

The Effects of Archery as a Sports Branch on Coping with Stress

Hasan Aykut Aysan

*Dicle University, School of Physical Education and Sport, Diyarbakir, Turkey
E-mail: haysan1@hotmail.com*

KEYWORDS Neurophysiologic. Biofeedback. Data Collection. Sports. Psychology

ABSTRACT The purpose of this study is to determine the effect of archery on coping with stress. The participants were evaluated in two groups. They were between 19-22 years old. Measurements were measured with a bio feedback system device for five minutes before the shooting then the data was collected. The participants were given shooting techniques training in the same session and shot again. After the second shooting, the measurements were taken for a period of five minutes. Considering the level of excitement values of the participants; pre-test value of the female sports women was 7.52 ± 4.02 , post-test value was 10.31 ± 4.52 and pre-test value of male sportsmen was 10.27 ± 3.50 , post-test value was 13.11 ± 3.48 , which were all found statistically significant ($p < .01$). Regarding the comparison of the two groups, the difference was found statistically significant ($p < .05$). According to the results, playing archery sports may a positive effect on coping with stress.

INTRODUCTION

Joining a physical or sport activity is a reality which is well accepted around the world. Participation in physical activity and sport has countless advantages for people. These advantages are generally gathered under roofs of fitness, skill development, and self-esteem. At the same time, sport and physical activities are also known to be a stressful ambience for some of its participants (Gilbert et al. 2007; Voight 2002; Weinberg and Gould 2007; Lovallo 2015).

Athletes have a number of stimuli to attend to while competing, but the amount of information that an individual can process at one time is limited (Gilbert et al. 2007; Cox 2002; Salim et al. 2015). Before or in due course of the competitions, numerous athletes face some stressors. "When athletes worry about performance evaluations from coaches and parents, they are less likely to successfully attend to competitive stimuli and their performance may suffer. In turn, this situation can create stress for the athlete" (Gilbert et al. 2007; Salim et al. 2015). "Stress is an impartible aspect of sports competitions. The coping process includes cognitive measures and behavioral activities of the individual to

manage stress, and it is an important adaptation process which can play an effective role in the emotional adjustment of athletes" (Lazarus 1984; Lovallo 2015; Salim et al. 2015). "The spread of stressful factors in athletics like making physical or mental errors, experiencing pain and agony, losing, observing the success or cheating of a rival, the audience noise, getting fined by the referee, and getting reprehended by the coach make the necessity of effective coping skills inevitable in order to achieve athletic success while the inability to deal with the stressful factors efficiently to obtain athletic success and performance is harmful" (Besharat 2007).

Stress is believed to be one of the most influential factors in whether athletes are able to perform to the best of their abilities (Lazarus 2000; Salim et al. 2015). Athletes who are unable to cope effectively with stress may suffer from both performance problems and issues with psychological well-being (Ntoumanis and Biddle 1998; Robertson and Wood 2015).

Researchers had reported that stress has an inhibiting role on athletic performance and improves it unlike enhancing the coping skills (Anshel and Gang Yan 2008; Hammermeister and Burton 2004; Robertson and Wood 2015). Individuals who encounter any event or situation causing stress want to make use of the systems consisting of their feelings and opinions, beliefs and values and interpersonal relations to get rid of this particular stressful situation or event. Religious belief, feelings and opinions

Address for correspondence:
Dr. Hasan Aykut Aysan
Dicle Üniversitesi Beden
Eğitimi ve Spor Yüksekokulu,
21280, Diyarbakir, Turkey
Telephone: +90 412 2411100
E-mail: haysan1@hotmail.com

make a significant contribution to the solution of the problems which affect the individual negatively (Emhan and Cayir 2010; Lovallo 2015; Robertson and Wood 2015).

Shooting an arrow consists of the following stages: holding the bow, raising and pulling back, pointing, releasing the arrow and watching. These stages have their own important details. It is considerably important for a good shooting to use your time well, to get a clean release, to have the correct shooting stance and to focus. Behind a good shooting lie some physiological and psychological processes. Hormonal and neuromuscular changes take an important place in this particular process of archery (Kolayis and Mimaroglu 2008; Davonport 2015).

Having been analyzed by several researchers, sports' mental health was claimed to be helpful for physiological, biological and psychological wellness. These can be specified as allowing changes in monoamine activity in central nervous system, decrease in hypothalamic pituitary – adrenocortical activities, increase in endorphins release and promotion of physical well-being (Canan et al. 2010; Robertson and Wood 2015; Salim et al. 2015). In order to understand the effect of stress, effect of the stress needs to be measured. If it doesn't get measured, the results cannot be discussed. Stress can be measured by some measuring methods. Such as stress performance tests, measuring the physiological and biological changes, life events chart.

Measuring the changes that are caused by stress such as blood pressure, heart rates, reflexes and breathing rates by both mechanical and electronic devices. It's important that this measuring method is reliable and easy to evaluate. Nowadays field experiments are easier because these devices are mobilized and more practical. We used this method for measuring effects of stress on our candidates (Measurement of Stress 2015; Robertson and Wood 2015).

METHODOLOGY

Forty-two individuals, 19 females and 23 males, were chosen for this study. They were selected randomly from students of Dicle University. None of the participants has a diagnosed physical and physiological disorder and they are all between 19-22 years old. Participants had to be chosen from those who did not do archery before and they were made aware of the study

through the desks in the archery shooting hall in the university. After the students were given information about the study, the volunteers were involved. All the participants were informed both orally and in a written way and their approvals were obtained.

The measurements were taken through NeXus 10 mark II (Made in Netherland) computerized bio feedback system device. The NeXus-10 offers 4 single channel inputs, 2 dual channel inputs, 1 oximetry/ trigger (with NeXus Trigger Interface) input and 1 digital input. The Nexus-10 is capable of measuring a wide variety of modalities simultaneously, such as brainwaves (EEG, SCP), muscle tension, heart rate, relative blood flow, skin conductance, respiration, temperature, and more. Individual's stress levels before archery shooting and stress levels after archery shooting were measured by this device. For a period of five minutes before the shooting then the data was collected; the participants were given shooting techniques training in the same session and shot again. After the second shooting, the measurements were taken for a period of five minutes.

Statistical Analysis

SPSS 20.0 was used for the statistical analysis. Paired and independent samples t tests were applied for the data showing normal distribution.

RESULTS

The demographic information of the participants examined were following; the average age of the females was 21.00 ± 2.47 (years), average height was 165.20 ± 5.12 (cm), average body weight was 53.90 ± 5.38 (kg); the average age of the males was 21.75 ± 2.98 (years), average height was 172.20 ± 4.56 (cm) and average body weight was 66.55 ± 5.73 (kg) (Table 1).

Table 1: Demographic information of the participants

<i>Demographics</i>	<i>Gender</i>	<i>N</i>	<i>M±Sd</i>
<i>Age (year)</i>	Female	19	21.00 ± 2.47
	Male	23	21.75 ± 2.98
<i>Height (cm)</i>	Female	19	165.20 ± 5.12
	Male	23	172.20 ± 4.56
<i>Body Weight (kg)</i>	Female	19	53.90 ± 5.38
	Male	23	66.55 ± 5.73

When the level of excitement values examined, the pre-test value of the female athletes was 7.52 ± 4.02 , post-test value was 10.31 ± 4.52 pre-test value of the male athletes was 10.27 ± 3.50 and their post-test value was 13.11 ± 3.48 (Table 2), which was found statistically significant ($p < 0.01$). Table 3 shows that when values of both groups were compared, the difference between the average measurement values of female and male was found statistically significant with a level of $p < .05$.

The measurement result taken before and after shots was significant different in the level of excitement ($p < 0.01$). Excitement in the process of daily life time certain level increase in human life cycle of buildings in achieving of shooting, stress management is important terms.

DISCUSSION

Step toe and Butler found out in a study that playing sports was related to the decrease in emotional stress (Step toe and Butler 1996). Brocks et al. (1998) analyzed the relationship between sports and panic disorder and found out that playing sports was more effective than placebo in reducing the symptoms of panic disorder and was almost as effective as clomipramine.

Several researchers have attempted to explain sports satisfaction. While researchers like Scanlan et al. (1989) define satisfaction in sports as a reaction effecting positively the emotions and/or perceptions reflected by the sports experience like having fun, loving and being pleased; Winkle stated that satisfaction or a positive emo-

tion was a part of the hemostatic balance of the nature (Munroe-Chandler 2005).

Kimiecik and Harris in 1996, did not agree the former definitions; both of them claimed that satisfaction was not a way which was to affect the reaction or the situation. These researchers argue that satisfaction is a good physiological state for an athlete to take care of his/her way for his/her own sake and to control it (Ozdevcioglu and Yalcin 2010). It has been claimed that sports and physical activities, and stress, anxiety and depression are inversely proportional; self-respect and self-perception are directly proportional, and that physical activities have positive effects on the behavioral problems, self-respect, depression, anxiety in children and adolescents (Karakaya et al. 2006). It is probable that athletes who play both in teams and individually develop emotional qualifications. It is known fact that physical activity eliminates individuals' negative feelings and opinions (Arslan et al. 2011).

It was stated that playing sports regularly can relieve depressive symptoms in the different ages (Strawbridge et al. 2002). Similarly, Motl et al. in 2004, found out that increase in physical activity in early adolescent period and depressive symptoms are inversely proportional. In the research conducted by Step toe et al. on 16483 high school students, it was claimed that sports reduces the symptoms of depression excluding the effect of age and (Step toe et al. 1997). In this study, it was observed that archery as a sport, which is played individually, is in accordance with these findings. It was found that archery reduces the levels of stress.

Table 2: Excitement level averages of the participants according to measurements

Gender	Measurements	N	M ±Sd	t	p
Female	Pre-test	19	7.52 ± 4.02	-6.829	.001**
	Post-test	19	10.31 ± 4.52		
Male	Pre-test	23	10.27 ± 3.50	-8.531	.000**
	Post-test	23	13.11 ± 3.48		

* $p < .05$ ** $p < .01$

Table 3: Excitement level averages of the participants according to gender

Measurements	Gender	N	M ±Sd	t	p
Pre-test	Female	19	7.52 ±4.02	2.369	.027*
	Male	23	10.27 ±3.50		
Post-test	Female	19	10.31 ±4.52	2.285	.035*
	Male	23	13.11 ±3.48		

* $p < .05$ ** $p < .01$

This strengthens the supporting role of the sports in the treatment of instant boredom, fear and sorrow. When it comes to the study conducted by Canan and Ataoglu in 2010, the relationship between the type of sports played and depression was examined and it was claimed that team sports were associated with the decrease in depressive symptoms. However, it was also claimed that this relationship was not same for the sports played individually.

CONCLUSION

This study revealed that there was a significant relationship between stress, instant boredom, and archery as a sport and shed light on further studies to analyze causal connections. According to our findings, doing archery has a positive effect on the symptoms of instant boredom and stress. These findings can be a basis to encourage archery as a sport in terms of providing developments in the psychological well-being.

RECOMMENDATIONS

To overcome the difficulties during daily life, according to the results obtained, archery trials in coping with stress should be considered as a treatment method.

REFERENCES

- Anshel MH, Gangyan S 2008. Coping styles following acute stress in sport among elite Chinese athletes: A test of trait and transactional coping theories. *Journal of Sport Behavior*, 31(1): 3-21.
- Arslan C, Güllü M, Tural V 2011. Spor yapan ve yapmayan ilköğretim öğrencilerinin depresyon durumlarının bazı değişkenlere göre incelenmesi. *Niğde Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi*, 5(2): 120-132.
- Broocks A, Bandelow B, Pekrun G, Geaorge A, Mayer T, Bartmann U 1998. Comparison of aerobic exercise, clomipramine, and placebo in the treatment of panic disorder. *Am J Psychiatry*; 155: 603-609.
- Canan F, Ataoglu A 2010. Anksiyete, depresyon ve problem çözme becerisi algisi üzerine düzenli sporun etkisi. *Anadolu Psikiyatri Dergisi*; 11: 38-43.
- Cox RH 2002. *Sport Psychology: Concepts and Applications*. 5th Edition. New York: McGraw-Hill.
- Devonport T 2015. Understanding stress and coping among competitive athletes in sport. *Sport and Exercise Psychology*. New York: Routledge: 127.
- Emhan A, Cayir C 2010. Girişimcilerin stres ile bas edebilmesinde tinsel değerlerin etkisi. *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 24(2): 101-20.
- Gilbert JN, Gilbert W, Morawski C 2007. Coaching strategies for helping adolescent athletes cope with stress. *Journal of Physical Education, Recreation and Dance*, 78(2): 13-24.
- Hammermeister J, Burton D 2004. Gender differences in coping with endurance sport stress: Are men from Mars and women from Venus? *Journal of Sport Behavior*. 27(2): 148-164.
- Karakaya I, Coskun A, Agaoglu B 2006. Yüzücülerin depresyon, benlik saygısı ve kaygı düzeylerinin değerlendirilmesi. *Anatolian Journal of Psychiatry*, 7: 162-166.
- Kimiecik JC, Harris AT 1996. What is enjoyment? A conceptual/definitional analysis with implications for sport and exercise psychology. *Journal of Sport and Exercise Psychology*, 18: 247-263.
- Kolayis IE, Mimaroglu E 2008. Okçuluk milli takımının antrenman ortamında kalp atım hızı ve nisan alma süresinin atış puanı üzerindeki etkileri. *Uluslararası İnsan Bilimleri Dergisi*, 5(1): 1-18.
- Lazarus RS 2000. How emotions influence performance in competitive sports. *The Sport Psychologist*, 14: 229-252.
- Lazarus RS, Folkman S 1984. *Stress, Appraisal, and Coping*. 9th Edition. New York: Springer Publishing Company.
- Lovallo WR 2015. *Stress and Health: Biological and Psychological Interactions*. California: Sage Publications.
- Measurement of Stress 2015. How The Stress Can Be Measured? From <<http://www.mainboard24.com/universite/600334-olcumu-psikoloji.html>> (Retrieved on 18 March 2015).
- Motl RW, Birnbaum AS, Kubik MY, Dishman RK 2004. Naturally occurring changes in physical activity are inversely related to depressive symptoms during early adolescence. *Psychosom Med*, 66: 336-342.
- Munroe-Chandler KJ 2005. A discussion on qualitative research in physical activity. *Athletic Insight*, 7(1): 67-81.
- Ntoumanis N, Biddle SJH 1998. The relationship of coping and its perceived effectiveness to positive and negative affect in sport. *Personality and Individual Differences*, 24: 773-788.
- Ozdevecioglu M, Yalcin Y 2010. Spor tatmininin sporcuların stres ve saldırganlık düzeyleri üzerindeki etkisi. *Niğde Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi*, 4(1): 48-61.
- Robertson GA, Wood AM 2015. Return to sports after stress fractures of the tibial diaphysis: A systematic review. *British Medical Bulletin*, 114(1): 95-111.
- Salim J, Wadey R, Diss C 2015. Examining the relationship between hardness and perceived stress-related growth in a sport injury context. *Psychology of Sport and Exercise*, 19: 10-17.
- Scanlan TK, Stein GL, Ravizza K 1989. An in-depth study of former elite figure skaters: II. Sources of enjoyment. *Journal of Sport and Exercise Psychology*, 11: 65-83.
- Steptoe A, Butler N 1996. Sports participation and emotional well-being in adolescents. *Lancet*, 347: 1789-1792.

- Stephoe A, Wardle J, Filler R, Holte A, Justo J, Sanderman R 1997. Leisure-Time physical exercise: Prevalence, attitudinal correlates, and behavioral correlates among young Europeans from 21 countries. *Prev Med*, 26: 845-854.
- Strawbridge WJ, Deleger S, Roberts RE, Kaplan GA 2002. Physical activity reduces the risk of subsequent depression for older adults. *Am J Epidemiol*, 156: 328-334.
- Voight M 2002. Combating training-stress syndromes. *Journal of Physical Education, Recreation and Dance*, 73(3): 34-38, 52.
- Weinberg RS, Gould D 2007. *Foundations of Sport and Exercise Psychology*. 4th Edition. Champaign, IL: Human Kinetics.

Paper received for publication on May 2015
Paper accepted for publication on November 2015