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Effect of time pressure on shooting skills of male archers

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Abstract

The aim of the present study is to assess the impact of time pressure on shooting skills of male archers. To conduct the study 50 male archers (average age 23.39 years) were selected as sample. Purposive sampling was used to select male archers who took part in national level archery championship. To assess shooting skills of selected male archers, a target set at 70 meters distance according to recurve archery rules was used. The archers shot 06 arrows in specified time of 04 minutes as well as 02 minutes. After two rounds the scores of each archer for two specified time limits were recorded. Paired sample 't' test reveal that shooting skills of male archers was far superior in 04 minutes time limit as compared to their shooting skills in 02 minutes time limit. It was concluded that time pressure significantly affect shooting skills of male archers. The results are discussed in the light of well established theories of time pressure in relation to cognitive and motor performance.

Keywords: Time pressure, male archers, skills

Introduction

In archery, an archer needs to shoot a definite number of arrows within a stipulated time limit. Recurve archery is conducted outdoors and barring extreme weather conditions play goes on. At Barcelona Olympics single elimination was introduced and since then it is being used in every subsequent Olympics. The time limit for shooting 06 arrows was 40 seconds for each arrow. Under revised rules the time limit for shooting one arrow is 30 seconds. The reduced time limit for shooting require an archer to change his/her style of shooting because due to lack of time an archer shoot instantly without getting much of preparation time.

There are four main phases of archery shooting. They are preparatory movements, period for production of forces, critical instant and the final phase is continuity. These phases include stance, nock the arrow, arrow grip, bow arm, body pre-positioning, bow raise and pre-draw in phase I. Phase II include pre-draw, full draw, anchoring and expanding. Critical instant includes anchoring, expanding, sighting and release with follow through and relaxation being last phase.

It has been advocated that work can be completed in shorter time but it reduces its quality. This fact has been scientifically documented by many researchers like Palmer, Huk and Shadlen (2005) [8], Carrasco and McElree (2001) [3], Doshier (1976) [4] and Fitts (1954) [5]. They advocate that time pressure has its effect on perceptual decision making, visual search, memory retrieval and motor planning. All these are important in archery because it requires above factors for sports performance.

Although researcher like Lee KooH (2009) [6], Takai *et al.* (2012) [6], Musa *et al.* (2016) [7], Anjali and Dabas (2017) [2] studied archery performance in the light of psycho-genetic factors, anthropometric based assessments, physical fitness, video feedback, biomechanical aspects and certain psychological factors no study yet has been conducted in which performance of male archers has been analysed in the light of time pressure. Hence the present study was planned to assess the impact of time pressure on shooting skills of male archers.

Objective

The objective of the present study is to assess the impact of time pressure on shooting skills of male archers.

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Hypothesis

It was hypothesized that time pressure will significantly influence shooting skills of male archers.

Methodology

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

Sample

To conduct the study 50 male archers (average age 23.39 years) were selected as sample. Purposive sampling was used to select male archers who took part in national level archery championship.

Tools

Archery Shooting Skills

To assess shooting skills of selected male archers, rules used in recurve archery was used. A recurve bow was used by selected male archers to shoot at targets that are 70 meters away. The target was divided into 10 scoring rings of five colours. The two outermost rings are white coloured which contains 1 and 2 points. Next two rings are black coloured and gives 3 and 4 points. Similarly two blue rings are worth 5 and 6 points followed by two red circles with scoring weight of 7 and 8 points. The centre ring is gold in colour. The centre ring worth 9 and 10 points. The target ring for 10 points looks like a dot from 70 meter distance.

Procedure

50 national level male archers were identified and selected as sample purposively.

Each subject shoot six arrows in 04 minutes and 02 minute time duration. This process is repeated once again. In this way archer shoot fixed number of arrows twice in 04 and 02 minute time duration.

The shooting scores obtained by each selected male archer during 04 minutes and 02 minutes was recorded. Paired Sample 't' test was used to compare shooting scores of 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 Male Archers in 04 minutes and 02 minutes Time Duration (N=50)

| Groups | Archery Shooting Scores | | 't' |
|-------------------------|-------------------------|-------|--------|
| | Mean | S.D. | |
| 04 minute time duration | 72.92 | 15.85 | 9.34** |
| 02 minute time duration | 67.12 | 16.57 | |

** Significant at .01 level

A perusal of statistical entries shown in table 1 shows statistically significant impact of time pressure on shooting skills of male archers. The shooting scores of male archers was found to be significantly better in 04 minute time duration (M=72.92) as compared to their shooting scores during 02 minutes time duration (M=67.12). The calculated 9.34 also verifies this finding at .01 level of statistical significance.

Result and discussion

On the basis of analysis of data it was found that male archers performed better in 04 minute time duration as compared to 02 minute time given for shooting fixed number of arrows. Results indicate significant impact of time pressure on

shooting skills of male archers. This shows that when time is less for shooting fixed number of arrows, the accuracy also decreases. This clearly indicate speed of shooting is increased when time is reduced but also the accuracy was compromised. Since unforeseen environmental or other circumstance may consume time of archer during competition it is necessary for a archer to manage his time so that the performance remains the same. Takai (2012)^[9] in a study also reported that time management of world class archer is significantly better during shooting as compared to not so elite archers.

Conclusion

On the basis of results it may be concluded that time pressure creates psychological tension which reduces shooting skills of male archers considerably.

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