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EXAMINATION OF THE RELATIONSHIP BETWEEN THE ATTITUDES OF PHYSICAL EDUCATION AND SPORTS TEACHER CANDIDATES TOWARDS INDIVIDUAL INNOVATION AND USING STUDENT-CENTERED TEACHING METHODS AND TECHNIQUES

EXAME DA RELAÇÃO ENTRE AS ATITUDES DOS CANDIDATOS A PROFESSORES DE EDUCAÇÃO FÍSICA E DE ESPORTE EM RELAÇÃO À INOVAÇÃO INDIVIDUAL E A UTILIZAÇÃO DE MÉTODOS E TÉCNICAS DE ENSINO CENTRADOS NO ESTUDANTE*

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Abstract: This study was conducted to reveal the attitudes of physical education and sports teacher candidates towards individual innovativeness and using student-centered teaching methods and techniques according to dependent and independent variables. The scale of attitude towards using student-centered teaching methods and techniques (SAUSCTMT), which consists of 27 items and 4 sub-dimensions, developed by Koç (2014), and the individual innovativeness scale (IIS), which consists of 20 items and 4 sub-dimensions, developed by Hurt et al., (1977) and adapted to Turkish by Kılıçer and Odabaşı (2010) were used in the study. The necessary permissions were obtained for the scale method used in this study, with the decision of the Scientific Research and Publication Ethics Committee of Mardin Artuklu University, dated 08.06.2022 and numbered 2022/6-3. The sample of the study was composed of 132 students and the data obtained were analyzed with the SPSS 25.0 software. Unpaired T-Test and One Way ANOVA tests were used in the analysis of the data obtained from the participants. Also, a "Pearson correlation analysis" was conducted to determine the level and the direction of the relationship between dependent variables. In the correlation analysis, it was seen that the strongest relationship was positive between the "SAUSCTMT" and the valuing sub-dimension ($r = .859$; $p<0.05$). In the study, it was determined that national athlete teacher candidates and those who had education in the sports management department had more positive ideas. As a result of the study, it was determined that physical education and sports teacher candidates' attitudes towards individual innovation and using student-centered teaching methods and techniques were nearly at a moderate level.

Keywords: Physical Education. Individual Innovation. Teaching Techniques. Teacher.

Abstract: Este estudo foi realizado para revelar as atitudes dos candidatos a professores de educação física e esporte em relação à inovação individual e utilizando métodos e técnicas de ensino centrados no estudante, de acordo com variáveis dependentes e independentes. A escala de atitude em relação ao uso

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de métodos e técnicas de ensino centrados no estudante (SAUSCTMT), que consiste em 27 itens e 4 sub-dimensões, desenvolvida por Koç (2014), e a escala de inovação individual (IIS), que consiste em 20 itens e 4 sub-dimensões, desenvolvida por Hurt et al., (1977) e adaptada para turco por Kılıçer e Odabaşı (2010) foram utilizadas no estudo. As permissões necessárias foram obtidas para o método de escala utilizado neste estudo, com a decisão do Comitê de Ética em Pesquisa Científica e Publicação da Universidade Mardin Artuklu, datada de 08.06.2022 e numerada de 2022/6-3. A amostra do estudo foi composta por 132 estudantes e os dados obtidos foram analisados com o software SPSS 25.0. Na análise dos dados obtidos dos participantes, foram utilizados os testes T-T-Test Unpaired e One Way ANOVA. Também foi realizada uma "Análise de correlação Pearson" para determinar o nível e a direção da relação entre as variáveis dependentes. Na análise de correlação, verificou-se que a relação mais forte foi positiva entre o "SAUSCTMT" e a sub-dimensão de valorização (r= .859; p<0,05). No estudo, foi determinado que os candidatos a professores de atletismo nacionais e aqueles que tinham formação no departamento de gestão esportiva tinham idéias mais positivas. Como resultado do estudo, foi determinado que as atitudes dos candidatos a professores de educação física e de esporte em relação à inovação individual e ao uso de métodos e técnicas de ensino centrados no aluno estavam quase em um nível moderado.

Palavras-Chave: Educação Física. Inovação Individual. Técnicas de Ensino. Professor.

1. INTRODUCTION

In our age, where technology is developing rapidly, there are radical changes and transformations in education activities as in other fields. With digitalization, access to information has become easier and faster. However, in the digital world, there are sources of information that can be expressed in different hundreds of thousands of different ways on the same topics, thus, it is very difficult to choose which ones contain healthy knowledge among these sources. Teachers who are specialized in their fields are needed to make the right and appropriate choice. Teachers are not only positioned devices that transfer information, but they are individuals who guide and encourage learners by using appropriate teaching techniques and are extraordinary role models. In addition to all these, although the teacher and the learning environment are the same, family values and the culture of the place of residence will be able to influence and differentiate the learners.

Innovation is defined as a process of development that is frequently used as a new thought or practice by a society or organization (Rogers, 2003). The innovativeness characteristics of individuals vary from person to person. While some individuals have some more innovative elements, others have qualities that prevent the innovation factor. In this respect, the fact that people have different worldviews in the society they live in affects the emergence and implementation of innovations (Surry and Brennan, 1998).

Educational institutions are the main institutions that constantly feel the need for change

and innovation (Arkhipova and Kuchmaeva, 2018; Caena, 2014; Genç, 2000; Genç and Erayman, 2008; Özdemir, 2000; Voogt and Pelgrum, 2005). Educational institutions have started to provide education in a more flexible structure with the effect of the changes and technology required by the age. In this context, the educational institutions can survive by keeping up with the innovation movement (Aslaner, 2010).

Teaching techniques are widely divided into traditional and contemporary teaching techniques. Traditional teaching is an approach where the course is more teacher-centered, the teacher has an informative role, and the student is the listener. Since the students receive the information as it is, they cannot process the information, cannot make sense of it, and the information that is not interpreted is soon forgotten and lost. The expression, question-answer, and demonstration techniques are generally used in this teacher-centered approach. The approach that does not allow the student to take an active role can be defined as an approach preferred by teachers who do not have sufficient self-efficacy in terms of classroom management, use of teaching methods and techniques, or those who do not have the knowledge and skills to apply their course with different approaches (Yılmaz et al., 2020). Active learning includes problem solving, small group studies, cooperative learning, learning by researching and experimenting. However, passive learning activities in which students are knowledge recipients include listening to teachers and often asking low-level questions (Jacobsen, Eggen & Kauchak, 2009).

The teaching strategy includes all activities in the learning process, from subject selection to analysis, from considering the psychological principles of teaching to the selection of the teaching method to be applied. In other words, the teaching strategy guides every dimension of the teaching-learning process related to a course (Emir, 2010).

2. METHODOLOGY

2.1. Research model

The relational screening paradigm, which is one of the main research models, was used to design the study. The relational survey model, which is one of the general survey model types, is a research model that aims to determine the presence and/or degree of co-variance between two or more variables (Fraenkel and Wallen, 2009; Karasar, 2012).

Convenience sampling method was used. One of the most widely used sampling types in social sciences is convenience sampling. In convenience sampling, researchers select participants

among individuals who are easy to reach, suitable for research, and volunteers (Gravetter and Forzano, 2012). The study group of the research consists of 132 physical education and sports teacher candidates studying at Mardin Artuklu University in the 2021-2022 academic year.

2.2. Data Collection Tools

2.2.1. Individual Innovation Scale (IIS):

The scale developed by Hurt at al., (1977) was adapted to Turkish by Kılıçer and Odabaşı (2010). The scale, which includes 20 items, consists of four dimensions: resistance to change (8 items), idea leadership (5 items), openness to experience (5 items), and risk taking (2 items). The reliability coefficients of the scale were calculated as .82 for the dimension of resistance to change, .77 for the idea leadership dimension, .80 for the openness to experience dimension, .61 for the risk-taking dimension, and .87 for the overall scale.

2.2.2. Scale of Attitude towards Using Student-Centered Teaching Methods and Techniques (SAUSCTMT):

The27-item scale developed by Koç (2014) was used to measure teachers' attitudes towards using student-centered methods and techniques. The scale consists of four dimensions: valuing, resistance, positive effects, and cost belief. The reliability coefficients of the scale were calculated by the researcher who developed the scale as .94 for valuing, .89 for resistance, .90 for positive effects, .84 for cost belief and .93 for the overall scale. In the reliability study conducted in this study, the reliability coefficients of the scale were calculated as .95 for valuing, .86 for resistance, .94 for positive effects, .76 for cost belief, and .94 for the overall scale. The necessary permissions were obtained for the survey method used in this study, with the decision of the Scientific Research and Publication Ethics Committee of Mardin Artuklu University, dated 08.06.2022 and numbered 2022/6-3.

2.3. Data Analysis

Skewness and kurtosis tests were performed to determine whether the data obtained from the study showed a normal distribution. In social science research, the skewness and kurtosis coefficients in the range of (-1.5,+1.5) (Tabachnick & Fidell, 2007) or (-2,+2) (George & Mallery, 2016) indicate that the data show a normal distribution. The tests showed that the skewness and kurtosis values were between +1.5 and -1.5, pointing to a normal distribution, and then parametric tests were conducted. Table 1 shows the skewness and kurtosis values of the sub-dimensions of the individual innovation scale and the teaching methods and techniques scale of university students receiving sports education.

Table 1. Normality test results of the sub-dimensions of the individual innovation scale and the teaching methods and techniques scale

Scale	N	Mean	SD	Skewness	Kurtosis
Resistance to change	132	23,515	0,547	-0,046	0,003
Idea leadership	132	19,959	0,324	-1,089	1,443
Openness to experience	132	20,286	,330	-1,239	1,788
Risk Taking	132	7,124	,170	-,893	,732
Individual Innovation Scale	132	70,886	,831	,091	,618
Valuing	132	38,636	,564	-,657	1,836
Resistance	132	22,232	,278	,512	,695
Positive effects	132	20,099	,324	-,917	1,287
Cost belief	132	12,153	,305	-,054	-,355
SAUSCTMT	132	97,090	1,042	,059	,245

An "independent t-test" was performed to determine the level of the relationship between physical education and sports teacher candidates' attitudes towards using individual innovation and student-centered teaching methods and techniques and whether there was a statistically significant difference between gender and being a national athlete and "One-Way Variance" analysis was performed to determine whether department and grade variables had a statistically significant difference. The "LSD" test was used to determine the groups with statistically significant differences as a result of the "One-Way Variance" analysis. In determining the level and direction of the relationship between dependent variables, a "Pearson correlation analysis"was completed. Correlations between dependent variables were evaluated as follows (Kalayci, 2006): "0.00-0.25: Very weak correlation; 0.26-0.49: Weak correlation; 0.50-0.69: Moderate correlation; 0.70-0.89: High correlation; 0.90-1.00: Very high correlation".

3. RESULTS

Below are the results obtained from the opinions of prospective physical education and sports teachers in line with the objectives of the study.

Table 2. Difference between gender and individual innovation levels of physical education and sports teacher candidates (T-test)

	Gender	N	Mean	SS	SD	T-Value	P-Value
	Female	54	23,444	5,375	,731	-,109	,913

Resistance to Change	Male	78	23,565	6,893	,780		
Idea leadership	Female	54	19,887	3,214	,437	-,185	,854
	Male	78	20,009	4,066	,460		
Openness to Experience	Female	54	20,238	3,295	,448	-,120	,904
	Male	78	20,319	4,135	,468		
Risk Taking	Female	54	6,767	1,688	,229	-1,754	,082
	Male	78	7,371	2,106	,238		
Individual Innovation Scale	Female	54	70,337	8,325	1,132	-,548	,584
	Male	78	71,266	10,351	1,172		

According to the results in Table 2, no statistically significant difference was found in the sub-dimensions of resistance to change (t = -.109; p = .913), idea leadership (t = -.185; p = .854), openness to experience (t = -.120; p= .904), risk taking (t = -1.75r; p = .082) and individual innovation scale (t = -.548; p = .584) (p>0.05).

Table 3. The difference between gender and physical education and sports teacher candidates' attitudes towards using teaching methods and techniques (T test)

	Gender	N	Mean	SS	SD	T-Value	P-Value
Valuing	Female	54	37,831	7,008	,953	-1,189	,237
	Male	78	39,193	6,076	,688		
Resistance	Female	54	22,690	3,223	,438	-,366	,715
	Male	78	22,915	3,619	,409		
Positive effects	Female	54	23,964	4,548	,618	-,219	,827
	Male	78	24,140	4,529	,512		
Cost belief	Female	54	12,217	3,377	,459	1,000	,319
	Male	78	11,596	3,593	,406		
SAUSCTMT	Female	54	96,703	13,055	1,776	-,516	,607
	Male	78	97,845	12,126	1,373		

According to the results in Table 3, no statistically significant difference was found in valuing (t = -1.189; p = .237), resistance (t = -.366; p = .715), positive effects (t = -.219; p= .827), cost belief (t = -1.000r; p = .319) and the scale of attitude towards using teaching methods and techniques (t = -.516; p = .607) and its sub-dimensions (p >0.05).

Table 4. Difference between the individual innovation levels of the national athlete and physical education and sports teacher candidates (T test)

	National Athlete	N	Mean	SS	SD	T-Value	P-Value
Resistance to Change	Yes	6	28,500	5,089	2,077	1,999	,048
	No	125	23,280	6,289	,562		
Idea leadership	Yes	6	20,500	4,183	1,707	,356	,723
	No	125	19,941	3,736	,334		
Openness to Experience	Yes	6	21,500	5,089	2,077	,795	,428
	No	125	20,230	3,760	,336		
Risk Taking	Yes	6	7,500	1,516	,619	,476	,635
	No	125	7,107	1,991	,178		
Innovation Total	Yes	6	78,000	11,610	4,739	1,875	,063
	No	125	70,560	9,400	,840		

According to the results in Table 4, while there was a significant difference in the sub-dimension of resistance to change (t=1.999; p= .048), no statistically significant difference was found in the sub-dimensions of idea leadership (t = .356; p = .723), openness to experience (t = .795; p = .428), risk-taking (t= .476; p = .635) and individual innovation (t=1.875; p = .063).

Table 5. The difference between the attitude levels of the National Athletes and physical education and sports teacher candidates towards using teaching methods and techniques (T test)

	National Athlete	N	Mean	SS	SD	T-Value	P-Value
Valuing	Yes	6	43,000	6,066	2,476	1,689	,094
	No	125	38,439	6,475	,579		
Resistance	Yes	6	22,333	3,011	1,229	-,352	,725
	No	125	22,845	3,494	,312		
Positive effects	Yes	6	27,000	3,098	1,264	1,630	,106
	No	125	23,928	4,556	,407		
Cost belief	Yes	6	12,500	3,937	1,607	,457	,649
	No	125	11,826	3,512	,314		
SAUSCTMT	Yes	6	104,833	11,478	4,686	1,496	,137
	No	125	97,039	12,503	1,118		

According to the results in Table 5, no statistically significant difference was found in valuing (t = -1.689; p = .094), resistance (t= -.352; p = .725), positive effects (t = 1.630; p= .106), cost belief (t= .457; p = .649) and the scale of attitude towards using teaching methods and techniques (t = 1.496; p = .137) and sub-dimensions (p >0.05).

Table 6. Difference Between the Grade Variable and Individual Innovation Levels of Physical Education and Sports Teacher Candidates (Variance Analysis)

Scale	Grade	N	Mean	SD	F	P	Significant Difference
Resistance to change	1st grade	24	23,962	5,976	,162	,922	--------
	2nd grade	48	23,673	5,646			
	3rd grade	43	23,441	7,187			
	4th grade	17	22,628	6,522			
Idea leadership	1st grade	24	19,571	4,557	,375	,771	--------
	2nd grade	48	19,810	3,470			
	3rd grade	43	20,024	3,844			
	4th grade	17	20,764	2,969			
Openness to experience	1st grade	24	20,125	4,357	,582	,628	--------
	2nd grade	48	19,789	3,972			
	3rd grade	43	20,719	3,786			
	4th grade	17	20,823	2,324			
Risk Taking	1st grade	24	6,541	2,501	,937	,425	--------
	2nd grade	48	7,351	1,763			
	3rd grade	43	7,196	1,836			
	4th grade	17	7,125	1,964			
Individual Innovation Scale	1st grade	24	70,201	9,495	,102	,959	--------
	2nd grade	48	70,625	9,116			
	3rd grade	43	71,381	10,249			
	4th grade	17	71,341	9,782			

According to the results in Table 6, no significant difference was found between the sub-dimensions of resistance to change (F=.162; p = .922), idea leadership (F= .375; p = .771, openness to experience (F= .582; p = .628), risk-taking (F=.937; p = .425) and individual innovation scale (F=.102; p = .959).

Table 7. The Difference Between the Grade Variable and the Levels of Attitudes of Physical Education and Sports Teacher Candidates Towards Using Teaching Methods and Techniques (Variance Analysis)

	Grade	N	Mean	SD	F	P	Significant Difference
Valuing	1st grade	24	35,904	5,797	3,487	,018	1-3, 2-3
	2nd grade	48	37,931	5,153			
	3rd grade	43	40,857	6,548			
	4th grade	17	38,866	8,898			
Resistance	1st grade	24	22,367	3,124	,458	,712	--------
	2nd grade	48	22,315	2,991			
	3rd grade	43	22,016	3,510			
	4th grade	17	22,354	3,269			
Positive effects	1st grade	24	18,795	3,846	3,005	,033	1-3
	2nd grade	48	19,874	3,174			
	3rd grade	43	21,327	3,530			

	4th grade	17	19,467	4,818			
Cost belief	1st grade	24	11,365	3,196	,702	,552	--------
	2nd grade	48	12,459	2,790			
	3rd grade	43	12,009	4,063			
	4th grade	17	12,764	4,265			
SAUSCTMT	1st grade	24	93,764	11,690	2,857	,040	1-3, 2-3
	2nd grade	48	95,581	10,509			
	3rd grade	43	101,697	13,385			
	4th grade	17	96,629	14,267			

According to the results in Table 7, there was a statistically significant difference in valuing (F= 3.487; p = .018), positive effects (F= 3.005; p = .033) and the scale of attitudes towards using teaching methods and techniques (F= 2.857; p = .040), while there was no significant difference in the sub-dimensions of resistance (F=.458; p = .712) and cost belief (F=.702; p = .552).

In the results of the LSD test conducted to determine the source of this difference, the difference was found between the first and third grades and between the second and third grades in the valuing sub-dimension.

In the sub-dimension of positive effects, a difference was found between the first grade and the third grade.

In the scale of attitude towards using teaching methods and techniques, it was between the first grade and third grade and the second grade and third grade.

Table 8. Difference Between the Department Variable and Individual Innovation Levels of Physical Education and Sports Teacher Candidates (Variance Analysis)

Scale	**Department**	**N**	**Mean**	**SS**	**F**	**P**	**Significant Difference**
Resistance to change	Physical Education and Sports Teaching	27	24,161	6,037	,235	,791	--------
	Coaching Education	30	23,01	6,510			
	Sports Management	75	23,483	6,361			
Idea leadership	Physical Education and Sports Teaching	27	19,629	4,011	1,210	,302	--------
	Coaching Education	30	19,201	3,325			
	Sports Management	75	20,381	3,764			
Openness to experience	Physical Education and Sports Teaching	27	19,296	4,268	2,400	,095	--------
	Coaching Education	30	19,633	3,398			
	Sports Management	75	20,904	3,705			
Risk Taking	Physical Education and Sports Teaching	27	7,513	1,616	,841	,434	--------
	Coaching Education	30	7,204	1,845			

	Sports Management	75	6,952	2,115			
Individual Innovation Scale	Physical Education and Sports Teaching	27	70,600	9,978	,848	,431	--------
	Coaching Education	30	69,055	9,600			
	Sports Management	75	71,721	9,397			

According to the results in Table 8,no significant difference was found between the sub-dimensions of resistance to change (F=,235; p = ,791), idea leadership(F=1,210; p= ,302), openness to experience(F=2,400 ; p= ,095), risk-taking (F=,841; p = ,434) andindividual innovation scale (F=,848; p = ,431).

Table 9. The Difference Between the Department Variable and Physical Education and Sports Teacher Candidates' Attitudes Towards Using Student-Centered Teaching Methods and Techniques (Variance Analysis)

Scale	**Department**	**N**	**Mean**	**SS**	**F**	**P**	**Significant Difference**
Valuing	Physical Education and Sports Teaching	27	36,978	8,018	1,228	,296	--------
	Coaching Education	30	39,538	6,393			
	Sports Management	75	38,872	5,864			
Resistance	Physical Education and Sports Teaching	27	21,666	3,281	,262	,770	--------
	Coaching Education	30	22,500	3,604			
	Sports Management	75	22,329	3,006			
Positive effects	Physical Education and Sports Teaching	27	19,299	4,699	1,014	,366	--------
	Coaching Education	30	19,731	3,756			
	Sports Management	75	20,534	3,298			
Cost belief	Physical Education and Sports Teaching	27	11,740	3,132	,774	,463	--------
	Coaching Education	30	12,846	3,642			
	Sports Management	75	12,024	3,586			
SAUSCTMT	Physical Education and Sports Teaching	27	93,571	14,128	,750	,474	--------
	Coaching Education	30	98,582	13,857			
	Sports Management	75	97,760	10,139			

According to the results in Table 9, no statistically significant difference was found in valuing (F= 1.228; p = .296), resistance (F=.262; p = .770), positive effects (F= 1.014; p = .366),

cost belief (F=.774; p = .463) and the scale of attitude towards using teaching methods and techniques (F=.750; p = .474).

Table 10. Correlation analysis results for the relationship between IIS and SAUSCTMT and its sub-dimensions

Scale	Identifiers	1	2	3	4	5	6	7	8	9	10
Resistance to change	**r**	1									
	p	-									
	N	132									
Idea leadership	**r**	,019	1								
	p	,000	-								
	N	132	132								
Openness to experience	**r**	,024	,673	1							
	p	,000	,000	-							
	N	132	132	132							
Risk Taking	**r**	,321	,267	,311	1						
	p	,000	,000	,000	-						
	N	132	132	132	132						
IIS	**r**	,591	,725	,709	,222	1					
	p	,000	,000	,000	,000	-					
	N	132	132	132	132	132					
Valuing	**r**	,026	,346	,326	,230	,295	1				
	p	,000	,000	,000	,000	,000	-				
	N	132	132	132	132	132	132				
Resistance	**r**	,289	,207	,179	,071	,328	,237	1			
	p	,000	,000	,000	,000	,000	,000	-			
	N	132	132	132	132	132	132	132			
Positive effects	**r**	,058	,363	,371	,264	,305	,757	,262	1		
	p	,000	,000	,000	,000	,000	,000	,000	-		
	N	132	132	132	132	132	132	132	132		
Cost belief	**r**	,326	,034	,117	,132	,247	,001	,274	,022	1	
	p	,000	,000	,000	,000	,000	,000	,000	,000	-	
	N	132	132	132	132	132	132	132	132	132	
SAUSCTMT	**r**	,137	,378	,386	,158	,424	,859	,572	,822	,348	1
	p	,000	,000	,000	,070	,000	,000	,000	,000	,000	-
	N	132	132	132	132	132	132	132	132	132	132

It was determined that the highest level of relationship was positive and at a high level between "the scale of attitude towards using student-centered teaching methods and techniques" and the sub-dimension of valuing (r =, 859; p=0.000). The lowest relationship was found to be

positive and weak in the sub-dimension of resistance to change and idea leadership (r = .019; p=0.000). A weak relationship was found between the individual innovation scale and the scale of attitude towards using student-centered teaching methods and techniques (r = ,424; p=0.000).

4. DISCUSSION

Below is a review of the results of the analyses performed within the scope of the study.

There was no *statistically significant difference in the study group between individual innovation* and gender (Table 2). It can be said that the individual innovation characteristics of female teacher candidates and male teacher candidates were similar. However, in the study, it was seen that the individual innovation scores of male teacher candidates were higher than the scores of female teacher candidates. It can be said that the male physical education and sports teacher candidates adopted innovative approaches more due to their personal characteristics. In line with the study findings, Göksel and Yıldız (2021), Yapıcı and Kaya (2020), Demir Başaran and Keleş (2015), Rogers and Wallace (2011) emphasized that the characteristics of individual innovation do not change by gender, but can be affected by cultural and personal factors. In their study, Atılgan and Tükel (2021) stated that the high score of male participants in innovation was due to the individual characteristics, that is, cognitive, subjective, and behavioral differences in personal characteristics. However, in some studies conducted in different fields, it was stated that women exhibited more innovative approaches than men (Yılmaz, 2019; Ertuğ and Kaya, 2017; Gür Erdoğan and Zafer-Güneş, 2013; Klecker and Loadman, 1999).

Within the scope of the research, no statistically significant difference was found between gender and the attitudes of physical education and sports teacher candidates towards using student-centered teaching methods and techniques (Table 3). It was seen that the female teacher candidates had higher scores in the cost belief sub-dimension; however, the male teacher candidates had higher level of attitudes towards using teaching methods and techniques in overall scale and other dimensions. In parallel with the study, Yalçın and Uzun (2018), Polat (2018), Yıldırım (2011), and Ocak (2010) stated that gender was ineffective in using student-centered teaching methods and techniques. However, contrary to the findings of the study, Fidan and Duman (2014) found that female teachers had significantly higher levels of qualifications required by the constructivist approach than male teachers.

Within the scope of the study, it was determined that the individual innovation levels of physical education and sports teacher candidates differed statistically and significantly in the sub-dimension of resistance to change according to the variable of being a national athlete, and this

difference was in favor of those who were national athletes (Table 4). There was no difference between the individual innovation scale and other sub-dimensions. However, it was seen that the level of individual innovation of the national athletes was higher due to their participation in the global national and international competitions and their knowledge of the global world and competition. In his study, Öner (2019) found that young adult male athletes had low levels of individual innovation.

Within the scope of the research, no significant difference was found in the attitudes of physical education and sports teacher candidates towards student-centered teaching methods and techniques according to being a national athlete (Table 5). Since physical education and sports teacher candidates received equal standards of education for teaching methods and techniques, it can be said that there was no difference. However, it was seen that the scores of those who were national athletes were higher. Since national sports teacher candidates had education at a higher level and were involved in sport activities more, it can be said that their attitudes towards student-centered teaching methods and techniques were higher to eliminate the deficiencies in the lessons.

Within the scope of the study, no statistical difference was found in the individual innovation levels of physical education and sports teacher candidates according to the grade variable (Table 6). Since the study consisted of physical education and sports teachers with homogeneous culture and sociodemographic characteristics taking part in active sports, no difference was observed in grades. In parallel with the findings of the study, Yeğin (2017) stated that the level of individual innovation and their grades were similar. Contrary to the research findings, Bitkin (2012) found that individual innovativeness differed according to the grade, and the level of individual innovativeness increased as the grade increased.

Within the scope of the study, a significant difference was found in the attitudes of physical education and sports teacher candidates towards student-centered teaching methods and techniques according to grade (Table 7). The difference was determined in the sub-dimensions of valuing and positive effects and the overall scale. In general, it was seen that the attitudes of physical education first grade students towards student-centered teaching methods and techniques were low and the attitudes of third grade students were high. It was considered that it may be effective to provide courses to teacher candidates, especially in the second and third grades, regarding teaching methods and techniques. It was seen that as the grade increased, their attitudes towards student-centered teaching methods and techniques increased.

Within the scope of the research, no statistically significant difference was found in the

individual innovation levels of physical education and sports teacher candidates according to the department variable (Table 8). It was seen that the scores of teacher candidates studying sports management were slightly higher In the sub-dimension of openness to experience and the individual innovation scale. In the other sub-dimensions of IIS, it was seen that the scores of those who received education in the physical education and sports department were high. Göksel and Yıldız (2021) stated in their study that the scores of teacher candidates studying in the department of physical education and sports were higher, and that this was due to the fact that the students in the department of physical education and sports were at a better level in sports and academical terms. In the study conducted by Adıgüzel et al. (2014), it was stated that the department variable was not effective on the individual innovation characteristics of teacher candidates.

Within the scope of the study, no statistical difference was found in the attitudes of teacher candidates towards using student-centered teaching methods and techniques according to the department variable. It was seen that the scores of teacher candidates who received education in the coaching education and sports management departments were high. It can be said that the teacher candidates, who received education in the coaching education department, had more positive attitudes towards using student-centered teaching methods and techniques due to the fact that their courses were intensively practice-based and there was an intense participation in the courses. Yağan (2022) stated that student-centered methods, techniques, and strategies affected student attitude at a high level in social areas and at a medium level in numerical areas.

In the *correlation* analysis conducted within the scope of the research, it was seen that the high level of relationship was positive and high between the "the scale of attitude towards using student-centered teaching methods and techniques" and the valuing sub-dimension. A positive and weak relationship was found between the individual innovation scale and the scale of attitude towards using student-centered teaching methods and techniques. It was seen that there was a little increase in the attitudes of physical education teacher candidates towards using student-centered teaching methods and techniques with the increase of individual innovation characteristics. Similarly, in the study conducted by Çetin (2020), it was found that there was a moderate positive relationship between the two variables in the relationship between the IIS and the SAUSCTMT. It was stated that there was a positive and strong relationship between individual innovativeness and teacher leadership (Köstereliođlu & Demir, 2014), readiness for online learning (Demiralay et al., 2016), the attitude towards educational research (Akçöldekin, 2017)

and level of attitude towards learning (Adıgüzel et al., 2014).

5. CONCLUSION

As a result, it was observed that physical education and sports teacher candidates' attitudes towards individual innovation and using student-centered teaching methods and techniques were nearly at a moderate level. It was determined that the individual innovativeness characteristics of the gender of the teacher candidates and their attitudes towards using student-centered teaching methods and techniques had similar characteristics. It was determined that the teacher candidates who were national athletes had more positive perspectives, and as the grade increased, students' opinions improved positively.

6. RECOMMENDATIONS

- Research should be conducted with physical education and sports teacher candidates and individuals who are physical education and sports teachers.
- Research should be conducted with physical education and sports teachers working in public and private education institutions.
- Comparative studies with teachers and teacher candidates in different fields should be conducted.

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