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Artur Taymazov
3-time Olympic Champion
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Sincerely in the advancement of Wrestling,

David Curby

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FACTORS AFFECTING THE PRESENCE OF WRESTLING IN SCHOOL PROGRAMS

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ABSTRACT
This work is part of a broader research that attempts to analyse the presence of combat sports in secondary education. The study investigates the presence of Olympic wrestling in the curricula of teacher preparation programs, as well as the factors influencing the choice, based on the knowledge, perspective and the needs about these disciplines. 81 active physical education (PE) teachers of Valencia's secondary schools completed an online questionnaire (51 men and 30 women). Results highlight that most of the teachers select team sports such as basketball, handball and volleyball; however, only a few included combat sports in their program, with judo being the most frequently selected. The main factor justifying the scarcity of combative sports refers to the fact that teachers are not able to provide an instructional unit, and that these activities are considered dangerous, risky and unsuitable to instructional values. These viewpoints indicate that more specialized instructional tools for basic education in the fundamentals of combative sports, including wrestling are needed.
Key Words: Olympic Wrestling, Physical Education, High School Education, Formation, Didactic Tools.

INTRODUCTION

Physical struggle and combative activities have been a permanent feature in human life, whether interpreted as ritual, game (34), exercise or sport, and with several purposes (utilitarian, recreational, or leisure). Today, this physical struggle fits into conventional forms of modern sport including several Olympic sports (boxing, fencing, judo, Olympic wrestling, and taekwondo).

Wrestling has a limited presence in secondary schools. When selecting the content to design the class program in secondary school curricula, several studies indicate that the block of "Games and Sports" represents, together with "Health and Fitness", the highest percentage of working time for teachers (18, 21, 23, 32, 34, 43 and 44). Among the most selected sports disciplines (35), there are "classic team" sports, such as volleyball, basketball and handball. Teachers select sports according to the domain and their knowledge of the disciplines (24).

Teachers' perception about combat sports, regarding their perceived danger and violence, prevents them from being considered suitable for the development of positive values and attitudes associated with sports practice. Furthermore, for many centuries, messages related to women's sport practice have always been negative: physical exercise is harmful to women's health, women do not have the aptitude or the interest for it, and that sports masculinize women (13, 38). However, combat sports are exercises that, for a proper execution, need the collaboration and cooperation of the participants (11) and they are also activities and disciplines suitable for the development of numerous skills and abilities on the physical, psychomotor, cognitive, emotional, social and ethical areas in the school context (9, 11, 15, 36). These positive outcomes are listed in table 1.

Table 1 Advantages of combat sport

Advantages	Authors
It values work	2, 8, 15, 16, 29, 34.
Anger management, stress relief and integral formation	1, 2, 3, 6, 27, 34, 36.
Improvement of social relationships and integration	2, 5, 9, 16, 15, 34.
Improvement of basic motor skills	
Respect for rules and colleagues	2, 15,16, 27, 34
Improvement of physical condition, increase of responsibility and motivation, and all around achievement in the school program	2; 15, 27, 34

Of course, we cannot forget the difficulties expressed by teachers when introducing these sports in schools. Accordingly, we grouped causes for these viewpoints, based on research that has studied what teachers know, think and need.

What they know

Academic Teacher Training: 72-83% of PE teachers have studied PE (17, 39). This is due to the fact that anyone with a university degree can participate in the specialty admission test without having the academic qualification of the mentioned specialty. Thus, it can be stated that there are PE teachers without sufficient academic training to teach combat sports (4, 34).

Staff Experiences and Interests: The content block of games and sports is the one that acquires most importance, and therefore is chosen by PE teachers during the first two years of secondary school (25). Teachers select most of the content, and combat sports do not appear, since teachers choose not to teach them in class (24). The most frequently selected disciplines are the team sports, followed by individual sports and finally by the adversary ones, with judo being the most practiced combat sport (25, 42).

What they think

Violence is generated by sport: Such discrimination towards combat sports is mostly caused by unjustifiable reasons such as a perceived lack of collaboration between the adversaries and continued competition being dangerous and violent (1,6, 8, 10, 30, 41). Since their origin, these sports were conceived with the purpose of destroying the enemy's body and inflicting injury to the adversary (19). Combat sports are deceptive if not known, in that only seeing or hearing the word "fight" or "battle" reminds them of violence and mutual pain; however, in the context of sports it is quite the opposite. In Olympic wrestling there is no violence or scuffle, but respect and techniques with no malice. It is true that direct contact with the adversary is involved, but there are several security mechanisms in place to prevent serious injuries to participants. These include a number of referees and judges, strict regulations with safety rules and, most importantly, there is mutual respect between the athletes.

"*Defeminisation" of women:* Combat activities have traditionally been considered to be a sport for men (6); this is because of its historical function of "turning a boy into a real man" (14) and lastly, the fact that these are sports just for men who want to prove their value (19). This masculinized perspective on wrestling activities has generated negative stereotypes about women practitioners, such as their lack of femininity or their masculinization (36). This vision must be overcome and there is a need to stop differentiating these disciplines according to the practitioner's gender (33). PE teachers should not ignore combat sports because of the conception of masculinity, and wrestling should not be considered by students as a male sport (39).

Demands and interests of the students: The Faculty of Physical Education considers several factors in order to conduct the didactic/curricular planning, among these are the students' characteristics and preferences (43), Nevertheless, a study (43) show that students want to practice combat sports, but these do not appear in the programming. On the other hand, students are influenced by the media, sports organizations (24) and their parents, who, in one way or another, "guide" their child to one sport or another (9). Finally, the low demand of combat sports cause students not to receive stimuli related to them, leading to a lack of awareness, and hence, a lack of requests for these sports to be practiced (11).

What they need

Facilities and materials available in the school: The availability of the equipment and the space to deliver content facilitates its inclusion. Many teachers consider the materials (40, 41) and the space (4) with which they teach are insufficient or unavailable. Therefore, if the materials, most often mats, and the space to teach combat sports are not available, teachers will not choose this content. Sports installations in schools are built to practice certain traditional sports like football, basketball and handball (4). Most of the schools have a covered space or room and outdoor spaces in which we come upon the playground and sports courts where we find indoor soccer goals and basketball hoops. In a school it is hard to find the equipment needed to conduct sports such as combat ones due to the specificity of their material; thus, it is good to offer alternative materials with which to carry out practice (31). Using materials built by students (20) allows them to perform sports almost unfamiliar to them, because the use of these materials is innovative and motivating.

Shortage of educational proposals:

Increasingly, one can find instructional materials for combat sports, but these are often aimed at an audience with previous experience (24). For many teachers aiming to start practicing these sports in order to teach them in class do not have the minimum level of understanding these instructional units. At the same line (4, 31) finding appropriate materials from an educational-formative model is difficult.

The purpose of the study was to investigate what teachers think about Olympic wrestling within the PE curriculum. Our background research allowed us to know what teachers think, know and need regarding the presence of Olympic wrestling in their programming for PE classes. In order to explore the questions raised so far, we developed a questionnaire from the various causes identified in the background studies examined (24, 28).

MATERIAL AND METHODS

Participants

The target population of the study were secondary education PE teachers. The research involved 81 teachers in service during the course of the 2013-2014 school year (51 men and 30 women). They had an average age of 41.3 years old (SD = 39.4), and an average teaching experience of 15.5 years (SD = 9.9).

Instrument

The questionnaire consisted of 19 closed-ended items, with a Likert scale response ranging from 1 to 5, where 1 is "strongly disagree" and 5 "strongly agree". The Cronbach Alpha method was applied to establish a reliability analysis for the three categories. The instrument demonstrated an acceptable internal consistency, with an overall value of 0.89 for the full scale (22), which is considered suitable for research on attitudes. In addition, we saw that the reliability coefficient increased with the elimination of the item 11. The 3 subscale were: a) what the teacher knows about Olympic wrestling (items 1, 2, 3, 15 and 19); b) what the teacher thinks about the Olympic Wrestling (items 4, 7, 8, 10, 12, 14, 16 and 17); and c) what they need to include Olympic Wrestling (5, 6, 9, 13, 18) in the curriculum. Internal consistency (Cronbach's α) of the three subscales was 0.78, 0.81 and 0.67 respectively.

Statistical data analysis

The preliminary statistical analysis (Kolmogorov-Smirnov) shows a normal distribution of variables. Frequency analysis and comparative analysis are performed using as sample statistic the t-Student test for comparison between groups by gender. To reduce the accumulated error (type I error), the Bonferroni correction factor has been applied to the 2 t-tests performed on each of the differential analysis. Thus, the significance level is set at 98%. An analysis of one-way ANOVA was performed only for subjects who have received some training in combat sports, in order to determine the role of training on teachers' knowledge, thinking and needs. Statistical analysis was performed using the SPSS 20.0 program licensed by the Catholic University of Valencia.

RESULTS

Table 2 presents the descriptive statistical analysis of the study variables (mean and standard deviation), as well as the differential analysis (t-test) performed on the variables by gender (men and women). The differential analysis shows that men score higher than women in the "What they know" ($t = -2.28$, $p < 0.02$) and "What they think" ($t = -2.24$, $p < 0.02$) subscales. Women score higher in the "What they need" subscale ($t = -2.37$, $p < 0.01$), and are shown in table 2.

Table 2 Subtest Scores

	Women		*Men*		
	M	*S.D.*	*M*	*S.D.*	*t*
What they know	3.17*	0.78	3.39	0.75	-2.14
What they think	3.52*	0.39	3.80	0.81	-1.76
What they need	2.22	0.661	2.36	1.06	0.63

The one-way ANOVA analysis confirmed the presence of significant differences between those who received combat sports training and those who did not, with the former showing a higher scores in the "What they know" ($F = 28.410$, $p = .00$) and in the "What they need" ($F = 8.071$, $p = .00$) subscales. On the other hand, the "What they think" subscale showed no significant differences between groups.

DISCUSSION

Based on results obtained, we made the following observations from the following features, what they know, what they think and what they need.

What they know: This subscale analysed teachers' knowledge about Olympic wrestling. Teachers state that in general they are unfamiliar with the fundamentals of fight (78.3%) (4,41). Men are those who think they feel able to develop this content. No survey respondents practiced this sport during their time as students, but this does not preclude them from thinking that it is easy to explain to and to be understood by their students (56.7%). They disagree with the possibility to design the practice material, especially women (73.1%), which precludes their practice (23, 24, 39, 40). Therefore we consider the correct combination of the binomial **"**education and training" as one of the keys for the domain and selection of Wrestling in school.

What they think: The "What they think" subscale provides information about their beliefs and prejudices, considering how these are powerful influences when selecting PE in school. In general, teachers think that wrestling is dangerous (6, 8, 10, 30, 42) for their students, especially women (64.2%). This belief reduces significantly ($p = 0.03$) if the teacher interviewed belongs to the group that received training. Teachers believe that the sport of wrestling is risky (74.5%), although they believe that this sport does not encourage aggressiveness among students (67.1%). Female teachers believe that wrestling masculinizes its practitioners (36), while male respondents are indifferent to this issue (58%). Teachers generally do not think that it is an expensive sport to practice at school (51.6%) nor that it holds a very motivating content for students (67.9%), and lastly that the content is not appropriate for the values in PE classes (58%); this is contrary to what has been found by different authors (15,16, 31).

What they need: Generally teachers think that, even possessing equipment for the practice, they are not prepared to include the contents of wrestling in their class (51.9%), although this percentage significantly decreases ($p = 0.00$) when teachers are trained in fighting sports. However they consider that there should be more educational material for the introduction of wrestling adapted to the PE (70.3%) (4, 24, 29); in the case of women the percentage is up to 88.2%. Generally they show a willingness to invest time to learn and understand the fundamentals, where once again women present a higher valuation. Teachers who have received formation also affirm that they would like to receive more training ($p = 0.01$).

CONCLUSIONS

Among the conclusions of this study, we should highlight are that a large percentage of teachers who reported a lack of knowledge about the basics of Olympic wrestling and that they do not feel qualified to teach an instructional unit designed by experts.

Men think that this sport is risky, but carries no danger to students, especially those who have received initial training; women consider it dangerous. However, in general it is not perceived as a sport that generates violence.
Teachers do not think that Olympic wrestling encourages the development of educational values, contrary to what several studies affirm. Generally teachers show that they would be favourably available to invest their time in the necessary training allowing them to teach these activities, and they consider it appropriate to create teaching materials for its inclusion in secondary education.

PRACTICAL APPLICATIONS

The present study offered critical information to improve the situation of Olympic wrestling in PE classes based on what teachers think, know, and need. With these results it is possible to open new lines of research to improve the weaknesses that teachers reported, such as the lack of knowledge about these disciplines and the lack of teaching materials addressed to people with no prior experience with wrestling.

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OPPOSITION GAMES: NEW APPROACHES TO TEACH WRESTLING IN BRAZILIAN SCHOOLS

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ABSTRACT
This research was motivated by our interest in developing Opposition Games as a new methodology where we link the teaching of wrestling in the school through activities that combine enjoyment, skills and motor development and at the same time provide students the opportunity to develop an interest for a future specialization in wrestling. Opposition Games contains a goal in itself-a playful activity not requiring extrinsic goals, much to the contrary, is more about having fun with your participation. The game as an activity however is used to motivate students to enjoy wrestling activity, and also develop motor aspects that will facilitate future practice. The complete model for success requires that the participants see these wrestling games as enjoyable and pleasurable, and future PE teachers, wrestling coaches and physical education teachers, understand them and use as a learning tool. These new methodological approaches have worked with students of Physical Education, at Federal University of Paraná (UFPR), Brazil, and have been tested on public schools of Curitiba, Paraná, with success.
Key Words: Games, Opposition, Wrestling, motivation.

INTRODUCTION

School Physical Education (PE) requires a diverse, broad and inclusive classroom. A model exists in the United States, for the teaching of wrestling, in the school system. Many of the sports from the school program are taught in the school PE program, and that prepares athletes for wrestling. In this American example the school structure is used for the development of wrestling, and these competitive programs continue in the universities. The need for a broad and inclusive teaching practice led us to form a new methodology, named Opposition Games. There is Brazilian legislation that prescribes the practice of fighting, or combative sports (Capoeira, Karate and Judo) in the school, however, is not used by most teachers of physical education. We have created a methodological approach that is both motivating to practice wrestling in PE lessons and easy to use by teachers who do not have expertise in wrestling. The Federal University of Paraná (UFPR), teaches the basics skills of wrestling as a discipline of physical education course of study, and employs Opposition Games (OG) because it believes that its application in physical education presents many possibilities. The use of OG is motivating the teacher without expertise, to use this content in class, and is increasing the number of students in the practice of wrestling in school. This is also a reason for the success of the Brazilian Judo team as most medaled Olympic sport, because its inclusion in school has led to around two million practitioners. We investigated the reasons that have led to the withholding of wrestling in the physical education program, and have found that teachers report a weak academic background in wrestling. The UFPR has responded to this problem by offering wrestling in programs for future teachers. We must take into account that within the possibilities of integration of OG into school practice it is necessary to overcome the lack of qualified teachers of wrestling. The use of OG will contribute to the job capabilities required to teach wrestling and achieve this increase in qualified teachers of wrestling. The school reacts to the dominant culture of society during each historical moment, by modifying the curriculum. In the present case of Brazil, the historical moment is highly conducive to consideration of a system for teaching wrestling in the schools, as in 2016 the country will host the Olympics. We think that schools will use this Olympic spirit and develop a program for motivated students in two phases: The first will be similar to the utilization of OG, where teachers and students can take ownership of the contents of OG, and performing practices of motor skills required for a specialization in wrestling. In a second phase, wrestling will be included in extra-class activities.

It is very important to note that the opinion of several authors (2,3,4,8,9), demonstrate the marginalization of the wrestling in the school, and called for its use as an educational resource for the development of capabilities and skills in psychological, psychomotor, cognitive, affective, social and attitudinal level. They understand that wrestling is an activity that stands as intrinsic to their practice and respect themselves, rivals, the companions, the teacher and the materials. (5). Finally, we want to make clear that in the literature these teaching proposals based in an educational-training model are very scarce (1,9). This lack of scientific production in the area creates a great interest to know the opinions and beliefs of future graduates about OG and wrestling. We will then be able to test for an interdependent relationship between the contents of wrestling and Opposition Games and their contribution to the development of our students. This development of cognitive, social - affective and motor skills, is the

fundamental process of growth and development for the formation of an adult aware of his body, on the biological, motor, intellectual, social and psychological and constitutes the long awaited comprehensive education (7).

Olympic sport is motivating to justify the practice of including wrestling, as well as student cultures, in the school.. The OG and wrestling practices do not require the use of "judogui" (clothing to practice Judo), and can be practiced in the uniform used for physical education; the mat for wrestling practices can be built with recycled rubber tires, minimizing the cost in the initiation, and there may even be the possibility of acquiring the official FILA mat. This will enrich the pedagogical practice in physical education, making sure the student has the opportunity to explore their potential, learn from each other, with group work and cooperation.

METHODOLOGY

This research was conducted with students of physical education, at the UFPR, totaling 164 subjects, 70 women and 94 men, in the discipline wrestling, who had no previous knowledge of Opposition Games. Information was gathered from the subjects with a questionnaire. In it were items regarding their behavior, thinking and beliefs. These students of physical education held their teaching practices with public school students, and selected the most talented to participate in wrestling training, also offered UFPR, using the official FILA mat, and taught by a wrestling coach specialist. This teaching practice was offered in the last year of physical education course at the UFPR.

Instrument

The questionnaire consists of 11 items. All were closed questions with Likert response scale from 1 to 5, with 1 being "strongly disagree", and 5 "strongly agree". A reliability analysis of Cronbach's Alpha for the three categories was performed and demonstrated an acceptable internal consistency, with an overall r value of 0.89 for the full scale. This is deemed suitable for research on attitudes (6). The scale assesses, through three sub-scales, a) What the teacher knows about OG (items 1, 2, 3 and 10), b) The teacher beliefs that OG enhances the teaching of wrestling (items 4 and 7) c) What teachers need in order to choose to teach wrestling (Items 5, 6, 8 and 9). The internal consistency (Cronbach's α) of the three sub-scales they will have been 0.78, 0.81 and 0.67, respectively.

Statistical analysis of data

Preliminary Statistic analysis (Kolmogorov-Smirnov) showed an even distribution of the variables. An analysis of frequencies and the Student-t method for a comparison between groups by gender was used. To reduce the accumulated error (type I error) in the t tests performed on each of the differential analysis, we applied the Bonferroni correction factor. The significance level was 98%. We carried out a one-way ANOVA only for the subjects who received some training in combat sports, to determine the role of training on knowledge, thinking and needs of teachers. The statistical analysis was performed with SPSS 20.0 software license with the Federal University of Paraná.

RESULTS

The descriptive statistical analyses of the study variables (mean and standard deviation), as well as the difference (Student t) analysis performed on variables by sex (men and women), shows us that men score higher on the subscale ***Know OG*** ($t = -2.28$, $p < 0.02$) and subscale ***Belief in Wrestling*** ($t = -2.24$, $p < 0.02$) than women. Since they are the ones that score highest in sub-scale ***Needs*** ($t = -2.37$, $p < 0.01$).
The analysis of one-way ANOVA confirms the presence of a significant differences between those trained in combat sports and those whose only experience is with OG, ($F = 28.410$, $p = .00$) and Needs ($F = 8.071$, $p = .00$). While the subscale belief in wrestling showed no significant differences between both groups.

DISCUSSION

From the results obtained we performed the following considerations organized with the criteria in the following paragraphs, Know OG, Belief in Wrestling and Needs.

Knows OG

This sub-scale analyzed the knowledge that teachers have about OG. They pointed out that OG was known lessons at UFPR (73.3%). Men feel empowered to use this content for OG. The women were contrary the possibility to realize the use of alternative materials for the practice of wrestling (73.1%). We believe that the

training and practice of OG is one of the keys for the domain and the choice of OG in school, in their Physical Education classes.

Beliefs in Wrestling

This subscale, belief in wrestling, gave us information on the teacher's beliefs that OG could be a powerful pedagogical tool helping students choose wrestling in school PE. In general, the teachers think that the sport of wrestling is dangerous for their students, especially among the female teachers (64.2%). Reducing this belief significantly ($p = 0.03$) if they belong to the group that had previous training in sports combat. The faculty believes that wrestling is dangerous (74.5%), but do not feel that fosters aggression among students (67.1%). The women teachers still feel that wrestling masculinizes practitioners, but male teachers this data is indifferent (58%). The teachers, in general, do not believe it is an expensive sport to practice in their schools (51.6%); also claim that it has very motivating content (67.9%), but is not suitable for the working values in PE classes (58%), contrary to what the expert authors advocate.

Needs

The teachers, in general, still believe that the they have not received proper training to include the contents of OG / wrestling in class (51.9%), however this percentage decreases significantly ($p = 0:00$) among teachers who have had prior training in combat sports. However, when considering that there should be more teaching material for the introduction of the OG, a majority agrees (70.3%). In general, there is a predisposition to invest their time to learn and better understand its fundamentals, where new teachers have a greater appreciation. The teachers with prior formation also felt that they would receive more training ($p = 0.01$)

CONCLUSIONS

The findings of this study leads us to highlight that a high percentage of teacher's myth claimed not to know the basics of wrestling and not feel qualified to teach using Teaching Units designed by experts. They agree to start with OG in school and then pass the hand of teachers with expertise in wrestling for training. Men think that this sport is risky, but takes no danger to their students, especially those who had received prior training; women consider it dangerous. However, in general they do not feel that the sport generates violence. The faculty does not feel that wrestling can foster the development of educational values, contrary to the authors from several studies. A teacher, in general, demonstrate a favorable predisposition to invest their time in appropriate training to deliver these contents, and considers it necessary to produce educational materials adapted as OG for inclusion in physical education classes in elementary and secondary education.

PRACTICAL APPLICATIONS

This study provided essential information to improve the situation of teaching Olympic wrestling in PE classes, initially through OG taught by PE teachers and then as wrestling taught by specialists who can be these same PE teachers, provided they continue in education courses that include wrestling.

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COMPARISON OF THE PHYSICAL AND PHYSIOLOGICAL CAPACITIES OF ELITE TURKISH WRESTLERS AND THE WRESTLERS OF THE U.S. NATIONAL WRESTLING TEAM

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ABSTRACT
The purpose of the present study is to determine the physical and physiological characteristics of international caliber Turkish freestyle wrestlers and then compare these results with the physiological variables of the U.S. National Freestyle Wrestling Team. The parameters of height, age, weight, body fat percentage, vital capacity, aerobic power (MaxVO_2), speed (36.56 m), 400 m run, 2400 m run, right and left hand grip strength and the physiological traits concerning dominant grip and weak grip were selected for comparison. For the purpose of comparing the physiological parameters of the elite Turkish Wrestling Team and the U.S. National Freestyle Wrestling Team, a t test technique was employed at the 0.05 significance level. In the comparison of the physical and physiological parameters of the two teams, statistical differences in disfavor of the elite Turkish Wrestling Team were determined in the parameters of aerobic power (Max VO_2), 400 m run and the 2400 m run. No statistical differences were found between the other physiological parameters of the two teams. These results indicate that Turkish wrestlers may work and train less than foreign elite wrestlers.
Keywords: profiles, physical and physiological tests

INTRODUCTION

Success in wrestling is primarily a matter of skills, combined with intellect and strength. Other important motor traits that contribute to success include quickness, endurance and flexibility. Wrestling is a high-paced and dynamic branch of sports that requires continuous movement during the contest. In order to meet the demands of the sport in terms of circulation, respiration and muscle system, wrestlers have to enhance and strengthen their motor skills, aerobic and anaerobic capacities through various exercise methods.

While Hellicksen (9) reports the presence of a significant relationship between a high level of aerobic capacity and success in wrestling, Taylor (18) states that wrestling demands more body strength than any other branch of sports, and that wrestlers are proportionally the strongest athletes. Akgun (1) states that wrestling is a branch of sport that requires the possession of various functional traits; muscle strength, short reaction time, agility, neuromuscular coordination, superior static and dynamic balance, high anaerobic capacity and a high aerobic capacity. Although all these elements of physical fitness are important for wrestling, he states that the two most important are aerobic and anaerobic capacities.

The term physical fitness is generally used to describe a part of the physical skills necessary to succeed in sports. Burke (4) lists physical fitness elements as strength, aerobic power, anaerobic power, muscular endurance, speed, agility, balance and body composition. Astrand (2), on the other hand, divides physical fitness into two groups: the measurable elements of motor performance, and the aerobic functional capacity, and accordingly the capacity to carry or use oxygen in the body.

In order to develop these traits, wrestlers need to carry out training in a regular, planned and scientific manner. The purpose and content of wrestling training have to focus on ensuring that physical skills and physiological capacities are suitable for wrestling contests. The high level of physiological characteristics of elite athletes constitutes a field of study that that continues to gain importance and is closely followed by scientists and trainers. This includes scientific studies with introducing new areas of research. The goal of the training programs applied to athletes is to enhance their physical capacities and skills (12). Determining wrestlers' physiological traits and capacities is required for their development and success. In consideration of this information, the purpose of the present study is to identify the physical and physiological traits of wrestlers, and to enable trainers to remediate any inadequacies that are discovered and thus improve a wrestler's performance.

METHODS

For this study one wrestler for each weight category was selected from elite Turkish wrestlers who had won a medal in at least one European or world championship, and their voluntary consent for participating in the study were obtained. In order to determine physical fitness; age, height, weight, vital capacity, double grip strength, strong grip, weak grip, body fat percentage, aerobic power ($_2 2_2$), 35.56 m (40 Yard), 400 m and 2400 m run tests were implemented.

While a stadiometer and a scale were used to measure height and weight, body fat percentage was determined through skinfold measurements (Biceps, Triceps, Suprailiac, Scapula, Chest and Thigh) were carried out with a skinfold caliper and then applying Green's formula (8), grip strength was measured with a hand grip dynamometer, aerobic power ($MaxVO_2$) was measured through a Cooper test (12 minute run) and calculated through Clark's (5) formula, and the 36.56 m sprint (40 yards), 400 m and 2400 m runs were measured with a stop-watch.

The wrestlers were asked not to eat, use medication, use stimulants such as tea, coffee or cigarettes or perform demanding exercises for at least 4 hours before the tests. In order to enable the wrestlers to exhibit their maximal performance, the tests were spread on to three days.

RESULTS

Data obtained from elite Turkish wrestlers were compared to the physiological parameters of the wrestlers from the U.S. national wrestling team (13), and t value was employed in the calculation of the statistical differences between the two teams. The level of significance accepted for the tests was 0.05. These results are shown in table 1.

TABLE 1: Physical and Physiological Parameters of Elite Turkish Freestyle Wrestling Team and the U.S. National Freestyle Wrestling Team

TEAMS	ELITE TURKISH TEAM				US NATIONAL TEAM			
TESTS	N	$\bar{x}$	SD	SEM	N	$\bar{x}$	SD	SEM
Age (years)	10	24.9	3.75	1.18	8	24.88	2.42	0.85
Height (cm)	10	172.9	9.96	3.15	8	166.29	11.48	4.07
Weight (kg)	10	75.3	18.42	5.82	8	68.55	17.14	6.07
Vital Capacity (L)	10	4.63	0.87	0.27	8	4.14	0.79	0.28
Double Grip Strength (kg)	10	81.9	17.65	5.58	8	99.13	26.45	9.37
Strong Grip (kg)	10	43.8	9.78	3.09	8	50.38	13.15	4.66
Weak Grip (kg)	10	38.1	8.41	2.66	8	48.75	13.51	4.79
Body Fat (%)	10	7.92	1.61	0.5	8	9.45	3.24	1.14
Max VO_2 (ml/kg/min.)	10	48.9	3.79	1.2	8	55.29	4.28	1.51*
36.56 m Sprint (40 Yard)	10	5.35	0.24	0.07	8	5.28	0.36	0.12
400 m. Run (s)	10	71.6	5.5	1.74	8	63.37	3.58	1.26*
2400 m run (min)	10	10.44	52.97	16.76	8	8:49.5	27.37	9.70*

* = Parameters with statistically significant difference

DISCUSSION

For this study, the physical and physiological parameters of elite Turkish freestyle wrestlers and wrestlers from the U.S. national freestyle wrestling team that participated in World cup were calculated and compared. No statistical difference could be found between the average ages, heights and weights of the two teams. The average ages of wrestlers, was 25 years in both the American elite wrestlers and Turkish teams. In terms of height, Scott (13) reported the average height of American elite wrestlers to be 173.0 cm, and data reported from Turkish teams shows 173.3 cm in the Sekerspor team (6), and the 172.5 cm average height of U-21 Turkish freestyle and Greco-Roman wrestling teams (3) are parallel with the average height of the two teams examined in the present study.

Comparing the vital capacities of the two teams showed no statistically significant difference. Previous studies conducted on this matter report the average vital capacities of Canadian national wrestlers (14) and American collegian wrestlers (15) to be 4.9 L and 5.06 L respectively. On the other hand, in the study conducted on 10 Turkish wrestlers, Akgun (1) determined the wrestlers' average vital capacity to be quite higher with 5.48 L. This difference may have resulted from the heavier weights of the wrestlers that participated that study. However,

Akgun (1) states that "what really matters is not a high vital capacity, but the ability to use lung capacity in a maximal manner".

While no statistically significant difference could be found between the teams in terms of grip strengths (double grip strength, strong grip and weak grip); the U.S. national team shows a clear superiority. The fact that the U.S. national team is stronger in terms of double grip strength, strong grip and weak grip indicates that they are stronger than Turkish elite wrestlers also in terms of general physical strength. Wrestling requires more body strength than any other branch of sports. Studies report that wrestlers are the stronger than athletes involved in other branches (18). In a sense, grip strengths provide general information on physical strength. The studies conducted on Canadian and Japanese national teams (17), the study by Donmez (6) conducted on the Turkish club teams, and Baykus' (2) study conducted on U-21 national Greco-Roman wrestling team all report similar values.

Comparing the body fat levels of the two teams showed no statistically significant difference. Wrestlers' body fat ratio varies between 7% and 10% as also suggested by Hursh (11). In support of this, the average body fat percentage of 49 Canadian elite freestyle wrestlers was reported to be 8.2% (17), while the same was determined to be 9.81% for 33 elite American wrestlers (5), 9.1% and 8.96% for the wrestlers of Turkish club teams (6). Similarly, body fat ratio averages of Turkish freestyle U-21 national team was reported to be 8.25%, while the same was determined as 8.56% for a U-21 Greco-Roman national team (2).

A comparison of the maximum oxygen consumption capacities (Max VO_2) shows that there is a statistically significant difference in favor of the U.S. national team. Turkish elite wrestlers' maximum oxygen consumption capacities are not only lower than the wrestlers of the U.S. national team, but also quite lower than the values reported by Saltin and Astrand (16), Hellicksen (9) and Sharratt (14). The lower maximum oxygen consumption capacity of the Turkish team may result in serious problems in terms of achieving success in international competitions, because of the reports that demonstrate that there is a strong relationship between a high level of aerobic capacity and a good wrestling performance (9). This indicates that, in comparison with their foreign rivals, Turkish wrestlers seem to train less for aerobic capacity.

No statistically significant difference could be found between the two teams in terms of 36.56 m (40 yard) sprint. Still, the U.S. team has a slight superiority. 40 yard run are indicative of reaction time, explosive strength and anaerobic energy.

A statistically significant difference in favor of the U.S. team was determined in terms of 400 m run. In other studies included in the literature the average times of 33 American elite wrestlers and 27 young American elite collegian wrestlers (13) were reported to be 67.96 seconds and 65.8 seconds respectively, both better than the average of the Turkish team. Since a 400 m run is performed primarily through anaerobic processes, it reflects the same energy system character of wrestling (1). Anaerobic exercise capacity is used as an important factor in international wrestling competitions (10). Therefore, this can be considered as a highly significant effect that may affect Turkish wrestlers' performances in a negative manner.

Another statistically significant difference in favor of the U.S. team was found in the final test, a 2400 m run. Since the 2400 m run is primarily based on aerobic power, it is in parallel with maximum oxygen consumption (aerobic power) capacity. It was determined that young American elite wrestlers 2400 mm (13) and American collegian elite wrestlers (10) are better than the Turkish team with average run times of 9:22.0 and 9:37.00 seconds respectively. This indicates that the Turkish elite wrestlers are not able to complete the 2400 m run in the times produced in American wrestler groups... The sole reason for this is inadequate aerobic power. This may be rectified by including more aerobic exercises in training, and conducted with more intensity.

As a result, it was determined that the Elite Turkish wrestlers are significantly weaker than the wrestlers of the U.S. national freestyle wrestling team in terms of 400 m run, aerobic power (MaxVO_2) and the 2400 m run. Considering the fact that wrestling demands a mixture of aerobic and anaerobic power, it is clear that the physical condition of Turkish elite wrestlers may negatively affect their competitive success. It is essential that the planning for training must increase the focus on developing these traits.

The success of the U.S. National Team, which conducts their training with a large emphasis on physical preparation, in international competitions is well known. On the other hand, elite Turkish wrestlers' inadequacies based on a lack of training and particularly in terms of aerobic capacity, were confirmed by means of this study. In order to be more successful, elite Turkish wrestlers need to conduct training that would develop their anaerobic

and aerobic energy systems. Although energy systems capacities are not the only factors that bring success in wrestling, they are very important ones.

CONCLUSION

In recent years, determination of the physical traits of elite athletes has rapidly gained importance among sport scientists and high level trainers. Determining the physiological traits of elite athletes is very important for developing new training programs, controlling the presently the programs that are in use, and measuring the performance levels of athletes and applying this information when deciding on the tactics to be followed during the competitions, are all important applications of the information gained from physical and physiological testing. We believe that this study will constitute a reference for future studies and for determining the physiological norms for wrestlers.

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INTESTINAL PARASITIC DISEASES IN JUNIOR WRESTLERS: IMITATION OF OVERTRAINING SYNDROME

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Significant muscle loading in elite athletes result in considerable changes in their physiological and immune status. There can be variations in the concentrations of serum IgM, IgG and IgA – from significant decrease to elevation, reduction of total serum IgE, an increase in the level of proinflammatory cytokines, etc. (5, 13, 10). Therefore, health status monitoring is of great importance, especially in the diagnosis of diseases. The intense training of an athlete can cause a negative influence on the immune state, raise susceptibility to bacterial and viral infections, and induce functional disorders of the hepatobiliary system. Intestinal parasitic diseases (IPD) induce such changes (4, 6). Their timely diagnosis and adequate therapy are of peculiar importance in regions endemic with IPD. Uzbekistan belongs to such a region (1) .

Object of the study. To characterize the prevalence of intestinal parasites in junior wrestlers with an estimation of clinical manifestations, detect immunological shifts and assess the efficiency of antiparasitic therapy

Materials and methods. 202 wrestlers from colleges of Olympic reserve in Tashkent and Samakand were examined (102 and 100 individuals, respectively). All of the athletes were engaged in either judo, free-style or Greco-Roman wrestling, A control group for comparison included 200 individuals from the population of Tashkent. The control group for immunological studies included 15 healthy persons not engaged in sports activity. The diagnosis of intestinal parasites included triple coproscopy. Stool samples were taken with 1-3 day interval. Intensity of infection, if necessary, was estimated by evaluation of the parasites number in a visual field. For the estimation of antiparasitic therapy efficiency we additionally used formalin ether techniques.

Total serum IgE and TNF-α were detected using ELISA, test kits of LLC Vector-Best production, Novosibirsk, Russia. Ascariasis was treated with albendazole (a single dose of 400 mg), enterobiasis with mebendazole (daily dose 100 mg for three days), hymenolepiasis – with praziquantel (20 mg/kg in two doses with a 10 day interval), blastocystosis – with metronidazole, 500 mg three times a day for 7 days) (6), giardiasis - with ecdysten (20-25 mg daily for ten days). The purpose of antiparasitic therapy of ascariasis, entrobiasis, hymenolepiasis and giardiasis was eradication of the parasites, in blastocytosis – a decrease in infection intensity, because at present we have no preparations that efficiently treat blastocysrtosis, except nuitazoxanide, which is not available in Uzbekistan.

Ecdysten is a preparation from the class of phytoecdysteroids with diverse biological activity, involving adaptogenic, hepatoprotective, actoprotective and other properties (7, 9), produced by the Institute of Chemistry of Plant Substances of the Academy of Sciences of the Republic of Uzbekistan. The choice of ecdysten was due to its high efficiency in giardiasis and its ability to increase athlete's resistance to the exercise load (8). Besides the ability to properly eliminate giardia lamblia, it is also effective in treating clinical forms resistant to conventional antigiardial preparations (3).

Statistical analyses All results are reported as mean±SEM. Comparison between the indices under investigation were made using Student's t-test. The significance was determined at $P<0.05$.

Results and discussion. The first stage of the investigation was the evaluation of the prevalence of intestinal parasites among junior wrestlers from colleges of Olympic reserve in Tashkent and Samarkand. Results are shown in table 1. The table demonstrates the absence of significant difference between groups of wrestlers from Tashkent and Samarkand, although a tendency for higher prevalence of Ascaris lumbricoides and Blastocystis hominis was observed in wrestlers from Samarkand, including B. hominis infection of high intensity. A significantly higher prevalence of Blastocystis hominis was detected in both wrestler groups in comparison with the population sample of Tashkent, and only in the wrestlers was there found a B. hominis infection of high intensity. On the whole, the prevalence of intestinal parasites without B. hominis in wrestlers and population in Tashkent was the same: 26.4±4.3% and 24.5±3.0%, respectively ($P>0.05$). The percentage of wrestlers with parasites (without B. hominis) in Samarkand was higher than in the Tashkent population: 36.0±4.8% and 24.5±3.0% ($P< 0.05$). It seems probable that it is associated with a higher prevalence of parasites in the population of Samarkand which was not studied. A significantly higher percentage of wrestlers with B. hominis, including cases with infection of high intensity (which was not observed in the population) is possibly associated with immunological disorders,

because it was established that the percentage of individuals with B. hominis was significantly higher in persons with an expressed immunological imbalance (patients with pulmonary tuberculosis and HIV-infected persons) (2). It is well known that a diagnosis of IPD due to unspecific symptoms is impossible without laboratory analyses. The symptoms of IPD in wrestlers are shown in table 2. Gastrointestinal symptoms were mild and unsteady, and except for the meteorism and anorexia in hymenolepiasis, were observed in less than in 50% of examined individuals.

Table 1 Prevalence of intestinal parasites in wrestlers from colleges of Olympic reserve and a group of healthy non-wrestlers

Parasites	Wrestlers (n=102) Tashkent (1st group)		Wrestlers (n=100) Samarkand (2nd group)		Healthy individuals (population) in Tashkent (n=200) (3rd group)	
	N	%	N	%	N	%
Ascaris lumbricoides	6	5.8±2.3	10	10.0±3.0 ***	4	2.0 ± 0.9
Enterobius vermicularis	4	3.9±1.9	5	5.0±2.1	9	4.5 ± 1.4
Hymenolepis nana	3	2.9±1.6	6	6.0±2.3	4	2.0±0.9
Giardia lamblia	14	13.7±3.4	15	15.0±3.5	32	16.0 ± 2.6
Blastocystis hominis (total prevalence)	46	45.0±4.9 **	55	55.0±4.9 ***	36	18.0±2.5
Blastocystis hominis (high intensity of the infection)	14	13.7± 3.4	21	21.0±4.0	-	-

*significant difference between the 1st and the 2nd groups
**significant difference between the 1st and 3rd groups
***significant difference between the 2nd and 3rd groups

Table 2 Frequency of clinical manifestations of intestinal parasitic diseases in wrestlers (%)

Symptoms of intestinal parasitic diseases	Ascariasis (intestinal form) (n=16)	Enterobiasis. (n=9)	Hymenolepiasis (n= 9)	Blastocystosis (n=35)	Giardiasis (n=29)
Weakness	50	-	66.7	50	64.2
Increased Fatigability	50	25	100	42.8	78.5
Performance decrement	66.7	25	66.7	35.7	64.2
Irritability, mood swings	100	50	100	92.8	100
Sleep disturbances	83.3	50	100	50	71.4
weight loss	33.3	-	100	28.5	50
Nausea (episodic)	16.6	-	33.3	28.5	35.7
Headache	50	-	33.3	-	50
Vertigo	-	-	-	-	7.1
Anorexia	50	-	100	50	50
Diarrhea: Constant Recurrent	33.3	25	33.3	50	50
Stool frequency: 1-3 times 4-5 times daily 6-9 times daily	100	100	100	100	92.8 7.1
Character of stool: unformed semiformed formed	100	100	100	50 50	14.2 64.2 21.3
Meteorism	50	-	100	100	100
Abdominal pains in: Periumblical zone right hypochondrium	33.3	25	33.3	42.8 50	85.7
Allergodermatosis	-	-	-	-	7.1

Table 2 shows rather high frequency of astenoneuriotic syndrome, manifesting by irritability, mood swings, increased fatigability, performance decrement, sleep disturbances, anorexia, vertigo and headache, and these symptoms are typical for overtrainuing syndrome (OS) as well (15), and for this reason can be erroneously associated with excessive muscle loading, thereby affording the grounds for unwarranted interference into training.

Many aspects of OS pathophysiology remains unclear. Several hypotheses are proposed. OS can be associated with a glycogen decrease in muscles, possibly the transmitter serotonin plays a role, inasmuch as serotonin is formed from tryptophan and the amount of unbound tryptophan is increased with exercise. The decrease in the glutamine concentration in blood plasma and oxidative stress may play a role too, because markers of oxidative stress are much higher in athletes with OS. Some OS symptoms can be explained by an imbalance of the autonomic nervous system. Alterations in the hypothalamic-pituitary-adrenal and hypothalamic-pituitary–gonadal axes may be responsible for OS. The cytokine hypothesis suggests that OS is a physiological adaptation/maladaptation to excess stress initiated by an imbalance between training and recovery. Muscle contractions and repetitive joint action cause microtrauma to tissues. Adaptation through tissue healing and strengthening occurs via activation of local inflammatory response and the recruitment of cytokines (14). With continued intense training and an absence of adequate rest the inflammatory response can become amplified, chronic and pathologic. IL-1β, IL-6 and TNF-α can also participate in the development of OS П (11).

None of the above mentioned hypotheses explain all of the aspects of OS. At present the optimal explanation is cytokine, because cytokine can mediate glycogen decrease, affecting hunger center in hypothalamus and induce anorexia, resulting in a decrease of glycogen stores. Cytokines, in particular, TNF-α, can interfere with glucose transport to muscles for glycogen synthesis and inducing the feeling of tiredness in overtraining athletes. Behavioral and psychological changes can be associated with cytokines: IL-1β and TNF-α through influence on brain, induce sleep disturbances and depression, contributing to a release of stress hormones and the inhibition of testosterone production (14). OS is followed by activation of Th2-response and decrease of Th1-response, leading to a sharp inhibition of the protection against respiratory infections (15), and intestinal parasites stimulate just a Th2-response (12). It should be emphasized that an absence of studies on the influence of intestinal parasites on the health status, including cytokine profile, of elite athletes. Table 3 shows data on the detection of TNF–α in wrestlers.

Table 3 Level of serum TNF- α in athletes

Cohort under study	TNF-α (pg/ml)
Healthy individuals (n=15)	5.1±1.2
Wresters without parasites (n=20)	6.2±0.9
Wrestlers with parasites (n=17)	8.5±1.1 *

* significant difference with healthy individuals (P<0.05);

We found a significant increase of TNF-α in wrestlers with IPD, whereas in wrestlers without IPD this parameter did not differ from normal values, although a tendency to increase was observed. Thus, IPD could contribute to OS development at the expense of stimulation of TNF-α synthesis. Detection of total serum IgE in wrestlers is of particular interest. Results are shown in table 4.

Table 4 Level of total serum IgE in wrestlers

Cohort under study	IgE, IU/ml
Healthy individuals (n=15)	55.7±9.0
Patients with ascariasis not engaged in sports activity (n=7)	202.7±37.9 * **
Wrestlers without parasites (n=17)	42.3±7.8
Wrestlers with ascariasis before treatment (n=5)	67.6±6.4 ** ****
Wrestlers with ascariasis after treatment (n= 4)	53.4±5.0
Patients with giardiasis not engaged in sports activity (n=11)	154.2±5.0 * ** ***
Wrestlers with giardiasis before treatment (n= 8)	96.6±7.2 * ** ****
Wrestlers with giardiasis after treatment (n= 4)	62.1±6.6 ***

* significant difference with healthy individuals (P<0.05)
** significant difference with wrestlers without parasites (P<0.05)
*** significant difference with data before treatment (P<0.05)
****significant difference with patients with intestinal parasites not engaged in sports activity (P<0.05)

The table shows that wrestlers without IPD have a tendency to decrease their IgE levels. It reflects on the character of the IgE increase in wrestlers with parasites: IgE level in athletes with ascariasis and giardiasis was much less that in individuals with these parasites, but those not engaged in sports activity and without

concomitant chronic diseases. It points to a certain immunological imbalance. Elimination of these parasites resulted in normalization of this parameter.

Treatment of IPD with the aforementioned preparations resulted in elimination of parasites in all cases, or in the case of blastocystosis, in a decrease of infection intensity. It is noteworthy that even in the cases where wrestlers with IPD, with some symptoms of the disease, didn't notice the considerable influence of parasites on their work-out session. After the elimination of the parasites they unanimously spoke about an increased resistance to physical loading. It was especially expressed in the ecdysten applications. Thus under conditions of regions endemic with IPD, achievement of athletes peak of physical form requires regular examination for intestinal parasites and a timely treatment.

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RELATIONSHIPS AMONG HAND DOMINANCE, COMPETITION SUCCESS RANKINGS AND ISOMETRIC ELBOW AND KNEE STRENGTH IN PREPUBERTAL NOVICE WRESTLERS

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ABSTRACT
This study aims to investigate relationships between hand dominance, competition success rankings and isometric elbow and knee strength in 12 years old male novice wrestlers. For this study, body height, body weight, right and left elbow and knees' isometric flexion and extension strength measurements were taken from 379 voluntary subjects during the talent identification scouting for the Wrestling Education Centers of Turkey in 2002. A lateralization inventory was also applied to determine hand preference of novice wrestlers. To investigate the differences among variables, two-way ANOVA and t-tests were performed while correlation coefficients were also calculated between variables. Results of this study showed that finalists were taller, heavier and stronger than others. Significant strength differences were observed between right and left of elbow and knee joints regardless of handedness. Wrestling success ranking were well correlated with all strength variables not handedness. Right knee flexion strength of right handers was significantly higher than left handers while left handers had a smaller strength differences between right and left side in elbow extension and knee flexion. Although left and right handers had a very similar physical size, left handers had a symmetric strength between right and left side except knee extension while right handers had an asymmetry in all strength variables. In the selection of talented wrestlers, it is impossible to find the successful wrestlers of future by overemphasizing strength instead of psychological predisposition to wrestling and trainability in developmental stages. In sports where both right and left arm strength have equal importance it seems very important to improve training programs for preventing asymmetric strength development in novice wrestlers.
KEY WORDS: Talent Identification, Handedness, Elbow, Knee, Isometric Strength, Novice Wrestlers.

This study was presented during the Second International Symposium on Traditional and Olympic Wrestling at the September 14 -15 of 2012 in Kahramanmaras in Turkey.

INTRODUCTION

The human brain consists of two different hemispheres with special functions. Hand dominance, or preference, provides the information about brain hemispheric dominance. It is the most obvious behavioral asymmetry in human behaviors. The term hand dominance means using one hand more than the other, or it expresses asymmetric performance differences in tasks performed by hand (14, 1, 23, 19). So far many studies have reported that there were higher proportions of left-handedness among top athletes in individual sports such as baseball (15), tennis (2, 15), fencing (5), cricket (26) and in combative sports such as boxing (13) and wrestling (27). Researchers have also reported that more left-handed athletes were observed in interactive sports than in non-interactive sports (20). Advantages of being left-handed depend on the sport. There are claims about left-handed people having an inherent advantage in terms of spatial-motor skills when compared with right-handed people (11). On the other hand, Wood and Aggleton (26) claimed that the fact that there are more left handers in various sport branches is not the result of a neurological superiority, but it is the result of the characteristics of that sport. According to Dane and Erzurumluoğlu (8), left handers were superior to right handers in terms of visual reaction time in handball. Ziyagil (28) reported that right-handed prepubertal boys had better sprint and multiple sprint performance than left handers during repeated five sprints.

Strength differences are more obvious between the right and the left side of the body during prepubertal period. Sanchis-Moysi et al. (21) observed that tennis participation at prepubertal age led to significant muscular hypertrophy in the dominant arm (+13%), much greater than observed in non-active controls (+3%) depending on selective loading of arm muscles. Asymmetric strength development can hinder a child from reaching his biological potential and it may not be compensated enough in the future developmental periods (3). Children's training is based on factors such as age, gender, physical condition and training history (6). In this period, hand dominance can be considered in organizing individual training programs. Symmetric strength development can be achieved by making the weak side stronger with new training programs.

Understanding children's strength development based on hand dominance can help early detection of deficiencies and compensation of these disabilities. There are no studies about the difference between the physical performances of prepubertal right and left hander athletes in competition sports such as wrestling. In the period of 12 years, age is a very sensitive period for skills development especially in boys. Asymmetric strength development based on hand dominance can affect skills development negatively (3). Because motor-skill learning needs harmony of several elementary motor components, such as adequate power, appropriate speed and accuracy with the visuomotor integration between the brain hemispheres (4*).This study aims* to investigate the relationship between hand dominance, competition success rankings and strength in the selection of talented wrestlers.

METHODS

Selection of Subjects: 379 novice wrestlers with the mean age of 12 years from 34 cities of Turkey were tested during the talent identification scouting for Wrestling Education Centers of Turkey in 2002. They also went through a medical examination before the study. The body height of the subjects was measured by a metal scale with 0.1 cm sensitivity, and the body weight measurement was taken by a digital weight with a 0.1 kg sensitivity. The average body weight and height of subjects were 37.41±9.14 kg and 144.43±8.03 respectively.

Hand preference: For the determination of the subjects' hand preferences, all subjects received a Turkish adaptation of Oldfield's questionnaire (18) modified by Geschwind and Behan (11). The questions related to which hand was used by the subject for writing, throwing, scissors, toothbrush, knife (without fork), spoon, holding the handle for a shovel, striking a match, and twisting off the lid of a jar. The columns "always right," "usually right," "either hand," "always left," "usually left" were scored as + 10, + 5, 0, - 10, and - 5, respectively. Following Geschwind's suggestion (24), the laterality score was taken as the sum of all these scores, and no quotient was calculated. Tan also reported that in memory of Norman Geschwind, this laterality score was called the "Geschwind score" (24). A score of - 100 indicated that the subject responded "always left" on all items, and a score of + 100 indicated "always right" on all items. Hand dominance distribution is measured as such; (1) strong right hander, (between +80 and + 100 points), (2) weak right hander (between +20 and +75 points), (3) ambidextrous (between -15 and + 15 points), (4) weak left hander (between -20 and -75 points) and (5) strong left hander (between -80 and -100 points) (24).Subjects were assigned to right- and left-hand preference groups with respect to Gescwind scores. Ambidextrous, weak left handers and strong left handers were accepted as a left handed group, while strong and weak right handers composed to right handed group (7). All these mixed-handers were placed with the left-handers.

Measurements of strength: Elbow strength measurements were taken with Nicholas MMT (01160 Model Nicholas Manual Muscle Tester) when the subjects were lying on their backs. The device was applied to the front and back of the wrist and during the three-second long contractions, isometric elbow flexion and extension strengths were measured. While the subjects were sitting on the bench with their feet not touching the ground, the device was applied to the front and back of their ankles and during the three-second long contractions, isometric knee flexion and extension strengths were measured (25).

Statistical Analyses: SPSS 15.0 package program was used for the statistical analysis. Two-way ANOVA and t-test were used for the change in strength based on hand dominance and competition success. Post hoc Scheffe test was used to determine the origin of difference among groups. Correlation coefficients between variables were measured. A 0.05 and 0.01 were considered to be the significance level in the determination of differences and relations.

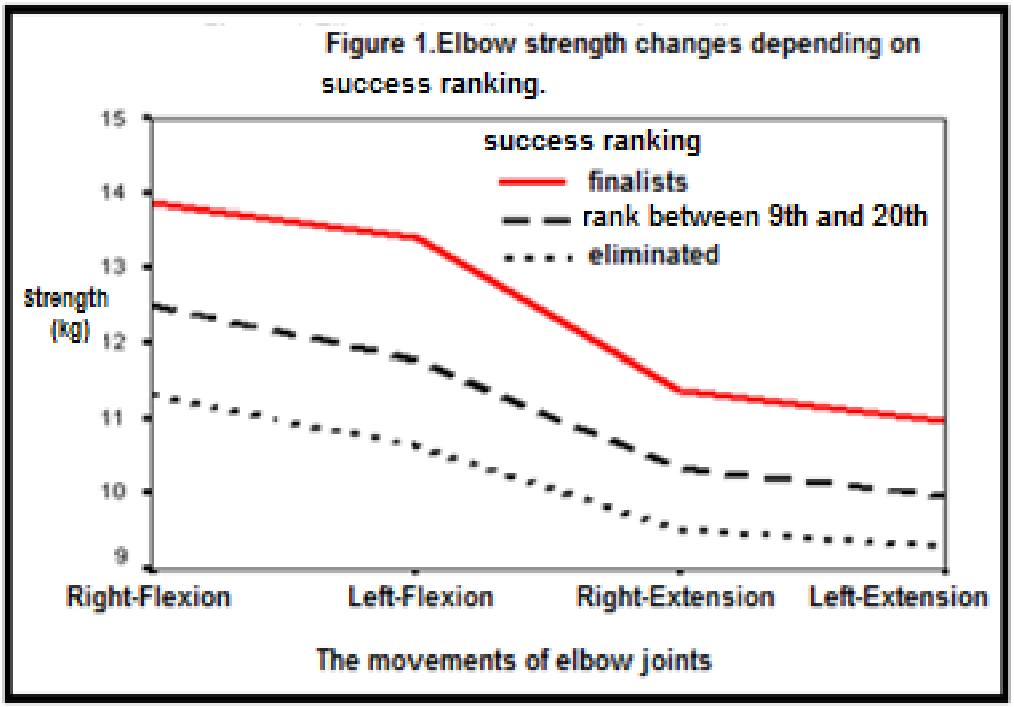
RESULTS

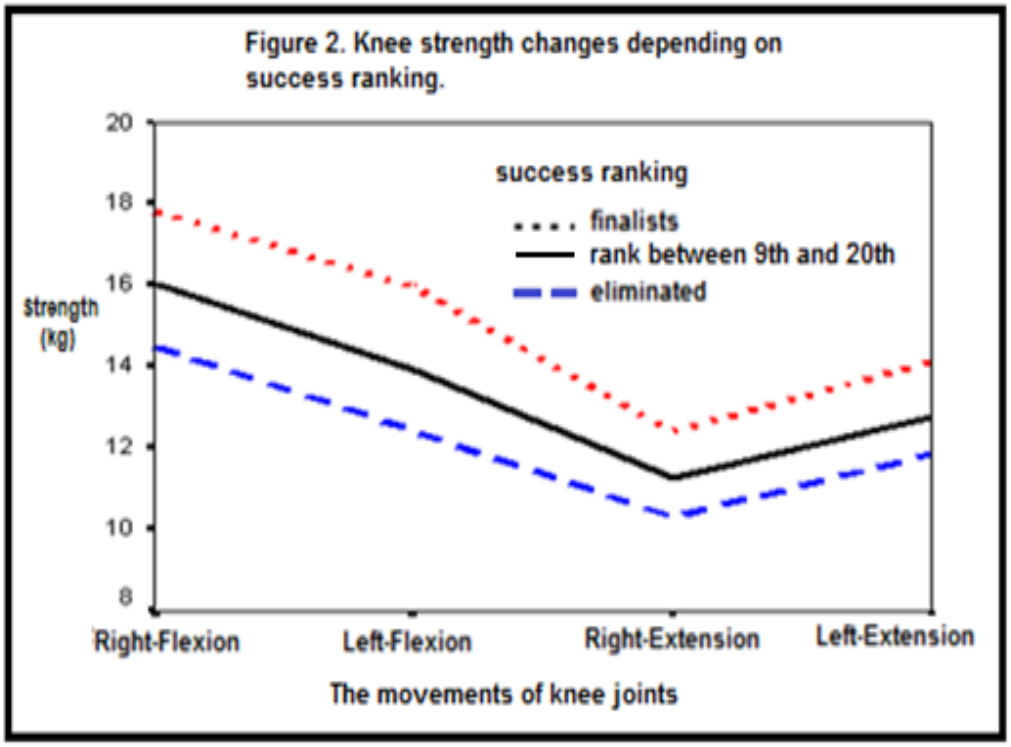
The subjects were divided into three groups as the finalists in the last eight, those who had a rank between 9th and 20th and those eliminated. Results of this study showed finalists were higher, heavier and stronger than others. Mean body height, mean body weight and body mass index (BMI) were gradually differentiated from eliminated to finalist wrestler groups. There was linear relationship between success rankings and all strength variables. All strength scores were highest in the finalists, it was moderate in those who had a rank between 9th and 20th and it was the lowest in those who were eliminated (Figure 1 and 2). Strength level tended to increase from the wrestlers eliminated to the finalists while no significant strength differences were observed between right and left side in elbow and knee joints among three groups. Isometric elbow and knee strength seems to be related to wrestling success in prepubertal children (Table 1). In generally, physical size and strength level had an effect on wrestling success in prepubertal children.

Table 1. A Comparison of physical characteristics and strength scores based on their success ranks.

Variables	Ranks	N	Mean±*SD*	Min.-Max.	df	F	Sig.	Schffee Summary
Body Height (cm)	1-8 (G1)	71	148.03±9.50	128.00-170.00	2	20.189	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	146.63±7.66	130.00-161.00				
	20> (G3)	215	142.28±6.95	126.00-161.00				
	Total	379	144.42±8.03	126.00-170.00				
Body Weight (kg)	1-8 (G1)	71	42.22±12.19	24.00-71.10	2	28.512	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	40.31±9.91	26.00-70.80				
	20> (G3)	215	34.57±6.12	24.00-68.80				
	Total	379	37.41±9.14	24.00-71.10				
Body Mass İndex (BMI)	1-8 (G1)	71	18.91±3.65	14.07-28.12	2	19.314	.000**	G1>,G3; G2>G3
	9-20 (G2)	93	18.51±3.14	13.65-27.66				
	20> (G3)	215	16.98±2.01	13.69-29.39				
	Total	379	17.72±2.81	13.65-29.39				
Right Elbow Flexion (kg)	1-8 (G1)	71	13.89±3.80	6.00-23.80	2	20.791	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	12.51±2.79	1.60-20.70				
	20> (G3)	215	11.35±2.71	1.20-19.60				
	Total	379	12.11±3.11	1.20-23.80				
Left Elbow Flexion (kg)	1-8 (G1)	71	13.44±3.87	7.30-22.70	2	29.944	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	11.80±2.69	5.80-20.30				
	20> (G3)	215	10.63±2.19	6.00-17.20				
	Total	379	11.44±2.90	5.80-22.70				
Right Elbow Extension (kg)	1-8 (G1)	71	11.38±3.15	5.00-26.80	2	18.475	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	10.33±2.01	5.00-16.20				
	20> (G3)	215	9.53±2.04	2.60-16.50				
	Total	379	10.07±2.39	2.60-26.80				
Left Elbow Extension (kg)	1-8 (G1)	71	10.99±2.55	6.40-20.30	2	19.720	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	9.97±1.98	5.20-16.30				
	20> (G3)	215	9.30±1.77	4.10-13.60				
	Total	379	9.78±2.08	4.10-20.30				
Right Knee Flexion (kg)	1-8 (G1)	71	17.84±4.94	7.80-28.08	2	19.654	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	16.05±3.70	2.08-26.91				
	20> (G3)	215	14.50±3.80	1.56-25.48				
	Total	379	15.50±4.21	1.56-28.08				
Left Knee Flexion (kg)	1-8 (G1)	71	15.98±4.81	8.40-27.78	2	29.767	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	13.93±3.42	6.67-23.35				
	20> (G3)	215	12.44±2.82	6.90-21.33				
	Total	379	13.47±3.67	6.67-27.78				
Right Knee Extension (kg)	1-8 (G1)	71	12.41±3.58	5.00-29.48	2	18.580	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	11.29±2.20	5.15-17.82				
	20> (G3)	215	10.32±2.34	2.78-18.29				
	Total	379	10.95±2.70	2.78-29.48				
Left Knee Extension (kg)	1-8 (G1)	71	14.12±3.45	8.03-26.39	2	19.261	.000**	G1>G2,G3; G2>G3
	9-20 (G2)	93	12.80±2.68	6.76-21.19				
	20> (G3)	215	11.85±2.44	4.06-17.68				
	Total	379	12.51±2.84	4.06-26.39				
R-L Difference in Elbow Flexion (kg)	1-8 (G1)	71	0.45±1.91	-5.20-4.60	2	.602	.548	N.D.
	9-20 (G2)	93	0.71±1.79	-7.20-4.60				
	20> (G3)	215	0.72±1.82	-10.80-6.30				
	Total	379	0.67±1.83	-10.80-6.30				
R-L Difference in Elbow Extension (kg)	1-8 (G1)	71	0.40±1.64	-3.20-6.50	2	.383	.682	N.D.
	9-20 (G2)	93	0.36±1.75	-3.90-5.70				
	20> (G3)	215	0.22±1.69	-4.10-5.00				
	Total	379	0.29±1.70	-4.10-6.502				
R-L Difference in Knee Flexion (kg)	1-8 (G1)	71	1.86±2.34	-4.11-6.69	2	.246	.782	N.D.
	9-20 (G2)	93	2.12±2.25	-8.04-7.23				
	20> (G3)	215	2.06±2.48	-12.24-8.99				
	Total	379	2.04±2.40	-12.24-8.99				
R-L Difference in Knee Extension (kg)	1-8 (G1)	71	-1.71±2.04	-7.32-5.51	2	.225	.798	N.D.
	9-20 (G2)	93	-1.50±2.20	-6.93-3.82				
	20> (G3)	215	-1.54±2.11	-6.50-5.32				
	Total	379	-1.56±2.11	-7.32-5.51				

*p<0.05, **p<0.01, R-L=Right and Left, N.D.=No Difference.





In this study 2.4% of the subjects were strong left handers, 7.92% were weak left handers, 1.85% were ambidextrous, 52.51% were weak right handers and 35.36% were strong right handers. As dichotomous groups, 12.1% of subjects were left handers and 87.9% right handers.

The results of the study showed that right knee flexion strength of right handers was significantly higher than left handers while left handers had a smaller strength differences between right and left side in elbow extension and knee flexion (Table 2).

Table 2. A Comparison of physical characteristics and strength scores with respect to hand dominance.

Variables	Hand Preferences	N	Mean±*SD*	Min.-Max.	t	df	Sig.
Body Height (cm)	Left Handed	46	143.26±9.40	128.00-170.00	-1.048	377	.295
	Right Handed	333	144.59±7.83	126.00-164.00			
	Total	379	144.42±8.03	126.00-170.00			
Body Weight (kg)	Left Handed	46	37.45±10.92	24.00-70.00	.027	377	.978
	Right Handed	333	37.41±8.89	24.00-71.10			
	Total	379	37.41±9.14	24.00-71.10			
Body Mass İndex (BMI)	Left Handed	46	17.92±3.25	13.78-26.67	.519	377	.604
	Right Handed	333	17.69±2.75	13.65-29.39			
	Total	379	17.72±2.81	13.65-29.39			
Right Elbow Flexion (kg)	Left Handed	46	11.50±3.74	4.30-23.80	-1.419	377	.157
	Right Handed	333	12.19±3.01	1.20-20.70			
	Total	379	12.11±3.11	1.20-23.80			
Left Elbow Flexion (kg)	Left Handed	46	11.91±3.69	6.60-22.70	1.166	377	.244
	Right Handed	333	11.38±2.77	5.80-22.40			
	Total	379	11.44±2.90	5.80-22.70			
Right Elbow Extension (kg)	Left Handed	46	9.78±2.64	5.10-15.80	-.895	377	.371
	Right Handed	333	10.11±2.35	2.60-26.80			
	Total	379	10.07±2.39	2.60-26.80			
Left Elbow Extension (kg)	Left Handed	46	9.79±2.07	6.10-16.80	.020	377	.984
	Right Handed	333	9.78±2.09	4.10-20.30			
	Total	379	9.78±2.08	4.10-20.30			
Right Knee Flexion (kg)	Left Handed	46	14.26±4.91	5.59-28.08	-2.157	377	.032*
	Right Handed	333	15.68±4.08	1.56-26.91			
	Total	379	15.50±4.21	1.56-28.08			
Left Knee Flexion (kg)	Left Handed	46	13.74±4.25	7.59-26.11	.533	377	.594
	Right Handed	333	13.43±3.59	6.67-27.78			
	Total	379	13.47±3.67	6.67-27.78			
Right Knee Extension (kg)	Left Handed	46	10.38±3.00	5.00-17.38	-1.541	377	.124
	Right Handed	333	11.03±2.65	2.78-29.48			
	Total	379	10.95±2.70	2.78-29.48			
Left Knee Extension (kg)	Left Handed	46	12.15±3.09	6.41-21.84	-.926	377	.355
	Right Handed	333	12.56±2.81	4.06-26.39			
	Total	379	12.51±2.84	4.06-26.39			
R-L Difference in Elbow Flexion (kg)	Left Handed	46	-0.41±1.72	-5.20-3.30	-4.364	377	.000**
	Right Handed	333	0.81±1.79	-10.80-6.30			
	Total	379	0.67±1.83	-10.80-6.30			
R-L Difference in Elbow Extension (kg)	Left Handed	46	-0.01±1.86	-4.10-4.50	-1.285	377	.199
	Right Handed	333	0.33±1.67	-3.90-6.50			
	Total	379	0.29±1.70	-4.10-6.50			
R-L Difference in Knee Flexion (kg)	Left Handed	46	0.52	-4.11-5.62	-4.715	377	.000**
	Right Handed	333	2.25	-12.24-8.99			
	Total	379	2.04	-12.24-8.99			
R-L Difference in Knee Extension(kg)	Left Handed	46	-1.77	-7.32-5.51	-.718	377	.473
	Right Handed	333	-1.53	-6.93-5.32			
	Total	379	-1.56	-7.32-5.51			

*p<0.05, **p<0.01, R-L=Right and Left.

Although left and right handers had a very similar physical size, left handers had a symmetric strength between right and left side except knee extension while right handers had an asymmetry in all strength variables (Table 3). In addition, significant differences were observed between right and left side regardless of handedness in all strength variables. There was a significant relationship between wrestling performance and strength, and the flexion strength of knee changed depending on the hand dominance. Left handers had only an advantage on right handers only in isometric right knee flexion strength. They had also a symmetric strength between right and left side except knee extension while right handers had an asymmetry in all strength variables.

Table 3. Comparison of strength symmetry between right and left side in each hand preference group in itself.

Variables	Joint	Side	N	M±SD	Difference	Difference%	df	t	Sig.
Left Handed	Elbow Flexion	Right Arm	46	11.50±3.74	-0.41	-3.57	45	-1.617	.113
		Left Arm	46	11.91±3.69					
	Elbow Extension	Right Arm	46	9.78±2.64	-0.01	-0.10	45	-.040	.969
		Left Arm	46	9.79±2.07					
	Knee Flexion	Right Knee	46	14.26±4.91	0.52	3.65	45	1.522	.135
		Left Knee	46	13.74±4.25					
	Knee Extension	Right Knee	46	10.38±3.00	-1.77	-17.05	45	-4.920	.000**
		Left Knee	46	12.15±3.09					
Right Handed	Elbow Flexion	Right Arm	333	12.19±3.01	0.81	6.64	332	8.287	.000**
		Left Arm	333	11.38±2.77					
	Elbow Extension	Right Arm	333	10.11±2.35	0.33	3.26	332	3.624	.000**
		Left Arm	333	9.78±2.09					
	Knee Flexion	Right knee	333	15.68±4.08	2.25	14.35	332	17.557	.000**
		Left Knee	333	13.43±3.59					
	Knee Extension	Right nee	333	11.03±2.65	-1.53	-13.87	332	-13.520	.000**
		Left Knee	333	12.56±2.81					

*p<0.05
**p<0.01

Table 4. Comparison of strength scores between right and left side in elbow and knee joints regardless of handedness.

		N	M±SD	Difference	% Difference	t	df	Sig.
Elbow Flexion	Right Arm	379	12.11±3.11	0.67	5.53	7.092	378	.000**
	Left Arm	379	11.44±2.90					
Elbow Extension	Right Arm	379	10.07±2.39	0.29	2.88	3.330	378	.001**
	Left Arm	379	9.78±2.08					
Knee Flexion	Right Knee	379	15.50±4.21	2.03	13.10	16.563	378	.000**
	Left Knee	379	13.47±3.67					
Knee Extension	Right Knee	379	10.95±2.70	-1.56	12.47	-14.373	378	.000**
	Left Knee	379	12.51±2.84					

*p<0.05
**p<0.01.

There were changes in all strength parameters based on competition ranks. Left elbow flexion, average elbow flexion and right knee flexion were correlated significantly to hand dominance (Table 5). While there was a significant relationship between wrestling performance and strength; especially left elbow flexion, average elbow flexion and right knee flexion were changed depending on hand dominance.

Table 5. Correlation coefficients between the variables wrestling competition ranks, hand dominance and strength of elbow and knee Joints.

Variables		Rankings	Handedness
Elbow Joint	Right Elbow Flexion Strength (kg)	.000**	.106
	Left Elbow Flexion Strength (kg)	.000**	.117
	Right Elbow Extension Strength (kg)	.000**	.199
	Left Elbow Extension Strength (kg)	.000**	.334
	Average Elbow Flexion Strength (kg)	.000**	.469
	Average Elbow Extension Strength (kg)	.000**	.199
Knee Joint	Right Knee Flexion Strength (kg)	.000**	.017*
	Left Knee Flexion Strength (kg)	.000**	.330
	Right Knee Extension Strength (kg)	.000**	.026*
	Left Knee Extension Strength (kg)	.000**	.070
	Average Knee Flexion Strength (kg)	.000**	.167
	Average Knee Extension Strength (kg)	.000**	.033*

** Significant relationship at the level of 0.01
* Significant relationship at the level of 0.05

Right brain hemisphere dominance in left handers seems to be related to strength performance. This situation brings strength to the forefront and ignores psychological tendency and trainability, and seems to limit the training to be successful wrestlers.

In general, the most obvious difference between left hander and right hander wrestlers is the creativity and spontaneity levels of their movement structures. The right hemisphere of the brain is generally related to spontaneous and automatic reactions. The left hemisphere of the brain is mostly responsible for logical, controlled and conscious acts and thoughts (22). Tactic is defined as the plan of act for special tasks as practiced in training. Spontaneity is doing, practicising and thinking without planning. Spontaneity in wrestling involves unpredictable acts in unexpected moments during competition. Thus, left handers' creativity and spontaneity during wrestling cannot be considered as their tactical advantage. During the game, neither the opponent's position nor the required technical moves of the moment are known. Wrestling requires very complex maneuvers involving attacks and counter attacks. Left-handed wrestlers have shorter reaction times than right-handed wrestlers. Left-handed wrestlers have less strength differences than right-handed wrestlers on both sides. On the other hand, right-handed wrestlers have the advantage of doing well planned moves in the game strategy. Right handers have a talent for executing very sequential moves and maneuvers. As a result, these characteristics of left-handed wrestlers and the fact that they have short reaction times can cause them to have more advantages (12,8). Both groups of wrestlers can be said to have advantages and disadvantages over each other. Although this assessment supports Wood and Aggleton's (26) view that left handers' being a majority in various sport branches is not because of neurological superiority but because of the characteristics of that sport, Ziyagil et al. (27) reported that in two international championships both left-handed men and left-handed women got more medals. It is obvious that new researches are required in this field. In order to equalize muscle strength asymmetry between the right and left side of the arms and legs, the weaker side was trained with increasing of repetitions and/or resistance. Resistance training results in improvement in muscular strength in preadolescents. This improvement in prepubescent children may be more a reflection of improved neuromuscular adaptation, than actual muscle hypertrophy (17). However, the strength training of prepubertal children should be monitored by an experienced coach (9). Asymmetric knee or leg strength development that prevents prepubertal children from reaching their biological potential may not be compensated enough in the following development stages (3).

CONCLUSIONS

Hand dominance and strength variables are significantly related to wrestling competition rankings. While knee strength is significantly related to hand dominance, there is no significant relation between elbow joint strength and hand dominance. Competition rankings correlated significantly all strength variables. Children's training should be based on factors such as age, gender, physical condition level and training past (6) and also their brain's hemisphere dominance. There is a significant relationship between competition ranking and strength and Wrestling Training Center talent identification shows that selections are based on strength more than wrestling skills. Using wrestling competition as a method in the Wrestling Training Center selections scouting seems not to be a useful method. Basic movement or perceptual motor skills, the child's psychological characteristics and especially his or her interest and love in wrestling, along with trainability in developmental stages should be considered as selection criteria.

Further research is required to assess whether handedness and strength associated with wrestling performance, can differentiate the talented athletes through developmental stages in male and female athletes.

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INDIVIDUALIZATION OF TRAINING IN WRESTLERS

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ABSTRACT
Purpose of work: to develop a system for the individualization of the phased training for wrestlers. The system is directed to the formation, development and perfection of a wrestler's own style for competition. The synthesized system includes managing (coach) and control (athlete) subsystems. The system includes aspects of the particular external environment from two blocks: rules of competitions and scientific knowledge. These two blocks are sufficient for a full determination of the conduct of the system. Next is to describe the intercommunication between managing and guided subsystems; between the external environment and the entire system for the individualization of the phased training. The system shows that a trainer sets the managing of the affecting sportsman on to three directions: block of training activity; block of competition activity; block of extra training and extra competitive activity. Conclusion: It should be noted that the most recent rules changes (FILA) have changed the external environment in this system, and produced more challenging requirements for the development of the special endurance.
KEYWORDS: age, wrestling, systems approach, individualization, style of wrestling.

INTRODUCTION
One of main directions for the perfection of a sportsmen's training system is a maximal orientation on an individual wrestler's tendencies, likes, dislikes, and abilities. These are important when choosing a sport specialization; with the development of a whole system, even after many years of training; and the determination of rational structure for the approach to competition (10, 11). Well known specialists in wrestling assumes (2,3,9,14,16), that one of necessary conditions of successful competition activity on mat is this course of matches and tournaments, which requires the maximization of the individual's physical, psychological and technical-tactic skills and abilities of a wrestler. That is why the process of a wrestler's training shall be built in individualized way on the basis of general regularities of sportsmen's training in Olympic sports (3,4,10,16,17). If all these conditions are fulfilled, then by the stage of preparation to highest achievements, an experienced wrestler already must have an effective individual style of wrestling. Only if, an athlete conducts matches in "own style", will achievement of high international results be possible (2,6,7,8 9,10,11).

The problem of individualization of training has been the subject of much research. However, the works, devoted to wrestling touched, mainly, elite athletes and were of fragmentary character, often did not consider the effect of many years of training, as well as the stages of training (12). With it, the level and content of the research, as a rule, corresponded only to competition activity from that time.

The absence of a single system of knowledge, which unites known regulations of individualization of wrestlers training, substantially reduces possibilities of further research, especially in problems of sport selection and management. That is why the problem of individualization of wrestlers' training should be studied and solved on a systemic level.

This work was conducted within the framework of a combined plan of scientific and research in the field of physical culture and sports of Ukraine for 2011-2015. The scope of that work was the Individualization of the training process of qualified combat athletes, while this paper only considers the development of a system of individualization of training for wrestlers.

METHODS
The study involved 92 wrestlers. All athletes were wrestling for more than five years. All athletes at this stage of training have had regular medical examinations and were ready to conduct the study. In this paper we used the methods: analysis and compilation of scientific and methodological literature and internet resources, pedagogical monitoring, questioning, analysis of competitive activity, testing of physical development, system analysis, system synthesis, and mathematical statistics.

Analysis of competitive activities included the results of wrestler's activities at the Olympic Games in Atlanta (1996), Sydney (2000) and Athens (2004) and interviews with leading trainers, experts, judges, and academics. We also analyzed all of the wrestlers who took the first five places (76 matches) at the games in the Beijing Olympics (2008). Anthropometric physical and psychologically characteristics in champions of each wrestling style were evaluated. The control tests of model characteristics of physical fitness of wrestlers were defined. The relationship between the results of these tests and model-governmental performance requirements were evaluated.

RESULTS AND DISCUSSION

When building the multi-year training system for wrestlers it is necessary to know the model characteristics of a champion's abilities. However, as results of research, conducted by advanced wrestling specialists, show, that champions can have substantially different combinations of preparedness' features, and these combinations are rather stable (5,6,7). We know numerous groups of wrestlers, which have approximately similar combinations of such characteristics. These specific combinations, ensure successful activity for such a group of wrestlers and the associated wrestling style. In previous works, which were done on the basis of results from competition analysis and expert evaluations by specialists, we stated that every high class sportsman (wrestlers, who took first five places at Olympic Games) can be related to one of seven styles. Using the terminology of the coaches and wrestlers, these are: "paced in hold", "paced at distance", "player", "binder", "highly reliable", "strongman", "full-developed" (6,7). The competitive characteristics of these styles of wrestling are shown in table 1.

Table 1 Characteristics of competitive activity of typical styles of wrestling

Styles of wrestling	Reliability of attack, %	Reliability of defense, %	Activity (real attack)·min^{-1}	Effectiveness of wrestling, points · min^{-1}	
«strongman»	32	63	1.2	0.6	1.6
«full-developed»	43	66	1.1	0.7	1.3
«highly reliable»	50	80	1.0	0.7	1.6
«player»	36	73	1.4	0.6	1.1
«binder»	63	65	0.9	1.2	2.0
«paced at distance»	55	53	1.4	1.1	1.8
«paced in hold»	53	66	1.4	1.3	2.3

Using these same approaches were identified model characteristics of each of the groups of wrestlers belonging to the selected style (7). The results allowed us to go to the development of individualization phased training in wrestling, aimed at identifying the formation, development and improvement of the particular style. Development of such system in a necessary condition for the optimal management of sportsman's training in Olympic sport (3,9,10,11,14).

A systemic approach in research implies the studying of an object of interest as a system. In a gnoseological aspect – it is the construction (analysis-synthesis) of a system for the studied object (4,10). In our case the studied object – is a stage-by-stage training system for high class freestyle wrestlers, while integrating (system-formation) and additional parameter, the individualization of training, to the system. The conception of "system" takes the highest place in the hierarchy of systemic approach methodology. That is why the next step of analysis requires choosing and specifying the "system" in compliance with the research problem (4,10).

From numerous definitions of this conception, the formulation of Anokhin is the closest to our direction of research: "System is such complex of selectively involved components, whose interaction and interrelation acquire character of inter-assistance of components for obtaining of focused useful result" (1). Further, considering the main principle of systemology (4,10)) we can provide the following definition of our system as, a stage-by stage training in free style wrestling with an individualized system of periodic training.

Individualized system of periodic training - a collection of the components (components and subsystems) and their interactions in the preparation of elite wrestlers. Includes a manageable mutual assistance appointment system. Additionally, it requires the identification, formation, development and improvement of an individual style within the dynamics of phase training.

According to the general theory of training athletes in Olympic sports (3,8,10,11), the system must provide the required and effective development of the athlete based on readiness from optimal management. Thus, the individualization system of periodic training is a control system consists of the managing subsystem (guiding) and controlled subsystem (to control). Every sub-system (managed and managing) shall include those substantial elements, sub-systems and their interactions, which form a certain unity of actions and activity in the whole. In our case the marked out sub-systems and elements purposefully solve the tasks of individualization of sportsman's training in the process of mutual assistance The combination of marked out sub-systems, elements and interactions should be as small as possible (but fairly complete within the boundaries of this study) (4,10).

It is useful to present the system of individualization in the form of diagram, shown in fig. 1. External factors can be represented by the two the most significant (for present research) blocks, which mainly determine the functioning of system of individualization:

- block of rules and conditions of competitions;
- block of scientific knowledge, generalized experience of advanced practice of sport activity in free style wrestling.

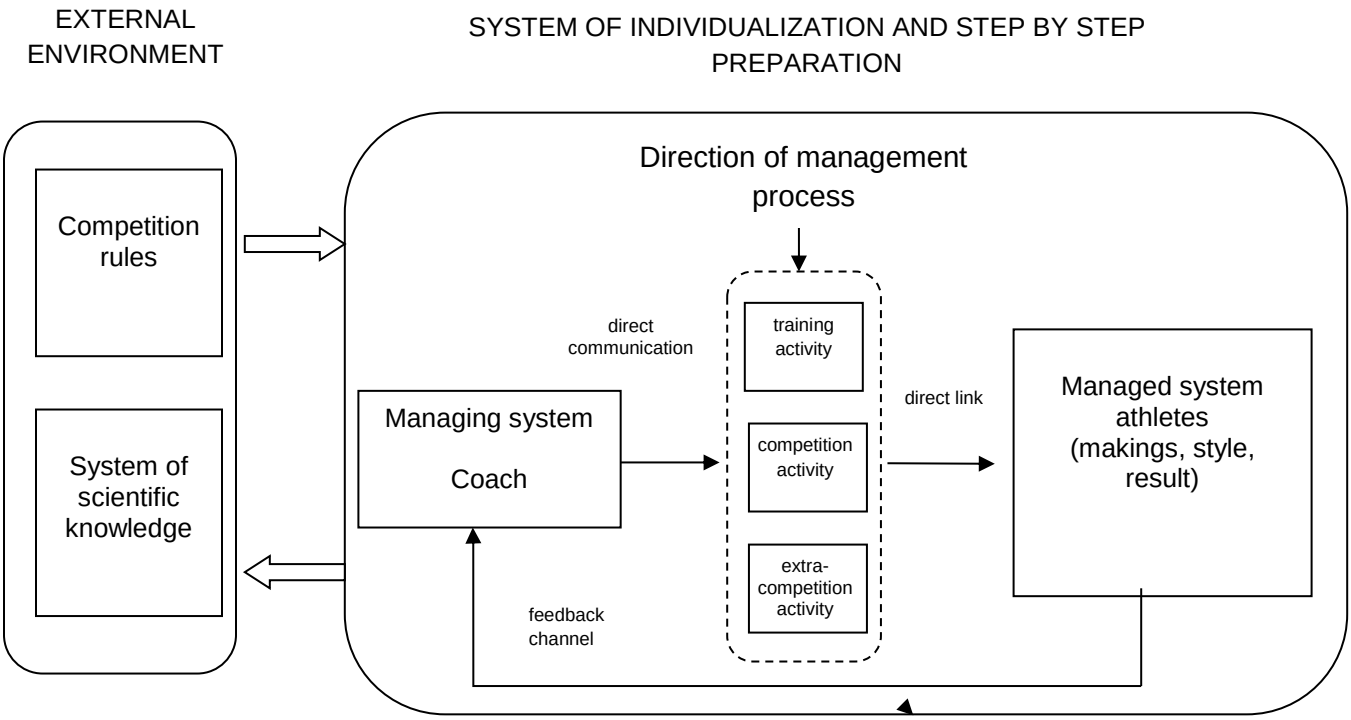

Fig. 1. Structural-logical schemes of individualization system of stage-by-stage training of wrestling

The individualization system itself consists of the managing sub-system (subject of management) – coach and managed sub-system (object of management) – sportsman. Ccoach, basing on rules of competitions, scientific knowledge and own experience set managing influence by channel of direct communication (DC) on sportsman by three directions, which are presented by three blocks:

- block of training activity (BTA);
- block of competition activity (BCA);
- block of extra-training, extra-competition activity (BETECA).

Through a feedback channel (FBC), the coach receives information about the sportsman: his tendencies and abilities, results of the cycle or stage training, level of wrestling style's formation and development, results of participation in competitions and so on.

On the basis of processing (analysis, synthesis, comparison) all information, decisions are worked out and appropriate corrections are introduced by all directions of management process (programs, methodic and means of training activity, competition activity, extra-training and extra-competition activity). External factors and the system of individualization can interact rather intensively, along with the dynamics of stage-by-stage training (see fig.1). For example, recent changes of competition rules set new, stricter requirements for the level of special endurance.

In particular, competitions in each weight category before are carried out 4-5 hours before final; during this time a sportsman conducts 4-5 matches, with rest interval between third and fourth, fourth and fifth matches can be only 15-20 minutes. Now, energy supply for competition activity is characterized by a particular dominance of the anaerobic, glycolytic component. Additionally, oxygen debt significantly increases in each match. Such changes resulted in correction of management process from all directions. For example in the block of training activity they started to pay more attention to development of special endurance and associated qualities, and changed programs and methods of training. In the block of extra-competition there is a new emphasis shifted to searching for means of more effective special active rest recreation and its stimulation, searching for new optimal diets and supplements, new methods for the reduction of the wrestlers' weight, etc.

In the block of competition activity. match tactics changed, calling for a still more rational use and saving of energy, both in the dynamics of a match and in the competition in general. In its turn the system of individualization is influenced by external factors and the International Federation of Wrestling (FILA) is constantly making changes and adjustments to the terms and conditions of the competition.

The block of scientific knowledge (external factors) determines and sets all organization and structure of training, competition, extra-training and extra-competition activity, but it's also is replenished with new knowledge, obtained from the athlete's training practice and competition.

CONCLUSIONS AND ADVICE FOR ATHLETES AND COACHES

We have developed a system of individualization of stage-by-stage training in free style wrestling, which includes managing (coach) and managed (sportsman) sub-systems. For this system external factors have been determined, which consists of two blocks: rules of competitions and scientific knowledge, which determine behavior of system sufficiently completely. We have marked out the main directions of management influences: training activity; competition activity; extra-training and extra-competition activities. Interactions both between managing and managed sub-systems and between external factors and all system of individualization of stage-by-stage training have also been stated. The prospects of further research imply development of programs of individualization of wrestlers' training for every fighting style.

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PRACTICAL MEDICAL GUIDE FOR WRESTLING COMPETITIONS LOCAL, REGIONAL OR YOUNGER AGE COMPETITIONS

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ABSTRACT
Health regulations regarding wrestling competitions are strictly defined and described by the International Federation of Associated Wrestling Styles. There are well prepared medical instructors, doctors and health providers both for the FILA (International Federation of Associated Wrestling Styles) and for the National Federations present at adult international competitions. However many competitions for younger ages or those held by local authorities supported by national federations are supervised by local medical doctors or Ambulatory Services inexperienced in wrestling. Every country has its own regulation for sport competitions but we lack a general practical guide for physicians or health care providers that could help these professionals to become familiar with wrestling.

We prepared a Practical Medical Guide for Wrestling Competitions in order to help those physicians or health care providers who are neither familiar with the wrestling rules nor with common wrestling injuries. In this guide, we listed all important medical aspects for wrestlers, referees and trainers in relations with the medical responsibility to provide acceptable medical services for these circumstances.

We defined the basic steps for medical examination by medical professionals before the weigh-in, as well as the relation with the Chief Referee, and how to behave at the mat (e.g. communication with the referees, trainers and wrestlers). We outlined when and how to help, what kind of equipment is necessary, and what the purpose of intervention is in different situations. The typical medical issues and injuries of wrestling are also listed. Moreover we strictly emphasized the various reasons and ways to suspend a bout.

INTRODUCTION
we would like to express our gratitude to you spending your valuable time and knowledge on our beloved sport. We would like to help your work with some practical advice if you are not familiar with wrestling and wrestling rules. The FILA (International Federation of Associated Wrestling Styles) has its own well described protocol for International-, Continental or World Championships (4). The present guide is for such competitions where you are the only medical staff without any other medical help.

Basic points:
- First, always introduce yourself to the Chief Referee who is a well prepared and experienced member delegated by the National Federation.
- It is useful to be familiar with the primary health care and the emergency guidelines and to follow them strictly.
- The participants must have their sport license checked by the Chief Referee without exception. The doctor–in-charge of the competition must not give permission for competing in case of missing this document and must suspend the wrestler. There may be younger wrestlers with parental permission but this must be approved by the Chief Referee, however you can overrule it and in certain cases you have the right to suspend it.

BEFORE THE COMPETITION:
Medical examination
It is a general approximately 20-30 second long examinations to eliminate obvious ailments – e.g. skin infection, fever, arrhythmia, fracture or dislocation. The inspection is independent from the sport medical license. In case of doubt or obvious contraindication of being able to compete you have to suspend the wrestler and document it.

Our advice:
- **Open wound, suture** – forbidden to compete with these ailments!

- **Nails:** long or sharp nails may cause injury (skin, eye) during the bout, so it must be controlled. You have the right to examine it and obviously suspend the wrestler from the competition but do not have the obligation to cut it (3).
- **Suspend wrestlers with contagious diseases**: skin, pulmonary, ORL (Oto-Rhino-Laryngology), etc. Mycotic skin infection may be frequent which implies disqualification (Figure 1).

Figure 1: Mycotic skin infection
(The figure is from the archives of the University of Debrecen, Medical and Health Science Center, Department of Dermatology, Debrecen, Hungary)

- **Examination of the pulse**: the large weight-, water- and mineral loss may cause a disturbance of the physiological equilibrium even in a healthy athlete. You do not need to measure all the cardiovascular functions but with a simple pulse test you can disclose major arrhythmia or pulse deficit (8,10).
- **Cardiac and pulmonary auscultation:** disclose major arrhythmic cardiovascular changes or pulmonary diseases. It is not expected from you to have the proper diagnosis under not ideal examining circumstances but in case of doubt you have the right to suspend the competitor (6).

COMPETITION:

- The organizing body must settle you to a place which is visible and easily approachable. It is good to wear a special medical uniform to be obviously recognizable. It is not compulsory to sit at the same place the whole time, you may leave your position (refreshment, sanitary reasons etc.), but you must notify the Chief Referee in advance.
- During the competition if you see a position or situation which can be dangerous for a wrestler's health even if it is left unnoticed by the referee, you can stop the bout without justification for preventing further injury (ex. laterally distorted knee, medially rotated ankle, etc.). If it is in a fall position, it automatically means the end of the bout by fall – but this is indifferent concerning the professional medical aspects.
- In case of injury, without serious complication, the referee calls you. The competitor should not leave the mat and you have to decide if the wrestler can continue or needs medical help. You do not have time limit for examination and solving the problem but you should have to tell in advance how much time your participation will take and whether the injury is reversible or not.
- If the injury is serious enough to suspend the bout, you have to decide if the wrestler needs referral to a hospital or not.
- Every medical intervention you initiate need to be recorded in written form.
- If there are no such circumstances, you are kindly asked not to enter the mat until the call of the referee.

Common situations:

- **Concussion:** First, decide about treatment and second decide about whether to let the wrestler return to compete. In most of the cases the origin of concussion may be unclear: direct trauma, secondary effect of dehydration, neck injury, hypoxia during a throw or the combination of all. To avoid the most dangerous consequences one has to follow the protocol of the so-called ABC rules of reanimation. Recline the person for free airway is the most important than to fix the neck and begin to move in case of intact consciousness and no neurological signs (2, 7, 12, 13).
- **Axial skeleton (spine) injury:** do not touch the wrestler to worsen the symptoms. Call for ambulance or put him/her into vacuum bed or place a neck orthosis depending on the site of injury (1).
- **Appendicular (extremity) skeleton injury:** reduction is not compulsory but can be measured in case of dislocation – avoid it in case of suspecting fracture-dislocation together (5).

- The referee must control the quality of the mat. A hole on it may cause serious distortions. If you notice such problem, please tell it to the referee.
- You must **not give any kind of oral medicine or treatment** to the wrestler during the bout. No medicine, no food, no drinks are allowed, and one must refuse to give them even in case of inquiry.
- **There is no time limit for the medical aid.** You have as much time as you need. But it is advised to inform the referee if the injury permits recovery. If it does not you can suspend the bout. If the situation allows it is advisable to notify how much time or you may need. The wrestler must not leave the mat during the medical interventions. In case of leaving it consequently the loss of the bout is followed.
- **Bleeding:** it is forbidden to wrestle with bleeding open wound, nose etc. (Figure 2). We strongly ask you to prepare an emergency kit for such situations that contain cotton, bandage, gloves and some vasoconstrictor which is not on the doping list. If you see blood on the competitor or on the mat you can ask to clean them / it.

Figure 2: it is forbidden to wrestle with open bleeding wound. One (deterrent) example committed by the first author: it is strongly advisable to use gloves to avoid blood-borne diseases.
(Photo by Gorgy Kovács-World Wrestling Championship 2013, Budapest, Hungary)

- **Eye injury:** the lesion of the cornea is a very common but not serious injury. It comes with tearing and the inability to keep the eyes open. In these cases we ask you to wash and cover the injured eye and refer the wrestler to the closest ophthalmology department (9).
- **Cauliflower ear:** it is a "trade mark" of wrestlers which is caused by the bleeding of the auricular cartilage. With time this blood is going to be calcificated and remains solid. Until that time it is very painful (11).
- **Creams:** may be used for raising local skin temperature ("heating"), for reducing pain or against hematomas. You may provide creams to help the competitor but it is not required from you.
- **Tape, bandage or other medical supplies:** you are not obliged to provide them after the competitors' wish. You may do it but you do not need to do it.

CONCLUSION:

The health and safety of all of the athletes is the number one priority. In any case where you suspect that the wrestler is not fit to compete you have the right to suspend him from the competition even if he has valid certification for it. This will often require your courage, as the wrestler and coach will almost always want to continue. You must tell it to the chief referee and you must document it. We also ask you to differ if it is a permanent or temporary illness or you consider further evaluation or new medical permission after further recovery.

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THE EFFECT OF RAPID AND GRADUAL WEIGHT LOSS ON SOME HEMATOLOGICAL PARAMETERS IN TRAINED WRESTLERS

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ABSTRACT

Introduction: Weight loss is a common issue among athletes, especially wrestlers. It is important that the various methods of weight loss be studied relative to the effect on athletic performance as well as the athletes' immune systems. The purpose of this study was to compare the effects of rapid and gradual weight loss methods on white blood cells in trained wrestlers.

Materials and Methods: 22 trained wrestlers (age 20-25years) volunteered to participate in the present research and were randomly assigned into one of two groups: Group 1 used rapid weight loss in a 48 h period, and Group 2 used gradual weight loss over a 12 day period. All subjects were asked to reduce 4 percent of their weight. Before and after weight loss intervention, blood sampling was performed, as well as the physical performance tests (simulated wrestling competition).

Results: White blood cells increased significantly in both groups ($p<0.05$). The amount of this increase was out of normal range in the rapid group, but remained within the normal range in the gradual group. Neutrophils increased significantly while lymphocytes decreased significantly in the rapid group ($p<0.05$).

Conclusion: Comparing these two weight loss protocols showed that the rapid weight loss method had more deleterious effects on the immune systems of wrestlers than a gradual weight loss plan.

Key Words: weight loss, white blood cell, Neutrophil, Lymphocyte, wrestler

INTRODUCTION

There is great interest in the need to improve community health through exercise. A topic attracting researchers is an understanding of the mechanisms that improve health or cause damage to the immune system during exercise (9,15) . In many cases, high-intensity exercise may induce significant changes in leukocyte distribution and function, causing a temporary impairment of immune function during the recovery period (4). Although most immune cells increase during exercise, during recovery after intense exercise, a suppressed immune system can result, and the risk of infection increases (20,21). In addition to the exercise intensity, repeated bouts of exercise with just a several hour break may also cause changes in the immune system through a nervous-hormonal-stress response. This may increase the period of risk during the recovery period (3,6,14,15). Heavy exercise causes a temporary suppression of the cellular and hormonal immune system; it causes a reduction in peripheral blood neutrophils, killer cells (natural killer cell) and lymphocytes, and it may take two weeks to recover (3,22). Hematologic indices in sports medicine are vital and necessary. These indices are used for the diagnosis, management and prevention of these deleterious effects from training (25). The effect of exercise on the hemostasis system depends on some parameters such as intensity, duration and the initial state (10). In long-term physical activity, the redistribution of body fluids occurs in order to maintain efficiency and is important in order to maintain sport skills , not only during practice and the race but also for maintaining good health (2). Many studies have been done on the effect of exercise on hematological indices that suggest different results (11). Wu et al (24) observed an increase in white blood cells after a 24-hour ultra-marathon race. Weight loss may cause a reduction in resistance to infection, such as an upper respiratory tract infection, besides a drop in athletic performance (16,22). In addition to the type and intensity of exercise, dehydration and weight loss, done repeatedly during a season of hard exercise can have adverse effects on the immune system and the ability of athletes (14). Weight loss may cause a lack of fitness and the ability to participate in the competition; the internal organs of the body including the kidneys, liver and heart are exposed to damage, so weight loss should be based on scientific principles, diet and proper training (17). Many studies have been done on the impact of rapid weight loss techniques on physiological and psychological factors in weight category sports, with little difference between the results indicating the negative effects of rapid weight loss on the above factors (7).

There has been a proposal for a new method of weight reduction in wrestlers using a gradual approach (17). The aim of this research is compare the effects of acute and gradual weight loss methods on some hematological parameters.

MATERIALS AND METHODS

This study is a semi-experimental study. From trained wrestlers living in Khorasan-Razavi province, 22 wrestlers, with a mean age of 22.5 ± 2.3 and BMI of 23.9 ± 2 volunteered to participate in the study. They were randomly assigned into two weight loss groups. Group 1 used the acute (rapid weight loss) and Group 2 used the gradual weight loss method. Blood samples were collected in three phases: before weight loss (A phase), 14 hours after the weight loss period (B phase) and after the last test (C phase). This timeline is shown in table 1. Percent of changes in plasma volume were calculated according to the Dill and Costill formula (5). Prior to weight loss and 14 h after the weight loss, body composition was analyzed using bioelectric impedance analysis. Aerobic capacity and anaerobic power were measured by the Bruce treadmill and Wingate (arms and legs) tests respectively. All subjects were required to lose 4% of their body weight. Participants in rapid group reduced their weight during 48 hours via traditional methods (severe diet, fluid restriction and using sauna). Participants in gradual group were monitored and evaluated to determine the amount and type of food intake. Then, they were asked to reduce their weight according to the Rashidlamir's method during 12 days and are shown in table 2. In this method, there are three four-day phases. In the first three days of each phase nutrition is decrease and on the day there is a return to the diet to the previous phase. In the first phase, the subjects decreased their food intake by 10% for three days (lunch and dinner) and then they returned to their usual eating habits on the fourth day (daily dietary habit before the protocol). In the second period, first they decreased their food intake by 20% for three days, then they returned to 10% on the fourth day. In the third phase, first they decreased their food intake by 30% for three days and then they returned to 20% on the fourth day. There was no limitation on drinking water and no decrease in breakfast, but the subjects avoided fat in all meals.

Table 1: Guidelines to evaluate the performance of wrestlers

<table>
<tr><td colspan="2">Pre-test</td><td>4% weight loss</td><td colspan="2">Post-test 1</td><td>Rest (20 min)</td><td>Post-test 2</td><td>Rest (20 min)</td><td colspan="2">Post-test 3</td></tr>
<tr><td>Morning</td><td>Evening</td><td rowspan="4"></td><td>Morning</td><td>Evening</td><td rowspan="4"></td><td rowspan="2">Arm Wingate</td><td rowspan="4"></td><td>Evening</td><td>immediately</td></tr>
<tr><td>Body composition</td><td>Arm Wingate</td><td>Body composition</td><td>Arm Wingate</td><td rowspan="3">Arm Wingate</td><td rowspan="3">Blood sample (C phase)</td></tr>
<tr><td rowspan="2">Blood sample (A phase)</td><td>Leg Wingate</td><td rowspan="2">Blood sample (B phase)</td><td>Leg Wingate</td><td rowspan="2">Leg wingate</td></tr>
<tr><td>Bruce Test</td><td>Bruce Test</td><td>Leg Wingate</td></tr>
</table>

Table 2: A decrease in food for wrestlers to lose weight

	1st day	2nd day	3rd day	4th day	5th day	6th day	7th day	8th day	9th day	10th day	11th day	12th day
Reduction in lunch	10%	10%	10%	eating as usual	20%	20%	20%	eating as usual	30%	30%	30%	20%
Reduction in dinner	10%	10%	10%	eating as usual	20%	20%	20%	eating as usual	30%	30%	30%	20%

PARTICIPANTS

The population of this study was the trained wrestlers with a history of at least 5 years of continuous practice. In addition they often have participated in national competitions and all of them had at least a provincial or national championship rank.

STATISTICAL ANALYSIS

The data were analyzed using Kolmogorov-Smirnov, one-way ANOVA and repeated measures tests, at the minimum significant level of p<0/05 using SPSS software(version 16).

RESULTS

The hematological test results are shown in table 3. The average of white blood cells count in both acute and gradual groups in phase B (14 hours after weight loss) did not increase significantly. However, in the acute group in phase B we observed a 4.7% increase in white blood cells as compared to the phase A (before weight loss) , however the gradual group in phase B (14 hours after the weight loss) showed a reduction of 5.4% in white blood

cells as compared to phase A (before weight loss). White blood cells in both acute and gradual groups in phase C (after the final stage of the athletic performance tests) were significantly increased (p≤0.05). This increase in white blood cells in the acute group (after the last performance test) was 53% (out of the normal range) as compared to phase A (before weight loss); on the other hand the increase of white blood cells in gradual group in phase C (after the last performance test) was 42% (in the normal range) as compared to phase A (before weight loss).

The average of neutrophils in both acute and gradual groups in phase B did not significantly increase, but in acute group, it increased by 1% in phase B, as compared with phase A; although in gradual group a reduction of 4% was observe in phase B as compared to the A phase. . However in the acute group in phase C we observed a significant increase (p≤0.05); but in the gradual group in phase C they did not significantly increase.

The average lymphocytes in both groups in phase B, did not show a significant decrease. However, there was a 1.7% decrease in the acute group in phase B as compared to phase A. Additionally, in the gradual group in phase B, there was an increase of 4.7%, as compared to phase A, but in the acute group in phase C there was a significant decrease (p<0.05); however, in the gradual group there were no significant decrease.

Table3: the average of WBC, significance level and changes in different phases

	unit	group	A phase	B phase	Sig level	Change in B phase	C phase	Sig level	Change in C phase	ref
WBC	10^9/L	Acute	7.04	7.39	P=0.44	4.7% ↑	15.19	P<0.01	53% ↑	4-11
		gradual	6.20	5.88	P=0.42	5.4% ↓	10.83	P<0.01	42%↑	
Neutrophils	%	Acute	51.09	51.60	P=0.863	1% ↑	66.45	P=0.013	30%↑1	50-70
		gradual	49.97	48.04	P=0.096	4% ↓	56.31	P=0.161	12.6%↑	
Lymphocytes	%	Acute	39.53	38.84	P=0.793	1.7% ↓	25.61	P=0.013	54.3%↓	20-40
		gradual	39.66	40.60	P=0.061	4.7% ↑	35.03	P=0.384	10.3%↓	

DISCUSSION

The results showed that the average number of white blood cells increased in both the acute and gradual groups' weight loss groups. This increase was found to be 53% (out of the normal range) and 42% (out of the normal range) in the acute and gradual groups respectively. These changes in both groups were statistically significant (p≤0.05). The possible mechanism explaining this phenomenon could be that acute weight loss is a severe physiological stress that can be associated with disorders in immune variables and individuals who are more prone to specific diseases such as upper respiratory tract infections. This issue for competitive athletes may be of particular importance. That is because they must be in the optimal physiological condition to do their best in performance (14,22).

The increase in leukocytosis in this research was similar to other studies (8,12,24), that may also be due to neutrocytosis that is affected by changes in the levels of catecholamines and cortisol (24). According to the role of neutrophil phagocytosis during inflammation and their increase, this explanation is plausible because intense exercise can cause muscle damage, and as a result of this injury, white blood cells levels are increased. It could be that some factors such as an increase in the activity of the sympathetic nervous system, increased cardiac output and changes in endothelial cells of capillaries are effective in releasing cells attached to the walls of the capillaries into the bloodstream (23). Neutrophils are also increased in both acute and gradual groups; it was statistically significant in the acute group (p≤0.05). Although lymphocyte levels decreased in both acute and gradual group, there was a significant reduction in the acute group (p≤0.05).

The increase in neutrophils has been also observed in other studies of the impact of intense exercise (13,19). The increase in the number of white blood cells in this study was associated with an increased numbers of neutrophils. Other studies have also shown that the increase in neutrophils during exercise is greater than the increase in total

white blood cell (6). In other studies, lymphocyte changes were reported to be similar to changes in white blood cells and neutrophils. That was not found in the present study our findings (18,20). Although it is generally believed that the lymphocyte count becomes elevated immediately after exercise and remains elevated for 24 hours, it decreases and reaches the lower limit of normal (6). A reduction in the number of lymphocytes is very important, as athletes are susceptible to viral infections during weight loss. In the acute group, the increase in white blood cell count may be related to stress, weight loss, physical activity, or the concentration of cells due to dehydration, (and not a reduction in the number of cells). Differences between our findings and other studies could be due to differences in the diet, the weight loss method and length of the study. Additionally, the increase in the white blood cell count can be due to increased catecholamines, particularly adrenaline and an increase in cortisol during exercise (1, 6). In some studies, the difference between weight loss, exercise and physical activity are not seen, so the theoretical effects of catecholamines and cortisol is considered as one of the strong factors in this regard (6,13). This increase can be sustained for minutes or hours after exercise and gradually return to normal levels (6,22). Imai et. al reported similar changes in two groups (weight loss and no weight loss) in judo athletes (13). Increases in WBC count and neutrophils were observed in rapid weight loss group. Rapid weight loss, as compared to gradual weight loss, has a more damaging effect on the immune system and may lead to severe repression of the immune system following this method. Therefore, we may conclude that acute weight loss can seriously threaten the wrestlers' health.

PRACTICAL ADVICE FOR COACHES AND WRESTLERS

Therefore, coaches and wrestlers are recommended to avoid acute weight loss methods and use the recommended method from this research a gradual method. With the gradual weight loss method, wrestlers can preserve their health status, successfully lose their weight, preserve their sporting performance and gain better results.

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WORDS OF WRESTLING

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Editor's note:
Liliana Kaneva is a multi-faceted official of the Bulgarian Wrestling Federation. She currently heads its International Relations, Protocol, and Public Relations departments. She is a renowned figure in the world of sports, a long-time associate of the International Wrestling Federation (FILA), founder and Executive Director of the Bulgarian Sumo Federation, co-founder and Deputy Chairman of the European Sumo Union, board member of the International Sumo Federation (ISF).

Liliana Kaneva is a lecturer, journalist, writer, artist and photographer. She has authored more than 250 works of various formats and topics. Her works have been featured in newspapers, radio stations, and television channels at home and abroad.

Liliana is the author of the FILA anthem Palestriada as well as the anthems of three other international federations and organizations. She authored the anthem of the Bulgarian Wrestling Federation, Ode to Victory and wrote the book A Wrestling Summons, which was published for the 80th anniversary of the federation. Her collection of poems has been translated into French, English, Japanese, and Ukrainian and has been featured in various anthologies and prestigious publications. She has received multiple awards for her varied literary work, including the top award of the Bulgarian Association of Writers. She is truly an ambassador for sport around the world!

I first met Liliana at the International Symposium on Traditional and Olympic Wrestling in 2012 in Kahramanmaras in Turkey. She was singing along with a professor from Kyrgyzstan a folksong about wrestling heroes! We have excerpted some of the interviews of champions done in 2012, and their heart-warming comments, that she included her book, Words of Wrestling. In this book, we see her intelligence, artistry, heart and joy that she brings to wrestling. DGC

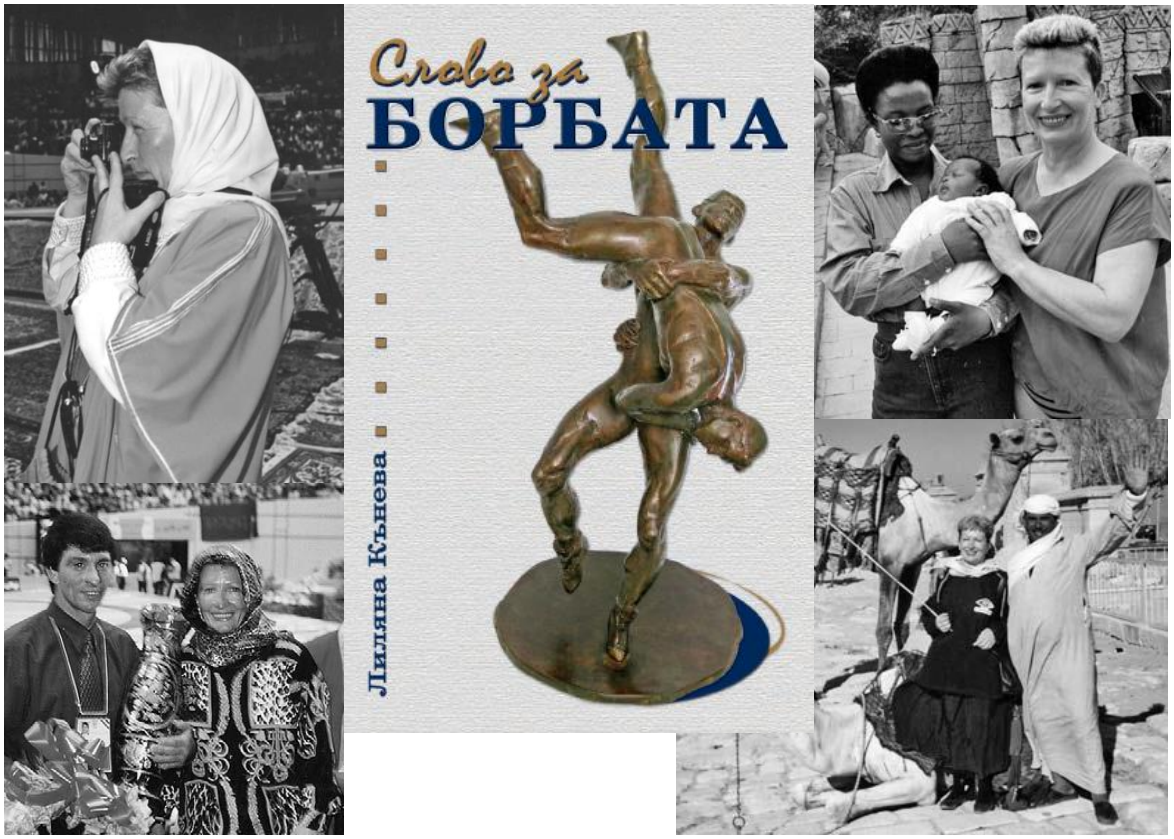

Figure 1 Liliana Kaneva is truly a world-wide ambassador for wrestling

Ivo Angelov: Two-time European vice-champion and a medal holder from World Championships. (since this interview Ivo Angelov became world and European champion in 2013)

For me wrestling is everything. It extends beyond the mat – a person has to fight for everything in life – for love, for survival, for happiness. I was in love with football as a child. My father is a miner and my mother took care of me (I have three siblings). I would visit the coach alone and he would keep sending me back – "come the day after tomorrow". Most of my classmates were training wrestling. They told me that they play football and other sports as part of their training. After the coach showed me some holds I fell in love with wrestling. I never had any regrets about football after that.

Figure 2. Ivo Angelov is hugging his coach after winning the bronze medal at the World championship in Istanbul, 2011

Most importantly I made great friendships through wrestling as well as wonderful memories; I hope for the same in the future. I will not discuss any material benefits, as it is not the most important factor.

The most exciting moment for me was the European championship in Varna in 2005, when I defeated my opponent and I realized I had become a bronze medalist.

It is a known fact that a competitor cherishes the first and the third place the most.

I remember the great support by the spectators. I get goose bumps to this day.

Another unforgettable memory is from a men's training camp where all of a sudden I was standing next to my idols – Armen Nazaryan, Nikolay Gergov, Ali Molov, and Sergey Mureiko. It was a moment of exaltation, so inspiring!

If a person believes in something and desires it wholeheartedly, sooner or later it will come true. One must however be devoted to his goals.

It does not matter what type of success it is – in sports or in business…

Mihail Ganev: Two-time World champion and medal holder from European championships.

My father, may he rest in peace, was the one who took my brother and I to train wrestling. The two of us were always wrestling, ever since we were crawling babies. When I was in the fifth grade in Veliko Tarnovo, Lako Lakov took me under his wing, later I trained with Strahil, and served my military service at Levski sports club.

It was difficult at first. I was hardly able to cover the norms, but what idols I had, out of this world: Valentin Yordanov, Buvaisar Satiev, Simeon Shterev. I dreamt of becoming a hero on the Great Mat and not on the mat of the rural town of Zlataritsa.

I must have been born with luck. At the World championship in Guangzhou in 2006, I defeated one of my idols Buvaisar Satiev. I was among the very few, who had managed to defeat him. They named me the executioner of Russians. I had a flat tire so to speak. I was unable to even secure a medal. All the good and bad things happen within a fraction of a second. I tore ligaments in my knee and had to pack my bags – I did not see the mat for two years, until 2010. That same year I reached the top – I became a World champion! I cried. In 2008 I lost my father and later a dear friend. I cried in their memory. I had promised to win a medal and I kept my promise. It is not easy, a lot of work, a lot of sweat. My coach Simo has a bag of tricks (holds) and he opens that bag daily.

We should have had this interview before a weigh in, look at me I am soaking wet!

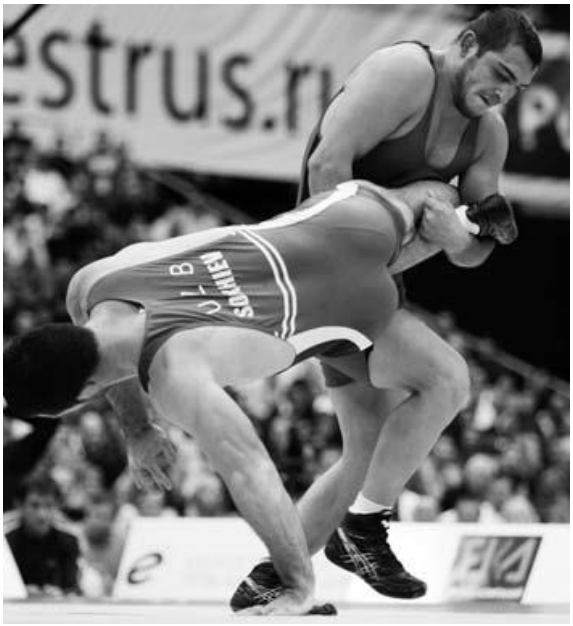

Figure 3. Mihail Ganev during the final bout for the World title, Moscow, 2011

Boyan Radev: Two-time Olympic and World champion, a renowned patron and Maecenas of Bulgarian art.

Before I became a wrestler and an art collector, I worked as a laborer at the "Republica 3" mine situated above Moshino, my village. I was breaking up coal, which went to the separation plant via conveyor belts to get sorted out. It was a very hot day. My partner and I were working atop the bunker. I was breaking the coal with an extremely heavy hammer and he was shoveling it on the conveyer belt. At that time I didn't have a passport yet. The work safety boss was from my village and arranged for me to work without a passport. This same hot day I asked my partner to go and fill up the flask with water. He responded: "You are younger, you should go". The water fountain was some 200 meters away and there was someone sitting beside it. I didn't know him but I asked him to wash my back from the coal. He washed my back and said: "You are very fit, where are you from?" I told him that before I started work at the mine I used to drive a horse cart at the state farm in Moshino. He was Todor Ivanchev, a former wrestler, who quit due to a shoulder surgery. He showed me the scar. He said to me: "I want you in the town of Pernik at the "Mir" stadium at 5pm. You are super fit; you will be a great wrestler".

Figure 4. Boyan Radev next to his bronze bas-relief.

I took the bus and went straight to the stadium. The youth coach known as Djafera ordered me "Get undressed" and handed me a pair of nylon shorts. There were no singlets back then. I wrestled an unknown boy. I used my miner and horse cart driver approach. I went into him and destroyed him. Later I found out that he was a Sofia regional champion many times.

If it were not for wrestling I would have been nobody. Back then they used to award two hundred and fifty dollars for an Olympic title. We wanted to have a place to train and to be fed. We wanted to be champions. The most important thing was to be sitting atop of the champion's ladder to the sound of the Bulgarian National Anthem. I was proud with myself, with my coaches, and with Bulgaria.

In the second "halftime" of my life I started collecting paintings. At that time I used to visit often Sofia municipality, because I needed to change my home. A municipality clerk was lying to me and to another man, who was also going there every day. I asked that man who he was. "I am a painter", he says. "If that is so let's go have some whisky and you give me a painting as a present", I responded. We sat down at the table and he told me that he was Stoyan Iliev, a student of Dechko Uzunov. We went to his studio. He told me to pick whatever I wanted. Now what? "Stoyan I know nothing about art paintings. Just give me something to hang in my house". He gave me a nice work of his. I still have it to this day. He and his wife are very close friends of mine.

All my distinctions, medals, and the rest of the items, which I have donated to Bulgaria, are exhibited at the National History Museum. There are around 200 items – icons, marble arrows, etc. Out of all my numerous awards I am most proud of the Coubertin medal, the Jacques Rogge trophy, and the FILA golden necklace. I am lacking only a distinction by the Pope. I hope this doesn't come across as me wanting a medal by the Pope!

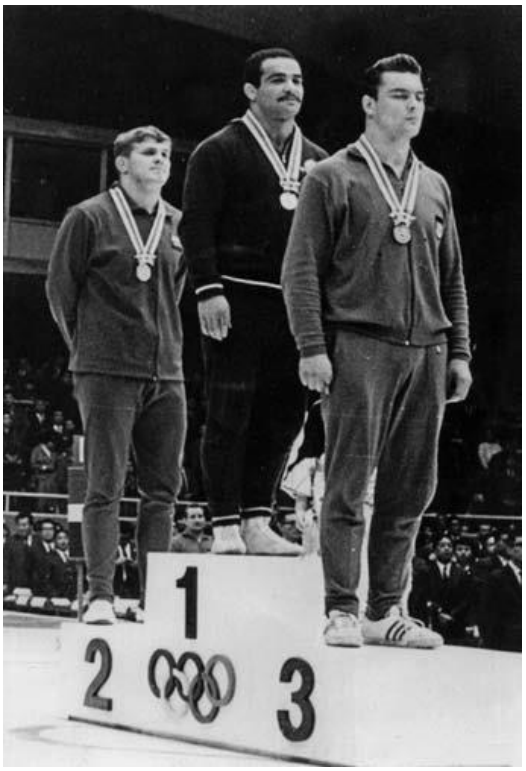

Figure 5. Boyan Radev – Olympic champion, Tokyo 1964

Wrestling helped me win the hard fights in life and to always wrestle to win. There are people, who have no pre and post history – just one "halftime" without a finish. I am not talking about a champion but about a man. The

second “halftime” of my life is quite strong and has no end. Collecting art is also an occupation for a champion. It requires persistence and the patience of a pursuer.

An athlete must compete as long as he can, he must have a drive. I have had a drive for everything I have done – to be the best dressed man, to achieve something no one else can.

Figure 6. Boyan Radev and his teammates at his house.

Artists and wrestlers honor only themselves. That being said, my idol in wrestling is Dimitar Dobrev. I am proud to have been his opponent at the age of 17 and that he was my coach during one Olympic Games and one World championship. Along with Mr. Watanabe from Japan, Hristo Traykov is also one of my idols. There is no one else like him on the wrestling mat – the greatest genius, a super talent, a unique wrestler. There will never be another one like him! Hristo is the unhappiest person in terms of athletic standing and the happiest person on the mat. Money means nothing to me, it is just paper. BBQ’s, chalga (pop folk) parties and the like - I don’t think so! When I have money I buy masterpieces and I feel light. I will collect art as long as I live and I will donate as long as I can. Is art collecting a passion? I am currently working on that answer. I will tell you in ten years.

TZENO TZENOV: President of the European Council of Associated Wrestling and FILA Bureau Member

Wrestling is my life calling, a way to be close to universal human values and to witness in person the intrinsic qualities of my peoples. Wrestling is not only a social and communal occurrence. It is most importantly a phenomenon of the overall human development.

When we are discussing wrestling, the associations, which come to mind, direct our attention to topics such as history, the psychology of a given nation, traditions or in general to anything that occupies a person’s active life.

In my case wrestling opened the door to a wonderful world, in which strength and mastery are intertwined with honor, pride, and mutual respect, a world where a wrestling bout often transforms into a friendship.

Figure 7. Tzeno Tzenov, FILA Bureau Member

Figure 8. Tzeno Tzenov is awarding Hristo Marinov at the World Championship in Moscow, 2010

I have countless memories and in order to summarize them I have to say, that all of them are connected to Bulgarian victories on the mat. I have seen plenty of pain and disappointments as well as outbursts of happiness and admiration. All these events together make up one unique memory of the thing, which makes me truly happy.

May the people, who devote themselves to wrestling, make it an inseparable part of their lives from the earliest of days till the very end.

Valentin Yordanov: Olympic, multiple World champion, multiple European champion, and President of the Bulgarian Wrestling Federation.

Wrestling is like the Universe. I have always felt part of it. The entire life of a person is a struggle – for improvement, for freedom, for victory; a struggle to save ourselves from our inner world, to save the Earth; a struggle for survival, a struggle for the future of our children…
Wrestling is a journey much like life – you never know when and how it ends. Sometimes you are infinitely happy; sometimes you are miserable, angry, impatient or desperate. I have felt it all.
I am still carrying inside the lively feeling of being on top of the Olympic ladder; when I was becoming a World and European champion or when I failed to do so and how my supporters cheered or cried along with me… The feeling was indescribable, when thousands of supporters in Teheran lined up to greet me and to even tear off a piece of my clothing.

Figure 9. Valentin Yordanov with his daughter

So many memories…
One thing I know for certain is that a person can never achieve anything alone, thus I always enjoy the successes of others as my own, because they are intertwined in one global thread, which leads to the big goal.
Almost every night I dream of wrestling as if I am reliving life.

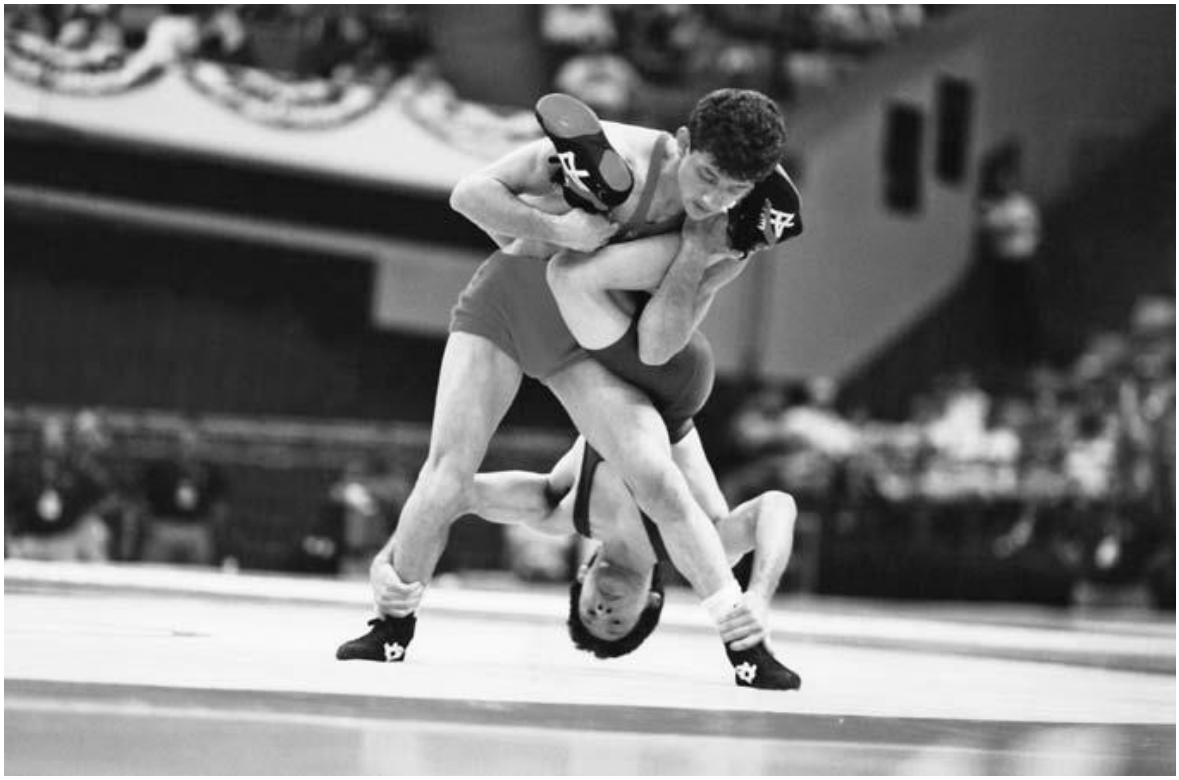

Figure 10. Out of this Valentin will come out as the winner.

ANALYZING WRESTLERS' PERCEPTIONS OF WRESTLING BY STUDYING THE METAPHORS OF THE ATHLETES FROM THE TURKISH NATIONAL TEAM

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ABSTRACT
This study aimed to explore the perceptions of wrestlers on the Turkish national wrestling team by analyzing their metaphors for wrestling. 107 athletes voluntarily participated in this study in 2013. Data were collected by asking the volunteers to fill in the blanks of the following sentence: "Wrestling is like .....since……..". In this way, it was expected that each participant would come up with a metaphor. For this study, the phenomenology research design was used and the data were analyzed using the content analysis technique. Within this scope, the analysis and interpretation of data is carried out in five stages: (1) Specifying the metaphors (2) Classifying the metaphors (3) Developing the categories (4) Ensuring validity and reliability (5) Entering data into SPSS program for the quantitative data analysis. According to the findings of the research, the participants generated 59 valid metaphors for wrestling. 10 different categories were developed by examining common characteristics of the metaphors. It was found that participants perceived wrestling as follows: As an expression of life (31 %), as a guide-ideal (19.2 %), as happiness (13.9 %), as dependence (11.7 %), as culture (10.7%), as income (9.6 %), as continuity (8.5 %), as diversity-richness (5.3 %), as strategy (5.3 %), as porterage-carrier of burdens (2.1 %).
KEY WORDS: Wrestling, athlete, perception, metaphor

INTRODUCTION

Human beings sometimes imitate other beings in nature and sometimes try to express themselves by relating their lives with those beings. Metaphors are one of these expressions. Metaphor can be defined as a figure of speech in which one concept or situation is used to describe another concept or situation (1). Metaphor is a way of thinking and perceiving (13). Metaphors are not only figures of speech and ways of perception but also figures of thought (12). They establish relations between old information and new information by finding their similarities, thus helping to explain new information in a tangible way (19). Metaphor is a powerful cognitive tool for grasping and explaining highly abstract, complex or theoretical phenomena (15). As it can be seen from the definitions, it is a figurative way of describing concepts. According to Forceville (8), three questions have to be answered before accepting something as a metaphor: 1-Which is the metaphor's target domain? 2-Which is the metaphor's source domain? 3- Which features are mapped from the source domain to the target domain? We can exemplify this relation as follows: *Metaphor's target* (like "wrestling" in the metaphor of "Wrestling is like a clock"), *Metaphor's source* (a clock) and *features that are mapped from the source to the target* (Wrestling is a sports branch that requires continuity and work like a clock). Metaphors have increasingly become the objects of studies in both local and international literatures over the last few years as more scholars were interested in the subject. The studies of following scholars can be given as examples of this trend: Inbar (11), Guerro and Villamil (9), Botha (6), Alger (3), Shaw, Barry & Mahlios (20), Forceville (8), Saban (15,16,17,18), Töremen and Döş (22), Girmen (10), Aydoğdu (4), Arslan and Bayrakçı (2), Öztürk (14) and Cerit (7). In general, these studies revealed their participants' metaphors for subjects and phenomena like "teacher", "student", "knowledge", "manager", "inspector", "school" and "culture". When the sports literature is examined, it was seen that only a few number of studies focused on metaphors. Bektaş et al. (5) studied the metaphors of youth Olympic volunteers' perceptions of the Olympics prior to the Olympics, and Şirin et al. (21) examined metaphoric perceptions of rafters with regard to rafting. Seeing metaphor as a tool for perception, a way of thinking and perceiving, a medium for constructing or building reality (23) can contribute to problem-solving by offering a different perspective for the existing problems in the field of sports. In this respect, this study, which was carried out with wrestlers, can provide cues for understanding and unearthing the athletes' expectations and motivations for entering this branch of sports.

The Purpose of Study

The general purpose of this research was to explore the ideas of wrestlers, who have actively wrestled on the Turkish national wrestling team, with regard to wrestling by studying their metaphors. Within the scope of this general purpose, we sought to answer the following questions:

1. Which metaphors did participants use for expressing their perceptions of "wrestling"?
2. Into which categories did participants' metaphors fall, with respect to their common characteristics?

METHOD

The Scanning model was used for this research, which aimed to explore the Turkish national team wrestlers' perception of "wrestling". A qualitative approach was chosen for the study. The wrestlers' metaphors for wrestling were collected with an open-ended questionnaire and described accordingly. 107 people participated in the study. They were randomly selected from the athletes who have actively wrestled for Turkish National Wrestling team in 2013.

Collection and Analysis of Data

An open-ended questionnaire form was prepared for exploring the wrestlers' perceptions of wrestling. The questionnaire form was finalized after it was reviewed by the experts. In the form, athletes were asked to fill in the blanks: "Wrestling is like…….since……..". Participants' metaphors were analyzed using content analysis. Meanwhile, frequency values were given for the metaphors that were generated. The analysis and interpretation of the metaphors were carried out in five phases: "determination of the metaphors", "classification of the metaphors", "developing categories", "ensuring validity and reliability" and "entering data into SPSS package program for quantitative analysis". When specifying the metaphors, we took following factors into consideration: Participants' specific reference to the metaphor, a relation with the metaphor, no definition allowed in the metaphors. In the stage of classifying the metaphors, they were sorted temporarily by considering the relation between metaphor's source and target. While some metaphors were used only by one participant, some of them were uttered more than one athlete. While some metaphors mentioned more than once were in the same category, some of them were in different categories due to the different point of views. Thus, in total, 107 metaphors with 59 codes were specified. Frequency values for these specified metaphors were calculated. Generated metaphors were categorized according to the relation between the target and source. These categories and metaphors were submitted to two experts (except the researchers) for review in order to ensure validity and reliability of the research. The experts examined the created categories and the metaphors that fell into these categories. The frequencies and the codes of participants' metaphors were indicated in the chart, the categories and the metaphors within these categories were shown in the table, and they were interpreted by quoting the athletes directly.

FINDINGS AND INTERPRETATIONS

In this section, the findings on participants' metaphors for "wrestling" were presented in tables according to the research questions and they were interpreted by quoting the participants directly.

Findings on participants' metaphors for "Wrestling"

The participants used 59 *valid metaphors* for "Wrestling". 29 metaphors out of total 59 metaphors were generated by a single participant, which are; guy, guy thing, love, mirror, care, grocery, Beşiktaş, will not be given up, sweetheart, flower basket, dance, man, heroin, marriage, Galatasaray, beautiful, air, life, light, job, logic, fruit, breath, chess, our darling, cigarette, food, bravery, manliness and heart. Following metaphors were mentioned more than once; *life (f=17), love (f=6), everything (f=5), ancestor, ancestor sport, occupation (f=4), way of life, water, love, clock, market, way of living, tradition (f=3),work of laborer, mother, our ancestor sport, heart, school, prophet's sport, life, life style (f=2). As it can be seen above, the participants used a plethora of metaphors for the concept of wrestling.*

Table 1. Valid metaphors used by the participants for the concept of "Wrestling", the number and percentages of participants representing them

Metaphor number	Metaphor	Frequency (f)	Percentage (%)	Metaphor number	Metaphor	Frequency (f)	Percentage (%)
1	Guy	1	1.06	27	Is life	1	1.06
2	Guy thing	1	1.06	28	Everything	5	5.03
3	Work of laborer	2	2.12	29	Light	1	1.06
4	Mother	2	2.12	30	Work	1	1.06
5	Love	6	6.36	31	Heart	2	2.12
6	Is love	1	1.06	32	Logic	1	1.06
7	Ancestor	4	4.24	33	Market	3	3.18
8	Ancestor sport	4	4.24	34	Occupation	4	4.24
9	Our ancestor sport	2	2.12	35	Fruit	1	1.06
10	Mirror	1	1.06	36	Breath	1	1.06
11	Care	1	1.06	37	School	2	2.12
12	Grocery	1	1.06	38	Prophet sport	2	2.12
13	Beşiktaş (name of team)	1	1.06	39	Clock	3	3.18
14	Will not be given up	1	1.06	40	Health	1	1.06
15	Sweetheart	1	1.06	41	Chess	1	1.06
16	Flower basket	1	1.06	42	Love	3	3.18
17	Dance	1	1.06	43	Our darling	1	1.06
18	Man	1	1.06	44	Cigarette	1	1.06
19	Heroin	1	1.06	45	Water	3	3.18
20	Marriage	1	1.06	46	Living	2	2.12
21	Galatasaray	1	1.06	47	Way of living	3	3.18
22	Tradition	3	3.18	48	Life style	2	2.12
23	Beautiful	1	1.06	49	Food	1	1.06
24	Air	1	1.06	50	Bravery. Manliness	1	1.06
25	Life	17	18.02	51	Heart	1	1.06
26	Way of life	3	3.18				
Total						107 (f)	100 (%)

The categories of participants' metaphors for the concept of "Wrestling"

Participants' metaphors for the concept of "Wrestling" were put into 10 categories, which are; *Wrestling as an expression of **life**, Wrestling as **a guide-an ideal**, Wrestling as an expression of **happiness**, Wrestling as an expression of **dependence**, Wrestling as an expression of **culture**, Wrestling as **income**, Wrestling as **continuity**, Wrestling as an expression of **diversity-richness**, Wrestling as a **strategy** and Wrestling as a **porterage-carrying life's burdens***. The categories of participants' metaphors for *"Wrestling"* were shown in table 2.

Table 2. Categories of Participants' Metaphors for the Concept of *"Wrestling"*

Categories	Metaphors	Metaphor *f* (%)	Codes of Metaphors
1.Wrestling as an expression of life	Life (13), way of life (5), living (2), love (2), everything (2), life style (1), water (1), fall in love (1) health (1), is life (1)	29(31.0)	10
2. Wrestling as a guide-as an ideal	Ancestor (4), Mother (2), Prophet's sport (2), guy (1), guy thing (1), mirror (1), care (1), man (1), air (1), everything (1), light (1), bravery-manliness (1), heart (1)	18 (19.2)	13
3.Wrestling as an expression of happiness	Fall in love (6), our darling (1), beautiful (1), love (1), way of life (1), dance (1), sweetheart (1), marriage (1)	13 (13.9)	8
4.Wrestling as an expression of dependence	Water (2), Beşiktaş (1), Galatasaray (1), Will not be given up (1), heroin (1),life (1), breath (1), cigarette (1), life style (1), food (1)	11(11.7)	10
5.Wrestling as an expression of culture	Ancestor sport (4), tradition (3), our ancestors' sport (2), everything (1),	10 (10.7)	4
6.Wrestling as an expression of income	Occupation (4), market (3), grocery (1), job (1)	9 (9.6)	4
7.Wrestling as an expression of continuity	Clock (3), life (3), heart (2)	8 (8.5)	3
8.Wrestling as an expression of richness-diversity	School (2), flower basket (1), everything (1), fruit (1)	5 (5.3)	4
9.Wrestling as an expression of strategy	Logic (1), chess (1)	2 (5.3)	2
10.Wrestling as an expression of porterage	Work of laborer (2)	2 (2.1)	1
	Total	107	59

Conceptual Categories

Category 1. Wrestling as an expression of life This category comprised of 10 metaphors used by 29 participants (31.0%), who identified wrestling with life and saw it as life or a part of life. When the frequency distributions (the number of participants) of the metaphors in this category were examined, the most used metaphors were as follows: *life (13), way of life (5), living* (2), *affection* (2), *everything* (2), *life style* (1), *water* (1), *is love* (1), *health* (1), *is life* (1). The participants' sentences within this category were indicated below:

"Wrestling is like life since it can be lived but cannot be told."
"Wrestling is like a way of life since it gives a meaning to our lives."
"Wrestling is like everything since life is so simple without it."
"Wrestling is like love since it can't be made without love."

Category 2. Wrestling as a guide-as an ideal This category of wrestling as a guide-as an ideal horizon comprised of 13 metaphors of 18 participants (19.2%). The most used metaphors in this category (based on frequency distributions) were as follows: *ancestor (4), mother (2), Prophet's sport (2), guy (1), guy thing* (1), *mirror* (1), care (1), man (1), air (1), everything (1), light (1), bravery, manliness (1) and heart (1). Some participants' statements in this category were noted below:

"Wrestling is like an ancestor since I love it".
"Wrestling is like a mother since it organizes one's life".
"Wrestling is like a guy since it's a hell of guy. It can't be described but can be lived".
"Wrestling is like Prophet's sport since it works out whole body."
"Wrestling is like a mirror since it reflects the conditions of life".

Category 3. Wrestling as an expression of happiness This category was composed of 8 metaphors used by 13 participants (13.9%), who saw wrestling as an expression of happiness. When we looked at the frequency distributions of metaphors within this category, the most used ones were respectively as follows: Fall in love (6), our darling (1), beautiful (1), love (1), way of life (1), dance (1), sweetheart (1), marriage (1). Participants' some statements within this category were as follows:

"Wrestling is like falling in love, since not everybody could fall in love".
"Wrestling is like love since lovers are attached to each other for a life time".
"Wrestling is like marriage since you are happy in every second of it".
"Wrestling is like dance since it is fun".

Category 4. Wrestling as a form of dependence 10 metaphors fell into this category, which was constituted by 11 participants (11,7 %), who saw wrestling as a form of dependence. When their frequency distributions were checked, the most used metaphors were as follows: Water (2), Beşiktaş (1), Galatasaray (1), will not be given up (1), heroin (1), life (1), breath (1), cigarette (1), life style (1), food (1). Some participants' statements within this category were indicated below:

"Wrestling is like water since I can't live without wrestling".
"Wrestling is like Galatasaray since you can't give it up".
"Wrestling is like breathing since you depend on it as you take it".
"Wrestling is like food since we need it".

Category 5. Wrestling as an expression of culture As it can be seen from the table 3, this category comprised of 4 metaphors and 10 participants (10.7%). The most used metaphors in this category (based on their frequency distributions) were as follows: Ancestor sport (4), tradition (3), our ancestors' sport (2), everything (1). Some participants' expressions within this category were given below:

"Wrestling is like ancestor sport since its brave".
"Wrestling is like a tradition since it's our ancestors' sport".

Category 6. Wrestling as income 4 metaphors and 9 athletes (9.6%) were in this category of wrestling as income. Depending on their frequency distributions, the most used ones were respectively: Occupation (4), market (3), job (1). Some participants' expressions within this category were indicated below.

"Wrestling is like an occupation since it helps us to make money".
"Wrestling is like a market, since it works up to some point and then stops working".
"Wrestling is like a job since it brings material and spiritual gains".

Category 7. Wrestling as an expression of continuity 3 metaphors and 8 athletes (8.5 %) were in this category, which was constituted by the participants who saw wrestling as continuity. Depending on the frequency distributions, most used metaphors in this category were as follows: Clock (3), life (3), heart (2). Some participants' sentences within this category were cited below:

"Wrestling is like a clock since you have to work non-stop".
"Wrestling is like a heart since it won't beat without working".
"Wrestling is like life since we're always in a struggle".

Category 8. Wrestling as an expression of richness-diversity This category comprised of 4 metaphors and 5 athletes (5.3%), who saw wrestling as an expression of richness-diversity. When the frequency distributions were checked, the most used metaphors were as follows: School (2), flower basket (1), everything (1), fruit (1). Some participants' expressions within this category were indicated below:

"Wrestling is like a school since there are people from each class".
"Wrestling is like a flower basket since it has all kinds of flowers".

Category 9. Wrestling as an expression of strategy This category comprised of 4 metaphors and 5 athletes (5.3%), who saw wrestling as an expression of strategy. When the frequency distributions of metaphors within this category were examined, the most used ones were logic (1) and chess (1). Participants' statements under this category were given below:

"Wrestling is like logic since the one who doesn't act logically will be defeated".
"Wrestling is like chess since not everybody can play chess".

Category 10. Wrestling as a porterage There was a 1 metaphor and 2 athletes (2.1%) in this category that was constituted by those who saw wrestling as a porterage. When the frequency distribution was checked, there was one metaphor: Work of laborer (2). Here below the participants' statements within this category:

"Wrestling is like a work of laborer since it is heavy".

"Wrestling is like a work of laborer since it is a very heavy work".

CONCLUSION AND RECOMMENDATIONS

This study aimed to explore the perceptions of wrestlers' who have actively wrestled for the Turkish national wrestling team and to classify their perceptions of wrestling under certain conceptual categories. According to the findings of the study, the participants generated 59 valid metaphors with respect to wrestling. After examining the common characteristics of these metaphors, 10 different categories were created. In this study, it was found that participants saw wrestling as follows: 31 % of the participants as an expression of life, 19.2 % of the participants as a guide-an ideal, 13.9 % as an expression of happiness, 11.7 % as an expression of dependency, 10.7 % as an expression of culture, 9.6 % as a source of income, 8.5 % as an expression of continuity, 5.3 % as an expression of richness-diversity, 5.3 % as strategy and 2.1% as porterage. When the athletes' metaphors for wrestling were examined, it was found that the most used metaphors were *life* (f=20), *love* (f=6), *everything* (f=5) as unique findings of this study.

When we categorized the participants' perceptions of wrestling, we saw that most of the metaphors fell into the categories of "life" and "guide". While 31 % of the athletes equated wrestling with life, 19.2 % of them associated it with a guide or an ideal. This result showed that participants perceived wrestling as a way and philosophy of life. The least used metaphor categories were "strategy and porterage".

In conclusion, for sports scientists, findings of this research revealed important clues for exploring, understanding and explaining the athletes' personal perceptions of wrestling. In line with this, metaphors can be used as a powerful *research tool* for unearthing, understanding and explaining the mental images of wrestlers with respect to wrestling. Furthermore, required changes on participants' perceptions of wrestling can be studied considering the educational aims of wrestling, which is one of the combat sports. These metaphors and studies like this are important guides that can bring us new perspectives for combat sports in general and wrestling education in specific. Considering the fact that participation in combat sports differs from participations in other sport branches, wrestling branch requires mental images. In combat sports, it's important to explain this complicated situation with the help of metaphors. Starting from this thought, we recommend that similar studies can be undertaken or repeated for other branches of the combat sports' (taekwondo, boxing, judo and karate) athletes and trainers. Researchers who would like to prepare lists or scales of metaphors can use the metaphors found in this study as a source.

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PERCEPTIONS OF DOPING FROM WRESTLERS OF THE TURKISH NATIONAL TEAM USING THE METAPHOR METHOD

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ABSTRACT
This study was conducted to identify the perception of previous and current wrestlers of the Turkish National Wrestling Team about the concept of "doping". The general aim of the present study is to determine the Turkish wrestlers' views about the concept of "doping" through metaphors. In 2013, 108 wrestlers were randomly selected from active and previously active wrestlers on the Turkish National Wrestling Team, to participate in this study. The metaphors produced by the participants related to the "doping" concept were examined by the content analysis method, the frequency of each metaphor was identified and the categories were formed. In this context, the analysis and interpretation of the metaphors were achieved by the following four steps: (a) identification of the metaphors, (b) classification of the metaphors, (c) formation of the metaphors, (d) reliability and validity analyses. In the study, the wrestlers produced 106 metaphors related to the concept of "doping". Based on their perceptions of doping, "avoidance", "awareness", "acceptance", "exclusion", "weakness", and "ambition" categories were formed. Results have shown that the wrestlers perceive the concept of "doping" as something to be avoided; they are aware of its positive and negative consequences; they think that its use can be acceptable; they think that they would be excluded if they dope; they perceive using doping as a weakness and being inefficient; and they see ambition as passion.
KEY WORDS: Doping, metaphor, perception

INTRODUCTION
Metaphor is an expression in which a person describes a concept or a case by using comparisons from his/her perception. “Metaphor” has many definitions and it was derived from the Greek word “Metapherein”. “Meta” means to change and “pherein” means to carry, (14) and the word “Metaphor” was used to mean “to carry something from one place to another place”. Metaphor is not only a thought material, type of a human conceptualization and a speech figure but also it is thought figure (13). Metaphors are one of the most powerful mental tools that structure, direct and control our thoughts about generation and processing of the events. Metaphors are also defined as “language of experiences” due to they give meaning to the individual’s own experiences (17). From this aspect, metaphors direct, light, and guide our practices.

“We don’t have a choice whether we think in metaphors or not. Metaphorical matches are part of our brain, and we think and speak metaphorically whether we want or not. Since metaphoric processes are mostly unconscious we think and speak with metaphors even we become aware or not. Moreover, since our brains materialize things, our metaphors reflect our usual experiences in life” (13).

Metaphors provide us with the opportunity to build abstract and detailed in advanced level. Metaphors are one of the most important tools to try to partly comprehend things, emotions, aesthetic experiences, ethical practices and mental consciousness that we couldn’t understand entirely. They give opportunity to deductions used for motor emotional and other areas. Since we reason based on metaphors they mostly determine how we live our lives (13).

Metaphors are efficient tools to improve learning. If we want to discover something we first must imagine it. Metaphors might enable someone to be creative and to discover because metaphors are tools to form clear ideas in our minds, rather than unclear concepts in our imagination. Metaphors have the power to change our conceptual systems and to change students’ world views (2). Metaphors can be used in different areas of education. Research in general shows how concepts or events in education and education management are explained with metaphors by experimental group participants. These metaphors are used as tools to encourage learning, improve and plan creative thinking, guide education practices and to identify position of educators in modern education perception (11,10, 17, 20, 2, 16, 8, 21, 18, 4, 1, 19, 22, 3, 6, 7, 9, 24, 12). As for the literature

related to sports, we see that metaphor concept has not been used much, but Bektaş et al. investigated Olympic-related perceptions of 2011 European Young Olympics volunteers by using a metaphor method (5). Metaphor is seen as a tool to create and form reality; it is a style of thinking and vision and a perception tool (25). Therefore, metaphors might contribute to solving problems in sports from different point of views, and also solve associated problems. Today, doping is the most common phenomenon against fair play in sports. Doping is against the fair play principle and doping means disobeying this principle. Thus doping in sports is an important problem that is destructive to sports ethics.

It should be noted that beyond its associated small or high health problems, doping has a destructive aspect for moral values and it is counter to sports ethics. Therefore, studies related to doping that use sportsmen, with their level of knowledge about doping, and their views about doping, can contribute to solving problems associated with doping. To date, there is no such studies involving Turkish sportsmen and such a study could contribute to what we know about doping. Moreover, metaphors found from this study should be used by other researchers who would prepare metaphor lists and scales regarding doping.

The aim of the study

The general aim of the present study is to identify the perception of previous and current wrestlers of the Turkish National Wrestling Team about the concept of "doping" with metaphors Within this framework, the following questions are asked:

1. Which metaphors are used by previous and current wrestlers of the Turkish National Wrestling Team to explain their perceptions about doping?
2. Under which categories are metaphors related to “Doping” produced by previous and current wrestlers of the Turkish National Wrestling Team grouped, based on their common properties?

METHOD

The present study aiming to identify the perception of previous and current wrestlers of the Turkish National Wrestling Team about the concept of "doping” was conducted as a screening type study. In this study, a qualitative research approach was used. Metaphors used by previous and current wrestlers of Turkish National Wrestling were described based on data collected with open ended questionnaires. The study group consisted of 108 randomly selected wrestlers who were still active or previously active in the Turkish National Wrestling Team in 2013.

Data Collection and Analyses

An open ended questionnaire form was prepared to identify the perceptions. The form was prepared and its validity confirmed through an evaluation by wrestling experts. In the form, wrestlers were asked to complete this sentence: “Doping is like ..... Because .....” Metaphors related to sportsmen’s views about doping were analyzed by content analysis. At the same time, frequency values of the metaphors produced were recorded. The process of metaphor analysis and interpretation was conducted within the following four steps a.- “identifying metaphors”, b.- “classifying metaphors”, c.- “developing category” and d.- “reliability and validity analyses”. In identifying metaphors related to doping, attention was given to the following criteria: a.- participants should clearly state the metaphor, b.- metaphors shouldn’t include definition and c.- metaphors should be related. In classifying metaphors, subject, source and subject-source relation are considered to classify the category temporarily. After the analyses, 108 metaphors were accepted and metaphors produced by 2 participants were disregarded because they were not based on a logical argument. Some metaphors were represented by 3 sportsmen some were represented by 43. Frequency values of metaphors were calculated. Metaphors were categorized based on their subject and relation to their source, and 6 categories were formed. Validity of the categories was confirmed by two experts other than the researchers. Experts investigated the categories and their associated metaphors and appropriate quotations. Frequency values of metaphors related to doping were presented in table, some of the categories and their associated metaphors were demonstrated by figures and they were interpreted by using direct quotations from sportsmen.

RESULTS AND INTERPRETATIONS

In this section, metaphors were presented with tables and categories were shown with figures, and we interpreted each. Table 1 contains metaphors produced by wrestlers in alphabetical order with their frequency values.

Table 1. Distributions of Metaphors Produced by Wrestlers

M Number	Metaphor	*f*	M Number	Metaphor	*f*
1	Avoidance to Ethics	1	28	Bad Item	1
2	Alcohol	5	29	It is bad	2
3	Anti-Doping	1	30	Rightful due	3
4	Very Bad	2	31	Something bad	5
5	Discipline Punishment	1	32	Angel	1
6	Energy	1	33	It is a must	3
7	Early Development	1	34	dirt	1
8	Inequality	2	35	Harmful for health	1
9	Fanta	1	36	Unfair earning	1
10	Fenerbahçe (sport club)	1	37	Unhealty life	1
11	Necessary	5	38	Cigarette	8
12	Unnecessary	3	39	Cigarette, Alcohol, Drug	1
13	Weakness Laziness	1	40	Cigarette & Alcohol	1
14	Lack of trust	1	41	Cigarette & Heroin	1
15	Unfair Earning	2	42	Cigarette & Alcohol	3
16	Unfair treatment	5	43	Water	1
17	Dream	1	44	Crime	1
18	Figment of the Imagination	1	45	Thrown Game	3
19	Ambition	3	46	Shame	1
20	Stealing	6	47	Drug	1
21	Deception	3	48	Artificial	1
22	Alcohol Drink	3	49	I didn't do	1
23	Drug	2	50	Harm	1
24	Drug, dangerous	1	51	Harmful	3
25	Good	1	52	Weed	1
26	Cheating	1	53	Poison	3
27	Bad	2	54	Wrong	1

As shown in Table 1, 108 sportsmen produced 54 metaphors related to their doping perception. Sportsmen explained their views about doping with these metaphors and they related these metaphors with wrestling. Among these metaphors mostly stated were cigarette, stealing, bad thing, unfair, necessary, alcohol, unnecessary, ambition, cheating, alcohol drink, rightful due, a must, cigarette alcohol, thrown game, harmful, poison, very bad, inequality, unfair earning, drug, bad, it is bad and they were represented more than once.

Most of these metaphors are clear concepts. It can be argued that doping is very influential in sports because sports can explain doping with many different metaphors. Categories formed based metaphors produced by sportsmen were demonstrated with Figure 1.

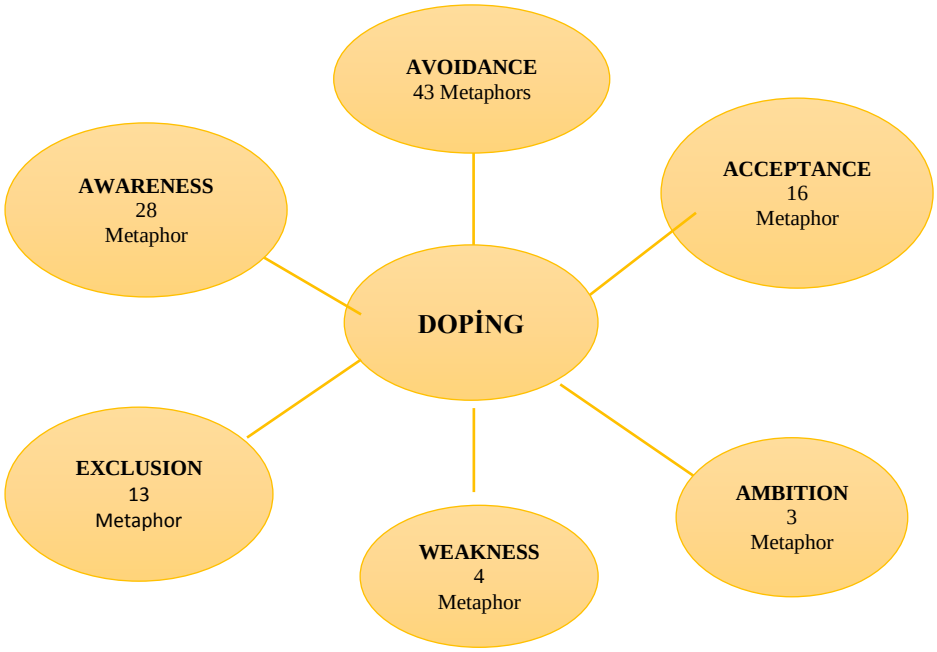

Figure 1. Categories formed related to perceptions of sportsmen about *doping*

As shown in Figure 1, “avoidance”, “awareness”, “acceptance”, “exclusion”, “weakness”, “ambition” categories were formed based on metaphors produced by sportsmen. In forming these categories, metaphors stated by sportsmen and their relation to doping were considered. Some of the metaphors belong to “avoidance” category were shown in Figure 2.

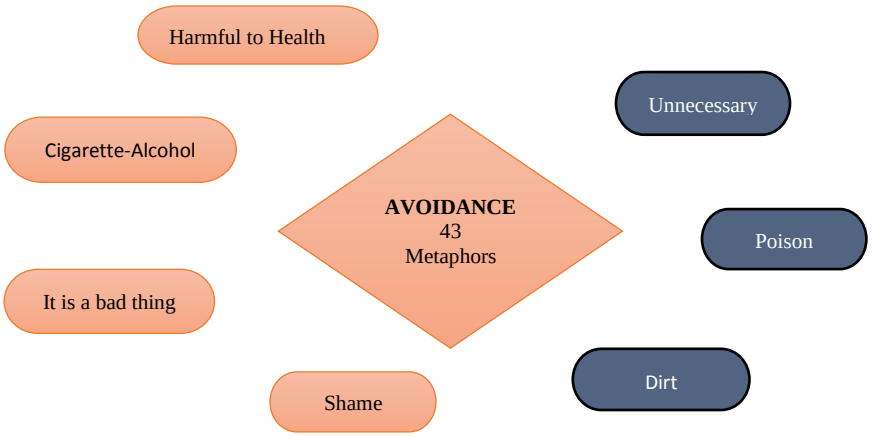

Figure 2. Avoidance

As presented in Figure 2, cigarette, alcohol, unnecessary, it is bad thing, poison, it is harmful to health, dirt, shame metaphors formed Avoidance category. Sportsman who defines doping as cigarette states his view as *“Doping is like cigarette. Because it is harmful to health”.* Sportsman who defines doping as unnecessary states his view as *“Doping is unnecessary. Because anything that provides convenience to body detracts something from the body”*. Sportsmen who define doping as bad states his view as “*Doping is like a bad thing. Because it ends life and sport.”* Sportsmen who define doping as poison states his view as “it falls somebody’s life apart”. Sportsman who defines doping as harmful to health states his view as *“chemical”*. Sportsman who defines doping as dirt states his view as *“dirty sports life”*. Sportsman who defines doping as shame states his view as *“take away self-esteem”*. Based on these metaphors, it should be understood that doping with its every form should be avoided. Metaphors belong to awareness category were demonstrated in Figure 3.

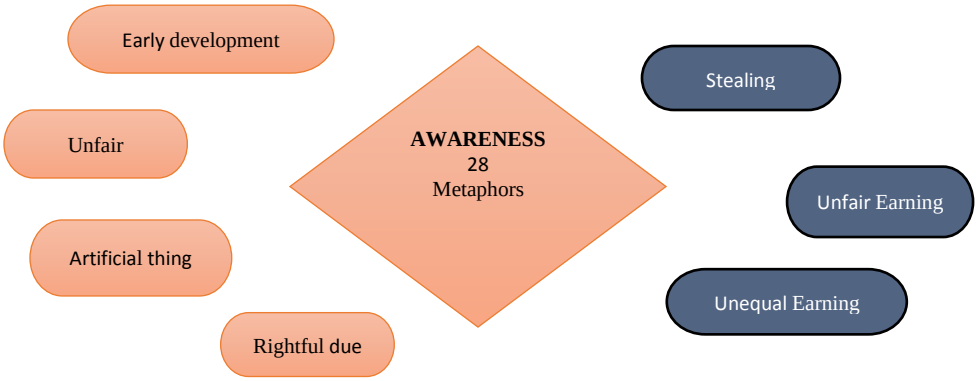

Figure 3. Awareness

As presented in Figure 3, early development, unfair earning, inequality, stealing, rightful due, unequal earning, artificial thing metaphors formed Awareness category. Sportsman who defines doping as early development states his view as *"Doping is like an early development. Because it is useless".* Sportsman who defines doping as unfair earning states his view as *"it ends competition".* Sportsman who defines doping as inequality states his view as "*cheating somebody of other sportsman's rights".* Sportsman who defines doping as rightful due states his view as "*it provides unfair earning*". Sportsman who defines doping as unfair earning states his view as *"illegitimate money"*. Sportsman who defines doping as artificial states his view as *"collapses by time"*. Based on these metaphors, it should be understood that all sportsmen know the functions and consequences of using doping. Metaphors belong to acceptance category were demonstrated in figure 4.

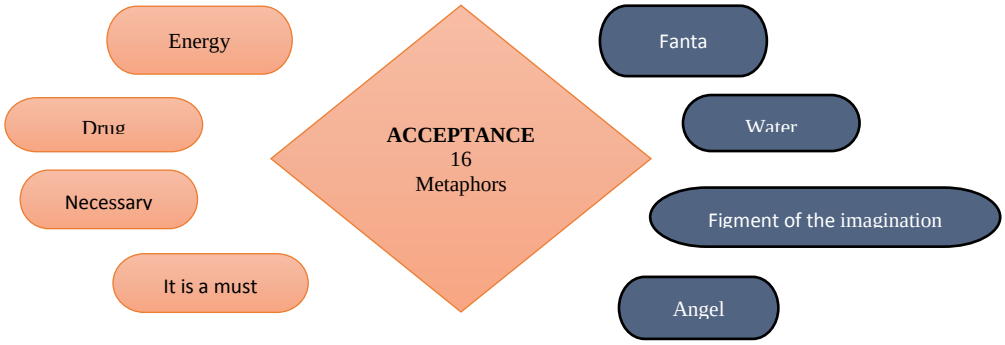

Figure 4. Acceptance

As presented in Figure 4, energy, Fanta, necessary, figment of the imagination, drug, angel, it is a must, and water metaphors formed Acceptance category. Sportsman who uses Fanta metaphor states his view as *"the more you drink the more you want to drink"* Sportsman who defines doping as necessary states his view as *"There is no sportsman who has never used doping"*. Sportsman who defines doping as figment of imagination states his view as "*Success is meaningless without using doping"*. Sportsman who defines doping as drug states his view as "*it is taken*". Sportsman who defines doping as angel states his view as *"it is unseen"*. Sportsman who defines doping as must states his view as *"there is nothing to do"*. Sportsman who defines doping as water states his view as *"you can't do without it"*. Based on these metaphors produced by sportsmen under the influence of brilliance of championship and medal, it should be understood that sportsmen think that doping usage should be accepted. Metaphors belong to exclusion category were demonstrated in Figure 5.

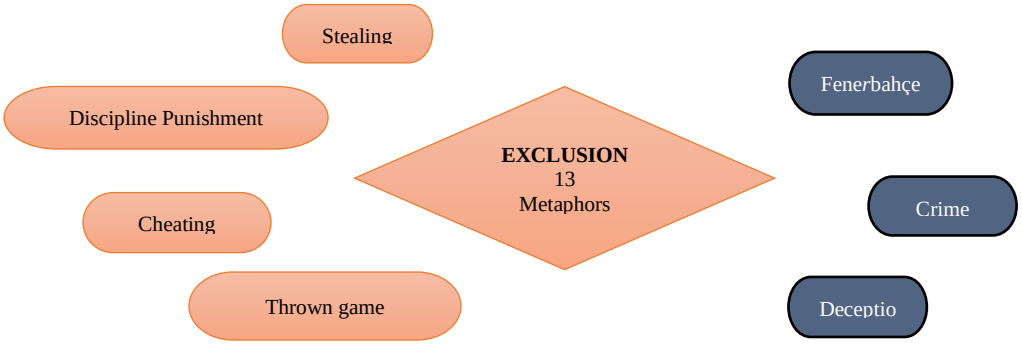

Figure 5. Exclusion

As presented in Figure 5, discipline punishment, Fenerbahce, stealing, deception, cheating, crime and thrown game formed Exclusion category. Sportsman who defines doping as discipline punishment states his view as *"Doping is like discipline punishment. Because it sends people away from school".* Sportsman who defines doping as Fenerbahce (Turkish soccer team) states his view as *"you wouldn't want to use it"*. Sportsman who defines doping as stealing states his view as "*stealing rights"*. Sportsman who defines doping as deception states his view as "you cannot succeed with deception". Sportsman who defines doping as cheating states his view as *"stealing from other's rights"*. Sportsman who defines doping as crime states his view as *"harms people"*. Sportsman who defines doping as thrown game states his view as *"it represents unfairness"*. Based on these metaphors, it can be said that when sportsmen use doping they know what to expect and they would be excluded. Metaphors which belong to weakness category were demonstrated in Figure 6.

Figure 6. Weakness

As presented in Figure 6, escape from ethics, inequality, weakness laziness, mistrust formed Weakness category. Sportsman who defines doping as escape from ethics states his view as *"Doping is like escaping from ethics. Because weaks use it".* Sportsman who defines doping as inequality states his view as *"when he uses doping he becomes stronger"*. Sportsman who defines doping as weakness laziness states his view as "*weapon used by cowards"*. Sportsman who defines doping as mistrust states his view as "*fear of failure*". It is evaluated that these metaphors represent weak sportsmen. Metaphors belong to ambition category were demonstrated in Figure 7.

Figure 7. Ambition

As presented in Figure 7, ambition was observed in three ways. In the first version sportsman states as *"Doping is like ambition. Because it is harmful to health."* In the second evaluation sportsman states it as "*tries every way to win"*. In the third evaluation, he states it as "*later come health problems*". It is understood from these metaphors that ambition turns into passion.

CONCLUSION AND SUGGESTIONS

In the present study aiming to identify perceptions of wrestlers who were still active and previously active in the Turkish National Wrestling Team in 2013, analyses showed that there were 108 metaphors. Wrestlers' views about doping were evaluated from different perspectives. Based on these metaphors, it was concluded that wrestlers don't have positive views about doping. In this respect, this study presents information about how using metaphors to identify wrestlers views about doping is important. In the study, it was found that wrestlers relate doping with metaphors such as angel, energy, water, must, necessary, cigarette, poison, alcohol, harmful, weakness, stealing, inequality. In Turkey, there is no study who investigates sportsmen's views about doping by using metaphors. Therefore, this study is not consistent or inconsistent with other studies. In the present study, which is the first one in the field, categories were formed based on metaphors produced by wrestlers. These categories were "avoidance", "awareness", "acceptance", "exclusion", "weakness" and "ambition". Bu Special to this study, when investigating metaphors related to "*Doping"* concept, most preferred metaphors were *cigarette (f=8), stealing (f=6), bad thing (f=5), unfair (f=5), necessary (f=5), alcohol (f=5)*. This shows that wrestlers perceive doping as addictive such as cigarette and alcohol, thief who stoles medal, something bad. They also think that using doping when it is not caught leads inequality and that it is necessary for success.

Results of the present study can contribute to researchers who would prepare education program for doping. In the study, questionnaire was used to collect data about doping perception; future studies can use interview technique or study can be supported with the interview technique. This study can also be replicate by sportsmen from different branches and categories.

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RAPID WEIGHT LOSS OF IRANIAN FREESTYLE AND GRECO-ROMAN ELITE CADET WRESTLERS

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ABSTRACT
The purpose of this study was to investigate and compare the prevalence and effects of rapid weight loss among elite cadet wrestlers. The wrestler study groups were comprised of 130 adolescents (71 Greco-Roman and 59 freestyle wrestlers) with a mean age of 16.49 ± 0.9 and 16.1 ± 1.1 years; weight 63.1 ± 19.6 and 62.56 ± 15.24 kg. These athletes participated in the International Children's Day tournament. Methods of rapid weight loss and weight loss effects of these wrestlers were assessed using a standard Oppliger questionnaire. Descriptive statistical methods (mean standard deviation), the Kolmogorov-Smirnov Test (to check for normal distribution of data) and T tests (to check for differences between the freestyle and Greco-Roman wrestlers) were applied and the level of significance was set as $p<0.05$.The results showed that the most frequently used methods for weight loss in both groups, were increased physical activity and dieting. Dizziness, irritability and poor concentration were the most commonly reported problems in both freestyle and Greco-Roman wrestlers following rapid weight loss. The largest weight change for freestyle and Greco-Roman wrestlers in the tournament was respectively, 1.81 and 1.38 kg. No significant difference ($P< 0.05$) was observed between the two groups in this age bracket.
Keyword: wrestling, methods of weight loss, elite cadet

INTRODUCTION

Rapid weight loss is a dangerous procedure that is commonly used by wrestlers. This has been problematic in wrestling and has been reported on since the early 1930's (7). Three wrestlers, who were preparing themselves for tournaments in 1997, lost their lives through their rapid weight loss in an attempt to make weight (28). Competition provides the incentive for wrestlers to lose weight in an attempt to wrestle in a lower weight class. Rapid weight loss, in individuals before puberty, if not done with health considerations, also provides a great concern. Limiting caloric intake and poor nutrition during growth can affect the growth and have dramatic effects on health (24). The best competition weight for athletes is their normal weight. Research has shown that a body fat content between 7% to 9% in men and 12% to 15% in women has the greatest effect on metabolism (6). Weight loss becomes a problem when the nutrition needs are not met or the body is not kept properly hydrated (25). Common methods of rapid weight loss for competition include dehydration. This is achieved through fluid restriction and increased sweating (2,18,23). In the body, most chemical reactions are carried out in liquid medium. All reactions in the body are noticeably affected by a lack of water. In the dehydrated state, the physiological response of the body is damaged and athletic performance is decreased (16,9,10).Studies show that short-term weight loss cases disturbances in biochemical and hormonal activity, body composition and resting metabolic rate (11,13,14,15,26,27,29).

Bradley (3) investigated the prevalence and effects of rapid weight loss among freestyle and Greco-Roman wrestlers. The maximum amount of weight loss was 7 kg. The maximum number of weight losses was seven times during the seasons. A weight fluctuation of up to ¼ pound throughout the week was also reported for men. Methods employed for weight loss included saunas, plastic clothing, dieting, eliminating a meal, starvation and diuretics. Within this group no enemas, laxatives and vomiting were reported. Wrestlers reported experiencing dizziness, muscle cramps, headaches and fever followed by rapid weight loss
.
Oppliger et al examined the methods of weight loss for 712 wrestlers from 36 high schools. With the exception of 29 heavyweight wrestlers, the methods used for weight loss included increased exercise, diet and the elimination of a meal. Starvation and not drinking liquids were risk behaviors for weight loss. Wrestlers attempted weight loss with practice in hot rooms, 9% with plastic clothing and 4.8% used the sauna (21).

Unhealthy weight loss practices cause negative impacts on the performance of young wrestlers. The methods of weight loss were not investigated comprehensively in young Iranian elite wrestlers. Since the national team's young adults are our main assets, the present study sought to examine and compare the prevalence and effects of rapid weight loss in freestyle and Greco-Roman elite wrestlers in Iran.

METHODS

This study was conducted as a descriptive survey. The population of the study was freestyle and Greco-Roman elite wrestlers aged 14 to 18 years across the country which competed with wrestlers from Georgia, Armenia, Turkey, Azerbaijan, Iraq, and others in an international competition on Children's Day representing Iran. 130 adolescent elite wrestlers participated in this study. In the present study, information on rapid weight loss was obtained using the Oppliger standardized 31-item questionnaire (20). The validity of the questionnaire was confirmed by the University of Northern Michigan. The validity of the translation of the questionnaire for use in Iran was determined by a wrestling expert who is fluent in English (17).

Oppliger's 31-item questionnaire is set in four parts. The first part consists of 7 questions which investigate the wrestlers' personal information such as age, normal weight, competitive weight, age category, style (freestyle or Greco-Roman) and a history of participation in competitions. The second section includes 17 questions which investigate assesses the dietary history of the wrestlers and also questions such as the starting age of wrestling, weight loss and gain status in the current year, the maximum amount of weight loss, the numbers of weight fluctuations during the season and weekly weight fluctuations. The third section has 3 questions which ask about the methods and the effects of rapid weight loss. This section contains two tables, one of them lists 15 methods for weight loss which have been by wrestlers. Another table lists the side effects from the weight loss method used. The last section consists of four questions that measure their source for nutritional information and the amount of weight lost by the wrestler (8).

The necessary coordination was carried out with the wrestling federation, the fitness and nutrition director of the wrestling teams, coaches and others involved in the squad in order to distribute the questionnaires at the competition venue. Then, the questionnaire was fully explained to the wrestlers and they completed the questionnaire. Researchers used descriptive statistics (mean and SD) in the tables and graphs, then the Kolmogorov-Smirnov test was used for a natural explanation of the data. The t test (to check for differences between the freestyle and Greco-Roman wrestlers) at a significant level ($p < 0.05$) was used for statistical analysis of data. Excel was used to draw the charts and the analysis was performed using SPSS version 16.

RESULTS AND DISCUSSION

The wrestlers' profiles are presented in table 1.

Table 1: Wrestler Profile

	Greco-Roman	Freestyle
Age of wrestlers	16.46	16.07
Weight before competition	64.60	65.49
Onset of wrestling	11.62	11.74
Onset of weight loss	14.53	14.03
Most weight lost	3.06	3.58
Weight after competition	63.07	62.56
fluctuation of weight in a week	1.40	1.80
Competition weight during last year	59.02	59.34

Weekly fluctuation of weight is 1.40 and 1.80 kg in the Greco-Roman and freestyle wrestlers, respectively, and no significant difference was observed between the two groups ($p = 0.01$). The most commonly used methods for weight reduction by Iranian elite wrestlers, were increased physical activity, dieting, and eliminating a meal. Using purgatives showed the lowest incidence. Use of weight loss methods was not significantly different between Greco-Roman and freestyle young elite wrestlers during the competition season in Iran. The methods and the percentage of wrestlers reporting their use are shown in fig. 1.

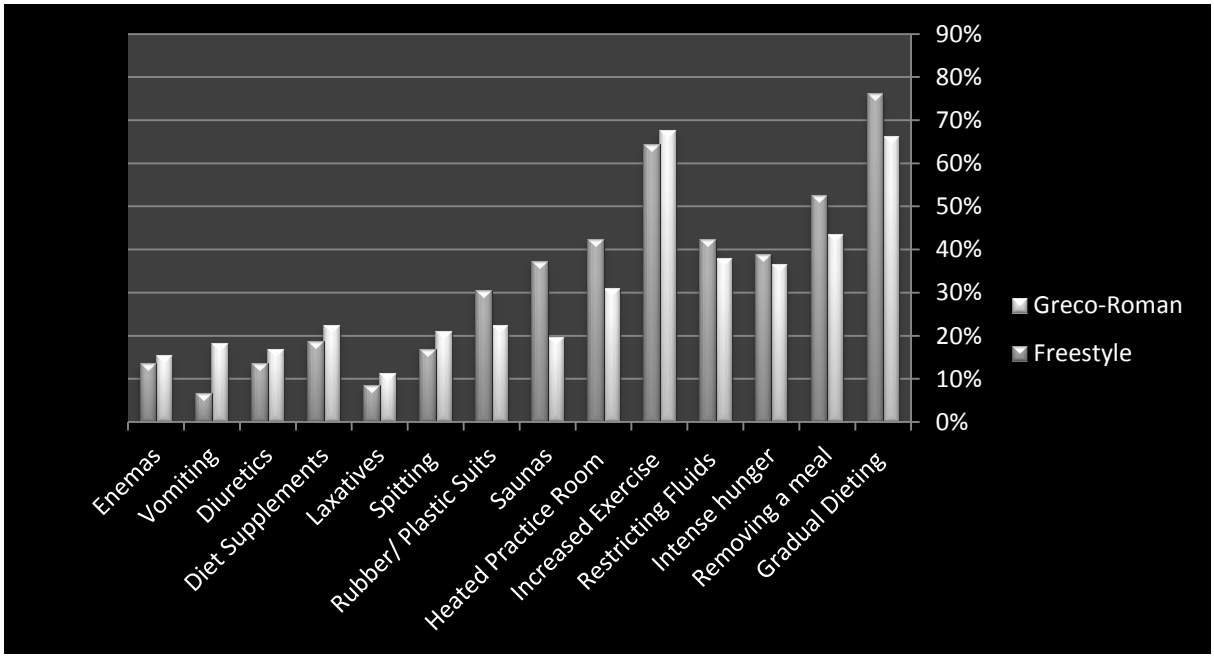

Figure 1: Methods of Weight Loss among Wrestlers.

The most common side effects of rapid weight loss among young Iranian elite wrestlers were dizziness, irritability and poor concentration. Nosebleeds were the least common observed side effect. Side effects of weight loss in young elite freestyle and Greco-Roman wrestlers of Iran were not significantly different during the competition season and are shown in fig. 2.

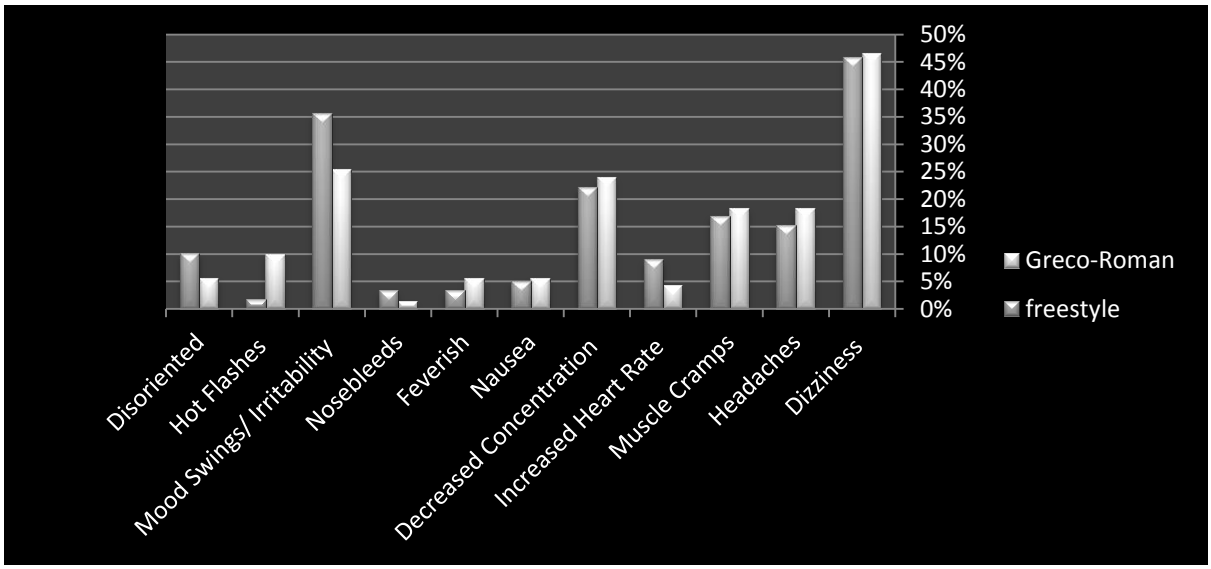

Figure 2: Negative Side Effects Experienced as a Result of Weight Loss

The results showed that coaches and experienced wrestlers have had the greatest impact on the methods of rapid weight loss on the young Iranian elite wrestlers. This was followed by exercise physiologists, dietitians, medical assistants and parents. The wrestlers' age had the least impact. According to the results, the effects of weight loss did not show a significant difference between styles. The results showed that coaches were the main source of information about nutrition and weight loss (35.5%). Other sources (friends, brother, media and internet) (7.13%); medical assistant (8.11%), doctors (3.11%) and parents (3.7%) are next in the rankings. The source of

information about nutrition and weight loss did not shown significant differences between freestyle and Greco-Roman wrestlers.

DISCUSSION

The results of the present study showed that the greatest amount of weight loss among young Iranian elite wrestlers was 29.3 kg that was greater than the results of Kiningham et al (5) and lower than results reported by Oppliger et al (20), Alderman et al (1) and Bradley (3). Perhaps the difference is due to the age difference among the wrestlers. Wrestlers had a mean age of 20 years in the Oppliger study, and 20.8 years in the Bradley study. According to the research, cadets engage in more weight loss than younger athletes (1, 17). In the present study, the mean number of weight loss was 1.67 times among young Iranian elite wrestlers. This was lower than Oppliger's results (20). One reason for this difference can be the frequency of the matches. The subjects in the cited studies participated in a long and regular league, so wrestlers had to attempt to lose weight more frequently (17).

The present study found that the most common methods used for rapid weight loss among the Iranian elite wrestlers were increased physical activity, dieting, and eliminating a meal. Starvation techniques, exercise in a warm room, sauna, removing fluids, wearing plastics, the use of dietary supplements, diet pills, removal of water from the mouth, diuretics, enemas and vomiting were also used for weight loss and the use of purgatives showed the lowest prevalence. These results were consistent with those obtained by Oppliger and Bradley, but inconsistent with the results of Aldrman et al (1). This difference can be attributed to the ages of the wrestlers. Alderman studied senior international wrestlers. Different activities (running, cycling, and swimming) were used for weight loss in Aldrman research (17,23). In the present study, the most common methods were diet and increased exercise up to 3 to 4 times per week.

In the present study, the use of enemas was observed in 2.14% of adolescent wrestlers. This shows that the use of enemas has become more popular among the Iranian adolescent wrestler nowadays which deserves reflection.

In the present study, dizziness, irritability and lower focus were most common side effects of rapid weight loss reported by young Iranian elite wrestlers. After that headaches, muscle cramps, lack of awareness and confusion, heatstroke, increased heart rate, nausea and fever were ranked as common side effects, with nosebleeds being the least common. Wrestlers also reported suffering from, fever and increased heart rate. The most commonly used methods for weight loss were increased exercise, dieting, and eliminating a meal, which can cause the loss of glucose in the liver, muscles, blood and eventually the brain. These are reasons for the reported dizziness, loss of concentration, headaches and irritability.

Dehydration may continue over several days and since body water can be decreased through hypohydration by about 2 to 3% in one day, this process leads to progressive dehydration which causes a water loss of 5 to 8%. Dehydration of about 4 to 6% lower focus and causes headaches, nsomnia and impatience. Dehydration of more than 8% can lead to heat cramps, heat exhaustion and heatstroke (1,2,29).

In the present study, team coaches were the primary source of weight loss and nutrition information. In both groups, parents have a small role in informing and influencing weight loss in wrestlers. But parents have shown a greater role in other research (20).

In summary, despite some inconsistencies, the weight loss practices of the cadet Iranian wrestlers in this study, employ weight loss methods that generally match previous research. There were only small differences in methods of weight loss used by Iranian cadet freestyle and Greco-Roman wrestlers. According to the research diet and increased exercise were the most important methods for weight loss in wrestlers. The results of this study can help trainers and nutritionists with more precise control of these procedures which can help to prevent the incidence of inappropriate methods of weight loss, especially enemas and the possible complications. Suitable training methods for weight loss and more precise advice to the coaches and wrestlers across the country should be implemented. Without this, the future of wrestling in Iran is in danger despite the progress of science related to athletic performance.

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CAUSES FAILURE OF CADET AND JUNIOR MEDALISTS IRAN IN SENIOR WRESTLING FROM THE PERSPECTIVE OF COACHES

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ABSTRACT
The purpose of this research is to study the causes for failure of Iranian cadet and junior wrestling medalists when they reach the senior level, from the perspective of coaches. The research sample was selected randomly and is included 162 people from grade I and 2 of active coaches of Iran. This research used a researcher-made questionnaire containing 35 questions in five subscales including program resources, management, physical fitness, sport injuries and psychological problems. The validity of this questionnaire was established by a review of 7 experts of physical education, and also in a pilot study using 30 experts. The questionnaire reliability was established using Cronbach's alpha yielded an r value of 0.80. The data analysis utilized descriptive and inferential statistical (Friedman test) in SPSS software and a significance level of $p<0.05$. Results showed that the factor with the greatest impact on the failure of cadet and junior medalists in senior wrestling was program resources, followed by, management, sport injuries, physical fitness and psychological problems, respectively. It is recommended that wrestling federation officials prioritize these subscales to maintain the development of cadet and junior medalists so they continue on as successful senior wrestlers.
KEY WORDS: training of sporting talent, cadet and junior wrestlers, barriers of wrestling development

INTRODUCTION
Today, the sports performance of a country is measured by the medals won by its athletes in the prestigious international tournaments. The success of athletes brings honor to hometowns and the entire nation of millions commemorate these achievements with great pride. Of course, if success is not attained, the defeat can also have a powerful influence–in this case, a great sadness. A hero achieves the victory and the whole nation considers themselves champions. In this regard, it becomes important for a country to develop a structure for the development and promotion of wrestling champions. This means that funding is made available for the organization of the country's elite managers and trainers (7).

In a country such as Iran, where the national sport is wrestling, there is pressure on administrators to use this vast talent, a large number of wrestlers, to organize a long-term perspective with a comprehensive and long term planning of the necessities for competitive success (5). This pressure for success comes from history and the ancient Iranian traditions, to the recent history of Olympic international medalists, and national concerns with Iranian society and culture (1).

The more experience with Olympic competition, the greater the chance for success, because of greater familiarity with the situation there is less stress (2). Administrators must make sure that the young wrestlers are carefully taken care of, through a scientifically and principled action plan and eliminate the factors that inhibit them from participation in the senior category.

Despite the large amount of research in the field of wrestling, none could be found that explores the causes of failure of the teenage wrestlers earn medals and do not continue on to the adult category. There is some research that examines the reasons for the results in various competitions. For example, researchers examined some of the causes of the national team's success in the senior world championships in Greco-Roman wrestling in 2009 Denmark from the perspective of trainers and athletes (8). Nourbakhsh (10) cites is the lack of adequate facilities, equipment and the lack of familiarity with f the coaches are the reasons kids drop out of wrestling.

Goral (4) has studied the impact of motivation in those who have achieved in sport and what these people demonstrate in their behaviors that distinguishes them from others. Motivation is one of the main factors, and basic to success. This person requires a good motivation system. The fact is obvious that success requires patience and plenty of effort. In order to achieve a win in the sport, a person must practice daily, with a long period of continuous training. Motivation plays a major role in the ability perform this work.

European countries have talent education centers at the local, regional and national level. Children and teenagers have a choice in schools and sports clubs, training local training centers-(often multidisciplinary). At these centers, there is a wide level of children and adolescents are included and have acceptable facilities. Then the kids to regional centers (single string and multidisciplinary). These centers, in addition to more features, have instructors with more knowledge and experience. National and higher level teams to come to these centers for training camps and the possibility of a joint training with the younger athletes occur. The national training centers are where the most talented kids are brought as members of the age group national team and prepared for continental and World Championships. The responsibility of these organizations unlike the national organizations responsible for regional centers. These children in the next years a large part of its national team members make up (6).

Unlike the scientific system and integrated in European countries, in Iran each year, we see young wrestlers who earn important medals in national and Asian championships and then disappear. One can understand when young wrestler quits because of a lack of success, but the wrestlers we are studying are those who have won impressive credentials. Hence the present research seeks answers to the following question, what are the main causes for the failure of some of the best adolescent and young adult wrestlers in Iran to not continue wrestling as a senior?

METHODS

This applied research study used descriptive data from a researcher-made questionnaire that had been previously developed to identify the factors contributing to success or failure of wrestling programs. For the development of this questionnaire a number of specialists in physical education offered opinions for content and provided suggestions. The final questionnaire consisted of 34 questions. To assess the reliability, a pilot study using a group of professionals in physical education, yielded a Cronbach Alpha of .80. The Iranian Wrestling Federation assisted in the distribution of the instrument to 162, Level 1 and 2 wrestling coaches who completed the questionnaire. For the analysis of the findings the descriptive statistics (included mean standard deviation etc.) were generated with software SPSS18.

RESULTS

The findings listed in table 1 are the responses of the coaches regarding their views as to why successful cadet and junior wrestlers drop out of the sport. The disregard to the financial status of these wrestlers is cited as the most important factor in the failure of elite teen and young adult wrestlers to continue as seniors. The lack of cash bonuses to earn the championship titles in the category, and differences in how to wrestlers rewarded, when compared to athletes in football and volleyball, are viewed as important.

Table 1. Prioritization of research in terms of trainers

Items	Component	Rating average	Priority
To neglect the financial status of the wrestlers	Program Resources	25.66	1
The lack of good paying cash bonuses to earn the championship titles	Program Resources	24.67	2
There are differences in how the adolescents and young adults wrestlers who achieve medals are rewarded when compared with other sports such as football and volleyball	Program Resources	24.43	3
Attention to future careers and the essentials of life in the future	Program Resources	22.02	4
The lack of professional support for proper use of bodybuilding, nutrition psychology etc.	Program Resources	20.56	5
The existence of specific relationships with coaches, choice of instructors, involvement in selection of members of the national team.	Management	20.49	6
Scientific advice and guidance available to sports centers in the country for the younger wrestlers	Management	20.01	7
Planning appropriate programs for young wrestlers at various levels of development	Management	19.71	8
Problems with weight loss and weight management	Sports injury	19.16	9
Lack of a proper strategy for the specific educational needs and problems of adolescents and young adults	Program Resources	18.38	10

The lack of holding joint field trips with the famous wrestlers of the world	Management	18.37	11
The administration does not provide an organized program, strategy or plan regarding the path from the beginning wrestler to the adult national team	Management	17.73	12
Failure to hold the selected tournament in order to identify top talent	Management	17.69	13
Problems with doping-education, testing, positive tests	Management	17.63	14
Lack of technology in the development of fitness and skill	Preparation	17.45	15
How we treat the champion	Management	17.28	16
The lack of evaluation (technical, physical, mental and tactical) following competitions of the younger wrestlers	Program Resources	17.11	17
The lack of a proper use of mass media for promotion and business opportunities	Management	16.83	18
The lack of proper use of medication and food supplements for the various age categories	Program Resources	16.68	19
The lack of appropriate internal and external organizing travel to tournaments for the younger wrestlers	Program Resources	16.64	20
The lack of proper and steady presence at international competitions in line with the growth and progress of the younger wrestlers who may be ready to move up	Preparation	16.52	21
Failure to control the amount of pressure in training of adolescents and young adults category	Preparation	16.35	22
The lack of coordination between the national teams of instructors and youth coaches	Management	16.22	23
Lack of a coordinated plan from the base teams to national team	Management	16.12	24
Failure to use advanced equipment and technical data for the development of the wrestlers	Program Resources	15.84	25
Treatment of our heroes as they pass through life	Program Resources	15.64	26
Reduction in the amount of support for the family of the wrestlers	Program Resources	14.71	27
Failure to address the social issues of confronting our young wrestlers	Mental issues	14.54	28
Improper use of the of fame by the young athletes after obtaining the medal	Mental issues	14.16	29
The incidence of sports injuries in youth and adolescents	Sports injury	14.15	30
Address the transition from one age category to the next	Management	13.71	31
Difficult access to facilities and equipment health centers for treatment of sports disorders	Sports injury	13.07	32
Over emphasis on winning with the younger wrestlers	Mental issues	12.92	33
The lack of identification and treatment of serious injuries in the beginner age category	Sports injury	12.55	34

The results of table 2 and chart 1 show that the most important factors in an elite younger wrestler failing to progress to senior competition

Table 2. Prioritization of the research components by the trainers

Component	Rating average	Priority
Program Resources	4.64	First
Management	4.36	Second
Sports injury	2.75	Third
Fitness	1.77	Fourth
Mental issues	1.48	Fifth

Chart1. Prioritization of the research component from perspective of the coach

DISCUSSION AND CONCLUSION

According to the results of this study, the priority, and the most important factor are program resources. Among the problems caused by a lack of these resources is the neglect of the financial status of the younger as well as the senior wrestlers. The administrators of wrestling must also the athlete's whole life, including schooling and work. Other obstacles include the need for more facilities, educational and career planning for young wrestlers.

There is a perceived lack of use and application of important information in the areas of nutrition, physical training, and psychology. Professionals in these areas are needed to teach the principles of training and nutrition at an early age. This could prevent the use of unauthorized practices including doping.

There is a need for psychological support for the adolescents and youth with regard to special conditions such as how to deal with defeat, being a youth hero and strategies for the appropriate education in order deal with the problems of teenagers. Teen and young wrestlers should also be counseled to provide help in the development of their goals and the steps to take to achieve e these goals. More professionalization and use of science is needed to help these athletes reach the level of fitness and movement skills necessary for the highest levels of competition.

Finally, although the program resources and management of the environment were seen as priorities, the three areas of sports injury, physical fitness and psychological issues still must be addressed. Administrators and those involved in the development of the sport should be focused primarily on developing program resources and management, and this must include the use of scientific specialists.

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Letter to the Editor

THE TRADITIONAL INDIAN WRESTLING

The recent rise in the success of Indian wrestlers on the international stage has been exciting. India has a long history of wrestling and it is my hope that as we increase our emphasis on modern international wrestling, the traditional styles are not forgotten.

Wrestling in India is traditionally played in mud, and is called mud wrestling (kushti). Kushti is an ancient Indian game, which has been played in Maharashtra from ancient times. I want to increase the awareness of traditional Indian wrestling and the various types of mud wrestling. Indian wrestling can be divided into four categories.

a) HANUMANTI WRESTLING

The holds full of skills, strategies and tactics used by Hanumanti such as leg hold and throw, cross buttock, leg hook and throw, arm and leg throw. Wrestling fought with expertness and holds.

b) BHEEMSENI WRESTLING

The type of holds requiring strength and power used by Bheemseni, such as lifting the opponent above the shoulder level and throwing him down, neck press etc.

c) JAMUWANTI WRESTLING

The wrestling in which locks and chalks are used.

d) JARASANDHI WRESTLING

The wrestling in which body parts are twisted and broken. It includes the locks namely neck lock, ankle lock, arm lock, etc.

Limb breaking holds used in Jarasandhi wrestling, includes shoulder lock, hand pull and wrist lock on the back, strangle hold and wrist breaking etc. Generally untrained and unskilled villagers who have enough strength usually make full use of Bheemseni wrestling, whereas Hanumanti wrestling has an advantage to beat even a strong opponent by applying tricks and skill holds. In Jamuwanti wrestling, by use of locks, a wrestler is able to bring his opponent under his control and can make him feel exhausted. And in Jarasandhi wrestling, by means of limb breaking holds, a wrestler can harm the opponent. Wrestling provides an opportunity to every individual of any age to develop stamina, strength, flexibility and ability to qualify the confidence, courage and patience, which are essential for leadership. Wrestling, as a sport evolved for the youth of the country and it can rightfully represent the tradition and antiquity as well. At present wrestling is very popular in each and every nook and corner of our country. Especially in the villages of India it does not require equipment and can be practiced by the youth themselves.

Wrestling is also a natural sport like athletics and swimming. It is considered both as a means of survival against heavy odds and to establish superiority over others. Wrestling has played an important role in the evolution of modern man. A peep into history reveals a different picture, that wrestling is the oldest game of India, and no wonder that it has spread to the other parts of the world from India. According to one's points of view, wrestling was spread from India to Greece and from Greece.

From the above I can conclude that though the traditional wrestling in India does not have a huge following, but the types of hold in the wrestling at the international level is of very much importance as it has historical benefit and this is what we have to preserve. Indian traditional wrestling holds are based on scientific principle and it is our responsibility to keep this culture alive.

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GUIDELINES FOR AUTHORS

Papers covering every aspect of wrestling science can be submitted for publication in the new "International Journal of Wrestling Science". Scientific research papers and reviews, applied/practical issues, current topics, and letters to the Editor will be accepted. Manuscripts must not have been submitted to another journal.

FORMAL PROCEDURE
Manuscripts may be submitted in English, French or Russian. An Abstract in English must be included. The maximum length of manuscripts is 6 pages (8.5 by 11 inches) (including tables, figures, pictures, and references). They should be 1.5 spaced, in 12-point Arial type throughout the paper, with .75 inch margins, and be written according to proper grammar, and syntax principles.

Manuscripts, along with a cover letter to the Editor that a new manuscript is being submitted for consideration, must be sent by e-mail to: davcurb@gmail.com Manuscripts will be blindly reviewed by two reviewers. Acceptance for publication will be based on quality, originality and reliability of the presented material. Whenever necessary, accepted manuscripts are returned by e-mail to the authors for corrections. After making the corrections, the authors have to resend the manuscript, along with a new cover letter to the Editor with detailed information about the alterations for each one of the reviewers' comments.

FORMAT
The complete manuscript must include:
The title page, with:
a) Complete title, b) names and affiliations of all authors in the order they appear, c) a running head, and d) contact information for readers (name, address, e-mail, phone number, fax).

ABSTRACT (one in English):
Abstract and Key words on a separate page, following the title page. Length should be less than 200 words.

INTRODUCTION
Introduction, starting on a separate page, and ending with the purpose of the study
and the corresponding hypotheses.

METHODS
Method, which includes a) Participants, b) Instruments-Tests, c) Procedures, d) Research design, and e) Statistical analysis.

RESULTS

DISCUSSION – CONCLUSIONS

PRACTICAL IMPLICATIONS/ADVICE FOR ATHLETES AND COACHES

REFERENCES
A reference list in **alphabetical order** should be included at the end of the paper. Authors should only include references which have been published or accepted for publication. They should also check that all references are actually cited in the body of the paper **(by number)**, and all citations in the paper are included in the Reference list. All references must be alphabetized by the first author's surname and numbered. They should be written according to the following examples:

1. BECK, B., and C. SNOW. Bone health across the lifespan – exercising our options. *Exercise and Sport Sciences Reviews*, 31 (3), 117-122, 2003.
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