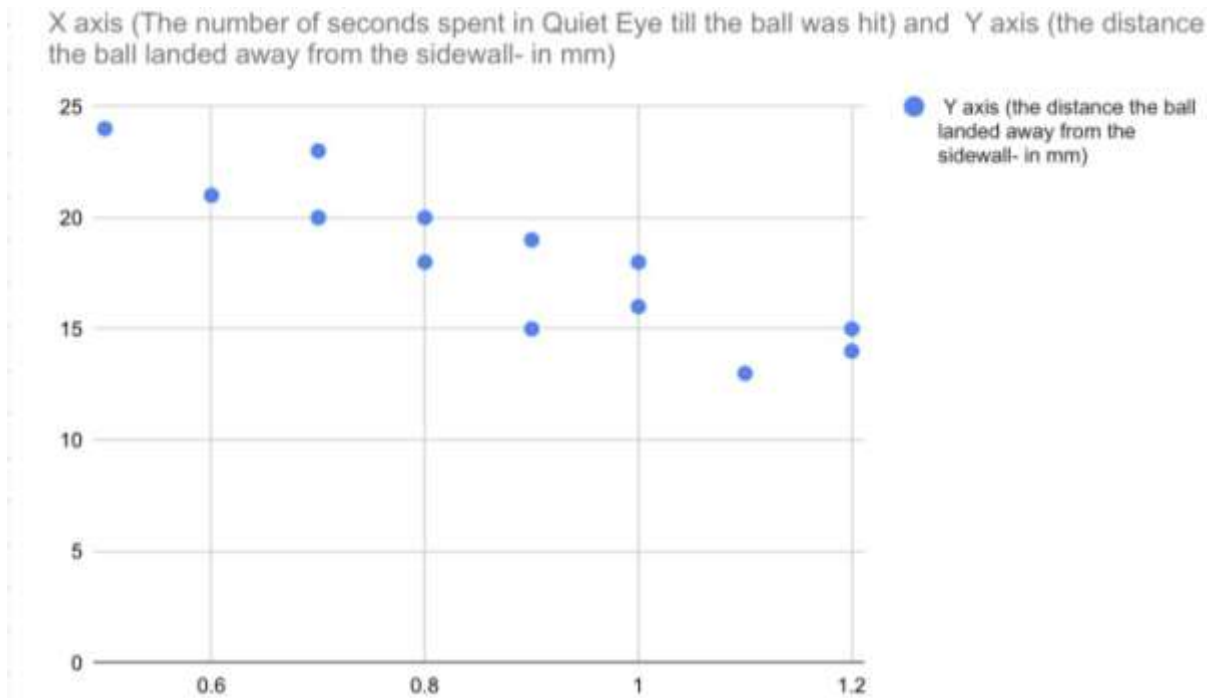
The Process

15 intermediate and semi professional level squash athletes were given eye tracking devices and fed 20 shots of straight drives in the forehand side. The athletes were given instruction to try and hit the ball as accurately and close to the sidewall of the court as possible. The results were then evaluated after taking the average of the time the athlete spent in the quiet eye zone in each shot as well as the accuracy of the drive. The same was done with the backhand side after with all the athletes hitting a total of 20 backhand drives. All the athletes were either current or ex state and national level squash players in West Bengal and India, respectively.

Results:-

Forehand

On measuring the fixation timings, the location and how close the ball was to sidewall for 20 forehand drives of each athlete, we found out the following for the results shown below-



The above scatter plot compares the averages of the Quiet Eye period and the distance of the forehand drive shot from the side wall of different athletes.

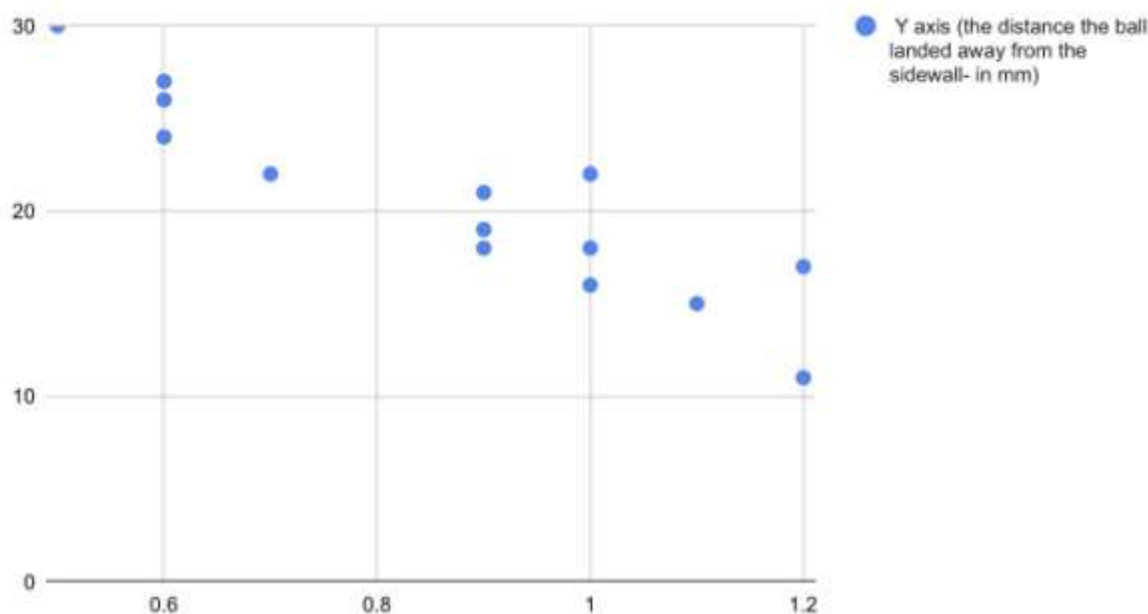
The correlation coefficient of the scatterplot is -0.898 . This means that there is a strong negative relationship between the number of seconds spent in the quiet eye zone and the distance that the ball landed away from the sidewall.

This strong negative relationship of more extreme than -0.8 (-0.898) means that the value is significant enough to prove that there is a relationship between the period of time spent in the Quiet Eye zone and the accuracy of a straight drive squash shot.

Backhand

On measuring the fixation timings, the location and how close the ball was to sidewall for 20 forehand drives of each athlete, we found out the following for the results shown below-

X axis (The number of seconds spent in Quiet Eye till the ball was hit) and Y axis (the distance the ball landed away from the sidewall- in mm)



The above scatter plot compares the averages of the Quiet Eye period and the distance of the forehand drive shot from the side wall of different athletes.

The correlation coefficient of the scatterplot is -0.913 . This means that there is a strong negative relationship between the number of seconds spent in the quiet eye zone and the distance that the ball landed away from the sidewall.

This strong negative relationship of more extreme than -0.8 (-0.913) means that the value is significant enough to prove that there is a relationship between the period of time spent in the Quiet Eye zone and the accuracy of a straight drive squash shot.

Conclusion:-

Thus, it can be reasonably inferred that the period of time that an athlete spends in the quiet zone also has an impact on his/her squash performance, more specifically on the accuracy and tightness of the drive shot in the sport of squash.

Recommendation:-

It is recommended that one takes Quiet Eye training to improve their accuracy and gameplay. Further research is required to be done however as to how one can take Quiet Eye training specifically for squash, and what other ways it helps a squash player apart from increasing accuracy in the drive shots.

Inspiration for the Topic

Being a massive sports lover, and an avid cricket watcher, I would often hear commentators speak about a peculiar characteristic of the bowling action of my favourite cricketer, Pat Cummins (one of the best fast bowlers of the current generation). They pointed out that while bowling his gaze was fixed at the spot he wanted to pitch the ball longer and more steadily, as opposed to his peers. So, I decided to hop onto the computer and check for myself whether this peculiar characteristic was backed by any scientific evidence in relation to Pat's relentless accuracy. Soon, after doing a quick google search and reading articles from a few sites, I found about the phenomenon of the quiet eye and was very intrigued.

Fascinated by it, I wanted to find out the relevance of Quiet Eye to my favourite sport- squash. Thus, I decided to conduct an experiment with the help of a few peers to find out whether there was any connection between Quiet Eye and squash.

References:-

1. Mann, D. T., Williams, A. M., Ward, P., and Janelle, C. M. (2007). Perceptual-cognitive expertise in sport: a meta-analysis. *J. Sport Exerc. Psychol.* 29, 457–478. doi: 10.1123/jsep.29.4.457
2. Lebeau, J. C., Liu, S., Saenz-Moncaleano, C., Sanduvete-Chaves, S., Chacon-Moscoso, S., Becker, B. J., et al. (2016). Quiet eye and performance in sport: a meta-analysis. *J. Sport Exerc. Psychol.* 38, 441–457. doi: 10.1123/jsep.2015-0123
3. Rienhoff, R., Tirp, J., Strauss, B., Baker, J., and Schorer, J. (2016). The ‘Quiet Eye’ and motor performance: a systematic review based on newell’s constraints-led model. *Sports Med.* 46, 589–603. doi: 10.1007/s40279-015-0442-4
4. Li, Y., Fathi, A., and Rehg, J. M. (2013). “Learning to predict gaze in egocentric video,” in Proceedings of the IEEE International Conference on Computer Vision (ICCV), Sydney, 3216–3223.
5. Vickers, J. N. (2007). *Perception, Cognition and Decision Making: The Quiet Eye in Action*. Champaign: IL: Human Kinetics.
6. Mann, D. T. Y., Williams, A. M., Ward, P., & Janelle, C. M. (2007). Perceptual-Cognitive Expertise in Sport: A Meta-Analysis. *Journal of Sport & Exercise Psychology*, 29, 457-478.
7. Vine, S. J., & Wilson, M. R. (2010). Quiet Eye Training: Effects on Learning and Performance Under Pressure. *Journal of Applied Sport Psychology*, 22, 361-376.
8. Vickers, J. N. (2011). Mind over muscle: The role of gaze control, spatial cognition, and the quiet eye in motor expertise. *Cognitive Processing*, 12, 219-222.
9. Causer, J., Holmes, P. S., & Williams, A. M. (2011). Quiet eye training in a visuomotor control task. *Medicine and Science in Sports and Exercise*, 43, 1042-1049.