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Shkumbin HOXHA [1]
Milaim BERISHA [2]
Agron THAQI [3]

[1] Physical Education and Sport Department, AAB College, Msc student, Kosova.

[2] School of Physical Education and Sport, Istanbul Gelisim University, Turkey.

[3] Department of kinesiology North Macedonia, PhD student, Tetovo State University, Macedonia.

Corresponding author: M. Berisha

e-mail: mberisha@gelisim.edu.tr

Analyses of Some Performance Parameters and Determination of the Norm Values in Kosovo First League Goalkeepers

Abstract

The purpose of this study is to determine the correlations between anthropometric and power-related factors, make differences in power-related factors according to the anthropometric features, and determine the norm values of some motor abilities in Kosovo First League goalkeepers. The research was conducted on a sample of 15 volunteer goalkeepers, aged 21 years ± 6 months old, who were active goalkeepers in the teams in the Kosovo First League. To measure the performance of the goalkeepers in the study, anthropometric parameters (length, weight, body mass index), acceleration (10 meters run), coordination (side steep), agility/maneuverability (Ilion's Agility Test), reaction time (Nelson Hand Reaction Test, Plate Tapping Test), and success of the goalkeepers (conceded goals per season, success score evaluated by the coach) in the last Kosovo First League. To process the results of the study, analysis of the data was done with the IBM SPSS Statistics 24 software. The statistics obtained were provided by descriptive statistics, t-test, Pearson correlations and percentiles. The goalkeepers playing in Kosovo's First Football League showed significant correlations between length, plate tapping, Nelson hand reaction, and goals and goalkeeper performance in the last season (p<0.05). Also, it was determined that taller goalkeepers' motor abilities were higher, and they were more successful according to the conceded goals per season and in the evaluation of the coaches compared to the shorter goalkeepers. The results of each test were given as the norm values for the Kosovo First Leagues' goalkeepers together with 20% groups. The ages of the goalkeepers in Kosovo First Leagues (average 20-22) were lower compared to the ages (average 26-28) of the goalkeepers of the major European leagues over the last decade. In the correlation analyses, it was determined that goalkeepers' performances were related to the length and reaction time.

Keyword: anthropometry, goalkeepers, Kosovo's first football league, power-related motor abilities.

INTRODUCTION

The goalkeeper is a unique position in football teams, and it is considered to be a determinant on the final match outcome, because one single mistake made by a goalkeeper can lead to a change on the scoreboard. Consequently, it is extremely important to evaluate a goalkeeper's match performance so that training programs can be designed and modified appropriately. However, additional studies should be undertaken in order to increase the knowledge of goalkeeper match performance (Gomez, 2015).

This research is made with senior goalkeepers who play for their teams in Kosovo First League. The goalkeeper in football is required to demonstrate a high level of different skills and actions related to both the defensive and offensive aspects of the game. Defensive acts, such as catching a shot, dealing with catching the ball down, half high, high or straight depending on the situation, deflection of the ball, positioning near the strike area, the exit of the goalkeeper in crosses catching the ball or hitting the ball with the fist and the goalkeeper coming out in situations 1 against 1, as well as offensive actions, such as passing the ball and hitting the ball at a distance which contributes to the construction of the action, where all these actions are performed in a repeated in games and exercises (Welsh, 1990).

In order to accurately execute the aforementioned defensive and offensive tasks and quickly, the goalkeeper has to take part in the exercises every time and has to train with his trainer which is specific only to the goalkeepers also to practice the exercises they do during the training session they have to play competitive character games where most the work of the coach and the change of the goalkeeper during the game are best noticed (Di Salvo, 2008).

Hardly any information regarding goalkeeper-specific skills can be found with the exception of a recent study of Knoop et al., (2013) designed to evaluate the reaction and action speed test (RAS) among thirty-four German goalkeepers of different age groups and competitive levels. Although the results of the RAS test have successfully differenced the first goalkeepers and their substitutes, the instrumental apparatus used in this study is not easily accessible to coaches and trainers. Therefore, simpler protocols are needed to evaluate the particular technical skills involved in goalkeeping (Knoop et al., 2013).

The purpose of this study is to determine the correlations between anthropometric and power-related factors, make differences in power-related factors according to the anthropometric features, and determine the norm values of some motor abilities in Kosovo First League goalkeepers.

METHOD

Analyzing some performance parameters and determination of the norm values in Kosovo First League goalkeepers was used as an experimental approach to the research. The research was conducted on a sample of 15 male goalkeepers aged 21 years ± 6 months old, who are goalkeepers of Kosovo First League goalkeepers. All participants reported being healthy, without any injury and normal sense of sight, hearing and touch. All of them were informed about the purpose and method of the experiment. The study was conducted based on the Helsinki declaration.

The values of the body height (H), body weight (W) and body mass index (BMI) were determined for samples. Body height was measured by the ''Martinanthropometer'' and the data was read with an accuracy of 0.1 cm. The body weight and body mass index were measured with medical scales (Tanita BC 545 N Innerscan Segmental Personal Body

Analysis) and the data was read with an accuracy of 0.1 kg. 10-meter sprint test measurements were performed according to Bjelica and Fratrić's protocol (the result is given with an accuracy of 0.1 sec) (Bjelica & Fratrić, 2011). The Illinois Agility Test (IAT) was administrated a standard version from previous literature (Roozen, 2008; Cureton,1942; Cureton, 1951; Wilkinson,2009; Caldwell, 2009), the length of IAT was 10 m and was marked by cones, with four cones in the center spaced 3.3 m apart and four corner cones positioned 2.5 m from the center of cones. On the "go" command the sample starts the IAT and at the finish line each trial war recorded in seconds. Plate tapping (PLT) was used to measure movement speed individually and measured according to the standard procedure used in the euro fit test battery (Badrić, 2011).

Analysis of Data

Analysis of the data made by using the IBM SPSS Statistics 24 software. To determine the differences between motor abilities in according to the anthropometric characteristics were used t-test, correlation between goalkeepers performance and motor abilities were determined by using Pearson corelation, and determination of the norm values for each motor abilities were used percentiles statistics.

FINDINGS

Table 1. Descriptive Statistics and Determination of the Norm Values for the Anthropometric and Power-Related Factor of The Kosovo's First Football League Goalkeepers

		L	W	BMI	10mR	SS	IA	PLT	NHR	CG	SScore
N		15	15	15	15	15	15	15	15	15	15
Mean		184.7	72.7	21.3	2.18	8.37	16.98	9.45	11.73	22.2	2.9
Std. Dev.		5.20	8.96	2.34	.23	.61	.92	2.14	1.98	8.38	1.38
Skewness		-.65	-.03	.01	.21	1.77	-.15	.82	.29	.97	-.05
Kurtosis		-.09	-1.28	-1.05	-.22	5.58	-.00	-.58	-.92	-.19	-1.22
Range		18	27.0	7.3	.87	2.69	3.53	6.57	6.00	27	4
Minimum		174	59.0	17.9	1.80	7.51	15.14	7.07	9.00	13	1
Maximum		192	86.0	25.2	2.67	10.20	18.67	13.64	15.00	40	5
Percentiles	20th	179.0	62.6	18.6	1.95	8.10	16.09	7.58	10.00		
	40th	184.0	68.7	20.7	2.10	8.29	16.84	8.36	11.00	Norm values	
	50th*	185.0	74.3	21.6	2.17	8.30	16.94	8.50	12.00		
	60th	186.2	76.1	21.9	2.26	8.31	17.09	9.27	12.00		
	80th	189.8	83.1	23.9	2.39	8.64	17.89	11.50	13.80		

Middle fifty*, L: Length (cm), W: Weight (kg), BMI: Body mass index (kg/m²), 10mR:10 meters run (secs), IA: Ilions agility test (secs), SS: Side steeps (secs), PLT: Plate tapping (secs), NHR: Nelson hand reaction (secs), CG: Conceded goals (per season), SScore: Success score (evaluated by coach 1-5)

Table 1 as it can be seen beside the descriptive statistics which has shown the normal distribution of the included tests, also was determined the norm values of the anthropometric and anthropometric features of Kosovo's First Football League goalkeepers.

Table 2. Differences in the Motor Abilities of the Goalkeepers Categorized by Anthropometric Features

	Length groups	N	X±SD	p	Weight groups	N	X±SD	p	BMI groups	N	X±SD	p
10mR	174.0 – 184.9cm	7	2.33±.18	0.01*	59.0-72.7kg	7	2.20±.23	0.73	17.9-21.3(kg/m2)	6	2.21±.25	.71
	185.0 – 192.0cm	8	2.04±.18		72.8-86.0kg	8	2.16±.25		21.4-25.2(kg/m2)	9	2.16±.23	
SS	174.0 – 184.9cm	7	8.53±.81	0.37	59.0-72.7kg	7	8.62±.80	0.14	17.9-21.3(kg/m2)	6	8.66±.88	.14
	185.0 – 192.0cm	8	8.23±.38		72.8-86.0kg	8	8.15±.27		21.4-25.2(kg/m2)	9	8.18±.27	
IA	174.0 – 184.9cm	7	17.30±.73	0.22	59.0-72.7kg	7	17.10±.85	0.67	17.9-21.3(kg/m2)	6	17.13±.93	.64
	185.0 – 192.0cm	8	16.70±1.03		72.8-86.0kg	8	16.88±1.03		21.4-25.2(kg/m2)	9	16.89±.96	
PLT	174.0 – 184.9cm	7	11.20±1.89	0.00*	59.0-72.7kg	7	9.81±2.25	0.56	17.9-21.3(kg/m2)	6	9.57±2.37	.86
	185.0 – 192.0cm	8	7.92±.62		72.8-86.0kg	8	9.14±2.13		21.4-25.2(kg/m2)	9	9.37±2.12	
NHR	174.0 – 184.9cm	7	12.85±1.77	0.03*	59.0-72.7kg	7	12.14±1.57	0.47	17.9-21.3(kg/m2)	6	12.00±1.67	.68
	185.0 – 192.0cm	8	10.75±1.66		72.8-86.0kg	8	11.37±2.32		21.4-25.2(kg/m2)	9	11.55±2.24	
CG	174.0 – 184.9cm	7	28.2±8.4	0.00*	59.0-72.7kg	7	23.4±6.8	0.61	17.9-21.3(kg/m2)	6	23.1±7.4	.73
	185.0 – 192.0cm	8	16.8±3.1		72.8-86.0kg	8	21.1±9.8		21.4-25.2(kg/m2)	9	21.5±9.3	
SScore	174.0 – 184.9cm	7	2.1±1.3	0.03*	59.0-72.7kg	7	2.4±09	0.19	17.9-21.3(kg/m2)	6	2.5±1.0	.34
	185.0 – 192.0cm	8	3.6±1.0		72.8-86.0kg	8	3.3±1.5		21.4-25.2(kg/m2)	9	3.2±1.5	

Significant differences: p<0.00*, 10mR:10 meters run (secs), IA: Ilions agility test (secs), SS: Side steeps (secs), PLT: Plate tapping (secs), NHR: Nelson hand reaction (secs), CG: Conceded goals (per season), SScore: Success score (evaluated by coach 1-5)

Analyses showed in table 2 determined that the goalkeepers who have higher body length were more successful in motor abilities (10mR, PLT, NHR) and play performance (CG, SScore) $p<0.00$. Analyses have shown that it was not any significant difference in the motor abilities or in the goalkeeper's success performance according to the anthropometric features such as a bodyweight and body mass index $p>0.00$.

Table 3. Relationships Between the Goalkeeper's Success Scores, Conceded Goals and Motor Abilities

Variables		L	W	BMI	10mR	IA	SS	PLT	NHR	CG
W	R	.499								
	P	.058								
BMI	R	.046	.886**							
	P	.871	.000							
10mR	R	-.704**	-.349	-.059						
	P	.003	.203	.835						
IA	R	-.522*	-.210	.019	.542*					
	P	.046	.452	.945	.037					
SS	R	-.481	-.511	-.338	.442	.234				
	P	.070	.052	.219	.099	.401				
PLT	R	-.841**	-.287	.125	.557*	.229	.492			
	P	.000	.300	.658	.031	.413	.062			
NHR	R	-.597*	-.210	.094	.213	.035	.109	.605*		
	P	.019	.453	.739	.445	.901	.698	.017		
CG	R	-.788**	-.323	.048	.493	.297	.341	.843**	.704**	
	P	.000	.240	.865	.062	.282	.213	.000	.003	
AScore	R	.740**	.491	.173	-.460	-.366	-.389	-.663**	-.683**	-.914**
	P	.002	.063	.538	.084	.180	.152	.007	.005	.000

** Correlation is significant at the 0.01 level, *. Correlation is significant at the 0.05 level,

L: Length (cm), W: Weight (kg), BMI: Body mass index (kg/m²), 10mR:10 meters run (secs), IA: Ilions agility test (secs), SS: Side steeps (secs), PLT: Plate tapping (secs), NHR: Nelson hand reaction (secs), CG: Conceded goals (per season), SScore: Success score (evaluated by coach 1-5)

Table 3 has shown that it was a significant correlation between goalkeeper's success performance and L, PLT, NHR $p<0.05$.

DISCUSSION

Results of the study have shown that the goalkeepers who have higher body length were more successful in the motor abilities such as 10 meters run, plate tapping and Nelson hand reaction tests. It can be connected to body extremities, longer legs and arms helped goalkeepers to achieve higher performance in an acceleration and movement speed of the upper extremities.

Goalkeepers have to compete with other players for the ball in the air, so goalkeepers with more length and weight have an advantage. This fact makes it easier to cover the entire goal area (Arneson et al., 2004).

In another way, body weight and body mass index have not shown any significant effect on the motor abilities or in the goalkeeper's successful performance. As it was shown in the correlation analyses, the goalkeeper's performance depends on power-related (explosive force) factors such as acceleration, speed and reaction time.

Regarding running performance and match outcome, the author finds that the goalkeepers of the teams that lost covered significantly greater distances in sprinting compared to the goalkeepers of the teams which won or drew, could be explained by the fact that they may push forward when losing, thus reaching their maximal physical capacity in the hope of potentially drawing or winning the game (Castellano et al., 2011).

As mentioned above, the correlation analyses have shown that the goalkeeper's performance (conceded goals per session and success score given by coach) affected by the motor abilities which are related to the explosive actions as a reaction time or acceleration.

Results showed that there were differences in most of the match performance indicators for goalkeepers. Goalkeepers of high level teams achieved less ball touches (BT) , Passes, Passes to forward half (PtFH), Interceptions, Clearances, yellow card (YC), Ball Recoverise (BR), Saves, Catches and lost balls(LB), but higher pass accuracy (PA) and accuracy of passes forward half (AoPtFH). This is possibly due to the fact that high level teams were subjected to less attacking play from the opponents, whereas the opposite happened to goalkeepers of low level teams. Similar findings were found by Szwarc et al., (2010). Meanwhile, Seaton and Campos, (2011) suggested that there were differences between goalkeepers from different levels in terms of ball distribution and success of performance indicators. The first team goalkeepers showed better performance on successful rolled and thrown distributions, while the third team's goalkeeper was the most successful at kicked distributions.

As another result, in the study were determined norm values for each anthropometric and motor abilities included in the study for the Kosovo's First Football League goalkeepers. In comparison to another country and leagues goalkeepers norm values of the anthropometric and motor abilities, Kosovo's First Football League goalkeepers have shown lower performance in abilities such a Running Speed when the average score was 2.10 and the result standard deviation was 0.23, compared to Guru Nanak Dev University, Amritsar football goalkeepers whose average score was 4.31 and the standard deviation score was 0.27 (Singh et al., 2017).

CONCLUSION

It can be concluded that the goalkeepers who have higher body length were more successful in the acceleration (10 meters run), action speed of the upper extremities (plate

tapping, and Nelson hand reaction) tests. Bodyweight and body mass index has not shown any significant effect on the motor abilities or in the goalkeeper's successful performance. As it was shown in the correlation analyses, the goalkeeper's performance depends on the power-related (explosive force) factors such as acceleration, speed, and reaction time.

The study results have shown that conceded goals per session and success score given by coach affected by the motor abilities which are related to the explosive actions as reaction time or acceleration. Based on the above conclusions we suggest that the goalkeeper's training program should be focused more on motor abilities such as reaction time, acceleration, explosive movements, etc.

Besides these findings in the study also, were determined norm values for each anthropometric and motor abilities included in the study for Kosovo's First Football League goalkeepers. Norm values of the goalkeeper's motor abilities can be used to prepare a more appropriate personal training program for goal keeper's, comparing values with another country or another league's goalkeepers and shaping training program according to the country or leagues which has shown better results than Kosovo's First Football League goalkeepers. In light of the above information, we can suggest norming all motor abilities related to the goalkeeper's performance according to age and league when they belong.

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ORIGINAL RESEARCH

Investigation of the Effect of Anthropometric Measurements of 11-12 Years Old Female Swimmers on Flexibility Parameter

 Serdar ŞAHİN [1]
 Abuzer TAŞ [2]

[1] Institute of Healty Sciences, İnönü University, Malatya, Turkey.

[2] Faculty of Veterinary Medicine, Kyrgyzstan Turkey Manas University, Kyrgyzstan.

Corresponding author: A. Taş

e-mail: abuzer.tas@manas.edu.kg

Abstract

This study was conducted to investigate the effect of anthropometric measurements on flexibility parameter of 11-12 years old female swimmers. 36 female swimmers aged 11-12 who trained in the Van Indoor Olympic Swimming Pool voluntarily participated in the study. The participants had an average age of 11.44 years, average height of 153.0 cm and average body weight of 44.04 kg. Diameter, perimeter, length and subcutaneous fat fold values were recorded with the anthropometric set. For the flexibility measurement, sit-reach test was taken and for the other flexibility measurements; shoulder flexibility test, dorsal and planter flexion, V-sitting test and hamstring flexibility test were used. The data collected were analyzed using the SPSS 21.0 statistical package program. Pearson correlation test and descriptive statistics were used in the analysis of the data and their significance levels were examined ($p<0.05$). A statistically significant difference was found between some of the anthropometric measurements and the sit-reach test of the female swimmers ($p<0.01$). A statistically significant difference was found between the anthropometric measurements and other flexibility tests of the female swimmers ($p<0.01$). A statistically significant difference was found between upper body length the left wrist planter flexion ($p<0.05$). A statistically significant difference was found between height-overarm difference and shoulder diameter and foot length ($p<0.05$). In conclusion, the effect of anthropometric measurements on flexibility parameter of 11-12 year old female swimmers was found to be significant in our study. Female swimmers aged 11-12 who receive regular swimming training can be said to have improved flexibility levels and increased sporting performance.

Keyword: swimming, anthropometry, flexibility, women.

INTRODUCTION

Sports are preferred in the development of physical and mental health, in the use of leisure time, in meeting the need to move, for entertainment and games. Sports significantly contributes to the physical and mental development of children, especially in the developmental age. It is known that growth and development change with physical activities as well as factors such as hereditary characteristics, nutrition and environment. Although the concept of sports has a period as old as human history, it has become an increasingly important place in society as time passes. In ancient times, people used their skills in swimming and diving to get rid of wild animals and their enemies and avoid water accidents. It is known that in ancient times, people swam across the river instead of building a bridge. (Şen, 2001; Aracı, 1999; İnal, 2003; Heper, 2012; Soydan, 2006; Bozdoğan, 1986).

Swimming is one of the sports performed in water providing physical development in the most perfect way. Due to the fact that this sport is carried out against the water resistance, swimming improves body resistance without any wear-out effects. In addition, swimming, one of the rare sports used in Physical Therapy, provides symmetrical and balanced development of body muscles (Bozdogan, 2006). Swimming requires a combination of physical strength and technical skill (Bozdogan, 1986; Bozdogan and Özüak, 2003).

When the sport branches are examined individually, it is observed that athletes engaging in these branches have different physical properties such as different body weights, height and body fat index. Various evaluation methods are used to evaluate the athletes' inclination to the branch they engage in, the risk of injury and training, or to understand the changes happening on the body. These can also be classified as anthropometric and physiological measurements (Bayraktar and Kurtoglu, 2009). Measurement taken from designated points of the body to evaluate the structure and composition of the body, such as diameter, perimeter, length and subcutaneous fat fold values are called anthropometry (Ergen et al., 2002).

In swimming, both the intensity of the training and the fact that the exercises are done against a certain resistance in the water are an important reason for the increase of flexibility. It is known that this has a positive effect on athlete development. The most important feature of a healthy athlete is good static and dynamic flexibility (Odabaş, 2003).

It is known that the wide angle of movement of the ankle, shoulders and waist in swimming give the athlete an important advantage. Swimmers are therefore known to be extremely flexible (Odabaş, 2003). Flexibility is one of 5 basic motoric features. Furthermore, flexibility is explained as the movements made at the widest angle and at ease (Dündar, 2012). When evaluated in terms of body structure and athletic fitness, flexibility is a crucial performance criteria and it is known to be connected with anthropometric characteristics (Özer, 1993). Within the individual sports, swimming gets more interest by people day by day with the help of the Olympic Games. Children who start swimming at an early age are more likely to succeed. More and more families understand the importance of swimming and encourage their children to take part in this sport. The aim of this study is to determine whether anthropometric characteristics of 11-12 year old female swimmers are related to the effect of flexibility parameter.

MATERIALS and METHODS

The System of Research

The group of the study consists of 11-12 age group swimmers and the sample consists of 36 female swimmers aged 11-12 who trained in the Van Olympic Swimming Pool.

36 female athletes who participated in the study voluntarily underwent sit-reach tests, shoulder mobility tests, v-sit tests, and hamstring flexibility measurements with goniometer, dorsi flexion-planter flexion tests. In addition, anthropometric measurements of length, diameter, perimeter and subcutaneous fat folds were taken with the Holtain brand anthropometric set. The Anthropometric Assessment Form created to record the information of the students involved in the research is given to the participants. As well as the personal information of the students, this Anthropometric Evaluation Form consists of individual charts to determine the somatotype structures of the students, such as height, weight, perimeter, length and subcutaneous fat fold and flexibility test results.

Taking Anthropometric Measurements

Anthropometric measurement tools: Seca brand inflexible tape measure, Tanita brand electronic scale, Holtain brand skinfold caliper and anthropometric measurement set were used for anthropometric measurements. Anthropometric evaluation of the swimmers participating in the study was repeated twice at the beginning and end of the study. The swimmers have been measured in swimsuits. Measurements were conducted by the same person each time, every measurement was conducted twice and the average score was recorded as the study data.

Flexibility Tests Used

The subjects were asked to do warm-up movements before taking flexibility tests, and then they were given comfortable clothing that would not restrict flexibility. Flexibility data taken from subjects in appropriate positions in areas where flexibility tests were conducted were carefully measured and recorded.

Statistical Analysis

In the analysis of the data obtained from the study, SPSS 20 package software was used for descriptive statistics such as arithmetic mean (x), minimum and maximum values of standard deviation (Sd), and Pearson Correlation parameter was used to evaluate the relations between Flexibility, Planter Flexion, Dorsiflexion, Shoulder Mobility Test, Goniometric Test Procedures With Hamstring Criteria and right and left foot Anthropometric variables.

FINDINGS

Table 1. Table of Correlation between Some Anthropometric Measurements and Sit-Reach Test of Female Swimmers Participating in the Study

		Height	Body Weight	Biceps Flexion Perimeter	Thigh Perimeter	Calf Perimeter	Upper Body Length	Height-Overarm Difference
Height	r.							
	Sig.							
Body Weight	r.	.717**						
	Sig.	0.000						
Biceps Flexion Perimeter	r.	.516**	.865**					
	Sig.	0.001	0.000					
Thigh Perimeter	r.	.544**	.692**	.804**				
	Sig.	0.001	0.000	0.000				
Calf Perimeter	r.	.647**	.823**	.858**	.880**			
	Sig.	0.000	0.000	0.000	0.000			
Upper Body Length	r.	.331*	.273	.190	.148	.180		
	Sig.	0.049	0.107	0.267	0.391	0.293		
Height-Overarm Difference	r.	.349*	.225	.139	.251	.287	.210	
	Sig.	0.037	0.188	0.418	0.140	0.090	0.219	
Sit-Reach Test	r.	-.724**	-.498**	-.377*	-.423*	-.472**	-.223	-.150
	Sig.	0.000	0.002	0.023	0.010	0.004	0.192	0.383

A statistically significant difference was found between some of the anthropometric measurements and the sit-reach test of the female swimmers ($p<0.01$). However, there was no significant difference between the upper body length and height difference and the sit-reach test ($p>0.05$).

Table 2. Correlation Chart between Anthropometric Measurements of Female Swimmers and Other Flexibility Tests

		Height	Body Weight	Thigh perimeter	Calf perimeter	Upper Body Length	Height-Overarm Difference	Pelvis diameter	Shoulder diameter	Foot length
Height	r.									
	Sig.									
Body Weight	r.	.717**								
	Sig.	.000								
Thigh Perimeter	r.	.544**	.692**							
	Sig.	.001	.000							
Calf Perimeter	r.	.647**	.823**	.880**						
	Sig.	.000	.000	.000						
Upper Body Length	r.	.331*	.273	.148	.180					
	Sig.	.049	.107	.391	.293					
Height-Overarm Difference	r.	.349*	.225	.251	.287	.210				
	Sig.	.037	.188	.140	.090	.219				
Pelvis diameter	r.	.717**	.632**	.548**	.616**	.307	.272			
	Sig.	.000	.000	.001	.000	.069	.109			
Shoulder diameter	r.	.792**	.700**	.467**	.572**	.306	.398*	.762**		
	Sig.	.000	.000	.004	.000	.070	.016	.000		
Foot length	r.	.690**	.491**	.512**	.623**	.117	.492**	.522**	.519**	
	Sig.	.000	.002	.001	.001	.496	.002	.001	.001	
Dorsi flexion Right wrist	r.	-.645**	-.518**	-.371*	-.468**	-.188	-.263	-.511**	-.527**	-.554**
	Sig.	.000	.001	.026	.004	.271	.121	.001	.001	.000
Dorsi flexion Left wrist	r.	.667**	-.556**	-.394*	-.476**	-.215	-.255	-.528**	.578**	-.539**
	Sig.	.000	.000	.017	.003	.208	.133	.001	.000	.001
Planter Flexion Right wrist	r.	-.586**	-.571**	-.449**	-.481**	-.304	-.104	-.392*	-.425**	-.433**
	Sig.	.000	.000	.006	.003	.071	.547	.018	.010	.008
Planter left wrist flexion	r.	-.615**	-.546**	-.430**	-.454**	-.367*	-.093	-.417*	-.476**	-.456**
	Sig.	.000	.001	.009	.005	.028	.589	.011	.003	.005
Shoulder mobility test	r.	.053	-.162	-.207	-.042	-.061	-.055	.060	-.039	.163
	Sig.	.761	.346	.225	.809	.724	.750	.730	.821	.343
Measurement of hamstring flexibility with goniometer right foot	r.	-.760**	-.552**	-.428**	-.483**	-.271	-.203	-.489**	-.597**	-.556**
	Sig.	.000	.000	.009	.003	.110	.235	.002	.000	.000
Measurement of hamstring flexibility with goniometer left foot	r.	-.687**	-.545**	-.397*	-.417*	-.314	-.115	-.381*	-.491**	-.381*
	Sig.	.000	.001	.017	.011	.062	.504	.022	.002	.022

Table 2. Correlation Chart between Anthropometric Measurements of Female Swimmers and Other Flexibility Tests

		Dorsi flexion Right wrist	Dorsi flexion Left wrist	Planter Flexion Right wrist	Planter left wrist flexion	Shoulder mobility test	Measurement of hamstring flexibility with goniometer right foot
Dorsi flexion Right wrist	r.						
	Sig.						
Dorsi flexion Left wrist	r.	.973**					
	Sig.	.000					
Planter Flexion Right wrist	r.	.727**	.751**				
	Sig.	.000	.000				
Planter left wrist flexion	r.	.738**	.761**	.976**			
	Sig.	.000	.000	.000			
Shoulder mobility test	r.	-.178	-.076	-.082	-.130		
	Sig.	.300	.661	.635	.452		
Measurement of hamstring flexibility with goniometer right foot	r.	.838**	.863**	.820**	.828**	.003	
	Sig.	.000	.000	.000	.000	.984	
Measurement of hamstring flexibility with goniometer left foot	r.	.676**	.701**	.752**	.749**	.193	.920**
	Sig.	.000	.000	.000	.000	.189	.000

Anthropometric measurements of female swimmers and other flexibility tests were found to be statistically significant (p<0.01). Although there was a significant difference between upper body length and left wrist planter flexion (p<0.05), there was no significant relationship between the other variables (p>0.05). Although there was a significant difference between height-overarm difference and shoulder diameter and foot length (p<0.05), there was no significant relationship between the other variables (p>0.05).

However, there was no significant difference between body weight and upper body and height difference; thigh perimeter and upper body length difference; calf perimeter and upper body length (p<0.05). There was no significant difference between shoulder mobility test and anthropometric measurements and other flexibility tests (p>0.05)

DISCUSSION and CONCLUSION

In this study where the effect of anthropometric measurements on the flexibility of 36 female swimmers aged 11-12, the average biceps perimeter was found, (23.3±2.5cm), average biceps flexion perimeter was (24.7±2.4cm), forearm perimeter average was (21.3±2.3cm), upper leg perimeter average was (47.8±4.7cm), thigh perimeter average was (41.5±6.7cm) and calf perimeter average was found (30,3±2,9cm). In their studies of swimmers aged 11-12 (n=80), Ostrowska et al. (2005) states the measurements of biceps perimeter measurements 23.15±2.34 cm and calf perimeter measurements 29.75±2.10 cm of female swimmers aged 11; the measurements of biceps perimeter measurements 24.28±2.72 cm and calf perimeter measurements 31.48±3.05 cm of female swimmers aged 12. Şenel et al. (2017), in the other hand, states the measurement of thigh perimeter 43.84±3.18, calf perimeter 31.94±2.6 and arm perimeter 23.98±2.73 of female swimmers aged 11-12. The fact that the studies have values close to the perimeter measurement averages can be attributed to the fact that the athletes are in a developmental age.

Various diameter averages of 36 female swimmers aged 11-12 are as below: shoulder diameter average (34.10±1.79), pelvis diameter average (23.38±1.89), elbow diameter average (4.94±0.49), wrist diameter average (4.43±0.40), knee diameter average (8.03±.40), and ankle diameter average (5.87±.48). In the study concluded by Ayan (2006) various measurement

results are as such: elbow diameter measurement for female students: 4.97±0.56 cm, elbow diameter measurement for male students: 5.17±0.57 cm. Among other diameter measurements, knee diameter measurements were 7.54±0.67 cm for female students and 7.93±0.69 cm for male students. Our study showed similar results when the diameter measurements were examined, suggesting that children in the pre-puberty period may differ by external factors such as nutrition levels, training and climate.

Other measurements of 36 female swimmers aged 11-12 are as below: the height averages: (153.0±.08), foot length averages: (23.5±1.2), upper body length averages: (78.9±9.9), two arm length averages: (156.1±8.9), height difference averages: (4.0±2.5). As a result of a study of 12-week swimming training, the average measurement results of the experimental group of Mühürhancı (2011) are as follows: overarm length: 155.46±6.49, height-overarm difference: 0.86±4.12, effigy length: 81.35±3.78, leg length: 73.25±5.04, foot length: 23.5±1.09. Control group averages: overarm length: 151.35±10.55, height-overarm difference: 0.65±3.2, effigy length: 76.06±4.83, leg length: 74.6±9.15, foot length: 23.11±1.13 (in cm). Since the athletes are competitors and train for at least 3-4 days per week, the results differ in our study; however, the fact that there was no obvious difference in the height measurements, it can be said that the athletes show similar development before puberty.

In our study, it was found out that the swimming performances of 36 female swimmers aged 11-12 were in good shape, due to their training being at least for 2 years and training for 3 or 4 times a week on average. Good results were obtained when looking at the relationship between anthropometric measurements and flexibility. From studies supporting the effect of swimming on anthropometric measurements, Özlü (2012), found a significant relationship between the anthropometric measurements of 50 mt freestyle technical swimming time and body weight, biceps, triceps, chest, abdominal, lower and upper legs, body fat percentage, flexion biceps, humerus bicondylar diameter, endomorph and mesomorph ($p<0.05$; $p<0.01$). However, there was no statistically significant relationship between the other anthropometric measurements ($p>0.05$).

In his study, Alemdağ (2009) took anthropometric measurements from children attending the swimming course aged 8-15 every 10 weeks, and found a statistically significant result when the relationship between the control group was examined. In the study conducted on anthropometric measurements of swimmers aged 8-16, Helmuth (1980) found a positive correlation between 100 m freestyle span and shoulder width, chest perimeter, hand and foot size and lean weight. From studies finding opposing results to our study, Çelebi (2008) found that regular swimming practices did not contribute to the physical development of boys and girls between the ages of 9 and 13 years as a result of the 12-week study examining the impact of regular swimming training. Şenel et al. (2017) found no significant association between the places in the competitions of 100 mt freestyle techniques of female swimmers aged 11-12 and the height measurements.

In their studies examining the relationship between freestyle swimming training characteristics and anthropometric characteristics are analyzed, Pelayo et al. (1996) found that the speed and the number of swims were connected to the gender and height of the swimmer, and therefore no significant difference was observed between the anthropometric characteristics.

In our study, it was determined that shoulder width has an effect on shoulder flexibility and that foot length is also important in ankle flexibility. It is concluded that

shoulder flexibility and ankle flexibility have little impact on performance values of other flexibility parameters due to variables such as training conditions, age ranges and gender.

A statistically significant difference was found between some of the anthropometric measurements and the sit-reach test of the female swimmers (p<0.01). Sit-reach test, the most commonly used parameter for flexibility measurements, height, v. weight, biceps flexion perimeter, thigh perimeter, calf perimeter, upper body length and height-overarm correlation were examined and as a result, a negative correlation was found. In addition, there was no significant difference between the upper body length and height difference and the sit-reach test (p>0.05).

Simoneau (1998) examined the effect of various anthropometric and flexibility measurements on sit-reach testing, and found that the level of association between sit-reach and move sequence performance was r=0.78 (p<0.01). All other flexibility tests and anthropometry variables (leg and arm length) were not well correlated with sit-reach test performance. In our study where the sit-reach test and anthropometric measurement levels were in a significant level, the relationship between the length measurements and flexibility tests also bear similarities.

Anthropometric measurements of female swimmers and other flexibility tests were found to be statistically significant (p<0.01). Although there was a significant difference between upper body length and left wrist planter flexion (p<0.05), there was no significant relationship between the other variables (p>0.05). Although there was a significant difference between height-overarm difference and shoulder diameter and foot length (p<0.05), there was no significant relationship between the other variables (p>0.05).

However, there was no significant difference between body weight and upper body length and height difference; thigh perimeter and upper body length difference; calf perimeter and upper body length (p<0.05). There was no significant difference between shoulder mobility test and anthropometric measurements and other flexibility tests (p>0.05).

In their studies examining the acute effects of static scratching exercises over the short-distance lie-flat stamp of the swimmers aged 11-12 (2012), Agopyan et al. found no significant difference between lie-flat stamp swimming distance duration scratching provisions (p>0.05).

Türkeri (2013) found no significant difference between flexibility measurements and perimeter width and length measures. The perimeter, length and width measurements were found to have a moderate to high level relationship between them.

Swimming is a sport that affects the whole body and is performed in horizontal position. It is also held at the Olympic level. In our study, female swimmers of 11-12 years of age were monitored as performance due to at least 2 years of swimming training and swimming at least 3-4 days per week. Anthropometric measurements of the swimmers in our study showed good results compared to their age groups. A statistically significant difference was found between anthropometric measurements and the sit-reach test and other flexibility parameters tests. However, there was no significant difference between body weight and upper body and height difference; thigh perimeter and upper body length difference; calf perimeter and upper body length. There was no significant difference between the shoulder mobility test and anthropometric measurements and other flexibility tests. Although there are studies that examine the anthropometric properties and flexibility levels of swimmers at the end of our study, studies that examine the effects of

anthropometric properties of swimmers on flexibility are limited enough to be said to be absent.

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The Metaphoric Perceptions of 9-12 Years Old Gymnastics Athletes Towards the Concept 'Coach'

Abstract

The aim of the study is to determine the perceptions of hobby group gymnastics athletes related to the concept of coach with the help of metaphors. The sample of the study consists of 90 hobby group gymnastics athletes. A "metaphor form" was prepared to determine the participants' perceptions about the concept of coach to collect data in the study. In the metaphor form, they were asked to complete some sentences such as "My trainer" is like ......; Because… ". The phenomenological design, one of the qualitative research approaches, was used in the study. Content analysis technique was used in the analysis of the study. For the reliability of the analysis of the research data, the reliability coefficient between the participants was calculated, and this value was found as 88%. As a result, it was seen that gymnastics athletes produced 43 metaphors in total. These metaphors were collected in 7 different categories. While it was determined that the participants mostly developed metaphors in the categories of "being a representative of love" and "being useful" related to the concept of coach, these categories were followed by "being a representative of good", "being a hero", "being a family", "being fun" and "being enlightened". The metaphors most produced by the participants were listed as teacher, angel, mother, fun and flower. Live, lifeless, abstract and concrete metaphors were used for the concept of coach.

Keyword: gymnastics, coach, metaphor, athletes, perception.

Büşra ERUL [1]
Mehmet GUNAY [2]

[1] Graduate school of educational sciences, Gazi University, Ankara, Turkey.

[2] Sports Science Faculty, Gazi University, Ankara, Turkey.

Corresponding author: B. Erul

e-mail: bsra.erul@gmail.com

INTRODUCTION

With the words "Today's children are the tomorrow's grown-ups", Mustafa Kemal Atatürk emphasized how important it is to have a quality education that we will give to our children, who are our future. The value of education at all levels of education is undoubtedly great. But the education given to children at an early age is more critical, because it is the period when the main schemes in the child's world of knowledge are formed. Stein K. explained the scheme as "a fundamental mental structure, a framework in which new incoming information will be placed." For this reason, their first experiences in sports life will constitute concepts such as coach, gymnastics and sports. These resulting schemes will affect the perception of sports throughout his/her life.

Education given in childhood (2-10 years) is of greater importance for children. ''The first six years of our child's life, that is, until they start school, are the years when their personality is shaped. At the age of seven, his/her personality is considered to be shaped by the main structure. This is the basic personality that the child will maintain throughout his/her life "(Saygili, 2012). Gymnastics is one of the branches that are most included in this age range in sports. "Gymnastics is the set of systematic movements based on the agility, flexibility and control of the body, performed as a demonstration with and without tools" (Mengütay, 1987). At the same time, it is an important branch because it gives the ability to notice and discipline the body, which are some of its numerous benefits, and can appeal to all of the basic motor features.

When it comes to sports, one of the people who play the most active role in children is their trainers. One of the first trainers children encounter will be gymnastics trainers. A trainer is a leader who has the ability to transfer his/her energy, strength, dynamism, knowledge and social capacity to his/her athletes in the most effective and permanent way (Bensiz, 2016). Coach-athlete communication in sports environments is important for the development of the psychological and physical characteristics of athletes. In the athlete-trainer relationship, communication enables the trainer and the athlete to develop common knowledge and understanding of common goals and beliefs (Jackson, Dimmock, & Compton, 2018). The behaviors and attitudes of the trainer towards his/her athlete will shape the concept of the trainer in the child. The positive or negative aspects of this concept will be reflected in the child's perception of sports.

It is very important for our children to be in safe environments physically, mentally and spiritually in the sports environment as in every field. With a single careless word from the trainer, many children are able to quit sports at a very early age and avoid the numerous benefits of the sport throughout their lives. On the contrary, an instructor who approaches and trains children patiently and with the right language can bring many children who do not want to do sports into sports and change their lives positively. Trainer-athlete communication in sports environments is important for the development of the psychological and physical characteristics of athletes (Jowett, 2003). Therefore, the behavior of the trainer is very important and one of the first factors to be considered in the sports education of the child.

One of the most effective methods for children to express their perceptions about the concept of trainer is the metaphor method. Metaphor is the use of a concept, word, term by analogy in order to explain a phenomenon better and more effectively, by establishing an association with a word in another meaning (Aydin, 2004). According to Çalışkan (2009),

metaphor, on the other hand, is a mechanism that brings alternative interpretations in comprehending knowledge beyond being a word figure, and sometimes produces a unique reality and knowledge.

When the metaphor studies related to gymnastics were examined, it was observed that there were few studies on gymnastics trainers, while it was found that more metaphor studies were carried out on the concepts of sports, physical education teachers and sports branches in different branches (Ayyıldız, 2016; Karakaya and Salici, 2016; Namlı et al., 2016; Güler, 2017; Hazar et al., 2017; Sevinç and Ergenç, 2017; Karaşahinoğlu and İlhan, 2019; Kurtipek, 2019; Öztürk and Soytürk, 2019; Yeniçeri, 2019; Yetim and Kalfa, 2019; Çelik, 2020). This research focuses on the concept of gymnastics trainer.

The aim of this study is to reveal the perceptions of athletes, who do gymnastics for hobby purposes, towards their trainer through metaphors and to contribute to the literature.

METHOD

Qualitative research method was used in this study which aims to reveal the perceptions of gymnastics hobby group athletes towards their trainer through metaphors. Qualitative research can be defined as studies where a process is followed to reveal perceptions and events in the natural environment in a realistic and holistic manner, and which provide more in-depth information about psychological measurements and social events and are carried out to find answers to questions that are difficult to express with traditional research methods (Yildirim and Simsek, 2014). Phenomenology design was preferred in the study. According to Moustakas (1994), the main purpose of phenomenology is to reduce individual experiences of a phenomenon to a universal explanation.

Research Group

Criterion sampling, one of the purposeful sampling methods, was preferred in the selection of the study group. The basic understanding in the criterion sampling method is to study all situations that meet a predetermined set of criteria (Yıldırım & Şimşek, 2011). The research group consists of 90 hobby group athletes in sports clubs in Ankara, who are between the ages of 9-12 and regularly doing gymnastics for at least 1 year.

Data Collection Tool and Data Collection

The data in the study were collected using a semi-structured interview form, which is frequently used in metaphor research (Döş, 2010; Inbar, 1996; Saban, 2009). At this point, the athletes of the sports club were asked to state a metaphor that explains their trainer and explain it. Participants were asked to complete the statement "my trainer is like ......, because ......" and, as a result, to explain the metaphors that the participants would state. Data were collected without any time limit. While the participants were writing the metaphors, no guidance was made to the child and the data was filled in an independent field in order for them not to be affected by the trainer or anyone.

Data Analysis

In the analysis of the data, the data were analyzed by content analysis method. Content analysis is the categorization of data (Patton, 2014). Content analysis in the study was carried out in 8 stages: (1) examination of forms and elimination of inappropriate forms, (2) re-compilation of forms, (3) numbering of forms (4) examination of metaphors, (5) development

of categories, (6) ensuring validity and reliability (7) calculation of frequencies and (8) interpretation (Saban, 2008; Ekici, Gökmen and Kurt, 2014; Ekici, 2016).

The first stage is the examination of forms and elimination of inappropriate forms: 102 forms in total were obtained here, and those that did not contain explanations or did not indicate metaphors were eliminated. In the second step, the forms were recompiled and those that did not have a connection between the explanation and the metaphor were removed. In the third stage, the forms were numbered as "P1/P2" in order to determine the number of participants and to make the forms reference. In the fourth stage, the metaphors were examined and categories were created according to the explanation statements. In the fifth stage, the categories created were reviewed and new categories were developed with so many other expressions in the same category.

In the sixth stage, two researchers, apart from the researcher conducting the research, examined the forms and categorized them in order to ensure the validity and reliability of the categories created in the study. These were compared and their reliability and validity were established. Reliability = Consensus / (Consensus + Dissensus) formula developed by Miles and Huberman in 1994 was used to determine the reliability of data analysis. The reliability coefficient of the research data among the participants was calculated and this value was found to be 88%. According to Miles and Huberman (1994), a reliability coefficient of 70% and above indicates that the research is reliable.

FINDINGS

This section presents the metaphors, categories and explanation examples of hobby group gymnastic athletes about the concept of trainer.

Table 1. Metaphors Developed by Gymnastics Athletes for their Trainer

Metaphor order	Metaphor name	f	Metaphor order	Metaphor name	f
1)	Teacher	11	23)	Meat	1
2)	Angel	9	24)	Ladybug	1
3)	Mother	7	25)	Super hero	1
4)	Fun	6	26)	World Champion	1
5)	Flower	5	27)	Champion	1
6)	Athlete	5	28)	Instructor	1
7)	Good	4	29)	Educator	1
8)	Candy	3	30)	A sweet bird	1
9)	Butterfly	2	31)	Good hearted	1
10)	Rose	2	32)	Sweat	1
11)	Supermen	2	33)	My Heart	1
12)	Funny	2	34)	Brother	1
13)	Horizon	2	35)	Father	1
14)	My Favorite	1	36)	Friend	1
15)	Cotton	1	37)	Happiness	1
16)	Heart	1	38)	Power	1
17)	Dove	1	39)	Doctor	1
18)	Beautiful	1	40)	Flexibility	1
19)	Sweet	1	41)	Lantern	1
20)	Gymnastics	1	42)	Helper	1
21)	Supporter	1	43)	Source of Energy	1
22)	Vitamin	1		**Total Views**	**90**

When Table 1 is examined, it is seen that hobby group gymnastics athletes have produced a total of 43 metaphors for the concept of "Trainer" and stated 90 views for it. It was determined that the metaphors *Teacher (11), Angel (9), Mother (7), Fun (6) and Flower (5)* were the most frequently repeated metaphors. Hobby group gymnastics athletes often drew analogies to abstract expressions (*angel, fun, love, happiness, power, beautiful, supporter, etc.)* to explain the concept of trainer. It was determined that the majority of the metaphors according to the frequencies are metaphors that the trainer is a good-hearted helper.

When the metaphors developed by the hobby group gymnastic athletes about the concept of trainer are evaluated together with their explanations, the classification into seven categories is shown in Table 2.

Table 2. Distribution of Metaphors Developed by Gymnastics Athletes by Categories

Categories	Number of metaphors (f)	%
1. Being a love representative	12	27.9
2. Being useful	10	23.2
3. Being a representative of goodness	7	16.2
4. Being a hero	6	13.9
5. Being a family	4	9.3
6. Being fun	2	4.6
7. Being enlightened	2	4.6
Total	**43**	**100.0**

According to Table 2, hobby group gymnastics athletes stated metaphors under seven categories for the concept of trainer. These categories are *being a love representative* (12-27.9%), *being useful* (10-23.2%), *being a representative of goodness* (7-16.2%), *being a hero* (6-13.9%), *being a family* (4-9.3%), *being fun* (2-4.6%) and *being* enlightened (2-4.6%).

The categories and the explanation statements of the participants in these categories are given between Tables 2.1 and 2.7.

Table 2.1. Metaphors and Explanation Statements Belonging to the Category of ″*Being a love representative*″

Category	Number of Metaphors (f=12)
1. Being a love representative	Flower (5), Candy (3), Butterfly (2), Rose (2), My Favorite (1), Cotton (1), Heart (1), Dove (1), Beautiful (1), Sweet (1), Meat (1), Ladybug (1)

Explanation samples quotes of gymnastics athletes;
Flower; Because I love him so much. (K85)
Candy; He helps us with the movements. He doesn't get angry with us about the movements we can't do. (P12)
Butterfly; I love that sport and my trainer. (P80)
Rose; She smells so good. (P47)
My favorite; My real teacher, I love her like my mother. (P40)
Heart; She is full of love. (P51)

When a total of 12 metaphors and explanations stated in the "*being a love representative*" category are examined in Table 2.1, hobby group gymnastics associate their trainer with objects such as flowers, candy, roses and hearts, emphasizing that they are representatives of love.

Table 2.2. Metaphors and Explanation Statements Belonging to the Category of "Being Useful"

Category	Number of Metaphors (f=10)
2. Being useful	Teacher (11), Instructor (1), *Educator* (1), Doctor (1), Supporter (1), Helper (1), Vitamin (1), My Energy Source (1), Gymnastics (1) Flexibility (1)
	Explanation samples quotes of gymnastics athletes;
	Teacher; He teaches us everything with compassion as it should be. (P61)
	Teacher; My teacher at school teaches a lot, and my gymnastics trainer teaches a lot like my teacher. (P79)
	Educator; He teaches us useful things. (P27)
	Doctor; She keeps us healthy. (P86)
	Supporter; I always find him saying that you can do it. So he's always behind me. (P57)
	Vitamin; She always keeps me strong. (P23)
	Gymnastics; Because he is very useful like gymnastics. (P3)
	Flexibility; She makes me more flexible. (P4)

When the 10 metaphors and explanation sentences stated in Table 2.2 "*Being useful*" category were examined, the participants stated that the trainer was beneficial through physical and cognitive teachings.

Table 2.3. Metaphors and Explanation Statements Belonging to the Category of *"Being a representative of goodness"*

Category	Number of Metaphors (f=7)
2. Being a representative of goodness	Angel (9), Good Person (4), Sweet Bird (1), Sweat (1), My Heart (1), Good-hearted (1), Happiness (1)
	Explanation samples quotes of gymnastics athletes;
	Angel; My trainer is very kind-hearted like an angel. (P56)
	Good-hearted; She treats us very well. (P45)
	Sweet bird; He treats us very well and he is very nice. (P33)
	My heart; She treats me very well. (P50)

When a total of 7 metaphors and explanation sentences specified in the "*being a representative of goodness*" category in Table 2.3 are examined, the good attitude and behavior of the trainer towards his/her student caused metaphors like an angel, a good person, a sweet bird in the eyes of his/her athlete.

Table 2.4. Metaphors and Explanation Statements Belonging to the Category of *"Being a superhero"*

Category	Number of Metaphors (f=6)
2. Being a superhero	Athlete (5), Superman (2), Superhero (1), World Champion (1), Champion (1), Power (1)
	Explanation samples quotes of gymnastics athletes;
	Athlete; He makes movements better than the movements we do. (P74)
	Athlete; He is muscular and very strong. (P69)
	Superman; Because he's so strong. (P8)
	World Champion; My teacher is muscular and my world champion. (P21)
	Champion; I want to be a champion by winning competitions like him. (P10)

When a total of 6 metaphors and explanation sentences stated in the "being a superhero" category in Table 2.4 are examined, the trainer being strong, doing the movements well and similar expressions show that they have become heroes in the eyes of the athletes.

Table 2.5. Metaphors and Explanation Statements Belonging to the Category of *"Being a family"*

Category	Number of Metaphors (f=4)
2. Being a family	Mother (7), Father (1), Brother (1), Friend (1)
	Explanation samples quotes of gymnastics athletes;
	Mother; She thinks, loves and cares about us all. She cancels her own business for us and refuses to even spend time with her own children. That's why she is like our mother. (P81)
	My Mother; She is good and makes me feel safe. (P58)
	Father; He loves me, defends, helps and protects me in all matters. (P72)
	Brother; I can always explain whatever happens to my teacher and he is always helping. (P37)
	My Friend; Because we are having such a good time. (P41)

When a total of 4 metaphors and explanation sentences specified in the "being a family" category in Table 2.5 are examined, the trainer's warm approach, giving confidence and being with his-her athlete in all kinds of problems caused the athlete to see and perceive him/her as the closest person.

Table 2.6. Metaphors and Explanation Statements Belonging to the Category of *"Being fun"*

Category	Number of Metaphors (f=2)
2. Being fun	Fun (6), Funny (2)
	Explanation samples quotes of gymnastics athletes;
	Fun; He is a very kind and very good tutor. At the same time, he entertains us a lot by playing games. (P63)
	Funny; Our teacher is very funny and entertains us so much. (P42)

When the 2 metaphors and explanation sentences specified in the "being fun" category in Table 2.6 are examined, factors such as the fun time spent by the athlete in training and the trainer entertaining them caused them to perceive trainer as fun.

Table 2.7. Metaphors and Explanation Statements Belonging to the Category of *"Being enlightened"*

Category	Number of Metaphors (f=2)
2. Being enlightened	Horizon (2), Lantern (1)
	Explanation samples quotes of gymnastics athletes;
	Horizon; My trainer opens new horizons and prepares us for competitions. (P49)
	Lantern; She enlightens us with very important information. (P2)

When a total of 2 metaphors and explanation sentences specified in the "being enlightened" category in Table 2.7 are examined, it is understood that the trainer being a leader and teaching new things caused his/her athlete to see the trainer as an object that enlightens.

DISCUSSION and CONCLUSION

When the data obtained within the scope of the research were examined, it was determined that the participants mostly developed metaphors regarding the concept of trainer in the categories of "being a love representative" and "being useful", these categories were followed by "being a representative of goodness", "being a superhero", "being a family", "being fun" and "being enlightened". All of the metaphors developed by hobby group gymnastic athletes for their trainer are positive.

In the study of Güler (2017), a total of 706 athletes who attended summer sports schools in 18 different branches were asked to express their perceptions on their trainers through metaphors. 72 of the 706 athletes participating in this study were gymnastics

athletes. As a result of this research, a total of 7 categories (As a source of information and as a transmitter, as a person to be desired, as a relaxing-curative person, as a protective-caring and helpful person, as a repeller-scary, and pure and clean person). Almost all of the students stated positive metaphors. The "being a source of information" category obtained in Güler's study and the "Being useful category" obtained in this study; "Being a superhero category" and "a person to be desired"; "Being a representative of goodness-being a family category" and "as a protective-caring and helpful person" are similar categories. In the studies conducted on gymnastics trainer, it was noticed that almost all of the trainer perception was positive.

In this study, Güler also asked athletes of 17 different branches (basketball, athletics, badminton, boxing, football, wrestling, handball, table tennis, tennis, karate, hockey, darts, modern pentathlon, taekwondo, volleyball, weightlifting and swimming) to specify metaphors for their trainer, apart from the gymnastics trainer. As a result of the study, it was seen that athletes expressed positive metaphors for their trainers in most branches. The fact that almost all of the metaphors obtained for trainers in Gülerin's study are positive metaphors is similar to our study. Similar to the study group of our research, Gülerin's study was conducted only on hobby group athletes. Looking at the results, athletes revealed positive metaphorical perceptions towards their trainers. This result supports the findings of our study.

In their study, Karaşahinoğlu and İlhan (2019) tried to determine the metaphorical perceptions of 547 students studying at secondary school in 2014-2015 towards physical education and sports teachers through drawings. As a result of this study, it was seen that students mostly made drawings on the themes of " physical education teacher as an angry person ", " physical education teacher as a instructor", "physical education teacher as an element of love " and " physical education teacher as an element of negativity". When we compare the perceptions of trainer and physical education teachers here, it is seen that negative perceptions towards physical education teachers are higher.

In the study by Yeniceri (2019), 346 high school teachers in different branches in 2018-2019 were asked to state metaphors for "physical education and sports teacher" and "physical education and sports lesson". As a result of the research, it was seen that the majority made positive statements such as "health, life, water, etc." for physical education and sports teachers and lessons. The results of our study on the perception of trainer show similarity with the Yeniceri's study on physical education and sports teachers. The closeness of athletes' attitudes towards trainers and their attitudes towards physical education teachers can be thought of as a result of the common purpose of sports activities.

As a result, all of the metaphors developed by the hobby group gymnastic athletes for their trainer are positive. This is thought to be due to the study group being chosen from the hobby group.

SUGGESTIONS

In this study, the perceptions of gymnastics athletes towards their trainer were examined. It is an undeniable fact that children are the guarantee of our future or that healthy generations will create healthy societies and that children will affect the future of societies in almost every way (Parasız, Şahin & Çelik, 2015). It is very important for our children to be in safe environments physically, mentally and spiritually in the sports environment as in every field. In order to learn the factors that will create a negative

perception or impact for children in the sports environment and to carry out the studies related to this, studies should also be carried out to measure the perceptions of other important elements in the sports environment.

1. This study, which was done for hobby group athletes, can be done to competitors in a similar way and the results can be compared, and the effects of being a competitor on the sports and trainer perception of the athletes can be observed. When the goal changes in sports, the perception of the trainer in the athlete will probably change.

2. Although there are studies related to other branches, studies can be carried out to reveal the perceptions of children on "trainer, the branch they do and other elements in the sports environment" in all branches one by one. With these studies, the necessary data will be obtained in order to change the judgments against the branches.

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