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Examination of Sports Science Faculty Students' Individual Entrepreneurial Orientation in Terms of Different Variables

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Abstract

Examination of Sports Science Faculty Students' Individual Entrepreneurial Orientation in Terms of Different Variables

This study was carried out to examine the individual entrepreneurial orientation of third and fourth grade students studying in the Coaching Education and Sport Management Departments of Sports Science Faculties in terms of different variables. The participants in our study were 245 students (age: 22.3 ± 1.6 years; height: 174.9 ± 9.5 cm; weight: 71.8 ± 14.2 kg) studying in the Coaching Education and Sport Management Departments at the Sports Science Faculties of Trakya, Çanakkale Onsekiz Mart, Yalova, Sakarya Applied Sciences and Muğla Sıtkı Koçman Universities. The participants' individual entrepreneurial orientation was assessed with the Individual Entrepreneurial Orientation Scale, while their physical activity levels were assessed with the short form of the International Physical Activity Questionnaire (IPAQ). In addition to these scales, the participants' body mass index (BMI) and whether they had received entrepreneurship-related education were recorded, and the effects of various variables, namely physical activity level, BMI, gender, department attended, and previous entrepreneurship education experience, on individual entrepreneurial orientation were statistically examined. It was observed that physical activity level and BMI values had no effect on the individual entrepreneurial characteristics of either male or female participants ($p > 0.05$). However, the total scale scores and scores in the subscales of risk taking, innovation, and proactiveness of students who had received entrepreneurship education differed statistically from those who had not received entrepreneurship education ($p < 0.05$). The scores of coaching education department students in the proactiveness subscale of the scale were higher than the scores of sport management department students ($p < 0.05$). In conclusion, it can be said that participation in any training related to entrepreneurship can change individual entrepreneurial orientation. Repeating the study with a larger sample to explain the effects of independent variables such as body mass index, gender, and physical activity level on individual entrepreneurial orientation may produce different results.

Keywords: Physical Activity Level, Individual Entrepreneurial Orientation, Gender, Body Mass Index.

Spor Bilimleri Fakültesi Öğrencilerin Bireysel Girişimcilik Yönelimlerinin Farkli Değişkenler Açısından İncelenmesi

Bu araştırma, Spor Bilimleri Fakültesi Antrenörlük Eğitimi ve Spor Yöneticiliği Bölümlerinde öğrenim gören 3 ve 4. sınıf öğrencilerin bireysel girişimcilik yönelimlerinin farklı değişkenler açısından incelenmesi amacıyla gerçekleştirildi. Çalışmamıza Trakya, Çanakkale Onsekiz Mart, Yalova, Sakarya Uygulamalı Bilimler ve Muğla Sıtkı Koçman Üniversitelerinin Spor Bilimleri Fakülteleri bünyesindeki Antrenörlük Eğitimi ve Spor Yöneticiliği bölümlerinde öğrenim gören 245 öğrenci (yaş: 22.3 ± 1.6 yıl; boy: 174.9 ± 9.5 cm; kilo: 71.8 ± 14.2 kg) katıldı. Katılımcılara ait bireysel girişimcilik yönelimleri Bireysel Girişimcilik Yönelimi Ölçeği ile fiziksel aktivite düzeyleri ise Uluslararası Fiziksel aktivite ölçeğinin kısa formu (IPAQ) ile değerlendirildi. Bu ölçeklere ek olarak, katılımcılara ait vücut kütle indeksi (VKİ) ve girişimcilikle ilgili eğitim alıp almadığı bilgileri de kaydedilerek IPAQ, VKİ, cinsiyet, öğrenim görülen bölüm ve girişimcilik eğitimi durumu gibi çeşitli değişkenlerin bireysel girişimcilik yönelimleri üzerindeki etkileri istatistiksel olarak incelendi. Fiziksel aktivite düzeyi ve VKİ değerlerinin gerek erkek gerekse kadın katılımcıların bireysel girişimcilik özellikleri üzerinde etkisinin olmadığı görüldü ($p>0.05$). Girişimcilikle ilgili eğitim alan öğrencilerin ölçek alt boyutlarından risk alma, yenilikçilik, proaktiflik ve ölçekten aldıkları toplam puan, girişimcilik eğitimi almayanlardan istatistiksel olarak farklılık gösterdi ($p<0.05$). Antrenörlük eğitimi bölümü öğrencilerinin ölçek proaktiflik alt boyutundan aldıkları puan, yöneticilik bölümü öğrencilerinin aldıkları puandan daha yüksekti ($p<0.05$). Sonuç olarak, girişimcilikle ilgili herhangi bir eğitime katılmanın bireysel girişimcilik yönelimlerini değiştirebileceği söylenebilir. Vücut kütle indeksi, cinsiyet, fiziksel aktivite düzeyi gibi bağımsız değişkenlerin bireysel girişimcilik yönelimi üzerindeki etkilerinin açıklanabilmesi için çalışmanın daha büyük örneklemle tekrarlanması farklı sonuçların alınmasına neden olabilir.

Anahtar Kelimeler: Fiziksel Aktivite Düzeyi, Bireysel Girişimcilik Yönelimi, Cinsiyet, Vücut Kütle İndeksi.

INTRODUCTION

Entrepreneurship is a concept that is discussed in many different disciplines and appears in different varieties, and for these reasons, it does not have a clear definition (1). In the 18th century, the Irish economist Richard Cantillon associated the concept of entrepreneurship with the concept of risk and defined it as the purchase of raw materials, services and production to sell at a predetermined price (2). In fact, risk stands out as one of the natural elements of entrepreneurship (3). Entrepreneurship involves behaviours such as taking initiative, using resources correctly and productively, managing socio-economic balance, taking a position against possible failures, and undertaking risks (4-6). Moreover, it incorporates values such as being innovative, generating new ideas, and being visionary. In this sense, it also includes creativity, which is associated with passionate implementation of innovations, and the ability to produce creative results (5). Entrepreneurial spirit, which results in increased production through the effective and efficient use of economic resources, also supports economic growth, and ensures the spread of innovative understanding in society through the advancement of creative and innovative ideas (6).

As entrepreneurship becomes more widespread in society and investment opportunities open doors to innovative ideas, the use of resources also leads to competition. New ideas that are tested to increase productivity highlight the main features of the concept of entrepreneurship (7).

There are numerous benefits that entrepreneurship contributes to economic development. Among these benefits, job creation, economic growth and the creation of an innovative social structure stand out. In order to provide these benefits, the individual's socioeconomic and cultural baggage, social habits, family structure, education level, quality of education, economic conditions and government incentives are very important. In this way, individuals with entrepreneurial potential can take action, thereby contributing to growth at the national level (8). Factors such as government policies, financial activities and access to foreign markets form the basis of entrepreneurship. Known as the entrepreneurship ecosystem, this system focuses on the rapid changes and innovation opportunities experienced at the global level (9).

In the light of this information, individual entrepreneurship can be interpreted as an individual's use of original ideas, skills and resources to set up a new business or initiate a project. The individual generates solutions in economic, social or cultural fields, and therefore, individual entrepreneurship is a phenomenon that incorporates these situational factors (10). Due to its social dimension, it can be thought that individual entrepreneurship also encompasses sport.

Entrepreneurial orientation at the corporate level in businesses is measured by three main dimensions known as proactiveness, innovation, and risk taking (11-13). Proactiveness helps businesses predict market opportunities and determine strategies accordingly. In this way, businesses rise over time to the position of shaping the competition in the markets in which they operate. Moreover, businesses that act proactively find it easier to identify products and services that will be in demand in the future (14). Innovation is a key factor in determining the performance of a business because the ability to introduce new products, processes and ideas increases the competitiveness of that business. Whilst innovation generally involves a certain amount of risk and positive results are not always guaranteed, it is accepted in the literature that businesses that innovate are generally more successful than those that do not (15). In fast-changing environments, it is unclear how much profit will be made with current business operations and processes. For this reason, businesses have to constantly seek new opportunities. In this case, businesses may need to take risks, take bold steps, and invest in uncertain environments. This involves investing in new technologies, launching innovative products on the market, and acting boldly (16).

METHOD

A correlational survey model with an immediate survey approach, which is one of the general survey models, was used as the research model. Within the scope of the sample size calculation, although it was determined that 165 university students needed to be reached, the sample size was specified as 245 in order to obtain better results (17). The participants in the study were third and fourth grade students studying in the Coaching Education and Sport Management Departments at Trakya University Kırkpınar Sports Science Faculty, Çanakkale Onsekiz Mart University Sports Science Faculty, Muğla Sıtkı Koçman University Sports Science Faculty, Sakarya Applied Sciences University Sports Science Faculty, and Istanbul Cerrahpaşa Sports Science Faculty.

The Individual Entrepreneurial Orientation Scale, whose Turkish validity and reliability study was conducted by Ercan & Yıldıran (18), and the short form of the International Physical Activity Questionnaire (IPAQ), whose Turkish validity and reliability study was carried out by Öztürk (19), were used as data collection tools. The level of individual entrepreneurship was determined as the independent variable of the study, while factors such as gender, physical activity level, department attended, body mass index, and previous entrepreneurship education experience were specified as the independent variables of the study.

Statistical Analysis

In our study, which was conducted to determine differences in participants' individual entrepreneurial orientation according to gender, previous entrepreneurship course participation, department attended, physical activity level and body mass index, statistical analysis of the data was carried out using the SPSS® Statistics for Windows version 23 software program (IBM, Armonk, NY; 2011). In the statistical comparisons that were made, parametric tests were preferred when the assumptions of normal distribution and sphericity tests performed on the relevant datasets were met, while nonparametric tests were preferred when they were not met. Whether the data of the relevant variables conformed to normal distribution was tested with the Shapiro-Wilk test and confirmed with skewness and kurtosis values (20). Mauchly's test of sphericity was used to test whether the variances of the differences between any two measurements were equal. The Mann-Whitney U test was used for between-group pairwise comparisons of mean differences within groups of independent variables that did not conform to normal distribution. Statistical analysis of independent variables requiring nonparametric testing is expressed as median [25%-75% percentile] values in the relevant tables. In parametric tests, mean and standard deviation values are given in the relevant tables. For the statistical analysis performed to determine individual entrepreneurial orientation according to physical activity level, groupings were made according to the IPAQ physical activity values obtained from the participants. In cases that met the assumptions of normality and sphericity, the independent samples t-test was used to compare two groups, while one-way multivariate analysis of variance (one-way MANOVA) was used to compare the means of more than two groups. Prior to one-way MANOVA, the univariate normality assumption was checked by normality tests and outliers, while the multivariate normality assumption was checked by calculating Mahalanobis distance values. To reveal the power of the statistical analysis, effect size values for all relevant tests were included (for the Mann-Whitney U test: r; 0.1 = small, 0.3 = medium, 0.5 = large effect size, and for the independent samples t-test: Cohen's effect size d; 0.2 = small, 0.5 = medium, 0.8 =

large effect size) (21-22). Statistical significance level throughout the whole statistical analysis was set at $p \leq 0.05$.

Ethical approval and institutional permission

The study was approved by the Non-Interventional Clinical Research Ethics Committee of Trakya University Faculty of Medicine with protocol number TÜTF-BAEK 2023/54 and decision number 02/25, dated 13.02.2023, and all practices were carried out in accordance with the Declaration of Helsinki.

FINDINGS

Descriptive characteristics of the sports science faculty students who participated in the study were compared. When the participants were compared in terms of age, height and weight according to their gender, it was determined that the groups showed normal distribution and the assumption of sphericity was met when evaluated within the groups in terms of age and weight ($p < 0.05$), while it was observed that the normal distribution assumption was not met in terms of height values ($p > 0.05$). Information on the comparison of the age and weight values within gender and between genders based on the results of the independent samples t-test and the height values of the two groups according to the results of the Mann-Whitney U test are shown in Table 1 below. The obtained results show that the participants are statistically different from each other in terms of their descriptive characteristics.

Table 1. Descriptive Characteristics of Participants

	Female (N = 84) Mean ± SD	**Male (N = 161) Mean ± SD**	**Female-Male (N = 245) p**
Age (years)	22 ± 1.37	22.4 ± 1.68	0.042*
Height (cm)	165.3 ± 6.22	179.9 ± 6.59	< 0.01*
Weight (kg)	58.5 ± 8.83	78.7 ± 11.1	< 0.01*

SD: Standard deviation. *p < 0.05

Individual Entrepreneurial Orientation According to Physical Activity Level

Based on the scores obtained from the IPAQ physical activity scale, male participants were found to be physically active at a moderate level (600<IPAQ<3000 MET-min/week) and at a high level (IPAQ>3000 MET-min/week) (19), and therefore, male participants were divided into two separate groups according to their physical activity level. As a result of the normal distribution and sphericity tests, it was seen that the datasets of the risk taking and innovation variables met the necessary assumptions, but that the datasets of the proactivity and total score variables did not meet the normal distribution assumption. Accordingly, the independent samples t-test was performed to determine whether there was a difference in individual entrepreneurial orientation of male students with different physical activity levels in terms of risk taking and innovation, while the Mann-Whitney U test was performed to determine whether there was a difference in individual entrepreneurial orientation in terms of proactivity and total score. Information on the statistical analysis conducted to compare individual entrepreneurial orientation of male sports science faculty students in terms of risk taking, innovation, proactiveness and total score according to their physical activity level is shown in Table 2.

According to the results of the pairwise comparisons, no significant difference was observed in individual entrepreneurial orientation (obtained from risk taking, innovation, proactiveness and total scores) in male sports science faculty students with different physical activity levels ($p > 0.05$).

Table 2. Comparison of Individual Entrepreneurial Orientation in Male Students According to Physical Activity Level

	PAL-Moderate (N = 65) Mean ± SD	PAL-High (N = 87) Mean ± SD	p	ES
Risk taking	10.8 ± 2.60	10.39 ± 2.89	0.367	0.15[d]
Innovation	14.43 ± 3.27	14.65 ± 2.99	0.661	0.07[d]
Proactiveness	11.87 ± 2.34	11.18 ± 2.76	0.146	0.14[r]
Total score	37.08 ± 6.75	36.08 ± 7.16	0.338	0.14[r]

PAL: Physical activity level; ES: Effect size; Cohen's effect size d: 0.2 = small, 0.5 = medium, 0.8 = large; r: 0.1 = small, 0.3 = medium, 0.5 = large; SD: Standard deviation. $p < 0.05$

According to the scores obtained from the IPAQ physical activity scale, female participants were found to be physically inactive (IPAQ<600), physically active at a moderate level (600<IPAQ<3000 MET-min/week), and physically active at a high level (IPAQ>3000 MET-min/week) (19), and therefore, female students were divided into three separate groups according to their physical activity level. In the statistical analysis conducted to determine whether the physical activity levels of female students with three different levels of physical activity had a significant effect on their individual entrepreneurial orientation, a one-way multivariate analysis of variance (one-way MANOVA) was performed to determine whether the risk-taking, innovativeness, proactiveness and total score values of female students differed according to their physical activity levels (Table-3). Prior to the test, the univariate normality assumption was checked with normality tests and outliers, while the multivariate normality assumption was checked by calculating Mahalanobis distance values, and it was seen that the datasets were normally distributed in both cases. Levene's test showed that error variances could be considered equal for risk taking ($p = 0.380$, $p > 0.05$), innovativeness ($p = 0.722$, $p > 0.05$), proactiveness ($p = 0.135$, $p > 0.05$) and total scores ($p = 0.569$, $p > 0.05$).

According to the MANOVA results, no significant difference was observed in individual entrepreneurial orientation in female sports science faculty students with different physical activity levels (obtained from risk taking, innovation, proactiveness and total scores) according to the combined dependent variable [F8-150 = 0.609, $p > 0.05$ Pillai's Trace = 0.064, partial $\eta 2 = 0.032$] (Table 3).

Table 3. Comparison of Individual Entrepreneurial Orientation in Female Students According to Physical Activity Level

	PAL-Inactive (N = 5) Mean ± SD	PAL-Moderate (N = 41) Mean ± SD	PAL-High (N = 34) Mean ± SD	p	ES
Risk taking	9.20 ± 1.64	10.07 ± 2.89	9.91 ± 2.86	0.805	0.006[η^2]
Innovation	12.40 ± 3.78	14.49 ± 3.15	14.88 ± 3.57	0.311	0.030[η^2]
Proactiveness	9.80 ± 4.66	11.27 ± 2.58	10.91 ± 3.14	0.557	0.015[η^2]
Total score	31.40 ± 9.69	35.56 ± 7.29	35.71 ± 8.20	0.507	0.018[η^2]

PAL: Physical activity level; ES: Partial eta-squared effect size η^2; $0.01 \leq \eta^2 < 0.06$ small, $0.06 \leq \eta^2 < 0.14$ medium, $\eta^2 \geq 0.14$ large; SD: Standard deviation. $p < 0.05$

Based on the scores obtained from the IPAQ physical activity scale, it was seen that the sports science faculty students were physically inactive (IPAQ<600), physically active at a moderate level (600<IPAQ<3000 MET-min/week), and physically active at a high level (IPAQ>3000 MET-min/week), and therefore, all male and female students participating in the study were divided into three separate groups according to their physical activity level. Descriptive statistical information on individual entrepreneurship parameters for the groups is shown in Table 4.

Table 4. Descriptive Statistics Values for Individual Entrepreneurship Parameters of Sports Science Faculty Students According to Physical Activity Level

	Risk Taking	Innovation	Proactiveness	Total Score
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
PAL-Inactive (n=19)	11.58 ± 3.04	15.90 ± 2.18	12.05 ± 2.70	39.53 ± 6.53
PAL-Moderate (n=105)	10.00 ± 2.78	14.49 ± 3.24	10.92 ± 2.85	35.30 ± 7.40
PAL-High (n=121)	10.37 ± 2.72	14.42 ± 3.24	11.52 ± 2.52	36.20 ± 7.06

SD: Standard deviation. $p<0.05$

At the normality test stage of the statistical analysis conducted to determine whether physical activity levels in students with three different physical activity levels had a significant effect on their individual entrepreneurial orientation, it was observed that the groups did not meet the necessary assumptions regarding any parameter of individual entrepreneurship. Therefore, the Kruskal-Wallis test was performed to see whether there was a difference between the individual entrepreneurship parameters of the three groups (Table 5).

Table 5. Comparison of Individual Entrepreneurial Orientation in Sports Science Faculty Students According to Physical Activity Level

	Mean ± SD	p*	$\chi^2_{(3)}$	ES
Risk Taking (n=245)	10.31 ± 2.79	0.056	5.76	0.02 η^2
Innovation (n=245)	14.57 ± 3.18	0.250	2.78	0.01 η^2
Proactiveness (n=245)	11.31 ± 2.69	0.161	3.65	0.01 η^2
Total Score (n=245)	36.08 ± 7.22	0.069	5.35	0.02 η^2

SD: Standard deviation; ES: Partial eta-squared effect size η^2; $0.01 \leq \eta^2 < 0.06$ small, $0.06 \leq \eta^2 < 0.14$ medium, $\eta^2 \geq 0.14$ large. *Kruskal-Wallis test p value. $p < 0.05$.

The obtained Kruskal-Wallis test results showed that there were statistically non-significant differences between the individual entrepreneurship parameters of the groups ($p > 0.05$). Based on this result, it can be said that individual entrepreneurial orientation in sports science faculty students with different physical activity levels is similar ($p > 0.05$).

Individual Entrepreneurial Orientation According to Body Mass Index Value

Body mass index values are considered in four different ranges: BMI < 18.5 kg/m2 (underweight), 18.5 ≤ BMI < 24.9 kg/m2 (normal), 25.0 ≤ BMI < 29.9 kg/m2 (overweight), and 30.0 ≤ BMI < 34.9 kg/m2 (obese). According to this classification, the students participating in our study were divided into two groups (those with normal weight and those who were overweight) based on their body mass index values below and above 30 kg/m2. As a result of the normal distribution and sphericity tests, the independent samples t-test was performed for pairwise comparisons for datasets where normal distribution and sphericity assumptions were met in the parameters of individual entrepreneurial orientation for the groups, while the Mann-Whitney U test was performed to determine whether there was a difference in individual entrepreneurial orientation in pairwise comparisons for datasets where these assumptions were not met. Descriptive information regarding the statistical analysis of individual entrepreneurial orientation in sports science faculty students in terms of risk taking, innovation, proactiveness and total score according to their body mass index values is shown in Table 6, while information on the pairwise comparisons of the relevant variables is shown in Table 7.

Table 6. Descriptive Statistics for Individual Entrepreneurial Orientation in Sports Science Faculty Students According to Body Mass Index Values

	BMI_1 Underweight (n = 15) Mean ± SD	BMI_2 Normal (n = 163) Mean ± SD
Risk Taking	10.08 ± 2.80	10.90 ± 2.67
Innovation	14.35 ± 3.14	15.15 ± 3.23
Proactiveness	10.91 ± 2.69	11.31 ± 2.72
Total Score	35.60 ± 7.11	37.36 ± 7.42

BMI: Body mass index; BMI-1: BMI <18.5 kg/m² (underweight), BMI-2: 18.5 ≤ BMI <24.9 kg/m² (normal), BMI-3: 25.0 ≤ BMI < 29.9 kg/m² (overweight), BMI-4: 30,0 ≤ BMI < 34,9 kg/m² (obese); SD: Standard deviation.

According to the results of the statistical analysis, it can be said that there is no statistically significant difference in individual entrepreneurial orientation of sports science faculty students according to their body mass index values ($p > 0.05$).

Table 7. Comparison of Individual Entrepreneurial Orientation in Sports Science Faculty Students According to Body Mass Index Values

	BMI		BMI1 - BMI2 (n = 245)		
	BMI1 (n = 15) Mean ± SD	BMI2 (n = 163) Mean ± SD	M [Min – Max]	p	ES
Risk Taking	10.08 ± 2.80	10.90 ± 2.67	11 [8 – 12]	0.055	0.12r
Innovation	14.35 ± 3.14	15.15 ± 3.23	15 [13 – 17]	0.093	0.11r
Proactiveness	10.91 ± 2.69	11.31 ± 2.72	12 [10 – 13]	0.889	0.01r
Total Score	35.60 ± 7.11	37.36 ± 7.42	37 [31 – 42]	0.110	0.10r

BMI1: Normal weight; BMI2: Overweight; SD: Standard deviation; M [Min – Max]: Median [25% –75% percentile]; ES: Unbiased effect size r; 0.1 = small, 0.3 = medium, 0.5 = large. $p < 0.05$

Individual Entrepreneurial Orientation According to Gender

As a result of the normal distribution and sphericity tests performed for the parameters of individual entrepreneurial orientation in participants divided into two separate groups, male and female, it was determined that the normal distribution and sphericity assumptions of the datasets were not met. Therefore, in pairwise comparisons of the datasets, the Mann-Whitney U test was conducted to determine whether there was a difference in individual entrepreneurial orientation according to gender. Information on the statistical analysis performed to compare individual entrepreneurial orientation in sports science faculty students in terms of risk taking, innovation, proactiveness and total score according to gender is shown in Table 8.

Table 8. Comparison of Individual Entrepreneurial Orientation of Sports Science Faculty Students According to Gender

	Gender		Female - Male (n = 245)		
	Female (n = 84) Mean ± SD	Male (n = 161) Mean ± SD	M [Min – Max]	p	ES
Risk Taking	9.88 ± 0.31	10.52 ± 0.22	11 [8 – 12]	0.085	0.12r
Innovation	14.58 ± 0.36	14.56 ± 0.25	15 [13 – 17]	0.786	0.02r
Proactiveness	10.99 ± 0.32	11.47 ± 0.20	12 [10 – 13]	0.196	0.08r
Total Score	35.32 ± 0.84	36.47 ± 0.55	37 [31 – 42]	0.359	0.06r

SD: Standard deviation; M [Min – Max]: Median [25% –75% percentile]; ES: Unbiased effect size r; 0.1 = small, 0.3 = medium, 0.5 = large. $p < 0.05$

According to the statistical analysis results, it can be said that there is no statistically significant difference in individual entrepreneurial orientation of sports science faculty students according to gender ($p > 0.05$).

Individual Entrepreneurial Orientation According to Entrepreneurship Course Participation Status

Participants who attended and did not attend the entrepreneurship course were divided into two separate groups according to their course participation status. As a result of the normal distribution and sphericity tests performed on the datasets for the parameters of individual entrepreneurial orientation in participants according to their entrepreneurship course participation status, it was seen that the normal distribution and sphericity assumptions were not met. Therefore, the Mann-Whitney U test was conducted to determine whether course participation status made a difference to individual entrepreneurial orientation in pairwise comparisons of data sets. Information on the statistical analysis performed to compare individual entrepreneurial orientation in sports science faculty students in terms of risk taking, innovation, proactiveness and total score according to their course participation status is shown in Table 9.

Table 9. Comparison of Individual Entrepreneurial Orientation in Sports Science Faculty Students According to Entrepreneurship Course Participation Status

	Course Participation		Course Participants - Course Non-Participants (n = 245)		
	Course Participants (n = 18) Mean ± SD	Course Non-Participants (n = 227) Mean ± SD	M [Min – Max]	p	ES
Risk Taking	11.94 ± 0.45	10.18 ± 0.19	11 [8 – 12]	0.010*	0.16r
Innovation	16.78 ± 0.61	14.39 ± 0.21	15 [13 – 17]	0.004*	0.18r
Proactiveness	12.67 ± 0.53	11.20 ± 0.18	12 [10 – 13]	0.023*	0.14r
Total Score	40.83 ± 1.43	35.70 ± 0.48	37 [31 – 42]	0.009*	0.17r

SD: Standard deviation; M [Min – Max]: Median [25% −75% percentile]; ES: Unbiased effect size r; 0.1 = small, 0.3 = medium, 0.5 = large. *p < 0.05

According to the statistical analysis results, it was determined that regarding sports science faculty students' participation in the entrepreneurship course, there were statistically significant differences in favour of students participating in the course in terms of all parameters of individual entrepreneurial orientation. Based on this result, it can be said that participation in the course has a weak statistically significant effect on individual entrepreneurship in terms of all parameters ($p<0.05$).

Individual Entrepreneurial Orientation According to Department Attended

The participant group of our study consisted of students enrolled in coaching education or sport management departments at the faculty of sports science. Participants were divided into two separate groups to determine whether there was a difference in individual entrepreneurial orientation according to the department they attended. As a result of the normal distribution and sphericity tests performed on the datasets for the parameters of individual entrepreneurial orientation in the participants according to the department they attended, it was seen that the normal distribution and sphericity assumptions were not met. Therefore, in pairwise comparisons of the datasets, the Mann-Whitney U test was conducted to determine whether receiving education in the department students attended made a difference to individual entrepreneurial orientation. Information on the statistical analysis conducted to compare individual entrepreneurial orientation in sports science faculty students in terms of risk taking, innovation, proactiveness and total score according to the department they attended is shown in Table 10.

Table 10. Comparison of Individual Entrepreneurial Orientation in Sports Science Faculty Students According to their Chosen Department

	Department		Department1 - Department2 (n = 245)		
	CED (n = 126) Mean ± SD	SMD (n = 119) Mean ± SD	M [Min – Max]	p	EB
Risk Taking	10.17 ± 0.26	10.45 ± 0.24	11 [8 – 12]	0.589	0.03r
Innovation	14.55 ± 0.28	14.59 ± 0.29	15 [13 – 17]	0.939	0.01r
Proactiveness	11.71 ± 0.23	10.87 ± 0.25	12 [10 – 13]	0.025*	0.14r
Total Score	36.32 ± 0.63	35.82 ± 0.67	37 [31 – 42]	0.568	0.04r

CED: Coaching Education Department; SMD: Sport Management Department; Department1: CED student; Department2: SMD student; SD: Standard deviation; M [Min – Max]: Median [25% −75% percentile]; ES: Unbiased effect size r; 0.1 = small, 0.3 = medium, 0.5 = large. *p < 0.05

According to the results of the statistical analysis, a statistically significant difference was determined in the individual entrepreneurial orientation of sports science faculty students according to the department they attended, in favour of the coaching education department, but in the proactiveness parameter only. According to this result, it can be said that receiving coaching education has a weak statistically significant effect on sports science faculty students' individual entrepreneurship orientation in terms of the proactiveness parameter of individual entrepreneurship ($p < 0.05$).

Individual entrepreneurial orientation of sports science faculty students has become a very important issue nowadays. In a period when entrepreneurship in the fields of sports, health and fitness is increasing, it is invaluable for sports science students to possess entrepreneurial and innovative ideas (3). Robert and Bukodi (23) stressed the importance of the role played by education in developing entrepreneurial qualities. The education factor should be evaluated from its professional aspect, which promotes work experience, and from its academic aspect, which fosters general knowledge. For example, Bird (24) argued that receiving education in entrepreneurship is very important for business owners to ensure high-quality products and services, especially in some branches of industry. Kuratko (25) defined entrepreneurship by stating that entrepreneurship is considered as a powerful influence during a lively time period associated with change, vision and creativity.

Besides the theoretical and practical knowledge that sports science students acquire in their courses, they can also turn their passion for sport into entrepreneurial opportunities. For example, they can start their own businesses in areas such as sports coaching, gym management, and sports equipment sales. Moreover, they can also be successful in personal branding and digital entrepreneurship by opening blogs or social media accounts on healthy living (5).

Individual entrepreneurship encourages young people to think innovatively and helps them to improve their skills in starting and managing their own businesses (3). Sports science faculty students can contribute to the sports industry by developing creative and effective projects. Moreover, students with entrepreneurial spirit have the potential to create employment and can have a positive impact on the economy. Individual entrepreneurial orientation in sports science faculty students brings out the entrepreneurial spirit of young people who are interested in sports and healthy living and increases their contribution to the sector. Supporting and encouraging these students will help them develop innovative business ideas that will benefit sports fans and health enthusiasts (3).

In this study, sports science faculty students' age, height and weight characteristics were compared according to their gender. It was determined that the groups independently showed normal distribution in terms of age and weight and met the assumption of sphericity. However, the height values did not meet the assumption of normal distribution. According to the results of the independent samples t-test and Mann-Whitney U test, it was determined that age and weight values were different within gender and between genders, and that the height values were also different ($p < 0.05$).

No significant difference was observed in individual entrepreneurial orientation (obtained from risk taking, innovativeness, proactiveness and total scores) among male sports science faculty students with different physical activity levels ($p > 0.05$).

As a result of the statistical analysis, no significant effect was detected on individual entrepreneurial orientation female sports science faculty students with different physical activity levels. This also means that female students' risk taking, innovativeness, proactiveness and total score values did not show a significant difference according to their physical activity levels. However, in the results of studies conducted by Akman and Bektaş (26), Kılıç, Keklik & Çalış (27), and Aksel & Bağcı (28), it was stated that there was a relationship between students' entrepreneurial orientation and the gender variable.

In this study, it was found that entrepreneurial orientation in male and female participants did not meet the assumptions of normal distribution and sphericity. Therefore, the Mann-Whitney U test was used to examine the difference in gender-related entrepreneurial orientation. According to the statistical analysis, a significant relationship was found between the entrepreneurship course participation status of sports science faculty students and their individual entrepreneurial orientation. This shows that course participation had a statistically significant effect on individual entrepreneurship ($p < 0.05$). However, according to the research results of Saber (3), there was no significant difference between the gender variable and the perception of students studying at the school of physical education and sports and the faculties of sports science regarding the concept of individual entrepreneurship.

The Mann-Whitney U test is a nonparametric test used to check median differences between groups. As a result of this test, a statistically significant difference was determined between the individual entrepreneurial orientation of sports science faculty students according to their entrepreneurship course participation status.

Based on these findings, it can be said that course participation had a statistically significant effect on individual entrepreneurship. In other words there was a significant difference between individual entrepreneurial orientation in faculty students who attended the course and those who did not. This suggests that students' participation in the entrepreneurship course may have had a positive effect on individual entrepreneurship skills ($p < 0.05$).

According to the results of the examination of individual entrepreneurial orientation in students enrolled in coaching education or sport management departments at the faculty of sports science, it was determined that the datasets did not meet the assumptions of normal distribution and sphericity. Therefore, the Mann-Whitney U test was performed to examine whether there was a difference between the two departments. According to the results, in the analysis of individual entrepreneurial orientation in sports science faculty students, a statistically significant difference was detected only in the proactiveness parameter. This means that proactivity emerged as the most significant factor influencing students' entrepreneurial orientation ($p < 0.05$).

It can be stated that receiving coaching education or sport management education had a statistically significant effect on students' individual entrepreneurship. This shows that entrepreneurial orientation in these student groups differed when other parameters were taken into account, and that the entrepreneurial potential in students receiving a certain education was positively affected.

In this study, individual entrepreneurial orientation in sports science faculty students was examined according to their gender, physical activity levels and educational programmes. Considering the findings of the study, some important conclusions emerge. Firstly, age, height and weight characteristics were examined according to gender and differences between genders were detected. According to Korkmaz's (29) study, it was stated that there was a relationship between students' entrepreneurial orientation and age. In that study, it was revealed that age was related to self-confidence and innovation, type of learning was related to innovation and risk taking, and the presence of family entrepreneurs had a significant relationship with self-confidence, innovation and the need for success. Similarly, Aksel and Bağcı's (28) study concluded that there was a significant relationship between entrepreneurial orientation and age.

In addition, no significant difference was found between entrepreneurial orientation in male students with different physical activity levels. Moreover, no significant effect was detected on entrepreneurial orientation in female students with different physical activity levels. Furthermore, it was determined that the individual entrepreneurial orientation of the participants did not meet the assumptions of normal distribution and sphericity. The Mann-Whitney U test showed that there was a significant relationship between course participation status and individual entrepreneurial orientation.

As it is known, there is a lack of research regarding entrepreneurship among sports science students. Therefore, we believe that this study will help fill that gap. However, this can also be considered one of the limitations of the study.

DISCUSSION AND CONCLUSION

In conclusion, it was determined that being a student in either the Coaching Education or Sport Management department had a statistically significant effect on certain individual entrepreneurship parameters.

However, when individual entrepreneurial orientation was examined in general, although differences were found under certain conditions, no significant differences were observed under other conditions. Accordingly, further studies may be needed and the impact of different factors on individual entrepreneurship can be examined in more detail. In addition, the failure of datasets to meet the assumptions of normal distribution and sphericity is an issue that should be taken into consideration in future studies. In line with these findings, the following recommendations are presented to researchers in order to contribute to the literature:

- It is recommended that courses on individual entrepreneurship be added to university programmes. These courses can help students develop entrepreneurial skills.

- Mentorship programmes and internship opportunities should be offered to students to enable them to benefit from entrepreneurship opportunities in the field of sports. In this way, students can find the opportunity to combine their theoretical knowledge with practical experiences.

- Organising awareness-raising events related to entrepreneurship can encourage students to discover their entrepreneurial potential.

- The chance for students to interact with professionals in the sector can be increased by organising entrepreneurship conferences and seminars.

- Workshops can be organised with expert speakers to provide students with basic training on finance and business issues.

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