The Relationship Between Relative Age and Tournament Success for 11-Year-Old Male Wrestlers in Turkey

Türkiye'deki 11 Yaş Erkek Güreşçilerde Bağıl Yaş ile Turnuva Başarısı Arasındaki İlişki

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ABSTRACT

Children born in the first months of the same year are physically more advantageous than those born in the last months, and this advantage decreases as the athletes gets older. Athletes born in the last months of the year and unsuccessful may leave their careers at a young age. The aim of the study was to examine the relationship between tournament success and birth months in 11-year-old Freestyle and Greco-Roman style wrestlers. It was hypothesized that wrestlers born in the first months of the year would be more successful than those born in the last months. Tournament ranking and birth date information of 327 wrestlers who participated in the Turkey 11-Year-Old Male Freestyle and Greco-Roman Style Wrestling Tournament were used. In order to examine the relationship between athlete success and birth months, Chi-Square analysis was performed by grouping birth months into four quarters of the year. It was observed that the success rankings of both Freestyle and Greco-Roman style wrestlers decreased from the first quarter to the last quarter of the year (Freestyle: $\chi2 = 42.749$, df = 3, p = .000; Greco-Roman style: $\chi2 = 25.627$, df = 3, p = .000). It is thought that birth months should be given importance when grouping at young ages, especially in sports branches such as wrestling, where physical contact is high.

Keywords: *Wrestling, Relative age, Freestyle, Greco-Roman style*

ÖZ

Aynı yılın ilk aylarında doğan çocuklar, son aylarda doğanlara göre fiziksel olarak daha avantajlıdır ve sporcuların yaşı büyüdükçe bu avantaj azalmaktadır. Yılın son aylarında doğan ve başarısız kabul edilen sporcular, kariyerlerini genç yaşta bırakabilmektedir. Çalışmanın amacı 11 yaş serbest stil ve grekoromen stil güreşçilerde turnuva başarısı ile doğum ayları arasındaki ilişkiyi incelemektir. Yılın ilk aylarında doğan güreşçilerin son aylarda doğanlara göre daha başarılı olacağı varsayılmıştır. 11 Yaş Erkekler Serbest ve Grekoromen Güreş Türkiye Şampiyonasına katılan 327 güreşçinin müsabaka sıralaması ve doğum tarihi bilgileri kullanılmıştır. Sporcu başarısı ile doğum ayları arasındaki ilişkiyi incelemek için doğum ayları yılın dört çeyreğine gruplanarak Ki-Kare analizi yapılmıştır. Yılın ilk çeyreğinden son çeyreğine her iki stilde de güreşçilerin başarı sıralamasının düştüğü gözlemlenmiştir (Serbest stil: $\chi2 = 42.749$, df = 3, p = .000; Greko-Romen stil: $\chi2 = 25.627$, df = 3, p = .000). Özellikle güreş gibi fiziksel temasın yüksek olduğu spor dallarında, küçük yaşlarda gruplama yapılırken sadece yıllara göre değil, doğum aylarını da dikkate alarak (örneğin yılın ilk ve son 6 ayı) gruplanması gerektiği düşünülmektedir.

Anahtar Kelimeler: *Güreş, Bağıl yaş, Serbest stil, Greko-Romen stil*

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INTRODUCTION

In order to minimize the advantage of age-related physical differences, children are often grouped by age at school or sports activities (Musch and Grondin, 2001; Genc, 2020). This grouping can be in the form of one, two or three-year categories in sportive activities. Even if the groupings are limited to one year, there may be serious physical and psychological differences between those born in the first months of the year and those born in the last months (DeMeis and Stearns, 1992). The advantage of being born in the first months of the year is called the "relative age effect" or the "date of birth effect" (Grondin et al., 1984; Barnsley et al., 1985; Vincent and Glamser, 2006).

In many sports, the physical maturity of the child may be the reason for preference at the selection stage. Relatively older children have advantages in growth, biological maturity, and cognitive development (Cumming et al., 2017). While the physical advantage of being born in the first months of the year is relatively limited, it can also reveal other advantages (e.g. coach attention, parental support, self-confidence) to further increase the differences in performance (Helsen et al., 2005; Lames et al., 2008). Success in sports is often accompanied by positive feedback from parents and coaches, leading to more effort by the athlete and ultimately better performance. In addition, measures for selected athletes, such as extra training with elite trainers, provide a good performance advantage. These successive processes lead to a steady increase in performance, and being born just a few months earlier than their competitors has given athletes more opportunities and advantages (Augste and Lames, 2011; Wattie et al., 2015).

A previous study suggested that relative age effects exist in almost every competitive sport (Musch and Grondin, 2001). In sports branches based on physical contact, athletes are more affected by the relative age effect (Baxter-Jones, 1995), and this effect decreases as the age of the athletes' progresses (Lames et al., 2008). Wrestling is a sport in which direct contact with the opponent is high (Tomczak et al., 2013). However, we could not find any study examining the effect of relative age in freestyle and Greco-Roman style wrestlers. The relative age effect is considered a determinant of athletic success (Abbott et al. 2005; Wattie, Schorer, and Baker 2015). There are studies that specifically investigate this issue in combat sports; wrestlers (Albuquerque et al., 2014; Latyshev et al., 2022), judo athletes in different weight categories (Albuquerque et al., 2013), boxers (Delorme, 2014) and taekwondo athletes (Albuquerque et al., 2012) which have shown a relative age effect. Therefore, we think that it is important to examine the relative age effect in freestyle and Greco-Roman style wrestling because of the physical advantages (strength, maturation, etc.) that may occur due to age.

The aim of this study is to examine the relationship between the success in the tournament and the months of birth of the athletes participating in the "Turkey 11-Year-Old Male Freestyle and Greco-Roman Style Wrestling Tournament". It was seen that most studies in the literature were conducted with older athletes (Latyshev et al., 2022; Albuquerque et al., 2014; Nakata and Sakamoto, 2011). Therefore, we aimed to see whether being born in the first months of the same year provides an advantage for tournament success in the younger age groups.

METHOD

Participants: In the present study; tournament rankings and date of birth of a total of 327 wrestlers (187 freestyle, 140 Greco-Roman style) who participated in the "Turkey 11-Year-Old Male Freestyle and Greco-Roman Style Wrestling Tournament" in June 2019 were used. The tournament was held according to the elimination contest. The tournament is not categorized as juniors or cadets, but is held only nationally for 11-year-old. A wrestling match lasted 4 minutes (2 halves of 2 minutes). The tournament duration for each weight was 1 day. The wrestler, who lost 1 match, continued the tournament for the 3rd place if the opponent who defeated him made it to the final, otherwise he was eliminated. All of

the participants were 11-year-old. The distribution of freestyle and Greco-Roman style wrestlers by weight is given in Table 1.

Table 1

Distribution of Freestyle and Greco-Roman Style Wrestlers by Weight

Weights (kg)	30	34	38	41	44	48	52	57	62	68	78	Total
Freestyle	23	26	19	20	17	14	16	14	12	14	12	187
Greco-Roman	18	15	16	13	15	12	11	13	9	10	8	140
Total	41	41	35	33	32	26	27	27	21	24	20	327

Procedures: Ethics committee approval for the study was obtained from Bursa Uludag University Social and Human Sciences Research and Publication Ethics Committee (Decision No: 33, Date: 29.04.2021). The birth date and tournament ranking information of all wrestlers participating in the "Turkey 11-Year-Old Male Freestyle and Greco-Roman Style Wrestling Tournament" were obtained from the Presidency of the Turkish Wrestling Federation. In order to examine the "relative age effects" on success, the birth months of the wrestlers were divided into four quarters in accordance with the studies in the literature (Ferriz-Valero et al., 2020; Nakata and Sakamoto, 2011). Athletes born in January, February, March were in the first quarter (Q1), athletes born in April, May, June were in the second quarter (Q2), athletes born in July, August and September were in the third quarter (Q3), and athletes born in October, November and December were in the fourth quarter (Q4).

Statistical Analysis: SPSS for Windows 23.0 (SPSS Inc, Chicago, USA) package program was used for data analysis. In addition to frequency and percentage distributions, in order to examine the relationship between athlete success and month of birth, Chi-Square ($\chi 2$) analysis was performed by grouping birth months into four quarters of the year. The statistical significance level was determined as $p < 0.05$.

RESULTS

The distribution of the participants by month of birth and quarter is given in Table 2. It turned out that 77 (23.5%) of the 327 (Freestyle = 187, Greco-Roman style =140) participants were born in the first quarter, 82 (25.1%) in the second quarter, 84 (25.7%) in the third quarter and 84 (25.7%) in the fourth quarter.

Table 2

Distribution of Freestyle and Greco-Roman Style Wrestlers by Month of Birth

Quarters	Birth Months	Freestyle	Greco-Roman	Total
First (Q1)	January	16	13	29
	February	12	9	21
	March	15	12	27
Second (Q2)	April	20	12	32
	May	12	13	25
	June	13	12	25
Third (Q3)	July	11	13	24
	August	19	13	32
	September	16	12	28
Fourth (Q4)	October	23	12	35
	November	21	14	35
	December	9	5	14
	Total	187	140	327

Q1: First quarter, Q2: Second quarter, Q3: Third quarter, Q4: Fourth quarter of the year

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Chi-square analysis results of the quarterly distribution of birth months of medal and non-medal Freestyle wrestlers are given in Table 3. It was seen that there was a decrease in the number of medal winners from the first quarter to the fourth quarter and this change was statistically significant ($\chi2=42.749$, df=3, p=0.000<0.05).

Table 3

Quarterly Distribution of Birth Months of Medal and Non-medal Freestyle Wrestlers

Birth Quarters	Medalist	Non Medalist	Total	χ2	df	p
Q1	22 (51.2%)	21 (48.8%)	43			
Q2	17 (37.8%)	28 (62.2%)	45	42.749	3	.000
Q3	4 (8.7%)	42 (91.3%)	46			
Q4	1 (1.9%)	52 (98.1%)	53			
Total	44 (23.5%)	143 (76.5%)	187			

In Table 4, the results of the chi-square analysis of the quarterly distribution of the birth months of the medal and non-medal Greco-Roman style wrestlers are given. It was observed that in Greco-Roman style Q1=21 (61.8%), Q2=13 (35.1%), Q3=8 (21.1%) and Q4=2 (6.5%). The difference between quartiles was found to be statistically significant ($\chi2=25.627$, df=3, p=0.000<0.05).

Table 4

Quarterly Distribution of Birth Months of Medal and Non-Medal Greco-Roman Style Wrestlers

Birth Quarters	Medalist	Non Medalist	Total	χ2	df	p
Q1	21 (61.8%)	13 (38.2%)	34			
Q2	13 (35.1%)	24 (64.9%)	37	25.627	3	.000
Q3	8 (21.1%)	30 (78.9%)	38			
Q4	2 (6.5%)	29 (93.5%)	31			
Total	44 (31.4%)	96 (68.6%)	140			

When all of the participants in both styles are examined together (Table 5); again it was seen that there was a statistically significant decrease in the number of medalists from the first quarter to the fourth quarter (Q1=43 (55.8%), Q2=30 (36.6%), Q3=12 (14.3%), Q4=3 (3.6%), $\chi2=66.745$, df=3, p=0.000<0.05).

Table 5

Quarterly Distribution of Birth Months of All Medal and Non-Medal Wrestlers

Birth Quarters	Medalist	Non Medalist	Total	χ2	df	p
Q1	43 (55.8%)	34 (44.2%)	77			
Q2	30 (36.6%)	52 (63.4%)	82	66.745	3	0.000
Q3	12 (14.3%)	72 (85.7%)	84			
Q4	3 (3.6%)	81 (96.4%)	84			
Total	88 (26.9%)	239 (73.1%)	327			

Q1: First quarter, Q2: Second quarter, Q3: Third quarter, Q4: Fourth quarter of the year

DISCUSSION

The aim of the present study was to examine whether there is a relationship between the success achieved in the tournament and the month of birth of the athletes participating in the "Turkey 11-Year-Old Male Freestyle and Greco-Roman Style Wrestling Tournament". It was seen that in both Freestyle and Greco-Roman style wrestlers, those born in the first months of the year ranked higher in the tournament than those born in the last months.

In a study conducted with elite wrestlers, it was stated that the majority (not statistically significant) of the top 8 wrestlers in Greco-Roman and freestyle wrestling at the 2017, 2018 and 2019 World Championships and 2016 Olympic Games were born in the first half of the year (Latyshev et al., 2022). In the same study, it was reported that 53.3% of medal winners were born in the first half of the year and 46.7% in the second half of the year, but this difference was not statistically significant. In the present study, it was observed that 73 (92.4%) of 88 medalists were born in the first half of the year (in the 1st and 2nd quarters). Compared to the study of Latyshev et al. (2022), it is seen that the relative age effect is greater in the present study. In our opinion, the reason for this is that the present study was conducted with athletes in the younger age group. In another study, it was reported that there is a relative age effect in all styles in elite male wrestlers and this cannot be eliminated by weight categories (Albuquerque et al., 2014). Similarly, Fukuda et al. (2017) reported that a relative age effect was observed in young male wrestlers, despite weight classification. In another study, it was assumed that relative age effects were observed in sports where physical characteristics such as body mass, height and strength play an important role (Delorme et al., 2010). These studies in the literature support our study. No previous study was found that investigate the relative age effect in Turkish wrestlers. In this respect, the present study is the first study investigating the relative age effect in young Turkish wrestlers.

Previous studies on the relative age effect in combat sports appear to be inconsistent. In a study conducted with Olympic taekwondo athletes, it was reported that there was no relative age effect (Albuquerque et al., 2012). Likewise, in another study conducted with boxers, it was reported that there was no relative age effect (Delorme, 2014). In another study with heavyweight judo athletes, relative age effects were reported (Albuquerque et al., 2013). When examining athletes from 7 to 20 years of age engaged in sports by weight categories (judo, karate, wrestling, boxing), the data obtained showed the absence as well as dependence on relative age effect for athletes of various ages and levels (Romann et al., 2018). The conflicting results in combat sports may be due to the fact that wrestling is based on grappling, and sports such as taekwondo and boxing are based on striking. In addition, the fact that each combat sport has different requirements (different energy systems, physical fitness differences, etc.) might lead to these conflicting results.

In a study conducted with young triathletes, it was stated that the majority of gold medalists were born in the first quarter (Ferriz-Valero et al., 2020). In a study examining the birth dates of 39,590 track and field athletes who have been in the world's top 100 rankings at least once in the last 10 years; it has been reported that the majority of athletes born in the first months of the year (Brustio et al., 2019). In a study conducted in the National Hockey League in North America; it was concluded that the distribution of birth dates among ice hockey players was quite skewed, and those born in the first months of the year were overrepresented (Grondin et al., 1984). In a study conducted in Japan in which 4,318 athletes from different sports were evaluated; significant relative age effects were noted in baseball, football, volleyball, ekiden (a type of long-distance running in Japan), basketball, sumo wrestling, and horse racing (Nakata and Sakamoto, 2011). As can be understood from the studies listed, the relative age effect can be seen in many sports branches. However, it has been reported that individual strength/power activities involving competition against a single opponent, such as sumo wrestling are particularly susceptible to the relative age effect (Nakata and Sakamoto, 2011; Fukuda et al., 2017).

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No studies of relative age effect have been found in the literature on the age group 11 or below. In this respect, the present study differs from the studies in the literature. It may be difficult to examine the relative age effect in early childhood due to some limitations such as the age of starting sports and the age of being a competitive. However, it is thought that more research on the relative age effect in early childhood is needed.

Apart from the relative age effect, there are many factors that can affect the success of the athletes in the tournament. For example, "training age" is one of them. In the current study, there is no data on how long the participants continued their wrestling training which is a limitation for our research. It is also recommended to consider the training age in future studies on the relative age effect.

CONCLUSION

In conclusion; it was observed that among 11-year-old freestyle and Greco-Roman style wrestlers, those who were born in the first months of the year were more successful in the tournament. This might negatively affect the future sports life of the athletes who are evaluated as unsuccessful in the tournament and might lead to drop out from the sports (Hancock, Adler and Cote 2013). Therefore, sports organizations, trainers, and others interested in the performance of athletes should consider the potential relative age effect. The relative age effect should be handled more carefully, especially in sports branches such as wrestling, where physical contact is extremely high.

Authors' Contribution:

      1. Yahya YILDIRIM: Idea, Design, Control, Data Collection, Analysis, Article Writing, Critical Review

      2. Murat DENİZ: Design, Data Processing, Analysis, Article Writing

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