Physical evaluation of 6-7 years old female preselected tennis players

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Objective Through testing and analysis the characteristics of body shape，body composition，bone growth and physical fitness，hemoglobin, testosterone of 6-7 years old female preselected tennis players，the study aim was to provide reference bases for the early selection of female tennis players.
Methods A total of 75 female preselected tennis players(initial selection by the coaches) aged from 6 to 7 years were came from Hebei, Hubei, Qinghai and Inner Mongolia province, who came to Research Center for Heath related Physical Fitness Evaluation of Guangzhou Sport University for physical fitness test from July 2016 to July 2018. The height, weight, length of upper limbs, length of lower limbs, iliac width, shoulder width, body fat, muscle mass, bone age，bone mass density(BMD), anaerobic power and PWC170, reaction time, vertical jump, grip strength, hemoglobin, testosterone were measured using related instruments and methods, and calculated derived indicators BMI, iliac width/shoulder width. Data were compared with the national standard of physical health of students and/or evaluated by deviation method，and correlation had been analysed among physical parameters.
Results 1)The 75 female preselected tennis players' aged from 6 to 7 years height and weight were 128.10±5.32cm and 25.70±3.87kg，and there are 47 girls height upper medium grade level, 60% of which weight was at a moderate level, their BMI were 15.48±1.50kg/m^2，and all in the normal range, iliac width/shoulder width ×100 was 76.52±7.00, 70.7% 0f which was above medium grade level, the upper and lower limbs were 54.28±3.60cm and 71.68±5.26cm, girls' PBF were 21.03±6.44, muscle weight were 18.94±3.00kg, BMD were 2.04±2.20, and no low bone strength were fund; Anaerobic power of all female preselected tennis players were 135.93±31.65kg.cm, and the values of the PWC170 relative weight were 10.79±2.56kg.m/min.kg, reaction time were 0.628±0.128s, vertical jump were 21.13±4.95cm, the grip of right and left hand were 10.36±2.15kg and 10.06±2.40kg, the physical fitness parameters above in the upper middle class were more girls than the lower middle class; The hemoglobin content was 132.15±8.70g/L, which was above the normal level (110 -160g/L), the serum testosterone concentration was 1.52±1.20umol/L, which was much higher than that of normal girls (0-0.7umol/L).
2) When age was controlled, there was negative correlation between T and PFB, vertical jump and body weight, PWC170 and reaction time($P<0.05$), and there was positive correlation between hemoglobin and muscle weight($P<0.05$), height, and vertical jump($P<0.01$), muscle weight and anaerobic power($P<0.01$)，anaerobic power and height，weight，BMI，upper and lower limbs($P<0.01$, $P<0.01$, $P<0.01$, $P<0.05$, $P<0.01$)，PWC170 and vertical jump，the grip of right and left hand($P<0.01$, $P<0.05$, $P<0.05$), vertical jump and upper, lower limbs, iliac width/shoulder width($P<0.01$, $P<0.01$, $P<0.01$).
Conclusions 75 female aged from 6 to 7 years old preselected tennis players' body shape, physical fitness, physiological and biochemical function were superior to peers, and in those parameters，there were more people in upper middle grade than lower middle grade. There is a certain correlation between body composition, shape and fitness of female preselected tennis players' aged from 6 to 7 years.