

## Investigation Of The Impact Of The Uniform Colors Of Sportsmen Who Participated In Turkish Youth Boxing Championship On Their Performance During The Competition

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### ABSTRACT

The purpose of the present study is to elucidate the relationship between performance impacts of red and blue colors on uniforms of young boxers and competition results. The study universe was consisted of 650 competitions organized in the scope of 2005-2006 Sakarya City Young Men Boxing Championship by the Turkey Boxing Federation. Sampling of the study was constituted by 562 competitions which were selected randomly from the universe. In terms of data collection, video analyses of preliminary selection, semi-final and final competitions were conducted so that x2 test evaluation could be performed for the numbers of winning of sportsmen in blue and red color uniforms based on the competition results. According to the results obtained through this research; when general total result of the competitions and preliminary selection results is considered, it was found that sportsmen in blue uniform are more successful against the ones in red uniform. When semi-final and final competitions were considered, it was found that wearing blue and red color uniforms is not significantly relevant with the competition results of the sportsmen.

### KEYWORDS

Colors, Psychology of colors,  
Impact of Colors in Sports

### ARTICLE HISTORY

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## Introduction

It is obvious that colors in nature and in society play significant role. The fact that they have entered into human life as a mean within the framework of artistic and aesthetical considerations since ancient times is related with human past, and they gain place in human psychology according to experience levels.

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It is well known that colors have important place in sports life as well besides the fact that it has dominant place in human life. It has been observed that colors in sports have recently taken attention due to its impact on performances of sportsmen. While the primary element that could affect the personal perception was verbal communication, the second element is dressing. Knapp & Hall (2002) reported that dressing is a phenomenon that leaves a significant impression about the person at the first sight and that is useful for many purposes (sexual appeal, group identity, sovereignty and status signs) except only one function. The researches in the sports field revealed that dressing style (Greenlees et al., 2005 a, 2005b) and colors (Frank & Gilovich, 1988, Julie et al., 2007) create perceptual differences on individuals as a result of their impact.

As there are numerous studies in the literature concerning colors' impact on human beings in terms of psychological aspects (Dreiskaemper, et al., (2013); Dijkstra et al., 2005; Pryke & Griffith, (2006); Evan & Norris, (1996); Baube (1997); Cuthill et al., (1997)), it can be said that clear results have not been obtained about impact levels of colors on psychology of sportsmen because there are no sufficient resources in literature, which research how colors affect sportsmen mood. By considering competition results, it was observed that there have not been much researches investigating whether colors affect sportsmen psychology. When content of these researches was reviewed, studies investigating impact levels of red, blue and white colors on sportsmen based on the competition results stand out. Other researches relevant with our study are Dijkstra and Preenen, (2005): "No effect of blue on winning contests in judo"; Hill & Barton (2005), "Red does not enhance human performance in the Olympics, Seeing red? & Putting sportswear in context"; Attrill, M. J. et al., (2008) "Red shirt color is associated with long-term team success in English football"; and etc. When we review the results of these studies, it is evident that there are differences among these results. According to the findings of Dijkstra and Preenen (2005) whose study is concerning judo sports, wearing blue or white color uniforms does not provide any superiority to the judo sportsmen in competition. Despite of the study of Dijkstra and Preenen (2008), Hill & Barton (2005), Attrill et al. (2008), Greenlees et al. (2008), Miguel et al. (2011) and Caldwell & Burger (2011), Greenlees et al. (2013) reported in their studies that red color may induce aggression and may affect winning possibility in a positive way. The present study especially put forward whether ages and cultural values of sportsmen have impact on their performances and behaviors due to color change. Our research reviewed winning results obtained from the competitions of young sportsmen who participated to the Turkey Youth and Stars Boxing Championship organized by the Turkish Boxing Federation. When we evaluate other researches (Adam K. Fetterman, Tianwei Liu, Michael D. Robinson (2014) Dijkstra and Preenen (2008); Attrill, M. J. et al. (2008); Hill & Barton (2005)), it was seen that results were obtained through analysis of competition result of adult and professional sportsmen. When we investigated the competition results of the obtained studies, it was seen that the impact of wearing red and blue color uniform on performances of sportsmen was emphasized. The distinguished part of our study from the others in the literature is our dedication to reveal whether colors have impact on sports performances of youth, or not.



## Method

The research was constructed based on qualitative pattern; and data was collected through document review method as a case study. The resources of the study were intended to be revealed in a realistic and integrated way.

## Study Group

The study universe was consisted of competition results of sportsmen who wore red or blue uniform during 650 competitions managed and organized in the scope of 2005-2006 Sakarya City Young Men Boxing Championship. Sampling set was composed of this entire universe. However, according to the visual analysis results, all of the competitions were analyzed; then the 88 competition whose video record results were not clear were disregarded. Accordingly, 562 valid competition video records were obtained. While all universes were being provided, they were grouped in preliminary selection (456), semi-final (80) and final (26) competitions. As 940 sportsmen were participated into the organization, they were categorized in terms of age groups of sportsmen as Juniors (11-12), (13-14), Stars (15-16), and Youth (17-18) within the competition.

## Data Collection and Analysis

Data collection method of the study; all data was collected through analysis results of the video records obtained from the Turkish Boxing Federation archive based on the document investigation method. In data encoding, according to the winning number of blue and red color uniforms, while each winning was scored with 1 point, each loss was scored with 0 point. If usage of the uniform colors of the sportsmen (red and blue) is categorized, general competition results were distinguished as preliminary selection, semi-final and final. Data collected within the computer environment; after overall competition results were distinguished into preliminary selection, semi-final and final groups, and each category were separated into red and blue colors and their digital values were assigned. In the research, the MedCalc Turkey statistical package program was utilized in the analysis of the data acquired from the data collection means. In statistical data analysis process, chi-square analysis method was used.

## References Findings

Analysis results of the obtained data were assessed over preliminary selection, semi-final, final and overall results and exhibited below.

**Table 1.** Results of the Competition for Preliminary Selection

Difference	10.0%
95% CI	0.5% to 19.3%
Chi-squared	4.131
DF	1
Significance level	P = 0.0421

When we consider the preliminary selection competition results on Table 1, in terms of uniform colors of the sportsmen participated to the preliminary selection competition, it was found that sportsmen in blue color uniform presented significant difference compared to the ones in red color uniform ( $p \geq 0.05$ ;  $r = 0.0421$ ). That is, sportsmen in blue uniform present higher winning rate in competitions compared to the ones in red uniform.

**Table 2.** Results of the Semi-Final Competition

Difference	8.0%
95% CI	-15.3% to 30.5%
Chi-squared	0.239
DF	1
Significance level	P = 0.6246

According to the competition results in Table 2, in terms of uniform colors of the sportsmen participated into the semi-final competitions, it was found that wearing red or blue uniforms did not present any impact on competition results of sportsmen ( $p \geq 0.05$ ; ( $r = 0.6246$ ).

**Table 3.** Results of the Final Competitions

Difference	27.0%
95% CI	-3% to 59,9%
Chi-squared	2.767
DF	1
Significance level	P = 0.0962

According to the competition results on Table 3, in terms of uniform colors of the sportsmen participated into the final competitions, it was found that

wearing red or blue uniforms did not cause any significant impact on competition results of sportsmen ( $p \geq 0.05$ ;  $r = P = 0.0962$ ).

**Table 4.** Findings from the Overall Competition Results

Difference	10.0%
95% CI	1.4% to 18.4%
Chi-squared	5.180
DF	1
Significance level	$P = 0.0229$

When overall competition results on Table 4 were considered, according to the chi-square test results of all sportsmen participated into the competition, regarding uniform colors of the sportsmen, it was found that sportsmen in blue color uniform presented significant difference compared to the sportsmen in red color uniform ( $p \geq 0.05$ ,  $r = 0.0229$ ). That is, regarding winning results of the competition, sportsmen in blue uniform were more relevant.

### Result And Conclusion

The general purpose of this research was to determine and reveal whether boxers' uniform colors, which were thought to be effective on performance of sportsmen, had impact on results during competition.

According to the research findings, it was observed that there is significant difference between the results of the preliminary selection competition and overall competition results. In other words, when preliminary selection and competition overall result are considered, it was revealed that there is apparent superiority of sportsmen in blue color uniform against the sportsmen in red color uniform. When we consider the results in the current literature, although such a result is unexpected condition, it presents parallelism with the study of Rowe et al. (2005). When studies were reviewed, Dijkstra and Preenen (2005) reported that sportsmen in red colored uniform exhibited apparent superiority compared to the sportsmen in blue color uniform; and they were more effective during competitions (Dijkstra, Hill & Barton (2005), Attrill et al. (2008), Greenlees et al. (2008), Miguel et al. (2011), Caldwell & Burger (2011)). In one of the empirical studies called "Color and psychological functioning: The effect of red on performance attainment", Eliot et al. (2007) reported that red color has an adverse effect on competitors and it causes psychological impact on them. It can be considered that one of the primary reasons for our findings to exhibit different results from the other studies in the literature is that participants of this competition organization were in junior and youth category in younger age range. Additionally, similar to the studies of neurologist Yavuz (2013) and Çekinmez (2012), it can be mentioned that colors could cause various impacts on individuals due to the cultural differences. For instance, Emirates Airways made similar mistake in its first flight to Far East Asia. As gesture, the company distributed white cloths to the passengers of this flight since this was the company's first flight. However white

clove was representing death in Far East culture. The company realized that this was a mistake soon, but it did not help to prevent adverse impression created on passengers at their very first experience. Another reason could cause our study to exhibit different results than the other studies in the literature which focus on professional and adult sportsmen in their sampling groups. According to the study result, it was observed that wearing blue color uniform leaves positive impact on young sportsmen. On the other hand, it can be considered as well that seeing blue color in young sportsmen life frequently could be an impact to cause such a result. It can be thought that blue, green or light blue colors used school environment, uniforms, pre-school environment of young sportsmen could be the positive impact left on young individuals by this color (Specialist Psychologists Ayben Ertem, 2013). On the other hand, it can be said that blue color is an effective color in Turkish culture since it represents tranquility; and “evil eyes” are made in blue color and they were believed to protect people as well. Whereas Yavuz (2013) states that sportsmen and sports clubs must be careful about red color since it has provocative or seducing effect on human beings, he reported that this color may cause aggressive actions of the competitors or increase their concentration. It was stated that wearing red uniforms may cause competitors to behave more aggressive (Sampson (1995); Koca & Koç (2008); and Kılıçarslan & Fidan (2012), wearing blue uniforms, on the other hand, may dull and pacify person (Koca & Koç (2008); Kılıçarslan & Fidan (2012), therefore uniform colors must be preferred suitable in terms of sports and sports psychology since it may have impact on success and winning chance.

When semi-final and final competition results were considered, it was found that wearing blue or red color uniform was not relevant with competition results of sportsmen. According to competitions, it was indicated that uniform colors were not significantly effective in elevation of sportsmen to the higher categories. The fact that there is no significant difference in semi-final and final competitions exhibited parallelism with the results of the study of Dijkstra and Preenen (2008) regarding judo sports. Finally, while a significant difference was found between preliminary selection competitions and overall competition results; it was seen that there is no significant difference between semi-final and final competition results. However, when preliminary selection results, overall competition results, semi-final results and final results of the competition were considered, it was seen that sportsmen in blue color uniform were superior compared to the sportsmen in red color uniform.

## References

- Attrill, M.J., Gresty, K.A., Hill, R.A., & Barton, R.A., (2008). Red Shirt Colour Is Associated With Long-Term Team Success In English Football. *Journal Of Sports Sciences*, 26, 577-582.
- Ayben, E., (2013). <http://ivillage.mynet.com/yazarlar/gebelik-aile/ayben-ertem/21480-renklerin-psikolojik-etkileri.html?start=2>.
- Baube, C. L., (1997). Manipulations Of Signalling Environment Affect Male Competitive Success In Three-Spined Sticklebacks. *Animal Behaviour*, 53, 819-833.
- Caldwell, D. F., & Burger, J. M., (2011). On Thin Ice Does Uniform Color Really Affect Aggression in Professional Hockey?. *Social Psychological and Personality Science*, 2(3), 306-310.
- Cuthill, I. C., Hunt, S., Cleary, C., & Clark, C., (1997). Colour Bands, Dominance, And Body Mass Regulation In Male Zebra Finches (*Taeniopygia Guttata*). *Proceedings Of The Royal Society B*, 264, 1093-1099.
- Çekinmez, V., (2012). Farklı Kültürlerde Renklerin Anlamları. T.C. Başbakanlık Dış Ticaret Müsteşarlığı İhracatı Geliştirme Etüd Merkezi. İ.G.E.M.E.

- Dijkstra, P. D., & Preenen, P. T., (2008). No effect of blue on winning contests in judo. *Proceedings of the Royal Society of London B: Biological Sciences*, 275(1639), 1157-1162.
- Dijkstra, P. D., Seehausen, O., & Groothuis, T. G. G., (2005). Direct Male–Male Competition Can Facilitate Invasion Of New Colour Types In Lake Victoria Cichlids. *Behavioral Ecology And Sociobiology*, 58, 136–143.
- Dreiskaemper, D., Strauss, B., Hagemann, N., Büsch, D., (2013). Influence Of Red Jersey Color On Physical Parameters In Combat Sports. *Journal Of Sport And Exercise Psychology* volume. 35, Issue 1, February 2013, Pages 44-49.
- Elliot, A. J., Maier, M. A., Moller, A. C., Friedman, R., & Meinhardt, J., (2007). Color and psychological functioning: The effect of red on performance attainment. *Journal of Experimental Psychology: General*, 136, 154-168.
- Evans, M. R., & Norris, K., (1996). The Importance Of Carotenoids In Signaling During Aggressive Interactions Between Male Firemouth Cichlids (*Cichlasoma Meeki*). *Behavioral Ecology*, 7, 1–6.
- Fetterman, A. K., Liu, T., & Robinson, M. D., (2015). Extending Color Psychology to the Personality Realm: Interpersonal Hostility Varies by Red Preferences and Perceptual Biases. *Journal of personality*, 83(1), 106-116.
- Frank, M. G., & Gilovich, T., (1988). The dark side of self- and social perception: Black uniforms and aggression in professional sports. *Journal of Personal Social Psychology*, 54: 74–85.
- García-Rubio, M. A., Picazo-Tadeo, A. J., & González-Gómez, F., (2011). Does a red shirt improve sporting performance? Evidence from Spanish football. *Applied Economics Letters*, 18(11), 1001-1004.
- Greenlees, I. A., Eynon, M., & Thelwell, R. C., (2013). Color Of Soccer Goalkeepers' uniforms Influences The Outcome Of Penalty Kicks 1. *Perceptual & Motor Skills*, 117(1).
- Greenlees, I. A., Bradley, A., Thelwell, R. C., & Holder, T. P., (2005a). The impact of two forms of opponents' non-verbal communication on impression formation and outcome expectations. *Psychology of Sport and Exercise*, 6: 103–115.
- Greenlees, I. A., Buscombe, R., Thelwell, R. C., Holder, T. P., & Rimmer, M., (2005b). Impact of opponents' clothing and body language on impression formation and outcome expectations. *Journal of Sport and Exercise Psychology*, 27: 39–52.
- Greenlees, I., Leyland, A., Thelwell, R., & Filby, W., (2008). Football Penalty Takers' Uniform Colour And Prepenalty Kick Gaze Affect The Impressions Formed Of Them By Opposing Goalkeepers, *Journal Of Sports Sciences*, 26, 569–76.
- Hill, R. A., & Barton, R. A., (2005). Red Enhances Human Performance In Contests. *Nature*, 435, 293.
- Kılınçarslan, S., & Fidan M., (2012). Giresun Üniversitesindeki Çalışan Kadın Personelin Renklere Bakışı. *Gümüşhane Üniversitesi İletişim Fakültesi Elektronik Dergisi*. E-Gifder, Cilt/Volume: 1, Sayı/Number:4, Eylül/September 2012.
- Knapp, M. L., & Hall, J. A., (2002). *Nonverbal communication in human interaction*, Toronto, ON: Thomson Learning.
- Koca, E., & Koç, F., (2008). Çalışan Kadınların Giysi Seçimleri ve Renk Tercihleri, <http://Www.Esosder.Org>, Erişim Tarihi: 05.08.2010.
- LeMaire, J., Short, S. E., Ross-Stewart, L., & Short, M. W., (2007). The effect of uniform color on athletes' readiness for competition and perceptions of opponents' attributes. *Journal of Sport & Exercise Psychology*, 29.
- Pryke, S. R., & Griffith, S. C., (2006). Red Dominates Black: Agonistic Signalling Among Head Morphs In The Colour Polymorphic Gouldian Finch. *Proceedings Of The Royal Society B*, 273, 949–957.
- Rowe, C., Harris, J. M., & Roberts, S. C., (2005). Sporting contests: Seeing red? Putting sportswear in context. *Nature*, 437(7063), E10-E10.
- Sampson, E., (2005). *İmaj Faktörü*, (Çev: Hakan İlğün), İstanbul: Rota Yayınları.
- Sarıkaya, N. & Sütütemiz N., (2004). Tüketicilerin Satın Alma Davranışı ve Yaşam Tarzı Üzerinde Renklerin Etkisine Yönelik Bir Araştırma. 3.Ulusal Bilgi, Ekonomi ve Yönetim Kongresi, Osmangazi Üniversitesi, İktisadi Ve İdari Bilimler Fakültesi, Eskişehir.
- Yavuz, M., (2013). Nöroloji uzmanı <http://kisiselbasari.com/renklerin-spor-musabakalarına-etkisi.html>.