

# Indicators of Gender Identification Values of Personality Types in Sex Somatotypes in Young Female Shotput and Hammer Throwing Athletes

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## Abstract

Based on the analysis and generalization of the literature sources, as well as the results of the pedagogical experiment, the article presents data on a number of morphological index values and features of gender identification of the personality type in young athletes engaged in hammer throwing and shot put. In sportswomen in these sports, inversions of the values of sexual somatotypes and changes in the psychological self-esteem of their gender settings, the resulting adaptive changes in their organisms, under the influence of intense physical and psychological loads have been revealed.

**Keywords:** female athletes, juvenile age, shot put, hammer throwing, morphological index values, sex somatotypes, gender identification, personality types, adaptation

## Introduction

In connection with the rapid development of women's sports, from the side of sports morphology and psychology, adaptive processes that occur in the organisms and mental activity of female athletes of different age groups do not remain without attention. In athletics, such athletic types as hammer throw and shot put occupy a special place [1, 3]. In these athletics specializations, athletes are required to make significant physical and psycho-emotional efforts to perform all the elements and techniques of the action being performed. Significant physical and psychological stress in these sports determine the peculiarities of the construction of the training and competition process for athletes [2-5, 8, 9]. Particular attention should be paid to the issues of adaptation processes that occur under the influence of these significant loads in young female athletes, with the formation of inverse sexual somatotypes and changes in the athletes' own definition of their gender identification personality types (GIPT) [2, 7, 9].

### Aim of study

The purpose of writing this research article is to review and analyze the results of the study to determine the values of such a psychological and morphological indicator as gender identification/self-identification by female athletes who are primarily involved in male types of athletics.

### Hypothesis of the study

During the preparation for this study, its author came up with a working hypothesis that in the group of female athletes, there are adaptive changes in their sexual somatotypes, towards their shift to an intermediate, mesomorphic and pathological for women, andromorphic sexual

somatotype, and also that changes in their bodies, and shifts in psychological self-assessment of themselves, according to the masculine type, occur. This indicates that, as a result of adaptive hormonal restructuring, masculinization phenomena are occurring in their organisms.

### Abbreviation

- GIPT - gender identification personality types;
- SDI - sexual dimorphism index;
- SW - shoulder width;
- PW - pelvic width;
- CMS - candidate for master of sports;
- MS - master of sports.

### Methods and means of research

The experimental base of the study were sports sections, in which female athletes of teenage age (n=34) trained, engaged in hammer throw (n=16), and shot put (n=18). To achieve the goal of the study, we used a set of scientific methods, including the analysis of available scientific and scientific-methodological sources of information, determination of anatomical-anthropometric and morphofunctional values in female athletes, interviewing. The values of the sexual dimorphism index (SDI) were calculated, with the determination of anthropometric indicators of shoulder width (SW) and pelvic width (PW), with the subsequent distribution of athletes into sexual somatotypes according to the classification of J. Tanner,

as well as the determination of gender identification of personality type (GIPT) indicators, using for this purpose the questionnaire "Masculinity, femininity and gender personality type" (Russian analogue of "Bem sex role inventory"), proposed for practical use by O.G. Lopukhova (2013) [7]. In our experiment, we involved female athletes of adolescent age engaged in hammer throwing ( $n=16$ ). The average age of the athletes was  $19.57 \pm 0.36$  years. In the group of athletes engaged in shot put ( $n=18$ ), the average age of the athletes was  $19.49 \pm 0.48$  years. All athletes of both groups meet the criteria of adolescent age [1]. The level of sports qualification of the athletes is from the 1st category to candidate for master of sports (CMS) and master of sports (MS). The intensity and frequency of training is 4-6 times a week, from 2 to 2.5 hours per 1 training session.

## Results of the study and discussion

After carrying out the necessary anthropometric measurements, we obtained the results presented in Table 1. After analyzing the results of the obtained anthropometric indicators, it was found that the average values of the shoulder width indicators in female athletes in both study groups ( $p \leq 0.05$ ) significantly exceed the obtained values of the pelvis width, with the existing values in these groups less than the anatomically acceptable value of 28-29 cm [1, 3, 6]. This type of shoulder width/pelvis width ratio indicates a masculine body type in female athletes of both groups [1, 3, 6]. Body length (height) and body mass (weight) in female athletes of both groups were almost close to each other. Based on the results of anthropometric measurements, including the determination of the shoulder width and pelvis width indicators, the following results were obtained for the distribution of female athletes of adolescent age by sexual somatotypes, according to the classification of J. Tanner and W. Marshall [1, 3, 6], reflected in Table 2.

Name of the indicator	Body length (cm)	Body weight (kg)	Shoulder width (cm)	Pelvis width (cm)
Female athletes ( $n=16$ ) hammer throw	$178,37 \pm 0,78$	$83,26 \pm 0,23$	$37,74 \pm 0,85$	$27,83 \pm 0,24$
Sportswomen ( $n=18$ ) shot put	$176,59 \pm 0,59$	$82,47 \pm 0,51$	$36,57 \pm 0,37$	$27,14 \pm 0,64$

**Table 1. Anthropometric indicators of athletes of both groups**

Name of the indicator	Gynecomorphic sexual somatotype	Mesomorphic (transitional) sexual somatotype	Andromorphic sexual somatotype
Female athletes ( $n=16$ ) hammer throw	–	9 (56,25%) female sportsmens	7 (43,75%) female sportsmens
Female athletes ( $n=18$ ) shot put	–	11 (61,11%) female sportsmens	7 (38,89%) female sportsmens

**Table 2. Distribution of female athletes by sex somatotypes**

The distribution of female athletes by sex somatotypes is as follows: in female athletes of both study groups, the gynecomorphic sex somatotype was not determined, the mesomorphic somatotype was determined in 20 (58.82%) athletes involved in hammer throwing and shot put. The andromorphic sex somatotype was determined in 14 (41.18%) athletes of

both groups. After statistical processing and analysis of the results of the survey conducted using the questionnaire "Masculinity, femininity and gender personality type" [2, 7, 9,] in all groups, we obtained the following results, which are presented in Table 3.

№	Name of the indicator	Masculine type	Androgynous type	Feminine type
1	Female athletes ( $n=16$ ) hammer throw	10 sportswomen 62.50%	6 sportswomen 37.50%	–
2	Female athletes ( $n=18$ ) shot put	8 sportswomen 44.44%	10 sportswomen 55.56%	–

**Table 3. GIPT indicators in the study groups**

It is noteworthy that the results of this psychological study, as well as the determination of the somatic values of sexual somatotypes, completely lack data on the self-identification of female athletes' feminine manifestations. Most female athletes in both groups marked the columns in the questionnaire corresponding to the indicators of the masculine type of GIPT - 18 (52.94%), and 16 (47.06%) chose the values in the questionnaire corresponding to the androgynous type of GITL [2, 7, 9]. The undifferentiated gender type was not determined in any of the girls in all groups who took part in the study.

## Conclusions

1. In both studied groups of female athletes, the phenomena of intensive adaptive changes in inverted sexual somatotypes were revealed, as a consequence of inadequate physical and psycho-emotional loads in female athletes.
2. In these groups, female athletes with inverted, mesomorphic - 20 (58.82%) and andromorphic - 14 (41.18%), sexual somatotypes dominate, with a complete absence of the gynecomorphic somatotype.
3. In both groups of female athletes, there are no representatives of the feminine type of GIPT, with an almost equal representation of masculine - 52.94% and androgynous - 47.06% types of GIPT.

5. The author of this article managed to fully achieve the goal of his research and confirm the research hypothesis he put forward.

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