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Research Article

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Study of the features of bone pelvis options in genital somatotypes in young female athletes engaged in tennis

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Abstract

The article presents the results of a study on the study of the individual characteristics of the size, species and buildings of bone poles, in sexual vehicles, at the athletes of the youth age engaged in tennis. According to the results of the study, it was determined that in the group under study there are manifestations of not only inversion of sex somatotypes, but also numerous, often combined variants of disorders, both in the size ratios, so forms and types of pelvis.

Keywords: Female Athletes, Tennis, Youthful Age, Sexual Dimorphism, Sex Somatotypes, Bone Pelvis, Narrow Pelvis.

Abbreviation:

SDI: Sexual Dimorphism Index, Ws: The Width Of The Shoulders, Wp: The Width Of The Pelvis, Cms: The Candidate In The Master Of Sports, Ms: The Master Of Sports, Ipb: The Index Of The Pelvis Bones, Cu: Conventional Units, Anp:Anatomically Narrow Pelvis.

Introduction

Modern female sport, both the sport of higher achievements and amateur, requires considerable effort from athletes, with frequent and intense training. This can not not affect the performance of their body. The abundance of intense physical and psycho-emotional loads, without proper compensation and medical observation, inevitably leads to adaptive changes in the body of athletes of different age groups [1-3,4,9]. At the same time, young athletes are most vulnerable and susceptible to intensive and psychological changes, which are especially publisher, which began sports before menstruation, as well as female athletes of youthful age. Study of adaptive changes arising from female athletes under the influence of sports, and sometimes not adequate, physical and psycho-emotional loads, which they are exposed during training and competition, is always relevant and in demand. The author's work of recent years are represented by the results of studies dedicated to the anatomical anthropological and morphofunctional features of the body of athletes of all age groups, mainly the features of a number of values of their reproductive, endocrine and cardio-respiratory systems. Is an exception to the study of anthropometric indicators and morphological index values of bone pelvis athletes in their ontogenesis.

It should be noted that research relating to physical performance, anthropological indicators and technical criteria for the preparation of tennis players of different age groups, there is sufficient amount [3-5]. But, in affordable scientific and scientific and methodological literature, we did not discovered the data on the study of the initiation of sexual dimorphism in young athletes engaged in tennis. Rare are research work on the study of the anatomo-anthropological and morphofunctional peculiarities of the bone pelvis in athletes of puberty and youth in individual playful sports, in particular the tennis players [3-5]. A number of researchers of this problem indicate the available changes in the bone pelvis in athletes, in the form of a variety of forms of narrow pelvis, anatomically narrow pelvis, their "structural" forms, with I-II degrees of narrowing [2]. There are practically no fundamental, systemic scientific research relating to polyethological moments of bone pelvis changes in female athletes in their ontogenesis. Therefore, we believe that the peculiarities of the knowledge of genital somatotypes, the anthropometric and morphological features of the building of the bone pelvis of girls of the junior age engaged in tennis can help increase not only the level of their sporting skills, but also to preserve their somatic and reproductive health. This led to the relevance of our research, both by the search for new data on the features of the adaptation and vital activity of a person and in the prevention of reproductive pathology in athletes of this age group.

Aim: The study and analysis of the data obtained on changes in the size, formation, structure and types of bone pelvis, and the associated anatomical values and morphological indicators in young tennis players.

Material and Methods

To obtain the necessary information on the size of the bone pelvis

of athletes and its views, in the study group, we used such research methods such as pelvimetry and recalculation of the data obtained in order to obtain additional indicators, such as true conjugate (to determine the existing degree of pelvis.) The classification of narrow pelvis and their forms in litzmann, the definition of the anthropometric values such as the width of the shoulders (WS) and the pelvis (WP), to determine the type of physique in athletes, and the index of sexual dimorphism (SDI) on J. Tanner (1996).

Also, according to the obtained values of the WS and WP, sampling was carried out in athletes, based on the criteria, the classification of J. Tanner, namely: mesomorphic sex somatotype (73.1-82,1), as a transitional, between characteristic gynechomorphic sex somatotype (less than 73.1) and andromorphic somatotype (more than 82.1). Both mesomorphic and andromorphic floors belong to inversions-pathological displacements of somatotypes, not characteristic of gynechomorphic sexatype [3-5,7-10].

This study was conducted in Ukraine, on the basis of a number of sports clubs involved in the preparation of tennis players. The study was attended by athletes of youth (n=112), engaged in tennis. Sports qualifications of athletes who participated in the study - from the I discharge to the candidate in the Master of Sports (CMC) and the Master of Sports (MS). Studies of classes in this sport - from two to seven years. Training frequency 4-6 times a week, from 2 to 4 hours. The average age of athletes 19.58 ± 0.68 years. It was found that 9(75.00%) of athletes of youthful age, began their studies with tennis before the onset of menarhe (first menstruation).

Result and Discussion

After conducting anthropometric measurements, with the determination of the width indicators (biakromial size) and the width of the pelvis (bicrystar size, or d. cristarum), the following results were obtained, reflected in Table. 1.

Table 1: Shoulder width and pelvis indicators in the group studied.

Name of the indicator	Shoulder width, (cm)	Pelvis width, (cm)
Tennis players of youth (n=112)	36,87 ± 0,79	27,05 ± 0,23

According to the analysis of the results obtained, it can be argued that tennis players shoulder width indicators significantly exceed the size of their pelvis width. In this case, the values of the pelvis width do not correspond to the generally accepted anatomical indicators of the normal sizes of the pelvis width (distancia cristarum) equal to 28-29 cm [1,2,11,13,14]. Additionally, to determine the degree of maturity of the pelvic bones, we defined the index of the pelvis bones (IPB), as the integral indicator of the formation of the bones of the pelvis, according to the method of N.I. Kovtyuk [6]. According to its research, the peak of the growth of the main size of the bone pelvis occurs, on average, in 12-13 years old, and coincides with the appearance of menarche (first menstruation). In this regard, the age period coming to the pubertal and youth age is critical periods of ontogenesis, in the process of formation and maturation of the pelvic bones [2,6,12,13]. N.I. Kovtyuk was found that for girls of youth age, the IPB value ranges from 30.0 to 40.0 conventional units (cu), which corresponds to their age norm [2,6].

After carrying out the necessary anthropometric measurements and the mathematical calculation of this morphological importance, we obtained the following results: the average IPB value in athletes of youth 32.68 ± 1.06 cu. In this case, the obtained data showed that in 4(33.33%) athletes of youthful age, the ICT values are slightly lower than their age norm (from 27.5 to 29 cu), which indicates that the ripening ripening process pelvis structures. The remaining 8 (66.67%) athletes of youthful age, the obtained IPB values, with values above 30.0 (from 31 to 54 cu), indicate that the process of ripening and the formation of their pelvic bone structures is completed [2,6].

After determining the anthropometric indicators of the WS and WP, we carried out a mathematical calculation of the values of the interface index (SDI) and the release of sex somatotypes in the study group, with the release of gynechomorphic, mesomorphic and andromorphic sexual somatotypes in female athletes [3-5,7-10]. Data on obtained values of sexual somatotypes is reflected in Table 2.

Table 2: Distribution of female athletes by sex somatotypes.

Name of the indicator	Gynechomorphic sex somatotypes	Mesomorphic sex somatotypes	Andromorphic sex somatotypes
Tennis players of youth (n=112)	2(16,67%) Sportswoman	6(50,00%) Sportswoman	4(33,33%) Sportswoman

Attention is drawn to the fact that in the studied group there are athletes 10(83.33%), with revealed mesomorphic and andromorphic sexual somatypes. Only 2(16.67%) was preserved ginechomorphic sexual somatotype. Additionally, by surveying athletes, it was found that these girls have a small sporting experience from 1 year to 2.5 years. Female athletes who have experience in sports, incl. And the tennis from the 3rd or more years dominates the mesomorphic and andromorphic sexual somatotypes [3-5,7-10].

To identify existing changes in the size and structure of bone poles in athletes, we conducted a pelviometry, with a classic definition of 4 outdoor sizes of a large bone poles and, indirectly, through recalculation, the value of the true conjugate: distantia spinarum normally 25-26 cm: distantia cristarum - normally 28-29 cm: d. trochanterica normally 30-32 cm: c. externa - normally 20-21 cm: c. vera true conjugate or direct logging size into a small pelvis normal 11 cm [1,2,11-14]. In the entire group (n=112),

these pelvimetry were obtained: d. spinarum 24.37 ± 0.81 cm, d. cristarum - 27.11 ± 0.65 cm, d. trochanterica 31, 21 ± 0.72 cm, c. externa 19.46 ± 0.47 cm, c. vera 10.03 ± 0.34 cm ($p<0.05$).

When analyzing the results of pelviometry, with the definition of two transverse (d. spinarum, d. cristarum) and 1 direct size (c. externa) was reliably ($p<0.05$) that the indicators obtained are less than the anatomical standards of the outer sizes of the pelvis: d. spinarum 25-26 cm, d. cristarum 28-29 cm, c. externa 20-21 cm [1,2,11,12,13,14]. Exception is only indicators d. trochanterica) corresponding to normal values (30-32 cm). According to the results of measuring the size of the pelvis, we obtained the following pelvimetric values in the studied group (n=112): in 7 (58.33%) of the studied female athletes: d. spinarum 24.41 ± 065 cm ($p<0.05$), d. cristarum 27.68 ± 0.44 cm ($p<0.05$), d. trochanterica - 32.64 ± 0.93 cm ($p<0.05$), c. externa 18.55 ± 0.35 cm ($p<0.05$), c. vera 10.27 ± 0.25 cm ($p<0.05$).

All obtained values of dumpliometry, except for values d. trochanterica, which correspond to the norm, less regulatory indicators, which suggests the presence in this group of athletes anatomically narrow pelvis (ANP) [2,11-14]. With a more detailed consideration of the obtained pelviometric values, it was possible to reliably ($p<0.05$) to establish that the indicators d. spinarum less anatomical and obstetric norms were identified in 7(58.33%), d. cristarum - in 5(41.67%), d. trochanterica in 3(25.00%), c. externa in 7(58.33%), c. vera in 7(58.33%). It should be noted that in 7(63.64%) female athletes, the indicators d. trochanterica exceeds the normative indicators, which indicates the exceeding the normative values of this transverse size of the pelvis.

The athletes who were defined by the ANP were attributed to such sex coatings on the classification of J. Tanner, as: andromorphic sexatype 4(33.33%), mesomorphic sexatype 5(41.67%). In 2(41.67%) female athletes of the youthful age attributed to the gynechomorphic and 1(8.33%) to mesomorphic sexotypes (respectively 4(33.33%) and 1(8.33%) were identified Normal pelvis sizes, with appropriate norms, pelvimetry indicators [2,11-14].

Analysis of the identified embodiments of narrow pelvis, with different degrees of their narrowing showed that the normal values c. vera (11 cm) in the whole group, had 4(33.33%) girls. Direct input size in small pelvis, or c. vera, by values of which determines the degree of narrowing the pelvis [11-14], less than 11 cm was defined in 8(66.67%) female athletes, cross-narrowed pelvis in 6(50.00%), "Straightened" shapes of the pelvis in 6(50.00%), I degree Taste narrowing (less than 11 cm, but more than 9 cm) [2,12-14] - in 6(50.00%), the II degree of narrowing (8.5 cm) in 2 (16.67%) female athletes.

Conclusion

1. The study establishes that in the group of athletes of puberty engaged in tennis from 3 or more years, mesomorphic and andromorphic sexatypes are beginning to be formed, as the result of inversion and adaptive restructuring in organisms 10(83.33%) of these female athletes.
2. All obtained 3 sizes, except values d. trochanterica-less regulatory indicators, which makes it possible to assert the presence of anatomically narrow pelvic (ANP) female athletes in this group.
3. The female athletes who were defined out were attributed to such sexattoes as: andromorphic sexual somatotype 4 (33.33%), mesomorphic sexual somatotype 5(41.67%) sportswoman.
4. The direct size of the entrance to the small pelvis (c. vera), less than 11 cm was defined in 8(66.6.67%) female athletes, cross-narrowed pelvis in 6(50.00%), "Straighted" shapes of the pelvis in 6(50.00%), I The degree of thase narrowing (less than 11 cm, but more than 9 cm) in 6(50.00%), and the degree of narrowing (8.5 cm) in 2(16.67%).

Conflict of Interest

I have no conflict of interest.

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