
An exploratory analysis of recreational and competitive athletes' superstitious habits

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Abstract

The sport's rituals are an integral part of athletes' life, and they may largely contribute to their coping with uncertainty and regaining control over competition. This study explored the popularity, perceived effectiveness and characteristic types of sports superstitions among 383 recreational and competitive athletes. Furthermore, the study revealed factors underlying the characteristics of superstitious habits. The results of the questionnaire survey showed that 55.1% of the athletes had at least one superstition, among which pre-match rituals proved the most popular. Nearly 70% of superstitious athletes reported the belief that their rituals had an influence on their performance. The mean perceived effectiveness of rituals was 3.21 on a 5-point scale. The number of superstitions was found to be positively related to the level of athletic activity, to the importance of success and to the athletes' subjective sense of achievement. Furthermore, the type of the pursued sport also influenced the number of superstitions: among the five sports included in the analysis, the smallest number of rituals was reported by athletes pursuing racket sports, while the highest frequency was shown by handball players.

Keywords: *sports superstitions, recreational and competitive athletes, importance of success, subjective sense of achievement*

People in all cultures have long assigned essential importance to superstitious beliefs and behaviors, by which they strive to exercise control over their fortune. Some swear by lucky charms (Wiseman & Watt, 2004), while others knock on wood for luck (Keinan, 2002). There are studies suggesting that certain activities provide particularly ample ground for developing superstitious behaviors (Burger & Lynn,

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2005). Superstitions are especially popular among gamblers, university students (Vyse, 1997) and religious people (Flanagan, 2013), yet the most superstitious population is presumably athletes. Extreme pressure accompanies the objective to exceed their previous performance at each competition, or at least to defeat their opponents by reaching optimal performance. To this end, they continuously strive to extend the limits of their physical capacity and to reach perfection, which inherently involves a tendency to rely on transcendental forces in striving for maximum performance and achieving the desired goals (Zivanovic, Randelovic, & Savic, 2012). For example, the greatest basketball player of all times, Michael Jordan, wore the same blue shorts for luck, while the professional American golfer, Tiger Woods adheres to his lucky red shirt, which he typically wears on the last day of each tournament. World ranking leader tennis player Serena Williams, besides wearing one single pair of socks throughout each tournament, takes scrupulous care to bounce the ball five times before her first serve and twice before her second serve (Damisch, Stoberock, & Mussweiler, 2010).

Womack (1992) defines superstition as a rigid and repetitive behavior, which athletes believe to provide control over luck or other external factors. A similar definition is proposed by Foster, Weigand, and Baines (2006; in Farley, 2015), who add that athletes' superstitions have no clear practical function in reaching optimal performance. Routines are very similar to superstitions in outward appearance, whereas their function is different in that routines help athletes prepare physically and mentally for competition by increasing concentration (Thatcher, Day, & Rahman, 2011) and by ensuring adequate performance (Burke et al., 2006). Such routine exercises done prior to competition or performing certain actions (e.g., free-throw, serve) are, for example, relaxation, visualization, internal monologue, decision-making processes, or practicing physical performance of a movement (Cohn, 1990). Extremely strict timing and rigid succession of actions may be considered the criteria distinguishing superstitions from routines (Schippers & Van Lange, 2006). Furthermore, routines are learned behavioral and cognitive strategies purposefully used by athletes to improve performance (Cohn, 1990). By contrast, no logical explanation offers itself for the way superstitious behavior could improve athletes' performance (Burke et al., 2006). A further important difference is that while routine exercises are taught by professionals (e.g., sport psychologists, coaches) to athletes, superstitious behaviors are developed spontaneously and apparently randomly by athletes themselves (Bleak & Frederick, 1998).

Uninvolved observers may conclude that athletes' superstitious habits are purposeless and useless actions, whereas empirical findings suggest these rituals have a beneficial effect on athletes (Mouyard, 2012). Some sport psychologists hold that athletes develop superstitious habits in order to gain psychological advantage against their opponents. Other experts point out the importance of anxiety and reduced self-confidence emerging when athletes have no choice to accurately perform their superstitious rituals (Durham, 2010). Superstitious rituals performed in a rigid sequence help highly anxious athletes with reducing tension and

discomfort during competition, with overcoming fears, and with strengthening confidence in their abilities. Rituals provide a sense of security for competitors, albeit only momentarily. As a result, athletes' sense of control and concentration improves, and they can treat unexpected events much more easily (Zivanovic, et al., 2012). It has to be pointed out, however, that uncertainty and luck are essential factors influencing the outcome of sports competitions, which frequently lead to unexpected results, sudden turns in the score of the game, or a drastic decrease or increase in athletes' performance (Torma, Bérdi, Köteles, & Bárdos, 2013). Empirical findings show that superstitions provide a possible means of coping with uncertainty inherent in sports (Neil, 1980) by regaining control over the events (Womack, 1992).

Several studies addressed athletes' superstitious habits including their popularity and perceived effectiveness. Burger and Lynn (2005) found that 74.3% of the 77 professional baseball players reported at least one superstition practiced before or during the game. However, they did not attribute great importance to the influence of rituals. Schippers and Van Lange (2006) reported an even larger proportion of superstitious athletes: 80.3 % of the 197 competitive athletes regularly practiced at least one ritual during competitions. Bleak and Frederick (1998) point out that popularity of a specific ritual is not necessarily determined by its perceived effectiveness. Other findings suggest that superstitious behavior is related to several factors such as the level of competitive athletic activity (Neil, Anderson, & Shephard, 1981; Todd & Brown, 2003), the importance of success (Womack, 1992), athletes' subjective sense of achievement (Toback & Shrader, 1991; Rudski, 2001) and the type of the pursued sport (Bleak & Frederick, 1998; Schippers & Van Lange, 2006).

Most studies of the characteristics of superstitious behavior focused on one specific sport (e.g., basketball: Buhrmann & Zaugg, 1983; football: Ofori, Biddle, & Lavallee, 2012), while there also are comparative findings on superstitions in various sports. Bleak and Frederick (1998) compared superstitious habits of Division 1 competitors in football, gymnastics and athletics, of which groups gymnasts reported the largest number of superstitions. Although rituals practiced in the three sports showed certain similarities, the authors revealed superstitions specific to the given sport in all three cases. Irrespective of the pursued sport, habits related to clothing proved the most popular superstitions, while the second most popular type of superstition was praying rituals in football, eating superstitions in gymnastics, and lucky charms in athletics. However, no such differences were found between various sports in a study reported by Schippers and Van Lange (2006), which involved about 200 Dutch football, volleyball and ice hockey players.

Current study. The present study was primarily aimed at revealing Hungarian athletes' superstitious behaviors, which field has so far received very little scientific attention as pointed out by Torma et al. (2013). Furthermore, the study also

explored possible relationships between athletes' superstitious habits and factors such as the level of athletic activity (distinguishing between recreational, competitive, and elite athletes), the importance of success, and athletes' subjective sense of achievement. Finally, a comparative analysis explored the similarities and differences between superstitious habits practiced in five sports (racket sports, football, handball, volleyball and fencing).

In accordance with the above aims, the following hypotheses were tested in the study: (1) Competitive and elite athletes show more frequently superstitious behaviors than recreational athletes do; (2) Athletes assigning greater importance to success in their sport have more superstitious habits; (3) The less successful athletes judge themselves in their respective sports, the more superstitions they practice.

METHODS

Participants

The online questionnaire used in the study was administered to 383 athletes including 175 males (45.7%) and 208 females (54.3%). The mean age of the sample was 25.1 years ($SD = 8.98$), age ranged from 12 to 64 years. The mean amount of active time in the pursued sport was 11.33 years ($SD = 7.69$), and participants practiced 9 hours per week on the average ($SD = 5.731$). 178 participants pursued individual sports (athletics, badminton, biathlon, clay pigeon shooting, combat sports, cycling, dancing, fencing, gymnastics, horse riding, pentathlon, powerlifting/weightlifting, rowing, running, squash, swimming, table tennis, tennis, triathlon), while 205 participants were involved in team sports (floorball, handball, basketball, football, volleyball, water polo). The group of recreational athletes comprised 138 participants (36% of the overall sample), of whom 41 (10.7%) engaged in athletic activity exclusively for recreational purposes, while 97 (25.3%) occasionally participated in competitions. The sample included 182 competitive athletes (47.5%) and 63 elite athletes (16.4%).

Measures

Participants completed the 9-item Belief in Sports Superstitions Scale (BSSS; McClearn, 2004; adapted to Hungarian by Torma et al., 2013). (*"I believe that wearing a lucky piece of clothing can improve the performance of an athlete."*; *"Improves sports performance if the athlete touches or holds a lucky object before the race or match."*; *"It is important for an athlete to have pre-race rituals."*). Participants used a 4-point rating scale (ranging from 1 = "absolutely disagree" to 4 = "absolutely agree") to indicate the extent to which they agreed with each item of the Likert-type scale. A measure of belief in sports superstitions is provided by the total score of the scale. No reverse-scored items are included in the questionnaire.

Furthermore, participants responded to questions requesting demographic data and questions concerning superstitions. (*What superstitious habits do you / members of your team practice before/during/after games? How frequently does superstitious behavior influence the outcome of a game/competition? What benefits do the practiced superstitions provide?*). Prior to the questions, participants were presented with a general definition of superstition, which informed them that athletes primarily practiced superstitions to have luck. Some examples concerning famous athletes were listed in order to help athletes identify the type of habits in question.

Procedure

Data were collected between October 2015 and January 2016 via an online interface, on which participants completed the questionnaire. The questionnaire was published at social networking websites of several sports clubs, in online groups of athletes and via university mailing lists. Participants were informed before data collection about the aim of the study and about voluntary and anonymous participation.

RESULTS

The obtained data were processed by means of the SPSS v.22.0 software. In accordance with the homogeneity of variances of the studied groups' responses, between-subjects differences were analyzed by independent samples *t*-tests and one-way ANOVA tests. Statistical significance of the results was based on the $p < .05$ probability level conventionally used in social sciences.

More than half of the 383 participants, 211 athletes (55.1%) reported at least one regularly practiced superstition, while 172 participants (44.9%) did not specify such a habit. Superstitious participants reported a total of 443 superstitions, which amounted to 2.1 superstitions per person on average ($SD = 1.285$). Individual athletes most frequently mentioned one superstition (88 participants, 41.7%), and the highest individual number of superstitions was 8 (1 participant).

Among superstitious athletes, the mean perceived effect of superstitions on performance or on the outcome of competitions was 3.21 ($SD = 1.116$) on a 5-point scale, while their mean score on the BSSS was 22.14 ($SD = 5.570$). The reported superstitions were sorted into types according to the questionnaire developed by Bleak and Frederick (1998), and two further types were added to the list ("Post-match superstitions" and "Signs"). The pre-match/pre-competition type showed the highest frequency (144), while the lowest frequency (3) was shown by coach-related superstitions (see Table 1).

Table 1.
Types, frequencies, subjects and examples of the athletes' superstitions (open-ended questions)

Type	Frequency	Subject	Examples
Pre-match/pre-competition superstitions	144	Specific food Listening to music Warm-up rituals Movements Placing and touching objects	'Energy drink and chocolate bar before the match.' 'Right before the match starts, the last throw at the end of the warm-up must score.' 'After giving high fives, I run a few steps and jump up in the air.' 'Before every match, I tap the goalposts because they are with me.'
Lucky charms / clothes	96	Lucky charms Shirt number Lucky clothes	'A lucky animal figurine in the fencing bag.' 'I am only willing to play in a shirt with an even number / with number 17 / 13.' 'Lucky underwear / worn-through socks / wristband / necklace.'
Clothing and appearance	67	Specific clothing items and accessories Getting dressed in strict sequence Nail painting Makeup Hairdo Shaving rituals	'I wear black clothes at competitions.' 'I only wear coloured earrings and hairclips at competitions.' 'I always put on my left sock and left shoe first.' 'I always paint my nails in tricolor.' 'I do not shave myself during the week of the competition.'
Team rituals	54	Team cheers and mutual encouragement High five and hug Entering the field in specific order	'Before the match, all team members embrace each other's shoulders in the middle of our half of the field, and while the captain is speaking encouraging words, everyone spits in the middle of the circle.' 'Before the match, we yell the team's name and give each other a high five and a hug.'
On-match/on-competition superstitions	50	Touching equipments (e.g. table tennis table, goalpost) Placing objects Rituals before serve or throw	'I pass my hand over the edge of the table tennis table.' 'I always put down my towel to the right of the table.' 'Before a foul throw, I always bounce the ball twice slightly to the right, then I roll it twice in my hand, bounce once again, and roll once again—I only throw the ball then.'

Type	Frequency	Subject	Examples
Prayer	9	Prayer at a specific time or situation	'Prayer before the final.' 'Prayer to Lucifer.'
Signs	13	Perceiving specific events as good or bad signs	'It is a bad sign if anything unusual happens or anything is missed out of the normal routine.' 'If there is straw in the horse's tail or mane, the rider will fall off.'
Post-match/post-competition superstitions	4	Listening to music Leaving the field Announcement of results	'I always come last when receiving congratulations at the end of the match.' 'One must not sit down when the results are announced.'
Coach	3	Coach-related superstitions	'My goalkeeper coach is the last one I give a high five.' 'I talk to my coach before entering the course, and then he sees me to the dock.'

The first hypothesis was tested using an independent samples *t*-test. A significant difference in the mean frequency of superstitions was found between recreational and competitive athletes ($t(331) = -4.011, p < .01$). The mean frequency of superstitions was 0.8 ($SD = 1.215$) among recreational athletes and 1.36 ($SD = 1.48$) among competitive athletes. Since recreational and competitive athletes showed a significant difference in the frequency of superstitions, comparisons between various sports only included competitive and elite athletes. Sports that were included in the ANOVA analysis with the Bonferroni correction constituted sports that were pursued by at least 15 participants when excluding recreational athletes. The following five sports met this criterion: fencing ($n = 19$), handball ($n = 22$), volleyball ($n = 29$), racket sports (badminton, squash, table tennis, tennis; $n = 32$), football ($n = 82$; see Figure 1). Participants pursuing different sports showed significant and marginally significant differences in the frequency of superstitions ($F(4,179) = 2.75, p = .03$): both volleyball players ($p = .036$) handball players ($p = .059$) reported more superstitions than those pursuing racket sports (see Figure 2).

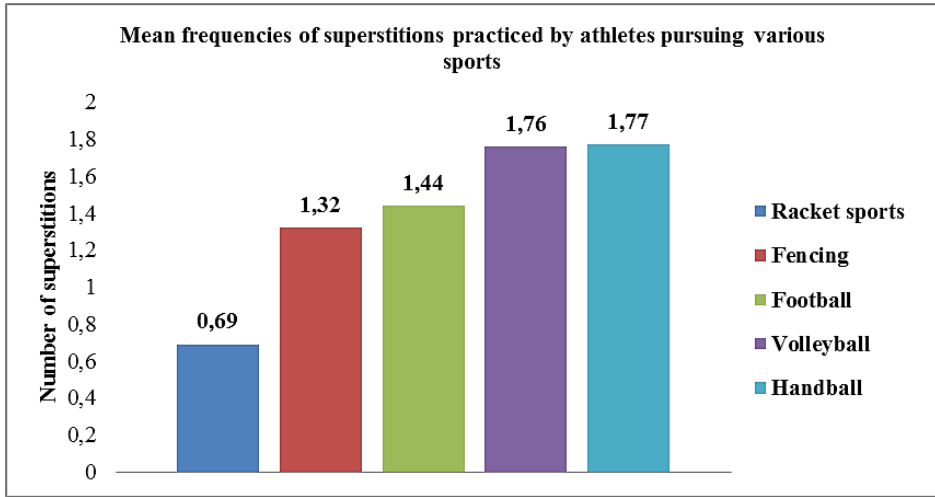


Figure 1. Mean frequencies of superstitions practiced by athletes pursuing various sports

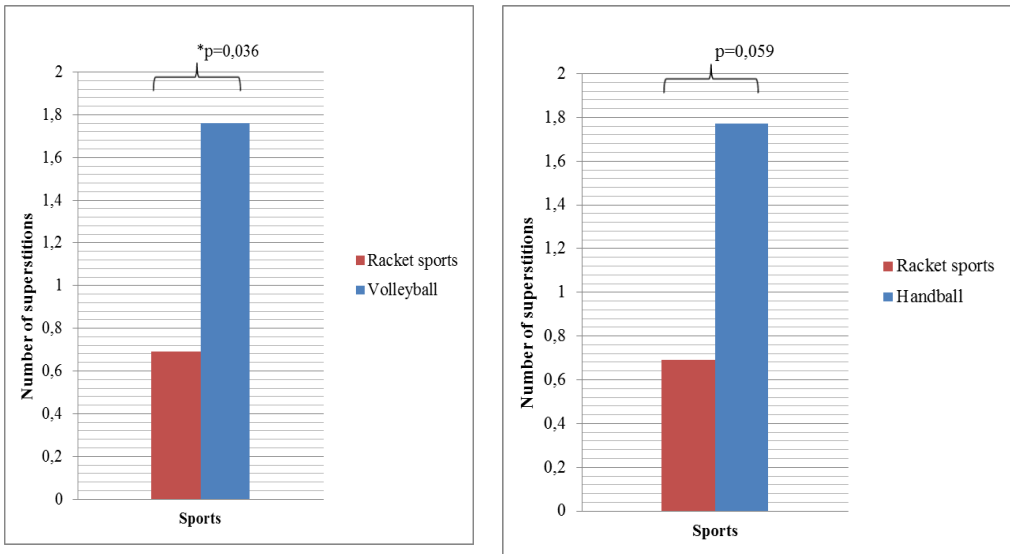


Figure 2. Mean frequencies of superstitions among players pursuing racket sports as compared to those playing volleyball (left), and handball, respectively (right).

A one-way analysis of variance (ANOVA) test was conducted in order to establish whether the number of superstitions practiced by individual athletes (zero, one, two or more) and the importance of success were related. The *t*-test with the Bonferroni correction showed that athletes practicing two or more superstitions assigned significantly greater importance to success ($M = 4.40$; $SD = 0.662$) than their non-superstitious counterparts ($M = 4.02$; $SD = 0.973$; $p = .001$). A large

positive correlation was found between the number of superstitions and their perceived effectiveness: $r(381) = .528, p < .001$. By contrast, the BSSS score did not correlate either with the number of superstitions or with the perceived effectiveness of the rituals. The results revealed a significant difference between competitive and recreational athletes in the importance of success ($F(2,380) = 6.842, MSE = 5.109, p = .001$; see Figure 3). The importance of success showed a weak positive correlation with the number of superstitions ($r(381) = .149, p = .003$) and with their perceived effectiveness ($r(381) = .146, p = .004$). According to the results of the one-way ANOVA test, no difference was found between the different sports either in the BSSS score or in the perceived effectiveness of the rituals.

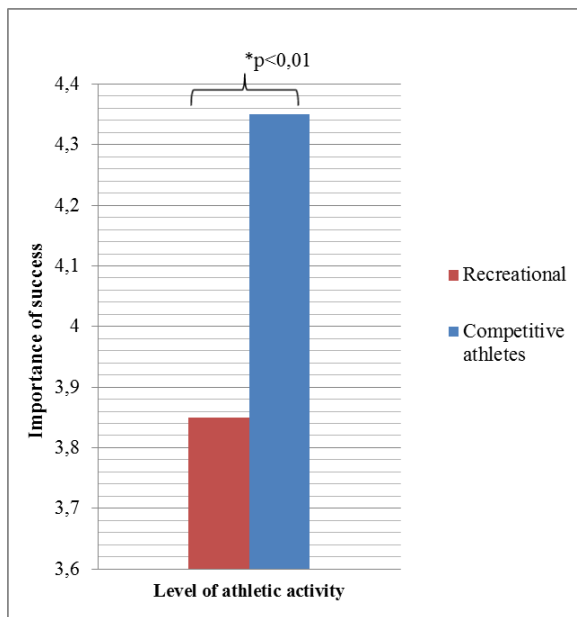


Figure 3. Mean importance of success among recreational and competitive athletes.

Hypothesis 3 was tested by correlating the independent variables with each other. The athletes' subjective sense of achievement only correlated with the number of superstitions ($r(381) = .133, p = .009$), while the BSSS score did not show a significant correlation either with the importance of success or with the subjective sense of achievement.

DISCUSSIONS

The present study was primarily aimed at revealing Hungarian recreational and professional athletes' superstitious behaviors including the frequency, perceived

effectiveness and type of rituals, and factors influencing the characteristics of superstitious behavior.

The results showed that 55.1% of the athletes adhered to at least one sports superstition, and that they preferred pre-match/pre-competition rituals to the other eight types of superstitions. In addition, the study revealed factors related to an increased frequency of superstitions such as competitive athletic activity, higher importance of success and a higher subjective sense of achievement. Furthermore, the type of the pursued sport also essentially influenced the number of sports superstitions. Regarding the types of rituals to which the 443 superstitions were sorted, the highest frequency was shown by pre-match/pre-competition superstitions, which were followed by lucky charms and lucky pieces of clothes, and by superstitions related to clothing and appearance.

Of the 383 recreational and competitive athletes, 55.1% reported at least one characteristic superstition, which proportion was somewhat higher when only including competitive athletes (64%). However, even this latter proportion remains below that reported by Burger and Lynn (2005), who found that 74.3% of the professional baseball players involved in their study practiced at least one superstition. An even higher proportion of 80.3% was found by Schippers and Van Lange (2006), in whose study athletes reported 2.6 rituals on average. This latter indicator was somewhat lower in the sample of the present study: participants mentioned 2.1 superstitions on average, which may indicate a marked cultural difference. However, the obtained lower frequency may also be due to the diversity of the sports represented in the sample as opposed to the above-mentioned studies: Burger and Lynn (2005) only examined baseball players, while Schippers and Van Lange (2006) included football, volleyball and ice hockey players in the sample. Another possible reason for the difference is that Hungarian athletes may be less willing to disclose their superstitious habits, since the Hungarian equivalent of the word superstition (*babona*) presumably still has a negative connotation. By contrast, athletes' superstitious behavior is widely accepted in other cultures (Womack, 1992).

The results confirmed Hypothesis 1 predicting that competitive athletes would practice more superstitions than recreational athletes. This finding is consistent with that reported by Neil and colleagues (1981), who demonstrated the positive relationship between the level of competition and the frequency of superstitions in a sample of ice hockey players. The higher frequency of superstitions among competitive and elite athletes is presumably due to the higher expectations towards these athletes posed by coaches, sponsors or the media. Their performance at a competition may essentially influence the course of their athletic career or finances, as a result of which they experience more intense pressure and possibly assign greater importance to uncertainty and luck. In turn, practicing superstitions may help athletes reach a relaxed state (Zivanovic et al., 2012), cope with uncertainty (Neil, 1980), and regain their sense of control (Womack, 1992). The present study revealed differences between various sports in the frequency of

sports superstitions, in consistence with the findings reported by Bleak and Frederick (1998). Participants pursuing racket sports proved the least superstitious group, who were followed by fencers, football and volleyball players showing a higher frequency of sports superstitions, and handball players reported the largest number of superstitions. These findings point out that individual athletes mentioned fewer superstitions than those pursuing team sports, which is in line with the related finding reported by Flanagan (2013). The author's explanation for the higher frequency of superstitions among team athletes is that they experience a more marked lack of control due to their success largely depending on other team members' performance. An alternative explanation for the difference in frequencies obtained in this study is that handball, volleyball and football players practice a large number of team rituals, which do not characterize racket sports and fencing.

Hypothesis 2 predicted that athletes assigning greater importance to success in their sport would have more superstitious habits. In line with findings reported by Womack (1992), the two variables positively correlated in the sample of the present study: those mentioned more superstitions who attached more importance to reaching outstanding performance at competitions. By striving for maximum performance and for victory at any price, athletes expose themselves to extra pressure with which they presumably try to cope by superstitious behavior.

However, this hypothesis was not confirmed by the obtained findings, since the frequency of superstitions and the subjective sense of achievement showed a positive correlation as opposed to the expected negative relationship: those athletes mentioned more superstitions who judged themselves to be more successful. This finding contradicts those published by Tobacyk and Shrader (1991) and by Rudski (2001), who found that participants' level of superstitiousness was negatively related to their self-efficacy and sense of achievement. The positive relationship observed in this study between the frequency of superstitions and the subjective sense of achievement was presumably due to subjectively more successful athletes' assigning greater importance to success in their pursued sports as compared to those who reported a lower sense of achievement. As discussed above, increased importance of success has been found to increase the frequency of superstitious behavior.

In any case, the present study has certain limitations that have to be taken into account when interpreting the obtained findings. One of these limitations is that the 383 athletes involved in the study pursued a variety of diverse sports, whose differences might distort the results. The sample was also heterogeneous in terms of age and the number of active years in sports, which might likewise distort the obtained findings. These limitations may be eliminated in future studies by examining a sample that is much more homogeneous in the mentioned three dimensions.

A shortcoming of the study is that no valid quantitative measure of sports superstitions was used, due to the unavailability of such measures. Athletes' self-report lists of their superstitions may in many cases be inaccurate or deficient for

several reasons. On one hand, participants might have difficulty making a distinction between superstitions and routine exercises despite the general definition and the examples of famous athletes' superstitions (e.g. Michael Schumacher, Rafael Nadal, Michael Jordan) provided for them as cues for the identification of their own superstitions. On the other hand, it is possible that participants chose not to report all of their sports superstitions due to a general dismissive attitude towards, and negative connotation of, superstitious behavior.

The authors of the present study also assign great importance to the validation and further development of the questionnaire used in the study. Certain types of superstitions such as team rituals and prayers raise the question whether they actually meet the criteria of a superstition, that is, whether athletes actually attribute magical power to these behaviors. In addition, the questionnaire should be extended with further types of rituals (e.g., "Signs", "Post-match superstitions) and with a section in which participants could complete the list of their superstitions in a free response format by adding those not included in the items of the questionnaire. Furthermore, a validated questionnaire would enable researchers to make reliable observations on factors (e.g. optimism, pessimism, proneness to anger) that possibly influence Hungarian athletes' superstitious behavior and their perceptions of the effectiveness of such rituals.

In the authors' view, research on sports superstitions is of particular interest not only to athletes but also to coaches and sport psychologists, since a better understanding of superstitious behavior may enable these latter to support athletes in purposefully using their rituals to reach optimal performance. To this end, seminars for coaches could include lectures on the characteristics of sports superstitions (their development, functions and possible benefits), which would promote sensitization to, and greater acceptance of, superstitions.

Shaping uninvolved observers' attitudes towards superstitions is important not least because rituals are an integral part of athletes' life, and they may largely contribute to their coping with uncertainty and regaining control over competition. Athletes essentially need these skills, since they are expected to show ever improving performance, or at least to achieve success, at competitions.

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