



## COMPARISON OF KNOWLEDGE LEVELS OF SWIMMING COACHES ABOUT DOPING AND ERGOGENIC AIDS

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### Abstract:

Most athletes consider their coaches as the most important source of information on nutrition and doping. The aim of this study was to determine the level of knowledge of swimming coaches about doping and ergogenic aids. **Method:** This study consisted of 148 randomly selected swimming coaches educated in the development Seminar of Swimming Coaches of Rize Ministry of Youth and Sports between April 23-27, 2019. The survey prepared by taking expert opinion. It totally consists of 19 items, 9 of which aim to determine demographic information and 10 of them to determine doping knowledge level. Frequency (f), percentage (%), chi-square test, independent sample t-test and one-way analysis of variance (ANOVA) used for data analysis. **Results and discussion:** According to the results of the study, when the participants' coaching experience and degree of coaching certificate were compared with the other variables, a statistically significant difference was found ( $p < 0.05$ ) but there was no significant difference between the other variables ( $p > 0.05$ ). According to the results of the study, it is unclear to what extent the participants who have more coaching experience transfer information to their athletes despite the high level of knowledge about doping and ergogenic aids. In addition, it is thought that the education given in doping and ergogenic aid in universities is insufficient.

**Keywords:** doping, ergogenic aid, swimming coaches

### 1. Introduction

The swimming branch is a sport that requires higher level of condition and is less likely to be injured than other sports branches that increase the strength and development of bio-motor properties. In order to ensure the highest level of sporting efficiency in this sport, swimmer candidates should be discovered at a very young age, trained by a coach

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with good training and exercise efficiently with the right training programs, rest effectively in order to have a productive training and most importantly, they should pay attention to eating and drinking (Hanula, 2001). Swimming is an Olympic sports branch that aims to swim a certain distance as soon as possible. There are some of the main factors that affect swimming performance, these are; physiological, morphological, biomechanical, technical and psychological factors (Saavedra et al 2010). Moreover, as swimming is a sport against water resistance, it is a sport based on good condition and strength where all the muscles in the body actively work (Bozdoğan, 2003).

Seconds, milliseconds, grams and millimeters occupy an important place between winning and losing in sports races where winning is the goal for the athlete. Therefore, athletes tend to use a number of substances, materials and methods that will affect the outcome of the competition beyond the performance they gain with training (Koca et al., 2004). It is accepted as doping to increase the performance by giving a foreign substance to the body in an artificial and unlawful way or to apply physiological agents in oversize amounts during or out of the competition (Erkiner and Soysüren, 2007). In recent years, advances in doping control areas and the detrimental side effects of doping have led athletes to find more natural methods for improving their performance. Nowadays, various researches are carried out in order to improve performance and some of these studies are focused on ergogenic aids. The term ergogenic aid can also be described as increasing the capacity to do business. Ergogenic aid can be nutritional, psychological, mechanical or biomechanical as well as drugs used to improve performance are included in ergogenic aid (Güner, 2002). Substances or methods such as vitamins, minerals, amino acids, plants, metabolites and other combinations, can be described as ergogenic aids (Güler et al. 2004, p.2).

Most athletes consider their coaches as the most important source of information in the matter of nutrition and doping. In general, although coaches are willing to play a role in the prevention of doping, it is seen that the trainers' lack of knowledge about doping and aiding substances, limited anti-doping training and their efforts to prevent existing doping are insufficient. As a result of the literature review, limited data including the level of knowledge of coaches about doping and ergogenic aids were obtained. The aim of this study is to determine the level of knowledge of coaches about doping and ergogenic aids.

## **2. Materials and Methods**

The present study consists of 148 swimming coaches who were selected by random method and trained within the scope of Rize Youth and Sports Swimming Trainers Development Seminar between 23-27 April, 2019. The research questions, which were prepared by taking expert opinion, consist of 19 items; 9 for determining demographic information and 10 for determining doping knowledge level.

## 2.1 Evaluation of the research data

After the SPSS 21.0 package program was determined that the data was in the appropriate distribution, frequency (f), percentage (%), chi-square test, independent sample t-test and one-way analysis of variance (ANOVA) were examined and LSD multiple comparison test was used to determine which groups had significant differences ( $p < 0.05$ ).

## 3. Results

In our study, the descriptive information of the participants, age, coaching experience, gender and certificate of coaching degrees were mentioned respectively.

**Table 1:** Distribution of the Descriptive Information of the Participants

	Variable	f	%	
Gender	Male	85	57.4	
	Female	63	42,6	
Education	High school	7	4.7	
	University	141	95.5	
Coaching degree	Stage 2	59	39.9	
	Stage 3	89	60.1	
Factor	n	A.O ±SS	Min	Max
Age	148	33.42±6.05	25	2
Coaching Year	148	9.17±5.35	57	34

**Table 2:** Comparison of Participants' Opinions on Doping Knowledge Levels and Their Various Situations in Terms of Age and Coaching Experience

Variables		Age			Coaching experience		
		n	A.O±SS	t	n	A.O±SS	t
Do you think ergogenic aid is a major problem?	Yes	112	33,8±6,42	1,94	112	9,17±5,39	0,03
	No	36	32,0±4,51		36	9,17±5,31	
Did you receive training on doping and ergogenic aid in the program where you received certificate of coaching?	Yes	110	33,87±6,29	1,71	110	9,76±5,75	2,93*
	No	38	32,11±5,17		38	7,45±3,50	
Have you participated in seminars, congress programs etc. about ergogenic aid and doping?	Yes	109	33,79±6,48	1,46	109	9,70±5,76	2,48*
	No	39	32,38±4,57		39	7,69±3,68	
Is the academic work in the field of ergogenic aids and doping enough in Turkey?	Yes	53	33,75±6,29	0,4	53	8,74±4,56	-0,78
	No	95	33,23±5,94		95	9,41±5,76	
Do you inform your athletes about doping and ergogenic aid?	Yes	91	33,71±6,84	0,81	91	9,31±5,73	0,41
	No	57	32,95±4,55		57	8,95±8,95	
Do you inform the families of your athletes about doping and ergogenic aid?	Yes	75	33,47±6,44	0,09	75	9,45±5,93	0,65
	No	73	33,37±5,68		73	8,88±4,72	
Do any of your athletes receive ergogenic aid?	Yes	25	32,48±4,88	-0,96	25	8,48±4,31	-0,82
	No	122	33,61±6,29		122	9,30±5,57	

\*There is statistically significant difference ( $p < 0.05$ ).

When the opinions of the items related to the coaching experience were examined, the opinions of the participants about the 'Did you receive training on doping and ergogenic aid in the program where you received certificate of coaching?' items were compared and a statistically significant difference was found ( $p < 0.004$ ). When the opinions of the coaches regarding item 'Have you participated in seminars, congress programs etc. about

ergogenic aid and doping?’ were compared in another item, a statistically significant difference was found ( $p < 0.015$ ). There was no significant difference between the participants' opinions about age and coaching experience and other items.

**Table 3:** Comparison of Participants' Views on Various Situations Related to Doping Knowledge Levels According to Sport Age and Coaching Experience Variables

Variables		Age			Coaching experience		
		n	A.O±SS	f	n	A.O±SS	f
Did you receive training on doping and ergogenic aid? If so, was it sufficient?	Sufficient	61	33,2+5,98	0,75	61	9,54+5,40	1,73
	Insufficient	62	34,0+6,20		62	9,53+5,65	
	No	25	32,2+5,92		25	7,36+5,35	
Do you find it necessary for your athletes to get ergogenic aid?	Yes	37	32,5+6,04	1,30	37	8,84+4,12	0,74
	No	73	34,2+6,45		73	9,70+6,31	
	Sometimes	38	32,6+6,05		38	8,47+4,33	
How do you behave when you determine one of your athletes using doping?	Disengagement	23	34,0+8,08	0,99	23	10,7+7,43	2,88*
	Elucidating	37	32,5+4,61		37	8,35+4,33	
	Admonishment	14	33,0+5,41		14	7,57+3,41	
	Dissuasion	22	35,0+7,64		22	10,0+4,88	
	Negotiate with family	19	34,8+6,25		19	12,0+7,34	
	Other	33	32,1+4,66		33	7,42+3,12	

\* There is a statistically significant difference ( $p < 0.05$ ).

Considering the relationship between the doping knowledge levels of the participants according to the coaching experience variables, a significant difference was found regarding the item “How do you behave when you determine one of your athletes using doping?” Significant differences have been determined at  $p < 0.05$  level between the other and negotiate with family, admonishment and negotiate with family, elucidating and negotiate with family and disengagement and other. There was no statistically significant difference between the other items.

**Table 4:** Comparison of Gender and Some Variables

Variables		Gender				
		Male		Female		p
		n	%	n	%	
Do you think ergogenic aid is a major problem?	Yes	62	72,9	50	79,4	0,36
	No	23	27,1	13	20,6	
Did you receive training on doping and ergogenic aid in the program where you received a certificate of coaching?	Yes	67	78,8	43	68,3	0,14
	No	18	21,2	20	31,7	
Did you receive training on doping and ergogenic aid? If so, was it sufficient?	Sufficient	37	43,5	24	38,1	0,32
	Insufficient	37	43,5	25	39,7	
	No	11	13	14	22,2	
Have you participated in programs such as seminars, panel, congresses on ergogenic aid and doping?	Yes	63	74,1	46	73	0,88
	No	22	24,9	17	27	
Do you think that the academic studies on ergogenic aid and doping in Turkey are sufficient?	Yes	35	41,2	18	28,6	0,11
	No	50	58,8	45	71,4	
Do you inform your athletes about the doping and ergogenic aids?	Yes	56	65,9	35	55,6	0,20
	No	29	34,1	28	44,4	
Do you inform your athletes' families about the doping and ergogenic aids?	Yes	45	52,9	30	47,6	0,52
	No	40	47,1	33	52,4	

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Do any of your athletes receive ergogenic aid?	Yes	19	22,4	6	9,5	
	No	66	77,6	57	90,5	
Do you think that it is necessary for your athletes to receive ergogenic aids?	Yes	26	30,6	11	17,5	0,14
	No	37	43,5	36	57,1	
	Sometimes	22	25,9	16	25,4	
How do you behave when you determine one of your athletes using doping?	Disengagement	16	18,8	7	11,1	0,34
	Elucidating	16	18,8	21	33,3	
	Admonishment	10	11,8	4	6,3	
	Dissuasion	13	15,3	9	14,3	
	Negotiate with family	11	12,9	8	12,7	
	Other	19	22,4	14	22,2	

There has been no significant difference between the opinions of the trainers regarding the gender variable and the level of knowledge about doping and ergogenic aid.

**Table 5:** Statistical Comparison Between Variables and Degree of Coaching Certificate (chi-square)

Variables		Degree of coaching certificate				
		2. Degree		3. Degree		p
		n	%	n	%	
Do you think ergogenic aid is a major problem?	Yes	44	74,6	68	79,4	0,800
	No	15	26,4	21	20,6	
Did you receive training on doping and ergogenic aid in the program where you received a certificate of coaching?	Yes	37	62,7	73	68,3	0,008**
	No	22	37,3	16	31,7	
Did you receive training on doping and ergogenic aid? If so, was it sufficient?	Sufficient	27	45,8	34	38,1	0,262
	Insufficient	20	33,9	42	39,7	
	No	12	20,3	13	22,2	
Have you participated in programs such as seminars, panel, congresses on ergogenic aid and doping?	Yes	47	79,7	62	73	0,176
	No	12	20,3	27	27	
Do you think that the Academic studies on ergogenic aid and doping in Turkey are sufficient?	Yes	20	33,9	33	28,6	0,693
	No	39	66,1	56	71,4	
Do you inform your athletes about the doping and ergogenic aids?	Yes	40	67,8	51	55,6	0,199
	No	19	32,2	38	44,4	
Do you inform your athletes' families about the doping and ergogenic aids?	Yes	30	50,8	45	47,6	0,973
	No	29	49,2	44	52,4	
Do any of your athletes receive ergogenic aid?	Yes	7	11,9	18	9,5	0,184
	No	52	88,1	71	90,5	
Do you think that it is necessary for your athletes to receive ergogenic aids?	Yes	14	23,7	23	17,5	0,165
	No	25	42,4	48	57,1	
	Sometimes	20	33,9	18	25,4	
How do you behave when you determine one of your athletes using doping?	Disengagement	7	11,9	16	11,1	0,649
	Elucidating	14	23,7	23	33,3	
	Admonishment	4	6,8	10	6,3	
	Dissuasion	10	16,9	12	14,3	
	Negotiate with family	10	16,9	9	12,7	
	Other	14	23,7	19	23,3	

\*\* There is a statistically significant ( $p < 0.01$ ).

Considering the relationship between the doping knowledge levels of the participants according to the participants' coaching certificate degree variables, a significant

difference has been determined regarding the item “Did you receive training on doping and ergogenic aid in the program where you received a certificate of coaching?” There was no significant difference between the opinions of the coaches regarding the degree of coaching and other items related to doping and ergogenic aid knowledge level.

#### 4. Discussion

In this study, doping knowledge levels and opinions of swimming coaches were discussed according to some variables respectively.

In the study, 148 volunteer coaches had a mean age of  $33.42 \pm 6.05$  and average experience of coaching was  $9.17 \pm 5.35$  years. %57.4 of the participants were male, %42.6 were women, coaches with second degree coaching certificate were %39.9 and coaches with third degree coaching certificate were %60.1.

In the study, a statistically significant difference was found in favor of the coaches with the higher average experience of coaching for questions ‘Did you receive training on doping and ergogenic aid in the program where you received a certificate of coaching?’ and ‘Have you participated in programs such as seminars, panel, congresses on ergogenic aid and doping?’ ( $p < 0.05$ ). When the Frequency Percent Distribution of the question ‘Do you have sufficient information about useful and harmful drugs used among athletes’ of Trainers is examined in the study of Demir (2012); ‘Yes’ is seen as %38, ‘No’ %18 and ‘Partly’ 34%. Based on this information, it is thought that most of the coaches have sufficient information about doping, if we consider the ‘Partly’ responses as well. The study of Demir aids our study.

Çetinkaya et al. (2007) examined the knowledge and attitudes of teachers and trainers on doping who graduated from Physical Education and Sports Schools. In their survey, it was determined that %1.4 of teachers and coaches received training on doping, while %98.6, a majority of them, did not receive training on this subject. This shows us that our coaches and trainers, who guide them in the training of athletes, do not have sufficient information about doping in universities. In the study conducted by Çetinkaya, it was stated that the training on doping received at the university was insufficient. When the experience of coaching in our study was examined, the fact that coaches with more coaching years were found to have higher levels of knowledge about doping and ergogenic substances suggests that congresses, seminars and other related trainings were more effective than the training on doping and ergogenic substances in the university.

Aladağ (2014) When the results of Aladağ’s (2014) dissertation study conducted by Kafkas University Sarıkamış School of Physical Education and Sports on the students of the Department of Coaching, Physical Education and Sports Teaching and Sports Management are examined, %18.7 answered yes, %60.8 no, and %20.5 partially answered the question “Do you have any information about doping?”. In the study of Aladağ, it is seen that the education given about doping and ergogenic aid in universities is insufficient, too.

Eröz (2007) stated that %11.7 of the athletes strongly agree, %72.5 of them strongly disagree and %12.5 of them are undecided on the topic whether they have sufficient information about doping.

Ağırbaş (2002) asked athletics young national athletes the question "Do you know what doping is?" and %75 of participants responded No and 25% responded Yes. In the study conducted by Şirin (2001), it was concluded about the side effects of doping that I am knowledgeable about it with a rate of %15.4 and I have a little knowledge about it with the rate of %18,3.

According to this research data; Eröz (2007), Ağırbaş (2002) and Şirin (2001) stated that athletes do not have certain information about doping and doping use. According to the data obtained in our study, although the coaches have information about doping and ergogenic aids, it is considered that they should be considered as a separate research subject about how much they reflect this information to their athletes and how much they inform their athletes about the topic.

Demir A (2012) examined the distribution of the views of the trainers about the things that should be done to the athletes determined to use doping and 54% of the trainers stated that they should be banned from competitions for 1-2 years and 38% of them stated that they should be banned from the competitions lifetime. In our study, when we look at the relationship between doping knowledge levels according to the experience of coaching variable, a significant difference was determined related to the question 'How do you behave when you determine one of your athletes using doping?'. Significant differences have been determined at  $p < 0.05$  level between the other and negotiate with family, admonishment and negotiate with family, elucidating and negotiate with family and disengagement and other. In our study, instead of giving ban penalties to the athletes, the factors of admonishment the athlete, elucidating and negotiating with the family come to the fore. This shows us that the coaches have the desire to win rather than lose the athlete.

## 5. Conclusions and Suggestions

As a result, it is normal for coaches with more coaching years to participate in trainings such as congress seminars and courses, to have more knowledge about doping and ergogenic aid, however, the extent to which this knowledge is transferred to athletes may be the subject of discussion. On the other hand, the quality of education related to doping and ergogenic aid given in universities is proved by many researchers that it is insufficient. Moreover, it is suggested to research the extent to which coaches transfer their knowledge to his athletes and whether the education given about the doping and ergogenic aids in universities is sufficient.

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