

Physical attractiveness of face and body as indicators of physical fitness in men

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Abstract

Human physical attractiveness appears to be an important signal of mate value that is utilized in mate choice. We argue that performance-related physical fitness (PF) was an important facet of ancestral male mate value and, therefore, that a positive relationship exists between PF and physical attractiveness as well as mating success. We investigated these relationships in a sample of 80 young men. In line with our predictions, we found that (i) a composite measure of PF correlated substantially with body attractiveness ($r = .43$, after controlling for confounds) but not with facial attractiveness; (ii) PF was positively related to various measures of self-reported mating success ($r_s \approx .22$); (iii) the relationship between PF and self-reported mating success was partly mediated by body attractiveness. We conclude it is a key function of men's body attractiveness to signal their PF and that men's faces and bodies signal different facets of mate value.

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1. Introduction

Physical attractiveness (hence attractiveness) plays an important role in human mate choice (e.g., Buss, 1989; Rhodes, Simmons, & Peters, 2005), a role that has been explained within the theoretical framework of sexual selection (e.g., Buss & Schmitt, 1993; Gangestad & Simpson, 2000; Johnston, 2006; Symons, 1979). From this viewpoint, the perception of attractiveness is an evolved adaptation, which promotes preferential mating with individuals of high mate value (i.e., individuals who increase their partner's reproductive success above the level expected in case of random mating).

Several aspects of ancestral life make performance-related physical fitness (PF) a likely component of ancestral men's mate value. Performance-related PF (hence PF) depends on motor skills, cardiorespiratory power, muscular strength and endurance, body composition, and other factors (Bouchard & Shepard, 1992) and largely reflects the ability

to perform work (i.e., to exert power along distance). Throughout the longest time of human history, subsistence strongly depended on physical activity. Life included long walks and hunting. Physically fit men, as compared to their less fit peers, (a) could probably better care for themselves and their family without risking health-threatening overexertion (Mackinnon, 2000); (b) they were better prepared for the challenges of male-male violence ubiquitous in ancestral life (Keeley, 1996); and (c) they could use aggression more successfully to co-opt the resources of others, to elevate their own status and to protect their mates and their mates' children against violence (Buss, 2004; Smuts, 1992). Finally, (d) physically fit fathers probably bestowed this advantage to their offspring because PF has a considerable heritable component (Maes et al., 1996; Malina & Bouchard, 1989).

If PF was important to ancestral men's mate value, and if attractiveness signals mate value, then PF and attractiveness should be positively related in men. To investigate this hypothesis is our main objective. Thus far, only indirect evidence supports this hypothesis. First, Hönekopp, Bartholomé, and Jansen (2004) reported a positive relationship between facial attractiveness and PF in young women. Second, several experimental studies using line drawings

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have found female preferences for male figures with a medium body mass index and a pronounced upper body v-shape, a likely indication of a lean, muscular physique and, thus, PF (Dixson, Halliwell, East, Wignarajah, & Anderson, 2003; Furnham & Baguma 1994; Horvath, 1981; Lavrakas, 1975; but see Gitter, Lomranz, & Saxe, 1982 for conflicting results). Moreover, two correlational studies using more realistic stimuli supported these experimental results: Fan, Dai, Liu, and Wu (2005), using 3D wire frame film clips, and Maisey, Vale, Cornelissen, and Tovée (1999), using front view photographs, found male bodies with low body mass index, broad chests and small waists to be attractive for women. Third, women positively respond to faces rated high for masculinity (Cunningham, Barbee, & Pike, 1990; Koehler, Simmons, Rhodes, & Peters, 2004; Rhodes, Chan, Zebrowitz, & Simmons, 2003). Facial masculinity may indicate high testosterone levels (e.g., Johnston, 2006; Penton-Voak & Chen, 2004), and testosterone promotes muscle growth (Bhasin, Woodhouse, & Storer, 2001). Therefore, women's preference for masculine faces may indicate a preference for muscular and, thus, physically fit men.

A potential relationship between attractiveness and PF in men has not been investigated yet. Our objective is to close this gap. We also analyze testosterone, rated masculinity, upper body v-shape, body mass index, and height as potential mediators for the hypothesized relationship between men's attractiveness and their PF. Given that attractiveness has the function to promote mating with individuals of high mate value (see above), we also expect that PF and mating success are positively correlated in men and that attractiveness mediates this relationship.

2. Methods

2.1. Participants

One hundred two healthy Caucasian men from Chemnitz and vicinity participated in this study after giving their informed consent. Participants were recruited via an advertisement in a local newspaper and by leaflets distributed on the University Campus. All participants received a payment of 25€. Relationships of 2nd- to 4th-digit ratio with PF and number of sex partners in this sample have been previously reported (Hönekopp, Manning, & Müller, 2006; Hönekopp, Voracek, & Manning, 2006). Here, we report the data of all 80 men who agreed to be photographed unclothed (see below). Participants completed a questionnaire surveying age, height, weight, sexual orientation, and potential confounds of PF (smoking, alcohol consumption, drug use, and amount of exercising). Descriptive statistics are given in Table 1. Due to men's low minimum parental investment, their mating success importantly hinges on their number of sex partners (Buss & Schmitt, 1993; Trivers, 1972). Therefore, we used the following variables to assess men's self-reported mating

Table 1
Descriptive statistics of sample

	Mean±SD
Age (years)	22.4±1.3
Height (cm)	182±7
Weight (kg)	75.9±9.9
Body mass index (kg/m ²)	23.0±2.3
Upper body v-shape	1.38±.09
Testosterone (nmol/l)	17.9±5.2
SHBG (nmol/l)	24.7±8.7
Free androgen index	.83±.41
PF score	175±20
Exercising (min/week)	337±273
Smoking (cigarettes/d)	2.5±4.9
Drug use (% users)	18
Number of sex partners ^a	4.6±4.7
Number of extrapair copulations ^a	.6±1.0
Age at first sex ^{a,b}	17.7±2.2

^a Seventy-seven exclusively heterosexual participants.

^b Actual age was used for five inexperienced participants.

success: lifetime number of sex partners, age at first intercourse, and number of times they had been an extrapair copulation partner (i.e., how often another person cheated on their partner). We relied on self-reported height and weight because these have turned out to be highly accurate (Bowman & DeLucia, 1992; Imrhan, Imrhan, & Hart, 1996).

2.2. Assessment of PF

Participants' PF was assessed using the Haro fitness test (Haag 1981; see also Hönekopp et al., 2004). This gym-based test consists of six heterogeneous exercises, which require (i) running and crawling beneath an obstacle, (ii) sit ups, (iii) repeated jumps over a hurdle, (iv) push ups, (v) running and picking up items from the floor, and (vi) throwing a ball repeatedly against the wall while lying on the belly. All exercises were scored according to the test rules. Participants were tested by two male experimenters blind to the hypotheses.

2.3. Ratings of attractiveness and masculinity

For later assessment of attractiveness, three digital color photographs (face, body front, and body back) were taken from each participant. Pictures were taken from a standard distance (faces: 1.5 m; bodies: 3 m) at a resolution of 1024×1344 pixels. For the face photographs, sitters wore a bathing cap (to reduce the influence of hair style), showed a neutral expression, and faced the camera frontally. For the body photographs, 80 men agreed to pose unclothed. A brick wall served as background for the body photographs. For the face photographs, backgrounds varied slightly and were later blurred. All photographs were cropped and standardized to the same height of 520 pixels. Faces were made unrecognizable on all front body photographs.

Twenty-seven women (age 25.6±6.6 years) rated all 240 individual photographs for attractiveness (1="not at all

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