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Physical fitness as a factor influencing the physical attractiveness of young women

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Original article

Abstract

Aim of the study: The aim of the study was to identify body build characteristics and components of physical fitness that have the greatest effect on subjective self-assessment and external judgment of the physical attractiveness of young women.

Materials and methods: The participants were 129 female students of tourism and recreation from Kraków aged 19 to 26 years. The level of physical fitness of the participants was evaluated using the European Physical Fitness Test. Physical attractiveness was assessed by the participants themselves and by external judges. The body height, body weight, and waist and hip circumferences of the women were measured. Furthermore, body water and body fat percentages were estimated.

Results: The analysis of the correlation between attractiveness and physical fitness indicates that in all the cases examined, those who performed better in the fitness tests not only feel but are also assessed as more attractive. Not all correlations proved to be statistically significant. However, the results obtained indicate a positive relationship between physical fitness and attractiveness of young women. The results of the research indicate that the parameters related to fat (absolute hip circumference, BMI index, and body fat percentage) have the greatest effect on the physical attractiveness of body build in both subjective and external judgments of young women.

Conclusions: The young women studied with higher physical fitness and lower values of fat-related parameters were assessed and perceived as more physically attractive. Physical fitness had a greater impact on the subjective than external judgment of physical attractiveness. The above finding can be a factor motivating to improve physical fitness and to undertake sporting activities.

Keywords

- physical attractiveness
- body build
- physical fitness
- somatic features
- young women
- students

Contribution

A – Preparation of the research project
B – Assembly of data
C – Conducting of statistical analysis
D – Interpretation of results
E – Manuscript preparation
F – Literature review
G – Revising the manuscript

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Introduction

Patterns regarding physical attractiveness are strongly determined by cultural factors. In modern global society, an important factor influencing taking measures to modify appearance is the pursuit of beauty standards created in the media. This determines behaviors aimed at modifying appearance, often at the cost of sacrifice and even health.[1,2,3] Particular pressure is experienced in this regard by women, whose self-esteem is more dependent on body weight and physical appearance.[4]

In social relationships, physical appearance provides the environment with information about a person, such as sex, race, age, and even socio-economic status. It is also an important source of judgment that influences the perception of the whole person and indirectly shapes their self-esteem. Beauty plays an important role in interpersonal relationships since appearance largely determines how the person is perceived. Several positive traits are attributed to physically attractive people, such as interpersonal and professional competence, interpersonal attractiveness, or social adaptation, which psychology refers to as the halo effect. Consequently, these individuals have more positive social experiences than their peers who are perceived as less beautiful6. It has also been confirmed that people with above-average physical attractiveness are healthier than those assessed as moderately attractive.[7] Beauty appears to be particularly important for young women, as it is early adulthood when the choice of a life partner is made.[9,10]

A literature review shows a clear predominance of studies on the effects of body build characteristics rather than physical fitness on the assessment of women's physical attractiveness. Among other things, it has been found that, in Western culture, a trim waist, a large bust, and slimness are physiological characteristics associated with health and vitality.[11,12,13] In addition to the obvious effect on physical attractiveness, body build can also affect physical fitness levels.[14,15] While there are studies in the world literature on the effect of regular exercise on body perception,[16,17] the topic of the relationship between selected fitness components and physical attractiveness is an area of research rarely explored to date.[18,19,20] Among other things, differences were found between the sexes, indicating that the declared level of physical fitness affects the subjective assessment of attractiveness to a greater extent in women than in men21. Taking into account the fact that declared physical fitness and physical activity are often overestimated,[22,23] it seems reasonable to determine the relationship between the actual level of physical fitness and the physical attractiveness of young women.

Meeting this objective requires answering the following research questions:

1. What is the relationship between the level of selected physical fitness characteristics and the subjective assessment and external judgment of the physical attractiveness of young women?
2. What somatic characteristics affect young women's subjective assessment and external judgment of physical attractiveness?

Material and methods

Material

The sampling was purposive and related to the availability of research material. It included 129 female students of tourism and recreation from universities in Krakow, aged 19 to 26 years ($\bar{x}$ = 21.06 ± SD = 1.29). The tests were conducted in a sports hall under identical standard conditions.

Research methodology

Anthropometric measurements

Body height (anthropometer), body weight, and waist and hip circumferences were measured, and body water and fat percentages were estimated (TANITA body composition analyzer model BC-1000). Based on the results, the body mass index (BMI) and waist-to-hip ratio (WHR) were calculated.

Measurement of physical fitness

Physical fitness level was evaluated using the EUROFIT European Fitness Test battery[24] by performing the following tests:

1. Balance: flamingo balance test i.e., balancing on one leg (FLB).
2. Upper limb movement speed: plate tapping (PLT).
3. Flexibility: sit-and-reach test (SAR)
4. Explosive strength: standing broad jump (SBJ).
5. Static strength: hand grip test (HGR).
6. Trunk muscle strength: sit-ups (SUP).
7. Functional strength of the shoulder girdle and arms. Bent arm hang test (BAH).
8. Speed: 10 × 5 shuttle run (SHR).
9. Cardiorespiratory endurance: endurance shuttle run test (ESR).

The results are presented in Table 1.

Assessment of physical attractiveness

A survey questionnaire was used to assess the physical attractiveness of the female students, with the participants rating the physical attractiveness of their physique on a scale of 1 to 10, where 1 meant not very attractive and 10 meant very attractive. Female students in sportswear were also rated, on the same scale, by independent judges (one female and two males), with the average of the two ratings taken as the male rating. The judges assessed only the attractiveness of the participants' physique.

Statistical methods

Basic descriptive statistics parameters were computed: arithmetic means and standard deviation. Spearman's rank correlation coefficient was used to examine the relationship of physical attractiveness with physical fitness and body build characteristics. A significance level of $p < 0.05$ was adopted in all analyses.

Results

In terms of physical fitness, a moderate correlation was found for functional strength of the shoulder girdle and arms (BAH; $r = 0.58$; $p < 0.05$), cardiorespiratory endurance (ESR; $r = 0.49$; $p < 0.05$), and trunk muscle strength (SUP; $r = 0.48$; $p < 0.05$) with attractiveness of young women. Interestingly, the aforementioned fitness components correlated significantly more with subjective attractiveness ratings than with judges' ratings.

The results also showed a weak relationship between participants' attractiveness and speed (SHR; $r = -0.34$; $p < 0.05$), and in the other parameters (balance, flexibility, speed of upper limb movements, hand grip) the relationships were generally weak ($r < 0.40$) and statistically insignificant ($p > 0.05$).

Analysis of the relationships between body build parameters and physical attractiveness revealed negative correlations of BMI ($r = -0.38$; $p < 0.05$), body fat (BF) ($r = -0.39$; $p < 0.05$), and hip circumference ($r = -0.51$; $p < 0.05$), with self-assessed body shape attractiveness (Tab. 2). The lower the value of these characteristics (BMI, BF and hip circumference), the higher the self-assessed body shape attractiveness. These correlations were found to be significantly weaker ($r < 0.20$) and statistically insignificant ($p > 0.05$) between body height, body weight, waist circumference, chest circumference, and WHR. For the male judges' assessments, the strongest relationships were found for BMI ($r = -0.46$; $p < 0.05$), BF ($r = -0.45$; $p < 0.05$), and hip circumference ($r = -0.40$; $p < 0.05$). In the female judge's assessment, statistically significant negative correlations were recorded for BMI ($r = -0.37$; $p < 0.05$), waist circumference ($r = -0.36$; $p < 0.05$), and hip circumference ($r = -0.35$; $p < 0.05$). The biggest difference in the judges' assessment was observed with the parameter BF, whose increase in the male judges' assessment had a significant effect on reducing attractiveness, while in the female judge's assessment, the effect was not that significant. There was also a statistically significant negative correlation between waist circumference and the female judge's assessment of attractiveness ($r = -0.36$; $p < 0.05$).

Table 1. Physical parameters and fitness of women studied

Parameter / test	$\bar{x}$	SD
Body height [cm]	165.07	5.85
Body mass [kg]	59.82	10.10
BF [%]	23.82	6.93
Waist circumference [cm]	72.71	7.54
Hip circumference [cm]	97.78	8.12
Chest circumference [cm]	88.40	9.29
BMI [kg/m^2]	21.92	3.34
WHR	0.74	0.05
FLB [n]	2.99	3.48
PLT [s]	12.23	1.87
SAR [cm]	8.71	7.51
SBJ [cm]	152.80	25.70
HGR [kg]	30.60	5.62
SUP [n]	21.04	4.39
BAH [s]	8.08	10.30
SHR [s]	22.31	2.41
ESR [n]	31.75	13.26

Notes: FLB – Flamingo Balance, PLT – Plate Tapping, SAR – Sit-and-Reach, SBJ – Standing Broad Jump, HGR – Hand Grip, SUP – Sit-Ups, BAH – Bent Arm Hang, SHR – 10 × 5 m Shuttle Run, ESR – Endurance Shuttle Run.

Table 2. Spearman's rank correlation coefficient for correlations between body build characteristics and physical attractiveness of the participants (n = 129)

Parameter/ index	Self-assessment of attractiveness	Judges' assessment	
		Woman	Men
Body height [cm]	0.182	0.028	0.137
Body mass [kg]	−0.156	−0.189	−0.289
BF [%]	−0.391*	−0.185	−0.455*
Waist circumference [cm]	−0.180	−0.365*	−0.293
Hip circumference [cm]	−0.510*	−0.348*	−0.399*
Chest circumference [cm]	−0.186	−0.053	−0.213
BMI [kg/m^2]	−0.376*	−0.389*	−0.456*
WHR	0.014	−0.090	−0.053

* $p < 0.05$

Table 3. Spearman's rank correlation coefficient for correlations between physical fitness and attractiveness (n = 129)

Parameter/ index	Self-assessment of attractiveness	Judges' assessment	
		Woman	Men
FLB	−0.171	−0.287*	−0.229*
PLT	−0.165	−0.284*	−0.267*
SAR	0.031	0.299*	0.193
SBJ	0.249*	0.254*	0.411*
HGR	0.163	0.114	0.204*
SUP	0.476*	0.198*	0.387*
BAH	0.579*	0.177*	0.323*
SHR	−0.341*	−0.130	−0.262*
ESR	0.491*	0.134	0.366*

* $p < 0.05$

Notes: FLB – Flamingo Balance, PLT – Plate Tapping, SAR – Sit-and-Reach, SBJ – Standing Broad Jump, HGR – Hand Grip, SUP – Sit-Ups, BAH – Bent Arm Hang, SHR – 10 × 5 m Shuttle Run, ESR – Endurance Shuttle Run.

Discussion

An analysis of the correlations between attractiveness and physical fitness indicates that, in most tests, higher achievers felt and were judged as more attractive. Not all correlations proved statistically significant, but the results indicate a positive relationship between physical fitness and physical attractiveness. Physical fitness had a greater effect on self-assessed physical attractiveness than on judges' ratings, which is important in the context of self-esteem. Hönekopp et al.[19] studied the effect of physical fitness on perceived physical attractiveness of the body in men and also found such positive correlations between physical fitness and physical attractiveness.

It seems interesting to note that the strongest associations with attractiveness occurred in the bent arm hang (BAH), sit-ups (SUP), endurance shuttle run (ESR), and standing broad jump tests (SBJ). These are tests in which fatness and height-weight proportions have important influence on the outcome, also significantly affecting the judgment of attractiveness. In most of the tests, a stronger correlation was found between the subjective assessment of attractiveness and physical fitness than that of the judges. This may indicate a stronger effect of physical fitness on subjective rather than external judgment of physical attractiveness. Perhaps the awareness of high physical fitness increases the perception of physical attractiveness. However, more detailed research is needed to confirm such a thesis. The findings would confirm a study conducted among Spanish female students, which reported a positive effect of self-rated physical fitness on subjective ratings of physical attractiveness in terms of cardiorespiratory fitness, muscular strength, speed, and agility.[21]

Various methods have been used to study the physical attractiveness of the female body shape, including a verbal description of body build,[25] presentation of silhouette drawings,[26] photographs,[27] 3D graphics,[28] videos,[11] analysis of the body build of beauty contest winners, and the silhouettes of fashion models.[29] Analysis of the impact of individual body build features on attractiveness, the impact of facial appearance, make-up, and clothing is most often excluded. In our own research, we chose to assess the body shape attractiveness by direct contact between the judges and the participants. The results indicate that the absolute hip circumference, body mass index, and body fat percentage, i.e. parameters related to fatness, had the greatest impact on the physical attractiveness of the participants' body shape.

The analysis of the body shape attractiveness of women shows that it is relatively common to use the WHR ratio, with its value around 0.7 being the most desirable and positively influencing the assessment of physical attractiveness.[25] In our study, this ratio did not correlate with body attractiveness, presumably due to the sportswear the participants were wearing. However,

one component of the ratio (hip circumference) was relatively strongly negatively correlated with physical attractiveness. This is consistent with previous research indicating that in Western culture, wide-hip silhouettes are judged less attractive these days.[26]

Some reports indicate that, from the standpoint of physical attractiveness, BMI is more relevant than the WHR ratio.[30] In Western societies, women with an average value of the index close to 20 [kg/m^2] are considered the most attractive, while both underweight (BMI < 16 [kg/m^2]) and obese (BMI > 30 [kg/m^2]) individuals are considered significantly less attractive.[31,32] In our study, an increase in BMI reduced the attractiveness of the participants.

The third parameter that negatively correlated with both the subjective and external judgment of attractiveness by the male judges was body fat percentage. Undoubtedly, body fat percentage affects physical attractiveness and is related to the previously described BMI and WHR.[33,34] Judging slim or normal silhouettes as more attractive is explained by researchers both for biological reasons (age, sex hormone levels, health) and cultural aspects (fashion, promotion of a certain body type). As Pawłowski[35] argues, in no society is an excessively lean silhouette, like an obese one, perceived as more attractive than a normal relative body mass.

As hypothesized, body fat (BF) and related parameters (BMI and hip circumference) were the factors that most influenced attractiveness ratings. No significant impact of WHR in our study may have been due to the methodology used. Also, the body mass of the female students did not affect the judgment of physical attractiveness, probably due to their low body weight relative to their height, with the mean BMI in the study group being 21.92 [kg/m^2]. Another parameter studied that did not significantly affect the assessment of attractiveness was body height, which is an important indicator in assessing men's physical attractiveness.[36] Among women, this characteristic does not play such a significant role, and the range of body height considered attractive is significantly greater than for men.[37]

Conclusions

Physical fitness shows a stronger influence on the subjective assessment than the external judgment of physical attractiveness. The strongest correlates were shoulder girdle and arm strength, endurance, and trunk muscle strength.

In a study of the relationships between body build characteristics and physical attractiveness, a dominant influence of body fat characteristics on the assessment of physical attractiveness was observed. However, in this case, physical attractiveness is more influenced by external assessment than by subjective evaluation.

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