GENDER STEREOTYPES IN STUDENTS SPORT INTERESTS

Franjo Prot[1]
Pak Yong Chin[2]
Jelka Gošnik[3]
Sara Prot[4]

[1]Faculty of kinesiology, University of Zagreb, Zagreb, Croatia
[2]Department of kinesiology, Iowa State University, Ames, USA
[3]Faculty of philosophy and social sciences, Universty of Zagreb, Zagreb, Croatia
[4]Department of psychology, Iowa State University, Ames, USA

Gender based stereotypes are influencing sport interests. Objective estimation of that influence enables positive practical actions. Recently it was demonstrated that the second principal component absorbs most of the information ascribed to gender stereotypes extracted from 52 sport preference measures of sport interests (Prot, Bosnar, Pišot and Pišot 2011). Regarding ongoing improvement of gender equity issues, FISU and IOC are synergistically and complementarily developing effective policies, practices and strategies to reach gender equality in every possible way. What is a nature of this effect on sport preferences in university students population is the main aim of this study.
A sample of 905 university students was measured (347 males and 558 females with an average age of 20 years, 99.1% of them aged in range from 18 to 26 years). The participants were given a list of 52 sports to be evaluated on a five-point scale. The 52 colon vectors of original data matrix were standardized and transformed to 52 standardized principal components ordered according to the values of corresponding eigenvalues. Discriminative analysis was preformed regarding gender in the space of 52 principal components. Coefficient of canonical correlation in overall space is ρ_{52}=0.740 (ρ^2_{52}= 0.548). When information on gender is projected on the second principle component alone ρ_2=0.639 (ρ^2_2 =0.408) what preserves 74.45% of information of overall system of variables. The correlation between the second principal component and the overall space discriminative function is 0.863, the highest value in the vector of structure of discriminative function, and 0.639 when gender is projected on second principal components. Means on discriminative functions are positive for females and negative for males. The bipolar structure of such a synthetic measure of gender stereotypes component of sport interests enables us to classify sports interests form high positive values, moderate values and low values as feminine. On the opposite side, sport interests can be classified form high, moderate and low negative values as masculine. Finally, correlations for the third group of sports are oscillating around zero what enable to declare it as gender stereotype neutral sport interests.

Key words: university students, gender stereotypes, sports interests, taekwondo, principal components, discriminative analysis

Introduction

Theoretical and practical research of gender stereotypes in sport is valuable and important foundation for ongoing improvement of gender equity issues. For example, based on gender stereotypes (Oglesby & Hill, 1993) combat sports are considered male activities perceived as aggressive and dominance-oriented and are often treated as inappropriate for female participants (Plaisted, 1995). In this way participation in sport and preferences are active components of gender identity. Gender identity is a person's concept of self as being male and masculine or female and feminine, or ambivalent. It is based, in a part, on several sources, as are physical characteristics, parental responses, and psychological and social pressures. It is an internal experience of gender role but have consequences on position in society (Matteo, 1986; Koivula, 1995, 1999; Coakley, 2003). If gender identity of person, social group and other social aggregate is based on oversimplified generalizations about gender attributes, differences and roles when we are dealing with gender stereotypes. Confidence to authorities, lacking the experiences in wider range of sports activities make people prone to stereotyping. Gender stereotypes are not exception at all. Sport interests are preferences individuals have for activities that go with different sports, where preferences are individual's expressions of desirability or value of one course of action, outcome, or selection in contrast to others. Positively identified degree of influence of gender stereotyping on different sports and different sports preferences enable us to classify and recognize sports as female dominant male dominant and gender neutral (Bosnar and Žugaj, 2009). Recently it's been demonstrated that 2nd principal component of sport preferences absorb most of information of gender differences (Prot, Bosnar, Pišot and Pišot; 2011) on representative sample of urban secondary school graduates. Similar effect have been found on samples of urban elementary school pupils of late childhood and early teenage (Prot, Pak and Prot; 2011).

Gender neutral sports have great potential for practical management of gender equity, and as a synergy support achievement UN millennium development goals to promote gender equality and empower women. By using sport as a tool, the IOC and its partners International Sports Federations (ISF) and their Member National Associations (MNA) are implementing various activities across the globe in field of gender equality.

Based on sport preferences of university students gender stereotyping will be studied in setup of Croatian sports culture having in mind methodological aspect of the problem. So, the main aim of this study find out what is a nature of effect on role of 2nd principal component of sport preferences on the gender based discrimination in university student population.

Material and Methods

A sample of 905 university regular students 347 males and 557 females of average age of 20 years, 99.1% of them aged in range from 18 to 26 years, participated in the study. Students were from Faculty of philosophy and social sciences (120 males and 407 females) and Faculty of kinesiology (227 males and 151 females), University of Zagreb, Zagreb, Croatia with full range of sport achievement (not participated in sport, occasional or recreational practice, school sport, regional level competitions, national level of competitions, and international level of competitions). The sample represents positively selected upper part of general population regarding the education level.

They were given a list of 52 sports: acrobatics, aerobics, aeronautics, alpinism/ rock climbing, archery, athletics, auto-motor sports, badminton, baseball, basketball, bodybuilding, bowls, boxing, cycling, dance, diving, equestrian, fencing, field hokey, football, handball, ice hokey, judo, karate, kayaking/canoeing, mountaineering, orienteering, parachuting, pin bowling, rhythmic gymnastics, roller skating, rowing, rugby, scuba diving, shooting, skating, skiing, sledging, spear-fishing, sports fishing, sports gymnastics, swimming, synchronized swimming, table tennis, taekwondo, tennis, volleyball, water polo, water skiing, weightlifting, wind surfing, wrestling. Each of these sports to be evaluated on five-point scale: 1 – I will never participate; 2 – I will participate only if there is no other activity; 3 – I will participate from time to time under suitable conditions; 4 – I would like to participate and 5 – I will participate if there is any opportunity.

The original data were standardized and by means principal component analysis they were transformed to 52 standardized principal components ordered according to the values of corresponding eigenvalues of correlation matrix. For the first two principal

components commonalities were computed. Further on these communalities were decomposed in the way that part of each of components can be identified. Second components communality part enabling us to decompose the variance of second component, which is a value of second eigenvalue and percent of contributions of each preference variable identified.

Discriminative analyses were preformed regarding the gender in the space of all 52 principal components. Coefficients of canonical discrimination in the space of all 52 principal components and its structure i.e. correlations between components and discriminative function were computed. The structure of discriminative function in space of original variables was established. For the degenerative case, gender based discriminative analysis for the second principal component, analysis was repeated and results compared with results in the previous step.

Results

Principal components (table 1.) ordered according to the values of corresponding eigenvalues of correlation matrix are showing that first eleven components have variance greater then 1.0 and consequently positive reliabilities. They are representing 61.80% of all information of correlations of sport preferences. First principal component absorbs 22.45% and second principal components with 9.4% and they together are representing 31.87% of information of system of 52 original variables. But with respect to first eleven components the second component contribute with 15.24% what is interesting for this study. With respect to sum of first eight eigenvalues, what is nearest to the trace of matrix of image covariances in Guttman (1953) sense it is 16.99%. The sample of university students is highly selected portion of population where sport preferences are under the influence of greater number and more complex constellation of factors. The influence of this selection on correlations between preference variables is reflected on distribution of variances of principal components. But the second principal component has its important and interesting role.

Table 1. Principal component transformation with first nine above average eigenvalues of correlations matrix with percent of variance explained and percent of cumulative variance explained.

Component	Eigenvalues of correlation matrix		
	Total	% of Variance	Cumulative %
1	11.674	22.450	22.450
2	4.897	9.417	31.867
3	2.853	5.486	37.353
4	2.590	4.981	42.334
5	2.294	4.411	46.744
6	1.609	3.094	49.839
7	1.545	2.971	52.810
8	1.365	2.625	55.435
9	1.152	2.215	57.650
10	1.123	2.160	59.810
11	1.032	1.985	61.796

Extraction Method: Principal Component Analysis, only
Above average first 11 of 52 Eigenvalues are presented.

The bipolar structure of the second component of sport interests (Table 2.) enables us to classify sports interests form high positive values, moderate values and low values as feminine. On the opposite side, sport interests can be classified form high, moderate and low negative values as masculine. Finally, correlations for the third group of sports are oscillating around zero what enable to declare it as gender stereotype neutral sport interests. Further on structures of first (FC_1) and second (FC_2) principal components, communalities ($h^2_{(1,2)}$), decomposed communalities for the first($h^2_{)1(}$) and second ($h^2_{)2(}$) principal component, and percents of contribution of sport preferences to the variance of the second principal component are reflecting the same effect (Table 2.).

Mean values on the first (hpc1) standardized principal component (Table 3.) computed gender by faculty shows that on the first principal component students faculty of philosophy and social sciences (FF) have systematically lower values then the students of faculty of kinesiology (KIF) represent general measure of sport preferences. Means on the second principal component (hpc2) are gender bipolar with negative values for male subsamples and positive values for female subsamples.

Table 2. Structure of first (FC_1) and second (FC_2) principal component, communalities ($h^2_{(1,2)}$), decompositions of communalities for the first($h^2_{)1(}$) and second ($h^2_{)2(}$) principal component, percent of contribution of sport preferences to the variance of the second principal component.

SPORT	HC_1	HC_2	$h^2_{(1,2)}$	$h^2_{)1(}$	$h^2_{)2(}$	λ_2%
Dance	0.06	**0.72**	0.52	0.00	**0.52**	**10.53**
Rhythmic gymnastics	0.07	**0.71**	0.51	0.00	**0.50**	**10.12**
Skating	0.15	**0.66**	0.46	0.02	**0.44**	**8.91**
Roller skating	0.24	**0.59**	0.40	0.06	**0.35**	**7.09**
Synchro. swimming	0.22	**0.56**	0.37	0.05	**0.31**	**6.28**
Aerobics	0.12	**0.55**	0.32	0.01	**0.30**	**6.07**
Equestrian	0.39	**0.45**	0.35	0.15	**0.20**	**4.05**
Sports gymnastics	0.38	**0.34**	0.26	0.14	**0.12**	**2.43**
Acrobatics	0.47	**0.34**	0.34	0.22	**0.12**	**2.43**
Sledging	0.45	**0.34**	0.31	0.20	**0.12**	**2.43**
Fencing	0.42	0.23	0.23	0.18	0.05	**1.01**
Cycling	0.42	0.22	0.23	0.18	0.05	**1.01**
Diving	0.55	0.22	0.35	0.30	0.05	**1.01**
Badminton	0.27	0.21	0.12	0.07	0.04	**0.81**
Scuba Diving	0.56	0.17	0.34	0.31	0.03	**0.61**
Swimming	0.34	0.16	0.14	0.12	0.03	**0.61**
Mountaineering	0.54	0.16	0.32	0.29	0.03	**0.61**
Water skiing	0.58	0.14	0.36	0.34	0.02	0.40
Archery	0.59	0.13	0.36	0.35	0.02	0.40
Orienteering	0.59	0.13	0.36	0.35	0.02	0.40
Pin bowling	0.44	0.11	0.21	0.19	0.01	0.20
Shooting	0.56	0.10	0.33	0.31	0.01	0.20
Parachuting	0.53	0.10	0.29	0.28	0.01	0.20
Alpinism (climbing)	0.62	0.09	0.40	0.38	0.01	0.20
Wind surfing	0.64	0.09	0.42	0.41	0.01	0.20
Karate	0.51	0.06	0.26	0.26	0.00	0.00
Taekwondo	0.45	0.03	0.20	0.20	0.00	0.00
Kayak/ Canoeing	0.68	0.03	0.47	0.46	0.00	0.00
Skiing	0.45	0.02	0.21	0.20	0.00	0.00
Athletics	0.37	0.01	0.14	0.14	0.00	0.00
Bowls (boules)	0.47	0.01	0.22	0.22	0.00	0.00
Aeronautics	0.55	-0.01	0.30	0.30	0.00	0.00
Volleyball	0.37	-0.03	0.14	0.14	0.00	0.00
Judo	0.50	-0.08	0.26	0.25	0.01	0.20
Rowing	0.66	-0.10	0.45	0.44	0.01	0.20
Tennis	0.42	-0.13	0.19	0.18	0.02	0.40
Auto-motor sports	0.43	-0.13	0.20	0.18	0.02	0.40
Table tennis	0.45	-0.14	0.22	0.20	0.02	0.40
Parachuting	0.60	-0.14	0.38	0.36	0.02	0.40
Field hokey	0.60	-0.14	0.37	0.36	0.02	0.40
Baseball	0.58	-0.16	0.36	0.34	0.03	**0.61**
Sports fishing	0.51	-0.21	0.30	0.26	0.04	**0.81**
Box	0.51	-0.26	0.33	0.26	0.07	**1.42**
Body building	0.36	**-0.30**	0.22	0.13	0.09	**1.82**
Ice hockey	0.57	**-0.33**	0.43	0.32	**0.11**	**2.23**
Water polo	0.57	**-0.33**	0.43	0.32	**0.11**	**2.23**
Wrestling	0.56	**-0.35**	0.43	0.31	**0.12**	**2.43**
Handball	0.36	**-0.37**	0.27	0.13	**0.14**	**2.83**
Weightlifting	0.37	**-0.38**	0.28	0.14	**0.14**	**2.83**
Basketball	0.40	**-0.39**	0.31	0.16	**0.15**	**3.04**
Rugby	0.59	**-0.41**	0.51	0.35	**0.17**	**3.44**
Football (soccer)	0.37	**-0.53**	0.42	0.14	**0.28**	**5.67**

Table 3. First (hpc1) and second (hpc2) standardized principal component group means gender and gender by faculty of philosophy and social sciences (FF) and faculty of kinesiology (KIF).

GENDER	Faculty		hpc1	Hpc2
Males	KIF	Mean	0.383	-0.909
	FF	Mean	0.025	-0.619
	Total	Mean	0.259	-0.809
Females	KIF	Mean	0.293	0.159
	FF	Mean	-0.330	0.631
	Total	Mean	-0.161	0.503

Canonical discriminative analysis of all 1-52 principal components of sports interests regarding gender (table 5.) shows high and significant coefficient of canonical discrimination in overall space is $\rho_{1\text{-}52} = 0.740$ ($\rho^2_{1\text{-}52} = 0.548$). Inspection of vector of standardized discriminative coefficient, structure of discriminative functions in all 52 component space (table 4.) shows very interesting phenomena. The only one substantially high discriminative coefficient 0.987 and 0.86 corresponding to the second principal component shows that second principal component tends to be correlated with information on gender of entities (Table 7.).

Table 4. Results of discriminative analysis of all 1-52 principal components of sports interests regarding gender

Eigenvalue	Canonical Correlation	Wilks' Lambda	Chi-square	Degrees of freedom	Significance of χ^2 test
1.212	0.740	0.452	696.355	52	.000

When discriminative procedure is repeated for the second principal component alone (Table 5.), where information on gender is projected on the second principle component correlation is $\rho_2 = 0.638$ ($\rho^2_2 = 0.408$). In this case second principal component alone provide 74.45% of information available for discrimination regarding the gender. Rest of the difference between $\rho^2_{1\text{-}52}$ and ρ^2_2 (i.e. 0.140) what is 26.55% of information relative

to amount of information available for discrimination in the space of 52 sport preferences analyzed is collected from rest of their principal components.

Table 5. Results of discriminative analysis of 2nd principal component of sports interests regarding gender

Eigenvalue	Canonical Correlation	Wilks' Lambda	Chi-square	Degrees of freedom	Significance of χ^2 test
0.687	0.638	0.593	472.075	52	.000

In this way the second principal component is the best single synthetic measure of gender related component of sport preferences ascribed to gender stereotypes.
Group means on bipolar discriminative functions (table 6.) are showing positive values for females and negative values for males. The range between means on discriminative functions for all components discriminative function ($\Phi_{(1-52)}$) its greater than the range for 2nd principle component based discriminative function ($\Phi_{(2nd)}$) what will have effect on reproductions of original classifications of subjects in gender groups,

Table 6. Group means on discriminative functions for all components discriminative function ($\Phi_{(1-52)}$) and for 2nd component discriminative function ($\Phi_{(2nd)}$)

Gender	$\Phi_{(1-52)}$	$\Phi_{(2nd)}$
Males	-1.395	-1.050
Females	0.867	0.653

Table 7. Standardized discriminative coefficient (WC), Structure of discriminative function (FC) in all 52 component space

PRINCIPAL COMPONENT	WC	FC
Principal component 1	-0.403	-0.28
Principal component 2	**0.987**	**0.86**
Principal component 3	0.058	0.04
Principal component 4	0.013	0.01
Principal component 5	0.180	0.12
Principal component 6	0.196	0.13
Principal component 7	-0.139	-0.09
Principal component 8	0.251	0.17
Principal component 9	0.003	0.00
Principal component 10	0.149	0.10
Principal component 11	0.079	0.05
Principal component 12	-0.047	-0.03
Principal component 13	-0.183	-0.12
Principal component 14	0.039	0.03
Principal component 15	0.014	0.01
Principal component 16	-0.058	-0.04
Principal component 17	-0.092	-0.06
Principal component 18	-0.133	-0.09
Principal component 19	-0.023	-0.02
Principal component 20	0.050	0.03
Principal component 21	0.068	0.05
Principal component 22	0.080	0.05
Principal component 23	0.017	0.01
Principal component 24	-0.247	-0.17
Principal component 25	0.035	0.02
Principal component 26	-0.034	-0.02
Principal component 27	-0.003	0.00
Principal component 28	0.034	0.02
Principal component 29	0.008	0.01
Principal component 30	0.079	0.05
Principal component 31	-0.004	0.00
Principal component 32	0.070	0.05
Principal component 33	-0.007	0.00
Principal component 34	-0.056	-0.04
Principal component 35	-0.087	-0.06
Principal component 36	-0.020	-0.01
Principal component 37	0.026	0.02
Principal component 38	0.024	0.02
Principal component 39	0.033	0.02
Principal component 40	-0.044	-0.03
Principal component 41	-0.014	-0.01
Principal component 42	-0.016	-0.01
Principal component 43	0.003	0.00
Principal component 44	-0.080	-0.05
Principal component 45	0.076	0.05
Principal component 46	0.049	0.03
Principal component 47	0.094	0.06
Principal component 48	0.072	0.05
Principal component 49	0.048	0.03
Principal component 50	-0.075	-0.05
Principal component 51	0.024	0.02
Principal component 52	-0.015	-0.01

Classification of cases based on results of discriminative analysis on all 52 principal components, and classification of cases based on results of discriminative analysis on 2nd principal component alone (tables 8. and 9.) is considered successful. Reproduction of initial classification is reduced from 87.7% off original grouped cases correctly classified to 81.1%, what is difference of 6.6%.

Table 8. Classification results based on discriminative analysis on all 52 principle components

			Predicted Group Membership		
		Gender	males	females	Total
Original	Count	Males	290	57	347
		Females	54	504	558
	%	Males	83.6	16.4	100.0
		Females	9.7	90.3	100.0

87.7% of original grouped cases correctly classified.

Table 9. Classification results based on discriminative analysis on 2nd principle component

			Predicted Group Membership		
		Gender	Males	Females	Total
Original	Count	Males	256	91	347
		Females	80	478	558
	%	Males	73.8	26.2	100.0
		Femals	14.3	85.7	100.0

81.1% of original grouped cases correctly classified.

Such a synthetic measure of gender stereotypes based component of sport interests (Tables 10. and 2.) enables us to recognize 17 sports with substantial positive values that are declared as feminine on this sample of university students. On the opposite side with substantial negative values of their correlations 12 sports are recognized as masculine on this sample of university students. With correlations oscillating close to zero are 23 gender neutral sports on this sample of university students. Spearman's rank correlation between ranks of coefficient of structures of discriminative functions (table 10) is 0.96.

Table 10. Structure of all 52 components discriminative function ($F_{(1-52)}$) in space of sport preferences, their ranks ($R\ F_{(1-52)}$); structure of 2nd component discriminative function ($F_{(2nd)}$) in space of sport preferences, their ranks ($R\ F_{(2nd)}$)

SPORT	$F_{(1-52)}$	$R\ F_{(1-52)}$	$F_{(2nd)}$	$R\ F_{(2nd}$
Dance	0.63	1	0.72	1
Rhythmic gymnastics	0.59	2	0.71	2
Skating	0.58	3	0.66	3
Roller skating	0.52	5	0.59	4
Synchro. swimming	0.44	6	0.56	5
Aerobics	0.57	4	0.55	6
Equestrian	0.33	7	0.45	7
Sports gymnastics	0.07	11.5	0.34	9
Sledging	0.20	8	0.34	9
Acrobatics	0.04	13	0.34	9
Fencing	0.09	10	0.23	11
Cycling	0.07	11.5	0.22	12.5
Diving	0.00	16	0.22	12.5
Badminton	0.18	9	0.21	14
Scuba Diving	-0.03	18	0.17	15
Swimming	0.01	14.5	0.16	16.5
Mountaineering	-0.10	24	0.16	16.5
Water skiing	-0.06	21	0.14	18
Archery	-0.10	24	0.13	19.5
Orienteering	-0.04	19	0.13	19.5
Pin bowling	-0.06	21	0.11	21
Shooting	-0.12	28	0.10	22.5
Parachuting	-0.11	26	0.10	22.5
Alpinism (climbing)	-0.20	34	0.09	24.5
Wind surfing	-0.12	28	0.09	24.5
Karate	-0.02	17	0.06	26
Taekwondo	0.01	14.5	0.03	27.5
Kayak/ Canoeing	-0.12	28	0.03	27.5
Skiing	-0.15	30.5	0.02	29
Athletics	-0.17	32	0.01	30.5
Bowls (boules)	-0.10	24	0.01	30.5
Aeronautics	-0.15	30.5	-0.01	32
Volleyball	-0.06	21	-0.03	33
Judo	-0.21	35.5	-0.08	34
Rowing	-0.25	39	-0.10	35
Tennis	-0.19	33	-0.13	36.5
Auto-motor sports	-0.22	37	-0.13	36.5
Field hokey	-0.21	35.5	-0.14	39
Table tennis	-0.28	42	-0.14	39
Parachuting	-0.36	43	-0.14	39
Baseball	-0.24	38	-0.16	41
Sports fishing	-0.38	45	-0.21	42
Box	-0.27	40.5	-0.26	43
Body building	-0.41	47	-0.30	44
Ice hockey	-0.43	48	-0.33	45.5
Water polo	-0.39	46	-0.33	45.5
Wrestling	-0.50	51	-0.35	47
Handball	-0.27	40.5	-0.37	48
Weightlifting	-0.48	50	-0.38	49
Basketball	-0.37	44	-0.39	50
Rugby	-0.45	49	-0.41	51
Football (soccer)	-0.59	52	-0.53	52

Discussion

The results show similar tendencies of gender-type classification of sports as founded out and reported earlier (Koivula, 2001 and Bosnar and Žugaj, 2009). Discriminative analysis in the space of principal components of sport preferences demonstrates that gender stereotyping is dominantly represented by the second principle component as its synthetic measure. Its position as second principal component in order among others components and its magnitude of 4.879 of variance demonstrate its relative importance and relevance of 9.4% what it has. That is indicating that gender stereotyping is one among the other factors which are influencing preferences and interests for sports.
This synthetic measure of gender stereotypes component of sport interests enables us to recognize sports with high moderate and low positive values of correlations on the structure of discriminative function. This influence is lower in this sample of university students then it is reported on sample of secondary school graduates (Prot, Bosnar, Pišot and Pišot, 2011) and on sample of elementary school pupils (Prot, Pak and Prot, 2011). That suggests that increase in education and processes of maturation reduces role of gender stereotyping in sport interests and sport preferences as their measures.
With the positive values for females 17 sports: dance, rhythmic gymnastics, skating, roller skating, synchronized swimming, aerobics, equestrian, sports gymnastics, acrobatics, sledging, fencing, cycling, diving badminton, scuba diving, swimming and mountaineering with substantial positive values that are declared as feminine on this sample of university students. On the opposite side with substantial negative values of their correlations 12 sports: baseball, sports fishing, box, body building, ice hockey, water polo, wrestling, handball, weightlifting, basketball, rugby and football (soccer) are recognized as masculine on this sample of university students. With correlations oscillating close to zero are 23 gender neutral sports: water skiing, archery, orienteering, pin bowling, shooting, parachuting, alpinism (rock climbing), wind surfing, karate, taekwondo, kayak/canoeing, skiing, athletics, bowls, aeronautics, volleyball, judo, rowing, tennis, auto-motor sports, table tennis, parachuting and field hockey on this sample of university students. This group of gender neutral sports in the Croatian sport culture could be of practical importance for ongoing improvement of gender equity issues in broader social context (Coakley, 2003; Cunningham and Sagas, 2008)

Conclusion

The results illustrate that the sport preferences are gender stereotyped to certain degree. Suitable selection of data analysis procedure in this study again demonstrate that second principal component of sport preferences is synthetic bipolar dimension by which sports could be classified as masculine or neutral or feminine.

Apart from the other factors that are influencing attitudes and preferences toward different sports the presence of gender-based component is identified. Order and variance magnitude measure its relative importance. Lower than in some other segments of population, here on sample of university students, this influence of gender stereotypes on sport interests is estimated and evaluated as substantial.

Based on sample of subjects participated in this study it could be concluded that gender stereotypes in sport are present among university students, and that influence is lower in this sample of university students then it was recorded on secondary school graduates or elementary school pupils at the age of late childhood and early teenage period.

The pattern of relations of gender stereotypes and sports interests in Croatian sports culture resembles to those experienced in some other countries sport cultures, giving the meaning to sport as an active component in shaping social relations in developed societies.

According to results of this research gender neutral sports could be objectively identified and that could be of practical importance for ongoing improvement of gender equity issues in broader social context.

References

1. Bosnar K. and Žugaj, S. (2009). Gender typing of sports in Croatian university students. In. Doupona Topič, M. And Ličen, S. (Eds.): Sport, culture & society: an account of views and perspectives on social issues in a continent (and beyond), Ljubljana: University of Ljubljana, Faculty of Sport:161-164.
2. Cunningham, G. B., Sagas, M. (2008). Gender and sex diversity in sport organizations: Introduction to a special issue. Sex roles 58, (1-2), 3-9.
3. Coakley, J. (2003). Sport in society: Issues and controversies. New York: McGraw-Hill.

4. Guttman, L., (1953). Image theory for the structure of quantitative variates, Psychometrika 18, 277-296.
5. Koivula, N. (1995). Ratings of Gender Appropriateness of Sports Participation: Effects of Gender-Based Schematic Processing**.** Sex Roles, 33, 543-557.
6. Koivula, N. (1999). Sport Participation: Differences in Motivation and Actual Participation Due to Gender Typing. Journal of Sport Behavior, 22, 360-380.
7. Koivula, N. (2001). Perceived Characteristics of Sports Categorized as Gender-Neutral, Feminine and Masculine. Journal of Sport Behavior, 24 (4), 377-393
8. Matteo, S.(1986).The effects of sex and gender-schematic processing on sport participation. Sex Roles, 15, 417-432.
9. Oglesby, C., Hill, K. (1993). Gender and sport. In: Singer, R.N., Murphey, M., Tennant, L.K. (Eds.) Handbook of research on sport psychology. New York: Macmillan Publishing Company. 718–28.
10. Plaisted, V. (1995). Gender and sport. In T. Morris & J. Summers (Eds.), Sport psychology: Theory, applications and issues (pp. 538-574). Brisbane, Australia: John Wiley & Sons.
11. Prot F., Bosnar K., Pišot S, and Pišot R. (2011). The second principal component of sports interest as synthetic measure of gender based stereotypes Abstract book proceedings of 8th European Association for Sociology of Sport Conference 2011 "People in motion - bridging the local and global" – Umea 19th – 21th of May 2011, Sweeden.
12. Prot, F., Pak, Y.C. and Prot, S. (2011). The role of gender stereotypes in sport interests for taekwondo and other sports of urban elementary school pupils. Proceedings of the 3rd International Symposium for Taekwondo Studies, April 29-30, 2011. Gyeongju, Korea: 129-139.