AN ATTEMPTED DETERMINATION OF THE LATENT STRUCTURE OF LEISURE-TIME SPORTING AND OTHER RECREATION ACTIVITIES' CHARACTERISTICS

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Abstract:

The aim of this study was to determine the latent structure of characteristics of leisure-time sporting and other recreation activities practised in the Republic of Croatia. The analysis was based on the survey of 1,126 adults of both sexes who filled in an open-ended questionnaire, which resulted in a list of 93 items - sporting and other recreation activities - that the subjects wrote as answers to the questions regarding their participation in sporting and other recreation activities according to their own preferences and attitudes as well as their experience. Taking into account the existing well known approaches to classifications, a new solution and elaborated. On the basic of the basic information about recreation activities ten variables were obtained. Factor analysis was applied, interpreted and discussed. In accordance with the Guttman-Kaiser criterion, nine factors were obtained that explained 95% of the total variance. The factors were, as a rule, defined by only one criterion variable each. Therefore, the expected latent structure of the characteristics describing leisure-time sporting and other recreation activities was not obtained.

Keywords: *kinesiology, classification, sport science, recreation, sporting activities, other recreation activities, active life*

EIN VERSUCH DER BESTIMMUNG VON LATENTER STRUKTUR DER CHARAKTERISTIKEN VON FREIZEITSPORTARTEN UND ANDEREN FREIZEITAKTIVITÄTEN

Zusammenfassung:

Das Ziel dieser Studie war, zu versuchen, die latente Struktur von Charakteristiken sowohl der Freizeitsportarten, die in Kroatien getrieben werden, als auch anderer Freizeitaktivitäten zu bestimmen. Die Analyse ruhte auf der Untersuchung an 1126 Erwachsenen, Männer und Frauen, die einen offenen Fragebogen ausgefüllt und die Frage über deren Teilnahme sowohl an den Freizeitsportarten als auch an anderen Freizeitaktivitäten gemäß Präferenzen, Meinungen und Erfahrungen beantwortet haben. Das Resultat war eine aus 93 Item, Freizeitsportarten und anderen Freizeitaktivitäten, bestehende Liste. Eine neue Möglichkeit der Klassifikation von solchen Tätigkeiten wurde in diesem Artikel bearbeitet. Aufgrund Informationen über die Freizeitaktivitäten wurden 10 Variablen erhalten. Die Faktorenanalyse wurde angewandt, interpretiert und erörtert. Gemäß dem Guttman-Kaiser Kriterium wurden neun Faktoren abgeleitet, die 95% der gesamten Varianz erklärten. Die Faktoren wurden, in der Regel, nur mit einer Kriteriumsvariable definiert. Deswegen wurde die erwartete latente Struktur von Charakteristiken, die die Freizeitsportarten und andere Freizeitaktivitäten beschreiben, nicht erhalten.

Schlüsselwörter: *Kinesiologie, Klassifikation, Sportwissenschaft, Erholung, Freizeitsportarten, andere Freizeitaktivitäten*

Introduction

The course of western civilization led to the development of a large number of a variety of sporting activities (Klingsworth, James, & Morris, 2003; Bercovitz, 2000; Tarrant & Green, 1999). Their origin varies to a great extent, ranging from those that date back to the ancient types of contest, through games, up to modern sport and recent exercise movements like jogging, aerobics, and the latest so-called extreme sports. Consequently, the issue of classification of such a big number of sports and sporting activities arises.

The necessity of classifying sporting activities is recognized worldwide. The COMPASS project, for example, is the most important European project that is aimed at classifying and, subsequently, at a standardized monitoring of participation in (leisure-time) sporting activities in a coordinated manner. Such a common reference scheme will make it possible to interpret and better understand the existing differences, and, simultaneously, the characteristics of each European country as regards the type of sporting and other recreation activities in which people participate. Beside this European project, there are other worldwide projects including all continents (e.g., Russell, Storm, & Craig, 2002). In the *Sports for All Incentives Policy* from 1996, a collaborative effort was initiated by Dr. Michael Booth (Sydney, Australia) to develop a valid and reliable questionnaire to measure health-related physical activity for both research and global surveillance (Booth, Macaskill, McLellan, Phongsavan, Okely, Patterso, Wright, Bauman, & Baur, 1997; Booth, Okely, McLellan, Phongsavan, Macaskill, Patterson, Wright, & Holland, 1999). With the support of the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC), an international working group was formed that consisted of physical activity researchers from 14 countries. The first step was to establish the goal to develop an International Physical Activity Questionnaire (IPAQ) to enable the collection of directly comparable physical activity data across countries in order to provide a common instrument that could be used internationally to obtain comparable estimates of physical activity participation from surveillance system data. Croatia is not (yet) a formal member of COMPASS, or any other similar world project, and has the status of not being able to provide relevant data in this respect at the moment.

Nowadays in kinesiology or sport science, there are several types of sporting and exercise activities' classification. Mraković (1994) divided the total population of kinesiological contents into conventional and unconventional movement structures. The conventional contents were further investigated (Horvat & Mraković, 1978; Kurelić, 1967; Mraković, 1971; Mraković, 1994) and four relatively homogenous sporting activity groups were obtained: monostructural kinesiological activities, polystructural acyclic activities, polystructural complex activities and polystructural conventional activities. Further, various classifications were made in: physical education (for example, Findak, Mraković, Metikoš, Neljak, & Prot, 2000; Corbin, 2002), kinesitherapy (Buijs, R., Ross-Kerr, J., O'Brien Cousins, S., Wilson, D., 2003; Hammell, Carpenter & Dyck, 2000; Karaiković & Karaiković, 1986) and leisure-time sport (Blagajac, 1994; Savić, 1987; Trkulja Petković & Andrijašević, 1994).

This study was aimed at classifying leisure--time sporting and other recreation activities practised in Croatia. Recreation in its broad meaning encompasses activities one conducts according to his/her own choice and in his/her own free or spare time (Lavizzo-Mourey & McGinnis, 2003). In general, these activities are: various types of physical exercise, activities belonging to the sphere of culture and art, social and entertainment activities, collection, craftsmanship and technical activities, activities in nature, etc. Recreation in the narrow meaning of the word refers to kinesiological recreation, fitness and healthpromotion, social and entertaining contents, that is, physical activities offered in some programs (Relac, 1984).

Sporting activities (SA) can be defined in various ways. The authors opted here for a definition proclaimed by COMPASS (Allin, Rossi Mori,, 1999): "*Sport* means all forms of physical activity which, through casual or organized participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels" (Mussin, 2002).

The aim of this paper was two-fold. Firstly, to obtain a list of sporting and other recreation activities in which people in the Republic of Croatia participate, and secondly, to determine, on the basis of that list, the latent structure of leisure-time sporting and other recreation activities' characteristics.

Ultimately, such studies could contribute to an attempt to adjust the Croatian standards in this

respect, both practically and methodologically, with those declared in Europe.

Methods

The sample of entities

The sample of entities consisted of a list of sporting and other recreation activities practised in leisure-time sport-oriented programs and other leisure-time activities regularly or occasionally practised by people in the Republic of Croatia. This sample was obtained by an open-ended questionnaire (Trkulja Petković, 2000) filled in by 1,126 randomly selected citizens, from 16 out of 20 regional counties plus the capital city of Zagreb, of the Republic of Croatia. In Table 1 it is evident that both sexes are evenly represented as regards the duration of their sport participation.

The resulting list consisted of 93 items, that is, different sporting and other recreation activities (Table 2). It should be noted that this list was generated both by those who used to practise sporting and other recreation activities and by those who still participate in them. Therefore, our intention was not to obtain a list of all possible sporting and other recreation activities in which people could participate, but to obtain a realistic survey of activities in which people actually do take part. Our list is to a large extent compatible with similar studies from other European countries, e.g. Switzerland (Lamprecht & Stamm, 2001), the Netherlands (Breedveld, 2002), or the Czech Republic (Rychtecky, 2000). However, certain differences were found, as regards a smaller number of specific activities in which people participate. In Croatia, for example, people participate also in sailing, water skiing, speleology, darts, fencing, water polo, bocce, sport shooting, croquet, paragliding, indiaca, hunting and traditional sports, whereas in other European countries people are also engaged in activities such as vita-parcours, snow-boarding, snow-shoeing, ski touring, qui-gong, disco dancing, mushrooming, horse dressage, and bandy.

Table 1. Total number of years of the sample's participation in different sporting activities

Participation	Current						Previous					
	m	m%	f	f%	T	T%	m	m%	f	f%	T	T%
None	180	63.6	103	36.4	283	25.1	242	58.5	172	41.5	414	36.8
Up to 3 yrs	220	50.6	215	49.4	435	38.6	145	56.6	111	43.4	256	22.7
From 4 to 10 yrs	138	63.0	81	37.0	219	19.4	207	62.2	126	37.8	333	29.6
Over 10 yrs	153	81.0	36	19.0	189	16.9	97	78.8	26	21.2	123	10.9
Total	691	61.4	435	38.6	1126	100	691	61.4	435	38.6	1126	100

f - female, m - male, T - total

The sample of variables

The obtained list served to the group of experts in kinesiological recreation to define the ten criterion variables that were regarded as leisure-time sporting and other recreation activities' characteristics whose latent structure determination was the aim in this study.

The ten obtained criterion variables (characteristics) were as follows.

Collective sporting and other recreation activities

Co-operation of the members of the group is necessary because the result of a particular activity depends on that co-operation. The goal is either to defeat the opposing group or to achieve an aesthetic standard. The variable encompasses numerous sporting games, synchronized swimming, dancing, and folk dancing. To be a part of the group, to have the feeling of belonging to the group, may be a significant motivation factor for participation. Collective sporting and other recreation activities may contribute to the realisation of goals such as an improvement of interpersonal relations (Rubeša, 1990; Žugić, 1990), disalienation, reducing the feeling of loneliness, etc.

Martial arts

Martial arts were extracted in a separate variable for several reasons. These activities have a long East Asian tradition, but are frequently practised in Europe as well. Attributes connected with them are usually nobility, skill,

Table 2. List of different sporting and other recreation activities obtained in the population of the Republic of Croatia

Gymnastics	Fencing	Water skiing	Indiaca
Tennis	Soccer	Sky diving	Indoor golf
Swimming	Aerobics	Rhythmic gymnastics	Football tennis
Handball	Bowling	Hiking	Swing bowls
Orienteering	Bodybuilding	Hunting	Excursion
Skiing	Water polo	Thai boxing	Programmed active rest
Underwater diving	Bocce	Scouting	Callisthenics
Horseback riding	Windsurfing	Motorcycle racing	Aqua-aerobics
Table tennis	Boxing	Baseball	Jazz dance
Basketball	Karate	Judo	Traditional sports
Athletics	Running (jogging)	Wrestling	Medical programmed active rest
Exercising for fitness	Lifting weights	Fishing	Martial arts
Ballet	Cycling	Squash	Gardening
Volleyball	Rowing	Taekwondo	Water sports
Jujitsu	Sport shooting	Budokai	Massage
Rafting	Yoga	Car racing	Corrective gymnastics
Sailing	Synchronized swimming	Cross-country skiing	Recreational exercising
Archery	Field hockey	Badminton	Biking
Rugby	Croquet	Chess	Exercising at home
Billiards	Paragliding	Full contact	Dancing/folklore
Golf	Ice hockey	Miniature golf	Walking
Speleology	Sauna	Roller blading	
Beach volleyball	Trim track	Stretching	
Darts	Ice skating	Wheelchair volleyball	

etc. Most of them imply a certain 'philosophy of living' and rituals. By means of these activities one can develop motor skills to symbolically destroy an opponent. Since combat implying direct physical contact lies in the basis of all these sports, certain personality traits are also necessary beside a particular level of motor skills. The interest of people for these activities is evident, but, since they require elements which may affect the general health status of a person negatively, they should be extremely carefully planned, programmed and selected.

Individual outdoor sporting and other recreation activities

One person alone, as a rule, suffices for participation in these activities, and the result depends on the abilities and skills of an individual. The activities are executed outdoors, however, in contrast to *outdoor activities* they demand that specially constructed sports grounds be built and that special equipment be supplied. Activities that one may execute on one's own, independently of other people, enable a completely free selection of place, time, frequency and duration of activity. The broad freedom of place selection thus has its advantages, but also its disadvantages, particularly when the motivation of a person for physical exercise is low. This group encompasses activities such as golf, skiing, fishing, athletics, etc.

Attractive/extreme sporting activities

The meanings of the words *attractive* and *extreme* largely describe the types of activities belonging to this category. We are talking about those activities that provoke the interest of people, regardless whether the reason for interest be the high price of equipment or the thrill and the danger that these activities imply. These activities are also executed outdoors, however, in the full meaning of the word, that is, they are done under ground, on the ground, in the air, on and under the water. This group encompasses speleology, horseback riding, car-racing, sky diving, underwater diving, etc. All those people who want to produce a demonstration effect or

feel the thrill ('adrenalin-rush') find a motive for participation in these activities, which may be the basis for the planning and realisation of recreation programs.

Individual indoor sporting and other recreation activities

This variable is, according to the way of participation and realisation of results, identical to the previous variable. The basic difference, however, between the two variables regards the space in which the activities are executed. From a health and financial point of view, the activities are preferably executed outdoors in open space (in nature, if possible), however, the advantage of continuous exercising indoors is not neglected since it does not depend on weather conditions. This group encompasses activities such as gymnastics, ballet, lifting weights, yoga, sport shooting, etc. As for the ways of participation in an activity and as for the realisation of results, this variable is identical to the previous one.

Recreationally beneficial sporting and other recreation activities

Any of the 93 activities listed may be partially or with some modification termed and/or applied as recreation activity. However, this variable encompasses one part of exclusive recreation activities/programs. This term implies those activities that almost exclusively belong to the domain of leisure-time sport, and that are usually not institutionalized (they do not have either an umbrella association or fixed rules). Recreationally beneficial activities are all those exclusive recreation activities that may lead to the optimization of the psychosomatic status provided that they are conducted on a regular basis (over a longer period of time) with an appropriate intensity, volume and frequency of exercising. This variable encompasses activities such as aerobics, aqua-aerobics, exercising for fitness, calisthenics, etc.

Leisure-time sporting and socializing activities

In leisure-time the goal is not always to achieve a certain result, a measurable advancement, a victory or the like. The goal is the activity itself, satisfaction, relaxation, entertainment, well-being. The goal of recreation activities that have the attribute *leisure-time* is precisely to spend quality free time. The activities belonging to this category may be of a kinesiological character (miniature golf, swing bowls, croquet), but they may also be social and entertainment activities (dominos, card games, chess, raffles, quizzes, carnivals, etc.).

Leisure-time medically controlled recreation activities

Almost all activities employed in recreation (here also referred to as *leisure time*) could, without making a bigger error, be assigned the attribute *health-related* due to the fact that the planning, programming and execution of any activity is based on the principle of health-related orientation. Naturally, the term *health* refers to the "total physical, psychological and social welfare, and not only the absence of disease or weakness" (according to Harel, 1996). Recreation does not deal with a cure (treatment), but primarily with prevention, that is, with correction and compensation (replacement) of the negative impact of the environment and of the working and living conditions (Active Living Leadership, 2004). Recreational medically programmed active rest (MPAR) is a type of protection and improvement of health and of protection and improvement of the way of life and it is to be found as a specific measure in Croatia's law on health protection. This variable also addresses, apart from the already mentioned MPAR, various fitness- and health-promoting procedures, corrective exercises, etc.

Outdoor sporting activities

In contemporary living conditions, characterized, among other things, also by a high degree of urbanization, outdoor activities are of significant importance. This is particularly evident in those activities that do not require any special material conditions such as constructed sports grounds, expensive equipment, etc. The variable *outdoor sporting activities* encompasses all sporting activities done outdoors and that are such, according to their structure, that they may produce the transformations of anthropological characteristics. This group encompasses activities such as running, biking, orienteering, roller-blading, etc.

Outdoor non-sporting recreation activities

In spite of the fact that activities that may produce transformations of motor abilities, cardio-respiratory fitness and anthropometric characteristics are commonly assigned a bigger

significance, the activities lacking this attribute should not be neglected. Such activities may be an excellent supplement of any other activity/ sport; however, they have their own value as well. They contribute to the quality of leisure time, and they may help meet the need for movement in those people who dislike competition. This variable encompasses hiking, scouting, going on excursions, etc.

Data processing methods

Each of the defined set of sporting and other recreation activities was mapped into the given set of criterion variables. This process was based on the opinions of experts qualified in leisure-time sport (lecturers, researchers and associates of the Chair of Kinesiological recreation at the Faculty of Kinesiology, University of Zagreb). Experts qualified each sporting and/ or any other recreation activity in such a way as to fit into one of the criterion variables. The result was a binary matrix comprising 93 entities each valued at a value of zero or one. This data matrix, having sporting and other recreation activities as entities and criterion variables, was used as the basis for further analysis.

The data were processed in the Computer centre at the Faculty of Kinesiology University of Zagreb. The statistical package SPSS for Windows was employed. A statistical description by means of frequencies and percentages for each variable were calculated. Further, the correlation matrix between the variables was calculated. An exploratory factor analysis was employed under the principal components analysis model. The number of significant factors was determined according to the Guttman-Kaiser criterion. The eigenvalues and the sizes of their partial contribution in the explanation of the total variance, the communalities of variables and the matrix of principal components were also calculated.

Results

In order to describe statistically the set of criterion variables, also termed *characteristics*, the frequencies and the corresponding percentages for each variable were calculated. It was evident (Table 3) that the activities analysed were evenly distributed across the set, with variables *collective sporting and other recreation activities* and *attractive/extreme sporting activities* being the most represented, and the variable *outdoor non-sporting recreation activities* being the least represented one.

The correlation matrix (Table 4) shows a very low correlation between the variables; they fall within a range between .00 and .23. The variable *collective sporting and other recreation activities* correlates with the variables *individual indoor sporting and other recreation activities* (.23) and *individual outdoor sporting and other recreation activities* (.22). A low correlation of .10 between the vari-ables *individual indoor sporting and other recreation activities* and *individual outdoor sporting and other recreation activities* is noticed. The low correlation between the other variables was expected since the classification supposed mutually exclusive groups.

The 10 criterion variables were subjected to a factor analysis to determine their latent structure. So, by means of the Guttman-Kaiser criterion the ten criterion variables were reduced to nine factors, that explained 95.5% of the total variance (Table 5).

Table 3. Frequencies and percentages of sporting and other recreation activities (entities) in the set of criterion variables

Variable	Frequencies	%
Collective sporting and other recreation activities	13	14.0
Martial arts	11	11.8
Individual outdoor sporting and other recreation activities	11	11.8
Attractive/extreme sporting activities	13	14.0
Individual indoor sporting and other recreation activities	11	11.8
Recreationally beneficial sporting and other recreation activities	7	7.5
Leisure-time sporting and socializing activities	10	10.7
Leisure-time medically controlled recreation activities	6	6.5
Outdoor sporting activities	6	6.5
Outdoor non-sporting recreation activities	5	5.4
Total	**93**	**100**

The communalities (Table 5) amounting to values from .84 up to .99 should be considered as very high, and, accordingly, the variables can be interpreted as well-defined with regard to their common variance.

Partial contributions of the explained variance (Table 5) were very evenly distributed. The explained variance ranged from 12.9% in the first factor to 10.0% in the ninth. This evidence implies, together with the communalities mentioned, that such a solution, namely, the obtained factors are expected to be maximally parsimonious.

The final factors solution discerned in Table 6 displays the expected parsimonious features. Namely, most of the factors are *single* factors, weighted by just one high loading. The first factor was defined by the characteristic (variable) *collective sporting and other recreation activities* (-.91). The variables *individual indoor sporting and other recreation activities* (.44), *individual outdoor sporting and other recreation activities* (.40) and *martial arts* (.22) are also present to a somewhat lower level. The second factor was bipolar and it was defined by the variables *individual indoor sporting and other recreation activities* (-.75) and *individual outdoor sporting and other recreation activities* (.73), whereas all the other variables had almost no connection with this factor. The third factor was highly defined by the variable *martial arts* (.79), and to a much lower extent by the variables *individual outdoor sporting and other recreation activities* (-.44) and *individual indoor sporting and other recreation activities* (-.36). The fourth factor was almost evenly defined by the variables *recreationally beneficial sporting and other recreation activities* (.64), *martial arts* (-.51) and *outdoor sporting activities* (.45) and to a much lesser extent by the variable *leisure-time medically controlled recreation activities* (.29). The fifth factor was dominated by the variable *outdoor sporting activities* (.75) on the positive pole, and by the variable r*ecreationally beneficial sporting and other recreation activities* (-.66) on the negative pole. The sixth factor was defined by the variable *leisure-time medically*

Table 4. Correlation among variables

Collective sporting and other recreation activities	1.00	;	;	;	;	;	;	;	;	;
Martial arts	-0.15	1.00	;	;	;	;	;	;	;	;
Individual outdoor sporting and other recreation activities	-0.22	-0.07	1.00		;	;	;	;	;	;
Attractive/extreme sporting activities	-0.04	-0.01	-0.02	1.00	;	;	;	;	;	;
Individual indoor sporting and other recreation activities	-0.23	-0.07	-0.10	-0.02	1.00	;	;	;	;	;
Recreationally beneficial sporting and other recr. activities	-0.11	-0.03	-0.05	-0.01	-0.05	1.00	;	;	;	;
Leisure-time sporting and socializing activities	-0.04	-0.01	-0.02	0.00	-0.02	-0.01	1.00	;	;	;
Leisure-time medically controlled recreation activities	-0.09	-0.03	-0.04	-0.01	-0.04	-0.02	-0.01	1.00	;	;
Outdoor sporting activities	-0.10	-0.03	-0.05	-0.01	-0.05	-0.02	-0.01	-0.02	1.00	;
Outdoor non-sporting recreation activities	-0.06	-0.02	-0.02	0.00	-0.03	-0.01	0.00	-0.01	-0.01	1.00

Table 5. Communalities, eigenvalues, percentage and cumulative percentage of explained variance

Variable	communalities	Eigenvalues	Percetange	Percetange Cumulative
Collective sporting and other recreation activities	0.843	1.29361	12.9	12.9
Martial arts	0.953	1.10227	11.0	24.0
Individual outdoor sporting and other recreation activities	0.919	1.06222	10.6	34.6
Attractive/extreme sporting activities	0.996	1.03325	10.3	44.9
Individual indoor sporting and other recreation activities	0.914	1.02305	10.2	55.1
Recreationally beneficial sporting and other recreation activities	0.974	1.01842	10.2	65.3
Leisure-time sporting and socializing activities	0.997	1.00723	10.1	75.4
Leisure-time medically controlled recreation activities	0.981	1.00403	10.0	85.4
Outdoor sporting activities	0.977	1.00287	10.0	95.5
Outdoor non-sporting recreation activities	0.993	.45305	4.5	100.0

Table 6. Matrix of principal components loadings

Variable /Factor	1	2	3	4	5	6	7	8	9
Collective sporting and other recreation activities	-0.91	-0.02	-0.08	-0.05	-0.01	-0.01	-0.02	-0.01	-0.01
Martial arts	0.22	0.05	0.79	-0.51	-0.06	-0.06	-0.06	-0.04	-0.02
Individual outdoor sporting and other recreation activities	0.40	0.73	-0.44	-0.17	-0.03	-0.03	-0.04	-0.02	-0.01
Attractive/extreme sporting activities	0.05	0.01	0.05	0.07	0.02	0.03	0.19	0.92	-0.31
Individual indoor sporting and other recreation activities	0.44	-0.75	-0.36	-0.16	-0.03	-0.03	-0.04	-0.02	-0.01
Recreationally beneficial sporting and other recreation activities	0.15	0.02	0.21	0.64	-0.66	-0.22	-0.11	-0.05	-0.03
Leisure-time sporting and socializing activities	0.04	0.01	0.04	0.06	0.02	0.03	0.13	0.27	0.95
Leisure-time medically controlled recreation activities	0.12	0.02	0.14	0.29	0.14	0.90	-0.15	-0.07	-0.03
Outdoor sporting activities	0.14	0.02	0.18	0.45	0.75	-0.38	-0.12	-0.06	-0.03
Outdoor non-sporting recreation activities	0.07	0.01	0.07	0.10	0.03	0.06	0.95	-0.25	-0.08

controlled recreation activities (.90) and by the small contribution of the variable *outdoor sporting activities* (-.38). The seventh factor was defined by the variable *outdoor non-sporting recreation activities* (.94), the eighth factor by the variable *attractive/extreme sporting activities* (.92) and by the small contribution of the variables *leisure-time sporting and socializing activities* (.27) and *outdoor non-sporting recreational activities* (-.25). The ninth factor was dominated by the variable *leisure-time sporting and socializing activities* (.95) and to a lesser extent by the variable *attractive/extreme sporting activities* (-.31).

Discussion and conclusion

The correlation matrix between the criterion variables (characteristics) (Table 4) shows, in general, very low correlations, as expected, since the classification hypothesizes mutually exclusive groups. In the factor analysis the results showed and confirmed this score. Namely, in the first factor the variable *collective sporting and other recreation activities* had the largest contribution, and was consequently defined as the factor of collective sports. The second factor axis differentiated between individual sports that are done indoors from individual sports that are done outdoors. This factor defined individual sports regardless of the place where they are practised/done. In the third factor all three variables (characteristics) belong to an area of sport and are basically executed individually, so that their interconnection is acceptable. Namely, the variable *martial art* was extracted from the group of individual sports due to its special features, both as regards the activities themselves and as regards the people that participate in them. This characteristic of martial arts does not relate only to leisure-time sport, but also to individual sports, which is evident from the opposite direction of the contributions of variables (characteristics) in the structure of this factor. Thus, this factor was defined as the *martial arts* factor. The following factor, defined as *recreationally beneficial sporting and other recreation* activities, was accompanied by *outdoor non-sporting recreation activities.* Their common denominator was the list of the following sporting and recreation activities: aerobics, exercising for fitness, non-competitive biking and running, i.e., none of them implies either any danger or competition. In contrast, the variable *martial arts* refers to combat in direct physical contact with an opponent. The fourth factor, therefore, emphasised the difference between leisure-time sporting activities and martial arts. The fifth factor was dominated by the characteristics (variables) that differ as regards the place where the activities are practised, the degree of organisation and the level of control. *Recreationally beneficial sporting and other recreation activities* are almost always carried out indoors (sports halls, fitness centres, swimming pools) as programmed and controlled leisure-time sporting activities, whereas the *outdoor sporting activities* are carried out exclusively outdoors and at one's own initiative. Due to the size of the contribution of variables it is difficult to choose only one variable and name the whole factor accordingly, especially because both variables have their loadings on the fourth factor as well. In the sixth factor, the most parsimoniously defined variable *leisure-time medically controlled physical activities* was dominant. Similarly, in the seventh factor, the variable *outdoor non-sporting recreation activities* was dominated by the group of unconventional activities carried out in nature, for example, hiking, walking, etc., and this is

something that clearly distinguishes it from the other groups of activities. The eighth factor was dominated by the *attractive/extreme sporting activities*. Finally, the ninth factor was dominated by the variable *leisure-time sporting and socializing activities* in contrast to the eighth factor that comprised the most risky or dangerous sporting activities. The variable *leisure-time sporting and socializing activities* included activities such as croquet, swing bowls, miniature golf, etc., whereas the variable *attractive/extreme sporting activities* encompassed activities such as speleology, motorcycle racing, paragliding, etc.

An attempt to determine the latent structure of the ten variables (characteristics) on the basis of their position in relation to the 93 entities was not successfully accomplished because the factor analysis did not result in the expected sufficient number of interpretable factors. The factors were, as a rule, defined by only one criterion variable each. Therefore, the expected latent structure of the variables describing leisure-time and other recreation activities was not obtained. Yet, this does not mean that these characteristics do not exist at the manifest level of characteristics of leisure-time sporting and other recreation activities. So, recreation activities practised in Croatia may be observed as: collective sporting and other recreation activities; individual sporting and recreation activities; martial arts; recreationally beneficial sporting and other recreation activities; outdoor non-sporting recreation activities; leisure-time medically controlled recreation activities; outdoor sporting activities; attractive/extreme sporting activities and leisure-time sporting and socializing activities. Due to the nature of the obtained results it would be useful to proceed with the research, but this time the entities should be better defined and the variables describing leisure-time sporting and other recreation activities should be more carefully selected.

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POKUŠAJ DEFINIRANJA LATENTNE STRUKTURE KARAKTERISTIKA SPORTOVA I SADRŽAJA SPORTSKE REKREACIJE

Sažetak

Uvod

U radu se polazi od činjenice da postoji veliki broj različitih sportova i sadržaja sportske rekreacije kojima se ljudi bave. Njihova brojnost nameće problem racionalne klasifikacije, što je predmet istraživanja kako u svijetu tako i u nas. Primjerice, COMPASS je europski projekt sa svrhom da se klasificira, standardizira i prati sudjelovanje ljudi u redovitim oblicima vježbanja. Hrvatska (još) nije formalni član COMPASS-a, ali se poduzimaju neke akcije u tom smjeru.

Ovaj rad ima dva cilja. Prvi cilj je napraviti listu (popis) sportova i sadržaja sportske rekreacije kojima se bave građani Republike Hrvatske. Drugi je cilj odrediti latentnu strukturu karakteristika tih sportova i sadržaja sportske rekreacije i tako ih klasificirati, odnosno, svrstati u manji broj skupina. Pored toga, ovakvo istraživanje može doprinijeti usklađivanju hrvatskih standarda s onima deklariranima u Europi.

Metode

Putem anketnog upitnika otvorenog tipa, prikupljeni su podaci od 1.126 odraslih osoba, građana Republike Hrvatske. Na osnovi odgovora ispitanika registrirana su 93 različita sporta i/ili sadržaja sportske rekreacije kojima su se ispitanici nekada bavili ili se sada bave. U ovome radu, upravo ta 93 sporta i/ili sadržaja sportske rekreacije čine uzorak entiteta. Tako definiran uzorak entiteta ne pokriva sve moguće sportove i sadržaje sportske rekreacije kojima bi se ljudi mogli baviti niti ima ambiciju biti potpun i iscrpan, već je odraz onoga čime se ljudi u Hrvatskoj bave.

Definiranje varijabli (kriterija) za utvrđivanje latentne strukture temelji se na postojećim teorijama u kineziologiji te na metodičkom pristupu u planiranju, programiranju, provedbi i kontroli tih sadržaja u području sportske rekreacije. Primijenjeno je 10 varijabli kojima su obuhvaćene osobine sportsko-rekreacijskih sadržaja kao: *kolektivno, borilački, individualno, na otvorenom prostoru, u zatvorenom prostoru, u prirodi, atraktivno/ekstremno, transformacijski, rekreacijski, društveno-zabavno, medicinski (zdravstveno).*

Svaki od 93 entiteta je, temeljem procjene eksperata, svrstan u jednu od varijabli.

Za obradu podataka upotrijebljen je statistički paket SPSS za Windows. Primijenjena je faktorska analiza pod komponentnim modelom, a broj značajnih faktora određen je prema Guttman-Keiserovu kriteriju.

Rezultati, rasprava i zaključak

Faktorskom analizom dobiveno je devet faktora koje objašnjavaju 95,5% ukupnog varijabiliteta. Komunaliteti potvrđuju dobru zastupljenost svih varijabli. Svaki od dobivenih faktora zastupljen je ravnomjerno (parcijalno nose podjednaku količinu zajedničkog varijabiliteta u ispitivanom prostoru), što upućuje na visoku kompleksnost strukture. Prvi faktor razlikuje *kolektivne* od svih ostalih u ovome radu opisanih sportova i sadržaja sportske rekreacije. Drugi faktor je bipolaran. Definiraju ga varijable *individualnih* sportova i sadržaja sportske rekreacije koji se provode kako *u zatvorenom* tako i *na otvorenom prostoru*. Treći faktor definiraju tri varijable koje pripadaju području sporta, a u osnovi se provode individualno. Unatoč tome može se reći da pokriva prostor borilačkih sportova. Četvrti faktor naglašava razliku između redovitih *rekreacijskih programa* koji se primjenjuju *u svrhu transformacije* antropoloških obilježja i njima bliskih sportova i sadržaja sportske rekreacije. Peti faktor definiraju dvije varijable kojima je zajednička karakteristika potencijala moć u *transformaciji* antropoloških obilježja, iako se razlikuju prema mjestu provođenja, stupnju organiziranosti i razini upravljanja. Šesti, sedmi, osmi i deveti faktor su "singl" faktori. Njih dominantno definira jedna varijabla, dok su doprinosi ostalih varijabli vrlo mali ili zanemarivi. Šesti faktors je definiran kao *medicinski kontrolirani* sadržaji sportske rekreacije, sedmi kao *rekreacijski sadržaji koji se provode u prirodi*, osmi kao *atraktivne/ekstremne sportske aktivnosti*, a deveti kao *rekreacijski i društveno-zabavni sadržaji.* S obzirom na to da je veći broj faktora, u pravilu, bio definiran samo jednom kriterijskom varijablom nije dobivena očekivana latentna struktura varijabla koje opisuju sportske i druge sadržaje sportske rekreacije.