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Cross-Faculty Analysis of Physical Fitness and Health Metrics among Turkish University Students

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Abstract: This research examined the health-related physical fitness profile, body composition, and musculoskeletal fitness of students enrolled in various departments at a university. Using a cross-sectional experimental approach, 130 participants (age: 22.49 ± 3.84 years; weight: 69.09 ± 17.6 kg; height: 169.4 ± 9.9 cm; 55% male and 45% female) were recruited, representing the Faculties of Architecture and Design (n=20), Engineering (n=20), Gastronomy and Culinary (n=20), Health Sciences (n=20), and Sports Sciences (n=50). Data were analyzed to assess normal distribution using the Kolmogorov–Smirnov test, and descriptive statistics of mean, frequency distributions, and percentages to answer the research questions. Physical fitness indicators across various groups were compared using One-Way Analysis of Variance (ANOVA), with statistical significance set at $p < 0.05$. The findings indicated that students enrolled in the Faculty of Sports Sciences exhibited higher levels of health-related physical fitness compared to their counterparts in other faculties. Significant differences were identified in body fat percentage, flexibility, upper and lower muscle strength, and cardiovascular endurance. This research underscores the importance of cross studies to monitor the evolution of health-related physical fitness among Turkish university students over time.

Keywords: Body Composition, Musculoskeletal Fitness, Cardiovascular Endurance, Physical Fitness

1. Introduction

Physical inactivity is a significant global health concern linked to various chronic diseases and conditions (Shahidi *et al.,* 2020). Sedentary lifestyles, characterized by low levels of physical activity have become increasingly prevalent across the world (Shahidi *et al.,* 2020; Bull *et al.,* 2020). According to the World Health Organization (WHO), physical inactivity is a major risk factor for non-communicable diseases such as heart disease, stroke, diabetes, and certain types of cancer. Worldwide, about 1 in 4 adults do not meet the WHO's recommended levels of physical activity (Bull *et al.,* 2020; Chaput *et al.,* 2020). According to the Republic of Turkey Ministry of Health, Public Health Department, approximately 87% of females and 77% of males in Turkey are classified as inadequately physically active (Erginoz, 2004). A 2022 WHO report indicates that 31% of adults worldwide failed to meet recommended levels of physical activity (Rakić *et al.,* 2024) These findings are corroborated by cross-national studies, which highlight the persistently high rates of physical inactivity among youths, both globally and in Turkey specifically (Bann, *et al.,*2019).

A significant portion of this elevated rate of physical inactivity is reported among Turkish university students (Arzu, et al 2006). Results from a national study indicate that increasing physical activity levels could potentially prevent 4.3% of the disease burden and 15% of deaths (Sevimli *et al., 2021*; Shahidi *et al.,* 2020; Shahidi *et al.,* 2022). In response to these findings, the National Health Policy in Turkey has pledged to achieve a 10% reduction in physical inactivity by 2025 (Republic of Turkey Ministry of Health, Public Health Department, 2015) (Kaya *et al.,* 2020). Addressing physical inactivity demands a holistic approach that engages individuals, communities, governments, and diverse sectors. This encompasses establishing supportive environments for physical activity, fostering awareness about the significance of an active lifestyle, and enacting policies that promote regular exercise (Ahmetov *et al.,* 2009). The adverse effects of decline in physical activity are evident in student demography, where a decrease in physical activity may also result in declined physical fitness. Physical exercise is associated with physiological and biochemical adaptation (Eimuhi *et al.,* 2024). Physical exercise involves physical exertion, voluntary bodily movements which are specifically planned, structured and repetitive in nature that enhances or maintains physical fitness, overall health and wellness status of an individual (Eimuhi *et al.,* 2024). Physical fitness encompasses the capacity to carry out daily activities without excessive fatigue (Shahidi, 2023; Shahidi, 2024). Health-related physical fitness is characterized by the capability to energetically engage in daily activities, demonstrating attributes and capabilities associated with a decreased risk of prematurely developing hypokinetic diseases (Shahidi *et al.,* 2022; Kami *et al.,* 2021; Shahidi *et al.,* 2023). Hypokinetic diseases refer to health conditions associated with inactivity and inadequate fitness levels, including high blood pressure, diabetes, obesity, osteoporosis, certain cancers, and other related ailments (Ding *et al.,* 2016; Pinto *et al.,* 2020). This definition suggests that excelling in different sports does not automatically ensure optimal body fat levels, cardiorespiratory fitness, or musculoskeletal fitness, which could potentially increase the risk of developing chronic disease (Shahidi, 2024). Conversely, individuals may have lower proficiency in skills-related components but can still maintain physical fitness and health by participating in regular aerobic and musculoskeletal exercises. These exercises can enhance cardiorespiratory fitness, attain optimal body fat levels, enhance flexibility, and develop muscular endurance and strength (Drenowatz *et al.,* 2013; Schwartz *et al.,* 2015). To highlight the importance of physical activity and its impact on academic performance, previous research has identified a correlation between high cardiorespiratory fitness and improved academic achievement. Recent literature supports these findings, suggesting that students with higher levels of cardiorespiratory fitness tend to perform better academically. This relationship underscores the value of promoting physical activity to enhance both health and educational outcomes (Rakić *et al.,* 2022; Bann *et al.,* 2019; Erickson *et al.,* 2011; Shahidi *et al.,* 2020).

The research conducted by Caia et al. (2016) found that 61% of students demonstrated low muscular strength, with 28% exhibiting below-average levels of muscular strengt. The study asserted that students face challenges concerning both body mass index and muscular strength, regardless of their level of physical activity (Caia *et al.,* 2016; Kwan *et al.,* 2012). Likewise, low cardiorespiratory fitness is a significant predictor that can only be alleviated through lifestyle modifications, such as promoting increased physical activity and implementing dietary changes. Kwan et al. (2012) and Eimuhi et al. (2024) noted a significant decline in physical activity upon university enrollment, consistent with findings from various authors indicating that approximately one-third of high school students become insufficiently active after transitioning to university. This observation is corroborated by a study investigating physical activity patterns among American, Asian, African, and Hispanic university students, which found that 46.7% were not engaged in physical activity, and 16.7% were classified as physically inactive (Crombie *et al.,* 2009). Several studies have also underscored an emerging trend of sedentary behavior among university students (Miles, 2007; Vuillemin *et al.,* 2005). In Turkey, previous studies have been reported on profiling of health-related fitness among children between 7-14 ages, immigrant secondary school students, and elderly males over 60 years (Nayir & Sarıdaş 2021). The problems and solutions to profiling health and physical activity were also studied by Shahidi et al, (2022). However, there is currently no available data on profiling health-related fitness among young adults within specific departments at tertiary institutions in Turkey. Given the importance of physical activity for both health and academic performance, this study aims to investigate the health-related physical fitness profile, including cardiorespiratory fitness, body composition with a focus on optimal body fat levels, and musculoskeletal fitness, assessed through sit-and-reach tests and measures of muscular strength, among students enrolled in Turkish universities. This analysis will provide valuable insights into the physical fitness and health status of university students, informing strategies to promote better health and academic outcomes.

2. Materials and Methods

One hundred thirty students with bachelor's degrees voluntarily participated in the present study. The demographic and anthropometric characteristics of the participants are as follows: the average age was 22.49 ± 3.84 years, with an average weight of 69.09 ±

17.6 kg and an average height of 169.4 ± 9.9 cm. The sample consist of 55% male and 45% female students). A cross-sectional design was employed for this collaborative effort, involving faculties such as the Faculty of Architecture and Design (n=20), Faculty of Engineering (n=20), Gastronomy and Culinary (20), Faculty of Health Sciences (n=20), and Faculty of Sports Sciences (n=50). The G-power analysis showed that 120 participants were sufficient to have 85% statistical power at a two-sided α of 0.05 significance. Accounting for a 10% dropout rate, given this requirement, at least 20 participants were recruited from each faculty to ensure adequate representation and statistical validity. Data collection was conducted between March to December 2023.

Participants underwent assessments for selected physical fitness parameters using standardized tests, including anthropometric measurements, sit-and-reach tests, hand and leg strength assessments for flexibility and strength, as well as endurance test for cardiovascular evaluation. Each test utilized in this fitness battery have been previously validated and considered reliable. The recruitment process included participants signing informed consent forms, ensuring voluntary participation, and the option to withdraw at any time. All research assessments and tests were meticulously conducted between 4:00 PM and 6:00 PM at the Sports Performance Laboratory under the direct supervision of university officials and sports coaching instructors. Ethical approval was obtained from the Institutional Review Board to ensure adherence to ethical standards and participant welfare (Approval Number: E-56365223-050.02.04-2023.137548.19).

2.1 Inclusion Criteria

All students currently enrolled who do not have any existing health issues are eligible to participate in the study. The absence of health problems is a key criterion for inclusion in the research. Therefore, students are required to provide a health report certified by a medical doctor.

2.2 Exclusion Criteria

Students will be excluded from participation if they have any of the following health issues: cardiovascular diseases such as heart disease or hypertension, respiratory disorders such as asthma or chronic obstructive pulmonary disease, musculoskeletal injuries or disorders such as recent fractures or severe arthritis, chronic conditions such as diabetes or epilepsy. Any other medical condition that could be negatively impacted by physical activity, as determined by a medical professional.

2.3 Familiarization

Before the assessment day, researchers communicated with each student, explaining the risks and benefits associated with their participation in the study. Subsequently, a written informed consent form was provided to all students, ensuring their understanding of the voluntary nature of participation and their right to withdraw at any point during the study.

2.4 Assessment Procedures

On the assessment day, the initial step involved obtaining comprehensive anthropometric profiles, including body weight, body height, body fat percentage, and body mass index. Subsequently, students were briefed on the specifics of the physical assessment protocol. Before the test, participants were instructed to adhere to pre-testing guidelines, including refraining from vigorous exercise, consuming food or beverages, and avoiding alcohol and caffeine for a specified period.

2.5 Anthropometric Assessments

Body height (measuring range: 85-200cm; precision: 1mm) and body weight (capacity: 200kg; precision: 50g) measurements were obtained using the Seca 220R telescopic stadiometer and Seca 710R weighing scale, respectively. The Tanita scale (RD-545 InnerScan PRO) was used for body fat percentage estimation, with participants standing barefoot on the scale's footpads. Height, weight, and age were input into the Tanita device, which employed bioelectrical impedance to estimate body fat percentage. Measurements were taken in duplicate, and the average was recorded to enhance precision (Shahidi, 2023; Shahidi *et al.*, 2023; Eimuhi, 2019).

2.6 Sit and Reach Test

A standardized Sit and Reach Box was positioned on a flat surface, with the zero-mark aligned with the participant's feet. A ruler was affixed to the top surface of the box, perpendicular to the participant's reach direction, to facilitate accurate measurements. Keeping the knees extended, participants were instructed to reach forward along the ruler as far as possible. The maximum point reached was recorded, with the distance measured in centimeters (Shahidi *et al.,* 2023).

2.7 Handgrip Strength

Before testing each participant individually, the dynamometer was adjusted to the size of the participant's hand. The arm, hand, and body positions were standardized according to the recommendations of the American Society of Hand Therapists to minimize variability in the testing conditions. Participants were seated with their shoulders adducted and neutrally rotated. The elbow was flexed at a 90º angle, resting on the table surface, and the forearm was maintained in a neutral position, with the wrist in 0-30º extension. This adjustment was crucial to ensure accurate and consistent measurements. Handgrip strength was measured using a standard adjustable handgrip strength test employing the Takei model dynamometer (T.K.K 5001 Grip-A, Takei Scientific Instruments, Niigata, Japan). Maximum handgrip forces for both hands were recorded in kilograms as the highest of the two trials (Shahidi *et al.,* 2023).

2.8 Leg and Back Strength

The back leg dynamometer test was conducted using a dynamometer with a resettable dial. Participants were instructed to ensure that the dial was reset to zero before commencing the test (Back and leg strength dynamometer, T.K.K 5402 Back-D, Takei Scientific Instruments, Niigata, Japan). Participants stood upright on the base of the dynamometer with their feet shoulder-width apart. Arms were positioned straight down, holding the center of the bar with both hands, palms facing toward the body. The chain was adjusted so that the knees were bent at approximately 110 degrees. In this position, participants' backs were slightly bent forward at the hips, heads were held upright, and eyes were directed straight ahead. Without bending the back, participants were instructed to pull as hard as possible on the chain, attempting to straighten their legs while keeping their arms straight. The pulling motion was executed steadily, avoiding jerky movements. Participants were instructed to keep their feet flat on the base of the dynamometer throughout the test. Maximum performance was expected when participants' legs were almost straight at the end of the lift (Shahidi *et al.,* 2023).

2.9 Cardiovascular Fitness Assessment

The cardiovascular fitness test is a pivotal component in evaluating students' physical health, aligning with the established guidelines of the National Student Physical Health Standard. The test entails measuring the time taken for participants to run either 1000 meters (for boys) or 800 meters (for girls) (Li *et al.,* 2022). Participants are required to exert maximum effort while running the specified distances, and their times are meticulously recorded for subsequent statistical analysis. During the test, the Activio Sport System (Activio AB, Stockholm, Sweden) records the participants' heart rates. Prior to the cardiovascular fitness test, participants undergo a standardized 5-minute warm-up, which includes muscle stretching and joint exercises. Testing is conducted in pairs, with at least two subjects starting from a standing position. They commence running upon hearing the "Run" command. The timekeeper begins the stopwatch upon seeing the flag and stops it when the subject's torso reaches the vertical plane of the finish line. Test results are recorded in seconds, accurate to one digit after the decimal point, with the second digit determined according to the principle of non-zero advancement. For example, 10.11 seconds is recorded as 10.2 seconds. The tests are conducted at the Athletics Field (400 meters) following the predetermined protocol and testing standards.

2.10 Statistical Analysis

The data collected was analyzed using Statistical Package for Social Science (SPSS, version 26). The Kolmogorov- Smirnov test tested all data for a normally distributed pattern. The analysis primarily employed descriptive statistics, focusing on mean values, frequency distributions, and percentages to clearly summarize the gathered data. The heart rate analysis using bi-exponential model: $HR(t) = a1 \cdot e^{-t/t1} + a2 \cdot e^{-t/t2}$. This formula represents the heart rate HRHR as a function of time t, where a1 and a2 are scaling factors, and t1 and t2 are time constants. The bi-exponential model captures two phases, initial rapid change characterized by the parameters a1 and t1. Slower adjustment characterized by the parameters a2 and t2. For each participant, the parameters a1, t1, a2, and t2 were generated to simulate bi-exponential heart rate data. The time variable ranges from 0 to 1000 seconds, divided into 100 intervals. Each participant's heart rate data was plotted with distinct colors to differentiate between individuals. Moderate Intensity: 50-70% of Max HR, shaded in green. Heavy Intensity: 70-85% of Max HR, shaded in yellow. Severe Intensity: 85-100% of Max HR, shaded in red. To assess and compare the results of physical fitness measures among multiple groups, the One-Way Analysis of Variance (ANOVA) statistical method was employed. This analysis allows for the examination of significant differences in means among three or more independent groups ($p < 0.05$).

3. Results

Descriptive data are presented in Tables 1 and 2. A total of 130 university students from different departments participated in the study. Compared with the other groups the faculty of sports science students had significantly better in anthropometrics, flexibility (30.5 cm), hand (30.5 kg), leg muscle strength (126.4 kg), and cardiovascular endurance (243.5 sec) ($p = 0.001$) as shown in Table 3.

Table 1. Characteristics of the participants

Variables (N = 130)	Min	Max	Mean ± SD
Height (cm)	147	187	169.4 ± 9.9
Weight (kg)	42	118	69.06 ± 17.6
Sit and reach (cm)	14	46	27.4 ± 8.6
Back Leg Strength (kg)	29	201	106.1 ± 47.4
Hand grip R (kg)	16	56	33.07 ± 11.6
Hand grip L (kg)	16	52	32.2 ± 10.6
Peak HR (bpm)	180	222	199.15 ± 9.8
Peak HR (%)	88	112	98.33 ± 5.9
Avg. HR (bmp)	131	208	164.09 ± 16.9
Avg. HR (%)	66	105	82.12 ± 8.6
Time (sec)	207	515.4	282.012 ± 79.2

Not. R = Right; L = Left; Max = Maximum; Min = Minimum; SD = Standard Deviation; bmp = Beats per minutes; Time; is the average time for finishing the 800 and 1000-meter cardiovascular test.

Table 2. Characteristics of the participants by gender

Gender	Variables	Min	Max	Mean
F (n=60)	**Height (cm)**	147	180	162.9 ± 7.4
	Weight (kg)	42	101	58.39 ± 13.4
	Sit and reach (cm)	16	46	27.31 ± 9.2
	Leg strength (kg)	29	186	72.84 ± 29.9
	Hand grip R (kg)	16	56	37.37 ± 11.8
	Hand grip L (kg)	17	52	36.2 ± 10.6
	Peak HR (bpm)	187	222	200.91 ± 10.9
	Peak HR (%)	88	112	98.05 ± 7.1
	Avg. HR (bmp)	153	208	170.32 ± 17.6
	Avg. HR (%)	76	105	85.18 ± 9.1
	Time (sec)	208.8	515.4	307.24 ± 91

M (n=70)	**Height (cm)**	149	187	174.42 ± 8.7
	Weight (kg)	57	118	77.29 ± 16
	Sit and reach (cm)	14	42	27.64 ± 8.1
	Leg strength (kg)	55	201	131.9 ± 42.2
	Hand grip R (kg)	16	56	29.75 ± 10.3
	Hand grip L (kg)	16	50	29.12 ± 9.7
	Peak HR (bpm)	180	219	197.79 ± 8.6
	Peak HR (%)	88	109	98.54 ± 4.8
	Avg. HR (bmp)	131	194	159.28 ± 14.8
	Avg. HR (%)	66	97	79.75 ± 7.4
	Time (sec)	207	515.4	262.537 ± 63

Not. R = Right; L = Left; Max = Maximum; Min = Minimum; SD = Standard Deviation; bmp = Beats per minutes; Time; is the average time for finishing the 800 and 1000-meter cardiovascular test.

Table 3. The anthropometric and physical characteristics of each faculty

Variables	**Gastronomy and Culinary (n=20)**	**Architecture and Design (n=20)**	**Health Sciences (n=20)**	**Engineering (n=20)**	**Sports Sciences (n=50)**	**p-value**
Height (cm)	171.42 ± 6.1	172	154.67 ± 5.1	168.1	171.96 ± 10.5	0.001*
Weight (kg)	80.85 ± 28.4	91.7	56.2 ± 6.9	57.3	69.64 ± 12.7	0.001*
Sit and reach (cm)	24.58 ± 5.8	45310	24 ± 4.5	30	30.51 ± 9.3	0.003*
Leg strength (kg)	83.33 ± 37.2	120	57.83 ± 18.7	59.5	126.42 ± 38.9	0.000*
Hand grip R (kg)	35.63 ± 12.2	27.13 ± 11.6	45.54 ± 7.3	38.37 ± 15.5	30.55 ± 10.6	0.015*
Hand grip L (kg)	34.61 ± 10.1	32.23 ± 10.8	43.18 ± 7.6	35.17 ± 13	29.82 ± 10	0.018*
Peak HR (bpm)	201.83 ± 12.8	201	202.67 ± 3.5	199	195.43 ± 8.2	0.045*
Peak HR (%)	95.5 ± 8.3	103	101.33 ± 2.1	99	97.62 ± 4.5	0.027*
Avg. HR (bpm)	170.5 ± 18.6	141	164 ± 11.2	149	161.62 ± 14.8	0.032*
Avg. HR (%)	85.5 ± 9.7	72	82 ± 6	74	80.76 ± 7.3	0.021*
Time (sec)	398.9 ± 88.9	327	257.8 ± 43.4	207	243.59 ± 19.3	0.001*

Not. R = Right; L = Left; Max = Maximum; Min = Minimum; SD = Standard Deviation; bmp = Beats per minute; Time; is the average time for finishing the 800 and 1000-meter cardiovascular test; *Significant at $p < 0.05$.

Table 4. The results of the Mann-Whitney U test

	Height (cm)	Weight (kg)	Body fat (%)	Sit and reach (cm)	Leg strength (kg)	Hand grip R (kg)	Hand grip L (kg)	Peak HR (bpm)	Time (sec)
Mann-Whitney U	796	960	1101	646	462	860.5	852.5	629	438
Z	-3.1	-1.972	-1.003	-4.136	-5.393	-2.656	-2.711	-4.255	-5.565
P	0.002	0.049	0.045	0.001	0.001	0.008	0.007	0.001	0.001

Not. R = Right; L = Left; bmp = Beats per minutes

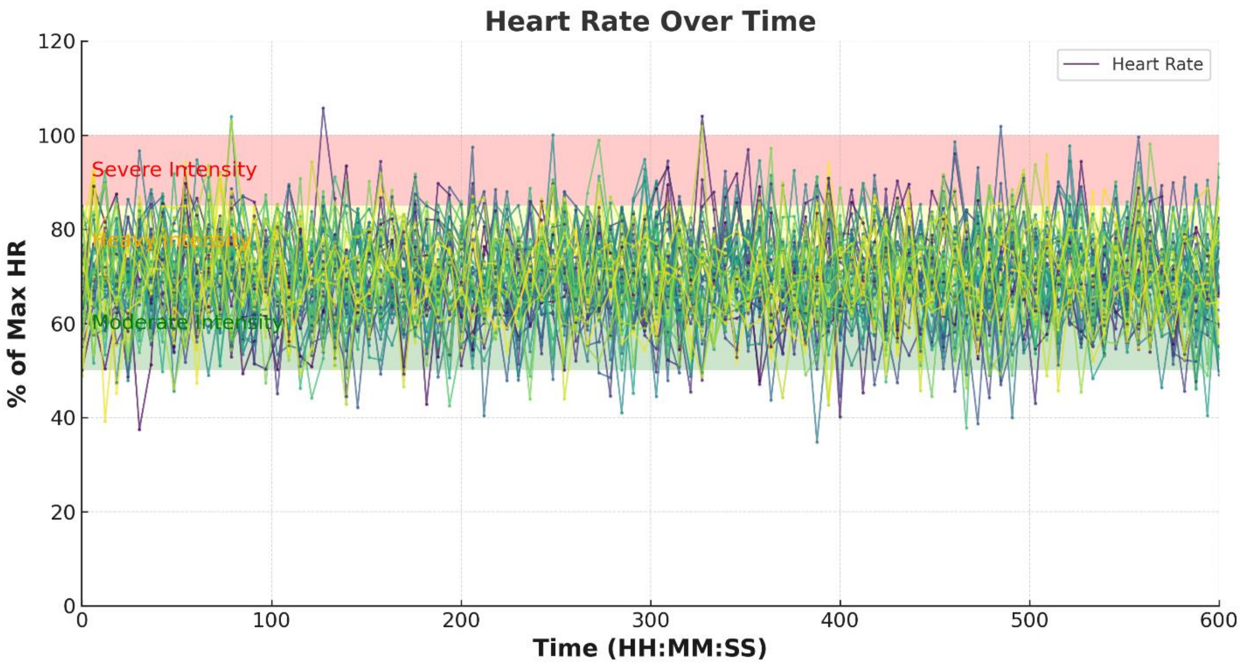

Figure 1 Display the monitoring of heart rate during 800 and 1000-meter cardiorespiratory fitness testing.

According to the results, differences were found in all the study variables by faculties. As expected, statistically all variables have significant differences between the faculty of sports science students compared to other faculties ($p < 0.05$).

In the cardiorespiratory test, the Sports science student showed lower time distance covered during 800 and 1000-meter field tests by both genders in the sports science group and a higher max heart rate than other groups (Table 3 and Figure 1).

Note: The graph depicts heart rates per minute in different testing zones based on exercise intensity for all participants. Most participants maintain heart rates within the moderate to heavy intensity zones throughout the test. A few participants reach the severe intensity zone, indicating higher exertion levels. These variations in heart rate responses can be analyzed to understand individual fitness levels, endurance, and cardiovascular response to exercise. Each color represents a different training zone: green for the moderate domain, yellow for the heavy domain, and red for the severe domain. Figure 2 presents the maximum heart rate achieved by participants during the 800-meter and 1000-meter tests. Additionally, the figure illustrates the distribution of time participants spent in each heart rate zone during these tests.

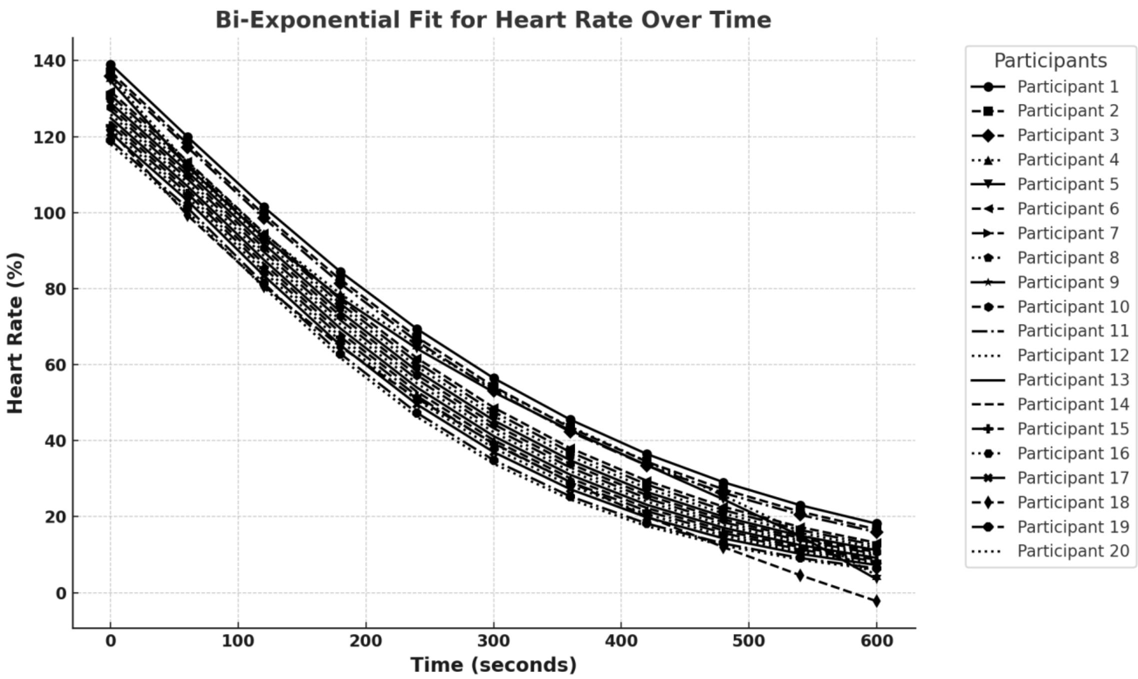

Figure 2 The bi-exponential graph provides a clear visual representation of how heart rate changes over time for multiple participants. The distinct phases captured by the bi-exponential model can offer insights into cardiovascular responses and recovery patterns in different individuals.

4. Discussion

This study aimed to examine cross-faculty analysis of physical fitness and health metrics among Turkish University Students. The findings of this study revealed that the faculty of sports science students had better body fat percentage, flexibility, upper and lower muscle strength, and better cardiovascular endurance when compared with the other faculties. Given the nature of their academic curriculum, students in the Faculty of Sports Science engage in regular physical activity as part of their coursework. This consistent exercise routine, which may involve various forms of training and conditioning, helps to improve both upper and lower muscle strength, as well as cardiovascular endurance over time. The faculty provides access to state-of-the-art facilities, equipment, and resources dedicated to physical fitness and performance enhancement. This enables students to train effectively, optimize their workouts, and monitor their progress, leading to improvements in body composition, flexibility, and overall physical fitness levels. The results showed that differences were found in all the study variables by faculties. As expected, statistically all variables have significant differences between the faculty of sports science students compared to other faculties. The demands of coursework and academic commitments vary across faculties. The study has shown that the physical activity level among university students was found to be satisfactory, although the percentage of low levels of physical activity was higher among female students (Rajappan *et al.,* 2015). Moreover, obese and severely obese students exhibited a low level of physical activity at a higher percentage. For instance, students in the Faculty of Engineering may have heavy academic loads (20 hours per week) and spend significant amounts of time on theoretical and technical studies, leaving less time for physical activity and exercise compared to students in faculties with lighter academic loads. Differences in time allocation for physical activity and exercise can contribute to variations in body composition and fitness levels among students across different faculties. For students in the Faculty of Sports Science, they undergo a tailored curriculum that emphasizes physical fitness and performance. This specialized education likely includes targeted exercises, training regimens, and knowledge of optimal nutrition, contributing to better body fat percentage, flexibility, and muscle strength. However, contrasting findings were presented in the study conducted by Griban and colleagues (2020) which presented no statistically significant differences in body fat percentage, flexibility, upper and lower muscle strength, and cardiovascular endurance among students. This discrepancy may be attributed to the sample size and selection process of participants, as the study employed a small sample size, which may not have captured the full range of variability in health-related physical fitness levels. Additionally, selection bias, where certain groups of students were both overrepresented and underrepresented may have distorted the findings and led to no significant differences.

The findings of this study further revealed that for the cardiorespiratory test, the students in the faculty of sports science showed lower time distance covered during 800 and 1000-meter field tests by both genders in the sports science group and a higher max heart rate than other groups. There may be inherent differences in baseline fitness levels and athletic abilities among students in sports science programs compared to those in other disciplines. Students who pursue sports science studies may have a predisposition towards athleticism or an interest in physical fitness, which could contribute to their superior performance in cardiorespiratory tests and higher maximum heart rates compared to their peers in other academic fields. This result was in discordance with a systematic review conducted by Mello and colleagues (2020) which showed a low cardiorespiratory test with lower max heart rate among students. This discrepancy may be attributed to heterogeneity in sample number as well as the influence of potential confounding factors in the profile analysis conducted in cross-sectional studies. Factors such as overall physical activity levels and maturation status could play a role. Additionally, the studies were not conducted across diverse regions of Brazil, with evidence-primarily concentrated in the southern and northern regions. The study by Fazanes and colleagues (2020) found that seven out of every ten-university students engaged in physical activity, primarily to maintain fitness or for health reasons. A lack of time and laziness were the most common reasons given by those students who chose not to undertake physical activity.

5. Conclusion

The students in Faculty of Sports Sciences exhibited a satisfactory level of health-related physical fitness profile when compared with the Law Faculty, Faculty of Economics, Administrative and Social Sciences, Faculty of Architecture and Design, Faculty of Engineering, and Faculty of Health Sciences. Specifically, there was a statistically significant difference in body fat percentage, flexibility, upper and lower muscle strength, and cardiovascular endurance of students in the Faculty of Sports Sciences. This is attributed to their engagement in practical activities and regular exercises during classes, as well as participation in extracurricular activities. Students in the Faculty of Sports Science undergo a tailored curriculum that emphasizes physical fitness and performance. This specialized education likely includes targeted exercises, training regimens, and knowledge of optimal nutrition, contributing to better body fat percentage, flexibility, and muscle strength.

6. Limitations of the Study and Future Research Lines

Some additional limitations of this research should be considered. Conducting longitudinal studies would offer valuable insights into the trajectory of health-related physical fitness among Turkish adults' students over time. By following participants longitudinally, researchers can track changes in physical fitness parameters and identify factors influencing these changes, such as lifestyle habits, socio-economic factors, and environmental influences. This approach would provide more robust evidence and allow for the examination of causal relationships between various factors and health-related physical fitness outcomes.

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Seyed Houtan Shahidi: Conceptualization, Investigation, Writing original draft. **Esra Büyükvesek**: Conceptualization, Supervision, Methodology, Validation, Data curation, Writing original draft. **E. Eimuhi Karl**: Conceptualization, Review and editing. All the authors read and approved the final version of the manuscript.

Ethics Approval Statement

Ethical approval was obtained from the Institutional Review Board to ensure adherence to ethical standards and participant welfare (Approval Number: E-56365223-050.02.04-2023.137548.19).

Informed Consent

The consent form was signed before the commencement of the study.

Conflict of Interest

The authors declare that there was no conflict of interest.

Data Availability

The dataset presented in the study is available on request from the corresponding author.

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