

## **SPORTS ANTHROPOLOGICAL AND SOMATOTYPICAL INVESTIGATION OF MALE AND FEMALE LATIN DANCERS**

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### **ABSTRACT**

The present study examines anthropometric and somatotypical differences of German Latin dancers in Usingen (n=19 women, n=16 men, age span 16–30 years, district and regional league) and gym visitors (30 females, 32 males, age span 16–40 years). Each proband participated voluntarily. Anthropometric data and somatotypical parameters in this work correspond to international standards.

In both sexes the mean body weight and mean the BMI of gym visitors are higher than the corresponding parameters of Latin dancers (Females: Weight (kg) Fitness Sports vs. Latin dance: 61.6 vs. 58.9 kg, BMI: 21.8 vs. 21.1 kg/m<sup>2</sup>; Males: 77.0 vs. 76.5 kg, 23.7 vs. 23.1 kg/m<sup>2</sup>).

The female (male) dancers are generally in the hypoplastic – leptomorphic (metroplastic – hypoplastic – leptomorphic) region of Conrad's chessboard graphic.

In the somatochart after Parnell the focus of the distribution of the female (male) dancers is the endomorphic (mesomorphic) area.

In the somatochart after Heath and Carter a significant accumulation of the female dancers in the endomorphic area is noticeable, at low scattering in comparison to the female gym visitors. For men, both collectives accumulate in the mesomorphic sector with less scattering of the dancers.

In conjunction with the also measured higher body fat percentage of the dancers of both sexes compared to the control fitness group here, there is a clear signal to optimize the nutritional status and the body composition of the investigated German Latin dancers in Usingen.

On the other hand, the results support the earlier postulate of Kretschmer (1921), who stated that pyknic physique types in dance sport are more common than others somatotypes.

**Keywords:** *sports anthropological investigation, somatotypical investigation, ball-room dancing, Latin dancers, sports anthropology*

## **INTRODUCTION**

Latin dance is a term in the partner dance competition jargon. It refers to the types of ballroom dance that (with few exceptions) originated in Latin America. The category of Latin dances in the international dance sport competitions consists of the cha-cha-cha, rumba, samba, paso doble, and also the jive of United States origin.

## **Participants and Methods**

The present study examines anthropometric and somatotypical differences of German Latin dancers in Usingen (n=19 women, n=16 men, age span 16–30 years, district and regional league) and gym visitors (30 females, 32 males, age span 16–40 years).

Each proband participated voluntarily and the data were used anonymously. Anthropometric data and computed constitutional and somatotypical parameters in this work correspond to international standards (CONRAD 1963, HEATH & CARTER 1967+1990, KNUSSMANN 1996, MARTIN & KNUSSMANN 1988, RASCHKA 2006, TITTEL & WUTSCHERK 1972).

## **RESULTS**

In both sexes the mean body weight and the mean BMI of gym visitors are higher than the corresponding parameters of Latin dancers (Females: Weight (kg) Fitness Sports vs. Latin dance: 61.6 vs. 58.9 kg, BMI: 21.8 vs. 21.1 kg/m<sup>2</sup>; Males: 77.0 vs. 76.5 kg, 23.7 vs. 23.1 kg/m<sup>2</sup>).

The distribution of constitutional types after CONRAD and the somatotypes after PARNELL and HEATH & CARTER are summarized in Figures 1–3.

The female gym visitors are heaped in the metromorphic and metroplastic range of Conrad's checkerboard graphic. The female dancers, however, are generally in the hypoplastic – leptomorphic region. For the male gym visitors, a stronger scattering catches your eye. The male dancers, however, are generally in the metroplastic – hypoplastic – leptomorphic region.

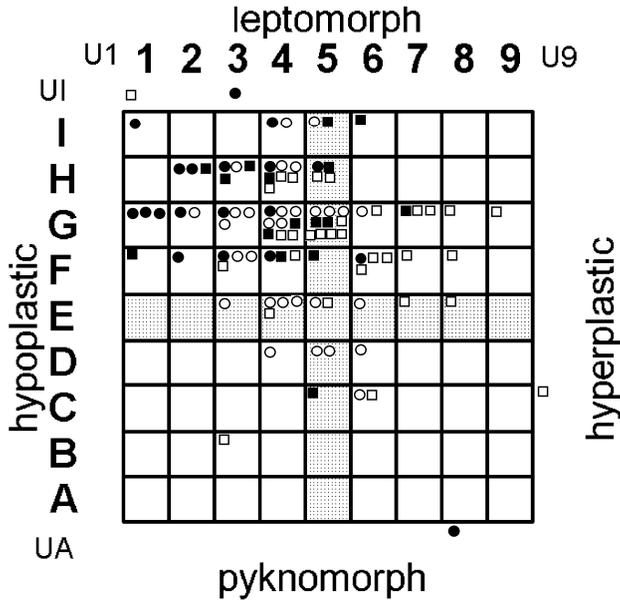


Figure 1. SEQ Abbildung \\* ARABIC 1: Latin dancers (filled circles: n=19 females, filled squares: n=16 males) and fitness athletes (open circles: n=30 females; open squares: n=32 males) in the chessboard pattern graphic after CONRAD

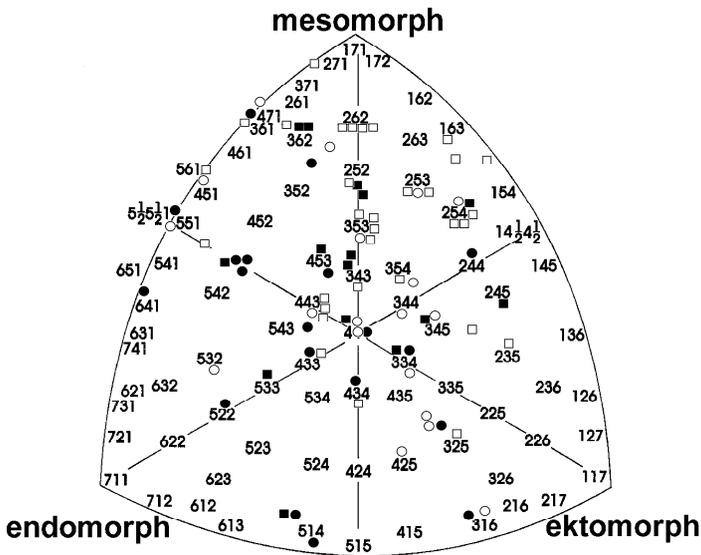
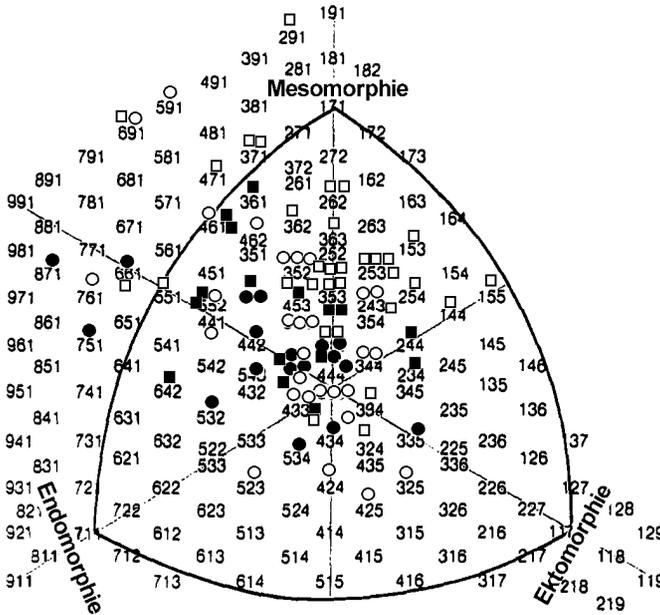


Figure 2. Latin dancers (filled circles: n=19 females, filled squares: n=16 males) and fitness athletes (open circles: n=30 females; open squares: n=32 males) in the somatochart after PARNELL

In the somatochart after Parnell, however, the focus of the distribution of the female dancers (fitness athletes) is the endomorphic (mesomorphic) area. The scattering is, however, quite pronounced. The majority of the male dancers is in the mesomorphic sector and the dispersion is less than for the male gym visitors.



**Figure 3.** Latin dancers (filled circles: n=19 females, filled squares: n=16 males) and fitness athletes (open circles: n=30 females; open squares: n=32 males) in the somatochart after HEATH and CARTER

In the somatochart after Heath and Carter a significant accumulation of the female dancers in the endomorphic area is noticeable, at low scattering in comparison to the female gym visitors. For men, both collectives accumulate in the mesomorphic sector with less scattering of the dancers.

In the following table certain selected anthropometric parameters are listed.

**Table 1.** Selected anthropometric and index parameters of fitness sports (n=35) and Latin dancers (n=62)

Parameter	Fitness Sports		Latin Dancers	
	Men (n=16)	Women (n=19)	Men (n=32)	Women (n=30)
Suprasternale (cm)	146.6±5.7	137.1±4.6	147.9±6.2	135.8±5.1
Omphalion (cm)	108.9±5.3	102.4±3.9	109.3±5.1	101.0±4.6
Radiale (cm)	114.9±5.6	107.9±3.3	115.2±5.9	105.7±3.9
Styilion (cm)	88.4±4.4	84.1±3.3	88.4±5.5	82.9±2.9
Symphysion (cm)	94.2±5.0	88.6±3.7	94.2±3.7	86.9±4.6
Trochanterion (cm)	93.3±5.7	87.7±4.5	91.6±4.4	84.2±4.2
Tibiale (cm)	50.4±3.8	46.8±2.3	49.7±3.5	45.9±2.7
Sphyrion (cm)	7.6±1.3	6.9±1.2	7.7±1.2	6.2±0.9
Sitting height (cm)	93.4±3.3	90.3±3.3	95.6±5.9	87.8±4.9
Shoulder width (cm)	36.2±2.7	32.3±1.5	35.2±1.9	30.9±2.5
Radioulnar breadth (cm)	5.4±0.6	4.9±0.4	5.7±0.9	4.9±0.7
Waist circumference (cm)	81.9±10.8	72.5±6.7	81.6±8.3	70.2±6.2
Upper arm circumf. in extension (cm) left side	31.3±3.1	26.8±2.1	28.9±2.0	26.0±2.7
Upper arm circumf. in extension (cm) right side	31.7±3.2	26.9±2.4	29.5±2.0	26.3±2.7
Forearm circumference minimum (cm) right side	17.5±0.9	15.7±0.7	17.2±0.8	15.7±0.8
Forearm circumference maximum (cm) left side	28.2±1.9	24.1±1.5	26.1±2.0	23.4±1.8
Thigh circumference (cm) right side	52.2±3.9	51.5±3.9	52.1±2.2	51.1±4.7
Thigh circumference (cm) left side	51.9±3.8	51.1±3.6	52.2±2.6	51.1±4.5
Calf circumference (cm) right side	37.9±3.2	36.1±2.5	38.0±2.4	36.6±2.7
Calf circumference (cm) left side	37.7±3.5	36.1±2.7	38.0±2.1	36.5±2.9

Parameter	Fitness Sports		Latin Dancers	
	Men (n=16)	Women (n=19)	Men (n=32)	Women (n=30)
Lower leg circumference (cm) minimum left side	23.9±1.6	22.7±1.3	24.2±1.6	22.8±1.6
Lower leg circumference (cm) minimum right side	24.2±1.6	22.7±1.6	24.6±1.6	22.9±1.5
Techn. foot length left side (cm)	26.0±1.4	23.9±0.9	26.2±1.3	23.5±1.3
Techn. foot length right side (cm)	25.9±1.4	23.9±1.0	26.1±1.2	23.4±1.3
Body fat (%) Caliper	10.6±3.0	20.8±3.7	12.9±3.4	21.8±4.6
Triceps skinfold (mm) right side	9.8±4.0	18.7±5.3	14.4±4.3	20.7±7.2
Triceps skinfold (mm) left side	10.3±3.7	18.8±5.4	14.8±5.6	21.1±6.3
Forearm skinfold (mm) left side	4.3±0.9	4.0±1.6	3.7±0.6	3.8±1.3
Suprailiac skinfold (mm) right side	7.2±2.8	10.5±4.9	8.7±6.3	10.7±5.9
Subscapular skinfold left side (mm)	12.2±6.4	12.2±4.5	12.7±3.6	13.7±7.5
Subscapular skinfold right side (mm)	11.9±6.3	11.9±4.8	12.8±3.6	13.9±7.1
Thigh skinfold (mm) left side	10.6±3.7	19.4±5.4	10.0±2.1	19.8±5.9
Calf skinfold (mm) left side	7.9±2.9	15.9±4.8	8.9±2.7	17.3±5.6
Rohrer-I. (g/cm <sup>3</sup> )	1.3±0.2	1.3±0.2	1.3±0.1	1.3±0.2

## DISCUSSION

The following table compares selected findings with the data from the literature.

**Table 2.** Comparison of selected anthropometric parameters of the investigated Latin Dancers with available international dance sports data according to HEATH and CARTER (1990)

	<i>n</i>	Mean Age (years)	Mean Height (cm)	Mean Weight (kg)	Mean Somatotype
<b>Female Dancers</b>					
San Diego Ballet	15	16.5	162.8	50.1	2.7 – 3.0 – 3.8
San Diego Modern Dance	23	27.8	165.3	55.2	3.2 – 3.1 – 3.3
Hungarian Ballett	13	19–37 (span)	161.1	47.5	3.0 – 3.2 – 4.0
Hungarian Folk Dance	18	19–37 (span)	159.5	52.8	4.7 – 4.1 – 2.7
Californian Ballet	7	31–32 (span)	162.6	50.1	2.9 – 3.4 – 3.7
Professional Montreal Jazz	6	19.0	162.0	47.6	3.1 – 2.4 – 4.4
Amateur Montreal Jazz	17	24.7	162.0	59.1	5.0 – 3.5 – 2.4
Amateur Grossmont Jazz	11	27.0	162.3	54.5	4.7 – 3.1 – 2.8
Latin Dance Usingen	19	19.5	166.8	58.9	4.7 – 4.5 – 3.0
<b>Male Dancers</b>					
Amateur Montreal Jazz	4	21.0	174.0	64.6	2.0 – 3.6 – 3.6
Amateur Grossmont Jazz	4	23.1	181.9	73.3	3.0 – 4.1 – 3.3
Latin Dance Usingen	16	23.1	181.9	76.5	4.1 – 4.9 – 2.8

The studied German Latin dancers from Usingen are ranked relative to the collected anthropometric and somatotypal parameters above most other dance groups.

In conjunction with the also measured higher body fat percentage of the dancers of both sexes compared to the investigated control fitness group, there is a clear signal to optimize the nutritional status and the body composition.

On the other hand, the results support the earlier postulate of Kretschmer (1921), who stated that pyknic physique types in dance sport are more common than others somatotypes.

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