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EXAMINATION OF ARTIFICIAL INTELLIGENCE ANXIETY AND SELF-EFFICACY LEVELS OF VOLLEYBALL COACHES

EXAME DE ANSIEDADE DE INTELIGÊNCIA ARTIFICIAL E NÍVEIS DE AUTOEFICÁCIA DE TREINADORES DE VOLEIBOL

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Hamdullah Ateş*
*Dicle University, Physical Education and Sports School, Diyarbakır, Türkiye
Orcid: https://orcid.org/0000-0002-4745-4881
hamdullah.ates@dicle.edu.tr

Gülseren Özaltaş Serçek**
**Mardin Artuklu University, Faculty of Tourism, Diyarbakır, Türkiye
Orcid: https://orcid.org/0000-0001-6552-4559
gulserenozaltassercek@artuklu.edu.tr

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Abstract
The aim of this study is to analyze the AI anxiety levels and self-efficacy levels of third-level volleyball coaches by evaluating them in terms of various demographic variables. Third-level volleyball coaches were included in the study. In addition to the personal information form, the Artificial Intelligence Anxiety Scale developed by Wang and Wang and the Coach Efficacy Scale-II revised by Myers, Feltz, Chase, Reckase and Hancock were used in the data collection tool. G-Power analysis was performed to determine the sample size and the minimum number of participants was determined. No statistically significant difference was found in the analyses made according to the variables of gender, age, marital status, education level and AI tool usage of the coaches. However, a significant difference was found in the evaluation made in terms of the variable of years of coaching. According to the results of the Tukey test, which is a post-hoc analysis, it was determined that the AI anxiety levels of third-level volleyball coaches with less coaching experience were lower. In addition, no statistically significant relationship was found between the artificial intelligence anxiety levels and self-efficacy levels of third-level volleyball coaches at the 0.05 level.

Keywords: Artificial Intelligence. Volleyball. Coach. Self-efficacy.

Resumo
O objetivo deste estudo é analisar os níveis de ansiedade e autoeficácia em IA de treinadores de voleibol do terceiro nível, avaliando-os em termos de diversas variáveis demográficas. Treinadores de voleibol do terceiro nível foram incluídos no estudo. Além do formulário de informações pessoais, foram utilizadas na ferramenta de coleta de dados a Escala de Ansiedade de Inteligência Artificial desenvolvida por Wang e Wang e a Escala de Eficácia do Coach-II revisada por Myers, Feltz, Chase, Reckase e Hancock. A análise G-Power foi realizada para determinar o tamanho da amostra e o número mínimo de participantes foi determinado. Não foi encontrada diferença estatisticamente significativa nas análises feitas segundo as variáveis sexo, idade, estado civil, escolaridade e utilização de ferramentas de IA pelos treinadores. Contudo, foi encontrada uma diferença significativa na avaliação feita em termos da variável anos de coaching. De acordo com os resultados do teste de Tukey, que é uma análise post-hoc, foi determinado que os níveis de ansiedade de IA dos treinadores de voleibol do terceiro nível com menos experiência como treinador eram mais baixos. Além disso, nenhuma relação estatisticamente significativa foi encontrada entre os níveis de ansiedade da inteligência artificial e os níveis de autoeficácia dos treinadores de voleibol do terceiro nível no nível 0,05.

Palavras-chave: *Inteligência Artificial. Voleibol. Treinador. Autoeficácia.*

1 INTRODUCTION

In recent news articles about artificial intelligence, which has been intensely discussed in society, various concerns about the future development of artificial intelligence have been expressed. These concerns include discussions that artificial intelligence may get out of control and negatively affect human life and social structure. However, such warnings are often overly pessimistic and far from reality, and the fundamental intellectual weaknesses that cause these concerns are not adequately addressed. Evaluations indicate that fear and anxiety about artificial intelligence largely stem from conceptual misunderstandings and lack of knowledge. Research shows that although there are legitimate reasons to be concerned about artificial intelligence, these concerns differ from the reasons put forward by AI alarmists (Johnson and Verdicchio, 2017).

Artificial intelligence, which was achieved with the desire to "equip computers and machines with the ability to think and reason like humans in order to model human intelligence," supports three important needs. These are; "Automating processes, gaining insights through data analysis, and establishing close connections with both customers and employees." (Davenport and Ronanki, 2020).

That artificial intelligence was a fully-fledged field of research emerged in the sessions, conferences and symposiums held in 1955, 1956 and 1958. The most important of these was the conference planned in 1956. The suggestion of the conference title as Artificial Intelligence by McCarthy was the beginning of all subsequent processes (McCarthy et al., 2006). McCarthy (2007) defined artificial intelligence as "the science and engineering of making intelligent machines, especially intelligent computer programs." Information and definitions by McCarthy (2007) are frequently encountered in studies on artificial intelligence (Staub et al., 2015). Artificial intelligence is a phenomenon that does not have to limit itself to a biological existence, but includes a task such as using computers to understand human intelligence.

The features of artificial intelligence are widely covered in the literature. When the sources in the literature are examined, it is inevitable that the concept of technophobia, which researchers encounter while examining the subject of artificial intelligence, will also be examined and contribute to a more detailed understanding of artificial intelligence. The concept of technophobia is expressed as an abnormal level of fear and anxiety that

occurs due to the decrease in productivity as a result of negative situations encountered in various sectors (Ha et al., 2011). The avoidance behaviors of some individuals towards technological developments reveal findings regarding the existence of technophobia. The combination of anxiety and attitudes that develop in individuals towards computers, which indicates the existence of the concept of technophobia, can be given as an example (Brosnan, 1998).

A study has shown that if individuals in business life cannot keep up with technological developments, it can create psychological effects that can cause individuals to develop a sense of fear and anxiety towards technology in both their business and private lives (Jiang et al., 2022). In another study, three different measurement tools were developed to measure the levels of technophobia in individuals (Rosen et al., 1992). The first of these tools is the computer anxiety rating scale, which aims to measure anxiety experienced during interaction with current or future computer technology. The second is the general attitude scale towards computers, which is designed to determine negative general attitudes towards the functioning and social effects of computers. The third is the computer thoughts scale, which aims to measure negative cognitions and self-critical internal dialogues that arise during computer use or future interaction designs.

Anxiety, defined as a state of arousal resulting from perceived threats or unresolved fears and leading to distraction (Epstein, 1972), is considered a fundamental emotion in human experience and is at the core of many psychoneurotic and psychosomatic disorders. Anxiety is divided into two main categories: state and trait anxiety, and manifests itself with a variety of behavioral symptoms.

State anxiety (S-Anxiety) is defined as a temporary emotional response of the autonomic nervous system that increases with feelings of anxiety, tension, nervousness and worry. In particular, individuals' negative feelings about computer use can manifest themselves in the form of state anxiety (Çavuş and Günbatar, 2008). On the other hand, trait anxiety (T-Anxiety) reflects individual differences in individuals' level of anxiety susceptibility; this manifests itself in a consistent response to potential threats to self-esteem and perceptions of threat (Papay and Spielberger, 1986). State anxiety related to technology can manifest itself in different forms, and three basic types of anxiety stand out. The first is the concern that unemployment will increase as a result of technological developments widely replacing human labor with machines, and that this situation will deepen social inequality in the short term. The second is the existence of a comprehensive

concern about the ethical and moral effects of technology on human well-being. The third type of concern is the view put forward by some pessimistic approaches that the era of great technological progress is over (Mokyr et al., 2015).

A simple statement that can be made regarding all these explanations is that Artificial Intelligence can be used to refer to the fear and anxiety expressed about out-of-control artificial intelligence. Humans are thought to be unique because of their capacity to think, and if computers can think too, fundamental concepts of what it means to be human become obsolete. So AI actually has a long history dating back to the time when the first modern computers were being built, when computers began to threaten the idea of what it meant to be human (Johnson & Verdicchio, 2017).

In order to achieve success in all branches of sports, athletes must maintain their performance at the highest level, and they must also have high mental skills and be able to reflect their skills in line with their capacities. In addition, these athletes need to have a good professional coach in order to reveal their talents, develop their deficiencies and increase their performance (Anshel, 2003). The concept of coach is expressed as a person who improves the performance of the athlete he works with and transfers his experience and knowledge to the athlete (Feltz et al., 1999).

Beswick (2016) stated that coaches, who are considered to be very important individuals in sports education, should be considered as individuals with positive character traits such as being courageous and optimistic. Scientific studies have shown that coaches with high social skills (Pitino and Forde, 2008) and improved professional self-efficacy levels have a stronger psychology (Koçak and Güven, 2018).

The phenomenon of self-efficacy emerges as one of the cognitive perception factors that is known to have an impact on the behaviors exhibited by individuals (Bandura, 1982). According to another definition, the phenomenon of self-efficacy is the totality of general judgments that individuals have and is a cognitive process (Morris 1995).

The level of competence that coaches expect from athletes or teams plays an important role in shaping athletes' perceptions of their own competence. In a study conducted among U.S. Olympic athletes, coaching competence ranked second among the most effective coaching behaviors that provide support and confidence to enhance performance (Gould et al., 1999). Chase et al. (1997) specifically investigated the relationship between coaches' competence levels and their teams' performance. In a study

examining the competence levels of coaches of four intercollegiate women's basketball teams, it was determined that coaches with high competence levels had a positive effect on their teams' performance (Feltz & Lirgg, 2001).

Coaches, who play a very important role in ensuring the development of athletes, ensure that they convey their knowledge and experience to athletes in a healthy way, which enables them to achieve professional success (Özbek et al., 2021). They help the athletes they work with to exhibit positive behaviors by providing them with competitive skills (Ateş, 2023). In this respect, it is important for the coach to be mentally healthy. A coach's ability to communicate well with his athletes and to develop them depends on his/her high level of psychological well-being and self-efficacy. A coach who shows a positive approach to life helps athletes to have a positive outlook on life and to show the tendency to do their best and not give up in the face of difficulties they may encounter.

"Artificial Intelligence" tools, which have gained importance with developing technology, have advantages as well as disadvantages. In addition to making things easier in various professions, it also increases anxiety levels. Measuring the artificial intelligence anxiety levels of coaches, who are an important part of the sports field, has created the need to conduct such a study. Therefore, our study aimed to contribute to the literature by examining the artificial intelligence concerns and self-efficacy levels of volleyball coaches.

2 METHOD

2.1 Research model

This descriptive study, which aims to examine the artificial intelligence anxiety and self-efficacy status of volleyball coaches, is in the general screening model. This study, in which quantitative research methods were applied, is a descriptive research type in the cross-sectional survey type, which is "a research approach that aims to describe a past or present situation as it is". Descriptive research is generally conducted to "illuminate a given situation, reveal possible relationships between events, and make evaluations in line with standards" (Creswell, 2014).

2.2 Research group

G-Power analysis was performed to determine the sample number. As a result of the G-Power analysis performed by taking the effect size as 0.05, ά-margin of error as 0.05 and β-margin of error as 0.80, it was anticipated that at least 180 samples would be included in our research. As a result, a total of 287 third-level volleyball coaches participated in the research. Demographic information of the research group is given in Table-1.

Table 1

Demographic Characteristics of the Research Group

Variable		**n**	**%**
Age	18-23 Years Old	50	17.4
	24-29 Years Old	88	30.7
	30-35 Years Old	55	19.2
	Ages 36 and above	94	32.8
	Total	287	100.00
Gender	Woman	108	37.6
	Male	179	62.4
	Total	287	100.00
Educational Status	High School or Associate Degree	36	12.5
	Licence	212	73.9
	Postgraduate	39	13.6
	Total	287	100.00
Marital status	Married	121	42.2
	Single	166	57.8
	Total	287	100.00
Coaching Age	0-3 Years	121	42.2
	4-7 Years	62	21.6
	8-11 Years	39	13.6
	12 Years and above	65	22.6
	Total	287	100.00
Artificial Intelligence Tool Usage Status	Yes	134	46.7
	No	153	53.3
	Total	287	100.00

A total of 287 volleyball coaches, 37.6% female and 62.4% male, participated in our research. Of these coaches, 17.4% are between the ages of 18-23, 30.7% are between the ages of 24-29, 19.2% are between the ages of 30-35, and 32.8% are 36 and older. 42.2% of the coaches are married and 57.8% are single, 12.5% have a high school or associate degree, 73.9% have a bachelor's degree, and 13.6% have a postgraduate degree. Of the volleyball coaches participating in the study, 42.2% have 0-3 years of coaching

experience, 21.6% have 4-7 years, 13.6% have 8-11 years, and 22.6% have 12 or more years of coaching experience. While 46.7% of the volleyball coaches included in our research used artificial intelligence tools, 53.3% were found not to use artificial intelligence tools.

2.3 Research ethics

Before the research, the ethics committee permission dated 10/06/2025 and numbered 337 was obtained from the Dicle University Health Sciences Institute Ethics Committee. Ethical rules have been taken into consideration when citing sources.

2.4 Data collection tools

In this study, the Personal Information Form prepared by the researcher in line with the purpose of the research, the Artificial Intelligence Anxiety Scale developed by Wang and Wang (2019) and the Coach Competence Scale-II revised by Myers et al. (2008) were applied. Information on the measurement tools used in the research is provided below.

2.5 Personal information form

In accordance with the aims of the study, the personal information form developed by the researcher in order to obtain demographic information of third-level volleyball coaches includes information on gender, age, marital status, education status, years of coaching and artificial intelligence tool usage.

2.6 Artificial intelligence anxiety scale

The Artificial Intelligence Anxiety Scale (AIAS) developed by Wang and Wang (2019) was used as the data collection tool in the study. This scale is a 7-point Likert-type (1=Not at all, 7=Completely) scale that allows participants to evaluate their experiences with artificial intelligence. The scale consists of four sub-dimensions: learning, job change, socio-technical blindness, and artificial intelligence configuration. These sub-

dimensions are defined as Learning (items 1-8), Job Change (items 9-14), Sociotechnical Blindness (items 15-18), and Artificial Intelligence Configuration (items 19-21), respectively. The Turkish adaptation of the scale was made by Terzi (2020). Scale scores range from 21 to 147, and it is accepted that the level of artificial intelligence anxiety increases as the scores increase. The internal consistency coefficients of the scale were reported as .97 for the Learning sub-dimension, .92 for Job Switching, .92 for Sociotechnical Blindness and .92 for Artificial Intelligence Configuration in the original study. In this study, they were calculated as .95, .93, .92 and .95, respectively, and the overall Cronbach's Alpha value of the scale was found to be .96.

2.7 Coach competence scale-II

The Coach Competence Scale-II, revised by Myers et al. (2008) and consisting of five sub-dimensions and 18 items, was used in this study in accordance with the purpose of the research. While motivation, game strategies, and technical teaching are represented by four items each, character and physical condition are measured by three items each. Scale items were evaluated with a 4-point Likert rating system. According to the responses of the participants, the maximum score that can be obtained from the scale is 72, and the minimum score is 18. The increase in scores is parallel to the increase in the competence levels of the coaches. Low scores obtained from the scale indicate that the competence level of the coaches is low; high scores indicate that the competence level is high (Unutmaz & Gencer, 2017). The internal consistency coefficients of the scale in the original study were reported as .64, .74, .74, .68, and .70 for the sub-dimensions, respectively, and .89 for the total scale. In this study, Cronbach's alpha values were obtained as .74 for the motivation sub-dimension, .73 for the game strategies sub-dimension, .77 for technical teaching, .84 for character formation and .79 for physical condition. The overall reliability of the scale was calculated as .93.

2.8 Data collection

Using the purposive sampling method, the scales used in the study were applied online to third-level volleyball coaches who volunteered to participate in the study.

2.9 Data analysis

The data obtained from the scales were analyzed using the SPSS 22 statistical program. Skewness and kurtosis coefficients were examined in order to evaluate the distribution properties of the data. In case of normal distribution condition, independent sample t-test was used in the analysis of differences between two groups; one-way analysis of variance (ANOVA) was used in comparisons of three or more groups. Pearson correlation test was used in the examination of the relationship between the artificial intelligence anxiety levels and self-efficacy levels of the coaches. Additionally, when significant differences were detected between three or more groups, the "Tukey" test, a Post-Hoc test, was applied to determine the source of these differences. Statistical significance level was accepted as .05 in all analyzes.

Table 2

Values for Correlation Relationship Between Dependent Variables

r	**Relationship**
0.00-0.25	Very Weak
0.26-0.49	Weak
0.50-0.69	Middle
0.70-0.89	High
0.90-1.00	Very High

3 FINDINGS

This section of the research includes information about the statistics that emerged based on the answers given by the volleyball coaches to the scales used in the research.

Table 3

T-Test Results of the Research Group's Artificial Intelligence Anxiety Levels and Self-Efficacy Levels According to the Gender Variable

Scales and Sub-dimensions	Gender	n	$\bar{X}$	ss	t	df	p
Motivation	**Woman**	108	14.49	1.78	1.82	285	0.05
	Male	179	14.03	2.26			
Game Strategies	**Woman**	108	13.91	2.19	0.67	285	0.50
	Male	179	13.73	2.25			
Technical Education	**Woman**	108	14.34	1.90	1.00	285	0.79
	Male	179	14.09	2.12			
Character Development	**Woman**	108	11.24	1.51	1.60	285	0.11
	Male	179	10.93	1.62			
Physical Condition	**Woman**	108	10.51	1.68	1.00	285	0.71
	Male	179	10.30	1.79			
Proficiency Scale (Total)	**Woman**	108	64.49	7.42	1.38	285	0.35
	Male	179	63.08	8.92			
Learning	**Woman**	108	20.05	10.73	-0.34	285	0.35
	Male	179	20.51	11.81			
Job Change	**Woman**	108	25.41	11.02	2.92	285	0.75
	Male	179	21.56	10.72			
Sociotechnical Blindness	**Woman**	108	17.38	7.50	1.97	285	0.44
	Male	179	15.63	7.18			
Artificial Intelligence Configuration	**Woman**	108	13.23	6.04	3.92	285	0.77
	Male	179	10.39	5.90			
Artificial Intelligence Anxiety (Total)	**Woman**	108	76.06	29.40	2.18	285	0.93
	Male	179	68.09	30.39			

** p<0.05 significance level*

When examined in terms of gender variable, it was revealed that the artificial intelligence anxiety levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score (p> 0.05).

When examined in terms of gender variable, it was revealed that the self-efficacy levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score (p> 0.05).

Table 4

ANOVA Test Results for Artificial Intelligence Anxiety Levels and Self-Efficacy Levels of the Research Group According to Age Variable

Scale and Sub-Dimensions	Age	n	$\bar{X}$	ss	f	p
Motivation	**18-23 Years Old (1)**	50	14.30	2.36	1.40	0.25
	24-29 Years Old (2)	88	14.39	1.91		
	30-35 Years Old (3)	55	13.69	2.17		
	Ages 36 and above (4)	94	14.28	2.07		
Game Strategies	**18-23 Years Old (1)**	50	13.64	2.65	0.13	0.94
	24-29 Years Old (2)	88	13.83	2.30		
	30-35 Years Old (3)	55	13.75	2.20		
	Ages 36 and above (4)	94	13.87	1.95		
Technical Education	**18-23 Years Old (1)**	50	13.84	2.47	0.61	0.61
	24-29 Years Old (2)	88	14.27	2.09		
	30-35 Years Old (3)	55	14.20	2.08		
	Ages 36 and above (4)	94	14.29	1.71		
Character Development	**18-23 Years Old (1)**	50	10.80	2.03	1.28	0.28
	24-29 Years Old (2)	88	11.22	1.33		
	30-35 Years Old (3)	55	10.82	1.58		
	Ages 36 and above (4)	94	11.16	1.53		
Physical Condition	**18-23 Years Old (1)**	50	10.30	1.95	0.18	0.91
	24-29 Years Old (2)	88	10.42	1.95		
	30-35 Years Old (3)	55	10.49	1.61		
	Ages 36 and above (4)	94	10.31	1.53		
Proficiency Scale (Total)	**18-23 Years Old (1)**	50	62.88	10.30	0.39	0.76
	24-29 Years Old (2)	88	64.13	8.43		
	30-35 Years Old (3)	55	62.95	8.13		
	Ages 36 and above (4)	94	93.90	7.45		
Learning	**18-23 Years Old (1)**	50	18.62	9.27	2.33	0.08
	24-29 Years Old (2)	88	18.52	10.29		
	30-35 Years Old (3)	55	22.76	11.83		
	Ages 36 and above (4)	94	21.53	12.83		
Job Change	**18-23 Years Old (1)**	50	21.16	9.87	0.97	0.41
	24-29 Years Old (2)	88	22.44	11.58		
	30-35 Years Old (3)	55	24.42	11.78		
	Ages 36 and above (4)	94	23.70	10.46		
Sociotechnical Blindness	**18-23 Years Old (1)**	50	13.98	6.51	2.43	0.07
	24-29 Years Old (2)	88	16.09	7.54		
	30-35 Years Old (3)	55	17.22	7.85		
	Ages 36 and above (4)	94	17.15	7.07		
Artificial Intelligence Configuration	**18-23 Years Old (1)**	50	10.84	5.70	0.71	0.55
	24-29 Years Old (2)	88	10.98	6.59		
	30-35 Years Old (3)	55	11.75	6.22		
	Ages 36 and above (4)	94	12.07	5.78		

Artificial Intelligence Anxiety (Total)	**18-23 Years Old (1)**	50	64.60	26.65	1.99	0.12
	24-29 Years Old (2)	88	68.03	30.15		
	30-35 Years Old (3)	55	76.15	32.00		
	Ages 36 and above (4)	94	14.45	30.52		

** p<0.05 significance level*

When examined in terms of age variable, it was revealed that the artificial intelligence anxiety levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score ($p > 0.05$).

When examined in terms of age variable, it was revealed that the self-efficacy levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score ($p > 0.05$).

Table 5

ANOVA Test Results for the Research Group's Artificial Intelligence Anxiety Levels and Self-Efficacy Levels According to the Educational Status Variable

Scale and Sub-Dimensions	**Educational Status**	**n**	$\bar{X}$	**ss**	**f**	**p**
Motivation	**High School or Associate Degree (1)**	36	14.56	1.98	0.61	0.54
	License (2)	212	14.17	2.14		
	Postgraduate (3)	39	14.08	2.01		
Game Strategies	**High School or Associate Degree (1)**	36	13.53	2.17	0.52	0.60
	License (2)	212	3.79	2.30		
	Postgraduate (3)	39	14.05	1.86		
Technical Education	**High School or Associate Degree (1)**	36	14.17	1.83	0.01	0.99
	License (2)	212	14.18	2.10		
	Postgraduate (3)	39	14.23	1.95		
Character Development	**High School or Associate Degree (1)**	36	11.14	1.85	0.10	0.90
	License (2)	212	11.05	1.54		
	Postgraduate (3)	39	10.97	1.61		
Physical Condition	**High School or Associate Degree (1)**	36	10.36	1.40	0.03	0.97
	License (2)	212	10.37	1.83		
	Postgraduate (3)	39	10.44	1.65		
Proficiency Scale (Total)	**High School or Associate Degree (1)**	36	63.75	7.52	0.02	0.98
	License (2)	212	63.56	8.72		
	Postgraduate (3)	39	63.77	7.53		
Learning	**High School or Associate Degree (1)**	36	19.56	13.85	0.69	0.50
	License (2)	212	20.79	11.22		
	Postgraduate (3)	39	18.62	9.91		
Job Change	**High School or Associate Degree (1)**	36	20.86	11.14	0.80	0.45

	License (2)	212	23.27	10.93		
	Postgraduate (3)	39	23.54	11,12		
Sociotechnical Blindness	**High School or Associate Degree (1)**	36	14.39	7.59	1.42	0.24
	License (2)	212	16.50	7.37		
	Postgraduate (3)	39	16.87	6.81		
Artificial Intelligence Configuration	**High School or Associate Degree (1)**	36	10.25	6.11	1.33	0.27
	License (2)	212	11.80	6.11		
	Postgraduate (3)	39	10.72	6.00		
Artificial Intelligence Anxiety (Total)	**High School or Associate Degree (1)**	36	65.06	34.96	0.94	0.39
	License (2)	212	72.36	29.58		
	Postgraduate (3)	39	69.74	29.05		

** p<0.05 significance level*

When examined in terms of the educational status variable, it was revealed that the artificial intelligence anxiety levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score ($p > 0.05$).

When examined in terms of the educational status variable, it was revealed that the self-efficacy levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score ($p > 0.05$).

Table 6

T-Test Results of the Research Group's Artificial Intelligence Anxiety Levels and Self-Efficacy Levels According to the Marital Status Variable

Scales and Sub-dimensions	**Marital status**	**n**	$\bar{X}$	**ss**	**t**	**df**	**p**
Motivation	**Married**	121	14.21	2.15	0.03	285	0.78
	Single	166	14.20	2.07			
Game Strategies	**Married**	121	13.94	2.11	0.96	285	0.07
	Single	166	13.69	2.31			
Technical Education	**Married**	121	14.37	1.84	1.31	285	0.09
	Single	166	14.05	2.17			
Character Development	**Married**	121	11.13	1.54	0.76	285	0.47
	Single	166	10.99	1.61			
Physical Condition	**Married**	121	10.39	1.57	0.10	285	0.07
	Single	166	10.37	1.87			
Proficiency Scale (Total)	**Married**	121	64.04	7.73	0.74	285	0.23
	Single	166	63.30	8.87			
Learning	**Married**	121	20.65	12.70	0.40	285	0.06
	Single	166	20.11	10.39			
Job Change	**Married**	121	22.77	11.07	-0.31	285	0.78
	Single	166	23.18	10.94			
Sociotechnical Blindness	**Married**	121	16.37	7.31	0.17	285	0.77
	Single	166	16.22	7.38			
	Married	121	11.73	5.93	0.63	285	0.46

Artificial Intelligence Configuration	**Single**	166	11.27	6.23			
Artificial Intelligence Anxiety (Total)	**Married**	121	71.52	31.40	0.21	285	0.33
	Single	166	70.78	29.43			

** p<0.05 significance level*

When examined in terms of marital status variable, it was revealed that the artificial intelligence anxiety levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score ($p > 0.05$).

When examined in terms of marital status variable, it was revealed that the self-efficacy levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score ($p > 0.05$).

Table 7

ANOVA Test Results for Artificial Intelligence Anxiety Levels and Self-Efficacy Levels of the Research Group According to the Coaching Year Variable

Scale and Sub-Dimensions	Year of Coaching	n	$\bar{X}$	ss	f	p	Tukey
Motivation	**0-3 Years (1)**	121	14.17	2.05	0.68	0.56	
	4-7 Years (2)	62	13.97	2.09			
	8-11 Years (3)	39	14.21	2.47			
	12 Years and above(4)	65	14.49	1.97			
Game Strategies	**0-3 Years (1)**	121	13.52	2.40	1.57	0.20	
	4-7 Years (2)	62	13.81	2.12			
	8-11 Years (3)	39	14.36	2.11			
	12 Years and above(4)	65	13.95	2.02			
Technical Education	**0-3 Years (1)**	121	13.89	2.25	3.38	0.02*	**1-3**
	4-7 Years (2)	62	13.98	1.97			
	8-11 Years (3)	39	14.36	2.18			
	12 Years and above(4)	65	14.83	1.40			
Character Development	**0-3 Years (1)**	121	11.00	1.69	1.10	0.35	
	4-7 Years (2)	62	10.92	1.59			
	8-11 Years (3)	39	10.90	1.79			
	12 Years and above(4)	65	11.35	1.19			
Physical Condition	**0-3 Years (1)**	121	10.14	1.97	1.34	0.26	
	4-7 Years (2)	62	10.47	1.65			
	8-11 Years (3)	39	10.62	1.48			
	12 Years and above(4)	65	10.58	1.53			
Proficiency Scale (Total)	**0-3 Years (1)**	121	62.72	8.95	1.44	0.23	
	4-7 Years (2)	62	63.15	8.45			
	8-11 Years (3)	39	64.44	9.21			

	12 Years and above(4)	65	65.22	6.49			
Learning	**0-3 Years (1)**	121	20.81	10.17	1.23	0.30	
	4-7 Years (2)	62	19.89	11.10			
	8-11 Years (3)	39	17.44	10.93			
	12 Years and above(4)	65	21.63	13.83			
Job Change	**0-3 Years (1)**	121	24.73	10.65	3.60	0.01*	**1-2**
	4-7 Years (2)	62	20.18	10,,61			
	8-11 Years (3)	39	20.15	10.72			
	12 Years and above(4)	65	24.22	11.41			
Sociotechnical Blindness	**0-3 Years (1)**	121	17.21	7.04	4.38	0.01*	**4-2**
	4-7 Years (2)	62	14.34	6.99			
	8-11 Years (3)	39	14.03	7.44			
	12 Years and above(4)	65	17.78	7.57			
Artificial Intelligence Configuration	**0-3 Years (1)**	121	12.52	6.01	5.18	0.01*	**1-3 4-3**
	4-7 Years (2)	62	10.29	6.05			
	8-11 Years (3)	39	8.72	5.78			
	12 Years and above(4)	65	12.25	5.95			
Artificial Intelligence Anxiety (Total)	**0-3 Years (1)**	121	75.26	28.08	4.01	0.01*	**1-3**
	4-7 Years (2)	62	64.69	29.47			
	8-11 Years (3)	39	60.33	30.05			
	12 Years and above(4)	65	75.88	32.75			

** p<0.05 significance level*

As a result of the statistical analyses, no statistically significant difference was observed in the sub-dimensions and the total of the scale according to the variable of the years of coaching of the volleyball coaches' self-efficacy levels ($p > 0.05$). However, a significant difference was found in the sub-dimension of technical teaching ($p < 0.05$). As a result of post-hoc tests, it was determined that this difference was between individuals with 0-3 years of coaching experience and coaches with 12 years and more experience, and was in favor of the 0-3 years of experience group.

Table 8

T-Test Results of the Research Group's Artificial Intelligence Anxiety Levels and Self-Efficacy Levels According to the Artificial Intelligence Tool Usage Variable

Scales and Sub-dimensions	Using an AI Tool	n	$\bar{X}$	ss	t	df	p
Motivation	**Yes**	134	14.16	2.13	-0.34	285	0.84
	No	153	14.24	2.07			
Game Strategies	**Yes**	134	13.68	2.27	-0.82	285	0.37
	No	153	13.90	2.19			
Technical Education	**Yes**	134	14.17	1.96	-0.13	285	0.77
	No	153	14.20	2.11			
Character Development	**Yes**	134	11.02	1.61	-0.26	285	0.44
	No	153	11.07	1.57			
Physical Condition	**Yes**	134	10.31	1.74	-0.57	285	0.90
	No	153	10.43	1.77			
Proficiency Scale (Total)	**Yes**	134	63.34	8.31	-0.50	285	0.72
	No	153	63.84	8.49			
Learning	**Yes**	134	19.03	10.70	-1.82	285	0.71
	No	153	21.48	11.90			
Job Change	**Yes**	134	22.84	11.02	-0.24	285	0.83
	No	153	13.15	10.97			
Sociotechnical Blindness	**Yes**	134	16.35	7.47	0.14	285	0.93
	No	153	16.23	7.24			
Artificial Intelligence Configuration	**Yes**	134	11.04	6.23	-1.10	285	0.44
	No	153	11.83	5.99			
Artificial Intelligence Anxiety (Total)	**Yes**	134	69.27	29.42	-0.96	285	0.32
	No	153	72.69	30.91			

** p<0.05 significance level*

When examined in terms of the artificial intelligence tool usage variable, it was revealed that the artificial intelligence anxiety levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score (p> 0.05).

When examined in terms of the artificial intelligence tool usage variable, it was revealed that the self-efficacy levels of third-level volleyball coaches did not show a significant difference in both the sub-dimensions of the scale and the overall total score (p> 0.05).

Table 9

Simple Correlation Analysis Results Between Artificial Intelligence Anxiety Levels and Self-Efficacy Levels of Volleyball Coaches

		Artificial Intelligence Anxiety Scale
Coach Competence Scale-II	r	-0.4
	p	0.51

** p<0.05 correlation level*

According to the responses given to the scales by the volleyball coaches included in the research, no statistically significant relationship was found between the Coach Competence Scale-II and the Artificial Intelligence Anxiety Scale at the 0.05 correlation level.

Table 10

Results of Simple Correlation Analysis Between Artificial Intelligence Anxiety Levels and Self-Efficacy Levels of Volleyball Coaches According to Gender Variable

			Artificial Intelligence Anxiety Scale
Female	**Coach Competence Scale-II**	r	-0,01
		p	0,91
Male	**Coach Competence Scale-II**	r	-0,07
		p	0,36

** p<0.05 correlation level*

Based on the responses of the volleyball coaches included in the study to the scales according to the gender variable, no statistically significant relationship was found at the 0.05 level between the Coach Competence Scale-II and the Artificial Intelligence Anxiety Scale.

Table 11

Results of Simple Correlation Analysis Between Artificial Intelligence Anxiety Levels and Self-Efficacy Levels of Volleyball Coaches According to Age Variable

			Artificial Intelligence Anxiety Scale
18-23 Years Old	**Coach Competence Scale-II**	r	-0,01
		p	0,94
24-28 Years Old	**Coach Competence Scale-II**	r	-0,09
		p	0,39
30-35 Years Old	**Coach Competence Scale-II**	r	-0,22
		p	0,10
Ages 36 and above	**Coach Competence Scale-II**	r	0,12
		p	0,26

** p<0.05 correlation level*

Based on the responses of the volleyball coaches included in the study to the scales according to the age variable, no statistically significant relationship was found at the 0.05 level between the Coach Competence Scale-II and the Artificial Intelligence Anxiety Scale.

Table 12

Results of Simple Correlation Analysis Between Artificial Intelligence Anxiety Levels and Self-Efficacy Levels of Volleyball Coaches According to the Educational Status Variable

			Artificial Intelligence Anxiety Scale
High School or Associate Degree	**Coach Competence Scale-II**	r	0,01
		p	0,94
License	**Coach Competence Scale-II**	r	-0,02
		p	0,82
Postgraduate	**Coach Competence Scale-II**	r	-0,25
		p	0,13

** p<0.05 correlation level*

Based on the answers given to the scales by the volleyball coaches included in the study according to the educational status variable, no statistically significant relationship was found at the 0.05 level between the Coach Competence Scale-II and the Artificial Intelligence Anxiety Scale.

Table 13

Results of Simple Correlation Analysis Between Artificial Intelligence Anxiety Levels and Self-Efficacy Levels of Volleyball Coaches According to Marital Status Variable

			Artificial Intelligence Anxiety Scale
Married	**Coach Competence Scale-II**	r	-0,03
		p	0,71
Single	**Coach Competence Scale-II**	r	-0,04
		p	0,57

** p<0.05 correlation level*

Based on the responses given by the volleyball coaches included in the study to the scales according to the marital status variable, no statistically significant relationship was found at the 0.05 level between the Coach Competence Scale-II and the Artificial Intelligence Anxiety Scale.

Table 14

Results of Simple Correlation Analysis Between Artificial Intelligence Anxiety Levels and Self-Efficacy Levels of Volleyball Coaches According to the Coaching Year Variable

			Artificial Intelligence Anxiety Scale
0-3 Years	**Coach Competence Scale-II**	r	0,00
		p	0,96
4-7 Years	**Coach Competence Scale-II**	r	-0,15
		p	0,25
8-11 Years	**Coach Competence Scale-II**	r	-0,05
		p	0,77
12 Years and above	**Coach Competence Scale-II**	r	-0,01
		p	0,96

** p<0.05 correlation level*

4 DISCUSSION AND CONCLUSION

This study was conducted in order to examine the level of anxiety that Artificial Intelligence technology, which is actively involved in many areas with the developing technology, can create as well as the innovations it can bring to sports environments. The general purpose of this study is to measure volleyball coaches' artificial intelligence anxiety levels and their proficiency levels and to measure the relationship between the two situations. As a result of the statistical analysis, the data analysis showed a normal distribution. When the findings of the research are examined, no statistically significant relationship was found at the 0.05 level between the artificial intelligence anxiety levels of volleyball coaches and their competence levels.

In the evaluation made in terms of gender variable, it was concluded that there was no statistically significant difference in terms of the average scores of third-level volleyball coaches from the artificial intelligence anxiety scale. When the studies in the literature were examined, it was determined that women had higher artificial intelligence anxiety levels than men in the study conducted by Fortuna et al. (2023). Similarly, in the study conducted with 328 dentists, it was concluded that female dentists had higher artificial intelligence anxiety levels than male dentists (Bulut et al., 2022). The findings obtained in these studies contradict the result obtained in our research. When we look at the literature, there are also studies in which the gender variable does not have an effect on the level of artificial intelligence anxiety (Al Fadeel et al., 2021). The findings obtained in this study support the result obtained in our research. In the evaluation made in terms of gender variable, it was concluded that there was no statistically significant difference

in the self-efficacy levels of third-level volleyball coaches in the total and sub-dimensions of the scale. When the studies in the literature are examined, a study conducted by Seçkin Ağırbaş et al. (2020) concluded that female coaches have higher self-efficacy levels than male coaches. Another study concluded that male coaches have higher self-efficacy levels than female coaches (Kavussanu et al., 2006). The findings obtained in these studies contradict the results obtained in our research. When we look at other studies in the literature, there are also studies in which the gender variable has no effect on the self-efficacy level (Koçak, 2019; Huang 2006). The findings obtained in these studies seem to support the results obtained in our research.

In the evaluation made in terms of age variable, it was concluded that there was no statistically significant difference in terms of the average scores of third-level volleyball coaches from the artificial intelligence anxiety scale. When the literature was examined, it was concluded in the study conducted by Zhang et al. (2019) that the level of artificial intelligence anxiety increased in parallel with the increase in age. Similarly, Schepman and Rodway (2020), Cave and Dihal (2020), Gibbs et al. (2021) concluded that there was a direct proportion between the increase in age and artificial intelligence anxiety levels. The findings obtained in these studies contradict the results obtained in our research. When the literature was examined, there are studies in which the age variable had no effect on artificial intelligence anxiety (Fortuna et al., 2023; Al Fadeel et al., 2021). The findings obtained in these studies support the result obtained in our study. In the evaluation made in terms of age variable, no statistically significant difference was observed in terms of the mean scores of third-level volleyball coaches from the self-efficacy scale. When the literature was examined, it was concluded in the study conducted by Feltz et al. (1999) that as age increases, experience will increase and the self-efficacy levels of coaches will increase. The findings obtained in this study contradict the results obtained in our research. Contrary to this study, studies conducted by Seçkin Ağırbaş et al. (2020), Koçak (2019), Kowalski (2007) and Dumangöz and Sanlav (2021) in the literature did not detect a statistically significant difference in the self-efficacy levels of coaches with the age variable. These studies support the results obtained in our research.

When the findings of the current study are examined, it is seen that the average scores of volleyball coaches from the artificial intelligence anxiety scale do not differ statistically according to the educational status variable. When the literature is examined, it is determined that artificial intelligence anxiety levels decrease with the increase in

educational status in the study conducted by Filiz et al. (2022). Similarly, Maskara et al. (2017) and Oh et al. (2019) reached similar results in their studies. Zhang et al. (2019), Cave et al. (2019), Schepman and Rodway (2020) also reached the conclusion that artificial intelligence anxiety levels decrease with the increase in educational status. The results of these studies are opposite to our study. When the self-efficacy levels of volleyball coaches are considered in terms of the educational status variable, no statistically significant difference was observed in the entire scale. When the studies in the literature are examined, it was concluded that the self-efficacy levels of coaches increased in parallel with the increase in the level of education in the study conducted by Feltz et al. (1999). Similarly, Malete and Feltz (2000), Myers et al. (2005), Cumming et al. (2007) also found in their studies that there was a directly proportional relationship between education status and coaching self-efficacy status. The findings obtained in these studies contradict the results obtained in our study. When the literature was examined, Dumangöz and Sanlav (2021) concluded that the education status of volleyball coaches did not affect their self-efficacy levels. The findings obtained in this study support the results obtained in our research.

Another finding of our study is that no statistically significant difference was found in the average scores of volleyball coaches' artificial intelligence anxiety levels from the artificial intelligence anxiety scale according to the marital status variable. When we look at the studies in the literature, the number of studies in which the marital status variable is associated with artificial intelligence anxiety is limited. Zhang et al. (2019), Gibbs et al. (2021) concluded that domestic individuals have higher artificial intelligence anxiety levels. The findings obtained in these studies contradict the findings of our research. Filiz et al. (2022) and Fortuna et al. (2023) also encountered similar results to the findings obtained in our research in their studies. When the self-efficacy levels of volleyball coaches were considered in terms of the marital status variable, no statistically significant difference was observed in the entire scale. When we look at the studies in the literature, Feltz et al. (1999), Campbell and Sullivan (2005), Aksu et al. (2024) and Demir and Kabakçı (2020) concluded in their studies that marital status has no effect on the competence level of coaches. These studies support the results of our research.

Another finding of our study is that a statistical difference was found in the average scores of volleyball coaches on the artificial intelligence anxiety scale according to the variable of their coaching years. When the limited studies in the literature are

examined, Al Fadeel et al. (2021) concluded in their study on healthcare workers that professional year had no effect on artificial intelligence anxiety. The result encountered in this study is opposite to our study. Another study concluded that as the length of time employees in the tourism sector work increases, their artificial intelligence concerns decrease. The results obtained in this study support our study (Fortuna et al. 2023). When the self-efficacy levels of volleyball coaches were examined in terms of the coaching year variable, no statistically significant difference was observed in the entire scale. When looking at the literature, Malete and Feltz (2000) and Dumangöz and Sanlav (2021) found in their studies that there was a statistically significant difference between the professional duration of coaches and their self-efficacy levels. These studies contradict the results of our research. In the study conducted by Seçkin Ağırbaş and his colleagues (2020), they concluded that the year of coaching had no effect on the self-efficacy levels of coaches. This study supports the results of our research.

When the findings of the current study are examined, it is seen that the average scores of volleyball coaches from the artificial intelligence anxiety scale do not differ statistically according to the "Using Artificial Intelligence Tools" status variable. When the studies in the literature are examined, Schepman and Rodway (2020), Zhang et al. (2019) and Grote and Berens (2020) concluded that actively using artificial intelligence tools reduces the level of artificial intelligence anxiety. In another study, it was concluded that although actively using artificial intelligence tools reduces the level of anxiety, the anxiety level may increase when the individual feels inadequate in situations where use is mandatory (Chatterjee et al., 2021). The findings obtained in these studies contradict the results of our research. When the self-efficacy levels of volleyball coaches were examined in terms of the "Using Artificial Intelligence Tools" status variable, no statistically significant differentiation was observed in the entire scale. When the literature is examined, there is no study that directly examines the relationship between the use of artificial intelligence tools and coaching self-efficacy levels. However, there are studies that measure these two headings indirectly. In the study conducted by Carling et al. (2009), it was determined that coaches who actively use artificial intelligence tools have increased awareness of performance evaluation. In another study, it was found that coaches need digital literacy and self-efficacy to use artificial intelligence-supported systems (Baca & Kornfeind, 2012; Serçek and Korkmaz, 2023). In a similar study, it was

determined that coaches who actively use technology have higher self-efficacy in strategy development and decision-making dimensions (Sullivan & Nashman, 2015).

As a result of the correlation analysis, no statistically significant relationship was detected at the 0.05 level between the artificial intelligence anxiety levels and self-efficacy levels of third-level volleyball coaches. According to these findings, it can be said that the artificial intelligence anxiety levels and self-efficacy levels of third-level volleyball coaches occur independently of each other. When the studies in the literature are examined, there are studies examining artificial intelligence anxiety and self-efficacy levels. A study was conducted with 561 personnel working at a HEI company in China, addressing the relationship between artificial intelligence capacity, self-efficacy perception, and learning performance, and determined that there was a significant relationship between artificial intelligence capacity and self-efficacy perception (Wang et al., 2023). Hsu et al. (2023) examined artificial intelligence learning anxiety and self-efficacy perception in their study with 28 middle school students. As a result of the analyzes, it was determined that there was a negative and significant relationship between the two variables. In another study, Lin et al. (2022) conducted a study on the relationship between abusive management, self-efficacy perception, organizational performance, and artificial intelligence with 493 employees working in branches of an international company in Turkey, Taiwan, Japan, and China. As a result of the analysis, it was determined that there was a negative and significant relationship between artificial intelligence and self-efficacy. The findings obtained in these studies are opposite to the findings in our research.

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INFORMED CONSENT STATEMENT

Informed consent was obtained from all participants involved in this study.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

The data used to support the findings of this study are available from the corresponding author upon request.

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