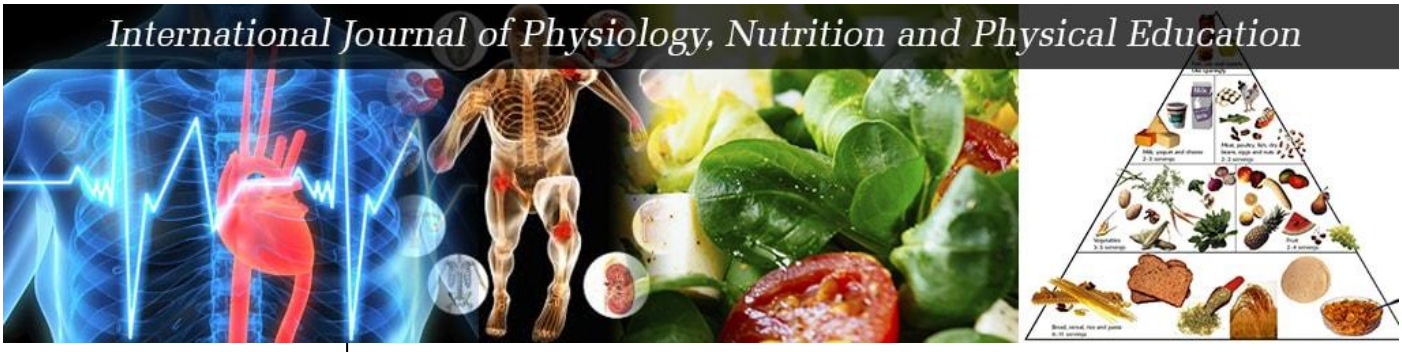

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A study of shooting performance of female archers in relation to time pressure

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Abstract
Effect of time pressure was analysed on shooting performance of female archers. This study was conducted on 50 female archers (average age 24.07 years) performing at national level tournaments. The shooting skills of these archers were assessed with the help of standard target for recurve archery. A target was set at 70 meters and selected archer shot 06 arrows in specified time limit of 04 minutes and 02 minutes respectively. In all each subjects shot twice on both the specified time limit. The paired comparison of shooting scores reveal that shooting accuracy of female archers was markedly superior while shooting in 04 minute time duration as compared to their shooting accuracy while shooting in 02 minute time duration. The results are discussion in the light of cognitive and motor skill aspect of time pressure.

Keywords: Time pressure, female archers, skills

Introduction
Most popular form of archery practiced worldwide is target archery. Target archery is most recognizable form as far as modern archery is concerned. Target archery is indoor as well as outdoor sport. Indoor distance are 18 meters while outdoor distance may range from 25 meter to 90 meters. Competition is based on ends of 3 or 6 arrows. The distance can be upto 90 meters with target face being traditional five coloured 10-rings. Two bow styles namely recurve and compound are included in international target archery. Recurve target archery is practiced in Olympics while compound target archery is associated with world games. Archers must shoot their arrows in a stipulated time limit. 03 arrows are shot in two minutes while 06 arrows are shot in 04 minutes. The ranking round is conducted for seeding purpose. Single elimination pairing is used on the basis of placing in the qualification round. After elimination, remaining eight archer shoot 4 ends of 03 arrows alternately. In quarterfinal an archer gets 30 seconds to shoot one arrow. Hence archer gets pre-defined time to shoot all the arrows.
Due to its immense popularity so many researchers namely Landers *et al*. (1986) [8], Podrzaj (1998) [11], Hemaur *et al*. (2005) [6], French and Kirka (2007) [5], Lee KooH (2009) [9], Agashe *et al*. (2012) [1], Basumatary and Pramanik (2014) [3], Bebetsos (2015) [4], Kaur and Sinha (2017) [7] have assessed shooting performance of archers in the light of various psychological, physiological, biomechanical, perceptual and visual factors. Surprisingly one aspect that has very little literature is time pressure on shooting performance. According to Murayama *et al*. (2007) [10] time pressure as psychological stressors impairs skill performance. Bar-Eli and Tractinsky (2000) [2] also opined that time pressure influence cognitive performance which eventually decreases quality of motor performance.
It is a known fact that time plays a significant part as far as execution of certain task is concerned. It has been opined by researchers like Takai (2007) that medalist copes much better in time management as far as preparatory phase is concerned. Despite the relevance of time pressure on shooting skills in archery, the studies on it are far and few. Hence the researcher decided to assess the effect of time pressure on shooting skills of female archers.

Objective
The objective of the present study is to find out the effect of time pressure on shooting skills of female archers.

Hypothesis
It was hypothesized that time constraint will significantly influence shooting skills of female archers.

Methodology
The following methodological steps were taken in order to conduct the present study.

Sample
To conduct the study 50 female archers (average age 24.07 years) were selected as sample. The selection of female archers were done from those female archers who took part in national level archery championship in India. Purposive sampling was used in the present study.

Tools
Archery Shooting Skills
Standard target face used in recurve archery was chosen to assess shooting skills of national female archers. This target face is 1.22 meters in diameter placed 70 meters away from archers. The inner gold ring is 12.2cm in diameter which looks like a dot when looked in from 70 meters distance. Target face comprise 10 scoring rings. These scoring rings are made up of five colours. The outermost ring is of white colour with weightage of 1 and 2 points while black coloured rings worth 03 and 04 points. The next two inside rings are made up of blue colour and they are worth 05 and 06 points. The two red rings worth 07 and 08 points while the innermost ring is gold in colour and worth 09 and 10 points.

Procedure
50 national level female archers were selected as sample in the present study. Written consent was obtained from selected subjects regarding their voluntary participation in this study. Female archers shoot six arrows in 04 minutes and 02 minute time duration. This process is repeated once again. In this way female archers shoot fixed number of arrows twice in 04 and 02 minute time duration.
The shooting scores obtained by each selected female archer during 04 minutes and 02 minutes was recorded. Paired Sample 't' test was used to compare shooting scores of female archers in 04 minute and 02 minute time duration. Result is presented in table 1.

Analysis of data

Table 1: Comparison of Archery Shooting Scores of Female Archers in 04 minutes and 02 minutes Time Duration (N=50)

Groups (Time Duration)	Archery Shooting Scores		't'
	Mean	S.D.	
04 minute time duration	73.50	12.96	10.21**
02 minute time duration	70.64	12.97	

** Significant at .01 level

Statistical entries in the form of t=10.21 in table 1 reveal that shooting scores of female archers in 04 minutes time duration (M=73.50) was far superior as compared to their shooting scores in 02 minutes time duration (M=70.64). The results also has statistical weightage at .01 level of significance.

Result and discussion
Analysis of data shows that female archers performed better in 04 minutes time duration as compared 02 minutes time duration allotted to show their shooting skills. Results clearly show the significant effect of time pressure on shooting performance of female archers. The results are not surprising because it has been advocated that when certain task is completed in less time, the speed of work increases but simultaneously the quality of output decreases. This may be due to adverse mechanism of time pressure as psychological stressor on cognitive, perceptual and motor movements.

Conclusion
On the basis of results and associated discussion it may be concluded that under time pressure female archers commit more mistakes while shooting.

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