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Differences in the Perceived Attractiveness of Non-contact and Combative Athletes' Facial Pictures

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Authors' contribution:
A) conception and design of the study
B) acquisition of data
C) analysis and interpretation of data
D) manuscript preparation
E) obtaining funding

ABSTRACT

Female mating strategies and partner preferences are influenced by many factors. Depending on the life context, the preference for either a long-term or a short-term relationship, the willingness to have off-spring, or the current fertility conditions can be key factors. Differences can largely be traced to the perception of physical masculinity and the ability to provide and raise offspring. This study seeks to obtain data that will help to describe changes in the female perception of the attractiveness of facial photographs of male elite golfers (non-contact sport) and MMA fighters (combative sport) in connection with the following factors: age, sexual activity/passivity, use of hormonal contraceptives, duration of actual relation-ship, and number of children. Data for this study were collected using an anonymous questionnaire that included photos of the athletes in a random order and a 1-10 rating scale (10 indicating the most attractive). The research sample consisted of 1,035 female participants. The statistical significance was analyzed using the Kruskal-Wallis and Mann-Whitney U tests, Eta2, and Cohen's d for the average ratings of the contact and non-contact athletes. The female participants slightly preferred the golfers' pictures. This preference grew significantly with age and number of children. A possible explanation for these results may be the participants' decreasing fertility or the willingness to have another child in the Czech socio-culture. In such cases, the strong masculine features typical of combative athletes could be less important. In contrast to some earlier findings, contraceptive use did not affect the perception of male attractiveness compared to the entire sample's average ratings, furthermore, neither did sexual activity/passivity.

KEYWORDS sexual habits, risky sexual behavior, prevention, sexually transmitted illnesses

Introduction

The sexual preferences of women and their mating strategies may change over time and depend on real life contexts. The main determinants in sexual strategies and the perception of attractiveness include fertility and preferences for either a long-term or a short-term relationship. In contrast to men, women can spread their genetic information through offspring only one time within the period of a year even if a woman is sexually active with many men. The minimum female investment in birth is a long epoch of pregnancy (nine months) and a great amount of energy. Conversely, men can spread their genetic information with much less effort (through only the act of coitus) (Buss, 1998). Generally, males also invest less in raising their offspring than females (Eibl-Eibesfeldt, 1989; Puts, 2010). Therefore, the reproductive success of women depends on the choice of a capable partner to a large extent. Signs of an appropriate partner are highly connected to the ability to secure resources for raising a child. According to Weiss (2010), preferred indicators of the ability to provide resources are durable and difficult to obtain. As such, they should be well-recognizable (in Czech culture, these signs are social status, clothing, jewelry and other valuables, education, profession, ambition, intelligence, etc.). Also important is the willingness to stay in a long-term relationship and share resources with a family, parenting skills, and the capacity to protect a woman and her offspring (Buss, 1998; Weiss, 2010). Preferences for a male who is capable of obtaining and sharing resources seem to occur cross-culturally (Buss, 1989; Cashdan, 1996). Although, there are some differences between cultures in the trade-off between parental and genetic investment (Kruger, 2006).

In the case of a short-term mating strategy, the qualities that benefit a woman at the time of mating play a greater role. Good looks can be more important, and physical indicators of higher levels of testosterone and good immunity (e.g., body symmetry, musculature, beards, body height, triangular body shape) are especially preferred (Weiss, 2010). Regarding behavioral characteristics, bravery, courage, strength, glory, and social visibility are preferred. Also, sexual urgency, assertiveness, or mild aggression may be important (Weiss, 2010). Such men are not only preferred for short-term relationships but also as additional partners to current ones (Puts, 2010). Additionally, strong masculine features and sexual dimorphism increase the number of short-term relationships in men as well (Rhodes, Simmons, & Peters, 2005). Some of these characteristics are very typical for contact sports, especially combative ones. This can be illustrated by a study (Vajda & Reguli, 2018) that investigated the sexual behavior of combat athletes in the Czech sociocultural context. Data showed that a growing number of one-night sexual partners was dependent on the level of competition. Also, the number of partners greatly exceeded the average of the Czech population. However, knowledge concerning short-term relationship preferences is less clear than long-term relationship preferences; research has produced mixed results (Puts, 2010). These uncertainties could be due to a large number of factors influencing partner strategies.

However, according to Weiss (2010), female preferences for masculine traits are ambiguous. Some studies display results showing that feminine facial features are more preferred due to their connection with better parental skills. From a biological view, facial features may be one of the many factors playing a role in partner selection. Preferences for highly masculine faces in the case of short-term relationships and less masculine faces in the case of long-term relationships may improve reproductive success (Kruger, 2006). Furthermore, in additional extra-pair copulation, masculine signs may be preferred (Penton-Voak & Perrett, 2001). On the other hand, good genetic traits could be associated with lower parental skills, as higher testosterone levels may be connected with a higher divorce ratio (Booth & Dabbs, 1993). According to the Baker (1993), 9-13% of children have different genetic fathers from from the fathers that rear them. Kruger (2006) used this information to support the hypothesis concerning extra-pair copulation. Additionally, female preferences for masculine facial features during ovulation (see Gildersleeve, Haselton, & Fales, 2014) point to a connection between seeking quality genes and high fertility. Moreover, the influence of fertility can be seen in data pointing to the preference for feminized male facial features after giving birth and caring for a young baby (Escasa-Dorne, Manlove, & Gray, 2017). Besides that, sociosexual attitudes and female personality play an important role in male facial traits preferences (Brown & Sacco, 2017; Brown, Sacco, & Medlin, 2019; Waynforth, Delwadia, & Camm, 2005). This relates to the intent to enter either a long- or short-term relationship as well.

Women are capable of reading a great amount of information about men purely from their facial features. For example, they are able to estimate a likely winner in an MMA match. Women perceive the winner as stronger and more masculine than the loser (Little, Třebický, Havlíček, Roberts, & Kleisner, 2015). They are also able to predict more successful cyclists in the Tour de France competition. In this case, however, their ability was negatively affected by the use of hormonal contraception (Postma, 2014). The perception of the ratio of the height to the width of the face is also strong. This ratio could be a predictor of success outside of sports as well.

It was shown, for example, in celebrities (Huh, Yi, & Zhu, 2014) and the presidents of the USA (Lewis, Lefevre, & Bates, 2012). The connections with the perception of dominance (Mileva, Cowan, Cobey, Knowles, & Little, 2014) or aggression (Carre & McCormick, 2008; Carré, McCormick, & Mondloch, 2009; Lefevre, Lewis, Perrett, & Penke, 2013) are relatively well-described. Furthermore, the facial width-to-height ratio is linked to testosterone. Kramer (2015) investigated a large number of athletes from the Glasgow 2014 Commonwealth Games, and his results showed that athletes in masculine or contact sports have a greater width-to-height ratio than their counterparts. This indicates the presence of more significant sexual dimorphism in combative sports. Seemingly, facial scars that could indicate risky and "heroic" behavior may be more attractive for short-term relations (Kelly & Dunbar, 2001). Scarring is also more typical for fighters than non-contact athletes. These clues lead to the assumption that there is a difference in the perception of attractiveness between combative and non-contact sport athletes by women in different life contexts.

Methods

The participant sample consisted of 1,035 women (25.7 ± 7.43 years of age) who were members of the two biggest Facebook groups for the terms "women's second-hand sale" and "mothers" in the spring of 2017. The administrators of these platforms were asked to post the research questionnaire on their sites. In addition, possible male respondents were identified by a control question asking the participants about their sex. The online questionnaire was fully anonymous. It contained 15 photos of the world's top golfers (in April 2017) and 15 photos of Ultimate Fighting Championship fighters (the top ranked in the category of 84 kg). The weight of the fighters was chosen in conformity with the average weight of the chosen golfers. Top world athletes in their discipline were selected on purpose due to the supposition that women could perceive the athletes' success (Little et al., 2015; Postma, 2014). However, the specific sports were selected based on their low popularity in the Czech Republic. Trnková (2016) investigated the categories of the sports media viewed by 814 Czech respondents. Golf was ranked 27th, and MMA was not even ranked in the top 30 viewed sports. This reduced the possibility of facial recognition of a favorite athlete in the pictures. Photos containing only the faces of the athletes were displayed in a random order. The participants from the research sample evaluated the attractiveness of the male athletes in each photograph on a scale of 1-10 (with 10 being the highest rating). The questionnaire was supplemented with questions about the determinants studied: participant age, subjective sexual activity/passivity, hormonal contraceptive use, duration of actual relationship, and number of children. The research design was previously used in the pilot study (Vajda, 2017).

Results

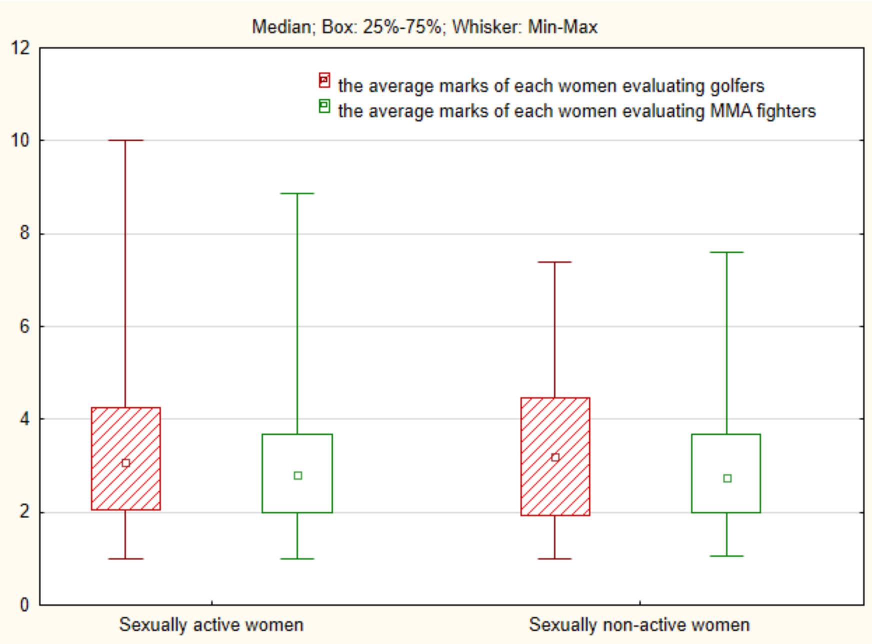
The data were tested using the Kologmo-Smirmov, Lilliefors, and Shapiro-Wilk tests, and it was found that the data did not come from a normal distribution. The ratings of male attractiveness were evaluated separately for the golfers' and the MMA fighters' photos and, consequently, compared with the value of the whole sample. The mean values of both groups as well as the whole sample can be seen in Table 1.

Table 1. Descriptive statistics

Category	Valid N	Mean rating	SD	Median	Mode	Min	Max
All sample	1035	3.07	1.36	2.89	1	1	10
Golf	1035	3.23	1.52	3.06	1	1	10
MMA	1035	2.91	1.17	2.80	1	1	10

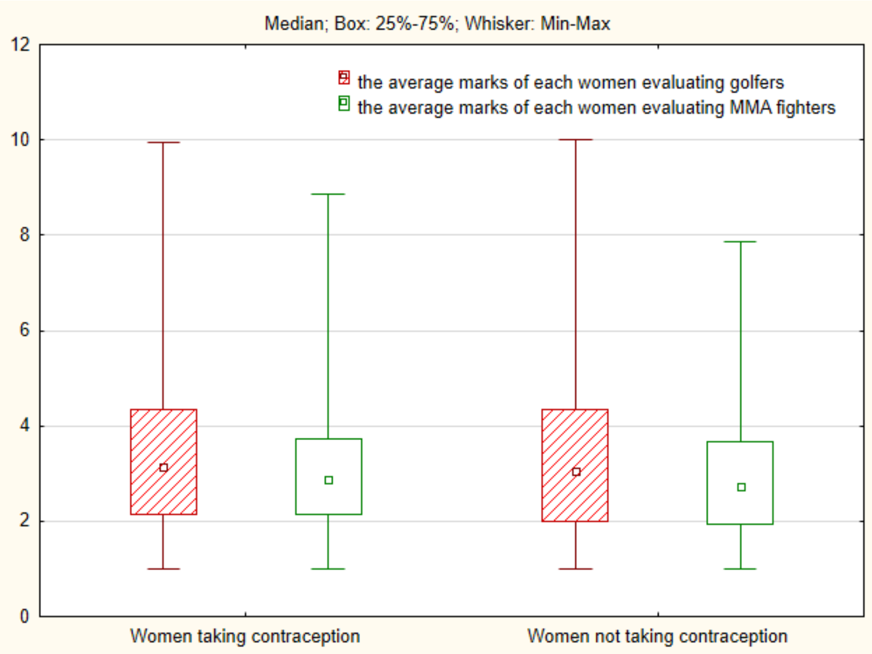
Source: own study.

Table 1 shows that all photos were rated relatively low by the female participants in the sample. The golfers received slightly higher marks than the MMA fighters. In addition to the whole sample, we compared the differences between the golfers' and MMA fighters' ratings given by women in different subgroups (e.g., age-based, sexually active or non-active, different numbers of children). The average values of each subgroup and the differences between the ratings for the athletes from both sports can be seen in Figures 1-5.



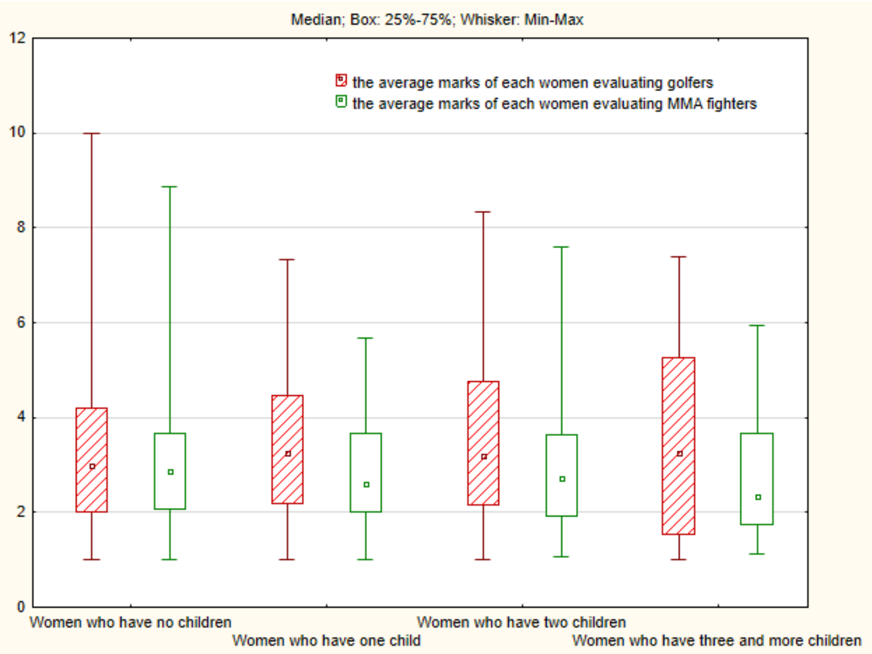
Note: average values of sexually active women (golf: median= 3.07, 25-75%= 2.07-4.27, min= 1, max= 10; MMA: median= 2.8, 25-75%= 2-3.7, min= 1, max= 8.86), average values of sexually non-active women (golf: median= 3.2, 25-75%= 1.9-4.47, min= 1, max= 7.4; MMA: median= 2.7, 25-75%= 2-3.07, min= 1.07, max= 7.6)

Figure 1. Descriptive statistics and box-plots of ratings sorted according to sexual activity
Source: own study.



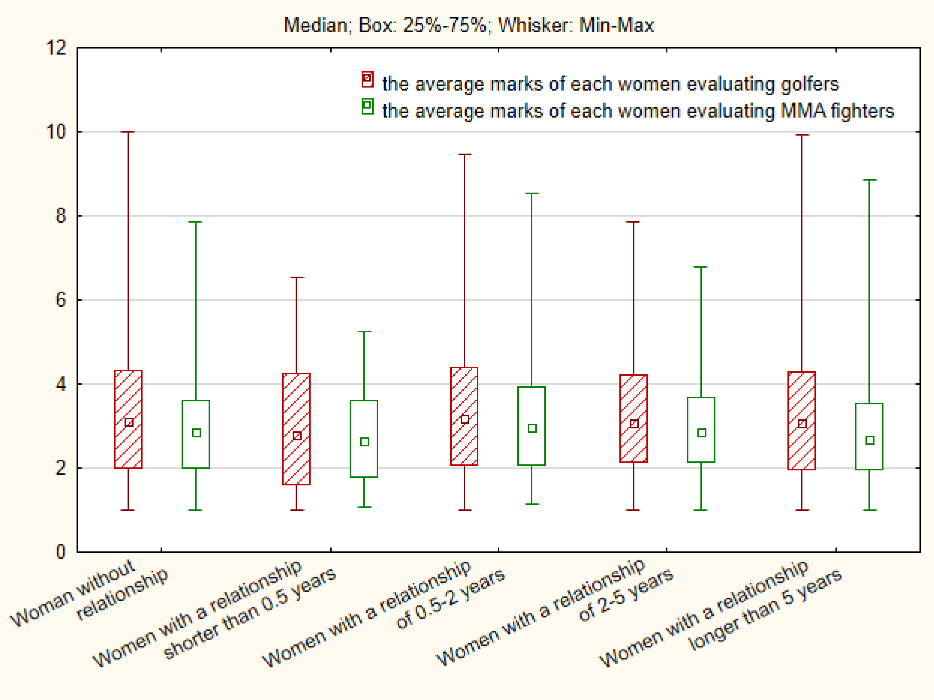
Note: average values of women not taking contraception (golf: median= 3.13, 25-75%= 2.13-4.33, min= 1, max= 9.33;MMA: median= 2.87, 25-75%= 2.13-3.73, min= 1, max= 8.87), average values of women taking contraception (golf: median= 3.07, 25-75%= 2-4.33, min= 1, max= 10; MMA: median= 2.73, 25-75%= 1.93-3.67, min= 1, max= 7.87).

Figure 2. Descriptive statistics and box-plots of ratings sorted according to the use of contraception
Source: own study.



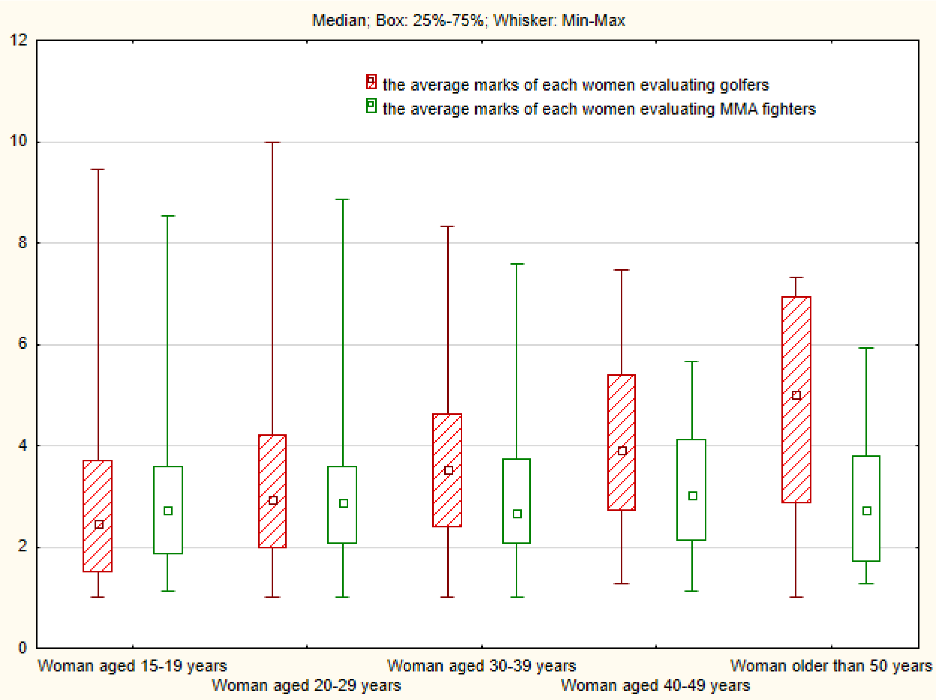
Note: average values of women with one child (golf: median= 3, 25-75%= 2-4.2, min= 1, max= 10; MMA: median= 2.87, 25-75%= 2.07-3.76, min= 1, max= 8.87), average values of women with two children (golf: median= 3.27, 25-75%= 2.2-4.47, min= 1, max= 7.33; MMA: median= 2.6, 37-75%= 2-3.67, min= 1, max= 5.67), average values of women with three and more children (golf: median= 3.2, 25-75%= 2.16-4.77, min= 1, max= 8.33; MMA: median= 2.73, 25-75%= 1.93-3.63, min= 1.07, max= 7.6), average values of women without child (golf: median= 3.27, 25-75%= 1.53-5.27, min= 1, max= 7.4; MMA: median= 2.03, 25-75%= 1.73-3.67, min= 1.13, max= 5.93).

Figure 3. Descriptive statistics and box-plots of ratings sorted by number of children
Source: own study.



Note: average values of women who have a relationship shorter than 0.5 years (golf: median= 3.1, 25-75%= 2-4,3, min= 1, max= 10; MMA: median= 2.87, 25-75%= 2-3.6, min= 1, max= 7.87), average values of women who have a relationship of 0.5-2 years (golf: median= 2.8, 25-75%= 1.6-4.27, min= 1, max= 6.53; MMA: median= 2.63, 25-75%= 1.8-3.6, min= 1.07, max= 5.27), average values of women who have a relationship of 2-5 years (golf: median= 3.17, 25-75%= 2.07-4.4, min= 1, max= 9.47; MMA: median= 2.97, 25-75%= 2.07-3.93, min= 1.13, max= 8.53), average values of women who have a relationship longer than 5 years (golf: median= 3.06, 25-75%= 2.13-4.2, min= 1, max= 7.87; MMA: median= 2.87, 25-75%= 2.14-3.67, min= 1, max= 6.08), average values of women who are not in relationship (golf: median= 3.07, 25-75%= 1.97-4.3, min= 1, max= 9.93; MMA: median= 2.67, 25-75%= 1.97-3.53, min= 1, max= 8.87).

Figure 4. Descriptive statistics and box-plots of ratings sorted according to relationship duration
Source: own study.



Note: average values of women aged 15-19 years (golf: median= 2.47, 25-75%= 1.5-3.7, min= 1, max= 9.47; MMA: median= 2.73, 25-75%= 1.87-3.6, min= 1.13, max= 8.53), average values of women aged 20-29 years (golf: median= 2.93, 25-75%= 2-4.2, min= 1, max= 10; MMA: median= 2.87, 25-75%= 2.06-3.6, min= 1, max= 8.77), average values of women aged 30-39 years (golf: median= 3.53, 25-75%= 2.4-4.63, min= 1, max= 8.33; MMA: median= 2.67, 25-75%= 2.07-3.73, min= 1, max= 7.6), average values of women aged 40-49 years (golf: median= 3.9, 25-75%= 2.73-5.4, min= 1.27, max= 7.47; MMA: median= 3.0,, 25-75%= 3.13-4.13, min= 1.13, max= 5.67) average values of women aged 50 years and more (golf: median= 5, 25-75%= 2.87-6.93, min= 1, max= 7.33; MMA: median= 2.73, 25-75%= 1.73-3.8, min= 1.27, max= 5.93).

Figure 5. Descriptive statistics and box-plots of ratings sorted by age
Source: own study.

Based on the answers from the questionnaire, the female participants were divided into categories. Nonparametric statistical methods were used to analyze the differences between the marks of the different subcategories for both sports. Statistically significant differences were found by the Kruskal-Wallis and Eta2 tests in the ratings when sorted according to the age of the participants. A small effect size based on the Eta2 test was reflected in the ratings classified according to age and number of children in relation to the golfers and in the length of relationship in relation to the MMA fighters, as can be seen in Table 2. The Mann-Whitney U test was conducted for a post-hoc time analysis (evaluated for the category "number of children" as well). The results were considered significant at a 2-tailed value of $p \leq 0.05$ in the following subcategories for the number of children in relation to the golfers: one child vs. no children (Mann-Whitney U test, $p = 0.063$) and two children vs. no children (Mann-Whitney U test, $p = 0.046$). Furthermore, the results were considered significant at a 2-tailed value of $p \leq 0.05$ in the following subcategories for age: 15-19 yrs. vs. 20-29 yrs. (Mann-Whitney U test, $p = 0.001$), 15-19 yrs. vs. 30-39 yrs. (Mann-Whitney U test, $p = 0.000$), 15-19 yrs. vs. 40-49 yrs. (Mann-Whitney U test, $p = 0.000$), 15-19 yrs. vs. 50+ yrs. (Mann-Whitney U test, $p = 0.000$), 20-29 yrs. vs. 30-39 yrs. (Mann-Whitney U test, $p = 0.001$), 20-29 yrs. vs 50+ yrs. (Mann-Whitney U test, $p = 0.005$), and 30-39 yrs. vs. 50+ yrs. (Mann-Whitney U test, $p = 0.038$). All of the above-mentioned differences were in favor of the golfers.

Table 2. Differences between the subcategories for both sports

Category	Sport	Kruskal-Wallis H	Kruskal-Wallis p	η2
Sexual activity	golf	0.26	0.61	0.00
Sexual activity	MMA	0.15	0.70	0.00
Use of contraception	golf	0.47	0.49	0.00
Use of contraception	MMA	1.91	0.17	0.00
Age of women	golf	44.53	0.00^{+}	0.04*
Age of women	MMA	1.12	0.89	0.00
Number of children	golf	6.72	0.08	0.01*
Number of children	MMA	2.30	0.51	0.00
Length of relationship	golf	2.57	0.63	0.00
Length of relationship	MMA	6.95	0.14	0.01*

Note: $^{+}$ statistically significant values based on the Kruskal-Wallis test at a level α= 0.05, * small effect size based on Eta^2 (0.01), ** medium effect size based on Eta^2 (0.06), *** large effect size based on Eta^2 (0.14)

Source: own study.

Moreover, the differences between the ratings of the pictures of the golfers and the MMA fighters given by the various subcategories of the female participants were evaluated using the Mann-Whitney U test and Cohen's d and compared to the differences between the sports in the whole sample (Table 3).

Table 3. Differences between the ratings for golfers and MMA fighters given by the various subcategories of the female participants

Subcategory	Sport	Number	Mean	SD	Mann-Whitney p	Cohen's d
All sample	Both	1035	3.07	1.36	-	-
All sample	Golf	1035	3.23	1.52	0.00^{+}	0.2*
All sample	MMA	1035	2.91	1.17		
Sexually active women	Golf	854	3.21	1.49	0.00^{+}	0.2*
	MMA	854	2.92	1.16		
Non-active women	Golf	181	3.32	1.65	0.04^{+}	0.3*
	MMA	181	2.89	1.19		
Women taking contraception	Golf	313	3.29	1.55	0.05^{+}	0.2*
	MMA	313	2.98	1.17		
Women not taking contraception	Golf	722	3.20	1.50	0.00^{+}	0.2*
	MMA	722	2.88	1.16		
Women who have one child	Golf	141	3.41	1.54	0.00^{+}	0.4*
	MMA	141	2.85	1.15		
Women who have two children	Golf	104	3.51	1.66	0.01^{+}	0.4*
	MMA	104	2.92	1.31		
Women who have three and more children	Golf	31	3.58	2.10	0.22	0.4*
	MMA	31	2.80	1.40		
Women who have no children	Golf	759	3.14	1.46	0.03^{+}	0.2*
	MMA	759	2.93	1.14		
Woman without relationship	Golf	284	3.25	1.55	0.02^{+}	0.3*
	MMA	284	2.89	1.15		
Women with a relationship shorter than 0.5 years	Golf	74	2.97	1.48	0.57	0.2*
	MMA	74	2.73	1.11		
Women with a relationship of 0.5-2 years	Golf	150	3.32	1.59	0.36	0.2*
	MMA	150	3.08	1.27		
	Golf	243	3.19	1.38	0.11	0.2*

Women with a relationship of 2-5 years	MMA	243	2.96	1.08		
Women with a relationship longer than 5 years, golf	Golf	284	3.25	1.56	0.01 +	0.3*
	MMA	284	2.85	1.20		
Woman aged 15-19 years	Golf	168	2.80	1.47	0.25	0.0
	MMA	168	2.83	1.13		
Woman aged 20-29 years	Golf	635	3.16	1.45	0.02 +	0.2*
	MMA	635	2.91	1.12		
Woman aged 30-39 years	Golf	172	3.57	1.51	0.00 +	0.4*
	MMA	172	2.96	1.29		
Woman aged 40-49 years	Golf	46	4.02	1.69	0.01 +	0.6**
	MMA	46	3.08	1.31		
Woman older than 50 years	Golf	14	4.65	2.07	0.02 +	1.0***
	MMA	14	2.92	1.43		

Note: + statistically significant values based on the Mann Whitney test at a level α= 0.05, * small effect size based on Cohen’s d (0.20), ** medium effect size based on Cohen’s d (0.50), *** large effect size based on Cohen’s d (0.08)

Source: own study.

Discussion

Although the top athletes’ pictures were used, participants in the research sample rated them with low marks. This could be due to the minor importance of physical signs in the mating strategies of women (Buss & Schmitt, 1993). This does not apply for men (Gladue & Delaney, 1990). This result can be explained by an evolutionary view of female mating strategies. For a woman, choosing a suitable partner is more important because of the greater female parental investment (Eibl-Eibesfeldt, 1989; Puts, 2010). What more, Smoliga & Zavorsky (2015) discussed several weaknesses of previous research pointing to the correlation between facial attractiveness and sport performance rankings. The golf players were rated as more attractive, and this trend grew with the age of the participants and also according to their number of children. In this case, decreasing willingness to have another child in the Czech socio-culture could be assumed. According to the Czech Statistical Office, there was an average of 1.63 children per woman in 2016 (ČSÚ, 2018). However, the perception of the attractiveness of male faces is multifactorial, e.g., women who regard themselves as attractive could perceive more masculine faces as more attractive (Little, Burt, Penton-Voak, & Perrett, 2001). Interestingly, the MMA fighters were rated similarly in every age group while the preferences for the golf players grew linearly. Only the group of the youngest women (15-19 yrs.) perceived both photo samples as having the same level of attractiveness. The rising preference for the golfers could explain inconsistent results in the perception of the attractiveness of masculine signs that could indicate higher testosterone levels, but more feminine signs point to better parental skills (Weiss, 2010).

Older participants tended to prefer the golfers to the fighters. The differences between the ratings for each group of photos grew significantly with the increasing age of the respondents. This links to seeking good parental skills and a milder temperament. High masculinity may be perceived by women as an indicator of aggression; so, masculine faces can be considered less attractive (Puts, Jones, & DeBruine, 2012). The pilot study of the smaller sample showed a similar trend in the link between the age of the female participants and the perception of male facial attractiveness (Vajda, 2017). Also, the current number of children was a relevant factor in the preference for the golfers’ photos. However, there was no linear trend in the statistical significance due to the low representation of women with three or more children (n = 14). The data clearly show that with an increasing number of children, the preference for the golfers gradually grew (see Table 3). There is a possibility that this may be partially attributed to the period after giving birth (Escasa-Dorne et al., 2017), which was not examined in this study, and partially to the natural correlation between a growing number of children and age.

In contradiction to some studies that have declared changes in the perception of male attractiveness while using hormonal contraception (Little et al., 2002; Alvergne & Lummaa, 2010; Postma, 2014), there was no significant variance in our sample. Also, the subjective assessment of sexually active/non-active status elicited no changes in perception. In contrast to earlier findings, preferences for more masculine faces were not proven in women concerning long-term relationships (Little et al., 2002; Puts et al., 2012). Although, there was some fluctuation in data stemming from relationship duration, which could be partly related to the different mean age of women in each group.

Though the trends in the data are clear, there could be some limitations according to the selection of the pictures used. They were not photographed under the same conditions. Thus, we have considered how this could affect the perceived attractivity.

Conclusion

This paper confirms the fluctuating perception of male attractiveness by women in different life contexts. The most significant factors appear to be age and number of children, which are closely connected to fertility and willingness to have another child. This finding supports the hypothesis of the trade-off between parental and genetic investment. However, the influence of contraception, which also influences fertility, was not proven and neither was the claim suggesting that women in long-term relationships prefer more masculine men. There could be a difference between each based on sociocultural context. Considerably more work and datasets will need to be done to fully understand the fluctuations in female preferences for masculine facial traits.

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