

## Effect of Focus of Attention in Acquisition Stage on Learning and Performance in the Stressful Conditions

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**Abstract:** This study aimed at to test different instructions of focus of attention in acquisition stage on learning and performance in the stressful conditions. Data analysis of results showed significant improvements in performance of participants of all groups in acquisition phase. However, there is no significant difference among groups in acquisition phases. The results related to the transfer phase, demonstrated that the group which was instructed to focus on racket had better performance compared with the group which was instructed to focus on the rope. The results related to the transfer under pressure did not show significant difference among the groups. These results are more in line with distraction than self-focus theories, suggesting that attention to performance worries rather than to skill execution generally explains choking.

**Key words:** Choking • Internal focus of attention • External focus of attention • Scott-fox test

### INTRODUCTION

Calm and stress control are necessary for successful performance under pressure and stressful situations. People, who have the ability to control the stress, will have better performance. Stress caused by the pressure, leading to a phenomenon called "Choking " that is causing the performance decline [1]. Obstruction is a destructive phenomenon that often occurs in athletes under stress situations. In a situation where the athletes are much worse than expected, the skills are implemented and this is when that we need better performance. A well known example of this phenomenon is when the team is losing on penalties at crucial moments in soccer game. Since the penalty can be along with psychologic, social and economical stress, but the has n enormous pressure on the offensive [1,2].

This higher pressure increased the chance of losing on penalties. Recently hill *et al.* (2010) introduces novel definition of obstruction based on sport psychologist's ideas. They believes that obstruction is the process by which individual perceptions is insufficient to deal with the present situation and concluded that this phenomena cause loss of performance and obstruction [3].

Athletes weren't informed from own performance details when the performance is in its higher phase and performed automatically, so error detection should be high. In contrast, when the athletes is in performance loss period, Perceived pressure to improve the expected performance, moves to increase their awareness and conscious control. For this reason detection the number of errors was decreased [4-8].

In high levels of performance, attention decreased to work details and skills, but with loss of performance, "focused attention" increased to compensate individual performance. Scientist believes that performance losing for other reasons may be occurs but better performance is when the performer has lower attention to skill execution [9-14]. Some study results indicated that Persons under pressure to refer to the conscious control to achieve a better result and this reduces the good performance (fluent movement) and result in poor performance and achieve the undesired goal. Anxiety created under stress has a negative effect on the coordination of movements for the good performance. Other studies also showed the situations that cause anxiety, can lead to inefficient and ineffective patterns [13].

Since the obstruction phenomenon is largely has been tested by manipulating the "stress" variable on athletes and professionals [2,7,8,13-15], blank spot for research matters with manipulating the "focus on attention" has been seen. Some research into has been investigated this condition in the early stages of learning of motor skills that in this researches, this phenomenon has been tested with manipulating pressure variable in the early stages of learning [16-21]. Since the adoption of appropriate focus of the training program is effective and efficient [6], Adoption of internal and external challenges, the focus in learning certain skills has remained unanswered.

If people can demonstrate their skills in different circumstances or situations and environments as well as to practice, Can be said that learning has little faith [22,23].

Therefore, this study has tried to focus on the learning and skills will be tested under pressure and to answer to 2 important research questions: First, the effect of focus of attention (internal, external and conditions without instructions) is how on the learning of skills? Second, can these variables affect performance in pressure situations?

Because it seems so far any study hasn't been done with such conditions, so try study done without any bias. Also performing this study can help us for more effective understanding the process and learn the skills to perform in pressure situations.

## MATERIAL AND METHODS

This study was performed with 70 right-hand volunteer girl students with a mean age of  $1.68 \pm 21.36$  yrs old in Shahid Beheshti University. The Scott-Fox test in this study (Scott and Fox 1995) in long service of Badminton used for subject's evaluation (image1). The implementation of a test conducted in standardized scoring areas from 1 to 5 at the end. Service hitter signs the bottom line that has the higher score. Any of the subjects makes the scoring by landing places numbers. During the test, service hitter strikes his service to pass from the top rope to a height of 40.2 feet apart and 20.4 meters from the tour. Services that would deal with the rope, will re-stroked and Balls had not been shot into scoring areas or rejection of the tour was give 0 score [24].

Another tool for this study was a questionnaire with information for age, gender, major, sport experience and health factors and any other information for drug consumption.

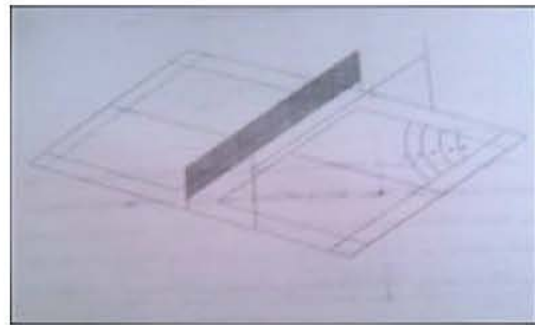


Image1: Activity: Badminton High service

**Study Executing Phases:** Before starting a major project, a preliminary study (pilot study) was conducted with ten subjects. Study duration was one month and in pilot study of the original design and implementation problems were estimated. Based on pretest results, subjects were randomly divided into 5 groups of 14 as block scheduling. Each group received their special attention instructions. The guidelines include: focus to the hand movement (internal) and external focus, including the racket and the rope and ball moving path. The Scott-Fox test in this study (Scott and Fox 1995) in long service of Badminton used for subject's evaluation. In this project including: education, pre-test, acquisition, transfer and transfer under stress.

Education includes familiarization with the ball, racket, playground, how to get a badminton racket and about how the service was performed. Pretest was some efforts with 15 repetitions. Each session had 50 attempts in five blocks of 10 attempts. At the beginning of each block, the specific instructions were reminded to that group participants and wanted them would demand an end to those efforts with the efforts they make. In every effort, scores were recorded for each subject. To reduce the effects of training, fatigue and evaluation lasting effects of the training, transfer test were performed 72 hours after the acquisition phase [26,28] and with changing the service ground from the left side of playground, service striker moved to the left side of ground and attempting were done without instructions for 15 repetitions. It should be noted that for various reasons, subject's number were reduced to 55 at the end of the project.

**Statistical Analysis:** Descriptive statistics used for mean and standard deviation, graph depicting and table formation. Kolmogorov-Smirnov non parametric test used for data normality evaluation. Analysis of variance

with repeated measure, one way ANOVA and POSTHOC Tukey tests in SPSS statistic program version 16 used for statistical evaluation of data's.

## RESULTS

**Results for Pre Test and Acquisition Phase:** Results of analysis of variance test for performance of subject's in pre test summarized in Table 1.

All five groups in the acquisition phase shown progress in performance and effect of training of results was positive (Table 2).

**Results of Transfer and under Stress Transfer Test:** In transfer phase there fund significant differences between focusing attention to rocket and focusing attention to rope ( $P>0/05$ ). There weren't significant differences between other groups. Also there weren't significant differences between different groups in under stress transfer phase.

Table 1: Analysis of variance test results for performance of subject's in pre test

Statistics	Mean of				
Variation source	square	df	M	F	P
Inter group	0.012	4	0.003	0.079	0.98
Intra group	1.843	50	0.037		
sum	1.855	54			

There aren't significant differences.

Table 2: Summary of one way ANOVA with repeated measure test results for different experimental groups in acquisition phase.

Statistics	Mean of				
Variation source	square	df	M	F	P
Groups effect	0.180	4	0.045	0.93	0.45
Sessions effect	3.48	5	0.69	20.09	0.001*
Interaction between groups and Sessions	0.609	20	0.030	0.877	0.617

\*significant differences

Table 3: Results of Bonferroni POSTHOC test for evaluating subject's performance in training sessions

Sessions	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>
1 <sup>st</sup>	-					
2 <sup>nd</sup>	0.082	-				
3 <sup>rd</sup>	0.001*	0.035*	-			
4 <sup>th</sup>	0.001*	0.001*	0.239	-		
5 <sup>th</sup>	0.001*	0.001*	0.017*	0.161	-	
6 <sup>th</sup>	0.001*	0.1001	0.001*	0.001*	0.009*	-

\*significant differences

Table 4: Summary of one way ANOVA for comparison of service trial scores in five groups in transfer phase.

Statistics	Mean of				
Variation source	square	df	M	F	P
Inter group	1.065	4	0.266	2.718	0.04*
Intra group	4.891	50	0.098		
sum	5.955	54	-		

\*significant differences

Table 5: Results of POSTHOC test for comparison of experimental groups performance in transfer phase.

Groups	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
1 <sup>st</sup>	-				
2 <sup>nd</sup>	0.93	-			
3 <sup>rd</sup>	0.22	0.65	-		
4 <sup>th</sup>	0.95	1.00	0.59	-	
5 <sup>th</sup>	0.83	0.37	0.02	0.42	-

Table 6: Summary of one way ANOVA results for comparison of badminton long service performance scores in five experimental groups in under stress phase.

Variable groups	Mean of				
	square	df	M	F	P
Between group	0.575	4	0.144	1.070	0.381
Inter group	6.714	50	0.134		
Sum	7.289	54	-		

Table 7: Mean and standard deviation for badminton long service performance scores in pre test, transfer and under stress phases.

Test Group	Pre test	Transfer	Under stress
1 <sup>st</sup>	0.87±0.21	0.86±0.34	0.86±0.28
2 <sup>nd</sup>	0.84±0.19	0.97±0.38	1.02±0.51
3 <sup>rd</sup>	0.88±0.18	1.15±0.34	1.12±0.36
4 <sup>th</sup>	0.85±0.16	0.96±0.21	0.97±0.30
5 <sup>th</sup>	0.87±0.19	0.72±0.23	0.85±0.30

## DISCUSSION

Statistically significant findings in the acquisition stage, again confirmed the existing theories about the role and impact of the training on motor skills learning [22,23]. But without existing significant of group in sessions, it appears that in targeting skills that get results (points) is the main purpose of movement, there is no difference between internal and external instructions and the without instruction conditions. A closer look at the obtained results from acquisition stage, observed that the first session that the attention guidelines was provide to individuals, the attention focusing on rocket group has lowest los and internal focusing group has highest los from the pre test to latest session.

This suggests that it is more likely that subject's have attempted to change the focus (external to the rocket, ball and other factors) for reaching in better results. Therefore, with increase training and higher skill level, attention focusing will be changed and reached to external attention focusing [3]. Therefore, no significant difference between groups in training sessions can be influenced by the factors mentioned above.

Subject reports in this group (without instructions group) determined that most people in this group (72/7%) were selected the external focus (focus to the rockets) in compare to internal focus (to movement and force of the hand), so there was not significant statistical differences with other groups. The ultimate cause of this discrepancy can be kind of task.

Because in the targeted tasks, achievement more scores is goal and movement operation isn't so important and this tasks needs more special attention therefore, this factor may have influenced the results. Other finding of this research was the results of transfer test.

Based on Statistically significant findings with respect to the transfer test, can be stated that guidelines of external attention that are directly related to the movement can be more useful for learning of motor skills (Table 7). In this task, the focus to the rocket in compare to the rope shows significant differences but, there weren't significant differences between other groups.

This part of study revealed that focus of attention to the important symptoms related to learning can be affect performance in different conditions. The relationship between point of focus of attention and movement can have an important role in motor skills learning.

Since optimal performance in stressful situation is the best criterion for the skills learning, so the pressure transmission test was performed to determine the amount of learning in real terms. The test results showed no significant differences between groups. It seems that the spotlight of attention alone haven't central and determining role in the conditions of pressure (Table 7).

The test results showed that the spotlight of attention was not impeding performance in pressure situations. Bad results in subjects of all groups in this test with compare to the pre test and acquisition phases weren't challengeable. participant reports after completing the test showed that for achievement a better result we should focusing on to that instructions have been received in the acquisition phase. As a result, based of attention theories, [8-10,36], we expected that the internal focus group, should be gain the weakest results But, such a situation

was not observed and the results were not significantly different from other groups. So it seems that other factors have caused a drop in performance.

Based on results obtained from the under stress transfer test, While the groups with instructions of internal focus (hand) and external (the racket and path of ball) showed improved performance in the stressful condition but, groups with attention instructions to the rope and without instructions, showed drop in performance from pre test to under stress transfer test and this results was approached to meaningful statistical. so it can be stated that it appears providing appropriate guidelines to attention focus in the skills training can to help subjects in under stress conditions with focusing has overcome on the concerns and anxiety and get better results. Therefore, proper attention instructions in skills practice will lead to better results in transfer and stressful conditions.

## **CONCLUSION**

Based on these findings it can be concluded that, according to the instructions associated with considerable momentum, leading to better results, Current research suggests that coaches in the early stages of motor skills learning used a lot of attention related instructions direct to the movement, to better learning of motor skills.

Also, because the attention focus in the stress condition alone does not cause dysfunction in performance, It seems that fear and anxiety caused by the consequences of performance is an important factor in impaired performance.

So as Oudejans and colleagues [21,20] in his experiments with novice subjects expressed

Practice in the stress situation in overcoming to obstruction, fear and anxiety can prepare her/his in this regards.

Current research results indicate that coaches prepare his trainings along with stress and plan strategies to overcome the stress in search of training and gain an experience for his athletes so that the athletes to demonstrate better performance under stressful conditions. Finally, the individual differences in the stress conditions have an important and decisive role on the skill operation and this was evident in person's behavior.

In the paper that is prepared, the changing role of individual differences in the stressful condition were examined and future research could also take longer

opinions in order to stop the "obstruction" phenomenon and for the skills successful performance in stressful situations.

### ACKNOWLEDGEMENTS

Gratitude is expressed to the subjects that participated in this study as well as to each of the assistants who were instrumental in the collection of the data. This study was funded by a product grant from the University of Shadid Beheshti (Tehran, Iran). The researchers independently collected, analyzed and interpreted the results and have no financial interests in the results of this study. Also, dissemination of the results in this study does not constitute endorsement by the researchers or their institutional affiliations.

Finally research group want to appreciate from Professor Anoushirvan Kazemnezhad and Parvaneh Shamsipour that assisted to research completing with their statistical suggestions.

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