journal of sociological context
sosyolojik bağlam dergisi

ISSN: 2757-5942. Sosyolojik Bağlam®, 2023 4(2) 182-192
https://doi.org/10.52108/2757-5942.4.2.6

◆ *Research Article*

An Investigation of the Relationship between Fingerprints and Anaerobic Powers of Sports Sciences Students

Haci İsmail ÇINGI[**]
0000-0001-9298-4323

Sadettin ÇALDIRAN[†*]
0000-0002-2489-0269

Mustafa YILMAZ[‡]
0000-0001-7686-5711

Ömer ÇINGI[*]
0009-0000-8465-0016

ARTICLE INFO

Submitted: 13. 04. 2023
Revision Requested: 25. 06. 2023
Final Revision Received: 07. 07. 2023
Accepted: 28. 07. 2023
Published Online: 15. 08. 2023

Keywords:

Sports Science
Fingerprint
Anaerobic Power
Muscle Fiber
Sports Ability

ABSTRACT

In this study, the relationship between fingerprints and the anaerobic power of athletes was analyzed in a random sample group in correlation type. Fingerprints have been used electronically for identification in forensic criminology and authentication in business and social life with the development of dermatoglyphics science in the last century and the understanding that fingerprints are unique to the individual. Today, it is known that much research is being carried out to determine genetic characteristics, heredity, gender, character, and ability analysis from fingerprints. In this study, the height and weight measurements of 126 athletes from Cumhuriyet University Faculty of Sports Sciences were taken with the appropriate sampling method, and the vertical jump test was applied to the individuals. The anaerobic power of the athletes was calculated with these collected data. The coding method determined 10 fingerprints of the same sample group, and fingerprint classes and attributes were determined by observation. According to the findings obtained from the data analysis, a significant difference was observed between the anaerobic powers of the athletes according to their fingerprint classes. The anaerobic power of athletes with W2 Normal fingerprint codes has been observed to be higher than those without W2. However, it has been observed that fingerprints in certain codes increase and decrease in direct proportion to anaerobic power. In light of the data obtained in this study, limited but meaningful data were obtained in the direction of detecting sportive skills from fingerprints.

[*]1**Corresponding Author**: Haci İsmail Çıngı (Yüksek Lisans Öğrencisi), Cumhuriyet Üniversitesi, Eğitim Fakültesi, Eğitimin Felsefi, Sosyal ve Tarihi Temelleri Anabilim Dalı, Sivas, Türkiye ✉ haciismailcingi46@gmail.com
[*]2 Sadettin Çaldıran (Yüksek Lisans Öğrencisi), Cumhuriyet Üniversitesi, Beden eğitimi ve Spor Anabilim Dalı, Sivas, Türkiye ✉ sadettincaldiran@gmail.com
‡3 Mustafa Yılmaz (Uzm. Psikolojik Danışman), Milli Eğitim Bakanlığı, Fatma Temel Turhan Bilim ve Sanat Merkezi, Yozgat, Türkiye ✉ yilmazmustafa.pdr@gmail.com
[*]4 Ömer Çıngı (Yüksek Lisans Öğrencisi), Topkapı Üniversitesi, Güvenlik Bilimleri ve Uygulamaları Anabilim Dalı, Kıbrıs ✉ omercingi100@gmail.com
Kaynak Gösterimi/ Citing This Article: Çıngı, H. İ., Çaldıran, S., Yılmaz, M. ve Çıngı, Ö. (2023). An investigation of the relationship between fingerprints and anaerobic powers of sports sciences students. *Sosyolojik Bağlam Dergisi, 4*(2), 182-192. doi:10.52108/2757-5942.4.2.6

1 Introduction

The current understanding of education addresses both education and the individual in every aspect. Individual differences, interests, learning styles, intelligence, and abilities have a significant impact on every process of education, and it is observed that pre-knowledge and motivation factors are also considered in this process (Kuzgun & Deryakulu, 2006). The concept of intelligence and ability has been the subject of many studies. Gardner approached the concept of intelligence differently from many researchers. He stated that intelligence needs to be evaluated in a single dimension and many dimensions (Demirel et al., 2006). This understanding allowed Gardner to develop the theory of multiple intelligences. Gardner (1993) stated that environmental factors and inheritance play a supportive or inhibitory role in the development of intelligence areas that he presented with the theory of multiple intelligences. In addition, the existing opportunities, cultural values, moral and customary conditions of the society to which we belong, and the opportunities of individuals and their families directly affect the development of intelligence areas positively or negatively (Bümen, 2002). It is seen that Gardner expressed the concept of intelligence, which is listed with ability above, as ability in many different places (Dağlıoğlu, 2015).

One of the intelligence areas explained in Gardner's theory of multiple intelligences is Bodily-Kinesthetic Intelligence (Yavuz, 2001). Bodily-Kinesthetic Intelligence is the ability to effectively use brain and body coordination, express oneself through gestures and facial expressions, and create products using the body (Büyükalan, 2003; Gardner, 2006). Individuals with high Bodily-Kinesthetic Intelligence cannot remain motionless for long periods, learn through movement, engage in multiple sports, enjoy dancing, moving, and touching, participate in physical activities such as model-making, remember actions more than words, show skill and accuracy in physical work, and have talents in areas such as athletics and role-playing (Vural, 2004). Research on individuals with high Bodily-Kinesthetic Intelligence has revealed that they have different types of muscle fibers (Yıldız, 2012). Muscle fibers are known to be divided into two main groups, Type 1 and Type 2. The differentiation between these muscle fibers is based on their physiological and metabolic characteristics. Type 1 muscle fibers are slow-twitch and appear red in color. They are suitable for long-lasting contractions and resistant to fatigue. Type 2 muscle fibers are further divided into Type 2a and Type 2b, which are fast-twitch and have high power output but are prone to fatigue. Type 2b muscle fibers have fewer mitochondria, are white in color, and use the anaerobic pathway in ATP synthesis. They have a quick and strong contraction ability but also fatigue quickly, similar to Type 2a fibers (Altundere, 2020). Short-distance runners, who require maximum power output in a short amount of time, have more Type 2 muscle fibers, while marathon runners have more Type 1 muscle fibers in their muscles. (Miçooğulları, 2014).

Moreover, it is known that individuals with Type 1 muscle fiber structure excel in long-distance swimming, running, cycling, and horseback riding, while individuals with Type 2 muscle fiber structure excel in wrestling, long jump, high jump, weightlifting, and basketball, as reported by Yıldız (2012). Detailed information on muscle fiber characteristics can be found in Table 1.

Table 1. Classification of Muscle Fiber Types (Miçooğulları, 2014)

	Classification of Motor Unit	
Features of the Nerve	Type I	Type II
Cell Diameter	Small	Big
Transmission Speed	Fast	Very Fast
Excitability	High	Low
Properties of Muscle Cells		
Fiber Count	A few	Many
Fiber Diameter	Medium	Big
Unit Power	Low	High
Metabolic Properties	Oxidative	Glycolytic
Contraction Rate	Medium	Fast
Fatigue	Few	More

This research is important in terms of providing information about muscle fiber types, which are an important factor in talent selection in sports. If the hypothesis proposed in this research is reached, it will be possible to detect individuals with explosive ability through their fingerprints at a young age. A comparison of fingerprint types between male athletes actively engaged in sports in the Aegean region and males who do not engage in any sports revealed significant differences between these two groups (Altıntaş et al, 2011). In addition, it is known that fingerprints are used to determine sex, heredity, genetic traits, blood groups, diseases, and even for character analysis (Delice et al., 2014). The distribution of muscle fiber type, which is a determining factor in athletic ability, is determined by various methods. These methods used for evaluating anaerobic power include laboratory tests such as the Cunningham Faulkner Treadmill, Katch, and Wingate tests and field tests such as Jump, Margaria-Kalamen Staircase, Sprint, and Speed running tests (Yıldız, 2012). The difficulty and limitations of both field and laboratory tests make it quite challenging to use them in practice. However, early detection of this ability significantly affects athletic success (Kılıçkaya & Zelyurt, 2015). Based on these studies and to take these studies a step further, detecting individuals with anaerobic power at an early age through their fingerprints is important not only for individuals with sporting ability but also for their families and national investments. Considering the effort, money, sweat, facilities built, and personnel appointed in developing an athlete, it is clearly seen that considerable cost and effort are involved. The most important part of this study is the ability to detect individuals with sporting ability at a young age through their unique fingerprints at very low costs. The only reason for comparing fingerprints of individuals with innate athletic ability is not just because they are innate. Fingerprints are not only specific but also systematic. Fingerprints can be examined, analyzed, and systematically formulated (Police Department Publications (EGMY), 2005b, p. 80). It is known that fingerprints are formed early in the womb and have unique qualities and quantities (Akpolat, 2014). Today, fingerprints are considered a new argument for use in various areas besides security checks and criminological areas. This research is innovative and suitable for an inclusive, integrative, and in-depth examination.

This research aims to investigate whether there is a relationship between anaerobic power and fingerprint class and characteristics in individuals. In this context, this relationship is expected to contribute to the literature on the possibility of using fingerprints in sports branch selection and the Type 2 muscle fiber ratio, which is the most important determinant of anaerobic power if this relationship is identified.

The following problems have been investigated to achieve these goals.:

Can a relationship be found among individuals with anaerobic power and the ability to produce force who also have the skill of sporulation when their fingerprints, fingerprint classes, and characteristics are examined?

Can a common fingerprint be identified among individuals with anaerobic power if there is a similarity in their fingerprints who have Type 2b muscle fibers?

Can the skills of individuals with anaerobic power and potential for sports be developed if they are identified at a young age and provided with appropriate training in this field, given the opportunity and resources?

If a correlation is established between fingerprint and anaerobic strength, can fingerprint be used in selecting a sports branch?

Anaerobic power is an indicator of certain team sport skills, which are also indicators of kinesthetic intelligence in sports. Therefore, it may be possible to detect individuals with kinesthetic sports intelligence through fingerprint analysis, based on the assumption that anaerobic power is related to kinesthetic intelligence.

Answers were sought to these questions.

2 Method

2.1 Model of the Research:

This study aimed to investigate individuals' anaerobic power based on their fingerprints. To achieve this goal, the research was conducted using a quantitative research approach, specifically the cross-sectional design over a period of time. The study utilized a correlational research design.

In this research, it has been investigated whether the fingerprint ridge group or fingerprint intrinsic characteristics of individuals with anaerobic power are similar to each other or not. If they are similar, the degree of similarity has been determined through a correlational scanning model, and the existing situation has been identified. The relational scanning model is an approach used to identify the variability between multiple variables and their relationships. This model aims to determine how variables change together and identify the reasons behind their shared variations (Karasar, 2011).

2.2 Participants (Cosmos and Sample)

The study population consists of university students studying at the Faculty of Sports Sciences at Sivas Cumhuriyet University during the 2021-2022 academic year. The sample group was determined by the appropriate sampling method of non-probabilistic sampling techniques. 126 individuals were included in the study based on volunteering. In the selection of the sample, care was taken to include students from different classes and different branches in order to address the overall population.

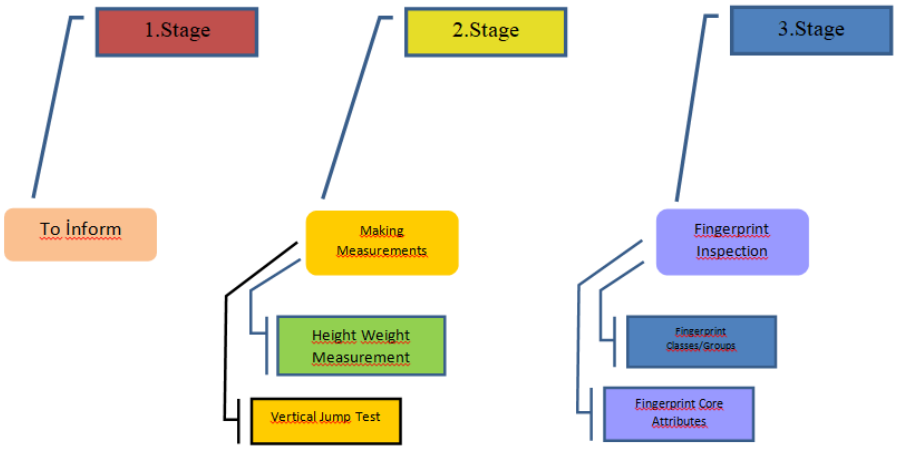
Inclusion criteria: The individuals who are continuing their education in the branches/programs of the Faculty of Sports Sciences at Cumhuriyet University during the 2020-2021 academic year are those who have completed each stage of the process voluntarily.

Exclusion criteria: Individuals who do not participate in all measurements, do not fill out permission forms, or withdraw from participating at any stage of the process. Also, individuals with a body mass index below 19 or above 30.

2.3 Participants (Cosmos and Sample)

In the first stage, the sample group was informed, in the second stage, measurement data was collected, and in the third stage, fingerprint examination and fingerprint data were collected.

Figure 1. Data Collection Schema



The details of the data collection phase shown in Figure 1 are listed below under headings.

2.3.1 Phase One

This stage involves informing the participants about the process they will go through, filling out relevant forms in case of limited participation, including participants in the research voluntarily, and providing each participant with forms to continue filling out until the end of the process under their supervision and control. This is the stage where the process begins.

2.3.2 Phase Two

At this stage, the process consists of two layers. The first layer involves taking measurements of the participant's height and weight and processing this information on forms. The second layer involves vertical jump tests.

2.3.2.1 Anaerobic Power Measurements

This study used the vertical jump technique to assess anaerobic power. "The vertical jump is a method that considers the body weight and jumping speed, and the difference between the height a person can reach while standing and the height they can reach while jumping (Tamer, K., 1995)". Vertical jump tests (Sargent vertical) are one of the field tests used to determine anaerobic power (Yıldız, S. A., 2012). Individuals with type 2b muscle fibers perform movements at maximum speed because they produce ATP through anaerobic metabolism and exhibit very strong contractions (Altundere, 2020). Therefore, the vertical jump technique was used to identify participants with type 2 muscle fiber structure and anaerobic power.

2.3.2.1.1 Warm-up Protocol

The warm-up protocols consisted of a 5-minute walk, 5-minute static stretching (Faigenbaum etc., 2005), and a 10-minute run at 60% of maximum heart rate (Zois etc., 2015). After the warm-up protocol, participants were given 3 minutes of passive rest before proceeding to the vertical jump test.

2.3.2.1.2 Vertical Jump Test

All participants were instructed to wear sports clothing and shoes for physical exercise. The tests were conducted in a sports hall at 25 degrees Celsius. All participants were instructed to maintain their eating habits and avoid strenuous physical activities within 48 hours prior to the test sessions (Sales etc., 2018). Anthropometric measurements were taken before starting the test. The coach showed the participants how to perform the vertical jump test correctly and allowed them to practice the movement. The Vertec test device evaluated the vertical jump (Escalante etc., 2016). The participant stood directly under the Vertec, and the starting point for the highest wing measurement that could be touched with the dominant hand without lifting the heels off the ground was determined. Participants were instructed not to take any forward steps before jumping, and they were allowed to squat down quickly with their feet shoulder-width apart and parallel to each other and swing their arms down and back to make a fast counter-movement. They then made a maximal jump with a quick counter movement to touch the highest possible Vertec wing with their dominant hand. Each participant performed three maximal jumps with a 2-minute rest period in between (Alemdaroğlu, 2012). The best score was recorded in centimeters (Bosco etc., 1995). The vertical jump degrees of the test participants were recorded on the Fingerprint and Vertical Jump Analysis Form (Form 2).

2.3.3 Phase Three

At this stage, participants are in the phase where they record certain information on forms that they have been following since the beginning of the process, including fingerprint groups and personal characteristics. In this stage of the research, various coding and techniques have been used to adhere to ethical standards and minimize errors in the data collected.

2.3.3.1 Fingerprint Inspection

The fingerprints of the participants were examined by a fingerprint expert using lateral light and a magnifying glass (3x/40x) to study the dermatoglyphic patterns (fingerprints) directly on their fingers. Fingerprint analysis sheets were created for each participant. The fingerprint groups and classes of individuals were evaluated and noted based on their unique characteristics. To protect individual rights and adhere to scientific ethical principles in this research, only enough data was used to demonstrate the relationship between fingerprint type and Anaerobic power, and thus Kinesthetic-Spatial Intelligence. The participants' fingerprints were not taken, recorded, or stored. Separate analyses were performed for all fingers of the participants' right and left hands, and the acquired information was recorded in the analysis sheets, not the fingerprints themselves. When noting the fingerprint names, the fingerprint classes in the Henry-Galton Classification System used in fingerprint archive procedures in our country before computer technology were referenced, as seen in Table 2. This data was recorded in the Fingerprint and Vertical Jump Analysis Form (Form 2).

Table 2. Fingerprint Groups and Classes Table (EGMY, 2005a, s.15).

Finger prints			
Lasso Group Tracks		Wirbel Group Tracks	
Lasso Tracks	without lasso Tracks	Ringlike Traces	Combined Tracks
• Ulnar • Radial • Fav • Right leaning Fav • Left leaning Fav	• Ark • Right leaning Ark • Left leaning Ark • Tak • Right leaning Tak • Left leaning Tak	• Central Circle • Central Base • Central Pocket • Circular Spiral • Base Spiral	• Muzaf • Twin • Mixed • Nedweist

Table 3. Code Table of Fingerprint Groups and Classes

Fingerprint classes	Lasso Tracks	Without Lasso Tracks	Ringlike Traces	Combined Tracks
Codes used in data collection	L1	L2	W1	W2

Table 4. Fingerprint Attributes Codes Table

Fingerprint Core Attributes	Normal-looking Fingerprint	Sideways Fingerprint	Top or Bottom Engraved Fingerprint
Codes	N	Y	Ü/A

In this study, two separate data were collected from the participants. The first one is the vertical jump score data, along with the height and weight information collected from the participants. The secondary data is the fingerprint data collected from the same participants. While collecting fingerprint data, codes were created according to the main groups in the Henry-Galton Fingerprint Classification System, which is internationally accepted. The codes for Fingerprint Groups and Classes listed in Table 2 were given in Table 3 and 4. All participants' fingerprints were examined, and the group and class codes and unique attribute codes were provided in Table 3.

2.4 Data analysis

The data obtained in the study were analyzed using the JAMOVI (2.2.2) program. Descriptive statistics such as frequency, mean (M), standard deviation (SD), median (Md), variance (Var), minimum and maximum values, skewness, and kurtosis coefficients were used in the analysis of the data. One-way analysis of variance and Tukey HSD test were used to test the research question. The decision about whether the data met the normality assumption was based on descriptive statistics. Hair and friends. (2013) argue that there is no serious violation of normality when the values of kurtosis and skewness are within the range of ±1. George and Mallery (2010) state that it is sufficient for this range to be within ±2. Tabachnick and Fidell (2013) expressed that it is sufficient for homogeneity of group variances in the execution of variance analysis, that the ratio of group variances does not exceed 10, and for a balanced pattern formation in the execution of variance analysis, the ratio of group frequency distributions does not exceed 4.

3 Results

Participants were grouped according to their anaerobic power. Women and men were evaluated separately. A low correlation was observed between anaerobic power and fingerprint in women. However, in men, there was a proportional relationship between anaerobic power and fingerprint groups.

Table 4. People with Anaerobic Strength Between 0-119 Ratio, Number, Fingerprint Class and Characteristics Table

Anaerobic Power Between 0-119		
	Amount	Percent
Participant Total	46	
W2 (NORMAL)	8	17,4
W2 (TOP-LEANING)	6	13,0
W2 (MIXED)	7	15,2
Others	25	54,3
W2 (TOTAL)	21	45,7

Table 5. Ratio, Number, Fingerprint Class and Characteristics Table of Persons with Anaerobic Strength Between 120-130

Anaerobic Power Between 120-129		
	Amount	Percent
Participant Total	31	
W2 (NORMAL)	6	19,4
W2 (TOP-LEANING)	0	0,0
W2 (MIXED)	14	45,2
Others	11	35,5
W2 (TOTAL)	21	67,7

Table 6. Ratio, Number, Fingerprint Class and Characteristics Table of Persons with Anaerobic Strength Between 130-139

Anaerobic Power Between 130-139		
	Amount	Percent
Participant Total	19	
W2 (NORMAL)	4	21,1
W2 (TOP-LEANING)	4	21,1
W2 (MIXED)	8	42,1
Others	3	15,8
W2 (TOTAL)	16	84,2

Table 7. Ratio, Number, Fingerprint Class and Characteristics Table of Persons with Anaerobic Strength 140 and Above

Anaerobic Power Above 140		
	Amount	Percent
Participant Total	30	
W2 (NORMAL)	13	43,3
W2 (TOP-LEANING)	4	13,3
W2 (MIXED)	6	20,0
Others	7	23,3
W2 (TOTAL)	23	76,7

Table 8. Findings Analysis
Descriptive Statistics for Anaerobic Power

Groups	f	Median	$\bar{X}$	s'	σ^2	Distortion (sh)	Kurtosis (sh)	Ranj	Min	Max
W2 Without	45	118	121,156	12,83	164,68	0,86 (0,35)	0,20 (0,69)	50	102	152
W2 Mixed	30	126	125,200	8,53	72,72	-0,41 (0,43)	0,06 (0,83)	37	105	142
W2 Normal	31	132	132,419	15,70	246,58	-0,15 (0,42)	-0,96 (0,82)	56	102	158
W2 Yan	14	132	127,071	15,40	237,30	-0,20 (0,60)	-1,62 (1,15)	45	103	148

f = Frequency, $\bar{X}$ = Arithmetic mean, s' = Standard deviation, σ^2 = Variance, sh = Skew / Kurtosis Standard Error

According to Table 8, skewness and kurtosis coefficients of anaerobic power values are within the range of ±1 for fingerprint groups. Only the kurtosis value of the W2 Yan group is within the range of ±2. Mean and median values are close to each other. It has been observed that the values calculated by skewness/standard error and kurtosis/standard formula are within the range of ±3.29 according to the standard normal distribution. These findings indicate no serious violation in terms of normality for the anaerobic power values of the groups. In addition, the ratio of the frequencies of the groups to each other is between 3.21 and 1.03, and the ratio of the variances of the groups to each other is between 3.40 and 1.03. This indicates that the frequency distribution is balanced for variance analysis, and there is no serious violation in terms of homogeneity of variances.

3.1 Findings Analysis

Table 9. Analysis of Variance Results for The Anaerobic Power of Individuals According to Their Fingerprints

Variable	$\chi 2$	Sd	$\chi 2$ /sd	F	P	η^2
Finger prints	2362,279	3	787,426	4,605	0,004	0,106
Mistake	19837,188	116	171,010			

Note. Type III Sum of Squares, Sd = Degrees of tolerance, η^2 *= Eta square*

According to Table 9, it has been observed that the one-way analysis of the variance model, which was established to examine whether individuals' anaerobic powers differ in terms of fingerprint, is significant (F3 116 = 4.60, p = .004 and η^2 = .11). Approximately 11% of the variance in anaerobic power is explained by the fingerprint variable. The effect size indicates a medium to high effect. According to the Tukey HSD analysis results conducted to examine significant differences between groups in terms of anaerobic power, a significant difference was observed between Non-W2 and W2 Normal (t = -3.69 and p = .002). No significant differences were found among other groups.

4 Conclusion and Recommendations

This study investigated a relationship between Anaerobic power and fingerprint class and individuals' characteristics. Contribution to the literature is expected regarding the relationship between Type 2 muscle fiber ratio, the most important determinant of anaerobic power. In this context, it has been found that there is a relationship between anaerobic power and fingerprint classes and characteristics in the conducted research. A literature review revealed that there had been no prior research on the relationship between fingerprints and anaerobic power, thus opening a new door for future studies. Scientific examinations of fingerprint research have increased in the last two centuries. However, it is also crucial to clearly distinguish pseudoscience from science, as the foundation of positive sciences is based on experimentation and observation. The only method of basing research on a scientific foundation regarding fingerprints is through observation and mathematical (experimental) calculations. In this study, consistent results were obtained using observation and experimentation, forming the basis of the scientific approach. Nowadays,

fingerprints are starting to evolve from an abstract concept to a concrete one regarding social significance.

Fingerprint patterns have been the subject of many studies and attract a lot of attention nowadays. Delice (2014), who researched the formulas of fingerprint patterns rather than the patterns themselves, found that the fingerprint formulas of individuals who commit certain types of crimes are similar. Even though fingerprints have been the subject of many studies, their specific structure makes research difficult. However, our investigation and research using our unique formula method revealed differences in anaerobic strength between different groups.

In this research, two types of data were collected. The first one includes measurements of height, weight, and vertical jump test results. Using these measurements, individuals' anaerobic power was calculated. The second type of data was obtained through fingerprint analysis, which involved observing individuals' fingerprints to determine their fingerprint classes and characteristics.

Vertical jump tests (Sargent vertical) are one of the Anaerobic field tests used for detecting anaerobic power (Yıldız, S. A., 2012). According to the data obtained in the research, it has been observed that the anaerobic power of the athletes is directly proportional to the increase in fingerprints belonging to the W2 code. It is suggested that athletes with fingerprints belonging to the Normal code, one of the three different qualitative groups of fingerprints carrying the W2 code, have higher anaerobic power compared to athletes who do not have this type of fingerprint. Additionally, it is known that individuals with type 2b muscle fibers perform movements at maximum speed since they produce ATP anaerobically and exhibit very strong contractions (Altundere, 2020). The most important point is that the data obtained from this research can pioneer an innovative approach to sports specialization in early detection of individuals with type 2 muscle fiber structure from fingerprints and directing them to sports branches suitable for their muscle fibers at a young age.

The data in this research should be analyzed under two separate headings. The first one is the structure of fingerprints. When the usage areas of fingerprints are investigated, it is seen that it is for identification and verification purposes. In our country, the first fingerprint identification process for a murderer was in 1916, when the killer's fingerprints were identified on a gas lamp (Poyraz, 2005). The first fingerprint identification process in the literature is related to a murder case in Aines in the rural area of Argentina in 1892 (Gendarmerie General Command Publications (JGKY), 2009, p.14). It can be observed that fingerprints have only been used for identification in the last century. This unique data source is used for identity verification, unlocking locks, and as a security key. In the literature review conducted, it is seen that there are few studies on the usability of fingerprints other than identification (Çıngı, 2022; EGMY, 2005b; JGKY, 2009). The main reasons for this lack of research are the shortage of experts conducting academic studies in this field, fingerprints being a difficult argument regarding analysis and examinations, restrictions in personal data protection laws, and individuals' reluctance to participate. Additionally, it can be shown that some fingerprints may deform and become corrupted depending on the structure of individuals' skin, the surfaces on which fingerprints are left, the angle of the fingers during printing, and the force applied by individuals. Another dimension that needs to be examined in the research is the difficulties that may arise during application. The applied vertical jump method, the determination of the participant group, the problems that may arise from physical and environmental conditions during application, and the preparedness of the participant group can be counted. The methodology applied in our research has been developed taking into account the situations and variables mentioned above. Otherwise, it would not be possible to bring together fingerprint and vertical jump research under the same roof as a meaningful whole.

This research is limited to male athletes of the Sports Sciences Faculty at Cumhuriyet University. It is clear that conducting the research with a broader population, including women as samples, will yield clearer results. It is a fact that fingerprinting is a topic of great interest in today's society, and the research results in this field will always arouse curiosity in the public. Additionally, fingerprinting is a science that has not been fully explored. Therefore, expanding research in this field will benefit society and science.

4.1 Contribution of Research to Theory

- Fingerprints have been the subject of many studies. However, its specific structure made research difficult. It is expected that this study will contribute to the studies on fingerprints.

- In light of the data we have obtained with our research, it is expected that individuals with type 2 muscle fiber structure will be identified by fingerprints in the early period and directed to sports branches suitable for muscle fibers at young ages will create a suitable training environment for the country's sports and increase the efficiency to the highest level.
- Considering the difficulties in identifying existing muscle fiber types, it is anticipated that the findings obtained in this research will make a good innovative and practical contribution to developing a new muscle fiber type determination method.
- This research it is to pioneer the idea that fingerprints can be used not only in the criminal field but also in different fields for society.

Peer-review: Externally peer-reviewed.
Conflict of Interest: The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.
Grant Support: The authors received no financial support for the research, authorship, and/or publication of this article.

References.

Akpolat, F. (2014). *Parmak izinin fraktal teorisi* (Unpublished Master Thesis). Bilecik Şeyh Edebali Üniversitesi, Fen Bilimleri Enstitüsü, Bilecik.

Alemdaroğlu, U. (2012). The relationship between muscle strength, anaerobic performance, agility, sprint ability, and vertical jump performance in professional basketball players. *Journal of Human Kinetics, 31*, 149-158.

Altıntaş, N., Şanlısoy, F., Kutlu, N., Arı, Z., Aşçı, M., Arslan, E., Candan, N., Büyükyazı, G., & Soner E. (2011). Ege Bölgesi elit sporcularında dermatoglifik, antropometrik ve biyokimyasal verilerinin değerlendirilmesi. *Cumhuriyet Tıp Dergisi, 33,* 285-292.

Altundere, T. (2020). Nöromüsküler elektrik stimülasyonu ve manyetik stimülasyonun el bilek fleksör izokinetik kas kuvveti ve el kavrama kuvvetine etkisinin karşılaştırılması (Unpublished Specialization Thesis). İstanbul Medipol Üniversitesi, Tıp Fakültesi, İstanbul.

Bosco, C., Belli, A., Astrua, M., Tihanyi, J., Pozzo, R., Kellis, S., ... & Tranquilli, C. (1995). A dynamometer for evaluation of dynamic muscle work. *European Journal of Applied Physiology and Occupational Physiology, 70*(5), 379-386.

Büyükalan, S. F. (2003). Çoklu zekâ kuramı. *Eğitim ve Denetim Dergisi*, (1), Ankara.

Çıngı, H. İ. (2022). Kan bağı bulunan aile bireyleri arasında parmak izi benzerliğinin araştırılması. *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (40), 470-502.

Dağlıoğlu, H. E. (2015). Erken çocuklukta üstün yetenek. In Ş. Feyzullah (Ed.). *Üstün zekâlı ve üstün yetenekli öğrencilerin eğitimi* (pp. 73-94). Ankara Pegem Akademi.

Delice, M., Duman, A., & Özel, Ş. A. (2014). Parmak izi tipi ile suç türü arasındaki ilişkisinin incelenmesi. *Akademik Bakış Uluslararası Hakemli Sosyal Bilimler Dergisi*, (43), 3-27.

Erturan, A. G. (2006). *İlköğretim 4. sınıf öğrencilerinde beden eğitimi ve sporun bedensel/kinestetik zeka alanı üzerine etkisi: Denizli ili örneği* (Unpublished Master Thesis). Sağlık Bilimleri Enstitüsü, Pamukkale Üniversitesi, Denizli.

Escalante, G., Alencar, M., Haddock, B., & Harvey, P. (2016). The effects of phosphatidic acid supplementation on strength, body composition, muscular endurance, power, agility, and vertical jump in resistance trained men. *Journal of the International Society of Sports Nutrition*, *13*(1), 1-13.

Faigenbaum, A.D., Bellucci, M., Bernieri, A., Bakker, B., & Hoorens, K. (2005). Acute effects of different warm-up protocols on fitness performance in children. *Journal of Strength and Conditioning Research, 19*(2), 376-381.

Gardner, H. (2006). *Changing minds*. Boston, USA: Harvard Business Scholl Press.

Gendarmerie General Command Publications. (JGKY, Jandarma Genel Komutanlığı Yayınları) (2009). *Adli bilimler 1 kitabı, parmak izinin tarihçesi.* Ankara: Kriminal Daire Başkanlığı Yayınları.

Karasar, N. (2011). *Bilimsel araştırma yöntemleri.* Ankara: Nobel Yayınları.

Kılıçkaya, A., & Zelyurt, H. (2015). Okul öncesi programlarında özel gereksinimli bireylerin yer alma durumlarının incelenmesi (1989-2013). *Uluslararası Türk Eğitim Bilimleri Dergisi*, (4), 200-212.

Kuzgun, Y., & Deryakulu, D. (2006). *Eğitimde bireysel farklılıklar* (2nd ed.). Ankara: Nobel Yayın Dağıtım.

Miçooğulları, A. (2014). *Fiziksel aktivite düzeyleri farklı iki öğrenci grubunun kas kuvvetlerinin karşılaştırılması* (Unpublished Master Thesis). Zirve Üniversitesi, Sağlık Bilimleri Enstitüsü, Gaziantep.

Police Department Publications. (EGMY, Emniyet Genel Müdürlüğü Kriminal Daire Başkanlığı Yayınları), (2005a). *On parmak izi tasnif sistemi kitabı,* Yayın No: 12, Ankara.

Police Department Publications. (EGMY, Emniyet Genel Müdürlüğü Kriminal Daire Başkanlığı Yayınları), (2005b). *Parmak izi temel eğitim kitabı*, Yayın No:5, Tarihçe, Sir Edverd Henry, Ankara.

Poyraz, R. (2005). Parmakizi kullanımının ülkemizdeki gelişimi (1). *Adli Bilimler Dergisi, 4(*4), 57-64.

Sales, M. M., Maciel, A. P., Aguiar, S. D. S., Asano, R. Y., Motta-Santos, D., Moraes, J. F. V. N. D., ... & Sousa, C. V. (2018). Vertical jump is strongly associated to running-based anaerobic sprint test in teenage futsal male athletes*. Sports, 6*(4), 129.

Tamer, K. (1995). *Sporda fiziksel-fizyolojik performansın ölçülmesi ve değerlendirilmesi*. Ankara: Türkerler Kitabevi.

Vural, B. (2004). *Öğrenci merkezli eğitim ve çoklu zekâ*. İstanbul: Hayat Yayıncılık.

Yıldız, S. A. (2012). Aerobik ve anaerobik kapasitenin anlamı nedir? *Solunum Dergisi, 14*(Ek), 1–8.

Zois, J., Bishop, D., & Aughey, R. (2015). Yüksek yoğunluklu ısınmalar: Müteakip aralıklı egzersiz sırasındaki etkiler. *Uluslararası Spor Fizyolojisi ve Performansı Dergisi, 10*(4), 498-503.