FINGERPRINT CHARACTERISTICS OF HO CHI MINH CITY WOMEN'S FOOTBALL QUALIFYING TEAM

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Abstract:

The research used 8 indicators to carry out fingerprint biometrics for 23 athletes of theHo Chi Minh City women's footballqualifying team. The research results showed the total fingerprint score: 3 athletes got excellent, 7 got good, 10 got fair and 3 got average scores.Athletes who got fair scores and above, especially those who got good and excellent scores, were also the best players of the team.

Keywords: Fingerprints, athlete selection, female athlete, Football.

INTRODUCTION

Dermatoglyphics is a science in genetics. In 1685, GouardBidloo published the first book on fingerprints.In 1926, Harold Cummins, an American anatomist and his partner, gave birth to the science of studying human skin patterns with the term Dermatoglyphics. In 1976, Schauman and Alter published research results, which clearly indicated the relationship between fingerprints and cardiovascular disease, Alzheimer's, leukemia ...In 2004, the IBMBS - International Behavioral & Medical Biometrics Societywas established.Today, countries such as the US, Japan, China, Taiwan ... have applied the study of fingerprints in education to improve the quality of teaching and learning.In 2010, ADRS - Asian Dermatoglyphics Research Centrewas founded.Countries like China, Taiwan, Malaysia, Singapore, etc. have applied this in areas such as training, human resource management, recruitment, entertainment, sports and even geniusorientation.In addition, dermatoglyphics also supports the assessment of some congenital diseases.This is significant for the early detection of disease.Therefore, dermatoglyphics is very important in the selection of sport talents. In this research, we studied the fingerprints of Ho Chi Minh CityWomen's Football qualifying team to discover the characteristics of women's football athletes, which can be applied in the initial selection.

RESEARCH METHODS

During the research process, we used the synthesis method to analyze the related documents, the biometric method and the statistical math method.

Research subjects: Fingerprint characteristics of athletes of Ho Chi Minh City Women's Football qualifying Team.

Study object: 23 female athletes from the Ho Chi Minh City Women's Football qualifying team.

RESULTS AND DISCUSSION

1. Determining the criteria of fingerprint biometric application for the athletes of the Ho Chi Minh Citywomen's football qualifying team

To conduct the biometric fingerprints of Ho Chi Minh City women's football qualifying team's athletes, the research has applied Shao ZiWan's8 general criteria and standards for assessing fingerprints (1988), presented in Appendix 2. The method of fingerprint biometrics has been presented specifically in the article by: Nguyen Thi Gam (2016 Initial application of dermatoglyphics in the selection of gymnastics athletes,Journal of Sports Training and Science, Ho Chi Minh City Sports University, 4 (14), 58-63.

2. Fingerprint biometric results of Ho Chi Minh City women's football qualifying team

2.1. Fingerprints criteria

Fingerprint biometric results of HCMC women's football players are presented in Table 1.

Table 1 shows that the fingerprints of athletes of the Ho Chi Minh City Women's Football qualifying team have the following features:

- Arches appearance rate 21/230 (9.13%), Loops 133/230 (57.83%), Whorls 76/230 (33.04%, including double loop whorls 30/230 - 13.0%).

According to Wang Yu Kang's research (1986): The arches pattern rate can reflect the

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Table 1. Fingerprint biometric results of HCMC women's football players

Kinds of fingerprint		Result		3 main fingerprint	
		m_i	%	m_i	%
Arches (A)	As	11	4.80	21	9.13
	At	10	4.30		
Loops (L)	Lu	125	54.30	133	57.83
	Lr	8	3.50		
Whorls (W)	Plain (Wp)	28	12.20	76	33.04
	Central pocket loop (Wc)	5	2.20		
	Spiral (Ws)	13	5.70		
	Double loop (Wd)	30	13.00		

staminaof athletes, the higher the arches appearance rate, the worse the stamina. For ordinary people, the appearance rate of arches pattern is 2.24%. As for some genetic diseases, the appearances rate of the arches pattern is quite high, which can be 60-70%, even 100%.Arcordingto Thieu Te Uyen's research (1989): The arches appearance rate of elite athletes in men's track and field is1.3%, and 2% in women's; in men's physical education is 0.5%, in women's is 2.8%; men's athletics 3,0 %, women's 2.5 %; in men's volleyball is 2.2%, women's is 0.8%. According to the research results by Nguyen Thi Gam (2017),the arches pattern appearance rate of HCMC Aerobic Gymnastic athletes is 0%. While it is 21/230 for the athletes of the Ho Chi Minh City Women's Football qualifying team(9.13%). Thus, compared to the above mentioned sports, this is quite a high rate.It proves that the innate factor of the strength of some athletes in the Ho Chi Minh City Women's football team is limited. Specifically, there are 3 athletes with 2 arches, 1 player with 5 arches and 1 player with 7 arches. However, long-term endurance has a genetic level of 70% (According to Nguyen Ngoc Cu-1997),the other 30% can be improved through exercise.Therefore, coaches need to pay attention that there are separate methods to foster and improve the athletes' endurance.

Accordingto Yu Wen Qian, Tai Feng (2012): People with relatively good upper limb strength, usually have a low appearance rate of whorls pattern, the central pocket loop whorls' appearancerate of elite tennis players in the province of Liaoning – China is 27% for males 30% for females. According to the research results of the author Nguyen Thi Gam (2017), the central pocket loop whorls' appearancerateof HCMC elite female Aerobic Gymnastic athletes is 7%. Athletes of the Ho Chi Minh City Women's Football qualifying team have the appearance rate of whorls pattern at 33.04%, higher than the aforementioned sports. This proves that the upper limbs' strength of some of the athletes is still limited. However, relative strength has a low genetic level of 64% (According to Nguyen Ngoc Cu-1997), that is, 36% can be modified through training. Moreover, in football, the performance is unaffected much by the upper limbs' strength. So this limitation can be overcome. On the contrary, athletes with whorls pattern high appearance rate, especially double loop whorls, have well-developed brains, quick response, fast thinking speed…this provides them with good tactical thinking. This is a unique necessity for football players.

According to Yu Wen Qian, Tai Feng (2012): The higher the appearancerate of the double loop whorls, the higher their ability to coordinate movement, as well as reaction speed, and mental flexibility. Accordingto Thieu Tu Uyen (1989), The appearance rate ofdouble loops pattern for normal people is 4% ~5%, and about 10% for elite athletes. According to the research results of the author Nguyen Thi Gam (2017), HCMC elite female Aerobic Gymnastics athletes have the double loops pattern appearance rate of 19%. Athletes of HCMC female football team (1) have the double loop whorls pattern appearance rate of 13%, higher than of Chinese elite athletes. Including 12/23 (52.2%) athletes with double loop whorls

pattern. Especially, there were 3 athletes with 3 double loop whorls, 1 athlete with 4, and 1 with 5. This proves that the majority of HCMC women's football qualifying team has high movement coordination, reaction speed and mental flexibility. This is beneficial for acquiring techniques, tactical thinking and quick reaction in football competition.

- In addition, according to the results from Table 1: Structure of 3 main fingerprints pattern of the Ho Chi Minh City Women's Football Team: Loops (L) 57.83 %, Whorls (W) 33.04%, Arches (A) 9.13%. Which may be indicated by: L.W.A. According to the research results by Nguyen Thi Gam (2017): HCMC elite Aerobic Gymnastics athletes have the following rate: Loops 53%, Whorls 47% and Arches is 0% (L.W.A). Accordingto ThieuTuUyen (1989) elite female gymnastics athletes also have the distribution of major fingerprint patterns (L.W.A). This is a similar feature between the elite female gymnastics athletes, the elite HCMC Aerobic Gymnastics athletes and the athletes from the HCMC Women's Football qualifying team.

2.2. The ATD angle

The results of fingerprint biometrics ATD angle of athletes from HCMC Women's Football qualifying team shown in table 2.

Table 2. Fingerprint biometrics ATD angle results of athletes from HCMC Women's Football qualifying team

ATD angle (degree)	Resutl		
	$\overline{x}$	Average	Total score
Left hand	40.78	41.35	10.04
Right hand	41.91		

Players in the Ho Chi Minh City Women's Football Team have an average of 40.78 degrees on the left hand and 41.91 degrees on the right hand.The average of two hands is 41.35 degrees, higher than that of Ho Chi Minh City's elite Aerobic Gymnastics athletes with an average value of ATD = 37^0 in both hands (According to the research results of the author Nguyen Thi Gam - 2017). However, the first 13 athletes had the same ATD angle as the Chinese elite

athletes. Especially, there are 2 athletes with ATD angle of 33 degrees. This proves that these athletes have high potential to acquire and facilitate skills in Football. ATD also represents mental health. Athletes with small ATD angle tend to have better mental health. This is beneficial for tactical thinking as well as bearing the pressure of the competition.

2.3. The base of thump area

According to Zhang Chun Fu and Li ZhiRong (2003), "The base of thump area has a clear pattern, which is a typical variation of skin pattern and correlates with a number of geneticcirculatory and respiratory diseases.Therefore, the appearance rate of clear patterns in the thump base area is an important indicator to evaluate the cardiopulmonary function of athletes".

According to the research results of author Li Sui Gao (1980), for normal people, the rate of appearance of clear patterns in the thump base area is 10%. According to Shao Zi Wan (1989), the rate of appearance of clear patterns in the thump base area is very rare in elite athletes, only about 2.5%. According to the research results of Yu Wen Qian, Tai Feng (2012),Tennis players in Liaoning Province - China have the appearance rate of patterns clearly shaped in the thump base area as follow: Normal male athletes are 6%, elite male athletes are 4.7%; normal female athletesare 4.3%, elite female athletesare 3.2%.

According to the research results of the author Nguyen Thi Gam (2017), the elite female Aerobic Gymnastics athletes in Ho Chi Minh City did not have a clear pattern in both the thump base areas, accounting for 0%. Of the 23 players in the women's football team in Ho Chi Minh City, 1 athlete has a clear pattern in the lower thump base area. Therefore, more attention should be paid to this athlete in making the amount of movement as well as her position in the match accordingly. At the same time, it is necessary to regularly check and monitor the health of this athlete.

2.4. Palm wrinkles and hand triangle

The biometrics results showed that athletes from the HCMC Women's Football qualifying team all

have normal palm wrinkles on both hands (not too short), with a maximum score of 20/20.

Lai Rong Xing found that people with hand wrinkles of the II and III variants have very good flexibility.Athletes from the HCMC Women's Football qualifying team do not have a thorough palm wrinkles so they have a maximum score of 10/10.

The hand triangle of the athletes of the Women's football team in Ho Chi Minh City is also full, reaching a maximum score of 5/5.

After conducting biometrics and assessing each indicator, we summarized the fingerprint indicators of the elite Ho Chi Minh City Aerobic Gymnastics athletes, the results presented in Table 3.

We use the grading scale commonly used by Vietnamese people. The grading scale is as follows: 50 points or more - qualified, Average (50 ~ 64), Fair (65 ~ 79), Good (80 ~ 89 points), Excellent (≥ 90). Fingerprint biometric results show that the majority of athletes in the women's football team in Ho Chi Minh City reached the maximum score at 6/8 of the criteria: Arches pattern, palm wrinkles, upper and lower thumb base area, connecting area and hand triangle; In the ATD angle criterion: The player who has the lowest score is 1/20 (1 athlete), the highest is 18/20 (3 athletes); In the double loops pattern criterion: There are 5 athletes who got the maximum score of 20/20, 6 athletes scored 15/20, 1 athlete scored 10/20, 11 athletes scored 0/20; According to the grading scale in Table 1, there are 3 excellent athletes, 7 good athletes, 10 fair and 3 average athletes.In summary, the fingerprint biometric results have proved: In terms of innate genetics, the athletes of the women's football team in Ho Chi Minh City have convergedfully the typical elements of the elite athletes.

CONCLUSION

The research results have summarized the fingerprint characteristics of the athletes of the Ho Chi Minh City Women's Football team as follows:1).The ATD angle is normal (average ATD angle of both hands = 41.35o). This proves that the ability to acquire knowledge of most of these athletes are at the fair and good level; 2) Loops pattern (L) 57.83 %, whorls pattern

Table 3. Summary of biometric fingerprint results of the athletes of Ho Chi Minh City Women's Football qualifying Team (n=23)

Each indicator of skin pattern	Score	Total score/ 100 score
ATD angle	10.48	
Double loop whorls	8.70	
Arches	8.09	
Palm wrinkles	20.00	77.09
Upper thumb base area	10.00	
Connecting area	10.00	
Lower thumb base area	4.83	
Hand triangle	5.00	

(W)33.04%, arches pattern (A) 9.13%. The three main types of fingerprint patterns are distributed as follows L>W>A; 3) Double loop whorls appeared quite often: 12/23 athletes had them. Including 3 athletes with 3 double loop whorls, 1 athlete with 4double loop whorlsand 1 athlete with 5double loop whorls. It proves that the majority of athletes in the Ho Chi Minh City Women's Football team have the ability to coordinate movement, with high reaction speed, and mental flexibility; 4) The appearance rate of the arches pattern is fairly high (9.13%). It proves that some athletes have limited innate genetics endurance; 5) The appearance rate of short palm wrinkles is 0%; 6) There were no connection between the palm wrinkles; 7) 22/23 athletes have normal upper and lower thumb base area, No obvious deformations. Demonstrate that the athlete hasgood circulatory, respiratoryfunction and no congenital heart disease; 8) Full appearance of 8/8 hand triangles.

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