

STUDY OF 2D:4D AS AN INDICATOR TO AEROBIC FITNESS AMONG ADULT FEMALE

Dr. Pintu Sil

Asstt. Prof. State Institute of Physical Education for Women, Hastings House, Alipore, Kolkata, India

ABSTRACT

The 2D:4D is the ratio of the lengths of different digits or fingers typically measured from the midpoint of bottom crease where the finger joins the hand to the tip of the finger. Purpose of the present study was to study the relationship of digit ratio (2D:4D) with Aerobic fitness among young adult women. A total of 50 female college students having the age of 21 to 30 years were selected randomly as subjects for the present study. Height and weight, Length of index finger (2D) and ring finger (4D), and Aerobic fitness were the criterion in this study. Standard tools and test were used for the measurement. Mean and standard deviation (SD) have been considered for descriptive statistics and correlation coefficient (r) was calculated by Person Product Moment method. Only 0.05 levels has considered for the present study. All statistical calculations have been done by using standard statistical software. Results revealed that coefficient of correlation between 2D:4D with aerobic fitness for female ($r = -0.205$) was not significant statistically ($p < 0.05$). From the above findings it was concluded that the 2D:4D was not sufficient to be used as a good indicator of aerobic fitness in young adult women.

Key words: 2D:4D (Digit Ratio), Indicator, Aerobic fitness, Young adult women.

INTRODUCTION:

The 2D:4D ratio is calculated by dividing the length of the index finger of the right hand by the length of the ring finger of the right hand^[1]. The 2D:4D digit ratio is sexually dimorphic while the second digit is typically shorter in both females and males; the difference between the lengths of the two digits is greater in males than in females. Study reported that for males, the index finger is generally about 96 percent of the length of the ring finger, which gives an average digit ratio for males of 0.96. Males generally have a digit ratio below 1.00 and they have what is termed a "low digit ratio." Women generally have a digit ratio of about 1.00 (the index and ring fingers are of about equal length) which is termed a "high digit ratio." Studies reported that the men have lower digit ratio (shorter index fingers than ring fingers) than do women^{[2][3]}. In 1930 it was proved with the statistically significant sex difference in a sample of 201 men and 109 women^[4]. In 1983 Wilson conducted a study to examine the correlation between assertiveness in

women and their digit ratio and that was the first study which conducted to reveal the correlation between digit ratio and a psychological trait within members of the same sex. ^[5] Fink et al. (2004) found that men with low (indicating high testosterone) and women with high (indicating high estrogen) 2D:4D ratios express greater levels of facial symmetry.^[6] Some authors suggest that digit ratio correlates with health^{[7][8]}, behavior^{[6][9][10]}, and even sports performance^[11]. Purpose of the present study was to study the relationship of digit ratio (2D:4D) with aerobic fitness among young adult female.

MATERIALS AND METHODS

Subject:

A total of 50 female college students having the age of 21 to 30 years and at least graduate were selected randomly as subjects for the present study.

Criterion Measure:

Criterion measures in this study were as follows:

- a) Height and Weight
- b) Length of index finger (2D) and ring finger (4D)
- c) Aerobic fitness

Instruments and Tools Used:

Following Instruments and tools will be used to collect data in this study:

- a) Stedimeter
- b) Weigh machine
- c) Small sliding breadth caliper
- d) Cooper aerobic fitness test.

DESIGN OF THE STUDY AND STATISTICAL PROCEDURE

Anthropometric data have been collected directly by measuring the subjects. Mean and standard deviation (SD) have been considered for descriptive statistics and correlation coefficient was calculated by Person Product Moment method. Only 0.05 levels has considered for the present study. All statistical calculations have been done by using standard statistical software.

RESULTS AND FINDINGS

The mean values and SD of 2D:4D and aerobic fitness of the subject have presented in Table-1 and the coefficient of correlation between digit ratio with aerobic fitness was calculated by Pearson Product-Moment method and the results have also presented in Table-2.

Table-1: Descriptive statistics of 2D:4D and aerobic fitness of the subjects

Statistical parameters	2D:4D	Aerobic fitness (M/12 min)
Maximum Value	1.25	1143
Minimum value	0.91	700
Mean	0.99	986.66
SD	0.06	90.19
N	50	50

Table-2: Coefficient of Correlation (r-value) between independent and dependent variables

Variables	<i>Aerobic Fitness</i>
2D:4D	$r = -0.205^{\wedge}$

[^]Not significant at 0.05 levels as CR to be significant was 0.273.

Present study has found negative correlation between 2D:4D with aerobic fitness but this correlation was not significant statistically. Therefore the result was not sufficient to be used as a good indicator of aerobic fitness in young adult female. Das and Sil (2015) reported no significant relationship between 2D:4D with selected motor abilities like flexibility, muscular strength and muscular endurance.^[12] Manning et al. (2001)^[13] found high digit ratio reduced performance in sports.

CONCLUSIONS

Digit ratio has a negative but low correlation with aerobic fitness in adult female which was statistically not significant. Therefore it was concluded that 2D:4D could not be used as a good indicator of aerobic fitness in young adult female. Further study is needed with more subjects for taking concrete inference about the use of 2D:4D as an indicator of aerobic fitness for young adult women.

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