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Science of Gymnastics Journal (ScGYM®)

Science of Gymnastics Journal (ScGYM®) (abrevated for citation is SCI GYMNASTICS J) is an international journal that provide a wide range of scientific information specific to gymnastics. The journal is publishing both empirical and theoretical contributions related to gymnastics from the natural, social and human sciences. It is aimed at enhancing gymnastics knowledge (theoretical and practical) based on research and scientific methodology. We welcome articles concerned with performance analysis, judges' analysis, biomechanical analysis of gymnastics elements, medical analysis in gymnastics, pedagogical analysis related to gymnastics, biographies of important gymnastics personalities and other historical analysis, social aspects of gymnastics, motor learning and motor control in gymnastics, methodology of learning gymnastics elements, etc. Manuscripts based on quality research and comprehensive research reviews will also be considered for publication. The journal welcomes papers from all types of research paradigms.

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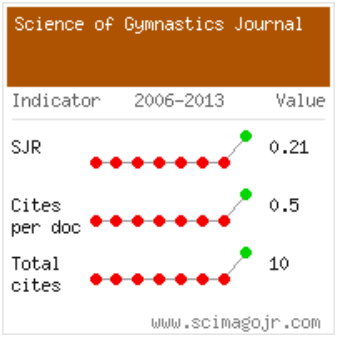

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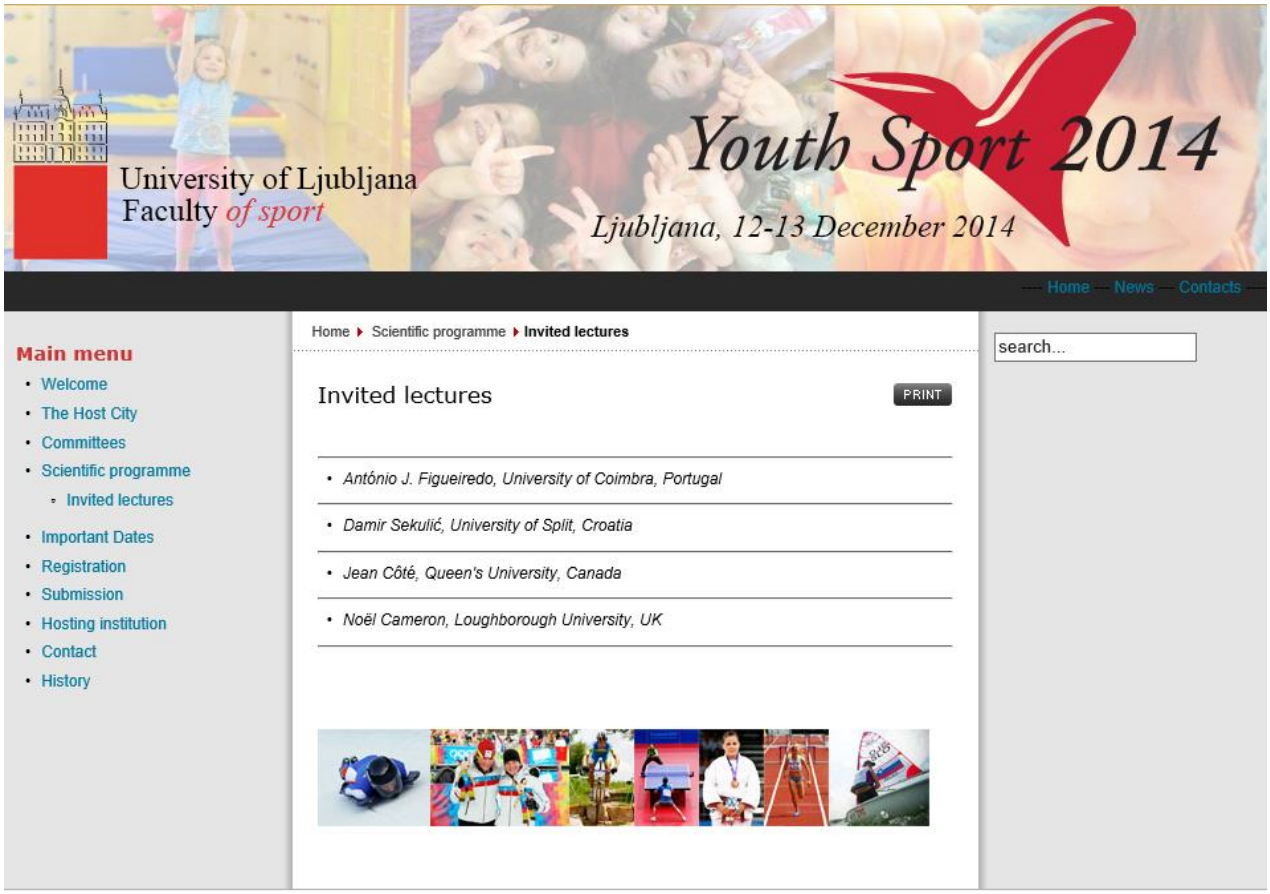


Welcome to the 7th Conference for Youth Sport

The Conference is a triennial event organised by the University of Ljubljana, Faculty of Sport. Continuing the tradition, the 7th Conference on Youth Sport plans to be a high-level event focused on sport science and sport research in a wide yet well-defined range of thematic areas:

1. Challenges in the field of physical education
2. Youth Development
3. Training and testing
4. Sports career dilemmas
5. Education of young athletes
6. Medicine and injury prevention
7. Performance and match analysis
8. Principles for sports training in youth sports
9. Talent indentification
10. Open papers

The Conference will be a forum for sport science researchers to gather and extend networking between them; and to integrate doctoral students and young researchers into the field.

More info:

http://www.youthsport.si/

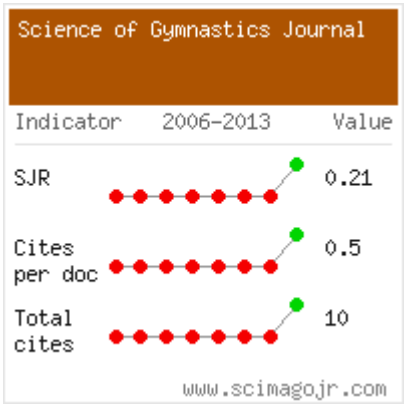
EDITORIAL

Dear friends,

Some of our wishes come through, we got Scopus evaluation, and for the first evaluated year of 2013 we have following results:

Title	SNIP 2013	IPP 2013	SJR 2013
Science of Gymnastics Journal	0.092	0.05	0.205

Source Normalized Impact per Paper (SNIP) measures contextual citation impact by weighting citations based on the total number of citations in a subject field. The Impact per Publication (IPP) measures the ratio of citations per article published in the journal. SCImago Journal Rank (SJR) is a prestige metric based on the idea that not all citations are the same. Scopus ranked us into 4th quartile of journals, even better results we received from SJR SCImago where we had for 2013 20 articles published and 10 cites and we are pplaced into 3rd quartile.



Such results would not be accomplish without our authors and reviewers who made good articles. Of course, our thanks go also to those who cited our articles and we hope there will be more of them in the future if we will be also included into Thomson Reuters Web of Knowledge IF.

For the third issue in 2014, our fellow researchers prepared six articles from the fields of judging, physical education, biomechanics and history. With renoved professor Anton Gajdoš (Slovakia) author of many gymnastics books and articles we agreed he will have short historical notes about best gymnasts. He has quite big archive and it is worth to publish.

The first article is about judging artistry in women artistic gymnastics and is written from Slovenian authors Maja Bučar Pajek, Marjeta Kovač, Jernej Pajek and Bojan Leskošek**,** article was prepared with Neli Kim (FIG, WTC president) support and some of ideas were already implemented into new Code of Points.

The second article deals with gymnastics safety within physical education classes. Tunisia team Sarra Hammoudi Nassib, Bessem Mkaouer, Sabri Nassib, Sameh Menzli, Hela Znazen, Sabra Hammoudi Riahi and Ahmed Njeh; notes it is not important just active support of pupil, but as well are important apparatus management and class management.

The third article was prepared by María Alejandra Ávalos Ramos, María Ángeles Martínez Ruiz and Gladys Merma Molina from Spain. Their research analyses the limitations of gymnastics

teaching in Secondary Schools and it would be important when designing the curriculum, to know the practice of teachers which could contribute to the implementation of new models of professional development and training.

The fourth article is from Slovenia by Miha Marinšek and Uroš Slana. They developed and standardized software for Android smart phones to analyse equilibrium during training seasons, which can be used in different gymnastics sports where equilibrium oscilations matters.

The fifth article is from Greek Theofanis Siatras, he examined the acute effect of synergist and antagonist muscles static stretching (SS) on the body segmental angles. As we are using stretching in everyday practice it is worth to read article if we want to be better coaches.

The last article is from Jože Podpečnik, who works at Slovene National Museum and he prepared interesting historical article about Sokol uniforms. It is worth to note, not many federations take care about their dresses from the past. But this artefacts are important for new generations to learn from our experience.

Just to remind you, if you quote the Journal: its abbreviation in the Web of Knowledge is SCI GYMNASTICS J. I wish you pleasant reading and a lot of inspiration for new research projects and articles,

Ivan Čuk
Editor-in-Chief

THE JUDGING OF ARTISTRY COMPONENTS IN FEMALE GYMNASTICS: A CAUSE FOR CONCERN?

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Original article

Abstract

Due to its nature and relatively poor definitions in the Code of points, judging of artistry may suffer from serious flaws in reliability and validity. We have used the balance beam artistry evaluation forms given by 5 execution judges at World Championship in Tokyo 2011 to analyze reliability and validity. Data on 194 competitors was gathered. Deductions were received by a highly variable number of competitors from separate judges in the same components of artistry. The variability of average total artistry deduction was relatively large, ranging from 0.18 to 0.39 points. The average correlation coefficient in total artistry deductions between all judge pairs was 0.6±0.06 and average correlation coefficient in total deductions from execution score was 0.73±0.04, $p < 0.001$. Kendall's coefficient W revealed significant systematic over- or under-rating of judges in the components of artistry of presentation, sureness of performance and variation in rhythm, but also in total artistry deductions (W values ranged from 0.05 to 0.53, $p < 0.001$ for all W coefficients). We conclude that neither reliability nor validity of artistry judging was satisfactory in this analysis. Further thorough evaluations of judging performance in artistry are needed to guide accommodations and hopefully improvements in this field.

Keywords*: Artistic Gymnastics, Evaluation, Panel Judging, Bias.*

INTRODUCTION

Judging in artistic gymnastics has long tradition and crucially influences outcome. The differences between gymnasts are often small, especially if the homogenous group such as the world class gymnasts competes at the higher level competitions as World Championships or Olympic Games (GymnasticsResultsCom, 2012).

Several aspects of judging performance were already described in the past (Aronson, 1970; Ansorge et al., 1978; Ansorge & Scheer, 1998; Boen, Van Hoye, Auweele, Feys & Smits 2008; Bučar Pajek et al., 2011; Bučar et al., 2012; Pajek et al., 2013; Dallas & Kirialanis, 2010; Leskošek et al., 2010; Plesner, 1999; Plessner & Schallies, 2005; Popović, 2000; Ste-Marie, Valiquette & Taylor; 2001)

The Code of Points for women 2009 defined 5 judges for evaluating exercise execution at World Championship in Tokyo 2011. This results in the E (execution) score. In addition, 2 judges evaluate exercise content and they provide the D

(difficulty) score. E scores range from 10 points down in decrements of 0.1 and D scores go from 0 points rising in increments of 0.1 (FIG, 2009). According to the Code of points the judges giving execution (E) scores may penalize competitors for general mistakes, specific execution mistakes and artistic flaws (FIG, 2009).

In the recent years our group has performed several analyses of the judging performance at various competitions and several propositions for further improvements in this field were made (Bučar, Čuk, Pajek, Karacsony, & Leskošek, 2012; Bučar Pajek, Forbes, Pajek, Leskošek, & Čuk, 2011). It was our impression that evaluation of artistry components suffers from serious flaws in reliability and validity of judging. We also questioned the relevance and justification for deductions in some components of artistry, such as gesture and mimic, which may be highly variable between the judges and subject to personal and subjective opinions. Since the sum of all artistry deductions may rise up to 0.8 points, this may significantly impact the final result and we feel that such an impact should be justified by quantitative data.

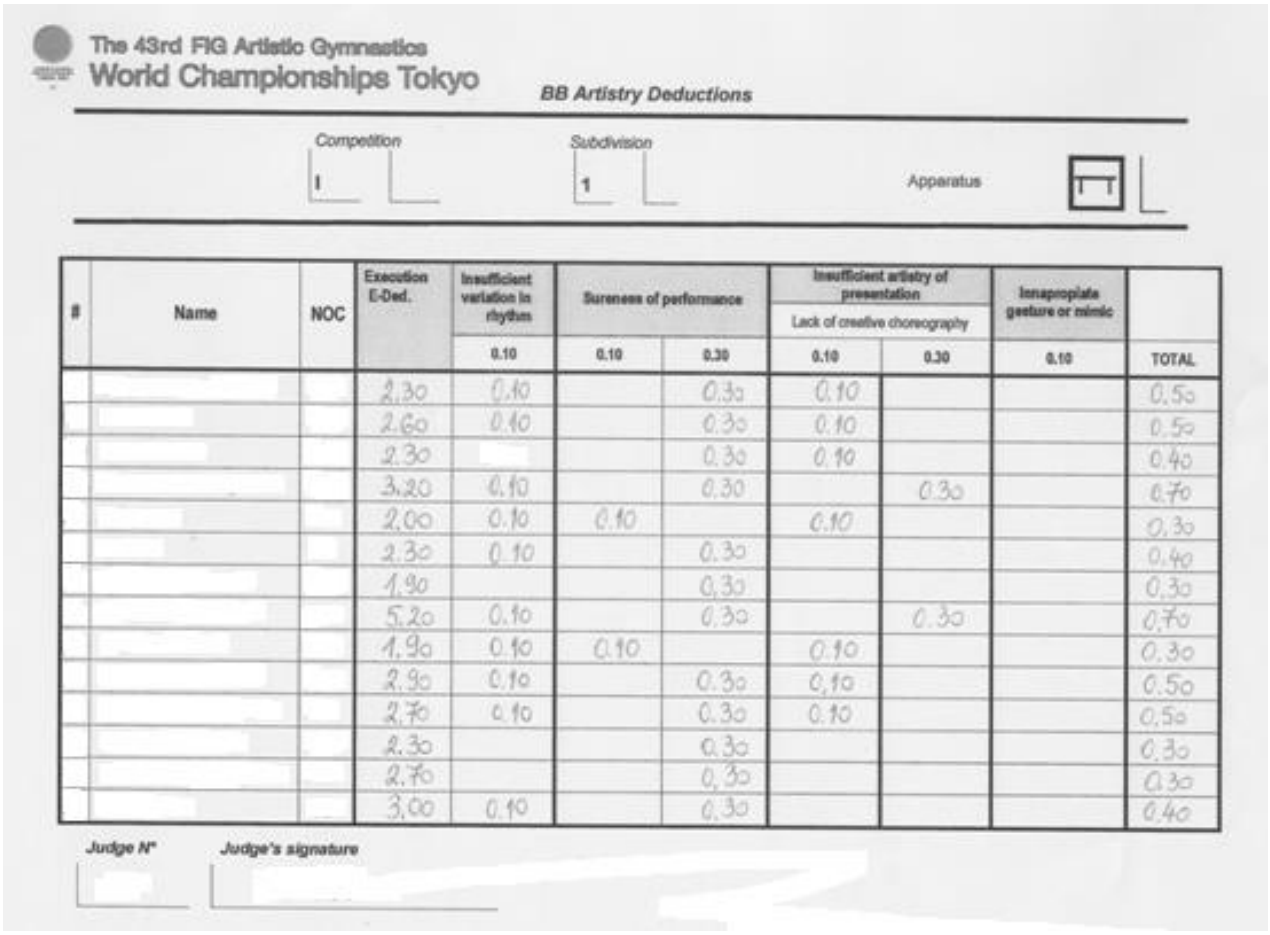
In female artistic gymnastics artistry is evaluated and judged at two apparatus: balance beam and floor. Artistic deductions are derived from the following components of artistry: inappropriate gesture and mimic, insufficient artistry of presentation, sureness of performance and insufficient variation in rhythm (Table 1). The deductions are given in the magnitude of 0.1 or 0.3 points and the final artistry deduction is included in the final E score.

But it seems, that is not very clear for the judges and coaches what is the artistry and how the judges are expected to judge. In theory, artistry at balance beam and floor is defined as mastery of execution (the judges should move away from the personal taste of beauty and follow the definition in the Code of points). But in the Code of points (FIG, 2009), there was no clear definition of mastery, just deduction for artistry mistakes (Table 1).

In Artistic Gymnastics we are concerned with the problem of a systematic bias and inconsistency of judges which may influence the final ranks of competitors. Continuous monitoring of the quality of judging (incorporating reliability and validity) is a necessity. Therefore we designed this study with the aim to analyze the reliability and validity of judging artistry in female gymnastics. We have used the judging results from one of the world's largest competitions and examined them for indices of inter-rater reliability and validity. On the basis of results we proposed several lines of concern regarding the performance of judging and justified the need for further exact and thorough reevaluation of this field.

Table 1. *Artistry Deductions at Balance Beam (FIG, 2009).*

FAULTS	**0.1**	**0.3**
Insufficient variation in rhythm	X	
Sureness of performance	X	X
Insufficient artistry of presentation throughout the exercise including:		
Lack of creative choreography originality of composition of elements and movements	X	X
Inappropriate gesture or mimic not corresponding to the movements	X	



The 43rd FIG Artistic Gymnastics World Championships Tokyo

BB Artistry Deductions

Competition: I | Subdivision: 1 | Apparatus

#	Name	NOC	Execution E-Ded.	Insufficient variation in rhythm	Sureness of performance		Insufficient artistry of presentation / Lack of creative choreography		Inappropiate gesture or mimic	
				0.10	0.10	0.30	0.10	0.30	0.10	TOTAL
			2.30	0.10		0.30	0.10			0.50
			2.60	0.10		0.30	0.10			0.50
			2.30			0.30	0.10			0.40
			3.20	0.10		0.30		0.30		0.70
			2.00	0.10	0.10		0.10			0.30
			2.30	0.10		0.30				0.40
			1.90			0.30				0.30
			5.20	0.10		0.30		0.30		0.70
			1.90	0.10	0.10		0.10			0.30
			2.90	0.10		0.30	0.10			0.50
			2.70	0.10		0.30	0.10			0.50
			2.30			0.30				0.30
			2.70			0.30				0.30
			3.00	0.10		0.30				0.40

Judge N° | Judge's signature

Figure 1. *Judge sheet for artistry (to protect judges and gymnasts identity we erased identifications data from presented artistry sheet (Majer, 2013).*

METHODS

This evaluation of artistry is based on results at World Championship in Tokyo 2011. The evaluation forms for artistry deductions were inspected for all competitors on balance beam qualifying session (N=194). Each competitor was evaluated by 5 judges of international level. For each competitor the deduction score for each component of artistry and final artistry deduction score given by each judge was noted. Final difficulty, execution and total score were monitored as well for each competitor. The identity of judges was not revealed and was kept anonymous for the purpose of this report.

The reliability of judges in monitoring artistry was evaluated by counting the frequency of missing scores and by distribution of deductions at various components of artistry.

The compliance and coherence of judges was evaluated through calculation of mean artistry deduction and mean rank of the artistry deduction for each individual judge. Ranks of the judge's artistry deduction for each competitor were analyzed using the Kendall's coefficient of concordance W. In this specific application of Kendall's W, the higher (and more significant) W values denote systematic over or under-rating of artistry deductions and are therefore a reflection of a special case of judging bias. Kendall's W was calculated for final artistry deduction and separately for each component of artistry.

Kendall's coefficient of rank correlation tau-b between judges for total artistry deductions was compared to tau-b for final total deductions without artistry deductions.

This evaluation was used to compare the concordance of judges at artistry and other components of judging execution. Finally, the Kendall's tau-b correlation coefficient between total artistry deductions and final D, E and total scores were calculated for separate judges.

Used set of variables included: FREQUENCIES OF DEDUCTIONS for components of artistry evaluated by the judges, TOTAL ARTISTRY DEDUCTIONS with distribution by judges, MEAN RANK OF ARTISTRY DEDUCTIONS given by individual judges and TOTAL ARTISTRY DEDUCTION MEAN RANK, CORRELATION COEFFICIENTS of total artistry deductions and total deductions between judge pairs.

RESULTS

There were 194 competitors on balance beam qualification session with artistry deductions included. The frequencies of missing deductions and distribution of deductions for various artistry components are given in table 2.

For inappropriate gesture or mimic there was no deduction for vast majority of competitors. Judge No. 4 stands out with the highest number of deductions and the highest number of missing values at all components of artistry. In general, there are large differences in the distribution of no deduction, 0.1 and 0.3 deductions for sureness of performance and insufficient artistry of presentation.

When the data on individual judge's artistry evaluation forms were inspected, several cases were found, where the judges gave artistry deductions, but calculated the sum of separate deductions in a wrong way (the final artistry deduction was different than the sum of separate components).

Total artistry deductions with distribution according to individual judges are given in table 3.

Table 2. *Frequencies of Deductions and Missing Values for Components of Artistry Evaluated*

Artistry component	Deduction level	Judge 1	Judge 2	Judge 3	Judge 4	Judge 5
Inappropriate gesture or mimic	No deduction	194	175	190	138	179
	Deduction 0.1	0	0	0	9	1
	Missing value	0	19	4	47	14
Insufficient variation in rhythm	No deduction	88	138	48	46	10
	Deduction 0.1	106	37	142	102	171
	Missing value	0	19	4	46	13
Sureness of performance	No deduction	2	21	87	57	24
	Deduction 0.1	34	78	94	60	64
	Deduction 0.3	158	76	9	30	92
	Missing value	0	19	4	47	14
Insufficient artistry of presentation	No deduction	88	106	124	74	112
	Deduction 0.1	89	62	59	67	47
	Deduction 0.3	17	7	7	6	22
	Missing value	0	19	4	47	13

Table 3. *Number of Competitors with Given Total Artistry Deduction and Their Means by Individual Judges.*

Total artistry deduction	Judge 1	Judge 2	Judge 3	Judge 4	Judge 5
No deduction	1	17	31	31	1
Deduction 0.1	11	46	53	27	15
Deduction 0.2	13	33	62	26	52
Deduction 0.3	49	57	35	31	22
Deduction 0.4	58	26	3	6	50
Deduction 0.5	46	6	8	18	24
Deduction 0.6	4	2	1	3	1
Deduction 0.7	12	4	1	3	16
Deduction 0.8	0	0	0	3	0
Missing	0	3	0	46	13
Mean total deduction	0.39	0.24	0.18	0.24	0.34

Table 4. *Mean Ranks of Judge's Artistry Deductions and Kendall's Coefficient of Concordance W.*

Artistry component	Judge 1	Judge 2	Judge 3	Judge 4	Judge 5	N	Kendall's W[a]	Sig.
Insufficient variation in rhythm	2.85	2.02	3.36	3.08	3.70	133	0.314	<0.001
Sureness of performance	4.11	3.42	1.86	2.13	3.48	132	0.532	<0.001
Insufficient artistry of presentation	3.47	2.88	2.74	2.90	3.00	133	0.054	<0.001
Total artistry deduction	4.3	2.8	1.87	2.12	3.91	143	0.527	<0.001

Table 5. *Correlation Mmatrices for Total Artistry Deductions Between All Judge Pairs. Correlations between total deductions (but without artistry deductions, which were subtracted from total deductions) are also shown.*

	Item	D score	E score	TAD 1	TAD 2	TAD 3	TAD 4	TAD 5
Correlations with final scores	Final score	0.68	0.78	-0.61	-0.66	-0.66	-0.62	-0.71
	D score		0.44	-0.49	-0.52	-0.53	-0.60	-0.51
	E score			-0.61	-0.63	-0.63	-0.49	-0.71
Correlation matrix for artistry deductions	TAD 1				0.55	0.59	0.46	0.60
	TAD 2					0.70	0.62	0.61
	TAD 3						0.61	0.63
	TAD 4							0.58
Correlation matrix for total deductions without artistry				TD 1	TD 2	TD 3	TD 4	TD 5
	TD 1				0.73	0.73	0.69	0.70
	TD 2					0.83	0.73	0.70
	TD 3						0.74	0.73
	TD 4							0.67

The coefficients of variation of the artistry deductions for the individual judges 1-5 were: 0.36, 0,63, 0,73, 0,84 and 0,48. Mean ranks of judges for components of artistry and total artistry deductions mean rank are presented in table 4. Ranks were tested for concordance with Kendall's W coefficient of concordance. These results are also given in table 3. No data is given for inappropriate gesture or mimic component, since there were no deductions for this component for any of the competitor in 3 out of 5 judges.

The correlations in total artistry deductions between separate pairs of judges are given in the table 5. This table also holds correlation matrices for various correlations of artistry deductions with other variables for all judge pairs.

TAD - total artistry deduction, the numbers denotes judges; TD - total deduction without artistry deduction, the number denotes judges.

It can be seen, that all correlation coefficient for judge pairs in total deductions (TD) are higher than coefficients for total artistry deductions (TAD), average TAD correlations coefficient was 0.6±0.06 and average TD correlation coefficient was 0.73±0.04, the difference between TAD an TD being statistically significant, $p < 0.001$. In general, the magnitude of correlations between TAD and final scores, D scores and E scores are expectedly negative, but also of relative low magnitude.

DISCUSSION

In the present analysis we have evaluated the artistry deductions on balance beam qualifying session at the World Championship competition in Tokyo 2011. We have found serious deviations in reliability of monitoring the artistry of competitors and significant values of systematic under- or over-rating denoting suboptimal validity.

For the component of inappropriate gesture and mimic it can be seen, that to a vast majority of competitors no deduction was given from 3 out of 5 judges. Only a single competitor was penalized from judge 5 and 9 competitors (not including the competitor of judge 5) were penalized from judge 4. These findings throw a major doubt on the relevance of this artistry category to be judged, when no deduction in this category is given from majority of judges to any of competitors. Additional source of problems when judging gesture and mimic comes from the fact that the judges may be inspecting the competitors mostly from the flank position and from the substantial distance, which prevents the appropriate gesture and mimic assessment. Additional problem, especially for less experienced judges, is that judges may spend significant amount of time looking at scoring sheet and therefore missing some of the less important features of the routine, such as mimic and gesture (Ste-Marie, 2000).

When looking at inter-judge variability, we have found large differences in the distribution of magnitudes and the mean total artistry deductions. The dispersion of mean deductions was relatively large, going from 0.18 points for judge 3 to 0.34-0.39 points (twice the amount) for judges 1 and 5. This is supplemented by the significantly ($p<0.001$) lower correlations between judge pairs in total artistry deductions as compared to correlations in total deductions from E score (without artistry deductions). Furthermore, the number of competitors without deduction for separate components of artistry is highly variable between the judges and even some calculation mistakes in summation of artistry deductions were noted. Taken together, these facts point to an insufficient inter-rater reliability of artistry judging, the finding which is substandard for general judging performance at major gymnastic competitions (Leskošek, Čuk, Karácsony, Pajek, & Bučar, 2010; Pajek, Cuk, Pajek, Kovac, & Leskosek, 2013).

Serious flaws in validity of artistry judging were also found. Here we focused on a special case of validity, which deals with the presence of systematic over or under-rating or scoring of competitor's artistry (what is also called bias). Table 3

clearly shows that we found a significant amount of systematic under- or over-rating in every artistry component examined. We speculate, that this has a different origin than national bias, where judges give better scores to gymnasts of same nationality (Ansorge & Scheer, 1988). This may better be explained by differences in character and personal characteristics (personal taste, culture), judging education and relatively high frequency of changes in FIG rules regarding the judging of artistry (FIG, 2009). The judging of artistry was also relatively poorly defined in FIG rules. In Code of points 2013 – 2016 artistry is better defined (FIG, 2013). We expect that new rules of artistry evaluation will bring improvement of reliability and consistency of judges and this should be verified through further research of future competitions.

In conclusion, we have analyzed the judging of artistry on balance beam at World Championship 2011 competitions and found worrying results. The inter-rater reliability was poor with large differences in number of competitors penalized and in average artistry deductions. For the artistry component of inappropriate gesture and mimic, majority of judges gave no deduction and other judges differed significantly. This puts the inclusion of this artistry component in the present code of points (FIG, 2013) under question. Validity of judging was substandard with systematic under- or over-rating found in all examined components of artistry and total artistry deductions as well. Due to the limitation of data to a single competition these results may be regarded as pilot and hypothesis generating. We propose that the performance of judging artistry should be repetitively examined in present Olympic Cycle (2012-2016) and if our results are confirmed a thorough reevaluation of the way and scope of artistry evaluation should be made by FIG.

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EFFECTIVE SKILLS AND INTERPRETATIVE PERCEPTION OF RISK TAKING OF FUTURE TEACHERS IN LEARNING GYMNASTICS SITUATION

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Original article

Abstract

The purpose of the present study was to determine the current skills used by the future teachers and the contribution of these skills to determine the risk evaluation during the learning of gymnastics situations. Twenty six future teachers voluntarily participated in this study. They were sports-science students pursuing degrees in Exercise Science and Physical Education during the academic year 2012/2013. All Gymnastics learning situations are digitally video-filmed. The investigators attended and observed all the learning lessons for 10 weeks throughout the entire semester. The interesting finding of this study was that there are seven skills that are mostly used by the future teachers such as the choice of the learning situations, problems resolution, risk assessment, mastery of the rules of safety, application of security rules and responsibility taking. The results suggested as well that future physical education teachers showed great importance to Equipments' Management and Time and Space Management. Likewise, responsibility taking, Intervention /help, and Group management were the most determinant skills used during the future teachers' interventions.

Keywords*: Skills, Physical Education, Observation, Intervention, Learning.*

INTRODUCTION

Physical Education (PE) is one of the educational means, possibly the most enjoyable and most effective one when used properly to reach its objectives (Güne, 2007; Öztürk, 1998). Considering this, the teaching of gymnastics, which is one of the branches of PE and which is described as a physical activity performed on athletic equipments or on the floor with the aim of making people gain strength, power, coordination, body control and flexibility, is vital in all PE classes. However, this activity requires a wide range of equipments which can lead to injury if not used correctly. It may also lead to injury in case the actions to be performed are not attempted sensibly. This diversity of elements requires different forms of education and raises questions for educational researches about the organization and systems of learning, and

consequently, about the methods that are used by teachers. In fact, in recent years, the injuries caused due to school physical education were increasing rapidly. These injury actions bring troubles to teachers, students and the familyas well (An, & Huang, 2012). Likewise, it has been revealed by researches concerning the field applications at schools that PE lesson, which have much importance at the individual's development, had been far away from the expected efficiency (Güray, 2002; Kangalgil & Dönmez, 2003; Karaku, 2005; Sungur, 2000; Tasmektepligil, Yılmaz, Mamolu, & Kılcıgil, 2006; Solmaz, 2006). So far, the most important target of today's educational system, when dealing with the teachers' learning situation, is the safety issue which is related to the lesson and the risk of injury that should be seriously taken into consideration. In fact, each activity taught in PE has its own safety regulations that children must be made aware of as confirmed by Capel (2002) who stated that, "… high quality organization, planning and management skills are required to ensure a purposeful, yet safe environment for children to practice new skills". Following this conclusion, all teachers are required to consider the risk assessments of the equipments and the environment they intend to use before the lesson begins because "Safety is arguably the most important factor in planning a PE lesson" (Capel, 2002). Since the pre-service teachers had inadequate knowledge of children's understanding and developmental levels, they were unable to anticipate how children learned the content and what types of learning tasks were more difficult or easier for children. Indeed, any presence of risk boosts research and safety construction. Analysis of teaching gymnastics' practices also shows that Physical Education and sports' teachers often choose a sanitized practice of Physical Activity and Sports "at risk". In fact, researchers like Kamba, Antoniou, Xanthi, Heikenfeld, Taxildaris, & Godolias (2004) show that the students involved in engines and which are originally of "driving insecurity" deficit feel more vulnerable than others. Therefore, they are less likely to engage in motor action thus enclosing the vicious cycle of passivity and failure in the field of Physical education and sport. Goirand (1998) also showed the negative effects of a luxury passive safety in gymnastics when affirming that "bowing students 'are' locked in a business perspective without vertigo." That is why, teachers encourage stakeholders to "dare" to let students explore its limits (Baumann, 2001; Carrasco, 1997; Lapeyre, 1993). In fact, the teacher must try to trust his students and should "Not 'be'too protective or too lax" (Rollet & Usmer, 1994), while he also needs to ensure a climate of mutual trust within the class (Bruckmann & Recktenwald, 2003). Therefore, when thinking about the issue, the developments in the security context of the PE and sport should enable us to better design an appropriate content which would be useful in its design and implementation of education. However, there is a lack of academic work in this area, and studies that had been conducted had mainly focused on high performance aspects of the sport. There are few studies related to gymnastics that had focused on the different levels and methods of teaching and learning. Similarly, few studies considered the act of safety during the learning situation. Accordingly, the primarily aim of this research was to determine the current skills of future teachers and the contribution of these skills to the risk evaluation during the learning of gymnastics situations.

METHODS

The research protocol has combined two methodologies presented to participants during a learning Gymnastics Cycle composed of eight lessons of one-hour session of practice. During the experiment, the same researchers were present throughout the lessons. Future teachers were de-briefed about the goal of the study once all the experimental sessions were finished. During the Gymnastic cycle, the future teachers used the following learning items

in their instructions: (a) learning forward roll; (b) backward roll in rear; (c) handstand; (d) round off; and (f) the creation of gymnastics sequences including different element. During the field experiences, the future teachers used the same class level and taught eight educational gymnastics lessons.

The following mediums were used for data collection:

1. The aspects of the lesson planning and the intervention of the future teachers were based on a constructed evaluation grid that comprises: *(1)* Didactic Preparation (DP): which refers to the analysis of the activities and the different processes of knowledge transmission and the skills specific to a discipline and its acquisitions by the students, *(2)* Physical Preparation of Lesson (PPL): which refers to the construction and implementation of tasks or situations which would allow a better control of interventions and move towards a better adaptation of content, *(3)* Management of Work Areas (MWA): which refers to the choice of the organization and the distribution of activities in space, *(4)* Setting up Equipment (SE): it is setting up and putting away the equipment designed for the establishment of play spaces or hardware configuration of the workshop (the nature of the obstacle, the height, width, area and pulse reception ...), *(5)* Use the Rules of Safety (URS): which involves organizing the session, making the Parade, adjusting groups favouring child safety, giving instructions on safety rules and finally the *(6)* Objectives / Constraints to be respected (O/C): they involve setting objectives and analysing the social and material constraints responsible for the choice of sport and the physical activity. We made reference during the construction of the grid to "five generic properties" of risk situations defined by Cadet (2001).

2. Observing and assessing the skills used by teachers during the lessons by referring to the professional skills of teachers such as: Equipment Management (EM): which is the fact of putting away the equipment designed for the establishment of the play spaces, Space Management (SM), Time Management (TM): which refers to the time spent for organization and transition actions, Group Management (GM): which deals with assigning students to play individually, per group or collectively according to the type of the task, Individualization of Instruction (II): which is implementing differentiated instruction on joint learning for all students based on objectives, Correction (C), Safety (S).

Observation allowed us to perceive the possible difference between the content analysis of the educational record of the session itself as well as the security taken at risk.

Process of Analysis of Observations

All Gymnastics learning situations are digitally-video filmed. All teachers' intervention sequences are recorded. The investigators had no prior relation with the participants. The investigators started this observation when the future teachers began their teaching in gymnastic cycle. The investigators attended and observed all learning lessons for 10 weeks throughout the entire semester. During the learning lessons, the investigators observed future teachers in individual and separate sessions throughout the Gymnastic cycle. The investigators took field notes while observing the future teachers.

In each filmed session, we primarily tried to identify the types of interventions and skills utilized by the teachers that we presented below. Indeed, the focus is on the choice of the use of active and passive safety, the intervention time and ability to help and prepare the students for the learning situations. Accordngly, our main purpose was to characterize a typical profile of future Tunisian teachers.

Individual Evaluation Forms

The individual Evaluation Forms were prepared for individual interventions to evaluate pre-lesson preparations and lesson interventions of the experiment future teachers who took part in this research

experiment. This individual Evaluation Form was constructed by observing teaching lesson before the experiment. This observation allowed us to construct the individual Evaluation parameters which were also relying on the given literature [the "five generic properties" risk situations defined by Cadet (2001)]. Each form has different evaluation parameters specifically related to that intervention. So, a four point scale (1=not at all; 4=very much so) was used. The evaluation of each future teacher was recorded and afterwards was graded by the evaluators who were involved in the research experiment. Thus, overall scores that future teachers received from each activity evaluation were counted.

Observing and evaluating pre-lessons' preparations and lessons' interventions of the experiment future teachers is assessed via the teachers' professional skills such as: the Choice of Learning Situations (CLS), Solving Problem (SP), Risk Assessment (RA), Mastery of the Discipline (MD), Mastery of the Rules of Safety (MRS), Applying the Security Rules (ASR) and Taking Responsibility (TR).

Twenty six future teachers (age 22.8±1.2 years; mass 78.5±5.7 kg; height 178.8±9.3 cm) voluntarily participated in the study. They were sports science students pursuing degrees in Exercise Science and Physical Education during the academic year 2012/2013.

To access the student populations in physical education and sport schools, we contacted the school counsellors. They have played the role of "research associates" in organizing the collection of data from their students. The phase of data collection took place during the gymnastics cycle from January to March 2013. No information about the purposes of the study was given to the participants until after they completed the experiment.

The step wise regression was established between correlated variables. Statistical analyses were compiled onto Excel spreadsheets and were performed using the software package SPSS version 16.0 (SPSS Inc., Chicago, IL, USA).

RESULTS

The aspects of planning lessons and future teachers' intervention

The findings suggested that future physical education teachers caring showed great importance to The Sitting up Equipment as compared with the other components of the lesson (Figure 1).

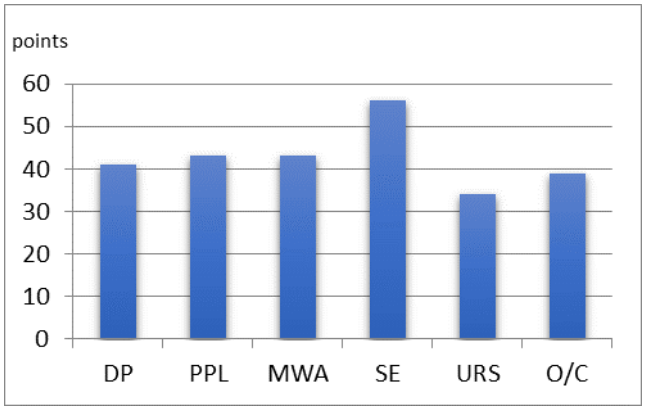

Figure 1. *The analysis of the content of the lesson and future teachers' intervention.*

**(DP) Didactic Preparation; (PPL) Physical Preparation of Lesson; (MWA) Management of Work Areas; (SE) Sitting up Equipment; (URS) Use the Rules of Safety; (O/C) Objectives / Constraints to be respected.*

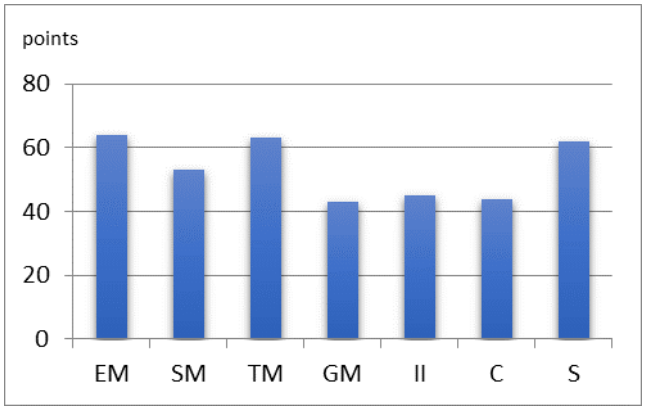

Figure 2. *The skills used by teachers during the lessons.*

** (EM) Equipment Management; (SM) Space Management; (TM) Time Management; (GM) Group Management; (II) Individualization of Instruction; (C) Correction; (S) Safety.*

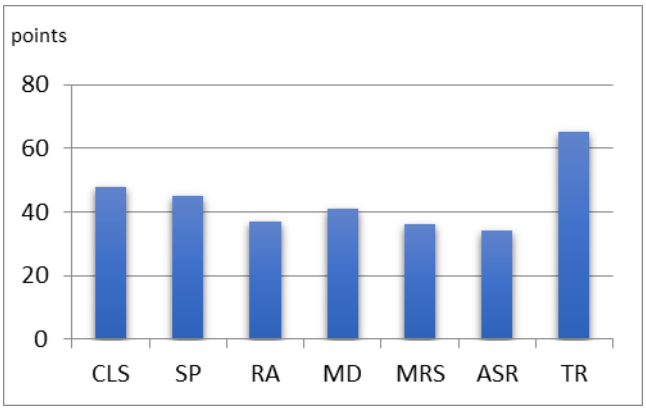

Figure 3. *The most skills used by the future teacher during gymnastics learning situations.*

** (CLS) choice of Learning Situations; (SP)Solving Problem; (RA) Risk Assessment; (MD) Mastery of the Discipline; (MRS) mastery of the rules of safety; (ASR) Apply the Security Rules; (T R)Taking Responsibility.*

Table 1. *The effective skills during lessons interventions.*

Model	A	SE	Beta	t	Sig.
Constant	8.03	0.85	-	9.46	0.000
SM	0.96	0.31	0.48	3.08	0.005
TM	0.87	0.29	0.46	2.93	0.007

a. Dependent Variable: global assessment skills.
**(SM) Space management; (TM) Time management.*

Table 2. *The factors that contribute to the determination of the teacher' competence.*

Model	A	SE	Beta	t	Sig.
Constant	0.00	0.00	-	-	-
MD	1.00	0.00	0.36	-	-
URS	1.00	0.00	0.33	-	-
PS	1.00	0.00	0.32	-	-
MRS	1.00	0.00	0.35	-	-
RA	1.00	0.00	0.36	-	-
CLS	1.00	0.00	0.48	-	-
TR	1.00	0.00	0.36	-	-

a. Dependent Variable: Total teachers 'skills.
**(MD) Master Discipline; (URS) Uses the Rules of Safety; (PS) Problem-Solving; (MRS) Mastering the Rules of Safety; (RA) Risk Assessment; (CLS) Choice of Learning Situations; (TR) Taking Responsibility.*

Table 3. *The main skills in making safety in learning gymnastics situations.*

Model	A	SE	Beta	t	Sig.
Constant	8.14	1.14	-	7.09	0.000
TR	1.40	0.44	0.51	3.17	0.004
I/H	-0.66	0.22	-0.49	-2.93	0.008
GM	0.78	0.34	0.37	2.29	0.032

a. Dependent Variable: teachers 'competence.
**(TR) Taking responsibility; (I/H) Intervention / Help; (GM) group Management.*

Concerning the skills used by teachers during the lessons, the future teachers provided more salient responses regarding their conceptions of safety when preparing their Gymnastics lessons respectively; Equipment's Management 64 points, Time Management 63 points and Safety 62 points. So, using adequate PE equipments and facilities was associated with future teachers' opportunities for more safety activity during physical education (Figure 2).

The effective skills during lessons interventions

According to Table 1, the regression of the overall score of the competence of the different variables shows that this score was determined by the space and time management. Furthermore, the score of the future teachers and the realization of pedagogical situations are based primarily on these two skills.

The factors that contributed to the determination of the teacher's competence

The results indicated that the factors mentioned above contributed to the determination of the teacher's competence and each one contributes according to its regression coefficient. Indeed, step wise regression which can also be expressed in the form of an equation leads to predict the score of the competence of the future teachers (table2).

The major skills ensuring safety in learning gymnastics situations

According to the table 3, the results indicated that responsibility taking, Intervention /help, and Group management were the most common skills used by the future teachers. In fact, we deduce that, these skills were effective for teaching and they are key skills in ensuring safety in learning gymnastics situations.

The teaching episodes indicated that the future teachers intentionally used the types of interventions in their lesson for example:

- We must install the equipment before starting
- Push with your hands.
- Stay tucked, especially tuck your head.

The most common skills used by the future teachers during gymnastics learning situations

Figure 3 illustrates that most of the future teachers were using the Taking Responsibility skill. There was a great consistency between the results of the skills' factors. So, we noted that "taking responsibility" was considered as the most effective skill that characterized the future teachers. However, the findings showed that the "choice of learning situation" and "solving problem" skills were almost similar.

DISCUSSION

The primarily aim of this research was to determine the actual skills of future teachers and the contribution of these skills to risk evaluation during the learning of gymnastics situations. The findings of this research indicated that physical education teachers are presented with numerous opportunities to show they care for their students such as Equipments' Management, Time Space Management and Space Management. Adedeji (2000) also pointed out that there must be sufficient motivation in the form of attractiveness of facilities, supplies and equipment to captivate the athletes' interest to participate in sports or physical education.

Moreover, statistical analysis allows us to rank these skills according to their coefficient and their contribution to the gymnastics lesson. Hence, there are seven skills that are mostly used by future teachers such as the choice of learning situations, solving problem, risk assessment, mastery of the rules of safety, applying the security rules and taking responsibility. These skills are essential in the practical preparation of the lesson and are inherent to the specific motor, the risk-taking and the Security Management.

In this study, not all teachers or their skills were perceived in a positive manner. In fact, future teachers didn't accord much importance to the Group Management, Individualization of Instruction and Correction. Accordingly, safety is arguably the most important factor in your planning. In all PE lessons the safety of pupils and hence of the environment and the equipment must be of a paramount importance. All activities taught in PE have their own safety regulations of which pupils must be made aware of BAALPE (1995).

Likewise, while observing and evaluating pre-lessons' preparations and lessons interventions of the experiment future teachers we noted that future teachers had recorded high scores at Take Responsibility skill. Nevertheless, Risk Assessment (RA), Mastery of the Rules of Safety (MRS), while taking into account the PE teachers of these fundamental skills, were rarely accomplished in order to offer students a content. When applying the Security Rules, these skills have received a substantial share from future teachers. So, teachers must know the specific rules of each activity, warn pupils of the particular dangers, set up safe routines with pupils and use appropriate lesson plans. Teachers must also establish rules and routines and shape pupils' behaviour which enhances both learning and safety (BAALPE 1995).

Certainly, changes in the security context of the EPS had a better design, an appropriate content and help defining teaching skills. As a result a key area of "responsibility" for a PE teacher to be aware of is the legal requirements and obligations that teachers must stick to in maintaining safety and teaching with a high standard. This security context is achieved through appropriate planning for each child in their P E lessons, including assessing and adhering to the safety rules and practices relevant to the subjects taught. While preparing to teach, the initial role of the teachers should be the consideration of the 'climate' in which they intend to teach PE

(Bailey, 2002). Thus, the above analysis allowed the identification of skills that contributed to an effective consideration of risk in learning or teaching security. Among these skills used in learning situations gymnastics is the choice of learning situations. Hence, according to Cadet (2001), the risk assessment should be made for different teaching scenarios or environments, each highlighting particular hazards; the potentially dangerous things associated with that activity/environment, the risks; and the likelihood of an accident occurring. Researches had shown as well that teachers' personal characteristics and ability to interact with students are indicators of successful teaching (Aicinena, 1991). To improve instruction delivered to students, teachers must have a reflective understanding of the "cadet experience" in the gymnastics course.

In fact, the concept of risk seems to be closely linked to the logic of sports. The effectiveness of the gymnastics course for example partly depends on the development of positive cadet perceptions. Luke and Sinclair (1991) believe that effective curriculum improvements can occur when teachers identify and change those aspects of the curriculum that have resulted in negative perceptions, and build on those aspects that have led to positive perceptions. They often encouraged one another, and the total insulation of the motor task leads to a critical loss at the cultural significance of the content taught. It would in fact be adapted at any time in learning the risk level of the student's skill. It is obvious that the teacher must be considered in the collective organization of learning. The opportunity for each student to choose a certain level of risk seems an interesting way. Furthermore, future teachers used preventive skills that led to the development and management of "passive" safety devices. Moreover, the acquisition of a motor skill in a risky context seems to require a particular didactic treatment. It would not eliminate any objective danger, but it would consider the risk as a variable which could be dealt with as a controlled escalation and through which it is possible to develop the students' skills and specific knowledge. Indeed, Physical Education, in general, and gymnastics, in particular, may provide a real learning safety, carrying specific skills and methods which are transferable to other sectors' attitudes. It seems quite possible to provide "safety learning" cycles in Physical Education. Such a security cycle must be rooted in a sporting activity with a carrier level (i.e., gymnastics or climbing), through which skills security are associated with knowledge of the discipline (Delignières, 1989; Kambas et al. 2004) needed to conduct any practice.

CONCLUSION

The findings suggested that future physical education teachers caring showed great importance for Equipment's Management, Time Space Management and Space Management. Likewise the taking of responsibility, Intervention /help, and Group management were the most determinant skills used during the future teachers' interventions.

In fact, we deduce that these skills were effective for teaching and were very important skills in making safety in learning gymnastics situations.

In conclusion, we deduce that the educational system in gymnastics is including a system at risk. Effective management depends on the skills of the teacher and his perception of the risk related to the situation. The complexities of this system explain the heterogeneity of practices and standardization requirements which are empirically observed. Teaching gymnastic activities in essence contains an irreducible amount of risk it tries to keep (Goirand, 1998). Conversely, some of the causes of this uncertainty are partly placed under the control of the teacher because they do not depend on chance, but on skills in envisaging risks.

Safe practice in Physical Education should be an integral feature of all aspects and in all phases of education, from the very early years of playgroup and reception to

adulthood and higher education. Teachers and people in positions of responsibility have a duty to care for those who are in their charge to ensure that planning and implementation should include recognition of safety as an important element.

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INCONSISTENCIES IN THE CURRICULUM DESIGN OF EDUCATIONAL GYMNASTICS: CASE STUDY

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Case study

Abstract

This research analyses the limitations of gymnastics teaching in Secondary Schools. Considering that this has a negative effect on the global education of pupils, the study investigates, through the voices of the physical education teachers themselves, how the teaching of gymnastics skills is planned and implemented, and the educational changes and new perspectives needed. The methodology employed is qualitative and AQUAD 6 software has been used to analyse the data. The research results show that there is not sufficient reflection during the process of curriculum planning and design and that deliberative educational thought is not significant. In addition, colleagues of the same centre do not seem to share knowledge. Consequently, processes of change are scarce and do not correspond with the reality of the educational context. Knowing the practice of teachers, when designing the curriculum, could contribute to the implementation of new models of professional development and training.

Keywords*: Teaching, Skills, Curriculum Design, Physical Education, Teacher Reflection.*

INTRODUCTION

In recent decades, in Spain, a noticeable reduction in the presence of gymnastics skills has been observed both in Secondary School curriculums (Decree-Law 112/2007 of 20 July, Valencian Community, Spain) and university degree courses. The gradual disappearance of these skills has been even more patent in practice than in government recommendations.

Our work as professionals in this field has made us very aware of this gradual loss. Professional contact with Secondary School teachers and our daily work with students of the degree in Physical Activity and Sports Science at the University of Alicante (Spain) during their teaching practice in schools, has alerted us to this gap and lead us to realise that gymnastics skills are not

taught adequately in the real world of educational centres.

Educational gymnastics involves the use of the body as a specific resource, which allows pupils to develop various skills on a cognitive, motor, attitudinal, affective and social level (Goudas & Biddle, 1993; Sloan, 2007), so leading to a better quality of life, social integration and a more balanced personality (Rikard & Banville, 2006). Gymnastics stimulates the development of a wide range of locomotor skills, body balance, control of body movement, the transition from dynamic to static elements and vice-versa, frequent changes of body position in space, and specific muscular activity (Bučar Pajek, Čuk, Kovač & Turšič, 2010; Kovač, 2006; Kovač & Novak, 2001; Novak, Kovač & Čuk, 2008; Živčić-Markovic, Sporiš & Čavar, 2011). The variety, quantity and quality of material resources used in gymnasiums also encourage participation and awaken curiosity for learning. In addition, the possibility of developing gymnastics exercises to music helps control movement, serves as additional motivation and encourages initiative and creativity, as pointed out by Šimůnková, Novotná and Chrudimský (2013). We share the opinion of these authors, who affirm that "well learnt gymnastics skills can generate feelings of satisfaction in pupils and encourage the practice of physical activity" (p. 130). All the educational benefits of the contents and competences of gymnastics skills call for their inclusion in the school curriculum.

Convinced that the voices of physical education teachers themselves will allow us to relate their cognitive and emotional thinking (Deglau & O'Sullivan, 2006), we have investigated their experiences, attitudes, likes and dislikes, all of which affect the teaching of gymnastics skills. The questions which guide this research seek to identify the way in which teachers design, direct and manage their teaching, but also their disposition towards reflection on their own teaching practice, towards reflection shared with colleagues and their predisposition towards curriculum changes and teaching practices (Tsui, 2009). Constant reflection as an instrument for change is useful for teachers as it allows them to reconsider and reconstruct their knowledge and professional practices (Ávalos, 2011; Schön, 1987; Tsui, 2009).

The design and implementation of a curriculum is not an easy task for teachers as many different factors influence this process, such as university education (Hargreaves, 1998), teachers' knowledge and skills (Cothran, McCaugtry, Kulinna & Martin, 2006) and even their personality (Hargreaves, 1998). In addition to the variables mentioned, in the case of curriculum design for Physical Education, we agree with Rink (2001), who highlighted the influence of the specific context, that is to say the characteristics of the school – described as *learning environment* by Ennis (1996) – and the teaching experience of the teachers. As Kirk (1993), suggested, when designing a physical education curriculum, teachers build knowledge which is enriched by practice. This wide variety and at the same time complex network of factors, which influence curriculum design, have lead the academic world of teaching and research to make an effort to improve the learning of pupils. However, there have still been few real changes in the way teachers approach and conceive the design of physical education curriculums (Kirk, 1993).

The term *design* is used in this study to describe a dynamic and renewed concept, which suggests that the work of designing a curriculum can be tackled systematically and with rigour through the setting of objectives –a perspective put forward by Pratt (1980) and one which served as a base for subsequent important works in the field of educational gymnastics, such as that of Kirk (1993)–, with personal implication from teachers and where the results depend on their skills. Thus, the very idea of "curriculum design implies an approach which encourages, and even celebrates, the personal qualities and idiosyncrasies of teachers" (Kirk, 1993, p. 247).

The underlying theory of this research is a non prescriptive model –as it describes what may happen– which defines "curriculum design as a chain of decisions" (Klein, 1991, p. 25) taken in a holistic and dynamic system in which pupils play an active part (Rovegno & Kirk, 1995), and in which teachers are expected to play an important role. In this system, decision making occurs at all stages of the curriculum, from the objectives, contents, methodology, activities, materials and resources, distribution of time and space, to assessment (Klein, 1991). This model, applied to curriculum design for Physical Education, requires that the objectives be evaluated continuously during the teaching and learning process. Each activity has an objective and nothing is done without a purpose (Brown & Campione, 1994). Although in recent decades there have been many advances made in research into curriculum design**,** as regards objectives, contents and strategies, in the field of educational gymnastics, it seems that there have been few real changes in the teaching of this subject. The results of different studies carried out since the 1980 (Brewer & Sharp, 1999; Placek, 1984; Thomson & Jones, 1985; Thorburn & Collins, 2003; Underwood, 1983) suggest that even when teachers consider objectives when designing a curriculum, they are often not used to guide every day teaching, nor for decision making. Kirk (1993), from the perspective of coherent educational logic, proposes that, in Physical Education, "continual supervision of pupils' progress is useful in order to verify the learning of skills, using different types of assessment instruments, and taking into account a taxonomy of objectives, which include cognitive, psychomotor and affective levels" (p. 252).

In addition, although there is not full agreement on the effectiveness of the different teaching methods in Physical Education (Rink, 2001), researchers and/or teachers agree that, for the teaching of this subject, the selection of the most appropriate teaching method for each activity and situation is crucial (Pehkonen, 2011). Furthermore, it is important to know how to design and adapt activities to the needs of pupils (Colby & Witt, 2000), but at the same time taking into account the influence of aspects related to teachers and the subject contents. If the teacher is capable of creating and designing adequate tasks, he/she can create authentic and meaningful experiences for the pupils.

Assessment is a term defined as both a course of action aiming to acquire and generate information, and something which the teacher can use when taking decisions in the classroom. Currently, assessment is one of the most complex questions in Physical Education teaching (Kirk, 2001; Kovač, Strel & Majerič, 2008; Van Vuuren-Cassar, 2011). Many teachers of this speciality believe that assessment does not give real value to a pupil's learning and/or progress, and so oppose the idea of assessing (Kirk, 2001). However, in the academic world of education the importance of assessment in Physical Education has been proved (Burton, 1998; Kovač, Strel & Majerič, 2008; Majerič, 2004; Newton & Bowler, 2010; Popham, 2011; Reynolds, Livingston & Wilson, 2010), as it is very useful when taking decisions as regards subsequent teaching and also for identifying pupils' learning problems. It allows teachers to decide which areas require more training (Kovač & Novak, 2001) and to give good feedback (Morrow, Jackson, Disch & Mood, 2005). Important questions to bear in mind are clear and precise assessment criteria, which have been explained to pupils previously (Kovač, 2012), and assessment which takes into account the age of pupils, course contents and the objectives (progress, demonstration, error identification, etc.) (Brau-Antony & David, 2002; Estrabaud, Marigneux & Tixier-Viricel, 2000; Rutar Ilc, 2003; Williams, 1996).

As we have seen, curriculum design and its implementation are very complex as they depend on the ability of teachers to take decisions on every aspect of the curriculum, which is a big challenge. The process described is the same for all the contents of the subject of Physical

Education. If we look at the area of gymnastics skills, as pointed out by Erwin, Woods, Woods and Castelli (2007), positive results, however small, are the consequence of the coordinated intervention of a series of variables associated with teachers, pupils, objectives, methodology, activities, assessment and contextual.

A revision of the different approaches to curriculum design and a move towards the reality of Physical Education teaching brings us closer to the theories of learning development through active insertion in communities of practice (Brown & Campione, 1994). Educational communities of practice could be ideal for helping teachers acquire and strengthen their skills in planning and implementation of the curriculum, in specific social contexts (Harrison, Lawson & Wortley, 2005; Tsui, 2009). In contrast to the traditional idea of learning based on the transmission of knowledge, this stance defends participation. Thus, physical education curriculum planning and design, from the perspective of learning communities (Jess, Atencio & Thorburn, 2011), implies the coordination of knowledge with action, and shared deliberation in the taking of educational decisions. Consequently, the collaboration of teachers with their colleagues is essential for the achieving of goals and/or the overcoming of challenges during all processes (Keay, 2006; Whitcomb, Borko & Liston, 2009), from curriculum planning to its implementation in the classroom.

The objective of this study is to analyse the thinking, as regards gymnastics teaching, of a sample of Secondary School teachers, and know how gymnastics teaching is designed and developed today, in Spain. In order to do this, we asked the following research questions:

1) What objectives do physical education teachers set when teaching gymnastics skills?

2) What methodology and activities do teachers use for teaching gymnastics skills?

3) What type of assessment and tools do physical education teachers employ to assess gymnastics skills?

4) Have physical education teachers introduced changes in the design and teaching of gymnastics skills?

METHODS

The qualitative focus of this research is the most appropriate for ascertaining teachers' thoughts on the design and implementation of gymnastics skills, as well as identifying the need for change in the practices of physical education teachers. This explorative study has been carried out using the intentional sampling method. Following Clandinin, Cave and Cave (2011), we have approached the research as a process of narrative thinking around three factors: the temporality of the educational participants (past, present and future), the interaction between teachers and pupils, and taking into account the context or specific environment in which the educational experience is lived. Clandinin, Huber, Steeves and Li (2011) discuss these ideas and maintain that "narrative thinking is much more than recounting and analysing stories" (p. 387). Thus, narrative research is a form of reflective practice which allows people to tell, retell and relive experiences in order to produce new knowledge which can correct and replace previous practices.

Secondary School physical education teachers, who work for the Education Department of the Valencia Community (Spain) were invited for the selection process. Fifty of these teachers agreed to take part in the research. The professional experience of the interviewees is diverse as they included both teachers with extensive experience and with a medium level of experience, and even teachers with few years of professional experience. Meetings with the physical education teachers were organised by contacting them directly by phone and/or by email.

The research instrument employed was semi-structured narrative interviews, often used for research into education (Denzin &

Lincoln, 2000). Forty-six oral interviews were recorded and four interviews were written. The interviews were carried out in person and took place in the corresponding educational context of the teachers (sports grounds, classrooms, gymnasiums, staffrooms, offices, etc.). The questions focused on teachers' experiences teaching gymnastics skills.

Once the data had been collected, it was transcribed and analysed. Inductive analysis was employed to study the information extracted from the interviews; this methodological strategy is based on identifying and categorizing the text units of the participants. The qualitative computer software (Analysis of Qualitative Data), developed by Günter L. Huber (2004), was used to process the information. This computer programme has allowed us to organise and categorize the data in codes so that we could finally determine the point of view of participants.

Firstly, we carried out an initial analysis of the contents of the interviews in order to establish the first connections between the research questions and the emerging concepts from the participants' narratives. Then, we moved on to the discussion and triangulation of the inferential codes. At this stage, three specialists in Physical Education in Secondary Schools, and a university lecturer, specialist in gymnastics, validated the codes and definitive categories. Once these processes had been completed, a codification map was obtained. The first theme, based on the work experience of the teachers, determines how physical education teachers design and implement the teaching of gymnastics skills. The second theme identifies teachers' concerns as regards change and the search for new teaching perspectives. This procedure has allowed us to verify that the validated categories and themes are correspond to the research questions of this study. The analysis of the results has been based on the following categories: absolute frequency (AF) and the percentage of absolute frequency (% AF), where AF is the total number of occurrences of the concept, found in each narrative, and the % AF is related to the absolute frequency total (AF.100/total AF).

RESULTS

The results are presented in the form of codes grouped into the two emerging themes of the research: design and implementation of teaching and the need for changes in the teaching of gymnastics skills. They are also given with their respective absolute frequencies and corresponding percentages.

Emerging theme I: Design and implementation of the teaching of gymnastics skills

The narratives have allowed us to identify the perceptions and difficulties teachers have as regards curriculum design and the teaching of gymnastics skills. In this theme, we find text units referring to the design and development aspects of gymnastics competencies in education. And the following curriculum elements are identified: objectives, teaching methods, gymnastics activities and assessment.

1. Objectives

The physical education curriculum specifies three types of objectives: conceptual, procedural, and attitudinal (Decree-Law 112/2007 of 20 July, Valencian Community, Spain). The objectives set by physical education teachers when teaching gymnastics can be inferred from the narratives. These objectives deal with technical execution, evaluation of attitude, creativity, assessment of pupils' progress, theoretical knowledge, evaluation of the use of information and communication technologies when carrying out and presenting tasks (Table 1). We can conclude from the results that teachers focus especially on technical execution (29.08%) and the development of attitudinal qualities (28.57%).

Teachers give greatest importance to correct technique in gymnastics skills and to the development of attitudes which reflect

interest, effort and wilingness to participate. These aspects are illustrated in the following narratives:

I make them do gymnastics activities. They may be helped, but, I give them an individual mark for what they do (Exp.004).

Basically I focus on their effort, attitude and how they improve. I look at the progress of each pupil. These are the two most important variables. I also take attendance into account (Nov.008).

The development of skills related to the use of information and communication technologies was the objective least mentioned (3.57%).

2. Teaching Methods

As shown in Table 2, the teaching methods used can be divided into three main groups: 1) Traditional methods: pupils play no part in their learning and the methods are instructive.

2) Participative methods: the implication of pupils in their learning, together with the teacher as mediator, is vital.

3) Problem solving methods: the development of critical thought, and active and investigative methodology are encouraged.

The predominance of traditional methods (54.48%) rather than participative methods (23.51%) or problem solving (21%) can be observed in the results. This is reflected in the following narrative:

I devote more time to practising basic gymnastics skills and use direct instruction so that pupils can learn different acrobatics (Exp.013).

Table 1. *Objectives of gymnastics contents.*

CÓDES	AF	%AF
Technique	57	29.08%
Attitudinal objetives	56	28.57%
Creativity	31	15.81%
Progress made from an initial point	30	15.30%
Concepts	15	7.65%
Use of information and communication technologies	7	3.57%
TOTAL	196	100%

Table 2. *Teaching methods for the development of gymnastics skills.*

CODES	AF	%AF
Traditional	79	54.48%
Participative	35	23.51%
Problem solving	31	21%
TOTAL	145	100%

Table 3. *Types of activities used in the teaching of educational gymnastics.*

CODES	AF	%AF
Basic activities	57	32.02%
Acrosport	51	28.65%
Rythmic and expressive activities	30	16.85%
Progressive activities	29	16.29%
Fun activities	11	6.17%
TOTAL	178	100%

Table 4. *Teachers' assessment of gymnastics activities.*

CODES	AF	%AF
1. Acrosport:		
1.1. Favour the process of teaching and learning	60	38.70%
1.2. Hinder the process of teaching and learning	7	4.51%
2. Progresive Activities:		
2.1. Favour the process of teaching and learning	32	20.64%
2.2. Hinder the process of teaching and learning	7	4.51%
3. Basic Activities		
3.1. Favour the process of teaching and learning	13	8.38%
3.2. Hinder the process of teaching and learning	16	10.32%
4. Rhthmic and expressive Activities:		
4.1. Favour the process of teaching and learning	12	7.74%
5. Fun Activities:		
5.1. Favour the process of teaching and learning	8	5.16%
TOTAL	155	100%

Table 5. *Different types of assessment used by teachers.*

CODES	AF	%AF
Continuous assessment	45	40.90%
Final assessment	37	33.63%
Innovative assessment	28	25.45%
TOTAL	110	100%

Table 6. *Assessment tools used by teachers.*

CODES	AF	%AF
Traditional tools	22	53.65%
Innovative tools	13	31.70%
No tools	6	14.63%
TOTAL	41	100%

Table 7. *Needs for change in the teaching of gymnastics skills.*

CODES	AF	%AF
1. Indication of teaching changes	60	78.93%
1.1. Changes in types of activities and assessment	36	47.36%
1.2. Changes in methodology	24	31.57%
2. No changes	16	21.05%
TOTAL	76	100%

Table 8. *Reasons for changes in the teaching of gymnastics skills.*

CODES	AF	%AF
Focussed on pupils	47	75.80%
Focussed on the teacher	15	24.19%
TOTAL	62	100%

AF: Absolute frequency
%AF: Percentage of absolute frequency

3. Types of gymnastics activities

These findings analyse the different types of specific activities used by teachers. Their own voices value more positively or negatively the application of different types. Thus, different types of activities can be identified: basic (low level of motor implication and technique), progressive (approached with different degrees of difficulty and execution), fun (play activities for which technique is not important), Acrosport (formation of human figures based on cooperation and the inclusion of all pupils), and rhythmic and expression (ballroom dancing, batukada, capoeira and aerobics). The results are shown in Table 3.

The data shows that the activities most used by teachers are basic gymnastics activities (32.02%). The narratives refer to activities of a low degree of difficulty and, mainly those for beginners.

The activities I tell them to do are basic and elementary. They are forward and backward summersaults, cartwheels and handstands. I try to teach them to do the activities well for the end of year festival (Ava.005).

The second most popular type of activity used by teachers is Acrosport (28.65):

I develop a didactic unit called Acrosport. I begin with a session on individual technique and after work in small groups in order to do collective gymnastics. I encourage them to produce their own creations (Ava.016).

In their reflections, physical education teachers value the different activities they use for teaching educational gymnastics favourably and unfavourably. The results can be seen in Table 4.

According to the teachers, Acrosport is the activity which facilitates teaching most (38.70%). In addition, they believe that these activities allow all pupils to participate, depending on their profile, and encourage the development of personal and social values. They also motivate pupils and encourage them to work autonomously. Below, we present some narratives which show this:

We do Acrosport and the truth is that it is very good because it is much more fun for pupils. They work in groups and are stronger when working together. They can use each other's bodies as support. It's really good (Exp.011).

With Acrosport, "I saw the light". They are more motivated. Pupils are less frightened. We work with fixed figures, and then, on cards, pupils create their own figures, and choreographies. I value creativity, originality, difficulty. They do it very well (Exp.015).

Furthermore, according to teachers, gymnastics activities of varying levels of difficulty also favour the process of teaching and learning (20.64%) (Table 4).

If you work towards a more or less accessible and flexible rate of progression, pupils see that they improve and that it is not so difficult. When they see that a more skillful classmate can do a "front flip", they believe thay are capable of doing something similar. When you work at different levels of difficulty and progression, they become more confident about doing these types of things (Exp.018).

I made three rows. More simple activities for some, for others more complicated ones and the rest, even more difficult. Each pupil did the activities of their level. This gave them a feeling of security and confidence (Exp.005).

The activities which teachers like least, due to the difficulty involved for pupils, are basic gymnastics skills (10.32%) (Table 4). However, these are the most used in class.

I think that pupils can feel a certain rejection towards basic gymnastics. If you don't approach activities progressively, pupils are frightened by them and feel that the activities are too difficult (Exp.005).

4. The assessment process

In this section, we will look at the narratives which refer to aspects related to the assessment of gymnastics skills, the different types of assessment and assessment tools used.

Three types of assessment emerge from the narratives: continuous assessment (40.90%), for which the progress of pupils after the initial assessment is considered; final assessment (33.63%), for which the teacher only gives a final mark for aspects of technique; and innovative assessment (25.45%), for which pupils participate in their own assessment process and in that of their classmates (Table 5).

If we combine the results of continuous assessment and innovative assessment (66.35%), we can see that a high percentage of teachers adopt unconventional models of assessment. Some narratives representative of these results are:

I assess the group, focusing on their day-to-day attitude, on the cooperation within the group when working, that they help each other, they show a positive disposition and take the activities seriously. More than if they can do a summersault well or not, I focus on the process, how they have worked together and what they have achieved (Nov.002).

I use self-assessment and assessment of pupils by classmates. There is a list of items, on cards, where they note if they have managed to do the move, if they have needed help.... and from here a coevaluation mark is reached. I prefer this type of assessment because it is quick, autonomous and encourages pupils to be responsible (Ava.008).

Finally, we would like to present the findings related to the tools used by physical education teachers for assessment. Traditional tools, like observation forms, data log sheets and assessment scales, are those most used (53.65%). An example of this code is the following:

I use an assessment sheet on which I note down the strategies used by a pupil, a sheet on which I write data defining skills, level of achievement. I use the sheet to see if they have done all the elements (Exp.008).

In addition, teachers refer to the use of innovative tools such as information technologies, technological, audiovisual and photographic resources (31.70%). These results are presented in the following table:

We were surprised to find that some teachers do not use any tools to assess gymnastics skills (14.63%).

I give a mark by making a rough guess. I believe it is important to have work tools for the class and assessment tools, but I have never used them. I do not have either work tools or assesment tools (Exp.003).

To sum up, the model most used by physical education teachers for assessing skills is, fundamentally, continuous assessment, and final assessment in second place. In addition, the tools most favoured are the traditional ones.

Emerging theme II: Needs for change

In this theme, we look at the voices of teachers who express the need to introduce changes, changes related to teaching methodology, activities, and assessment. In addition, we include the reasons why teachers propose changing aspects of their teaching practice. These are related to teachers' aptitudes and disposition, and to the demands and needs of pupils. Perceptions that there have been no changes in the process of implementation-action of gymnastics skills were also noted. The results can be seen in Table 7 and Table 8.

Participants affirmed that they have needed to modify their teaching during their professional career (78.93%). We can observe a certain preference for changes in the types of activities and in assessment (47.36%).

I used to have an observation sheet. I noted the different elements and an assessment scale.

I worked out the average and did not take into account if they worked as a group, or if they helped others, as I do now. Perhaps there are things I don't see, but in the past I used a traditional evaluation of technique and now I take other aspects into account (Exp.008).

In addition, we can observe changes related to teaching methods (31.57%). Finally, some teachers affirm they have had no need to change their methodology, activities, nor assessment (21.05%):

I continue doing a warm up and gym classes like I did in the beginning. The pupils get bored, because they do not do the activities well. I don't care. It has to be done! (Exp.020).

Teachers explain that the changes are due to diverse personal factors (aptitude and disposition of the teacher) (24.19%), but especially due to matters related to pupils themselves (75.80%) (Table 8).

Participants in the research, due to the interests and demands of adolescents, state that they can perceive the need to change their methodology, activities, and assessment.

Sometimes I have considered doing Acrosport when colleagues have commented that pupils generally like it (Ava.007).

DISCUSSION

Several authors, such as Zanting, Verloop and Vermunt (2003), have highlighted the experiential nature of teachers' knowledge, when trying to explain their objectives and teaching practice. Different research works have shown how teachers' knowledge is usually focused on and responds to the needs of the teaching context (Gholami & Husu, 2010). For this reason, Spillane and Miele (2007) consider it to be information which is dependent on context, and this transforms it from mere information to a reality, as it is information which is validated by the context.

Based on these premises, if we study the relations between the results obtained from the different questions, we can see consistencies, but also inconsistencies between the perceptions and practices of teachers. Thus, on establishing correlations between findings, we observe that the highest percentage of participants affirm that when designing gymnastics contents, they consider objectives related to technique (29.08%), teaching methods which could be considered traditional (54.48%), and implement basic activities (32.02%), despite valuing group activities like Acrosport more highly (38.70%). Finally, curriculum inconsistencies are evident in teachers' preference for the use of continuous and innovative assessment (66.35%), but with traditional instruments (53.65%).

We can conclude that this lack of coherence affects the very essence of learning and it shows that the social perspective, which considers learning as a process of participation opportunities (Lave & Wenger, 1991), has not taken root in teachers. The teaching of educational gymnastics could benefit from the adoption of a more collaborative model (Hargreaves, 2008; Little & Horn, 2007). Furthermore, the scarce use of fun activities (6.17%) in the teaching of this sporting discipline, which as Cheah, Nelson and Rubin (2001) point out, offer pupils the opportunity to develop values of social cohesion, is not very consistent with teachers' claim that they set attitudinal objectives (28.57%). It is important to highlight that basic gymnastics activities, which appear to be the most taught, are those that teachers value least. In addition, Acrosport (38.70%) is not by any means used by the majority despite encouraging inclusive activities and improving socialization and body image. These divergences between the use and evaluation of learning activities indicates that teachers do not employ a great deal of reflection in their planning, nor in their decision making (Schön, 1987; Tsui, 2009). Similarly, the choice of technical assessment tools contradicts the formative nature of the assessment they claim to adopt. The fact that there are some teachers who do not use any assessment tools attracts our attention (14.63%). All these inconsistencies alert us to the fact that teachers' attitudes are rather incoherent and not very reflexive, something which does not favour advancement towards expert knowledge (Ávalos, 2011; Tsui, 2009).

In summary, the results show that teachers have not yet moved far enough away from conventional teaching models. Gymnastics skills are still taught using traditional methods, which exclude pupils with lower motor ability and encourage competitivity more than cooperative work. Thus, we agree with Ávalos (2011), Bagnano and Griffin (2001) and Hassandra, Goudas and Chroni (2003) that changes in the initial formative models and in teachers' professional development are necessary in order for quality education to reach classrooms.

Indeed, the majority of participants state that they feel a need to change their teaching practices (78.93%), especially those related to the design of activities, assessment and methodology, with the aim of improving pupils' learning (75.8%). However, as we have seen, this increasing sensitivity and awareness has not lead to clear changes in real teaching practice, probably due to the fact that teachers' reflections on their practices are not deliberated (Ross & Bruce, 2007) or that they lack sufficiently developed knowledge

which allows them to observe, analyse and take the right decisions for optimizing their teaching. It is even more worrying that some teachers (21.05%) feel no need for changes in their teaching practices. This could be due to inadequate university training, a lack of professional teaching development, and attitudes which are conformist and not very reflective (Ávalos, 2011; Schön, 1987; Tsui, 2009).

When I began working, I applied my learning directly because I liked it a lot. Now I continue giving my classes in the same way I was taught during my degree, but I am aware that they didn't explain them to me very well. Also, there are no training courses in gymnastics skills (Exp.003).

My approach is similar to what I did eight or nine years ago. This year I'll do the same. "I don't want to complicate things" (Ava.013).

It is obvious that teachers' curriculum design is not the most appropriate. The teaching of this sports discipline is not easy; as occurs in other areas of Physical Education, it requires teachers to know and control innovative methods and have a more participative concept of learning (Penney, Brooker, Hay & Gillespie, 2009). In addition, it is crutial that teachers know how to adapt to different situations, and develop critical attitudes, analysis, and reflection on their reality, sharing all these practices with colleagues (Wright, McNeill & Fry, 2009).

CONCLUSIONS

In general, we have been able to conclude that the process of curriculum design and implementation of gymnastics skills is carried out with little reflection and feedback, and with few real changes and adaptations. Consequently, teaching tendency, which influences educational intervention, can be termed traditional, with all the constrictions and limitations that this involves. After analysing the results obtained, we can affirm that there are no indications that teachers' reasoning is reflective, and so conclude that their processes of change do not arise from deliberative educational thought. In addition, there is no evidence that these reflective processes are shared amongst colleagues, in the community of the educational centre.

Moreover, there are no narratives which reflect questioning, dilemmas or doubts. Our findings have been similar to those of other researchers in that participants usually refer to external circumstances to excuse their limitations and show no indication of self-assessment (Ávalos, 2011; Ross & Bruce, 2007). Consequently, it is difficult to affirm that teachers assume teaching as reflective practice (Geerink, Masschelein & Simons, 2010; Schön, 1987).

Teachers themselves, in their classrooms and centres, must lead the way to avoid a progressive demise of the learning of gymnastics skills, as pointed out by Castelli and Valley (2007). This will not occur unless initial university studies, and also the subsequent system of professional development for physical education teachers, are reformulated (Hadar & Brody, 2012; Vescio, Roos & Adams, 2008). Researchers agree that these models should foment teachers' capacity for reflection on their own professional practice (Cochran-Smith & Lytle, 2009; Stylianou, Kulinna, Cothran & Kwon, 2013), as well as foment the use of strategies to share and reflect on experiences with colleagues. In addition, research based on the practice of these skills should be encouraged. The teachers interviewed demand these changes, and they reiterated this repeatedly:

As times change and now parkour is popular and young people like this, perhaps we should look at doing gymnastics again, the youngsters want it (Exp.014).

It's good that somebody who is interested in this area and working on it should come. You chat with them and this makes you reconsider, and you say….look, this is an area which has been forgotten to some extent and I think we should look into it. Much better if there is some help from outside (Nov.011).

To summarise, in order to avoid the total disappearance of gymnastics teaching, which has so much to contribute to the integral education of pupils, new teachers of this speciality must build a renewed

conceptual and practical vision of the discipline.

The reality of educational gymnastics, in the context of Spain, allows us to make some suggestions as to how to improve the teaching of this discipline. Like Makoppoulou and Armour (2011), we believe it is crucial that changes be made, both in initial training models and in the professional development of teachers, in order that classrooms might enjoy the benefits of high quality teaching. Thus, physical education teachers should be re-evaluated in order to identify their strengths and weaknesses, and the results of this study would be useful for identifying their needs and demands. It is important that this evaluation be used to redesign the university training of physical education teachers, training which should focus on the development of reflexive skills, criticism, and the ability to make good decisions related to educational gymnastics teaching in specific situations and contexts, from curriculum design to the very act of teaching-learning. Finally, we believe it is very important that state education bodies, together with universities, provide continuous professional training, during which teachers can share experiences related to gymnastics and collaborate to produce Physical Education curriculums which include gymnastics.

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SMART PHONE AS A STANDING BALANCE ASSESSMENT DEVICE

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Original article

Abstract

Balance plays important role in postural control and force production in artistic gymnastics and can be used as injury prevention. Therefor balance should be monitored during the training process. Many different protocols have been used to assess balance. Recently there were proposals made to include new technologies such as smart phones in various assessment protocols. In present research, we compared a balance assessment protocol on a T shaped tilt board with smart phone application and G-weight goniometer balance assessment protocol. Thirty different positions in x-axis and thirty different positions in y-axis were used as a criteria acquired with two smart phones and one G-weight goniometer. We acquired also one real time measurement for 10 seconds on the T shaped tilt board. We found out a very strong and positive correlation between smart phone application and G-weight goniometer. Cronbach's alpha showed very high reliability of the smart phone measures. The limits of agreement showed that the measurement with the smart phone could be 0.85° below or 3.23° above in x-axis and 0.09° below or 2.96° above in y-axis the goniometer. Both smart phones share a very similar displacement-time curve. To sum up, the smart phones with its measurement characteristics are reliable and valid enough for monitoring balance on T shaped tilt board for practical use but are not precise enough for the research use.

Keywords*: Artistic Gymnastics, Evaluation, Panel Judging, Bias.*

INTRODUCTION

Humans are from balance point of view quiet unstable system with multiple segments to control over a relatively small base of support. Balance can be defined as the ability to maintain the body's centre of gravity (COG) within the base of support that involves the use of sensory information and its integration with muscle contractions (Kirby, Price & MacLeod, 1987).

Artistic gymnastics (AG) is a sport that requires a great sense of balance. It plays important role in postural control and force production while performing difficult gymnastic elements and landings. Many factors influence gymnastics postural control and force production performance, which include sensory information, motor responses and attention demands (Horak, 1987, Vuillerme & Nougier, 2004). The gymnasts are mostly exposed to above-mentioned factors when performing difficult gymnastics skills and/or at competitions. Difficult gymnastics skills

demand high level of sensory utilization for good postural orientation, high level of coordination, strength and joint range of motion in order to produce appropriate force direction and magnitude. Gymnasts have to focus their attention on the skill execution and not let other environmental factors distract them.

The aesthetic note of the AG demands from the athletes balanced and controlled execution. Landings are present in every gymnastics discipline and are being assessed by judges not only in artistic gymnastics, but also in acrobatic gymnastics, trampoline, rhythmic gymnastics, aerobic gymnastics and gymnastics for all. Landings in artistic gymnastics are parts of gymnastics routines where most of mistakes happen because of lack of balance (Marinšek, 2009, 2010). Somersault twists are mostly the reason, which causes landing asymmetries and thus lack of balance (Marinšek & Čuk, 2013). In most of gymnastics disciplines, static as well as dynamic balance is demanded. Motionless balance skills, holds on reduced base of support, such as various static holds in pyramids (Figure 1) and other leaping and tumbling skills are part of every gymnastics disciplines.

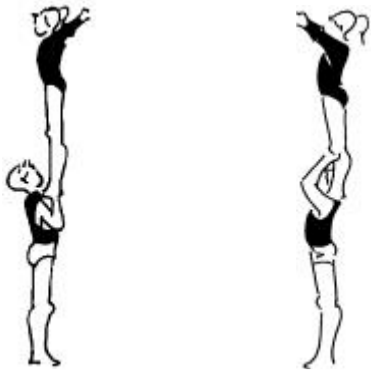

Figure 1: Stand in hand or on shoulder (Acrobatic Gymnastics Code of Points 2013-2016, FIG, 2013)

Balance training can improve postural control (Heitkamp, Horstmann, Mayer, Weller & Dickhuth, 2001, Granacher, Gollhofer & Strass 2006, Myer, Ford, Brent & Hewett, 2006, Yaggie & Campbell 2006, Beck et al., 2007, Gruber et al. 2007a, Taube et al., 2007a), has also a great impact on strength and jumping abilities (Bruhn, Kullmann & Gollhofer, 2004, Gruber & Gollhofer 2004, Kean, Behm & Young, 2006, Gruber et al., 2007b, Taube et al., 2007b, Tsopani et al., 2014) and can be used as injury prevention in elite sport.

Balance can be developed with different training devices such as tilt boards, half discs, soft mats (Heitkamp et al., 2001, Gruber & Gollhofer 2004, Taube, Gruber & Gollhofer, 2008), and sport specific movements on all gymnastics apparatus (Bressel, Yonker, Kras & Heath, 2007).

Numerous assessment protocols have been developed to provide important information on balance progress. Various protocols on tilt boards and force plates have been used as well as other tests such as Star Excursion Balance Test (Filipa, Byrnes, Paterno, Myer & Hewett, 2010) and Y Balance Test (Plisky et al., 2009).

Previous research indicates attempts to use other popular technologies for postural control and force production assessment such as Wii Balance Board (Clark et al., 2010), EquiTest t computerized dynamic posturography system (Tsopani et al., 2014), accelerometer-embedded springboard (Čuk, Penič & Križaj, 2011). These technologies can come into wide use because of their portability, inexpensiveness and availability. One of the most popular and widespread electronic devices nowadays which is equipped with a large set of embedded sensors is a smart phone.

Increasing number of smart phones enhances the number of applications used in smart phones. Recently, the application for the balance test has been developed. The application measures angle displacements on a T shaped tilt board in frontal and sagittal plane. The data can be

exported to the excel worksheet and used for further analysis.

The aim of this study was to compare measurement reliability between a G-weight goniometer and the balance test application on two different smartphones for various positions on a T shaped tilt board. Our hypothesis was that a smart phone measurement would provide reliable output in comparison to the G-weight goniometer measurements regardless of the smart phone model used.

METHODS

Apparatus

Two smart phones Huawei Ascend P6 (OS: Android OS, v4.2.2 CPU: Quad-core 1.5 GHz) and Samsung I9100 Galaxy S II (OS: Android OS, v2.3.4 CPU: Dual-core 1.2 GHz Cortex-A9) with balance test application and G-weight goniometer (Winkelmesser BMI) were used.

For determining the orientation of the device, one can use the rotational vector sensor, which is either of software or hardware type. Usually the rotation vector sensor fuses data from three different sensors: accelerometer, gyro and magnetic field sensor. Additional rotation vector sensors can be available on the Android device. By default, our program chooses the software sensor, whose vendor is Google Inc. and its version is 3. This sensor is part of The Android Open Source Project. If this sensor is not present then the default rotation vector sensor is chosen. Based on the data provided by the sensor we calculate the rotation matrix from which we derive the orientation of the device. When the device is lying on the horizontal plane with screen up the angle in the x- and y-axes is 0°. The application can be downloaded from https://play.google.com/store/apps/details?id=org.slani.balancetest.

Procedures

Thirty different positions (15 in positive and 15 in negative side) in x-axis and thirty different positions (15 in positive and 15 in negative side) in y-axis were used as a criteria. We acquired position (in degrees) in x- and y-axis randomly for G-weight goniometer and both smart phones. The acquired data was used to examine the eventual measurement errors of smart phones.

After initial position acquirement, we acquired one real time measurement for 10 seconds on the T shaped tilt board. The tilt board was moved randomly simulating balance assessment protocol and recorded with both smart phones. The acquired data was used for comparison of displacement-time curve in x- and y- axis between both smart phones.

Statistical analysis and data processing

Kolmogorov Smirnov test was used to test the data distribution. The measurement error was evaluated by the relative absolute error (RAE). The data gathered by smart phones was compared to the G-weight goniometer representing the gold standard for measuring range of motion. The t-test for paired data was calculated in order to find out the differences between G-weight goniometer and both smart phones. Additionally Pearson's correlation coefficient (PCC) was used to find out correlations between G-weight goniometer, Huawei, and Samsung smart phones. With respect to internal consistency, Cronbach's alpha was calculated in order to evaluate the reliability of the survey measures. The alpha value of 0.70 to 0.80 are regarded satisfactory for group comparison and 0.90 to 0.95 for individual comparison (Bland and Altman, 1997). As proposed by Bland and Altman (1986) an analysis of 95% limits of agreement (LoA) was performed to compare absolute reliability between the G-weight goniometer and smart phone measurements.

RESULTS

Kolmogorov-Smirnov test showed that distributions of the variables significantly do not deviate from normal

distribution ($p>0.01$, Table 1). The differences in the mean values of the measurements were statistically significant in x- ($p<0.001$) and y- axis ($p<0.001$). Samsung smart phone showed smaller difference to the G-weight goniometer (diff=0.753°) in comparison to Huawei smart phone (diff=1.18°) in x-axis. In y-axis the difference to the G-weight goniometer was smaller for the Huawei smart phone (diff=1.043°) than for the Samsung (diff=1.477°) (Table 1).

SEM for goniometer and smart phones ranged from 2.050° to 2.243° in x-axis and from 2.023° to 2.210° in y-axis (Table 1), suggesting consistency of the measurements. Relative absolute error compared to goniometer, which can be considered as gold standard is 0.85° and 1.48° for Samsung in x- and y-axis, and 1.19° and 1.07° for Huawei, respectively (Table 1)

.

Table 1. *Descriptive statistics, distribution and difference between G-weight goniometer and smart phone measurements.*

		N	Mean±SD (°)	RAE	SEM	P (K-S)	t	P(t)
Pair 1	xG	30	1.667±11.742	/	2.144	0.200	-5.974	0.000
	xSPsam	30	2.420±12.286	0.85	2.243	0.200		
Pair 2	xSPsam	30	2.420±12.286	0.85	2.243	0.200	7.485	0.000
	xSPhua	30	0.487±11.229	1.19	2.050	0.200		
Pair 3	xG	30	1.667±11.742	/	2.144	0.200	6.165	0.000
	xSPhua	30	0.487±11.229	1.19	2.050	0.200		
Pair 4	yG	30	-0.667±11.513	/	2.102	0.200	10.794	0.000
	ySPsam	30	-2.144±12.107	1.48	2.210	0.200		
Pair 5	ySPsam	30	-2.144±12.107	1.48	2.210	0.200	-2.269	0.031
	ySPhua	30	-1.710±11.078	1.07	2.023	0.200		
Pair 6	yG	30	-0.667±11.513	/	2.102	0.200	8.916	0.000
	ySPhua	30	-1.710±11.078	1.07	2.023	0.200		

Legend: N – numerous, Mean – mean value, SD – standard deviation, RAE - relative absolute error, SEM - standard error mean, P(K-S) – Sig. Kolomogorov Smirnov test, t – t value, P(t) – Sig. paired t test

Table 2. *Corelations between G-weight goniometer and smart phone measurements in x- and y- axis.*

	xSPsam	xSPhua	ySPsam	ySPhua
xG	.999	.997		
yG			.999	.999

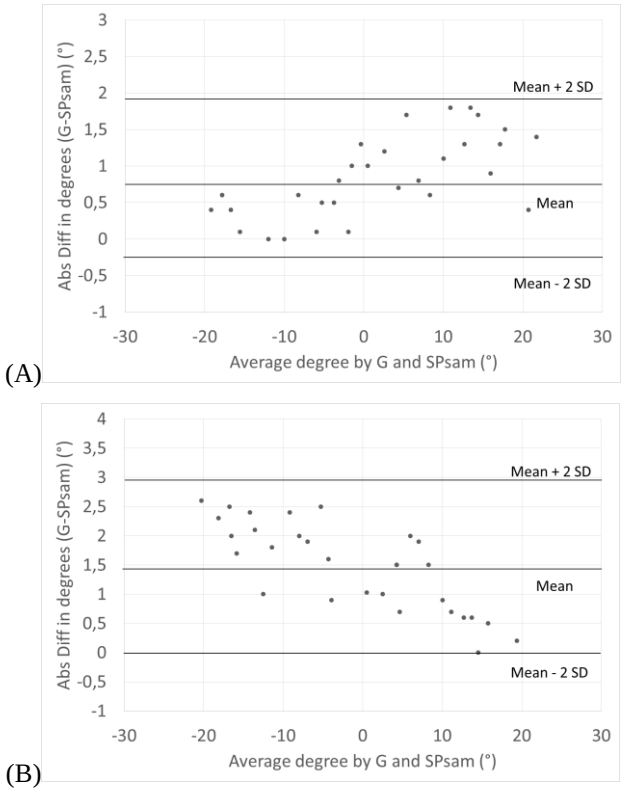

Figure 2. *Bland – Altman plots for the comparison between G-weight goniometer and Samsung smart phone in (A) x-axis and (B) y-axis.*

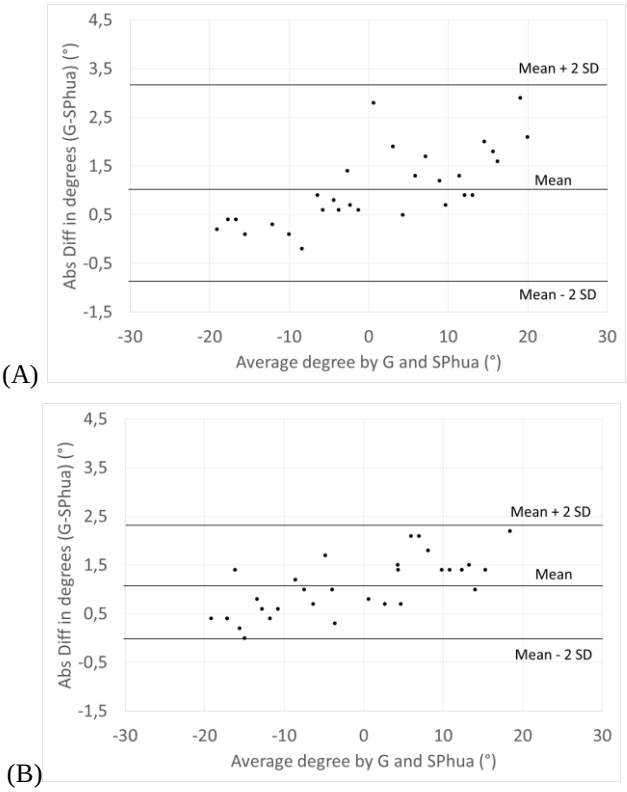

Figure 3. *Bland – Altman plots for the comparison between G-weight goniometer and Huawei smart phone in (A) x-axis and (B) y-axis.*

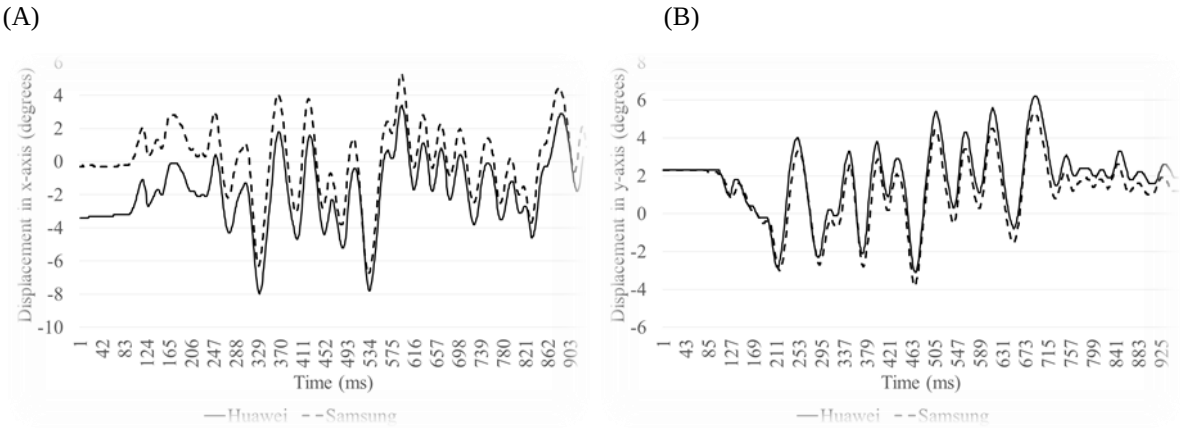

Figure 4. *Comparison of displacement (degrees) in (A) x-axis and in (B) y-axis for Huawei and Samsung smart phones.*

All Person's correlations are very high in x-axis ($r_{xG\text{-}xSPsam}$=.999; $r_{xG\text{-}xSPhua}$=.997; $r_{xSPhua\text{-}xSPsam}$=.997) and in y-axis ($r_{yG\text{-}ySPsam}$=.999; $r_{yG\text{-}ySPhua}$=.999; $r_{ySPhua\text{-}ySPsam}$=1.000) which is showing a strong positive correlation (Table 2). Despite the fact that results in nominal mean value are different they have the same function when angle of the tilt board is getting higher or lower.

Cronbach's alpha (.999 for x- and y-axis) showed very high reliability of the survey measures. Reliability index for the devices is very high. In order to compare absolute reliability between the G-weight goniometer and smart phone measurements the Bland and Altman plots for the degrees are presented in Figure 2 and 3.

The limits of agreement show that the measurement with the Samsung smart phone can be 0.15° below or 1.95° above the goniometer in x-axis and 0.00° below or 2.96° above in y-axis (Figure 2).

The limits of agreement show that the measurement with the Huawei smart phone can be 0.85° below or 3.23° above the goniometer in x-axis and 0.09° below or 2.23° above in y-axis (Figure 3).

Smart phones have different frequencies of recording. Despite selecting the same frequencies of recording (Hz), we the sampling rate was different. For the Huawei it was sampling rate 933 samples per 10 seconds, while for Samsung 950 samples per 10 seconds.

For Huawei we had to eliminate every 22nd measure to equalize time in y- and x-axis with Samsung smart phone. Figure 4 A and B show very similar displacement-time curve in x- and y- axis.

Correlation between both smart phones in x-axis was 0.94 and 0.97 in y-axis respectively. Thus, smart phones share 88% and 94% of variance in x- and y-axis respectively. This means very good to excellent reliability and validity of measurement.

DISCUSSION

The aim of this study was to find out if the smart phone could be reliable as a balance assessment device. There has been many devices used to assess balance, one of them being T shaped tilt board. The protocol to assess balance on the T shaped tilt board can be measured in time elapsed from the start of the protocol until the touchdown of the tilt board or in range of motion during protocol.

In the present study, we used two different models of smart phones to assess angle displacement on the T shaped tilt board and compare them to the G weight goniometer. After the comparison, we conducted two 10-seconds standing protocols with both smart phones.

In our research, we proved that two smart phone devices had a very strong positive correlation with G-weight

goniometer, which is considered a gold standard in range of motion measurements. SEM for goniometer and smart phones showed consistent measurements. Relative absolute error of two smart phones used compared to goniometer was between 0.85° and 1.19° in x-axis and between 1.07° and 1.48° in y-axis, showing slightly higher error in y-axis.

Internal consistency was confirmed by Cronbach's alpha values of 0.999 for x-axis and 0.999 for y-axis.

In measurement comparison between new and established measurement technique limits of agreement should be calculated (Bland & Altman, 1986). Bland – Altman's limits of agreement revealed that the measurement with smart phone could be as much as 0.85° below or 3.23° above in x-axis and 0.09° below or 2.96° above in y-axis the goniometer measurement, depending on the smart phone model. Figure 2 and 3 displayed lack of agreement between goniometer and smart phone that would be unacceptable for clinical purpose, but would be acceptable for practical use in monitoring balance progress of an individual.

Both smart phones share a very similar displacement-time curve. Despite selecting the same frequencies of recording (Hz), we found that the smart phone's operating system dynamically manages its sampling rate. As mentioned in a research by Mellone, Tacconi & Chiari (2012) occasionally the sampling rate intervals undergo large changes because of the concurrent processes with higher priority.

It seems that smart phones with its measurement characteristics are reliable and valid enough for monitoring balance on T shaped tilt board for practical use but are not good enough for research or clinical use.

However, we do not have to overlook advantages of smart phones in assessment procedures. As mentioned in other studies (Nishiguchi et al., 2012; Mellone, Tacconi & Chiari, 2012; Shin, Ro, Lee, Oh & Kim, 2012) smart phone's applications are relatively easily to improve. The data acquired through assessment can be presented in intelligible graphical way in smart phone's application, transmitted fast, and convenient to another device for statistical use. Because of their cost-efficiency, smart phones are available to broader public and therefore useful for monitoring balance progress during individual physical therapy or training.

CONCLUSION

Smart phone can be a valid and reliable balance assessment device for practical use in monitoring balance progress. Popular technologies such as smart phones can come into wide use as assessment devices because of their portability, inexpensiveness and availability. They come with a large set of embedded sensors, which can be used in many assessment circumstances.

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SYNERGIST AND ANTAGONIST MUSCLES STATIC STRETCHING ACUTE EFFECT DURING A V-SIT POSITION ON PARALLEL BARS

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Original article

Abstract

The aim of this study was to examine the acute effect of synergist and antagonist muscles static stretching (SS) on the body segmental angles, during a strength element on parallel bars (V-sit). Fourteen male recreational gymnasts (20.9 ± 2.2 years) were asked to follow three different protocols with the following order: a) general warm-up without stretching (WU), b) synergist muscles static stretching (SSS) and c) antagonist muscles static stretching (ASS). Right after each condition, the gymnasts were photographed in the sagittal plane, executing a V-sit position on parallel bars with legs extended and stabilized at the highest possible level. The leg-horizontal, trunk-vertical and arm-vertical angles were measured using image-pro software. Pairwise comparisons revealed a significant decrease for legs-horizontal angle, after the SS exercise of synergist muscles (SSS<WU, p<.01). The antagonist muscles SS resulted in significant increase for legs-horizontal angle, compared with synergist muscles SS condition (ASS>SSS, p<.001). Consequently, synergist muscles SS may not be recommended before gymnastics exercises that require maximal strength production. Nevertheless, the beneficial acute effect of antagonist muscles SS can act as a counterbalance to diminish or inhibit the SS detrimental acute effect on synergist' muscles.

Keywords*:* Static Stretching, Force Element, Digital Photography, Goniometry, Gymnastics.

INTRODUCTION

Stretching is crucial to enhance gymnasts' articular mobility (Sands, 2011). However, McNeal and Sands (2001, 2003) showed that static stretching (SS) had a negative acute effect, reducing the power of lower extremity muscles in competitive gymnasts. Authors' views about the acute effect of SS on subsequent performance varied in the last decades. In a systemic review by Behm and Chaouachi (2011), it was illustrated the far greater preponderance of measures reporting significant impairments (>50) as compared to no significant change (<20) or significant improvement (>10) of strength and power performance.

In college-aged subjects, studies showed the detrimental acute effect of SS on maximal isometric and isokinetic muscle strength performance (Bacurau et al., 2009; Behm et al., 2001; Cramer et al., 2004; Evetovich et al., 2003; Kokkonen et al.,

1998; Nelson et al., 2001; Power et al., 2004; Rubini et al., 2007; Siatras et al., 2008). The impaired muscle strength production (peak torque) has occurred with just 30 to 60 seconds of quadriceps muscles acute SS (Siatras et al., 2008). Ogura et al. (2007), also, found a decrease in maximal voluntary contraction with 60 seconds of SS in hamstring muscles. In addition, Knudson and Noffal (2005) reported significant differences in mean normalized grip strength between the control and stretching group after 40 seconds of SS. Contradictory studies demonstrated no effect on peak torque after 6 to 20 minutes of acute SS (Cramer et al., 2007; Egan et al., 2006). Similarly, no significant difference was found between stretching and control conditions in leg extensors' maximal voluntary contraction, after a quadriceps, hamstrings, and plantar flexors SS for a duration of 45 seconds (Behm et al., 2004).

Nevertheless, the possible negative effect of SS may have impact in numerous athletic events, such as gymnastics, which includes many SS exercises, that is the most used technique in warm-up routines of this sport's daily workout. Gymnastics' routines also include a lot of strength holds in many apparatus (especially on still rings and parallel bars), requiring maximal isometric strength generation of several muscles. In order to avoid deductions in the final score during competitions, these static elements require prescribed time of hold and angular positions (International Gymnastics Federation, 2009).

However, it is not yet clear whether there is a SS acute effect on the synergist and antagonist muscle groups, which participate in performing strength elements in gymnastics. In the present study, the 60-seconds SS acute effect on a common strength hold element, that is a V-sit position performed on parallel bars, will be examined a) after SS of synergist muscles, and b) after SS of antagonist muscles. We hypothesized that strength performance during the V-sit position may be decreased by an acute bout of synergist muscles SS, leading to a drop down of the legs. In contrast, SS of the antagonists may decrease muscle stiffness (increased compliance) and the athletes' performance is expected to be increased (legs' ascent).

Therefore, the purpose of this study was to evaluate the acute effects of SS exercises of synergist (quadriceps, iliopsoas and abs) and antagonist (lumbar and hamstrings) muscles on the body segmental angles, during a gymnastics static strength element. The V-sit position was chosen as a representative static exercise in gymnastics, requiring a maximal strength production by the athletes. This exercise was performed on parallel bars, due to the steadiness of this apparatus and the adjustable height of the bars depending on the testing settings.

METHODS

Participants

Fourteen male recreational gymnasts (20.9 ± 2.2 years; 176 ± .5 cm; 68.7 ± 5.3 kg), having a minimum of six years experience in gymnastics (range 6-8 yrs), participated voluntarily in this study. They were all free from injury and any musculoskeletal problem. The subjects were selected having the ability to perform a good support on the parallel bars (elbows and knees extended) and maintain it as steady as possible for three seconds, with the lower limbs over the horizontal plane of the hips. The subjects were informed about the procedures and gave their consent to participate in this investigation.

Procedures and stretching protocols

The participants were asked to follow three different protocols, before the V-sit execution on parallel bars, in the following order: a) general warm-up (WU), b) synergist muscles static stretching (SSS) and c) antagonist muscles static stretching (ASS) exercises.

Muscle SS was performed for 60 seconds, as this duration was considered adequate to provoke a negative acute effect. According to Siatras et al. (2008) and Ogura et al. (2007) this 60-seconds SS was sufficient enough to impair maximal strength production in quadriceps and

hamstring muscles, respectively. Any changes in flexibility as a result of SS were not determined, as Church et al. (2001) indicated a non-significant difference in flexibility comparing the pre-treatment and post-treatment sit-and-reach values.

The WU (control protocol) consisted of 5 minutes general exercises (jogging, jumping and general exercises without stretching) in order to raise muscles' temperature and prepare the body for vigorous exercises. Five swings and three L-supports followed as a specific WU on the parallel bars. The SSS protocol comprised a static stretching exercise, focusing on major synergist thigh and trunk muscles. The participants were lying on their low back on a vaulting horse (lumbar region), with the legs slightly bent and stabilized low on wall bars and the hands straight up aligned to the body. The subjects were asked to make a back hyper-extension of the body, in order to stretch simultaneously the synergist quadriceps, iliopsoas and abdominal muscles (figure 1). The stretching exercise of ASS protocol was performed in a sitting position on the floor with the legs extended together (pike position). The subjects flexed their trunk forward to the fullest extend, pulling their soles with their hands and encouraged to touch their thighs with their belly, in order to stretch the antagonist hamstring and lumbar muscles (figure 2). Each position of SSS and ASS protocols was developed slowly and gradually, with a controlled elongation of the muscles involved. The end range of motion was held passively for 60 seconds (one repetition) to a point of limitation before pain would develop (Siatras et al. 2008).

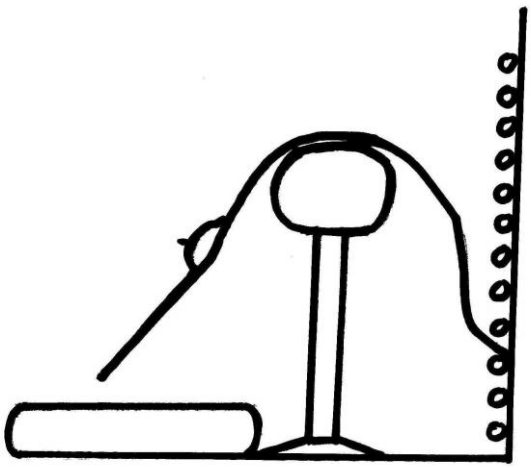

Figure 1. *Static stretching exercise included in SSS protocol, to statically stretch synergist quadriceps, iliopsoas and abdominal muscles. (SSS: Synergist muscles static stretching).*

Figure 2. *Static stretching exercise included in ASS protocol, to statically stretch antagonist hamstring and lumbar muscles. (ASS: Antagonist muscles static stretching).*

All subjects were not aware of the purpose of the study and executed the SS exercises unaided. The experimenter supervised so that all exercises were appropriately performed. The study of the SS acute effect on upper limb muscles was not in the purpose of the present investigation.

Immediately (max 30 sec) after each condition (WU, SSS and ASS), the V-sit exercise was executed on parallel bars. The subjects were instructed to lift slowly their legs to a maximal height, in which they could maintain them extended for 3 seconds. This static exercise is a strength element requiring steadiness and balance. The maximal isometric contraction of the synergist quadriceps, iliopsoas and abdominal muscles was also required. Two trials of V-sit were photographed and the best trial (>legs to horizontal angle) was selected for further analysis.

No familiarisation session with this specific position was imposed to the athletes, because they were familiar with this common gymnastics' element. SSS and ASS exercises were performed after WU session in the same order for all subjects (WU→SSS→ASS). This sequence was used in order to examine the possible SS negative effect on synergist muscles, as well as the minimization or elimination of this effect after the antagonist muscle groups SS. Besides, such stretching exercises in different orders are routinely performed by gymnasts in their daily training. A 5-min rest period was preserved between different conditions, in order to avoid any fatigue effect. All conditions were performed in the same day, in order to examine the hypothesis that the antagonist muscles SS could inhibit the synergist muscles SS negative acute effect.

Goniometric technique

The measurement of the angles formed by the different body segments during the V-sit position was achieved using a digital camera (Sony® 8.1 MP DSC-W90) and a software for image analysis (Image-pro plus v. 6.3, Media Cybernetics Inc., USA).

For the purpose of this study, each subject was photographed in the sagittal plane performing the strength hold element, having self-adhesives skin markers over the lateral malleolus, the greater trochanter, the acromion process and the midpoint between ulnar and radial styloid apophysis. These markers, positioned on the right side of the body, delimited the different body segments. The angles formed by the body segment and the horizontal or vertical planes were determined (legs to horizontal, trunk to vertical and arms to vertical angles), using the image analysis software. Additional details of this goniometric technique were reported in Siatras' study (2011). Afterwards, the percentages of the differences in legs to horizontal angle in the different protocols were computed [(WU - SSS) • 100 / WU, (ASS - SSS) • 100 / ASS, (ASS - WU) • 100 / ASS].

This photographic technique has the advantage to instantaneously capture an image from a distance and later quantify the different segmental angles using the image analysis software. In contrast to conventional goniometric techniques for range of motion assessment (universal goniometer, myrin goniometer, electrogoniometer, inclinometer, radiographic goniometry…), the examinee neither depends on the examiner, nor is restricted by the instrument during photographic testing and, therefore, he can perform difficult and specialized movements and postures.

Reliability of measurements

The intra-rater reliability of the legs to horizontal, trunk to vertical and arms to vertical angles measurements was, already, ascertained by Siatras (2011), showing that these measurements using digital photography and computer-assisted image analysis were precise enough (*ICC*: .945 to .971; *SEM*: 1° to 3°; *CV*: 5% to 7%) to be used for quantifying segmental angles during a V-sit position on parallel bars.

Statistical analysis

Means and standard deviations (± SDs) were calculated for all parameters. The effect of WU, SSS and ASS protocols

(independent variables) on legs to horizontal, trunk to vertical and arms to vertical angles (dependent variables) during the V-sit position on parallel bars was determined using one-way analysis of variance (ANOVA) for repeated measures (within-subjects design). Pairwise comparisons were processed to determine any significant difference between the independent variables for each segmental angle. Statistical significance was set at a $p < .05$ level.

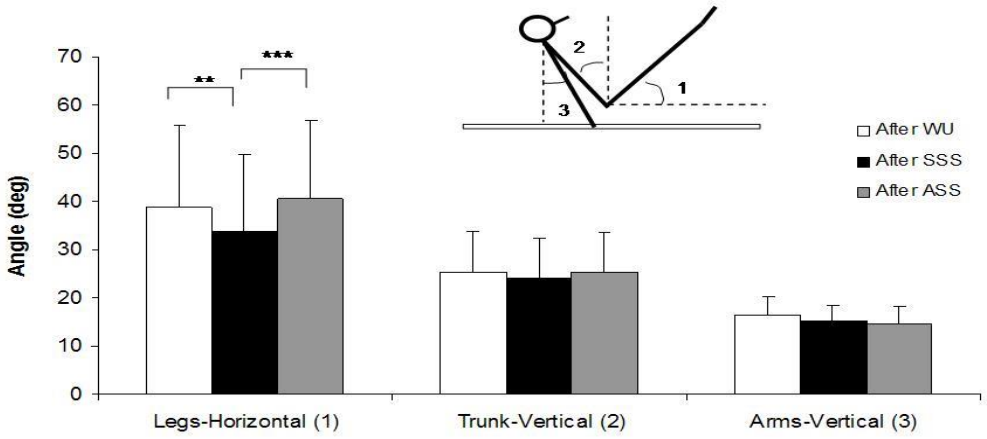

Figure 3. *Synergist and antagonist muscles static stretching acute effect on legs to horizontal, trunk to vertical and arms to vertical angles, during a V-sit hold element on parallel bars.*
*(WU: Warm-up; SSS: Synergist muscles static stretching; ASS: Antagonist muscles static stretching; **: p < .01; ***: p < .001)*

RESULTS

One-way repeated measures ANOVA revealed significant interaction of three conditions (WU, SSS, ASS) on legs to horizontal angle' size ($F_{2,41} = 24.520$, $p < .001$), during the V-sit position performed on parallel bars.

Concerning the acute effect of SS, pairwise comparisons revealed a significant decrease for legs to horizontal angle after the SS exercise of synergist muscles (SSS < WU, $p < .01$). The antagonist muscles SS resulted in significant increase for legs to horizontal angle, compared with synergist muscles SS condition (ASS > SSS, $p < .001$). No significant difference was observed between WU and ASS conditions ($p > .05$) (figure 3).

No significant interaction of three conditions was observed on the rest of trunk to vertical ($F_{2,41} = .561$, $p > .05$) and arms to vertical angles ($F_{2,41} = 1.557$, $p > .05$) (figure 3).

DISCUSSION

Given that SS is the most common form of pre-exercise stretching in athletic populations, the aim of the present study was to examine the acute effect of synergist and antagonist muscles SS exercises on the body segmental angles, during a static strength element in gymnastics (V-sit position on parallel bars). We hypothesized that SS of the antagonistic musculature could inhibit the precedent synergist muscles SS acute effect, allowing for a better V-sit performance (legs' ascent).

The main finding of this study was that there were significant differences among the three conditions (WU, SSS, ASS), only for legs to horizontal angle. These differences were focused on the decrease of legs to horizontal angle after SSS, obviously due to the synergists' maximal strength deficit. Specifically, after SSS treatment this angle was reduced by an average of -11.6% (SSS < WU). Moreover, ASS resulted in increased legs to horizontal angle. The ASS treatment had a beneficial effect on legs to horizontal angle of the order of +18.6% (ASS > SSS). This effect was also present between ASS and WU conditions, with a no significant difference of 5.7% (ASS > WU).

To date there is no literature sources that concern the effects of muscle SS on gymnastics' hold elements requiring maximal strength production. Furthermore, no findings exist concerning SS acute effects on hip and trunk flexor muscles, particularly for antagonist muscles SS effect on synergist muscles performance. Nevertheless, in a recent study, Costa and colleagues (2013) found no differences in isokinetic peak torque of hamstring muscles, when statically stretched the antagonist quadriceps muscles. No changes in the maximal strength of the knee flexor and extensor muscles were also observed by Jemni and colleagues (2014), when comparing the effects of an acute vibration-enhanced SS on the strength of hamstrings and quadriceps muscles. However, Costa and colleagues (2013) found reduced post-SS values in quadriceps isokinetic peak torque (60°/s), after SS of antagonist hamstring muscles. On the contrary, Sandberg and colleagues (2012), in a high-speed isokinetic testing (300°/s), showed that after antagonist hamstrings SS, the torque production of knee extensors was increased. Furthermore, they observed that stretching the hip flexors and dorsiflexors - the antagonists of the hip extensors and plantarflexors- may enhance jump height. Both vertical jump height and power were higher after the antagonists SS protocol. The findings of the present study are consistent with those of Sandberg and colleagues (2012), though the type of muscular contraction was different (isokinetic and power testing vs isometric).

In the literature, few investigations reported no negative effects on performance after SS of muscles involved in movements, such as vertical jump (Chaouachi et al., 2010; Church et al., 2001; Handrakis et al., 2010; Knudson et al., 2001; Power et al., 2004; Unick et al., 2005; Young and Elliot, 2001) and short sprint (Fortier et al., 2013; Little & Williams, 2006). This was probably due to the fact that jumps and sprints are movements that mobilize the intermuscular coordination, thus inhibiting the negative effect of SS. On the contrary, McNeal and Sands (2001) reported that, there was a reduction in drop jump performance after a SS protocol for ankle plantar flexors, in young female competitive gymnasts. This detrimental effect of SS exercises may be avoided by using short duration stretch of 20 - 30 seconds (Fortier et al., 2013; Little & Williams, 2006). Data of Winke et al. (2010) also suggested that a moderate SS of knee flexors before maximal isokinetic testing does not impair the muscle performance. No significant reductions were, also, reported after a SS duration of 30 – 45 seconds for bench press (Torres et al., 2008), or leg extension power (Yamaguchi & Ishii, 2005). These findings are important because the performance tasks examined are applicable to athletic activities. Similarly, no significant effects were reported on concentric knee extensor strength (Beedle et al., 2008; Zakas et al., 2006) and isometric knee flexor MVC (Ogura et al., 2007), following similar durations of stretch. Thus, it seems that SS duration up to 45 seconds has no detrimental effect on strength performance. When SS lasted approximately 60 seconds, the muscle strength was significantly decreased (Kay & Blazevich, 2008; Knudson & Noffal, 2005; Ogura et al., 2007; Siatras et al., 2008).

Most studies in college-aged subjects focused on the acute effect of SS, demonstrating loss of force production for plantar flexor (Fowles et al., 2000) and knee

flexor and extensor muscles (Kokkonen et al., 1998). Other investigations also showed the detrimental effect of SS on isokinetic peak torque of knee extensors that requires high level of force (Costa et al., 2013; Nelson et al., 2001; Sekir et al., 2010; Papadopoulos et al., 2005). Moreover, McNeal and Sands (2003) found that, even in young competitive gymnasts -who are accustomed to perform static stretches in strength/power type training sessions- the acute SS reduced the power of lower extremity muscles during drop jumps. Likewise, in a systematic review by Kay and Blazevich (2012), it was suggested that all lower limb muscle groups are affected by SS, with the knee flexor muscles being more influenced (82%), compared with the knee extensors (64%) and plantar flexors (62%).

The decrease of strength-generating capacity of the statically stretched muscles was attributed to the changes in musculotendinous unit length (increased muscle compliance, decreased stiffness, less optimal length of cross-bridges) (Behm et al., 2004; Behm et al., 2001; Cramer et al., 2004; Cramer et al., 2007; Egan et al., 2006). The affected passive or active musculotendinous stiffness was also regarded as responsible for stretch-induced force production decrease (Magnusson et al., 1996, Rosenbaum & Hennig, 1995). Wilson et al. (1994) maintained that a stiff musculotendinous system allows for improved isometric and concentric force production, because the contractile elements of the muscle are in a more favorable position on the length/force curve. On the other hand, Knudson et al. (2001) suggested that neuromuscular inhibition may be the mechanism responsible for muscular impairment, rather than changes in muscle stiffness. The force decrement, after an acute bout of muscle SS, was related to the Golgi tendon organs, which responded by producing a reflexive inhibition of both muscle and its synergists (Moore, 1984). The limited activity of H-reflex immediately after stretching exercises was also attributed to the reduced sensitivity of muscular spindles (Avela et al., 1999; Thigpen et al., 1985). Limited muscle spindles sensitivity (Beaulieu, 1981) or reduced motoneuron excitability (Guissard et al., 1988) are implicated to the stretch-induced force deficit.

Static stretching of the synergist muscles results in a commonly accepted reduction of their strength. Power and colleagues (2004) investigated whether acute static stretching affects isometric force, muscle activation and jump power. They found that static stretches had reduced the maximal voluntary contraction torque of the quadriceps by 9.5%. They also showed that torque remained statistically decreased by 10.4% over the 120 min following the trial. Furthermore, Fowles and colleagues (2000) found that the negative effect persists for up to 60 minutes. In the present study, the SS of antagonists, though last in the order of static stretching conditions, inhibited this negative effect due to the synergist muscles stretching. Thus, the gymnasts were able to redevelop maximal strength, leading to an improved V-sit position (legs' ascent). Sandberg and colleagues (2012) suggested that stretching the antagonist musculature would result in an increased performance by increasing the neural drive to the agonist muscles. As pointed out by Hutton (1992), static stretching exercises allowed to a "softer" musculotendinous system, with an increased muscle length. Thereby, the reduced antagonist muscles' stiffness may explain the gymnasts' ability to perform larger movements.

It is worth asking whether the static stretching detrimental acute effect on synergist muscles is reduced or even suspended, thanks to antagonist muscles stretching. Perhaps this sequence of static stretching treatment (antagonist after agonist muscles stretching) is an effective "antidote" to diminish or inhibit the static stretching deleterious effect on synergist muscles.

Future research is needed to clarify the neuromuscular mechanisms responsible for the beneficial effect of antagonists' static stretching in agonist muscles performance.

Further, it must be clarified how these results on the maximal strength of hip and trunk flexors are applicable to other muscle groups or athletic populations.

CONCLUSION

Static stretching of the trunk and hip synergist and antagonist muscles resulted in significant legs to horizontal angle fluctuation, during the V-sit strength hold element on parallel bars in recreational gymnasts. After 60-seconds static stretching of synergist muscles there was a negative acute effect of static stretching exercises (decreased legs to horizontal angle). Reversely, a beneficial acute effect was observed after static stretching of antagonistic muscle groups (increased legs to horizontal angle). However, a limitation of the current study was that the experimental protocol assessed the three conditions successively in the same order (WU→SSS→ASS) and not separately. This sequence was used in order to examine the possible SS negative effect on synergist muscles, as well as the minimization or elimination of this effect after the antagonist muscle groups SS.

In conclusion, static stretching exclusively for synergist muscles may not be recommended right before gymnastics' strength hold elements, because it produces a deleterious effect on maximal force. On the other hand, antagonist muscles static stretching could be used as a counterbalance to diminish or inhibit the static stretching harmful effects on synergist muscles. However, the findings of the current study could have been different if the assessment was made in other order and/or on separate days.

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ALL YOU NEED IS A RED SHIRT AND CAP, AND YOU ARE SOKOL!

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National Museum of Slovenia, Ljubljana, Slovenia

Original article

Abstract

The public appearances of Sokol companies in uniform at first awakened and later strengthened Slovenian national consciousness and united the Slovenians in Carniola and later across all Slovenian ethnic territory. The provincial government in Ljubljana and its German majority were largely opposed to the Slovenian gymnastics clubs. They blamed the Sokol clubs for encouraging ethnic intolerance with their excursions in uniform. In principle, practicing gymnastics was the first objective of the Slovenian gymnasts, followed in second place by various forms of social 'entertainment,' where they could demonstrate dignity, good manners, and moderation. Unform consisted of »surka« (jacket), red shirt, black shoes and »čikoš« (hat). The Southern Sokol Club chose for its headwear a low, round, wide-brimmed hat, to which a tricolor 'national' cockade and a Sokol feather were attached. The Sokol uniform with its red shirt became the symbol of a self-confident and nationally conscious Slovenian, a fighter for national emancipation, and a supporter of Slavic solidarity.

Keywords*: Sokol, Uniforms, Dress, Cap, National Colours.*

INTRODUCTION

Along with the awakening of Slovenian national consciousness in the mid-nineteenth century, dressing styles became a category of national affiliation beyond the previously firmly established classbased differences in dress in Slovenia. Janez Trdina reports that in 1848 nationally conscious students and some Ljubljana residents started to wear a *surka*[1] in imitation of the Croatian Illyrians, demonstrating their Slovenian national affiliation and South Slavic solidarity, and the bolder ones added a red cap. In the reading societies period after 1861, these jackets were often adopted by the nationally conscious Slovenian bourgeoisie.[2] Although they became an element of the Sokol uniform worn by the members of the Southern Sokol Club, founded in October 1863, the role of the symbols of the Sokol gymnastics movement went to the red shirt. The uniformed Southern Sokols immediately assumed the leadership of the Slovenian national movement, and by appearing in public in uniform its members appealed to national consciousness. The Sokol uniform with its red shirt became the symbol of a self-confident and nationally conscious Slovenian, a fighter for national emancipation, and a supporter of Slavic solidarity. The popularity of the Sokol red

[1] A *surka* is a jacket without lapels and with a low standing collar, copied after the Czech folk costume that had become popular among the supporters of Illyrianism in Croatia.

[2] Baš 1987, 234–235, 239–240.

shirt was concurrent with the role of the Sokol clubs in the Slovenian national movement and of course changed in the course of the movement's development.

To date, research on the Slovenian national and Sokol movements has not dedicated any major attention to the development of the Sokol uniform, and even less to its symbolism or the reactions of sympathizers or opponents. The first to attempt a more detailed description of the development of the Sokol uniform was Drago Stepišnik,[3] who compiled a basic survey of its development. A short but correct description of the development of the Sokol uniform in Slovenia up to the Second World War was written and illustrated by Sergej Vrišer.[4] In the archive sources, the clothes of the members of the Sokol clubs are mostly called *kroji* (uniforms), and the same was true of Slovenian newspapers of the time. Here and there, the names of the individual parts of a Sokol uniform were mentioned, when they were the subject of discussions in the clubs or among the public. The archive of the Ljubljana Sokol Club also reflects the attitudes of its leadership and members to the Sokol uniform, and the discussions were quite heated in the early period.

This article addresses only the development of the men's Sokol uniform in Slovenia before the First World War; the development of women's and youths' Sokol uniforms was specific and deserves special attention due to special historical and social conditions. I intentionally use the seemingly questionable term 'Slovenian' Sokol costume, especially considering the assumption that the Slovenian Sokols imitated the uniform of the Czech Sokols. For the first thirty years, the Slovenian Sokol uniform had some specific Slovenian characteristics, in particular the headwear. In spite of the uniformity of the Sokol movement in principle, the uniform of the Ljubljana Sokol Club differed from that of the Prague Sokols, as did the uniforms of some Sokol filials from the uniform of their parent club. In particular, the uniforms of the Upper Carniola Sokols and the Southern Sokols of Trieste differed from those of the Ljubljana Sokols in the color of the shirt and details of the headwear. The lack of a standard uniform in the Slovenian Sokol clubs would certainly have caused many problems in the long run and weakened their position in the struggle for the rights of the Sokol association and national rights. The leadership of the Ljubljana Sokol Club therefore acted resolutely when the first non-standard elements appeared, whether related to the uniform, the gymnastics system, or Slovenian gymnastics terminology.

The Ljubljana Gymnastics Club tackled the issue of the club uniform as early as the preparations for its foundation. At the preparatory meeting in early August 1862, the initiators appointed a temporary five-member board, in which the Slovenians had the majority. The board's efforts to heal the rift between the Slovenian majority and German minority were in vain. Moreover, the disagreements caused the German minority to found their own gymnastics club, the *Laibacher Turnverein*, the same year. The Slovenian Gymnastics Club thus had a competitor at both the club and national levels even before it was founded. This rift, which was also reflected in the choice of the club uniform, had an important impact on the operation of the two town and national gymnastics associations. The German Gymnastics Club adopted a standard club uniform,[5] whereas the Southern Sokols imitated the Prague Sokol Club. The archive material contains no evidence of contact between the Slovenian and Czech Sokols before the formal foundation of the

[3] Stepišnik 1974, 26–29.

[4] Vrišer 1990, 43–49; Vrišer 1991, 33–37.

[5] The founder of the German club gymnastics in the *Turnverein* was Friedrich Ludwig Jahn (1778–1852), who supported the strengthening and national unification of Germany. In the Austrian provinces, especially in the non-German areas of the monarchy, German gymnasts soon established themselves as the bearers of forced Germanization. The members of the *Turnverein* initially wore simple clothes made of unbleached cloth quite similar to ordinary clothes. In the mid-nineteenth century, the uniform of the German gymnasts stabilized and became standard. It consisted of a grey jacket, black trousers, and a 'German' hat. As an identification mark, the gymnasts wore a ribbon in the 'Frankfurt colors' (black-goldred) and a badge of four conjoined Fs symbolizing their motto: *frisch-fromm-fröhlich-frei* (hardy, pious, cheerful, free).

Slovenian club, but a telegram with greetings that the Slovenians sent from their founding meeting, as well as the name and uniform they chose for the club confirm the assumption that the Southern Sokol Club imitated the Prague Sokols in its initial phase of operation.

The first club rules of the Southern Sokol Club contained no provisions regarding the Sokol uniform. It is indirectly mentioned in the first section of the gymnastics system, in which Article 5 states that the gymnasts have to take off their 'body clothes' before training.[6] The members of the Southern Sokol Club discussed the Sokol uniform at the founding meeting, which took place on 1 October 1863 at the Ljubljana Reading Society. They unanimously agreed not to imitate the uniform of the German gymnasts. They adopted a decision in principle to copy the Czech Sokol uniform but without its hat. Unlike the Czech Sokols, they would not wear boots, but shoes. The Southern Sokol Club chose for its headwear a low, round, wide-brimmed hat called a *čikoš,*[7] to which a tricolor 'national' cockade and a Sokol feather were attached. The club's archive contains no document indicating why the general meeting did not adopt the footwear and headwear of the Czech model and why it chose a hat that was quite similar to the German uniform. The Ljubljana Sokols were greatly encouraged when they received a surprise package containing 60 badges of the Prague Sokol Club in late 1863. The club's president Etbin Henrik Costa ceremoniously distributed them among the members at the New Year's party at the Ljubljana Reading Society.[8]

A group of dissatisfied Sokols again brought up the issue of the Sokol uniform in early 1864. The embarrassed club's board wrote to the leadership of the Prague Sokol Club in late January 1864, asking for a detailed description of the Sokol uniform by mid March. Because the board had received no answer from Prague by 13 March, it decided to *have at least a temporary uniform made in our own wa*y.[9] Spring was close and with it the first season of outdoor events and public performances, and the members were still without uniforms. Pressed for time, the board members again decided to adopt the Czech Sokol uniform, including the red shirt worn by the supporters of Giuseppe Garibaldi in the struggle for a united Italy. Underneath the red shirt the Sokols were to wear a white shirt or vest and over it the thenpopular grey-brown *surka* with five interlacing laces and hooks instead of buttons with buttonholes. The members were to wear ordinary trousers with a short strap, also made of grey-brown Russian cloth. Regarding the headwear, to which a cockade with a monogram and a falcon's feather were to be attached, the board again failed to reach an agreement. Of the ten board members, four voted for the *čikoš*, four for a modern hat, and two for a 'Slavic' hat.[10]

Two days later, an extraordinary general meeting was held in the club's gymnasium with a single item on the agenda: the Sokol uniform. Following a motion by President Costa, the board's proposals were adopted by a slight majority. With the exception of the headwear, the Czech Sokol uniform was adopted. Instead of the proposed hat, the majority voted for a semi-round, gray *čikoš*. The writer of the minutes of the general meeting disagreed with the majority opinion and denounced the decision adopted. He considered the proposed hat to be childish, 'unnational' and impracticable, and, in short, unworthy of a Slovenian gymnast. In his opinion, the headwear should be strictly modeled after the Prague Sokol Club just like the uniform. He rightly feared that the decision adopted would soon lead to different Sokol uniforms from club to club. As an example of uniformity, he pointed out that the German

[6] ARS (Archive of Republica Slovenia) 641, box 1, a.u. 12, 2.

[7] The Sokol headwear, the *čikoš*, originally the headwear of a Hungarian herdsman (*csikós*), is thought to have been copied from the Czech Sokol fashion as well.

[8] ARS 641, box 1, a.u. 1, 11–12, 19–20; *Novice*, 7 Oct. 1863, 325.

[9] ARS 641, box 1, a.u. 1, 24.

[10] Ibidem.

gymnastics clubs wore the same uniforms and that gymnasts from Frankfurt or Berlin were dressed identically. The outvoted minority vehemently raised doubts about the regularity of the decisions adopted and continued to press for the complete Czech uniform, refusing to wear the type of hat adopted. The minority rightly feared that the disputed decision would cause a lack of uniformity in the Sokol organization. The meeting also discussed the threat of the provincial government to prohibit the Sokols from wearing red shirts in public. Costa gathered and submitted evidence that the Prague Sokol Club was permitted to wear such shirts, and managed to convince the Carniolan provincial deputy not to implement the threatened ban.[11]

At the meeting of the expanded board on 10 April 1864, the rules on outdoor events were adopted and subsequently distributed to the members in printed form. The preamble of the rules defined the purposes of outdoor events and continued with the provision that only members wearing the Sokol symbol and full uniform were allowed to take part in them. The leader of an outdoor event was to wear a shirt decorated with embroidery and stripes on the sleeves of his *surka*, indicating his position or function. Sokols wearing ordinary clothes and invited guests were allowed to join a Sokol event in no particular order. The final article of the rules appealed to the members to respect the law and public order, to show moderation, and to conduct themselves properly. Violations of the rules were considered unacceptable shaming of the club. Inappropriate conduct of members in uniform was admonished by the leader of the outdoor event on the spot, and in extreme cases such misbehavior was sanctioned with dishonorable expulsion from the club.[12] In the initial period some Sokols occasionally wore ordinary black trousers or performed in ordinary clothes wearing Sokol hats.

Uniformed Sokols made their first public appearance at the funeral of the mayor of Ljubljana and first chairman of the Ljubljana Reading Society, Mihael Ambrož, on 28 April 1864. Wearing the full uniform and carrying the club's new flag, 40 uniformed Sokols accompanied the funeral procession of this deserving national activist and placed a wreath on his grave. As reported by Fran Drenik, individual Sokols *feared to walk the streets in full uniform because of possible insults*, and they therefore put on the *čikoš* and falcon's feather only shortly before arriving at the cemetery. On his way to the gathering point, Drenik passed by the commander of the military hospital, Captain Schramek, who was standing on the porch of the Casino Club's café. The captain was so startled by Drenik's red shirt, *čikoš*, and *surka* that he cried out loud, thinking he saw a jumping jack. After the funeral, Dr Keesbacher, a highly regarded member of the *Turnverein*, approached the demonstrator of the Sokols, Pavel Draksler, and, obviously impressed by the uniformed Sokol company, proposed that the two gymnastics clubs of Ljubljana merge. Draksler resolutely rejected the offer and confidently responded that the *Turnverein* could not join the Southern Sokol Club, but that its members were free do so individually.[13]

In early July 1864, *Novice* published the first newspaper description of the uniform of the Southern Sokols. A social event at the Kranj Reading Club held on 29 June 1864 was attended by 80 Sokols in 'formal uniforms'. The Sokol uniform was described by *Novice* as *Trousers and jacket made of Russian cloth, red shirt, round grey hat with a falcon's feather; in these elegant uniforms the Sokols are a pleasure to the eye. Their red shirts stood out because they wore their jackets over their left shoulders*.[14] The Sokol uniform was also the theme of the host's speech at the joint lunch at the Pri Stari Pošti inn, but the speaker erred in his

[11] ARS 641, box 1, a.u. 1, p. 24; box 2, a.u. 18, 1–2.

[12] ARS 641, box 1, a.u. 1, 24–26, box 2, a.u. 19; Vrišer 1990, 44.

[13] ARS 641, box 2, a.u. 25, box 16, a.u. 1954; *Petindvajstetletnica Sokola 1863–1888*, Ljubljana 1888, 30–31.

[14] *Novice*, 6. 7. 1864, 219–221.

description and Costa senior had to correct him. The ceremonial program was followed by a ball where one could see *Carniolan beauties whirl around with Sokols in their fine uniforms.*[15] The Sokol uniform, which made its first and successful appearance on the dance floor, obviously found much favor with the female public.

In 1864, uniformed Sokols attended a reading society event in Ilirska Bistrica, the opening of the Planina Reading Society, and an evening torchlight procession in honor of the newly elected mayor of Ljubljana, Etbin Henrik Costa. *Novice* reported that a ceremonial social event at the Celovec (Klagenfurt) Reading Club on 30 October 1864 was attended by a member of the Southern Sokol Club whose uniform attracted considerable attention: *They were all watching him in his fine uniform and many voices were heard calling for more 'Sokols' to be seen in Celovec.*"[16] Excursions, visits to national societies and their events, the election of their president, Costa, as mayor of Ljubljana, and promotional accounts in the press contributed to ideas about founding Sokol clubs or its chapters in other Slovenian places (Kranj, Vipava, Planina, and Ilirska Bistrica). Among the conditions the Southern Sokol Club set for the chapters were payment of a membership fee, equipped club premises, and orderly finances. The parent club made no special mention of the issue of uniforms in the chapters, but it was self-evident that they should be standard uniforms.[17]

At the general meeting of 29 December 1864, the gathered Sokols once more addressed the issue of the uniform in item 6 of the agenda. After a heated debate, the meeting adopted a decision by majority vote that the *čikoš* as worn by the Czech Sokols was to replace the semi-round hat, whereas the rest of the uniform was to remain unchanged. The board of the club decided on 3 February 1865 that the club would order 100 new *čikoš* hats from the Prague Sokol Club and 150 Sokol monograms. The hats and monograms arrived in Ljubljana in early March 1865.[18]

A group of 72 Sokol gymnasts in uniform and carrying the Sokol flag posed for the first photograph of Sokols for the Ljubljana photographer Ernest Pogorelec on Sunday, 17 September 1865. According to the club's secretary, Fran Ravnikar, the photographer did a fine job. The remaining 35 Sokols separately visited the photographer on 8 October 1865 to have him make *a fine souvenir of unforgettable times.*[19] Photographs, especially of groups, had become affordable because of advances in photography. The Southern Sokol Club made use of photography for souvenirs and to represent themselves, and today these photographs are first-rate documents of the period and primary sources for research. Group portraits in uniform and with the club's flag were occasional gifts from the Southern Sokol Club as tokens of gratitude to deserving clubs and individuals. The photographs clearly show the uniforms, the flag, and the faces of the members of the Southern Sokol Club. Most of them wore beards, which a decade earlier symbolized sympathy for the ideas of liberalism and the March Revolution and attested to a person's support for democracy. For this very reason, as early as 1852 Austria's conservative authorities had prohibited civil servants from wearing facial hair below the mouth, and according to Janez Trdina, several types of hats, long hair, and 'unusual' clothes were equally forbidden.[20]

On 29 December 1866, the general meeting of the Southern Sokol Club unanimously adopted a proposal from 'demonstrator' Pavel Draksler to have winter coats made for the winter activities.[21] The season of the club's public activities lasted from early May to late October, and the club's leadership wanted to extend them to the inactive winter season. The winter

[15] ARS 641, box 1, a.u. 1, 29.

[16] ARS 641, box 1, a.u. 1, 30–31; *Novice*, 20 July 1864, 239–240; 27 July 1864, 248; 17 Aug. 1864, 268–270; 16 Nov. 1864, 377; 23 Nov. 1864, 383–384.

[17] ARS 641, box 1, a.u. 1, 33.

[18] ARS 641, box 1, a.u. 1, 36–37, 39–40, a.u. 42, ; *Novice*, l4 Jan. 1865, 7.

[19] ARS 641, box 1, a.u. 1, 54.

[20] Baš 1987, 242–244.

[21] ARS 641, box 2, a.u. 50.

activities included not only an annual commemoration visit to the graves of deceased members and sponsors on 1 November, but also private and public events such as costume parties, New Year's parties, a Valentin Vodnik memorial evening, and Sokol winter evenings. The club was aware of its important role in Slovenian social life, and especially in the winter it gladly accepted invitations to support the activities of national (i.e., Slovenian) clubs in various towns and places around Slovenia by attending them in uniform. Until 1882 there are no reports in the archive records on outdoor events in winter coats, and one may therefore assume that Draksler's proposal was not implemented. When the flag of the Trieste Slavic Workers' Club was blessed on 24 September 1882, the attending Ljubljana Sokols were so chilled by the autumn *burja* winds that the idea of purchasing winter uniforms was revived. The board from then on invited its members to serenades and parties in winter, where they gathered in *winter outfit, wearing the Sokol hat and feather*.[22] They also attended funerals in the winter; for example, that of Štefan Kočevar on February 1883, *in full Sokol uniform with hat, feather, and winter coat.*[23]

A street brawl between a group of Sokols and German gymnasts after the funeral of Henrik Germek, a member of the Southern Sokol Club, on the night of 24 July 1867 caused the provincial deputy to ban the Southern Sokols. On 20 February 1868, around 70 former Sokols gathered in the club's gymnasium with the intention of founding a new gymnastics club. After a heated debate, the Sokols confirmed the existing Sokol uniform with the exception of the *surka*, to which a stripe was added.[24] The founding meeting of the Ljubljana Sokol Gymnastics Club was held at the Reading Club on 28 April 1868, and once more addressed the issue of the Sokol uniform, which had remained unresolved since October 1863. The meeting unanimously decided that the uniform was to remain unchanged. Regarding the *surka*, they decided in favor of the 'Prague uniform' with the same back stripe as worn by the Czech Sokols. The new rules did not define the uniform in detail. The only reference to the uniform was in the provision that the members had the right *to wear the Sokol uniform, but only on the club's excursions and at its festivals*.[25] At the board's first meeting on 9 March 1868, the unsolved issue of the headwear was again tackled. Because the board could not reach an agreement, the decision was postponed to a later occasion. To resolve this unpleasant issue as soon as possible, Draksler, who was a member of the board, committed himself to having a model *čikoš* made and presenting it to the board at one of the next meetings. Further discussions and quarrels were resolutely terminated by an intervention from President Peter Grasselli. On 15 April 1868, the board adopted Grasselli's proposal to have the same uniform as the Prague Sokol Club with the exception of the *surka*. The board adopted the proposal only after Grasselli assured it that a *surka* with a chain stripe would not increase expenses for the Sokols.[26]

In 1869, initiatives to found Sokol clubs were launched in Kranj, Postojna, Cerknica, Celje, and Trieste. The initiating committees of clubs and chapters turned to the leadership of the Ljubljana Sokol Club for copies of the club rules. They had uniforms and flags made following the model of the parent club. The district and provincial authorities not only did not help them in any way, but through stalling and obstruction tried to make life as unpleasant as possible for the activities of the Sokol clubs. The district administration in Postojna, for instance, rejected the application of the Sokols to attend the high mass on the emperor's birthday in uniform

[22] ARS 641, box 5, a.u. 473.

[23] ARS 641, box 5, a.u. 475, fol. 2.

[24] *Historično-statistični pregled delovanja telovadnega društva 'Sokol' od začetka svojega obstoja, to je od leta 1862 do začetka leta 1871*, Ljubljana 1871, 14.

[25] ARS 641, box 2, a.u. 65.

[26] ARS 641, box 1, a.u. 1, 99, 101–102.

before the official foundation of the Sokol chapter.[27]

The Slovenians of Trieste encountered even greater difficulties in founding their gymnastics club when they announced that the founding ceremony would be held on 6 May 1869. The imperial deputy's office of Trieste rejected the application for approval of the club rules of the Southern Sokol Club on 3 June 1869 on the grounds that the Sokol Club and its flag and uniforms were likely to endanger public order and safety in the town. The leadership's direct complaint to the Ministry of Internal Affairs in Vienna was unsuccessful. The Trieste Sokols wanted to model themselves after the former Ljubljana Sokol Club by choosing the name 'Southern Sokol Club'. It is all the more unusual then that they did not do so in the case of the uniform, for which they chose a blue shirt instead of a red one, and added a red neck scarf. The archives of the club offer no explanation why the Trieste Sokols did not model their uniform after the Ljubljana or Prague Sokols. I assume that the decision was based on local clothing traditions. They were even less precise in the choice of headwear, allowing gray cloth hats as well as a black *čikoš*, to which a Sokol feather and monogram were attached. They also wore trousers made of gray cloth and shoes (rather than boots).

The political rally held in Sežana on 3 June 1870 was attended by numerous Slovenian societies as well as the 'Littoral Sokol Club' – that is, the Trieste Southern Sokols, which were never formally founded. *Novice* reported that the Rojan[28] Sokol flag was worn by a Sokol in a blue shirt accompanied by two Sokols in red shirts as guards. The Trieste Sokols obviously occasionally wore their Sokol uniforms at local events to enhance folk events. The rally was attended by a choir from Tolmin, dressed for the occasion in Sokol uniforms and red shirts. The newspaper does not mention which Sokol club the choirs borrowed the uniforms from. Furthermore, it is also unusual that no one criticized the fact that the Littoral Sokols and the singers wore different uniforms.[29]

The Upper Carniola Sokol Club, founded in early January 1870, chose a blue shirt for its uniform instead of a red one. The differences in uniform between the Ljubljana and Kranj Sokols were particularly obvious at their joint excursion to Sveta Katarina in mid May 1871. In his critical report, the new gymnastics instructor of the Ljubljana Sokols, the Czech Jan Z. Veselý, blamed the Upper Carniola Sokols for training only half a year, poor administration and technical leadership, ignorance of gymnastics theory, and lack of Sokol ideas.[30] The vice president, Peter Grasselli, was even more detailed in his criticism at the joint party in Medvode on 14 May 1871, when he expressed in his toast the wish for the Kranj Sokols to have the same uniforms as the Ljubljana Sokols as soon as possible. In addition to the blue shirt, the Kranj Sokols also wore wide-brimmed peasant hats, to which they attached redand-blue tassels.[31] Grasselli publicly appealed to the Upper Carniola Sokols to bring the uniform in line with 'the other Slavic gymnastics clubs' and wear *a red shirt as the symbol of the liberal principles every gymnast must nurture*.[32] The Upper Carniola Sokols obstinately persisted with their own variant of Sokol uniform, undermining the unity of the Slovenian Sokol movement from its very beginnings. After several years of obstinacy, their resistance ended when the Upper Carniola Sokol Club ceased operation.

In the meantime, the Ljubljana Sokol Club continued its efforts to standardize the uniform and purchases of uniforms within the club and its chapters. In spring 1870, the board called upon members that intended to have a new uniform made to do so before

[27] ARS 641, box 1, a.u. 1, 165.

[28] Roiano (Sln. *Rojan*) is a village next to Trieste.

[29] *Novice*, 8 June 1870, 185.

[30] Zaletel 1933, 192.

[31] Vrišer 1991, 35.

[32] *Novice*, 17 May 1871, 162.

the first excursions of the year. The Ljubljana tailors were to make the new *surkas* and trousers from better-quality cloth, ordered by the club from the Prague Sokols, instead of ordinary cloth. The fabric was available at Anton Jentl's shop on Špital Street and, according to the board, at a favorable price. At the fourth meeting of the board on 25 April 1870, Peter Grasselli addressed the question how to support young Sokols so that they could afford the Sokol uniform. The club had struggled with the high prices of cloth and tailoring services without any success from its foundation. Young Sokols, who were mainly from the ranks of shop assistants and journeymen in the crafts, found it difficult to raise the money required for having a uniform made, and the meager means of the club's treasury could not help them. At the fifth meeting of the board on 6 July 1870, the members once more discussed the headwear and adopted an unusual, but unanimous decision. During summer excursions, the Sokols were to wear straw hats to better protect them from the scorching sun. Around 50 uniformed Sokols were to attend the rally in Vipava on 29 July 1870 wearing straw hats. However, because of the poor weather they had no chance to see how effective the new headwear was. The rally was postponed to 14 August 1870 and was attended by around 120 Sokols in uniform, from the parent club and the Planina, Postojna, and Vipava chapters. The available sources fail to mention whether straw hats were also worn by the members of the Sokol chapters.[33]

Dissatisfied Sokols again raised the issue of the uniform at the general meeting in December 1870, but the meeting voted against their proposals. The board once more rejected proposals by frustrated members to change the uniform at its meeting of 19 March 1871. Among the reasons for its decision, the board drew attention to the introduction of 'real' democracy to the life of the club, an argument that was strongly supported by the club's gymnastics instructor Jan Z. Veselý. By insisting on a standard Sokol uniform, the board also fought phenomena of stratification and 'aristocratic' behavior in the club. At the general meeting of 29 December 1872, Fran Drenik again proposed changing the uniform. His contention that the uniform was the reason for poor participation in the club's excursions was not supported by the majority. Kadilnik raised the question of the hat for practical reasons and proposed changing it. After a heated debate, the general meeting adopted a Solomon-like decision: the proposals for changes to the uniform were to be dealt with by the newly elected board. The general meeting also assigned the new board the task of immediately contacting the leaderships of the chapters and reaching an agreement '*to modify their uniforms so that all Slovenian Sokol clubs will wear the same uniform*.'[34]

The economic crisis and increased political and police pressures exerted by the governments in Vienna from 1872 to 1882 placed heavy restrictions on the operation of the Ljubljana Sokol Club and its chapters. Membership in a Sokol club or publicly wearing a red shirt was reason enough to be dismissed from the civil service. Consequently, the activities of the club were reduced as well as its presence among the public. Within a few years the membership dropped by half and chapters stopped operating one by one. *Novice* reported in May 1872 on the conditions in the Planina Sokol chapter, where the club's activities were coming to a sad end. It blamed these conditions on internal divisions and the haughtiness of its leaders, who loved to show off in public wearing the Sokol uniform but completely neglected gymnastics.[35]

In spring 1873, the municipal authorities tightened the conditions for the public operation of the Ljubljana Sokol Club with a provision that made it nearly

[33] ARS 641, box 1, a.u.1, 181–183, 185–186; *Novice*, 24 Aug. 1870, 272.

[34] ARS 641, box 1, a.u. 1, 207, box 3, a.u. 137, 1–2, a. 3, 199.

[35] *Novice*, 29 May 1872, 176–177.

impossible to organize excursions. Uniformed Sokols were forbidden to gather in large groups in the town before excursions, and after the excursion they had to disperse when returning to town. This led to a joke in Ljubljana and its environs that was quite telling of the double standards the authorities applied to the two gymnastics clubs in Ljubljana: the difference between the *Turner* and the Sokols was that the former did not dare visit the countryside, and the latter were not allowed to visit it.[36] After the Slovenians lost the majority in the provincial diet in 1877, pressures on the

Ljubljana Sokols mounted to the degree that the Sokols were forced to participate in the club's excursions in ordinary clothes. When the Ljubljana Sokols organized an excursion in ordinary clothes to Zalog on 15 June 1879, the local people welcomed them enthusiastically and demonstrated their sympathy for the *national activists, even when they are dressed like gentlemen.*[37] Because of constant harassment by the authorities, the board even considered the option that the Sokols would no longer wear red shirts. On 21 September 1879, the general meeting chaired by the newly elected president Franjo Ravnikar adopted the decision *to no longer wear red shirts.* A frustrated minority could not reconcile itself with the decision and appealed for the matter to be reconsidered. At the extraordinary general meeting of 27 December 1879, the Sokols unanimously agreed *to continue to wear red shirts.*[38] However, the meeting's decision in favor of the red shirt lost much of its importance because of the internal instruction that the decision was not to be made public.

When the Croatian Sokols visited Ljubljana on 28 June 1880, the Ljubljana Sokols were once more motivated to address the issue of the Sokol uniform. At the fourth meeting of the board on 14 March 1881, President Fran Ravnikar proposed that they stop wearing the old hats (the *čikoš*). The board unanimously adopted Ravnikar's proposal for the type of hat as worn by the Zagreb Sokols, and they were ordered from the local hatter Krejči. The new hat with a feather and cockade cost 2 guldens, 45 kreuzers per piece. Thanks to mediation by the Sokol member Tratnik, the trouser belts were supplied by the belt-maker Schreiner of Ljubljana. However, this seemingly innocuous decision annoyed one of the members, T. A. Zupančič. In a letter to President Ravnikar dated 21 March 1881, he criticized the board for ordering the hats from someone that had not even been a member until recently, and of whom it was not known whether he really was a Slovenian patriot. Zupančič's 'patriotic feelings' were offended by the board's failure to assign the order to an older, steadfast merchant, and choosing a newcomer from abroad instead. At its meeting of 19 January 1882, the board adopted another Solomon-like decision: the caps were now ordered from the craftsmen Tille and Zevnikar.[39]

The Ljubljana Sokols wore their old hats for the last time on Thursday, 5 May 1881, when they gathered at the Reading Club *in full Sokol uniform with čikoš and feather* at 6 pm and walked to the house of the late Josip Jurčič, a long-time member of the club. The board had decided that *it would not be appropriate to wear the new hats for the first time at a funeral,* and therefore called upon the members to attend the funeral in the old uniform.[40] The Ljubljana Sokols first wore their new hats on Monday, 27 June 1881, at the Ljubljana railway station, where they met a train with 800 Slavic pilgrims traveling to Rome for the declaration of the feast-day of the Slavic apostles Sts Cyril and Methodius.[41]

In 1882, the isolated Ljubljana Sokol Club was joined by clubs from Trieste and Mozirje, and by the end of the decade further Sokol clubs were founded in Novo Mesto, Gorizia, and Prvačina. The

[36] *Novice*, 28 May 1873, 176.
[37] *Novice*, 18 June 1879, 199.
[38] ARS 641, box 3, a.u. 314; *Novice*, 31 Dec. 1879, 429.
[39] ARS 641, box 4, a.u. 335, fol 2, 2, a.u. 338, fol 1, 2, a.u. 404.
[40] ARS 641, box 4, a.u. 348, fol 1.
[41] ARS 641, box 4, a.u. 363, 1.

Ljubljana Sokol Club helped the new clubs prepare rules and the purchase of uniforms. At its founding meeting in Trieste on 8 May 1882, the Trieste Sokol Club confirmed its uniform, which was identical to that of the Ljubljana Sokols: trousers and *surka* made of 'grey fabric' or Russian cloth, and a red shirt worn underneath. The headwear consisted of a grey, soft, wide-brimmed felt hat with a falcon's feather and monogram on a white, blue, and red silk ribbon. Because of the club's meager means, they had great difficulties in purchasing the material for the uniforms, and until fall 1885 they regularly applied for financial support to the Ljubljana Sokols, and occasionally borrowed uniforms from the club.[42]

In spring 1882, the leadership of the Savinja Sokol Club sent the teacher Levstik to Ljubljana to gather detailed information because they wanted to purchase the same uniforms as the Ljubljana Sokols. Within one year, the Savinja Sokols had their own uniforms made. They wore them at several local events and presented themselves for the first time in Ljubljana on 3 July 1883. The Upper Carniola and Lower Carniola Sokol clubs, founded in 1887, also chose to have the same uniforms as the Ljubljana Sokols. Supported by the Ljubljana Sokol Club, new clubs were founded in Ajdovščina and Prvačina by the end of 1890, and they both opted for the standard uniform. Both clubs had great difficulties because the Trieste authorities prohibited them from wearing the Sokol uniforms in public. The Gorizia club therefore soon stopped its operation, while the Sokols of Prvačina survived thanks to their well-equipped gymnasium.[43]

For the celebration of the twentieth anniversary of the foundation of the Prague Sokol Club, the Czech Sokols organized a Pan-Sokol rally on 18 June 1882, the first big international event of the Sokol movement. The festival was attended by a fivemember delegation from the Ljubljana Sokol Club in uniform and with the club's flag, who traveled to Prague at their own expense. In its invitation, the organizer reminded the Slovenian Sokols not to travel to Prague in excursion clothes, high boots, or wide trousers, and for the gymnastics performance they were to wear white vests with red trim and cloth trousers. The spirit of the Prague Sokols stimulated the Slovenian Sokols to engage in renovating their club and to conform to the Czech Sokol clubs. The attitude toward the uniform was the clearest indicator of the club's spirit. In view of what was practiced by some Ljubljana Sokols, who did not wear the Sokol symbol on their hats, their attitude was not really up to standard. This improper habit of some members was discussed at the general meeting of 4 January 1884, which again tackled the issue of the hats and adopted the unanimous stance that the members should wear the Sokol symbol on their hats.[44]

The participation of fifteen Slovenian Sokols at the Second Pan-Sokol Rally in Prague in June 1891 turned into a landmark event for the Slovenian Sokol movement because of its long-term consequences. The president of the Celje Sokol Club, Josip Vrečko, wrote a letter to the board of the Ljubljana Sokols on 11 February 1892, drawing their attention to the conditions in the cradle of the Sokol movement. He proposed joint, immediate, and resolute action to standardize the uniform, Sokol symbols and awards, gymnastics instructions, and greetings in the Slovenian Sokol clubs; in short, to eliminate all deviations in the Slovenian Sokol clubs. Vrečko proposed an organizational and general standardization of the Slovenian Sokol clubs and called upon the leadership of the Ljubljana Sokols to head this very demanding project. The board of the Ljubljana Sokol Club welcomed the initiative of the Celje Sokols on 26 March 1892 and proposed that the gymnastics teacher Franjo Mulaček and the secretary of the Celje Sokols, Dragotin Treo, prepare a

[42] ARS 641, box 5, a.u. 528, a.u. 584, fol. 2, 1–2; Pavletič 1999.

[43] ARS 641, box 4, a.u. 409, fol. 1, 2, box 5, a.u. 503, fol. 3, box 6, a.u. 697, 712.

[44] ARS 641, box 5, a.u. 526, fol. 1, Vrišer 1990, 44.

reform plan drawing on the Czech model. For the uniform, the two proposed a cap with a Slovenian rosette and short falcon's feathers, a *surka* with laces, a red shirt made of 'rouge' cloth, and red buttons on the collar and cuffs. The presidents and their deputies were to wear a tricolor embroidery above the elbow around the left sleeve, the leaders a wide white sash, and the demonstrators a blue sash, both falling almost to the knees. The leadership of the Ljubljana Sokols agreed with the proposal and decided to replace the hats with Czech *caps of the finest quality with a tricolor cockade, the Sokol monogram, and a short feather*, and the trousers with *trousers with spats of the same colors*. Another proposal that was adopted provided for standardization of the fabric for the uniforms and shirts, a standard *surka*, and good-quality, standard laces. A further issue addressed were the winter coats, and it was decided that the existing ones could be used until further notice. These changes to the Sokol uniform came into force on 1 May 1892. A three-member commission was to supervise the implementation of the decisions and ensure that the Sokols wore the prescribed uniform. The Ljubljana Sokols sent the decisions of its board to all other Slovenian Sokol clubs and called upon their support in these efforts as soon as possible.[45]

The costs of standardizing the Sokol uniform, which was itself quite expensive, met with opposition in all the clubs. The leadership of the Celje Sokols attempted to tacitly implement the standardization but failed because the paper *Slovenski Narod* prematurely published the proposed standard uniform. In mid May 1892, a genuine revolt broke out at the Celje Sokol Club. The final straw was the proposal on standard spats, and frustrated members demanded an extraordinary general meeting. The secretary of the Ljubljana Sokols, Fran Tekavčič, advised the leadership of the Celje Sokol Club to temporarily postpone the reform of the uniform to cool down the heated discussions. The leaders of the other Sokol clubs were equally challenged to solve the issue of the standard uniform as soon as possible because the season of excursions and public gymnastics performances started in May.[46]

On its thirtieth anniversary, the Ljubljana Sokol Club organized a meeting of all Slovenian Sokol clubs, at which it wanted to lay the foundations for standardizing the Sokol clubs. In a letter to the organizing committee, dated 19 April 1893, Josip Vrečko proposed the themes for the meeting and especially pointed out the issue of a standard Sokol uniform. He continued by proposing standardization of the gymnastics terminology, the foundation of a union of Sokol Clubs and the elaboration of standard instructions for founding new clubs. At the meeting of the delegates of the Slovenian Sokol clubs, held at the Ljubljana Town Hall on 8 July 1893, the president of the Lower Carniola Sokol Club, Franjo Rosin, proposed the introduction of a standard uniform and the organization of a thereby lower purchase cost of fabric for the uniforms, and the future union was to ensure standard uniforms and fabrics. A special committee consisting of members of the Ljubljana Sokols was made responsible for implementing the decisions adopted. Franjo Mulaček described the development of the Sokol uniform in Slovenia, with special emphasis on the headwear, in an extensive speech.[47] He then continued to denounce both clubs as well as individuals whose aim was *to dress up in clothes that fit the human body tighter than working clothes and please the female sex*, and resolutely condemned the common conviction that membership in a Sokol club gave people the

[45] ARS 641, box 6, a.u. 712, 717, 1–7; Oražen 1940, 28–30.

[46] ARS 641, box 6, a.u. 720, fol. 1, 2.

[47] *. . . If I look back into the past, I see Sokols with round grey hats with small brims and a standing falcon's feather fixed up front, a short surka all covered in laces, a little later black caps imitating the Czech Sokols, and yet a bit later in straw hats in the summer . . . in other words, the headwear kept on changing . . . Such changes occurred in all Yugoslav Sokol clubs, and there are no two clubs with the same uniform in all aspects and even in the performances of individual clubs there are great differences in their uniforms* (AS 641, box 7, a.u. 763, 8).

right to *show themselves off as wild and uncouth while wearing the Sokol uniform*.[48]

The election of Viktor Murnik[49] (1874-1964) as secretary on 5 January 1896 started a reform period in the Ljubljana Sokol Club that was marked by the introduction of the Tyrš gymnastics system, standardization of Slovenian gymnastics terminology and the Sokol uniform, the organization of courses and lectures, and the translation of basic specialist literature. Following the Czech example, Murnik founded a board of instructors that soon became the core of the club's activities. For public gymnastics performances he selected only well-prepared gymnasts because this was the only way to promote Sokol gymnastics. He sent out well-trained instructors of gymnastics to assist other Sokol clubs, and invited gymnasts from other clubs to the gymnasium of the Ljubljana Sokol Club for additional training. The reform period concluded with the Second Slovenian Pan-Sokol Rally in Ljubljana in June 1904. The foundation of the Slovenian Sokol Union (SSU) on 1 October 1905 and the establishment of the organizational structure into districts (Sln. *župa*) in 1909 and 1910 successfully ended the structural reorganization, which then led to an exceptional expansion of the Slovenian Sokol movement.

Towards the end of the century, Sokol clubs in small towns and market towns still faced difficulties in purchasing Sokol uniforms. The secretary of the Celje Sokol Club, Franjo Jošt, complained at the general meeting in 1898 that the club was joined by gentlemen that were interested merely in festivals, club excursions, and celebrations where they *have the chance to show off their uniform but, once they owe several installments on their uniform, they write that they are leaving the club (*Orožen 1940). In addition to internal difficulties, the Celje Sokol Club had constant problems with the municipal authorities, which did not allow it to organize public parades in club uniform. The Celje municipal authorities consistently rejected the applications of the Sokol Club with the excuse that the appearance of Sokols in uniform would only worsen the already heated ethnic tensions in the town, adding that uniformed Sokols behaved provocatively. It took until the funeral of Hinko Šuklje (Hinko Šuklje was born in Brestanica on 10 July 1866. After studying medicine in Graz, he found a position in Ljubljana. Invited by national activists of Celje, he moved to the town in 1893 and specialized in gynecology. Šuklje was a member of the Celje Sokols and a member of its board. He founded and directed the Sokol tamburice-playing club. He died in Zadar, where he was being treated for tuberculosis, on 29 March 1903. He was buried in Žalec. (*Slovenski biografski leksikon*, 3, Ljubljana 1960–1971, 718–719)) for the Celje Sokols to first march in uniform and carry the club flag in the streets of Celje. The municipal authorities of Celje initially banned the funeral procession of the Sokols, but then gave in to public pressure, including from the Germans, and for the first and last time (in the Austro-Hungarian monarchy) allowed the Sokols to march in the town's streets. As reported by the club's secretary, Ljudevit Stiker, the Germans of Celje[50] were particularly annoyed by the red shirts and he ironically added that *they will have to get used to them, like it or not*.[53]

An anonymous group of members of the Ljubljana Sokol Club wrote a letter to the board in late 1903, pointing out that

[48] ARS 641, box 7, a.u. 749, fol. 4–5, a.u. 758, 763.

[49] Viktor Murnik was born in Ljubljana on 25 March 1874, where he graduated from the classical secondary school in 1892. He received his PhD at the Faculty of Law in Graz in 1898 and started his professional career as a court trainee at the court in Ljubljana. In 1901 he assumed the duties of secretary of the Provincial Chamber of Trade and Crafts. He joined the Ljubljana Sokols in 1892 and remained a loyal member until his death in 1964. In January 1896, he was appointed secretary of the Ljubljana Sokols and in the same year founded the first amateur section of men's instructors in Slovenia, and two years later the first women's section of instructors. From 1897 to 1905 he was the leader, and from 1905 onwards the president, of the Ljubljana Sokols. In 1906 he was appointed leader of the Slovenian Union of Sokol Clubs, and in 1910 leader of the Ljubljana Sokol district

[50] The terms *nemškutar* and *nemčur* were pejorative terms referring to ethnic Slovenians that opted for German identity or were in favor of close association with the German culture during the national differentiation process. 53 *Slovenski Sokol* 1904, 55.

many young gymnasts could not afford the Sokol uniform. They proposed introducing what was practiced by the Ljubljana *Turnverein*, which solved the purchase of club uniforms for poor new members with favorable loans. They also sharply condemned the motto *All you need are a red shirt and cap, and you're a Sokol!* which at the time circulated among the members, as well as among the public. The group demanded that an extraordinary meeting be called immediately to establish the healthy foundations for the club. In his answer to the anonymous letter, Murnik expressed his regret that many young Sokols could not perform in public because they had no Sokol uniform. He also regretted that the poor financial situation of the club made it impossible to support young members with favorable internal loans to buy a Sokol uniform.[51]

The Second Slovenian Pan-Sokol Rally was held in Ljubljana on 16–18 July 1904, and together with a ceremonial meeting and public performance, the rally concluded the reform of the Slovenian Sokol movement. Following a proposal by the Ljubljana Sokol Club, the other Slovenian Sokol clubs started to standardize the Sokol uniform in 1903, not only in cut but also in fabric. The Sokols replaced the winter coats with capes and in addition to laced shoes, boots were also allowed for the sake of the Mura Sokol Club from Ljutomer. The Mura Sokol Club, founded in 1903, had chosen the Czech ceremonial uniform including boots at the initiative of the immigrant Czech physician Karel Chloupek; because changing the uniform would be too heavy a financial burden for the club and it members, they remained with their first choice.[52]

At the invitation of the board of instructors of the Ljubljana Sokol Club, the leaders of the Slovenian Sokol clubs gathered in Ljubljana in March 1904. They decided that the freestyle exercises at performances were to be performed in gymnastics uniforms, not Sokol uniforms, and that only members that regularly participated in the training sessions would be allowed to participate in the ceremonial procession. The organizers required all Slovenian participants to wear standard uniforms, and all the gymnasts to be dressed in standard gymnastics uniforms. They called upon the uniformed Sokols to properly conduct themselves, not to add any trivial pendants to their uniforms, and to wear a Sokol cap with a feather, cockade, and monogram. The Sokol gymnasts wore a white singlet with narrow red trim, and a ribbon with the name of their club attached to the center of the chest. They were to wear dark blue cotton jersey trousers with a 3-cm-wide sewn-on blue-and-white belt, and underneath the trousers the organizers recommended blue 'swimming trunks.' The footwear consisted of black heelless shoes or black gym shoes with stockings the same color as the trousers. The organizers further recommended that the participants that intended to participate in the competitions and public gymnastics performances bring two or three gymnastics shirts. The leader of the public gymnastics performance was to wear a short white sash around his waist, and the leaders of the two gathering places a short blue sash.[53] The Pan-Sokol Rally was a good opportunity for the leaders of the Sokol clubs to verify how the decisions on the standard Sokol uniform were implemented. Murnik was satisfied with the degree of standardization of the Sokol uniform as well as with the organization of the Sokol rally.

The foundation of the Slovenian Sokol Union (SSU) on 1 October 1905, which included twelve clubs with over 2,000 members, laid the foundations for a uniform organizational structure of the Slovenian Sokols. The union implemented its program by introducing a standard training program and methods, organizing meetings, public and competition performances, celebrations and excursions, and lectures, publishing books, and other activities. Before the union was founded, the Ljubljana Sokol Club had

[51] ARS 641, box 11, a.u. 1310.

[52] Lubej Drejče 1980, 9; Oražen 1940, 72.

[53] *Slovenski Sokol,* 1904, 43–44, 94–95; 1906, 66.

supervised the standard uniform of the Slovenian Sokol clubs, and was then replaced by the board of instructors of the SSU, which through the monthly journal *Slovenski Sokol* laid down the standards and instructions for the clubs. The union's board approved the existing Sokol uniform on 8 December 1905, including the trousers, which remained long, but without spats or boots. The leadership of the union from then on supplied the fabric for the Sokol uniforms and capes and made sure that the fabric was always of the same quality and color.[54]

The board of the SSU adopted house rules and excursion rules on 8 December 1905, provisions concerning public performances, and a report on the Sokol uniform, symbols, and gymnastics uniform. The union's rules came into force for all the member clubs of the union from the day they were published in *Slovenski Sokol*; they included house rules and excursion rules, an example of club rules, and provisions on the Sokol uniform and symbols. Article 3 of the house rules obliged the boards of the clubs to instruct their members on the club rules, the house, public, and excursion rules, and the rules and decisions of the union. Club members were entitled to a space in the dressing room to change clothes and keep their gymnastics uniforms. The gymnasts were responsible for maintaining and cleaning their gymnastics uniforms. Barefoot gymnasts and gymnasts wearing ordinary shoes were not admitted into the gymnasium. Members were allowed to exercise stripped to the waist only in the gymnasium, not outdoors. When they practiced fencing they had to be adequately protected, replace damaged equipment, and repair damage. After the training sessions, the gymnasts had to keep their uniforms in the prescribed places in the dressing room. The members were also responsible for personal hygiene and the cleanliness of the common spaces.[55]

While the house rules laid down the conditions for activities in the club's premises and gymnasium, the public rules dealt with the conduct of Sokol gymnasts at public performances, where the Sokol clubs appeared in a special, standard uniform and under the club's flag. The instructions laid down the following symbols to be used with the Sokol uniform: a falcon's feather with cockade and monogram, a ribbon with the name of the club's headquarters on the left side of the chest, and the Sokol monogram on the belt. According to the rules of the union, every member was individually responsible for wearing the standard Sokol uniform and gymnastics uniform at public performances. The members were allowed to wear the Sokol uniform and symbols in public only with the permission of the club's board. Violation of this rule was sanctioned with expulsion from the club. Changing into the Sokol uniform in advance before public performances was prohibited, and after the performance the Sokols were obliged to go home immediately and change into ordinary clothes.[56]

The excursion rules stipulated that only members wearing the mandatory full uniform were allowed to take part in club excursions, delegations, and public events. Uniformed members of other Sokol clubs were allowed to participate in club excursions if they had the permission of their club's leader and if the guide accepted them. Excursionists that were included in the marching ranks were forbidden to carry walking sticks or umbrellas. Anyone that left the ranks during an excursion was obliged to first remove the Sokol symbols. The instructions also defined the salutes and conduct of the Sokols at funerals of deserving members, which the Sokol clubs occasionally attended in ordinary clothes. When it fully participated, the club marched with its flag wrapped in black cloth ahead of the coffin, while club delegations marched behind the coffin. During the ceremony in church and the funeral

[54] *Slovenski Sokol,* 1906, 102.

[55] *Slovenski Sokol,* 1906, 14, 16, 35–36.

[56] Ibidem, 36–37.

procession, the Sokols took off their caps on command. The board of the SSU adopted further instructions on the symbols to be worn by Sokol officials. These abolished the obligation of the presidents and vice-presidents to wear tricolor bands on the sleeves, as well as the sashes of the leaders and deputy leaders. The new provisions stipulated that the presidents, vice-presidents, or their deputies should wear a tricolor across the right shoulder of the *surka*, and the leaders and instructors a light blue badge. In addition to the badge, the leaders wore a small horn, and the flag bearers a red badge on the right shoulder. The president of the union or his deputy wore a tricolor sash from right shoulder to left hip at the performances of the union, and on other occasions a light blue sash.[57]

The Slovenian Sokol Union published an example of club rules in *Slovenski Sokol*. In the section dealing with the rights and obligations of the members, Article 8 stipulated the right to wear the Sokol uniform in accordance with the provisions of the board. Article 31 stated the right of the members to wear the special Sokol uniform and symbols at public performances with the permission of the board.[58] A union supervisor oversaw the implementation of the rules and decisions of the boards. Until the presidency of SSU adopted its rules of procedure, which defined the authorities of the union supervisors, the clubs were supervised only in the technical sense of instruction and advice. The union's board of instructors adopted the rules of procedure for the union's supervisors on 3 June 1906. The rules of procedure obliged the union supervisors to inspect the conditions in the clubs twice a year, or at least once and then before a major public performance. Normally, the clubs were advised in advance of the inspection by the union supervisor. The supervisor wrote a report on the inspection and sent it to the union's board of instructors, which then sent a copy to the board of the club in question. The leader of the inspected club had the right to appeal to the union's board of instructors if he considered the report biased. This inspection system was primarily aimed at ensuring a higher degree 'of uniformity and training in the clubs.'[59]

The SSU's instructions to the Slovenian participants at the First Croatian PanSokol Rally, held in Zagreb on 2–3 September 1906, stipulated in detail the use of the standard Sokol and gymnastics uniforms. The club leaders were responsible for the implementation of the instructions, including the standard Sokol and gymnastics uniforms. The first section of the instructions dealt with transporting and storing the Sokol and gymnastics uniforms. The organizers reminded the members in uniform to attach a slip of paper with their name and the name of their club to the bottom of their caps, and to mark all individual parts of their uniforms to keep them from getting mixed up. The participants were called upon to inspect and clean their Sokol and gymnastics uniforms before departure. The instructions further described in detail the mandatory Sokol uniform. The Slovenian Sokols wore caps with a five-cm black trim. A tricolor cockade with the Sokol monogram and feather was affixed to the cap above the left eye. The falcon's feather with a maximum length of sixteen cm was attached below the cockade and at an angel of thirty-six degrees. The trousers and *surka* were made of grey cotton cloth. The front of the *surka* had thirteen sewn-on buttons with buttonholes, and the sleeves four buttons with buttonholes. A narrow seven-cm stripe with a tricolor top edge was sewn on to the left side of the *surka* and featured the name of the club's seat. The trousers had hooks for the black lacquered belt with the round Sokol monogram made of white metal. The instructions further specified that the monogram had to be kept in the proper position. The red cloth shirt with red bone buttons had an ordinary cut without

[57] *Slovenski Sokol*, 1906, 37, 39, 40.

[58] Ibidem, 43, 44, 45.

[59] Ibidem, 12–13, 48, 52–53.

unnecessary folds or embroidered ornaments. Silk shirts were strictly forbidden. The Sokols wore ordinary black shoes and a knee-length coat. Lacquered or yellow shoes were forbidden. The president of the union wore a tricolor sash, and its leader a light blue sash and a small horn. The new instructions stipulated that, instead of the previous white sashes worn around the waist, the club presidents and vice-presidents had to wear a tricolor badge on the right shoulder, and the leaders and instructors a light blue badge. The flag bearers wore a red badge on the right shoulder and white gloves with wide cuffs. Members were forbidden to wear any other symbols.[60]

In early 1907 the presidency of the union entrusted the supply of Sokol fabric to the Češnik & Milavec company in Ljubljana and informed all Slovenian Sokol clubs and individuals to order fabric for their uniforms from this company *in order to gradually achieve identical colors in the uniforms of individual clubs.* The board of the union authorized the 'brothers' (members) Kostevc and Miklavec on 21 July 1907 to supply the Sokol clubs with cloth in accordance with the union's instructions.[61]

Over 300 Slovenian Sokols in uniform participated in the Fifth Pan-Sokol Rally in Prague from 28 June to 1 July 1907. The union published instructions on the mandatory Sokol and gymnastics uniforms in *Slovenski Sokol*. These instructions differed only in details from the instructions for the First Croatian Pan-Sokol Rally in Zagreb in 1906. The Sokol cap now had a six-cm-wide black trim instead of five cm. Concerning the shirts, the instructions drew particular attention to the mandatory light-red shade. The instructions for the gymnastics uniform only had a note on the trousers: the gymnasts were to fix them under their shoes with an elastic band. The trousers were drawn over the shoes and fixed under them with these bands. The instructions advised the participants in the rally not to wear rings, watch chains, bracelets, or any other jewelry. In spite of the provision that the participants were to travel to Prague in ordinary clothes, some of them ignored this. The union's board of instructors considered this a violation of discipline and again warned the members to conduct themselves in exemplary fashion in public.[62]

In 1910, the Celje Sokol Club celebrated the twentieth anniversary of its foundation and invited the other Sokol clubs to the opening of the club's gymnasium in Gabrje. The SSU published a detailed program of the rally and stipulated the same Sokol and gymnastics uniforms as for the Prague rally in 1908. Because of the new organization into districts, new symbols were added for their presidents and vicepresidents: like the club presidents and vice-presidents, they were to wear tricolor badges on the right shoulder. The union drew special attention to the cleanliness of the Sokol and gymnastics uniforms. It advised the participants in the rally to take a towel, soap, toothbrush, and comb with them for personal hygiene. The municipal authorities of Celje tried to prevent the ceremony with a decree, forbidding public wearing of national symbols and Sokol uniforms, as well as gatherings of more than five persons in the town's streets during the rally. Due to this decree, the Sokols reduced the ceremony from the planned two days to one day, and the event was held in the environs of the town, where the Sokols were allowed to perform in uniform.[63]

[60] *Slovenski Sokol*, 1906, 65–66.

[61] *Slovenski Sokol,* 1907, 23, 77; 1908, 31.

[62] *Slovenski Sokol* 1907, 56–57, 72, 86.

[63] ARS 641, box 15, a.u. 1911; Orožen 1940, 104–105; *Slovenski Sokol,* 1910, 60–61; 1911, 22–23. 67 *Slovenski Sokol,* 1911, 14, 28.

Figure 1. *Demonstrators of the Južni Sokol: Koblar, Vidic, Mandič, Coloreto and Draksler, 1864.*

Figure 2. *Ljubljanski Sokol members, 1867.*

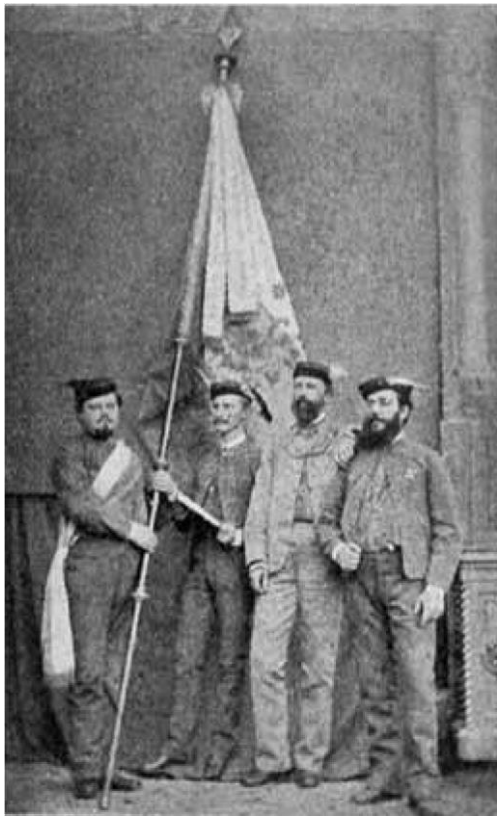

Figure 3. *Members of Ljubljana Sokol: Paternoster, Steinmety, Fr. Drenik, Nolli in Varaždin 1874.*

Figure 4. *Members of Ljubljana Sokol: Žitnik, Legat, Bernard, Nolli in Geba in Prague in 1881.*

Figure 5. *Ljubljana Sokol President Ivan Hribar in 1894.*

Figure 6. *The first board of instructors of Ljubljana Sokol: Smrtnik, Petrik, Murnik, Škof in Vernik in 1896.*

Figure 7. *Slovenia Sokol delegation in Prague in 1901.*

Figure 8. *Slovene Sokol gymnasts in Luxemburg in 1909 (Fuchs, Thaler, Pristov, Murnik Perdan, Rabič, Vidmar).*

Figure 9. *Portrait of Graz Sokol Club in 1914.*

Figure 10. *Sokol cap »čikoš«.*

Figure 11. *Uniform of a memebr of the Ljubljana Sokol »surka«.*

In January 1911, the SSU recommended that clubs and individuals order belts with the Sokol monogram from the Anton Škof Company in Ljubljana. According to the union, these monograms were not only cheaper but also more attractive than the previous ones. The price of a belt with monogram was 2 crowns, 30 hellers. The union confirmed the Jesih & Windischer company as the supplier of cloth for the Sokol uniforms and recommended it to the Slovenian Sokols. Due to numerous incidents and complaints from the (Catholic) Orel Gymnastics Clubs, the union forbade the Sokols wearing the Sokol uniform at public masked balls and dances with an exclusively entertainment program. The presidency of a district had the right to allow exceptions to this rule in view of the local conditions. The SSU also

published a memorandum of the Czech Sokol Union in *Slovenski Sokol*, which instructed the members not to wear Sokol symbols on the street and at political events, during demonstrations, or for pre-election events. The members were called upon to take care where and when to wear their uniform so as not to disgrace it.[67]

At the opening of a Sokol center in Domžale on 6 August 1911, the Ljubljana Sokol District organized an excursion, inviting the Celje and Upper Carniola districts and the Ljubljana First District to join in. It published instructions regarding the Sokol and gymnastics uniforms and symbols in *Slovenski Sokol*. The club leaders were responsible for checking the gymnastics uniforms of the participants, paying particular attention to cleanliness. The leaders were particularly notified of the ban on silk shirts and the mandatory black heelless shoes. The instructions recommended that the gymnasts take with them two gymnastics shirts. The gymnasts bound their uniforms into a bundle or put them in a bag, attached their names and the name of the district and club to it, and handed them over to be put in the club's bags. For personal hygiene they were to add *a towel, soap, brush, comb, etc*. After performing they were to go straight to the dressing room and change clothes.[64]

Similar instructions were issued by the union to the participants of the Second Croatian Pan-Sokol Rally in Zagreb on 13–15 August 1911. The uniformed participants wore the rally badges on the left side of the chest as identification marks. On the evening of 12 August 1911, the Slovenian Sokols got off the train at the Zagreb Railway Station with 'hanging *surkas*' (carrying them over their shoulders). Every participant in the rally was to write his name, his municipality, the name of his district, and his address during the rally on a visible place on his luggage. The gymnasts wrapped their uniforms in paper or kept them in a bag, equipped with a slip of paper with their name, the club's name, and the cloakroom mark. They attached one such slip to their gymnastics uniform and another to the bottom of their cap. The individual clubs packed the bags or bundles with the gymnastics uniforms in a common bag on which they wrote the name and address of the club. This luggage was then distributed to the proper addresses by the organizers, and on the day of the competition they were delivered to the dressing room.[65]

At the meeting of the union's board on 19 January 1913, its secretary drew attention to the Sokol bags, which the members lacked during club excursions. Such a bag cost between 240 and 250 crowns.[66] On 23 February 1913, the union's board of instructors determined that the Sokol gymnastics uniform should include a belt in the colors of the Slovenian flag and instructed the union's technical section to submit its proposal for a 'tasteful composition of the colors' by the next meeting.[67] On the fiftieth anniversary of the foundation of the Ljubljana Sokol Club, the union wanted to organize the Third Slovenian Pan-Sokol Rally, but the provincial government banned the event on 13 March 1913. The Ljubljana Sokol Club then combined the banned event with the rally of the union and districts on 10 August 1913 in Novo mesto. For this rally, the union's instructions did not differ from the previous ones. The union's leadership drew special attention to proper conduct during the trip, at the railway stations, and, of course, at the rally itself.[68]

The Sokol Union planned to organize the Third Slovenian Pan-Sokol Rally in Ljubljana on 15–17 August 1914, but the outbreak of the First World War prevented the event. In its invitation to the members, the union appealed to them to participate, if possible, in a new gymnastics uniform. It called upon the gymnasts to pay particular attention to the cleanliness of their uniforms so as not be subject to criticism or ridicule.

[64] Ibidem, 51.

[65] Ibidem, 54–55.

[66] *Slovenski Sokol*, 1913, 22.

[67] Ibidem, 33.

[68] Ibidem, 54.

Every gymnast was to bring the required number of shirts. The red trim of the shirt was not to be faded, and its white body was not to show washing spots. The same was expected of the gymnastics trousers, which were not to be faded or washed out, but dark blue. Every Sokol was to buy a new trouser belt for this occasion and elastic bands for fixing the trousers to the shoes. The gymnastics vest was to be 'tight-fitting,' not too large or too small. The trousers should not be too tight or taut at the waist. The gymnasts were to wear black heelless shoes and black stockings. The organizers advised all gymnasts to add accessories for personal hygiene to the bundle with their gymnastics uniform: soap, a towel, and a comb.[69]

The organizer called on the Slovenian Sokols to ensure, in a timely fashion, that they had the required Sokol uniform and pointed out the importance of the Sokols' appearance. The participants in uniform were urged to remember that they were members of the great Sokol family, which depended on them in every way, and that they were therefore responsible for raising the family's reputation through their acts. They should therefore behave smartly and proudly, like soldiers before their general. Their uniform should be tight-fitting, the cap straight on the head, the short feather at an angle of 45 degrees, the stripes not faded, the *surka* and trousers ironed, the shoes clean and black, the hair short, and the beard shaven or trimmed. It was forbidden to wear any other symbols and pendants on the uniform, including flowers. The organizer called the Sokols to unity: *We share the same wish to perform, so let us have the same appearance and not put anything on our uniforms that others do not have!* This was followed by the usual recommendation to take along everything necessary for washing, shaving, and cleaning one's uniform. The union recommended that the Sokols from distant places travel in ordinary clothes in order to keep their uniforms clean during the trip. It was recommended that participants intending to stay in Ljubljana for several days bring ordinary clothes to change into immediately after the rally. Participants that intended to take part in excursions during the rally were asked to do so in ordinary clothes. Finally, the SSU told the participants not to wear trivial objects, valuable objects, rings, bracelets, or pendants. The club officials were responsible for gathering the Sokols in advance of their departure for the rally and informing them in detail about the importance of the rally, the preparations for it, their conduct in uniform, rights and obligations, the program of the event, and, last but not least, all special and individual instructions from the organizer. The organizer explicitly advised the participants of the rally not to take wine with them on the trip and not to 'storm' station bars during the trip.[70]

Uniformed Sokols, organized as a paramilitary organization, were especially admired and respected by the young. Young men joined the Sokols primarily to socialize and train in gymnastics, whereas others were attracted to the clubs by the uniforms, which raised their self-confidence and made them feel proud. A Czech Sokol gymnast wrote in his memoirs that one of his reasons for joining the Sokols was the uniform. Describing a Sokol procession he witnessed as a child, he wrote: *Up front was a giant leader, his head high and his eyes darting around daringly, almost wildly. This man embodied a spirit of invincibility. Behind him was a short fellow with catlike movements – another famous Sokol who drew no less attention, and there were several others. The whole gave the impression of frightfully resolute people. My respect and admiration for these men was endless. Their shining red shirts, wide belts with the monogram, pointed feathers, muscular legs in high boots, swollen chests, all this was new and moving to me; it seemed to me that the ideal of a man's*

[69] *Slovenski Sokol*, 1914, 51.

[70] Ibidem.

power was to be found nowhere else than among the Sokols.[71]

The public performances in uniform of the Slovenian Sokol gymnasts played an important role in strengthening Slovenian national consciousness, promoted Slovenian identity, and made an important contribution to the development of the Slovenian national movement. The Sokol uniform, worn proudly by the Sokols, had a very significant role in these developments. The activities of the Sokol clubs were closely connected with their performances in public, and the care dedicated to the Sokol uniform – first to the ceremonial one, and later also to the gymnastics uniform – was a principal factor of club identity. By marching under the Sokol flag, the companies popularized the club's activities in the towns and villages. Club excursions and public gymnastics performances turned into triumphal events of Slovenian national consciousness, and participation in Sokol events as indisputable evidence of a progressive stance and national consciousness, making the Sokol uniform a status symbol of every nationally conscious Slovenian. The Slovenian public keenly registered when and where a uniformed Sokol company marched. Along the road taken by the company, maypoles were erected, the arrival of the Sokols was greeted with brass bands and singing, church-bell ringing, and mortar salutes, and when they returned in the evening lights were placed in the windows.

CONCLUSION

The public appearances of Sokol companies in uniform at first awakened and later strengthened Slovenian national consciousness and united the Slovenians in Carniola and later across all Slovenian ethnic territory. These liberally oriented gymnastics clubs of the Slovenian bourgeoisie were the first to overcome the prevailing provincial mentality with their public activities in uniform, and from their foundation onward acted as Pan-Slovenian organizations. In their initial period of operation they used every opportunity for self-promotion and in every possible way attempted to show themselves the better of their competitors in gymnastics and their ethnic German competitors. The provincial government in Ljubljana and its German majority were largely opposed to the Slovenian gymnastics clubs. They blamed the Sokol clubs for encouraging ethnic intolerance with their excursions in uniform.

In principle, practicing gymnastics was the first objective of the Slovenian gymnasts, followed in second place by various forms of social 'entertainment,' where they could demonstrate dignity, good manners, and moderation. At social events the Sokols had to take care not to tarnish the organization's reputation with lax behavior. The democratic nature of the organization and the equality of its members were expressed by the standard uniform as an essential element of the Sokol spirit, and of the vision of achieving the Sokol ideal in the near future. The equality in uniform was certainly one of the most important elements of Sokol ideology, but it took a very long time to catch on in the real world. The extraordinary general meeting of the Ljubljana Sokol Club on 18 November 1888 finally adopted the provision that the members had to address one another as 'brothers' and be on first-name terms when in uniform, and thus started introducing genuine democratic relations into the organization. By the end of the century, the Sokols normally were on first-name terms at the organization's premises or when in uniform, and addressed one another as 'brothers' – and later, following the introduction of female sections, as 'sisters'. Outside the clubs, formal forms of address were used in accordance with the period and its etiquette.

[71] *Slovenski Sokol*, 1907, 1.

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SHORT HISTORICAL NOTES I

Anton Gajdoš, Bratislava, Slovakia

Ph.D. Anton Gajdoš born on 1.6.1940 in Dubriniči (today Ukraine) lives most of his life in Bratislava (ex TCH, nowadays SVK). He comes from gymnastics family (his brother Pavel have world championship medals) and he devoted his life to gymnastics. His last achievement is establishment of Narodna encyklopedia športu Slovenska (www.sportency.sk). Among his passion is collecting photos and signatures of gymnasts. As we tend to forget old champions and important gymnasts, judges and coaches, we decided to publish part of his archive under title Short historical notes. All information on these pages is from Anton's archives and collected through years.

CZECH SOKOL TEAM 1907

Czech Sokol team made their debut at World Championship in 1907 in Praque. Already at their first attempt, they won. Talented generation competed until the beginning of the WWI.

From left - standing gymnasts: Seidl Josef, Sál Karel, Čada Josef, Starý Karel,
Lying/siting gymnasts: Prečner František- he was the first gymnast who presented combination but did not compete, Erben František, Honzátko Boris.

Prague 1907	MAG: Team competition: 1. Czech All – around: 1. Josef Čada, 3. František Erben, 4. Karel Starý, 6. Karel Sál, 7. Josef Seidl, 9. Bohumil Honzatko
Luxembourg 1909	MAG: Team competition: 2. Czech (Josef Čada, František Erben, Karel Starý, Ferdinand Steiner, František Markovsky, František Mracek) All – around: 2. Josef Čada, 7. Karel Starý, 9. František Erben
Torino 1911	MAG: Team competition: 1. Czech All – around: 1. Ferdinand Steiner
Paris 1913	MAG: Team competition: 1. Czech (Karel Starý, Josef Sykora, Josef Čada, Ferdinad Steiner, Douda, Prazak) All – around: 2. Karel Starý, 3. Josef Sykora, 6. Josef Čada, 9. Ferdinad Steiner

JALANTIE TUOMO ARTELO

Born 1st November, 1925.

Mr Jalantie was a Physical Education teacher and worked as Physical Education professor at the University of Helsinki from 1966 to 1983.

Member of the FIG men´s technical committee since 1967-1984 and its Vice-President from 1973 to 1984.

Mr Jalantie was manager of the European Gymnastics Championships in 1967.

He judged at the Olympics in Rome 1960, Tokyo 1964, Mexico 1968, Munich 1972, Montreal 1976, Moskva 1980 and Los Angeles 1984; from the year 1968 he was a head judge. He judged at World Championships in Praque 1962, Dortmund 1966, Ljubljana 1970, Varna 1974, Strasbourg 1978, Fort Worth 1979, Moskva 1981 and Budapest 1983. He judged at the European Championships in Paris 1957, Copenhagen 1959, Luxemburg 1961, Belgrade 1963, Antwerp 1965, Warsaw 1969, Madrid 1971, Bern 1975, Vilna 1977, Essen 1979, Rome 1981 and Varna 1983. He judged at World Cup in London 1975, Oviedo 1977, Sao Paolo 1978, Tokio 1979, Toronto 1980.

He has a golden badge of merit for Finnish sport from the Finnish minister of education and a medal of pro Sport from Finnish Government and the first class lion Knight medal and an honorary title of sport councilor.

Photo: from left Max Bangartner - general secretary of FIG - Alex Lylo and Tuomo Jalantie members of MTC FIG

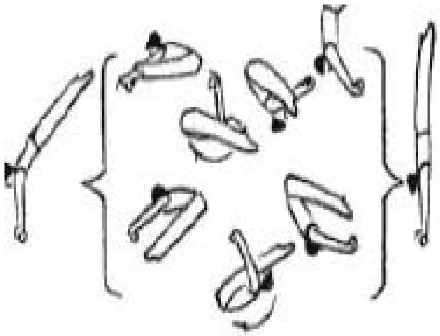
With help of Arja Kurki, daughter of Tuomo Jalantie, we written this biography.

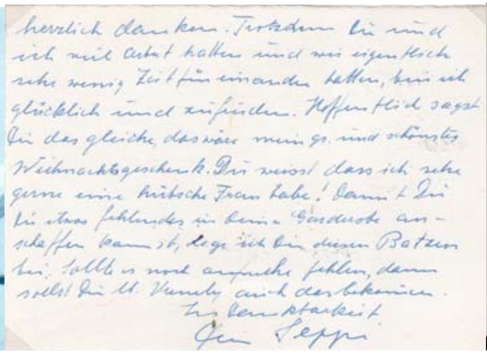
We all wish him happy 90th birthday next year. Cheers.

JOZEF STALDER

(* 6.2.1919, + 1.3.1991, Luzern, Swiss)

Many gymnasts (man and women) who perform his element (described and draw in FIG Code of Points) don't not know much about him. He competed at two OG (1948 London and 1952 Helsinki) and two WC (1950 Basel and 1954 Rome). At London OG he won gold on high bar, silver with team and bronze on parallel bars; in Helsinki he took two silvers (team and high bar) and two bronzes (all around and parallel bars). At WC 1950, he won with team, on floor and pommel horse, on high bar he was third. In Rome, he was 2nd on pommel horse and parallel bars and with team 3rd.





herzlich danken. Trotzdem [illegible] und
ich viel Arbeit hatten und wir eigentlich
sehr wenig Zeit für einander hatten, bin ich
glücklich und zufrieden. Hoffentlich sagst
Du das gleiche, das wäre mein 90. und schönstes
Weihnachtsgeschenk. Du weisst dass ich sehr
gerne eine hübsche Frau habe! Damit Du
Dir etwas fehlendes in Deine Garderobe an-
schaffen kannst, lege ich Dir diesen Batzen
bei. Sollte es noch an [illegible] fehlen, dann
sollst Du [illegible] auch das bekommen.
In Dankbarkeit
Dein Seppi

Slovenski izvlečki / Slovene Abstracts

Maja Bučar Pajek, Marjeta Kovač, Jernej Pajek, Bojan Leskošek

OCENJEVANJE ARTISTIČNOSTI V SESTAVAH ŽENSKE TELOVADBE: RAZLOG ZA SKRB?

Glede na naravo in precej slabo določitev artističnosti v Pravilih za ocenjevanje, ocenjvanje le-te lahko povzroči resne težave njene zanesljivosti in veljavnosti. Uporabljeni so bili rezultati petih sodnic artističnosti na gredi na svetovnem prvenstvu v Tokiju leta 2011, katere so ocenile 194 telovadk. Izračunane so bile ocene njihove zanesljivosti in veljavnosti. Rezultati so pokazali veliko spremenljivost med sodnicami (od 0,18 do 0, 39 točk). Povprečna povezanost med pari sodnic artističnosti je bila 0,6±0.06 in povprečna povezanost med pari sodnic pri skupnih odbitkih je bila 0,73±0.04. Kendalow koeficient skladnosti (W) je pokazal dosledno previsoko ali prenizko skupno oceno artističnosti predstavitve, gotovost izvedbe, spremenljivosti ritma in skupne ocene artističnosti. (razpon W od 0,05 do 0,53). Zaključimo lahko, da niti zanesljiost niti veljavnost ne dosegata primerne stopnje zaupanja. Potrebujemo nadaljnje preverjanje ocenjevanja artističnosti in bolj natančna navodila za ocenjevanje le-te v Pravilih.

Ključne besede: artističnost, ocenjevanje, sodniška komisija, predsodek.

Sarra Hammoudi Nassib, Bessem Mkaouer, Sabri Nassib, Sameh Menzli, Hela Znazen, Sabra Hammoudi Riahi, Ahmed Njeh

UČINKOVITOST ZNANJA IN PREDSTAVNOST ZAZNANIH TVEGANJ BODOČIH UČITELJEV PRI POUČEVANJU TELOVADBE

Namen raziskave je bil ugotoviti ali telovadne prvine, ki jih uporabljajo bodoči učitelji telesne vzgoje, prispevajo k določitvi tveganja pri poučevanju telovadbe. V raziskavi je sodelovalo šestindvajset bodočih učiteljev (študentov) in njihov pouk je bil sneman 10 tednov. Vse telovadne situacije pri učenju prvin so bile posnete s slikovno kamero. Obstaja sedem prvin, ki jih bodoči učitelji največkrat predstavljajo učencem, kakor tudi učnih situacij, reševanje problemov, ocena tveganja, spoštovanje in uporaba varovanja, in sprejemanje odgovornosti. Rezultati so pokazali, da morajo bodoči učitelji poznati pomembnost uporabe orodja, upravljati učenčev čas in prostor. Poleg odgovornega dela in varovanja je upravljanje s skupino najpomembnejše znanje, ki ga mora imeti bodoči učitelj telesne vzgoje.

Ključne besede: spretnosti, telesna vzgoja, opazovanje, posredovanje, učenje.

María Alejandra Ávalos Ramos, María Ángeles Martínez Ruiz[2], Gladys Merma Molina

NEDOSLEDNOSTI PRI NAČRTOVANJU UČNIH NAČRTOV TELOVADNIH VSEBIN: ŠTUDIJ PRIMERA

Analiza se ukvarja z omejitvami pri poučevanju telovadbe v srednjih šolah. Predvideva se, da ima to lahko negativni vpliv na splošno izobraženost učencev. S pomočjo učiteljev telesne vzgoje, kako je poučevanje telovadbe načrtovano in izvedeno ter kakšne spremembe pri izvedbi pouka so potrebne. Uporabljen je bil AQUAD6 program za analizo kvalitativnih spremenljivk. Ugotovitve kažejo, da učitelji nimajo primernega samokritičnega pogleda na načrtovanje in izvedbo pouka, prav tako pa nimajo primernega vzgojnega načrta. Poleg tega, učitelji na istih šolah imajo različne poglede in ne izmenjujejo znanja. Zato so spremembe načina dela redke in samo delo ni primerno vzgojnim ciljem. Ob upoštevanju analize dela učiteljev bi bilo smiselno prilagoditi učne načrte ter prilagoditi in obnoviti nove načine izobraževanja učiteljev.

Ključne besede: poučevanje, spretnosti, učni načrt, telesna vzgoja, učiteljev pogled.

Miha Marinšek, Uroš Slana

PAMETNI TELEFON KOT MERILNA NAPRAVA ZA RAVNOTEŽJE

Ravnotežje igra pomembno vlogo pri ohranjanju položajev pri orodni telovadbi in pri preprečevanju poškodb. Zato je pomemben nadzor ravnotežja pri vadbi. V svetu se uporabljajo različni merski postopki za oceno ravnotežja. Vedno bolj pa se kot merilne naprave uveljavljajo pametni telefoni. V raziskavi se je preverjala uporabnost, zanesljivost in veljavnost pametnih telefonov v primerjavi s standardnim goniometrom. Preverjenih je bilo 30 različnih položajev v x in y osi ter meritev na T ravnotežni deski v realnem času. Povezanost med standardnim goniometrom in pametnimi telefoni je bila visoka, Cronbach Alfa je kazal na visoko stopnjo zanesljivosti vseh meritev. Napaka meritev je od 0,85 stopinje do 3, 23 stopinje v x osi in 0,09 stopinje do 2,69 stopinje v y osi. Za delo v telovadnici je pametni telefon primerno sredstvo, medtem ko ima preveliko napako za raziskovalne namene.

Ključne besede: zanesljivost, veljavnost, merilna naprava, znanost, praksa.

Theofanis Siatras

VPLIV STATIČNEGA RAZTEZANJA MIŠIČ UPOGIBALK IN IZTEGOVALK TRUPA NA IZVEDBO VZNOSA V OPORI NA BRADLJI

Namen raziskave je bil ugotoviti vpliv treh različnih načinov raztezanja na izvedbo vznosa v opori na bradlji. Prvi način raztezanja je bil klasični način brez statičnega raztezanja, drugi način je bil s statičnim raztezanjem upogibalk in tretji s statičnim raztezanjem iztegovalk trupa. Štirinajst telovadcev (nižje kakovosti) je po izvedbi posameznega raztezanja naredilo vznos, kateri je bil posnet s fotoaparatom. Izmerjeni so bili koti med podlago in nogami, kot med trupom in navpičnico ter kot med rokami in navpičnico. Parna primerjava je pokazala, da je statično raztezanje mišic upogibalk trupa neprimerno, saj se kot med nogami in podlago zmanjša. Pri statičnem raztezanju iztegovalk se kot med nogami in podlago poveča. Dodatno ni priporočljivo statično raztezanje upogibalk pri nalogah, kjer je potem potrebna največja sila. Pomembno je, da se vedno izvede tako statično raztezanje upogibalk, kot iztegovalk, da se izniči njuno delovanje.

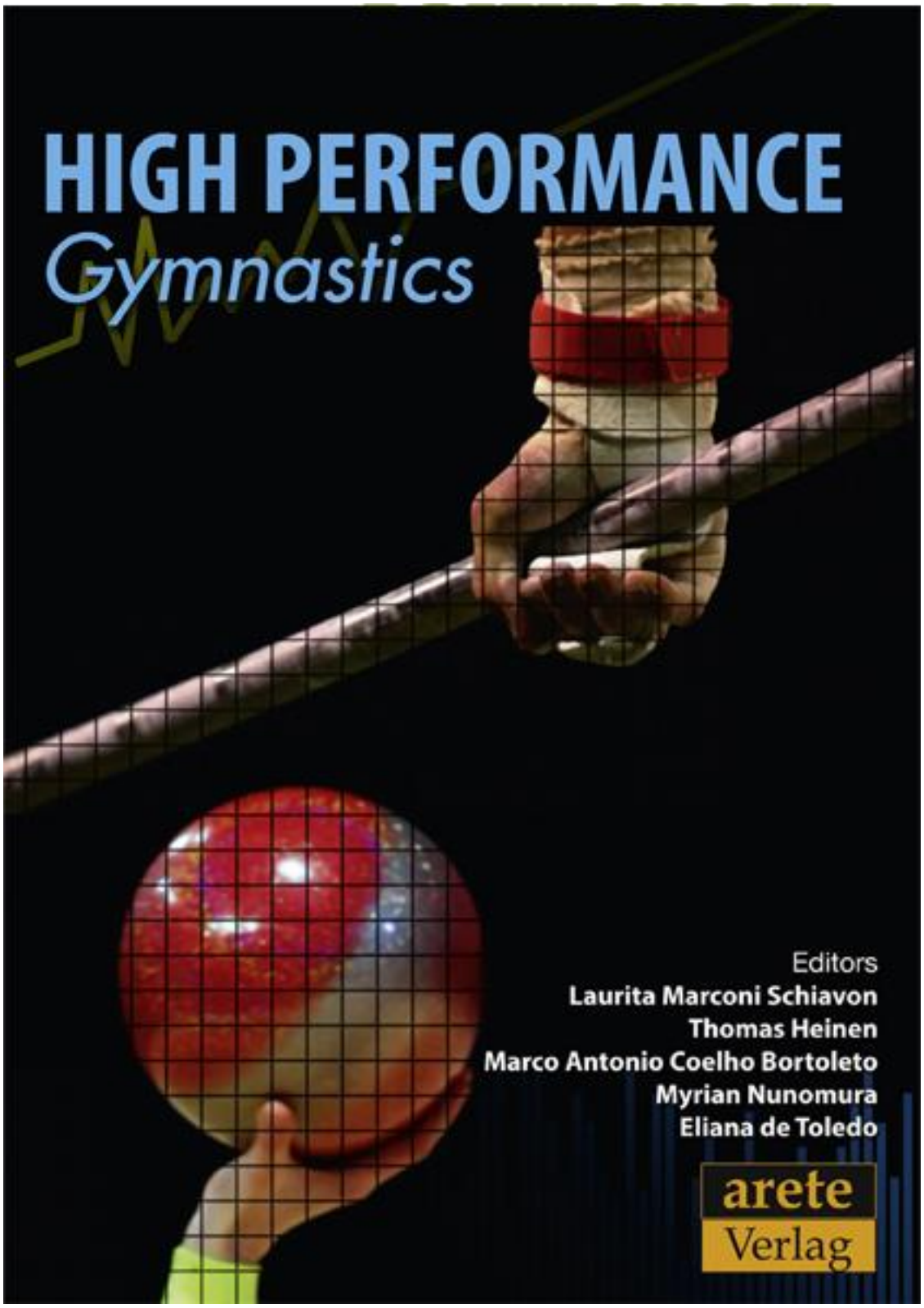
Ključne besede: statično raztezanje, prvina moči, digitalna fotografija, goniometer, telovadba.

Jože Podpečnik

VSE KAR POTREBUJEŠ JE RDEČA SRJCA IN KAPA, IN ŽE SI SOKOL

Javni nastopi Sokolov v uniformah so sprva zbudili, nato pa tudi močno povečali zavedanja narodne pripadnosti in združevanja, najprej na Kranskem, potem pa tudi v ostalih slovenskih pokrajinah. Pokrajinska vlada v Ljubljani in nemška večina so bili močno proti slovenskim telovadnim društvom. Obtoževali so sokolska društva za povečevanje narodne nestrpnosti s paradiranjem v uniformah. V osnovi je bila prva dejavnost sokolov telovadba, nato pa so bile pomembne še ostale dejavnosti, kot npr. druženje, zabava, kjer so lahko pokazali ponos, lepo vedenje in zmernost. Uniforma je bila sestavljena iz surke (jopič), rdeče srajce, črnih čevljev in čikoša (kapa). Člani Južnega Sokola so izbrali za pokrivalo nizko, okroglo, visoko obrobljeno kapo, na katero so pripeli tribarvni slovenski trak in sokolsko pero. Sokolska uniforma z rdečo srajco je postala simbol samozavestnega narodno zavednega Slovenca, borca za narodno enakopravnost in Slovansko vzajemnost.

Ključne besede: Sokol, uniforma, obleka, kapa, narodne barve.



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Foreword by Hardy Fink
Director, FIG Education & Academy Programs

These proceedings from the 2012 SIGARC symposium encompasses a broad range of historical, empirical, and scientific articles presented by some of the world's leading practitioners and researchers in the area of gymnastics. This symposium featured presentations about the various gymnastics sports, and with focused research on rhythmic-, men's- and women's-gymnastics from biomechanical, psychological, planning, and methodological perspectives.

The introductory presentation by Russell takes a critical and enlightening look at all of the gymnastics sports from the insights he gained over a lifetime of coaching and teaching gymnastics. He also dispels forcefully the suggestion that gymnastics participation "retards" growth. Four papers discuss aspects of rhythmic gymnastics. The beauty and the challenges related to group rhythmic performances from the experiences of the Brazil group are presented by Lourenc¸o et al. The content of rhythmic gymnastics routines are analyzed with reference foreword. to Code of Points requirements by Avila-Carvalho et al. A third paper, this one by Avil´es et al, studies the principles of periodization, planning, and pedagogy applied to training in rhythmic gymnastics. The fourth paper by Toledo and Antualpa deals with the development of high performance rhythmic gymnastics in Brazil as well as Brazilian participation in international competitions. Psychology applied to gymnastics training is also presented in three different papers. Nunomura and Oliveira look at the difficult and essential tasks of coaches in artistic gymnastics by presenting data on coaches' profiles and motivation. Heinen et al. outline how sport psychology can contribute to gymnastics performances from the analysis of the performance demands, psychological profiles, and psychological interventions. Schiavon takes a fascinating look at psychological aspects of preparing gymnastics teams and specifically the Brazilian women's team for the Olympics. Other sport sciences are not ignored. Irwin et al. look at biomechanical analysis and how this science can enhance the effectiveness of gymnastics coaches. Bortoleto and Duarte take a different but equally enlightening approach. It is that of qualitative video analysis that can be quickly and easily meaningful to a coach instead of the sometimes more difficult to understand biomechanical and quantitative analysis. Finally, no overview of gymnastics would be complete without the regulations that attempt to direct and guide its direction. Robin presents the influence of the Code of Points on gymnasts, coaches, and judges.

The totality of these proceedings from the 2012 SIGARC symposium provides a large amount of scientific, pedagogical, methodological, empirical and experiential information that can be of benefit to every gymnastics coach. Even the best or most successful of coaches can improve – can be better – by knowing and incorporating the information provided. Moreover, every book that presents the content and philosophy of the systematic, careful, and informed coaching of athletes is a welcome addition to gymnastics. And for this reason, I very much appreciate that this book will help improve our sports for all participants, but most especially for the gymnasts.