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Uses of media-reported female body parameters

- A contribution to the study of body image

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Abstract

The portrayal of the female body in the media has been shown to influence body image and self esteem amongst young women. While visual comparisons with those portrayed by the media as beautiful are prone to subjective judgment, when numerical values for such parameters as height, weight, bust, waist and hip size are reported, more objective comparisons may be made and may prompt some to strive to attain certain numerical ideals. Whether the measurements given are true or accurate is secondary to the fact of their reportage and their availability for such use.

Data pertaining to over 500 of 'Playboy' magazine's 'playmates' were obtained - being readily available via the Internet - from which it was possible to determine a number of anthropometric features. The use of such data in academic studies is not new although the scope of previous use seems to have been somewhat limited. The present study, therefore, sought to determine alternative ways of using such data to characterize the physiques portrayed.

A simple comparison with UK dress sizes, available in high street stores, showed that the characteristic 'playmate' physique did not generally conform to standard proportions - bust size, for example, being greater than catered for by standard sizes. However, despite this dimensional excess, the mean Body Mass Index was below 20. This latter finding, representing a state of mild starvation, is a potential cause for concern should the typical heights and weights from which it is derived be used by more vulnerable individuals to influence their own physique.

Introduction

Human physique is an important factor in the choice and attraction of sexual partners. However, notions of attractiveness and beauty are not fixed but are open to numerous cultural influences (Grogan 1999). These influences can, in turn, feed back to influence the ways in which members of society view and engage in bodily display.

One of the ways in which the importance of physical attractiveness manifests itself is via the existence of the 'glamour' industry. That there is a market for photographic depictions of the human (predominantly female) form in various provocative and enticing poses indicates the existence of a deep seated human desire.

The doyen of the glamour business is the Playboy 'empire' which has flourished for nearly half a century and is represented by 'Playboy' magazine which, although now below the circulation highs of the 1970's and 1980's, still commands a significant place within its niche. Each month, this magazine presents a 'Playmate of the Month' who represents the embodiment of physical beauty. As well as a portfolio of pictures, the *playmate* is also represented by a 'Datasheet' giving certain physical measurements and the answers to certain questions about likes and dislikes.

The use of the data pertaining to physical measurements has been used in previous academic studies (Wiggins et al. 1968, Mazur 1986, Singh 1993) but this has been somewhat limited in its approach and various nuances within these data left unrealised. Thus, of specific interest to this study was how the reported *playmate* data might be put to new and different uses and what information might be embedded within these data.

Materials and Methods

Data pertaining to the age, bust, waist and hip measurements, weight and height of Playboy *playmates* were obtained from the 'Playboy Playmate Data Statistics By Year' website [URL <http://users.mainlink.net/~sledford/pmdatamain.html>], maintained and regularly updated by Steven L. Edford of Louisville, Kentucky. These data are obtained from the (members only) Playboy Cyber Club website [<http://cyber.playboy.com>]. Data were not available for every *playmate* that has appeared in 'Playboy' magazine and, for some, the information was incomplete. However, data for a total of 504 *playmates* were obtained. (Within these data, three sets of twins and one set of triplets were present. The data for these nine individuals were treated separately.) These data, given in imperial units (feet, inches and pounds), were converted into SI units (cms and kgs).

From the converted data, (Quetelet's) Body Mass Index (BMI) (Lohman et al. 1988), Percentage Body Fat (Roche et al. 1981, Abdel-Malek et al. 1985, Lohman et al. 1988) and Hip-to-Waist Ratio (HWR) (Singh 1993) were calculated (See Appendix 1).

In addition to these parameters, the data were put to some novel uses. Bust-to-Height, Waist-to-Height and Hip-to-Height Ratios were calculated. Two other parameters, Bust Excess and Hip Excess were calculated by subtracting the waist measurement from the bust and hip measurements, respectively. Then, by dividing Bust Excess by Hip Excess, a parameter nicknamed 'Hourglass' was derived.

Results

Table 1 summarises the data and derived parameters. The average *playmate* was found to be 21.6 years of age, 167.6 cms tall and to weigh 52.2 kgs. She had a 90.1 centimetre bust, 59.3 centimetre waist and 88.6 centimetre hips. Her BMI was 18.6, she had 21.1% body fat and her HWR is 0.67. In relation to stature, the *playmate's* bust was 54% of her height measurement, her waist 35% and her hips 53%. In relation to her waist measurement, the *playmate's* bust showed a 30.9 cms excess and her hips a 29.3 cms excess. These two parameters gave her an 'Hourglass' of 1.06.

Table 1 - Summary statistics

	Age	Bust (cms)	Waist (cms)	Hips (cms)	Weight (kgs)	Height (cms)
Mean:	21.60	90.12	59.27	88.56	52.17	167.59
S.D.:	2.504	3.787	3.229	3.041	4.134	5.773
n:	504	504	504	504	504	504
Max.:	33.00	104.14	71.12	99.06	68.04	185.42
Min.:	17.00	81.28	45.72	80.01	42.18	149.86
Range:	16.00	22.86	25.40	19.05	25.85	35.56

	B.M.I.	% Body Fat	Hip-to-Waist Ratio
Mean:	18.57	21.07	0.67
S.D.:	1.074	1.752	0.035
n:	504	504	504
Max.:	23.40	27.86	0.76
Min.:	15.33	16.71	0.53
Range:	8.07	11.15	0.24

	Bust to Height	Waist to Height	Hip to Height
Mean:	0.54	0.35	0.53
S.D.:	0.028	0.018	0.022
n:	504	504	504
Max.:	0.64	0.42	0.60
Min.:	0.47	0.29	0.47
Range:	0.17	0.13	0.13

	Bust Excess	Hip Excess	"Hourglass"
Mean:	30.85	29.29	1.06
S.D.:	4.531	3.487	0.123
n:	504	504	504
Max.:	45.72	40.64	1.50
Min.:	20.28	20.28	0.77
Range:	25.44	20.36	0.73

Discussion

It is important to point out that the data studied here are not anthropometric data in the normal scientific sense. The accuracy of the measurements could not be verified and, coming from a 46-year period does not represent the work of a single person. Rather, one expects the data to be those reported by the *playmate* herself and so may include subtle errings towards some notional ideal (Mazur 1986). But it is the reported nature of these data and inclusive subjective factors that is important here, not their scientific accuracy. It is the very existence of this reported data which may influence those who hold *playmates* in esteem.

Whether the *playmate* physique is an ideal that is culturally or biologically conditioned is open to debate. The fact that, of all the physical measurements that could be reported, 'Playboy' magazine should select those that it does is indicative of a certain male focus on specific aspects of the female body.

The calculated 'Hourglass' parameter (1.06) is interesting in that it indicates, relative to the waist, a slight excess in the bust measurement over the hips. Thus, on average, *playmates* have bust measurements that exceed their waist measurements by an amount slightly greater than the excess shown by hip measurements. Indeed, only 76 (15%) of the sample of 504 had hip measurements larger than their bust measurements. This is in marked contrast to UK dress sizes (Sizes 8 to 26) where 'Hourglass' is 0.8, suggesting that it is the norm for hip measurements to exceed waists by more than busts exceed waists (table 2).

According to Singh (1993), a HWR in the range 0.6-0.8 represents healthy, fertile women (by contrast with the larger postmenopausal values). The HWR of 0.67 found in this study is, in some respects, an exaggeration of this pattern.

If UK dress sizes can be taken to be indicative of a physical bias towards 'child-bearing hips' or 'child-nurturing breasts', then it is towards the former, whereas the *playmate* physique tends towards the latter - even if those breasts may, at times, be artificially enhanced. (Breast augmentation is not uncommon in the glamour industry and is certainly known among *playmates*.)

An emphasis on breasts and/or hips might be explained in reproductive terms - that these physical characteristics represent indicators of reproductive ability guaranteeing production and survival of offspring. However, it is noticeable that the mean BMI was less than 20 - lower than the normal range of 20-25 and within a zone usually deemed 'mild starvation' - and that only 56 (11%) of the sample 504 had BMI's within the normal range - there being only two in the most recent 128 *playmates* (January 1990 - May 2000). A tendency towards a low BMI is unlikely to represent the best reproductive strategy.

This is in contrast to the impression conveyed by the 'Venus figurines' of the 'Gravettian' culture (27,000-20,000 years BP) which are believed to represent fertility symbols or some form of 'earth-mother goddess' (Klein 1989). Whereas these figurines share with *playmates* an emphasis on the hips (buttocks) and breasts, they differ in being anatomically accurate representations of rather corpulent women with BMI's certainly in the obese (BMI>30), if not grossly obese (BMI>40), ranges.

Thus, through her body, a *playmate* appears to be sending mixed messages. Although the hip and breast signals suggesting the ability to produce and sustain offspring are present, the level of body mass necessary to aid reproductive success tends to be lacking. The low BMI and 21.1% body fat are findings that had to be extracted from the data. Thus, any woman who, for whatever reason, seeks to match her weight and height to those typical of a *playmate* will unwittingly diet to the point of starvation.

Given the length of the period from which the data came, certain changes in *playmate* physique may have occurred (Mazur 1986). It was not the aim of this study to identify what these may have been. However, it seems that those changes that have occurred are of marginal importance. What is evident is that the *playmate* physique is sending mixed messages and that these cannot be entirely the result of biological influences. Cultural factors must have had a bearing to have brought about this disharmony. The use of *playmate* standards as idealized physiques to be emulated by females or to influence mate selection by males is a questionable practice. That certain females vulnerable to eating disorders might try to conform to the *playmate* weight-for-height standards may be a matter for concern.

Table 2 - UK Dress Sizes

Size:	8	10	12	14	16	18	20	22	24	26
Bust (cms):	82	85	90	95	100	105	110	115	120	125
Waist (cms):	62	65	70	75	80	85	90	95	100	105
Hips (cms):	87	90	95	100	105	110	115	120	125	130
"Hourglass":	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hip-to-Waist Ratio:	0.71	0.72	0.74	0.75	0.76	0.77	0.78	0.79	0.80	0.81

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Appendix 1 - Calculation of derived parameters.

(Quetelet's) Body Mass Index (BMI):

$$BMI = \frac{Weight (kg)}{Stature^2 (m)}$$

Percentage Body Fat:

$$\%BF = \frac{Weight^{1.2} (kg)}{Height^{3.3} (cms)} \times 4 \times 10^6$$

Hip-to-Waist Ratio (HWR):

$$HWR = \frac{Waist}{Hips}$$

'Hourglass':

$$'Hourglass' = \frac{Bust Excess}{Hip Excess}$$

where:

$$Bust Excess = Bust - Waist$$

$$Hip Excess = Hip - Waist$$

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