Anthropometric profile of international young table tennis players

Luis Carrasco [1], Francisco Pradas[2], Ana de la Torre[3], Marta Rapún[2] and Pilar Martínez[2]

[1] Department of Physical Education and Sport, Seville University, Spain
(Tel : +34-954-559786; E-mail: lcarrasco@us.es)
[2] Department of Music, Plastic and Corporal Expression, Zaragoza University, Spain
(Tel : +34-974-238426; E-mail: franprad@unizar.es)
[3] Sports Medical Center. Sports National Council. Spain.
(Tel : +34-91-5896700; E-mail: anadtcomba@yahoo.com)

Abstract: The aim of this study was to analyze the anthropometric profile of international young table tennis players who participated in 2007 Eurokids training camp. A total of 35 players (20 males and 15 females), aged between 11 and 13 years were evaluated. Different body measurements were recorded following the guidelines proposed by the ISAK: body mass, height, skinfolds (biceps, triceps, subscapular, suprailiac, supraspinal, abdominal, anterior thigh, and medial calf), girths (arm flexed and relaxed; arm flexed and tensed, thigh, and calf) and breadths (biepicondylar of the humerus, bistyloid, and biepicondylar of the femur). In addition to anthropometric analysis, body composition and somatotype of participants have been assessed. A t-test for independent samples was performed to examine statistical differences between sex groups. A balanced mesomorphy and endo-mesomorph profile were registered for male and female players, respectively. Within the tested age interval, range body fat content in female players was higher than in male players.

Keywords: Table tennis, Body composition, Somatotype, Young players.

1. INTRODUCTION

A great number of programs for talent identification in sports include anthropometric and body composition analyses [1]. Although in many sports body size represents a key point for the athlete's performance and significant differences can be observed between male and female athletes, this does not seem the case of table tennis.

2. METHODOLOGY

A total of 35 table tennis players aged between 11 and 13 years, all of them participating in 2007 Eurokids training camp held in Murcia (Spain), took part in this study.

A written informed consent was obtained from parents or tutors of all subjects before participating in this study.

Anthropometric analysis was conducted following the International Society for the Advancement of Kinanthropometry (ISAK) procedures. Body mass, height, body mass index (BMI), skinfolds (biceps, triceps, subscapular, pectoral, iliac crest, abdominal, thigh, and calf), girths (arm relaxed and tensed, thigh, and calf), and bone diameters (wrist, elbow and knee) were assessed. In addition, body fat percentage and somatotype were calculated using the formulas proposed by Faulkner [2] and Heath and Carter [3], respectively.

Descriptive analysis of all recorded data was performed using the software SPSS v.15. Moreover, an independent t-test was developed to assess for differences between male (M) and female (F) players. Confidence interval was set at 95% with a significance of $p < 0.05$.

3. RESULTS

General characteristics of table tennis players are summarized in Table 1.

Table 1 General characteristics of the subjects.

	Age (years)	Body mass (kg)	Height (cm)	Body mass index ($kg \cdot m^{-2}$)
Males (n=20)	12.06±0.8	41.80±4.83	151±0.1	18.33±2.19
Females (n=15)	11.94±0.73	42.75±8.59	153±0.1	17.98±2.40
Total (n=35)	12.00±0.77	42.27±6.98	152±0.1	18.16±2.31

Data are expressed as mean ± SD.

Similar results were achieved both in female and male players. Regarding anthropometric measurements, female players achieved higher values on height, body mass, and skinfolds (also sums of 4 and 6 skinfolds) although no significant differences were recorded. On the other hand, higher values of body mass index, arm and leg girths and bone diameters (wrist, elbow, and knee) were observed in male players although it was not significant (Tables 1 – 4).

Table 2. Trunk and upper limb player's skindfolds (mm).

	Tric.	Subsc.	Bic.	Pec.	Supsp	Supil.	Abd.
M (n=20)	11.27 ± 3.44	9.10 ± 5.07	5.56 ± 2.11	10.47 ± 6.17	7,82 ± 3.27	9.05 ± 4.79	13.74 ± 7.54
F (n=15)	13.07 ± 4.12	9.76 ± 3.59	6.53 ± 2.53	11.07 ± 4.96	10.63 ± 5.36	11.55 ± 5.31	15.85 ± 8.39
Total (n=35)	12.17 ± 3.79	9.43 ± 4.28	6.10 ± 2.32	10.77 ± 2.44	9.23 ± 4.53	10.31 ± 5.06	14.80 ± 7.81

Tric.: tricipital; Subsc.: subscapular; Bic.: bicipital; Pec.: pectoral; Supsp.: supraspinal; Supil.: suprailiac; Abd.: abdominal.

Table 3. Lower limb and sums of 4 and 6 skinfolds (mm).

	Quadriceps	Medial leg	∑4	∑6
M (n=20)	16.86 ± 6-03	11.06 ± 3.84	43.16 ± 20.14	71.08 ± 28.69
F (n=15)	17.75 ± 5.37	12.85 ± 4.61	50.24 ± 20.88	80.85 ± 29.01
Total (n=35)	17.31 ± 5.56	11.96 ± 4.22	46.71 ± 20.22	75.97 ± 28.42

∑4: sum of 4 skinfolds; ∑6: sum of six skinfolds.

Table 4. Girths and diameters measured on table tennis players (cm).

	Arm	Medial leg	Epic fem.	Epic hum.
M (n=20)	24.38±2.07	29.68±3.32	9.15±0.41	6.04±0.20
F (n=15)	23.87±62.44	30.90±3.13	8.77±0.61	5.81±0.41
Total (n=35)	24.13±2.21	30.34±3.18	8.96±0.54	5.93±0.33

Attending to body composition results, it may be noticed that male players showed higher muscle mass values, especially when absolute data were expressed. However, percentage of muscle mass was higher in female than in male players. In any case, these results did not show statistical differences. Female players showed higher values of body fat and percentage of body fat (absolute and relative values, respectively) but no differences were found (Figure 1).

Somatotype analysis revealed a central profile for female players (3.3-3.7-3.7 for ectomorphy, mesomorphy and endomorphy, respectively) and ecto-mesomorph profile (2.8-4.4-3.4 for ectomorphy, mesomorphy and endomorphy, respectively) for male players (Figure 2). In this sense, male players showed a predominant mesomorphy, being also higher than the female one ($p \leq 0.05$).

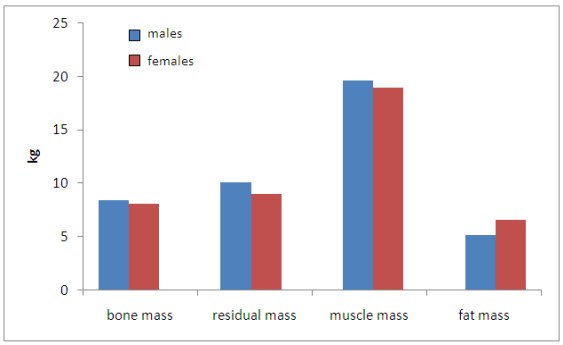

Fig. 1 Body composition of table tennis players.

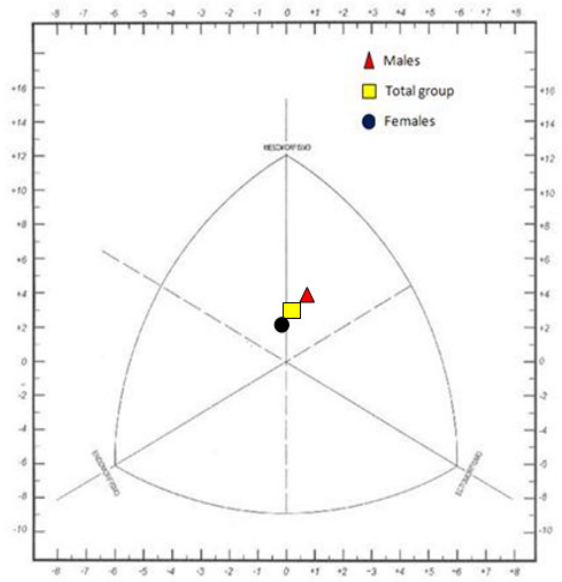

Fig. 2 Somatochart.

4. DISCUSSION

Anthropometric profile of both young female and male players is very similar. New studies focused on the importance of anthropometric parameters in table tennis performance are needed to clarify their inclusion in talent identification programs.

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