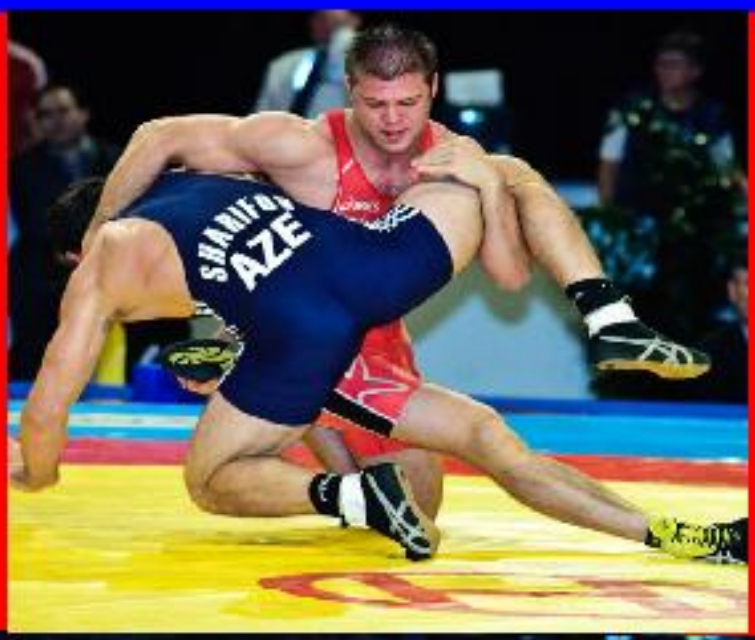
Science of Wrestling



Annual Research Review - 2009

David Curby

Preface

This annual publication is dedicated to the pursuit and use of the knowledge surrounding the noble and timeless sport of wrestling. Each year, an annotated bibliography of the scientific research, published in English, during the year in review, will be compiled and shared with those who work in the wrestling community. It is my hope that this work will spark further research, along with helping to educate those who are in a position to apply this knowledge. I am proud to be affiliated with this great sport. Thanks to our national governing body - USA Wrestling. Thanks to the National Coaching Staff for the support that they have given to me. Rich Bender, Mitch Hull, Steve Fraser, Momir Petkovic, Ike Anderson, Terry Steiner, Vladislav Izboinikov, Shannyn Gillespie, Anatoly Petrosyan, Zeke Jones, Bill Zadic and Brandon Slay always respond. I am grateful for the chance to work with Ivan Ivanov and Jim Gruenwald and their outstanding wrestlers at the USOEC in Marquette, Michigan. That torch has now been passed to the able hands of Dennis Hall and Willie Madison.

Thanks to my wife Lynne, and my wonderful children, Nicholas, Jacob and Courtney, who have been a big part of my work in the sport, and have patiently supported me. Tony Rotundo has provided the action photographs found on the cover. These are American medalists from the 2009 World Championships: Jake Herbert (Freestyle Silver at 84 kg), Tervel Dlagnev(freestyle Bronze at 120 kg) and Dremiel Byers (Greco-Roman Silver at 120 kg).

Some great research was published and I commend the sport scientists cited in this publication. I want to draw your attention to the opportunities for collaboration among the researchers involved with wrestling. Towards that end, please go to the article describing the formation of an International Network of Wrestling Researchers. Please register! Please visit my website at www.curbywrestling.com for the previous four years of this review. At my site there I have sections for Sport Science and the Testing of Athletes containing many articles of interest for the sport scientists and coaches in wrestling. The Sport Science section contains the Reviews of Wrestling Research that have been published since 2005, and also a wrestling bibliography of over 2,200 articles relating to wrestling sport science research that I have collected in my office. Please visit!

I have recently joined the Overtime School of Wrestling in Naperville, Illinois. I will be continuing my sport science work with Sean Bormet focusing on the testing and evaluation of his athletes.

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Annotated Bibliography of Wrestling Research in 2009

Aghamirian MR, Ghiasian SA. (2009) A clinico-epidemiological study on tinea gladiatorum in Iranian wrestlers and mat contamination by dermatophytes. ***Mycoses.*** 2009 Nov 16. [Epub ahead of print]
Keywords: dermatology/tinea gladiatorum/tinea/ringworm
Abstract: Dermatophytosis is still being considered as one of the major public health problems in wrestlers. Objectives: To identify the prevalence, clinical pattern, aetiological agents and the predominant transmission route of dermatophytoses in Iranian wrestlers, a study was carried out in 2008. In total, 270 wrestlers from eight wrestling salons were evaluated. Classical mycological techniques were performed on 135 skin scraping samples of 110 wrestlers suspicious for dermatophytoses and 240 touch preparation samples of wrestling mats. Diagnosis of the fungus type was made based on macroscopical and microscopical characteristics of the colonies. 19.2% of the evaluated wrestlers were inflicted with tinea gladiatorum. The head and neck were the most prevalent (36.5%) areas of involvement, followed by arms and forearms (28.8%), trunk (21.2%), as well as groin and knee (13.5%). The mean age of patients was 21 years and the most frequent age group was 10-19 years (51.9%). Trichophyton tonsurans was the most frequently isolated species representing 82.7% of isolates, followed by T. rubrum (5.8%), T. mentagrophytes var. interdigitale and Epidermophyton floccosum (3.8% each), and T. mentagrophytes var. mentagrophytes and T. verrucosum (1.9% each). Of 24 wrestling mats surveyed, 33.3% were heavily contaminated with T. tonsurans. Tinea gladiatorum in Iran is a common phenomenon among wrestlers, transmission pattern of which appears to be through man-to-man and mat-to-man contact. Furthermore, the clinical features of the disease are not consistent with those of the general population of Iran.
Medical Parasitology and Mycology Department, Qazvin University of Medical Sciences and Health Services, Qazvin, Iran.

Editor's Note: It is a positive development for our sport that the leading nations all address the issue of skin infections. These will lead to increasing education and elimination of the attitude of acceptance of fungal infections as a part of the sport.

Baranto, A., Hellstrom, M., Cederlund, C., Nyman, R., & Sward, L. (2009). Back pain and MRI changes in the thoraco-lumbar spine of top athletes in four different sports: a 15-year follow-up study. ***Knee Surg Sports Traumatol Arthrosc*** 17(9):1125-34
Keywords: Back/Back Pain/Growth/injuries/long term effects/Spine
Abstract: A total 71 male athletes (weight lifters, wrestlers, orienteerers, and ice-hockey players) and 21 non-athletes were randomly selected, for a baseline MRI study. After 15 years all the participants at baseline were invited to take part in a follow-up examination, including a questionnaire on back pain and a follow-up MRI examination. Thirty-two athletes and all non-athletes had disc height reduction at one or several disc levels. Disc degeneration was found in more than 90% of the athletes and deterioration had occurred in 88% of the athletes, with the highest frequency in weight lifters and ice-hockey players. 78% of the athletes and 38% of the non-athletes reported previous or present history of back pain at baseline and 71 and 75%, respectively at follow-up. There was no statistically significant correlation between back pain and MRI changes. In conclusion, athletes in sports with severe or moderate demands on the back run a high risk of developing disc degeneration and other abnormalities of the spine on MRI and they report high frequency of back pain. The study confirmed our hypothesis, i.e. that most of the spinal abnormalities in athletes seem to occur during the growth spurt, since the majority of the abnormalities demonstrated at follow-up MRI after the sports career were present already at baseline. The abnormalities found at young age deteriorated to a varying degree during the 15-year follow-up, probably due to a combination of continued high load sporting activities and normal ageing. Preventive measures should be considered to avoid the development of these injuries in young athletes.

Editor's Note: That most of these back problems have their origins during the adolescent growth spurt puts responsibility for youth coaches become familiar with appropriate training loads to which the back is subjected during the growth spurt, as well as identification and employment of appropriate preventive measures.

Barrell, A. S. (2009). Multiple Spinal Anomalies in a High School Wrestler. ***Athletic therapy today***, 14, 19-22.
Keywords: Back/Back Pain/injuries/Physical Examination/Spine
Abstract: The article presents a case study of spinal anomalies leading to back pain in a high school wrestler. The athlete's description of his symptoms and his medical history are given. Physical examination and X-rays revealed a

series of microfractures of the spine. Referred to a pediatric orthopedist, the wrester was treated by means of a lumbar brace, a restriction on athletic activity and prolotherapy through proliferant injections.

Editor's Note: Youth coaches must be smart regarding their selection and use of exercises that that load the spine. They also must be sensitive to complaints of their athletes which may indicate underlying spondylolysis and spondylolisthesis . These are common diagnoses made in the athlete suffering from persistent back pain. Genetic predisposition and repetitive trauma such as repetitive hyperextension (such as the wrestler's bridge) have been associated with these conditions.

Brickman, K., Einstein, E., Sinha S., Ryno J., & Guiness, M. (2009). Fluconazole as a prophylactic measure for tinea gladiatorum in high school wrestlers. ***Clin J Sport Med***, 19, 412-414.
Keywords: Fluconazole/Infection/Tinea/tinea gladiatorum/ringworm
Abstract: OBJECTIVE: To evaluate the use of prophylactic oral fluconazole in reducing the incidence of tinea gladiatorum in high school wrestlers. DESIGN: A prospective longitudinal study was conducted on high school wrestlers in northwest Ohio between 1997 and 2007. SETTING: Two northwest Ohio high school wrestling teams. PARTICIPANTS: High school wrestlers (373). INTERVENTIONS: Prophylactic fluconazole at a daily oral dosage of 100 mg for a 3-day regimen prior to the onset of the competitive interscholastic wrestling season and 6 weeks into the wrestling season. Guardians of participants signed consent forms outlining the risks associated with fluconazole prior to being enrolled into the study. MAIN OUTCOME MEASURES: Incidence of tinea gladiatorum in participants. RESULTS: Over the course of this 10-year study, out of 373 participants using prophylactic fluconazole, the incidence rate of tinea gladiatorum dropped from 67.4% to 3.5%. It should be noted that more than 50% of these infections occurred within the initial year of this study when the second administration of fluconazole was given at week 8 instead of week 6. No adverse effects were reported over the 10-year study period. CONCLUSIONS: The twice-per-season regimen of 100 mg daily for 3 days was highly effective in dramatically reducing the incidence of these skin lesions. The success of our study is 2-fold: First, fluconazole provided prophylaxis. Second, the overall incidence of fungal disease throughout the entire wrestling team was markedly decreased because most of the wrestlers participated in this study, significantly reducing exposure to these lesions through wrestling practice. No adverse effects in the use of fluconazole over this 10-year study period were reported.
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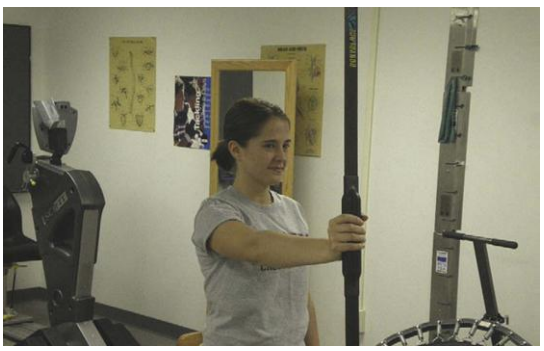
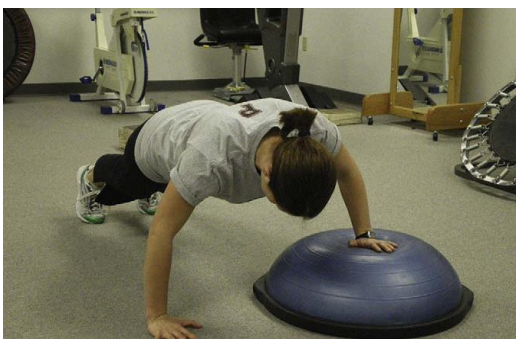
Editor's Note: The preventative use of such drugs can be successfully employed in athletes with a history of infection. The chances of such use occurring probably increases if a team has made a connection with a dermatologist who has experience in an athletic environment.

Brumitt J, Sproul A, Lentz P, McIntosh L, Rutt R. (2009) In-season rehabilitation of a division III female wrestler after a glenohumeral dislocation. ***Phys Ther Sport.*** 10(3):112-117.
Keywords: injuries; injury prevention; rehabilitation; Shoulder; women
OBJECTIVE: Wrestling is a popular sport in the United States at both the high school and collegiate levels. Traditionally a men's sport, participation by female athletes in wrestling is increasing. There exists a paucity of literature regarding injury incidence in women's wrestling. This lack of information challenges the ability of sports medicine and strength training professionals to design optimal injury prevention programs, training routines, and rehabilitation strategies. The objective of this report is to detail the successful conservative rehabilitation of a female


Rhythmic stabilization drill using the Body Blade (shoulder flexed to 90°)


Progressed to fast hand walks back and forth over a BOSU

wrestler after an initial glenohumeral dislocation. DESIGN: Case report. CASE DESCRIPTION: A 20-year-old female wrestling student-athlete presented to the university's sports medicine team after sustaining an anteriorly dislocated right shoulder. The patient had the goal to return back to competition in time for the National Championships. An evidenced-supported, non-traumatic glenohumeral instability rehabilitation protocol combined with weight-bearing exercises simulating functional sport positions was implemented with the goal of returning the injured collegiate female wrestler back to sport. RESULTS: At the end of the rehabilitation program the athlete demonstrated full active range of motion, good strength in the right shoulder, and reported her pain rating at a 1/10. The conservative rehabilitation strategy utilized in this case enabled the patient to return to wrestling and compete successfully

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Buss, B., Mueller, S., Theis, M., Keyser, A., & Safranek, T. (2009). Population-Based Estimates of Methicillin-Resistant Staphylococcus aureus (MRSA) Infections Among High School Athletes--Nebraska, 2006-2008. ***J Sch Nurs.*** 25(4):282-91.

Keywords: Infection/MRSA/Staphylococcus aureus

Abstract: Methicillin-resistant Staphylococcus aureus (MRSA) is an emerging cause of skin and soft-tissue infections among athletes. To determine statewide incidence among high school athletes, we surveyed all 312 Nebraska high schools regarding sport programs offered, program-specific participation numbers, number of athletes with physician-diagnosed MRSA infections, and athlete's sport at infection onset. Among 271 (86.9%) schools responding, MRSA infections were reported among one or more athletes by 4.4% (12/270) and 14.4% (39/271) during school years 2006-2007 and 2007-2008, respectively. From 2006-2007 to 2007-2008, MRSA incidence per 10,000 wrestlers increased from 19.6 to 60.1, and incidence per 10,000 football players increased from 5.0 to 25.1. We did not identify differences in distribution of MRSA infections on the basis of grade, school enrollment, location, or number of participants per team. Incidence of reported MRSA infections among football players and wrestlers was substantially higher during 2007-2008, compared with 2006-2007.

Editor's Note: The incidence of MRSA is growing and must not be ignored by coaches and administrators. We must be proactive and minimize the risk. See O'Laughlin, et al article in this bibliography.

Camic, C., Housh TJ, Mielke, M., Hendrix, C., Zuniga, J., Johnson GO, Housh, D. J., & Schmidt, W. D. (2009). Age-Related Patterns of Anthropometric Characteristics in Young Wrestlers. ***Med Sci Sports Exerc***. 41(5):1014-9.

Keywords: Anthropometry/Body Mass Index/Body Weight/Nutrition/skinfolds/weight/youth/profiles

Abstract: PURPOSE: The purpose of the present study was to compare the age-related patterns of anthropometric characteristics in young wrestlers (8-13 yr) to those of a national representative sample of boys the same age. METHODS:: Two hundred and fifty-three young wrestlers (X age +/- SD, 11.1 +/- 1.6 yr; height (HT), 145.5 +/- 11.4 cm; body weight (BW), 40.7 +/- 10.9 kg) volunteered as subjects in the present study. The sample of young wrestlers was divided into six independent age groups: age group 8 (AG8), 8.00-8.99 yr (n = 27); AG9, 9.00-9.99 yr (n = 43); AG10, 10.00-10.99 yr (n = 50); AG11, 11.00-11.99 yr (n = 45); AG12, 12.00-12.99 yr (n = 56); and AG13, 13.00-13.99 yr (n = 32). Nine variables including BW, HT, body mass index (BMI), subscapular and triceps skinfolds, waist, midarm, maximal calf, and midthigh circumferences were assessed on each subject. RESULTS: The results showed that there was only one (midthigh circumference) difference between the young wrestlers and the national sample for yearly changes in the anthropometric dimensions. DISCUSSION: These findings indicated that participation in age group wrestling was not associated with age-related patterns of anthropometric characteristics that were different from those of a national representative sample of boys the same age.

Camic CL, Housh TJ, Weir JP, Zuniga JM, Hendrix CR, Mielke M, Johnson GO, Housh DJ, Schmidt RJ. Influences of Body-Size Variables on Age-Related Increases in Isokinetic Peak Torque in Young Wrestlers. ***Strength Cond Res***. 2009 Nov 20. [Epub ahead of print]

Keywords: youth, strength, testing, profiles

Abstract: The purposes of the present study were to determine the patterns of age-related changes in 1) height (HT), body weight (BW), fat-free weight (FFW), and absolute isokinetic peak torque (PT); and 2) isokinetic PT covaried separately for HT, BW, FFW, and HT and BW combined in young wrestlers. One hundred twenty-five male wrestlers (mean age +/- SD = 14.3 +/- 2.4 yr; range = 11.1-18.2 yr) volunteered to perform concentric, isokinetic leg extension and flexion at 180 degrees .s on a Cybex II dynamometer to measure PT as well as underwater weighing to determine FFW. The polynomial regression analyses indicated there were significant quadratic increases across

age for HT (R = 0.62), BW (R = 0.56), and FFW (R = 0.47). For leg extension, there were significant increases across age for absolute PT (quadratic, R = 0.66), PT covaried for HT (linear, r = 0.10), PT covaried for BW (linear, r = 0.12), PT covaried for FFW (quadratic, R = 0.32), and PT covaried for HT and BW combined (quadratic, R = 0.11). For leg flexion, there were significant increases across age for absolute PT (linear, r = 0.59), PT covaried for HT (linear, r = 0.07), PT covaried for BW (linear, r = 0.08), PT covaried for FFW (quadratic, R = 0.23), and PT covaried for BW and HT combined (linear, r = 0.03). The results of this study indicated that age-related increases in leg-extension and flexion PT for the current sample of young wrestlers could not be accounted for by changes in HT, BW, FFW, or HT and BW combined. These findings suggested that neural maturation may contribute to increases in leg strength across age in young wrestlers.
Department of Nutrition and Health Sciences, Human Performance Laboratory, University of Nebraska-Lincoln, Lincoln, Nebraska 68583

Charilaos, C.N. ***Wrestling as a superior athletic event of the ancient Olympic Games: Comparisons referenced to modern wrestling and its route in the modern Olympic Games***. Paper presented at the 17th International Congress of Physical Education and Sport organized by the Department of Physical Education and Sport Sciences of the Democritus University of Thrace (Komotini, Greece): May 22-24 2009.
Keywords: Olympics/history/rules/promotion/scoring analysis

Editor's Note: The evolution of wrestling from the ancient Greek Olympics is traced to today's modern Olympic Games. The attractiveness and popularity are discussed in terms of the rules that are employed. The full paper is included in this review.

Darrow CJ, Collins, C. L., Yard, E. E., & Comstock, R. D. (2009). Epidemiology of severe injuries among United States high school athletes: 2005-2007. ***Am J Sports Med*** 37(9):1798-805.
Keywords: epidemiology/injuries/Risk
Abstract: BACKGROUND: Over 7 million students participate in high school athletics annually. Despite numerous health benefits, high school athletes are at risk for injury. HYPOTHESIS: Severe injury rates and patterns differ by gender and type of exposure. STUDY DESIGN: Descriptive epidemiology study. METHODS: Sports-related injury data were collected during the 2005-2007 academic years from 100 nationally representative United States high schools via RIO (Reporting Information Online). Severe injury was defined as any injury that resulted in the loss of more than 21 days of sports participation. RESULTS: Participating certified athletic trainers (ATCs) reported 1378 severe injuries during 3 550 141 athlete-exposures (0.39 severe injuries per 1000 athletic exposures). Football had the highest severe injury rate (0.69), followed by wrestling (0.52), girls' basketball (0.34), and girls' soccer (0.33). The rate in all boys' sports (0.45) was higher than all girls' sports (0.26) (rate ratio [RR], 1.74; 95% confidence interval [CI], 1.54-1.98; P < .001). However, among directly comparable sports (soccer, basketball, and baseball/softball), girls sustained a higher severe injury rate (0.29) than boys (0.23) (RR, 1.28; 95% CI, 1.08-1.52; P = .006). More specifically, girls' basketball had a higher rate (0.34) than boys' basketball (0.24) (RR, 1.43; 95% CI, 1.10-1.86; P = .009). Differences between boys' and girls' soccer and baseball/softball were not statistically significant. The severe injury rate was greater in competition (0.79) than practice (0.24) (RR, 3.30; 95% CI, 2.97-3.67; P < .001). Nationally, high school athletes sustained an estimated 446 715 severe injuries from 2005-2007. The most commonly injured body sites were the knee (29.0%), ankle (12.3%), and shoulder (10.9%). The most common diagnoses were fractures (36.0%), complete ligament sprains (15.3%), and incomplete ligament sprains (14.3%). Of severe sports injuries, 0.3% resulted in medical disqualification for thec2 athletes' career, and an additional 56.8% resulted in medical disqualification for the entire season. One in 4 (28.3%) severe injuries required surgery, with over half (53.9%) being knee surgeries. CONCLUSION: Severe injury rates and patterns varied by sport, gender, and type of exposure. Because severe injuries negatively affect athletes' health and often place an increased burden on the health care system, future research should focus on developing interventions to decrease the incidence and severity of sports-related injuries.

Editor's Note: Wrestling is consistently listed among the sports with the highest injury rate. See Yard for recently published studies focused specifically on wrestling.

Eckenrode BJ, Logerstedt DS, Sennett BJ. (2009) Rehabilitation and functional outcomes in collegiate wrestlers following a posterior shoulder stabilization procedure. ***J Orthop Sports Phys Ther*** (7):550-9.
Keywords: injuries/shoulder/rehabilitation
STUDY DESIGN: Case series. CASE DESCRIPTION: Five consecutive collegiate Division I wrestlers, with a mean age of 20.2 years (range, 18-22 years), were treated postsurgical stabilization to address posterior

glenohumeral joint instability. All received physical therapy postoperatively, consisting of range-of motion, strengthening, and plyometric exercises, neuromuscular re-education, and sport-specific training. Functional outcome scores using the Penn Shoulder Score questionnaire were recorded at postsurgical initial evaluation and discharge. Isometric shoulder strength, measured with a handheld dynamometer at discharge, was compared with measurements made during preseason screening. OUTCOMES: Postsurgery, upon initial physical therapy evaluation, scores on the Penn Shoulder Score questionnaire ranged from 37 to 74 out of 100. All 5 wrestlers improved with rehabilitation such that their scores at discharge ranged from 81 to 91 out of 100. Mean external rotation-internal rotation strength ratio for the involved shoulder was 73.5% (range, 55.9%-88.7%) preseason and 80.9% (range, 70.2%-104.1%) postrehabilitation. Four patients were able to return to wrestling over a period of 1 season, with no episodes of reinjury to their surgically repaired shoulder. DISCUSSION: Current research on posterior glenohumeral instability is limited, due to the relatively rare diagnosis and infrequent need for surgical intervention. Providing a structured physical therapy program following this surgical procedure appeared to have assisted in a return to full functional activities and sports.
University of Pennsylvania Health System, Penn Sports Medicine Center, Philadelphia, PA, USA.
brian.eckenrode@gmail.com

Eyers, C. M. C. (2009). Personality patterns of NCAA wrestlers and their relationship to disordered eating: Implications for educational leaders. Dissertation: EdD Central Michigan University.
Keywords: Diet/Eating/Eating Disorders/Health/Health Education/NCAA/Personality/psychology/ Risk/weight/weight control/Education/success
Abstract: A majority of the eating disorder research on male athletes has confirmed pathogenic weight control methods and dieting among this population. Males tend to diet more defensively in sports that demand weight control. However, discrepancy among researchers has led many to believe that male dieting is functional in order for athletic success with a general absence of the central pathology characteristic of clinical eating disorders. The purpose of this study was to determine whether relationships existed between personality patterns among National Collegiate Athletic Association (NCAA) male wrestlers and their risk for eating disorders. Specifically, the researcher explored whether males wrestlers exhibited levels of referral for eating disorders. Using a quantitative research design, it was found that NCAA male wrestlers (N = 108) were at an increased risk for eating disorders, with 13% of total participants scoring at levels indicating a need for referral. Analysis of data indicated that the independent variables of NCAA Division level, weight category, personality strength, and current psychological need did not have a relationship with eating disorder risk. However, when accounting for the independent variables of NCAA Division level, weight category, and current psychological need, personality strength ($p < .05$) had a moderating effect on eating disorder risk. Furthermore, when controlling for the independent variables of weight category, personality strength, and current psychological need, NCAA Division level indicated a mild trend toward significance ($p < .1$) with eating disorder risk. Due to the trend towards significance of personality strength with the relationship between NCAA Division level and eating disorder risk ($p < .1$), it was determined that personality strength had a moderating effect on NCAA Division level and eating disorder risk. Thought and belief oriented personality strengths represented 56.8% of the participants in this study. With 13% of the population studied scoring at levels of referral for eating disorders, it was concluded that the unknown etiology of eating disorder risk and the long term consequences of pathogenic weight control measures warrant future research.

Editor's Note: While the eating patterns of many wrestlers is certainly disordered during the weight making process, the prevailing thought seems to be that it does not persist following the competitive season, and is not indicative of an eating disorder. However, this type of research may help to elucidate why this seems to be the case, and at the same time possibly uncover male wrestlers for whom these behaviors can persist and actually become an eating disorder.

Ezerskis, M. Dynamics of cardiovascular functional indices of elite Greco-Roman wrestlers during annual training cycle. (2009) Doctoral Dissertation, Lithuanian Academy of Physical Education
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Editor's Note: Mindaugas placed 7th in the Beijing Olympics in Greco-Roman at 96kg. I was asked by the dissertation advisor, Dr. Jonas Poderys, to offer some comments as part of the defense process. I have included those comments.

Although coaches develop complex training plans, it is often difficult to present empirical evidence as to the efficacy of the various portions of the training. Wrestling is a complex sport which is difficult to assess. The wrestlers' match results are not as sensitive as to reflect the presence of the desired adaptations. The

competitive results (time, distance) of closed sports such as cycling, rowing, athletics, swimming can be more indicative of the presence of the desired adaptation. This study contains some promising methods for the assessment of alterations caused by training in elite wrestlers. In the annual training process measured and all-out load tests can be used for the adjustment of the training plan. Measured load tests are proper when the frequent assessment of sportsman functional state is required. Ezerskis provides protocols which are practicable for use as simple, repeated tests that avoid becoming a confounding variable with their own training effect. Sensitive and appropriate indices, and algorithms from cardiovascular data are provided for the assessment of adaptation during the various phases of the training cycle. Heart rate variability studies are providing a wealth of information diagnostic medicine, physical fitness research, and now, in this study, the training control of athletes.

This study makes a large contribution to the scientists and trainers who work with wrestlers. The adaptive response can be quantified, which will allow us to make necessary changes in the training plan, as well as becoming more aware of individual differences in our wrestlers' response to training. I look forward to replicating some of the tests in our work with wrestlers in the USA.

Greener, M. (2009) Getting ahead of tinea capitis. ***Nurse Prescribing*** 7(11): 495-498
Keywords: dermatology/tinea/tinea gladiatorum
Abstract: The clinical presentation of tinea capitis (fungal infections of the scalp) ranges from mild scaling, to widespread alopecia, to markedly inflamed and suppurating kerions. Tinea capitis tends to be most common in children aged between 6 and 10 years, although adolescents and adults can contract fungal scalp infections and be asymptomatic carriers. The dermatophyte *Trichophyton tonsurans* causes between 50% and 90% of tinea capitis cases in the UK. However, the wide range of potential pathogens—especially among people originating in, or who have visited, foreign countries—and diagnostic difficulties mandate mycological testing. Fungi can infect the hair shaft, which protects the dermatophyte from topical antifungals. Yet despite tinea capitis being common, there are relatively few approved oral antifungals licensed for the condition. Nevertheless, a 6–12-week course of oral griseofulvin produces mycological cures in between 70% and 100% of tinea capitis cases. Topical antifungals may reduce transmission and nurses can encourage the family to follow some simple steps that reduce the risk of further infection.

Editor's Note: This article provides an excellent overview of working with tinea capitis. Infections on the head often are more difficult to resolve, and can also be asymptomatic carriers that can transmit the disease.

Hamilton LD, Van Anders SM, Cox DN, Watson NV. The effect of competition on salivary testosterone in elite female athletes. ***Int J Sports Physiol Perform.*** 2009 4(4):538-42.
Keywords: women/hormones/testosterone/competition
Abstract: The association between androgens and competition in women has been understudied compared with men. The current study examined the link between testosterone (T) and competition in elite female athletes, using a sample of female wrestlers that included athletes competing at both the national and international level. In a repeated-measures design, saliva samples were collected before and after wrestling bouts, with comparable samples of wins and losses, and subsequently analyzed for T. Study results showed a 22% increase in circulating bioavailable T from pre- to postbout, $F(1, 12) = 9.71$, $P = .009$. There was no significant difference in T between win or loss outcomes. These findings-showing a link between individual head-to-head competition and T in women-demonstrate that women's androgenic responses to environmental contexts are dynamic and may be an important factor to address in research on competitive performance.
Department of Psychology, Simon Fraser University, Burnaby, BC, Canada.

Editor's Note: The subjects in this study were members of the Canadian National Team. The functional significance of these findings that women athletes show an androgenic response to intense head-to-head competition is not clear at this time. It is possible that increased testosterone can enhance performance through alteration of cognitive or physical processes.

Hildebrandt, Lori Madeline Mat game: The rise of American wrestling. Proquest Dissertations and Theses 2009. Section 0113, Part 0337 285 pages; [Ph.D. dissertation].United States -- Maine: The University of Maine; 2009. Publication Number: AAT 3364704.
Keywords: history/sociology/masculinity

Abstract: Mat Game is the story of wrestling as it develops from earliest times to its peak in the first decade of the twentieth century. Prior to 1900, wrestling was an important martial art, practiced in various styles around the world. As it developed in America, its participants occupied a unique position as representatives of local and national communities. An examination of primary sources shows a link between wrestling, cultural and religious images of manhood, the press, and the development of "men's" literature. The intersection of these seemingly disparate things led to the creation of an "ideal" American hero - and brought wrestling to its pinnacle at the turn of the twentieth century. This dissertation has two primary goals. First, it documents important events in early wrestling, connecting its participants to the larger culture of which they were part. Second, it illustrates the role of wrestling and wrestlers in the formation of images of manhood from colonial America to the early 1900s. Wrestling held a lofty position among early Americans, both natives and, ironically, Puritans. Wrestling helped these early Americans prepare physically and mentally for war. In addition, it helped define a man's worthiness to lead, whether as a native Chief or an American President. A look at literature throughout this period and into the early 1900s connects the image of a wrestler's strength and physical "beauty" to changing ideas of health, national vigor, and morality as exemplified by "muscular Christianity." By the turn of the century, wrestling and wrestlers brought the characters and ideals of realism, naturalism and pulp literature to life. Though limited in scope, this cultural and historical look at wrestling will contribute to our understanding of the everyday lives of eighteenth and nineteenth century American men. The study of wrestling has been largely ignored in academia, and this dissertation aims to lay a foundation upon which future research can be conducted.

Ilkit M, Saracli M, Kurdak H, Turac-Bicer A, Yuksel T, Karakas M, Schuenemann E, Abdel-Rahman SM**.** Clonal outbreak of Trichophyton tonsurans tinea capitis gladiatorum among wrestlers in Adana, Turkey. ***Med Mycol*** 2009 Oct 14.
Keywords: dermatology/tinea gladiatorum/tinea
Abstract: Tinea capitis gladiatorum and tinea corporis gladiatorum caused by the anthropophilic dermatophyte Trichophyton tonsurans are well-known clinical entities in individuals involved in combat sports e.g., wrestlers and judo practitioners. We present an outbreak of Trichophyton tonsurans tinea capitis gladiatorum among wrestlers at a boarding school in Adana, Turkey. Fourteen of the 29 wrestlers examined (48.3%) harbored the pathogen, including eight asymptomatic scalp carriers, five with tinea capitis superficialis, and one asymptomatic trunk carrier. Dermatophytes were isolated from samples of the neck (1), nape (1), trunk (3) and inguinal area (2) in four of the five tinea capitis cases. A total of five inanimate objects, i.e., two wrestling mats, two pillowcases, and one sheet were also found to be positive for T. tonsurans. Mixed-marker strain typing examining 24 sequence variations in 12 gene loci confirmed that the outbreak was caused by a single strain of T. tonsurans.
Department of Microbiology, Faculty of Medicine, University of Cukurova, Adana, Turkey.

Editor's Note: The asymptomatic scalp carriers, present a challenge. Is this where the prophylactic use of oral anti-fungal meds is indicated? Or can the periodic use of anti-fungal shampoo provide a solution?

Kara, E., Gunay, M., Ciciouglu, I., Ozal, M., Kilic, M., Mogulkoc, R., & Baltaci, A. K. (2009). Effect of Zinc Supplementation on Antioxidant Activity in Young Wrestlers. ***Biol Trace Elem Res,*** June 14 epub.
Keywords: glutathione peroxidase/Minerals/Nutrition/supplements/zinc/immune system
Abstract: This study aims to examine the effect of zinc supplementation on free-radical formation and antioxidant system in individuals who are actively engaged in wrestling as a sport. The study registered a total of 40 male subjects, of whom 20 were wrestlers and 20 were sedentary individuals. The subjects were equally allocated to four groups: group 1, zinc-supplemented sportsmen group; group 2, sportsmen group without supplementation; group 3, zinc-supplemented sedentary group; group 4, sedentary group without supplementation. Blood samples were collected from all subjects twice, once at the beginning of the study and once again at the end of 8-week procedures. The blood samples collected were analyzed to determine the levels of malondialdehyde (MDA), serum glutathione (GSH), serum glutathione peroxidase (GPx) activity, serum superoxide dismutase (SOD) activity (ELISA colorimetric method) and zinc (colorimetric method). No difference was found between MDA levels of the study groups in the beginning of the study. The highest MDA value at the end of the study was obtained in group 4 ($p < 0.01$). MDA levels in group 2 were established to be significantly higher than those in groups 1 and 3 ($p < 0.01$). GSH level, GPx, and SOD activities and zinc level measured in the beginning of the study were not different between groups. Measurements performed at the end of the study showed that groups 1 and 3 (zinc-supplemented groups) had the highest GSH level, GPx, and SOD activities and zinc level ($p < 0.01$). These parameters were not different in the groups without supplementation (groups 2 and 4). Results obtained at the end of the study indicate that zinc supplementation prevents production of free radicals by activating the antioxidant system. In conclusion, physiologic doses of zinc supplementation to athletes may beneficially contribute to their health and performance.

Editor's Note; See Senchina in this bibliography.

Karninčić, Hrvoje, Zoran Tocilj, Ognjen Uljević and Marko Erceg Lactate profile during Greco-Roman wrestling match. ***Journal of Sports Science and Medicine*** (2009) 8(CSSI 3), 17-19
Keywords: Anaerobic/aerobic/energy system/combat sport.
Abstract: The objective of this study was to determine and compare lactate profile of two groups of Greco-Roman wrestlers with different competences and training experience. Study was conducted on 10 wrestles that were members of Croatian national team and 10 wrestlers that were members of Wrestling club Split. Lactate samples were collected at four intervals during control fights that were held according to international wrestling rules of World Wrestling Federation FILA. Values of lactate increased as competition progressed, and they were highest at the end of the match for both groups of wrestlers. According to this study there were no significant differences in lactate between two groups at the end of the match, while significant differences were noted during the match. The information about lactate profile presented in this study can be used by coaches and wrestlers to develop condition programs.
Faculty of Kinesiology, University of Split, Split, Croatia and Center for sport medicine DIOMED, Split, Croatia

Editor's Note: It would be useful to see the lactate profiles of the athletes through a series of 4-5 matches in one day which is the requirement for the medalists in international competition. This has been done at some world championships, however, this was before the significant rules changes of 2005, and should be repeated.

King OS Infectious disease and boxing. ***Clin Sports Med.*** 2009 28(4): 545-60
Keywords: infections/skin infections,/dermatology
Abstract: There are no unique boxing diseases but certain factors contributing to the spread of illnesses apply strongly to the boxer, coach, and the training facility. This article examines the nature of the sport of boxing and its surrounding environment, and the likelihood of spread of infection through airborne, contact, or blood-borne routes of transmission. Evidence from other sports such as running, wrestling, and martial arts is included to help elucidate the pathophysiologic elements that could be identified in boxers.
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Editor's Note: I include this study from boxing to see what has been the experience in other combative sports.

Lee H, Park JE, Choi I, Cho KH. Enhanced functional and structural properties of high-density lipoproteins from runners and wrestlers compared to throwers and lifters. ***BMB Rep.*** (2009) 42(9):605-10.
Keywords: cardiovascular; cholesterol; lipoproteins
Abstract: Plasma high-density lipoprotein cholesterol (HDL-C) levels are inversely correlated with the risk of cardiovascular disease, and are known to increase with repetitive exercise. In the current study, HDL fractions from athletes' sera were isolated and compared as a function of the type of sport (runners [n = 10], throwers [n = 10], wrestlers [n = 10], and weight lifters [n = 8]), and as an age- and gender-matched reference group (n = 14). Among athletes, HDL from runners had the strongest antioxidant activity. Immunodetection showed that runners and wrestlers had the highest levels of apoA-I and lowest levels of apoA-II in their HDL. Electron microscopy also revealed that HDL(2) of runners and wrestlers were the largest in size. In conclusion, although all athlete groups had significantly better serum lipid/lipoprotein profiles than the reference group, runners and wrestlers had the most desirable lipoprotein function and structure, including antioxidant activity, HDL-associated enzyme activities and increased particle size.
School of Biotechnology, Yeungnam University, Gyeongsan, Korea.

Editor's Note: The type of training employed by wrestlers is a strong contributor to cardiovascular health. This can be a selling point for our sport!

Loro WA, Owens B. Unilateral hypoglossal nerve injury in a collegiate wrestler: a case report. ***J Athl Train.*** (2009) 44(5):534-7.
Keywords: Cervical spine; Concussion; injuries; nerve injuries; neurologic; Spine
OBJECTIVE: To introduce the case of a collegiate wrestler who suffered a traumatic unilateral hypoglossal nerve injury. This case presents the opportunity to discuss the diagnosis and treatment of a 20-year-old man with an injury to his right hypoglossal nerve. BACKGROUND: Injuries to the hypoglossal nerve (cranial nerve XII) are rare. Most reported cases are the result of malignancy, with traumatic causes less common. In this case, a collegiate wrestler struck his head on the wrestling mat during practice. No loss of consciousness occurred. The wrestler initially demonstrated signs and symptoms of a mild concussion, with dizziness and a headache. These concussion symptoms cleared quickly, but the athlete complained of difficulty swallowing (dysphagia) and demonstrated slurred speech

(dysarthria). Also, his tongue deviated toward the right. No other neurologic deficits were observed. DIFFERENTIAL DIAGNOSIS: Occipital-cervical junction fracture, syringomyelia, malignancy, iatrogenic causes, cranial nerve injury. TREATMENT: After initial injury recognition, the athletic trainer placed the patient in a cervical collar and transported him to the emergency department. The patient received prednisone, and the emergency medicine physician ordered cervical spine plain radiographs, brain computed tomography, and brain and internal auditory canal magnetic resonance imaging. The physician consulted a neurologist, who managed the patient conservatively, with rest and no contact activity. The neurologist allowed the patient to participate in wrestling 7 months after injury. UNIQUENESS: To our knowledge, no other reports of unilateral hypoglossal nerve injury from relatively low-energy trauma (including athletics) exist. CONCLUSIONS: Hypoglossal nerve injury should be considered in individuals with head injury who experience dysphagia and dysarthria. Athletes with head injuries require cranial nerve assessments.
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Macro, E.; Viveiros J., and Cipriano N., McMaster University, Hamilton, Ontario (2009) Wrestling with Identity: An Exploration of Female Wrestlers' Perceptions. ***Women in Sport and Physical Activity Journal*** 18(1) 42-53
Keywords: psychology/women/perceptions/attitudes
Abstract: This study explores female freestyle wrestlers' experiences related to identity, body consciousness, (hetero) sexuality, and (conventional) femininity, and also the perceptions of females participating in a traditionally male-dominated sport. Data was collected from questionnaires distributed to 47 high school, university, and club female wrestlers and from in-depth interviews with eight university wrestlers. Based on the findings, the researchers suggest that female wrestlers are comfortable with their body; that public perception concerning their sexuality and femininity is not an issue of concern for them; and that they do not experience gender-role conflict nor engage in the female apologetic. The results are of particular interest because they differ from what other studies have concluded regarding the experiences of women in(traditionally male-dominated sports.


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Editor's Note: It seems that in today's high speed world the growing acceptance of women's wrestling outpaces the sociologist's theorizing! Overall, the women in this study find their participation in wrestling to be an empowering experience.

Matsushigue, K. A., Hartmann, K., & Franchini E (2009). Taekwondo: Physiological responses and match analysis. J Strength Cond Res, 23, 1112-1117.
Keywords: blood/competition/lactate/match analysis/recovery
Abstract: The aim of the present study was to determine the time structure and physiological responses during Songahm Taekwondo (TKD) competition and to compare these variables between winner and non-winner athletes. Fourteen men subjects were analyzed. Blood lactate concentration (LA) and heart rate (HR) were determined before and after the match. The match was filmed for the determination of the number of techniques used, the duration of effort and rest periods (RPs), and the interval between high-intensity movements (HM). Post-match LA was 7.5 +/- 3.8 mmol·L^{-1}, HR was 183 +/- 9 b·min-1, and HM was 31 +/- 16 seconds. The mean effort time (8 +/- 2 seconds) did not differ from mean interval time (8 +/- 3 seconds). Winners used a smaller total number of techniques, but post-match LA or HR did not differ from that of non-winners. In conclusion, the glycolytic metabolism was not the predominant energy source and the physiological responses did not differ between winners and non-winners. Coaches and sports scientists should prepare a technical or physical training session considering the low glycolytic contribution in this sport, hence the training protocol should involve high-intensity movements interspersed with longer RPs to provide the creatine phosphate recovery, with special attention given to the technical quality of TKD skills and not to higher technique volume during a simulation of matches.

Editor's Note: I present this study as a model for similar work in wrestling, especially in light of the recent rules changes in international wrestling.

Mirzaei B, Curby DG, Rahmani-Nia F, Moghadasi M. Physiological profile of elite Iranian junior freestyle wrestlers. ***J Strength Cond Res.*** (2009) 23(8):2339-44.
Keywords: profiles/strength/power/body composition/speed/aerobic capacity/testing
The purpose of the present investigation was to describe the physiological profile of elite Iranian junior freestyle wrestlers. Seventy elite wrestlers (age 19.8 +/- 0.9 years) who were invited to the national training camps, based on their top 10 national ranking, participated in this study. The physiological profile included body weight, flexibility (sit and reach test), maximal oxygen consumption (Bruce protocol), maximal anaerobic power of the legs (Wingate test), muscular endurance and strength (bench press, squat, pull-ups, push-ups, grip strength, and bent-knee sit-up test), speed (40-m sprint), agility (4 x 9-m shuttle run), and body composition (7-site skinfold). The major results (mean +/- SD) are as follows: body weight (kg): 77.5 +/- 19.8; flexibility (cm): 38.2 +/- 3.94; maximal oxygen consumption (ml kg(-1) min(-1)): 50.5 +/- 4.7; maximal anaerobic power of the legs (W): 455.5 +/- 87.6; 1-repetition maximum bench press (weight lifted kg body weight(-1)): 1.4 +/- 0.15; 1-repetition maximum squat (weight lifted kg body weight): 1.7 +/- 0.2; push-ups (n): 66.9 +/- 7.6; pull-ups (n): 31.6 +/- 9.7; grip strength (force in kg body weight kg(-1)) 1.02 +/- 0.11; bent-knee sit-ups (n): 66.5 +/- 8; speed (s): 5.07 +/- 0.17; agility (s): 8.7 +/- 0.25; and body fat (%): 10.6 +/- 3.8. The present study provides baseline physiological data that have been used in the prescription of individual training programs for these athletes. This information is also available to the coaches and can contribute to the general strategy employed by a wrestler and for a specific match.
Department of Sport Sciences, University of Guilan, Rasht, Iran.

Editor's Note: Standardization of testing protocols will allow for comparisons between athlete groups. The identification of the most important tests is a task that remains.

Mudry, A. & Pirsig, W. (2009). Auricular hematoma and cauliflower deformation of the ear: From art to medicine. ***Otol Neurotol***, 30, 116-120.
Keywords: auricular Hematoma/cauliflower ear/Ear/injuries/
Abstract: Auricular hematoma and cauliflower deformation of the ear are unique in several respects. Knowledge about it began, in antiquity, through artists, particularly Greek and Roman, and then Japanese in the 18th century with their representation of cauliflower deformation of the ear on sculptures and paintings of pugilists and wrestlers. It is only in the 19th century that physicians began to make substantive progress in understanding this abnormality. It was first thought to be associated with mental disease, but by the beginning of the 20th century, its etiology was recognized as being caused by trauma and was then named auricular hematoma. The second step in the understanding of this affliction was the observation that auricular hematoma progresses toward cauliflower deformation of the ear, which was named cauliflower ear. Recognition of this evolution led to the development of therapies. During the second half of the 20th century, different treatments were developed. They included various hematoma drainage techniques with special bandages to prevent hematoma recurrence and ensuing progression to cauliflower ear. In summary, cauliflower deformation of the ear is an old artistic affliction that has only recently received medical attention.

Editor's Note: See Roy & Smith in this bibliography.

Newsome AL, DuBois JD, Tenney JD. Disinfection of football protective equipment using chlorine dioxide produced by the ICA TriNova system. ***BMC Public Health.*** 2009 9:326.
Keywords: equipment/hygiene/MRSA/Skin infections/Staphylococcal Infections/Staphylococcus aureus
BACKGROUND: Community-associated methicillin-resistant Staphylococcus aureus outbreaks have occurred in individuals engaged in athletic activities such as wrestling and football. Potential disease reduction interventions include the reduction or elimination of bacteria on common use items such as equipment. Chlorine dioxide has a long history of use as a disinfectant. The purpose of this investigation was to evaluate the ability of novel portable chlorine dioxide generation devices to eliminate bacteria contamination of helmets and pads used by individuals engaged in football. METHODS: In field studies, the number of bacteria associated with heavily used football helmets and shoulder pads was determined before and after overnight treatment with chlorine dioxide gas. Bacteria were recovered using cotton swabs and plated onto trypticase soy agar plates. In laboratory studies, Staphylococcus aureus was applied directly to pads. The penetration of bacteria into the pads was determined by inoculating agar plates with portions of the pads taken from the different layers of padding. The ability to eliminate bacteria on the pad surface and underlying foam layers after treatment with chlorine dioxide was also determined. RESULTS: Rates of recovery of bacteria after treatment clearly demonstrated that chlorine dioxide significantly ($p < 0.001$) reduce and eliminated bacteria found on the surface of pads. For example, the soft surface of shoulder pads from a university averaged 2.7 x 10(3) recoverable bacteria colonies before chlorine dioxide treatment and 1.3 x 102 recoverable colonies after treatment. In addition, the gas was capable of penetrating the mesh surface layer and killing bacteria in the underlying foam pad layers. Here, 7 x 10(3) to 4.5 x 10(3) laboratory applied S. aureus

colonies were recovered from underlying layers before treatment and 0 colonies were present after treatment. Both naturally occurring bacteria and S. aureus were susceptible to the treatment process. CONCLUSION: Results of this study have shown that chlorine dioxide can easily and safely be used to eliminate bacteria contamination of protective pads used by football players. This could serve to reduce exposure to potential pathogens such as the methicillin-resistant Staphylococcus aureus among this group of individuals.
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Editor's Note: The potential methods for the decontamination of shoes and kneepads requires that we look to what is being investigated in other sports.

O'Laughlin, D. M. & Cook, J. (2009). Financial analysis of methicillin-resistant Staphylococcus aureus in a high school wrestler. ***Pediatr Nurs***, 35, 130-136.
Keywords: Skin/Infection/MRSA/Staphylococcal Infections
Abstract: This article tracks the progression of an easily preventable skin infection of a high school athlete that occurred due to the lack of a cleanliness protocol in a high school gym. The extensive and expensive progress of the infection resulted in a major near-death event for the teen. Guidelines for school athletic programs are included. The ethical principle of justice supports nursing and public attention to prevention rather than tertiary care.

Editor's Note: This powerful case study tracks the costs incurred by a wrestler to be over $208,000 and is compared to the $41 that would have had to be spent to accommodate the good hygiene practices for the wrestling gym and locker room.

Panov, S.F., A. A. Pleshakov, M. S. Glazatkina, and A. I. Vakulo. Gastric secretion in seven- to thirty-two-year-old wrestlers. ***Human Physiology*** 35 (2):208-214, 2009.
Keywords: stomach/digestion/long-term effects
Abstract: The formation and adaptation of gastric secretion was studied in the sports ontogeny of various wrestlers and of athletes retired from sport. Gastric secretion proved to depend strongly on the level of the wrestlers' motor activity, which determined changes in the reactivity of the digestive apparatus and intensity of proteolysis (hypo- and hyperfunctions). Changes in the secretory gastric activity of wrestlers depended on their age and the duration and intensity of their physical exercises and were correlated with the body weight of the athletes.

Editor's Note: The hypofunction of gastric secretion in wrestlers is documented. This continues through retirement from sport. The significance of these findings should be interpreted by gastroenterologists regarding their impact on detraining and retirement from sport by elite sportsmen.

Popadic Gacesa JZ, Barak OF, & Grujic NG (2009). Maximal anaerobic power test in athletes of different sport disciplines. ***J Strength Cond Res***, 23, 751-755.
Keywords: anaerobic capacity/anaerobic power/peak power/power/testing
Abstract: The aim of this study was to investigate the values of anaerobic energetic capacity variables in athletes engaged in different sport disciplines and to compare them in relation to specific demands of each sport. Wingate anaerobic tests were conducted on 145 elite athletes (14 boxers, 17 wrestlers, 27 hockey players, 23 volleyball players, 20 handball players, 25 basketball players, and 19 soccer players). Three variables were measured as markers of anaerobic capacity: peak power, mean power, and explosive power. The highest values of peak power were measured in volleyball 11.71 +/- 1.56 W.kg and basketball players 10.69 +/- 1.67 W.kg, and the difference was significant compared with the other athletes ($p <or= 0.05$). The lowest value of peak power (8.58 +/- 1.56 W.kg) was registered in handball players. The mean power variable showed a similar distribution as peak power among groups. The highest values of explosive power were also registered in volleyball 1.75 +/- 0.33 W.s.kg and basketball players 1.64 +/- 0.35 W.s.kg, but there was no significant difference in values between volleyball players and wrestlers, between boxers and wrestlers, between boxers and basketball players, and between volleyball and hockey players ($p > 0.05$). The measured results show the influence of anaerobic capacity in different sports and the referral values of these variables for the elite male athletes. Explosive power presented a new dimension of anaerobic power, i.e., how fast maximal energy for power development can be obtained, and its values are high in all sports activities that demand explosiveness and fast maximal energy production. Coaches or other experts in the field could, in the future, find useful to follow and improve, through training process, one of the variables that is most informative for that sport.

Editor's Note: The demands of the sport may make an arm cranking Wingate test more appropriate for sports such as wrestling.

Roy, S. Smith, L.P. (2010) A novel technique for treating auricular hematomas in mixed martial artists (ultimate fighters) ***Am J Otolaryngol*** 31 (2010) 21 -24 Epub 2009 Mar 26
Keywords: auricular Hematoma/cauliflower ear/Ear/injuries/Hematoma
Purpose: This study aimed to descnbe a "bolsterless~ technique for managing auricular hematomas in professional fighters. Methods: Eight auricular hematomas were drained under local anesthesia by incising along an anatomical auricular crease. After evacuation of the hematoma and copious irrigation. the resultant skin flap was replaced in anatomical position. and through-and-through absorbable mattress sutures were used to secure the flap in place. Incision sites were left open and dressed with antimicrobial ointment No bolsters were placed. The patients were given I week of oral antibiotic therapy. Results: All 8 hematomas resolved without further intervention. All 8 ears returned to their preinjury cosmetic state. Fighters were able to return to training within a week of the initial injury. No postoperative infections or other complications were noted. Conclusions: In contrast to wrestlers, mixed martial artists (also called "ultimate fighters~) do not routinely wear protective head gear. As a result, they are at increased risk of recurrent auricular hematomas, often resulting in severe auricular deformities (cauliflower ear). These patients are anxious to return to training and fighting and are reluctant to wear a bolster after repair. At their urging, we agreed to attempt this bolsterless technique. Although 2 patients in this series already had a significant cauliflower ear before being treated for the current hematoma, in all cases the auricle returned to its preinjury condition. Bolsterless treatment using mattress sutures and cosmetically placed incisions presents a successful technique for management of auricular hematomas in this population.

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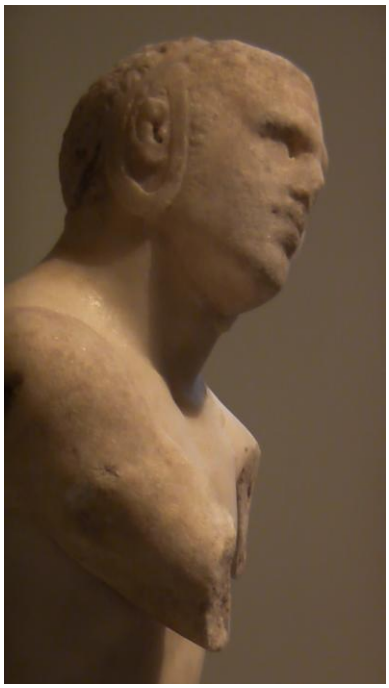

Editor's Note: Auricular hematoma has been present in combative sport since antiquity. There have been various treatment approaches, as illustrated by this article. I recently observed this interesting exhibit at the New York Metropolitan Museum of Art: Small Marble Statue of an athlete, 2nd or 3rd century B.C. He was clearly a competitor in one of the combat sports-wrestling, boxing or pankration. This is an early depiction of the type of protective earguard and chinstrap used by the Ancient Greeks.

Senchina DS, Shah NB, Doty DM, Sanderson CR, Hallam JE. Herbal supplements and athlete immune function--what's proven, disproven, and unproven? ***Exerc Immunol Rev.*** 2009;15:66-106.
Keywords: supplements/immune system/ergogenic aids
Abstract: The purpose of this paper is to critically evaluate current immunological and clinical literature regarding the effects of herbal preparations on athlete immune function. First, we review rates of herbal supplement use by athletes. Second, we use ginseng (Panax ginseng) and coneflower (Echinacea spp.) as models for examining how herbal supplements may influence immune function within the contexts of exercise and sport, while briefly considering several other popular herbal products. Third, we proffer several evidence-based hypotheses to explain apparent discrepancies among the cumulative data, concomitantly advancing a novel conceptual framework which may be useful to understanding herbal supplements and athlete immune function using Echinacea supplements as a model. Fourth, we apply the proposed framework to some prospective data regarding the effects of Echinacea pallida and Echinacea simulata on in vitro cytokine production and cell proliferation in peripheral blood mononuclear cells collected from male collegiate wrestlers and soccer players during training. Fifth and finally, we

evaluate the current knowledge on herbal supplements and athlete immune function, identify gaps and limitations in knowledge, and advance several possible options for future research.
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Editor's Note: Athletes are bombarded with advertising for products promising a variety of performing enhancing effects. Studies regarding these claims are often contradictory. This review article does an excellent job of identifying the variables that must be considered in researching the effects of herbal supplements. It can be a daunting task. For example the factors that can influence the outcome effects include: plant age, time of harvest, soil, sunlight, storage, age and gender of subjects, and dosing regimen for their extracts. These variables must be studied to explain some of the variations in the literature. This is the challenge for exercise immunologists as we need information to move us past the simplistic question, "does it work?" to a more scientifically valid question of "under what conditions will a given herbal supplement exert or not exert a specific effect." This approach applies to almost all nutritional and supplement claims.

Shiraki, Y., Hiruma, M., Hirose, N., & Ikeda, S. (2009). Commonly affected body sites in 92 Japanese combat sports participants with Trichophyton tonsurans infection. Mycoses, epub.
Keywords: dermatology/Infection/Tinea/Trichophyton
Abstract: Outbreaks of Trichophyton tonsurans infection constitute one of the serious problems among combat sports practitioners in Japan. To facilitate the diagnosis of individuals at risk, we undertook a study to determine which body sites are most commonly infected. We reviewed medical data, hairbrush culture results and questionnaire information from patients with T. tonsurans infection who were admitted to the dermatology clinic of Juntendo University hospital from 2000 to 2004. The study included 92 patients (87 males), aged 6-38 years (mean age: 18.4 years old). Eighty-nine patients were judo practitioners and three were wrestlers. Twenty-eight patients (30.4%) were asymptomatic carriers. In 64 patients, 51 patients (55.4%) with tinea corporis, 27 patients (29.3%) with tinea capitis, and/or one patient (1.1%) with tinea manuum were seen. Tinea corporis was observed on the forehead, auricles, nape of the neck, bilateral shoulders, left side of the upper chest, both elbows, back of the left hand to the wrist and both knees. Tinea capitis was most common in the occipitonuchal region at the hairline and in the temporal and frontal regions, at both auricles. Initial screening of these sites might facilitate the identification of the infection especially in judo practitioners.

Shriver, L. H., Betts, N. M., & Payton, M. E. (2009). Changes in Body Weight, Body Composition, and Eating Attitudes in High School Wrestlers. ***International Journal of Sport Nutrition and Exercise Metabolism***, 19, 424-432.
Keywords: Body Composition/body fat/Body Weight/metabolism/Nutrition/Nutritional Status/Weight Loss/diet
Abstract: Background: Many wrestlers engage in chronic dieting and rapid "weight cutting" throughout the year to compete in a category below their natural weight. Such weight management practices have a negative influence on their health and nutritional status, so the National Wrestling Coaches Association implemented a new weight-management program for high school wrestlers in 2006. Purpose: The purpose of this study was to determine whether seasonal changes in weight, body fat, and eating attitudes occur among high school wrestlers after the implementation of the new weight-management rule. Methods: Fifteen high school wrestlers participated in the study. Their weight, body composition, and eating attitudes were measured preseason, in-season, and off-season. Body fat was assessed using dual-energy X-ray absorptiometry. Attitudes toward dieting, food, and body weight were assessed using the Eating Attitude Test (EAT). Results: No significant changes in body fat were detected from preseason to off-season. Weight increased from preseason to in-season ($p < .05$) and off-season ($p < .05$). Although the EAT score did not change significantly from preseason to offseason, 60% reported "thinking about burning up calories when exercising" during preseason, and only 40% felt that way during the season ($p < .05$) and 47% during off-season ($p < .05$). Conclusions: The wrestlers experienced a significant weight gain from preseason to off-season with no significant changes in body fat. Their eating attitudes did not change significantly from preseason to off-season in this study, but further research using a large sample of high school wrestlers is warranted to confirm these findings.

Editor's Note: The monitoring of body composition, rather than merely body weight, throughout the entire span from preseason through post season is a very important aspect of this research. It warrants further study.

Sisjord, M. & Kristiansen, E. (2009). Elite women wrestlers' muscles. ***Int Rev Sociology Sport***, 44, 231-236.

Keywords: body appearance/coaching/females/ gender/psychology/sociology/strength training
Abstract: Wrestling is a male-dominated sport in terms of participation, commonly perceived as a masculine sport due to the requirement of muscular strength, courage, fighting spirit, as well as and the element of combat. Integral to achieving wrestling skills and physical capability is muscularity, something which may contradict common perceptions of feminine body appearance. The objective of this study is to examine female elite wrestlers' enactment of the wrestler's role and how they experienced enhancement of skills and bodily structure. This was done by means of a qualitative interview of eight Norwegian elite wrestlers comprising four females and four males in the age group 17 to 32 years. Since the wrestlers practice in a mixed gender setting the males were included as being part of the interaction. The study revealed different ways in which the female wrestlers were doing femininity which also seemed to be contextually bound. This was particularly related to strength training and overall performance as wrestlers. The seniors had apparently accepted strenuous strength training and big muscles, whereas the juniors were 'holding back' giving priority to the 'private body'. The seniors had accepted the 'athletic body' and muscularity with its social costs.
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Editor's Note: It seems that society is moving in the direction of accepting, and even valuing, the muscularity of the "athletic body" in women.

Solberg, P. A. & Halvari, H. (2009). Perceived autonomy support, personal goal content, and emotional well-being among elite athletes: mediating effects of reasons for goals. ***Percept Mot Skills***, (108) 721-723.
Keywords: goal setting/psychology/skill
Abstract: The relations between perceived support of autonomy from coaches, characteristics of personal goals, and emotional well-being from the perspective of self-determination theory was examined among 95 elite athletes (59% men; M=21.6 yr., SD=6.1) from Track and Field, Greco-Roman Wrestling, Taekwondo, and Power Lifting. Elite athletes were those representing their country in their sport. It was hypothesized that having autonomous reasons for goals would mediate the positive associations between perceived autonomy support and intrinsic goal content with subjective positive emotional well-being, and that controlled reasons for goals would mediate the association between extrinsic goal content and subjective negative emotional well-being. An idiographic approach to measures of personal goals and the autonomous and controlled reasons and intrinsic and extrinsic contents were performed. Perceived autonomy support from the coach was assessed with the Sport Climate Questionnaire and subjective emotional well-being was assessed with the Positive and Negative Affect Schedule. All hypotheses were supported by path analyses using LISREL.
Notes: *paul.andre.solberg@nih.no*

Editor's Note: This study supports the idea that allowing athletes to decide and pursue their own goals, can result in increased effort, performance and feelings of well-being.

Tartibian B., Maleki, B. H., & Abbasi, A. (2009). The effects of omega-3 supplementation on pulmonary function of young wrestlers during intensive training. ***J Sci Med Sport***, June 10 epub.
Keywords: Nutrition/pulmonary/pulmonary function/supplements
Abstract: The purpose of this study was to examine the effects of omega-3 supplementation on young wrestler's pulmonary function during intensive wrestling training. Forty healthy young male wrestlers participated in this study. The subjects were randomly divided into experimental (n=10), placebo (n=10), active control (n=10) and inactive control (n=10) groups. Participants in experimental, placebo and active control groups performed wrestling incremental training up to 95% of exercise MHR, three times a week, for 12 weeks. The inactive control group did not participate in any exercise training. Subjects in the experimental group were asked to consume omega-3 (1000mg/day for 12 weeks), while those in placebo were refused any doses of omega-3. The pulmonary variables were measured at baseline and at the end of 12 weeks of training program. Results indicated that consuming omega-3 during 12 weeks training had a significantly positive effect on pulmonary variables such as FEV1, FVC, VC, MVV, FEF25-75, FIV1 (p=0.001), but no significant changes were observed in FEV1% (p=0.141) and FIV1%

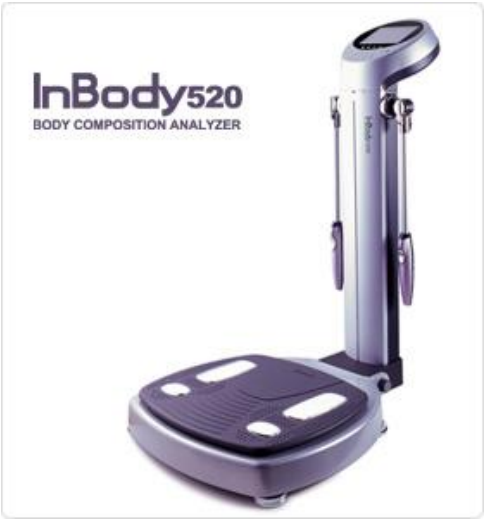
(p=0.117). The results of the present study suggest that consuming omega-3 during intensive wrestling training can improve pulmonary function of athletes during and in post-exercise.

Thompson, R.A. and R. T. Sherman. The Last Word on the 29th Olympiad: Redundant, Revealing, Remarkable, and Redundant. ***Eating Disorders*** 17 (1):97-102, 2009.
Keywords: weight loss/Olympics
The editorial presents the author's thoughts regarding the health aspects of the 2008 Olympic Games in Beijing, China. The negative body image reinforced by Australian rowing team members Amber Halliday and Marquerite Houston is discussed, as well as the harmful practice of cutting weight undertaken by Olympic wrestlers and the controversy over the possibility that some Chinese gymnasts were underage.
Bloomington Center for Counseling and Human Development, Bloomington, Indiana, USA

Editor's Note: The situation where an American freestyle wrestler became ill in his attempt to make weight, and was unable to compete, is included in this editorial.

Utter AC, Lambeth PG. Evaluation of Multi-Frequency BIA in Assessing Body Composition of Wrestlers. ***Med Sci Sports Exerc.*** 2009 Epub Nov 13.
PURPOSE: to evaluate the accuracy of multi-frequency bioelectrical impedance analysis (MFBIA) in assessing fat-free mass (FFM) in comparison with hydrostatic weighing (HW) and skinfolds (SK) in high school wrestlers in a hydrated state. METHODS:: Body composition was determined by MFBIA, HW, and 3-site SK in 72 high school wrestlers (mean +/- SD, age: 15.3 +/- 1.4 yr, height: 1.71 +/- 0.08 m, body mass: 67.3 +/- 13.4 kg). Hydration state was quantified by evaluating urine specific gravity. RESULTS: There were no significant differences for estimated FFM between MFBIA (57.2 +/- 9.5 kg) and HW (57.0 +/-10.1 kg) or SK (56.4 +/- 8.8 kg). The standard errors of estimate for FFM with HW as the reference method were 2.73 kg for MFBIA and 2.66 kg for SK. Correlations were found for FFM between HW and MFBIA ($r = 0.96$, $P < 0.001$), and between HW and SK ($r = 0.97$, $P < 0.001$). A systematic bias was found for MFBIA, as the difference between MFBIA and HW correlated with the FFM average of the two methods ($r = - 0.22$, $P < 0.001$). A bias was also seen between SK and HW and correlated with the FFM average ($r = - 0.47$, $P < 0.001$). CONCLUSION: This study demonstrates that MFBIA provides similar estimates of FFM when compared with HW in a heterogeneous high school wrestling population during a hydrated state. MFBIA is an attractive assessment tool, easy to use, and may be considered as an alternative field-based method of estimating the FFM of high school wrestlers.
Department of Health, Leisure, and Exercise Science; Appalachian State University, Boone, North Carolina 28608.

Editor's Note: There has been a general acceptance of the use of BIA in wrestling weight certification programs. This acceptance does not mean that it is without its problems. The standard error can span several weight classes. We should expect and welcome continued refinements in the BIA technology and equations used for use in wrestling. I have included a picture of the equipment used in the study.



Valiente JS, Utter AC, Quindry JC, Nieman DC (2009) Effects of Commercially Formulated Water on the Hydration Status of Dehydrated Collegiate Wrestlers. ***J Strength Cond Res***. 23 (8):2210-6
Keywords: Dehydration; hydration; hydration status; Plasma Volume; rehydration
Abstract: The objective of this study was to evaluate the effects of three different drinks (commercially formulated water, bottled water, and a carbohydrate-electrolyte beverage) on blood and urinary markers of hydration after acute dehydration in collegiate wrestlers. Twenty-one athletes were recruited to perform a randomized, crossover study comparing the effectiveness of commercially formulated water, carbohydrate-electrolyte (6% or 60 g.L), or regular

bottled water (placebo) in promoting rehydration after a 3% reduction in body mass. Urine specific gravity (Usg), urine osmolarity (Uosm), plasma osmolarity (Posm), and plasma volume were measured pre- and post-dehydration and at 1 hour after rehydration. Statistical analyses used a 3 (conditions) x 3 (times) repeated measures analysis of variance. Significant ($p < 0.01$) interactions were found for Posm, Uosm, and Usg. Posm returned to baseline levels and Uosm remained in a lower balance after 1 hour of rehydration in the trials of the commercially formulated water and regular bottled water. No significant interactions were found for plasma volume shift. The findings of this study demonstrate that the commercially formulated water was no more effective in promoting rehydration than either a carbohydrate-electrolyte solution or plain water in collegiate wrestlers after a 3% reduction in body mass and a rehydration period of 1 hour when consuming 100% of their body weight loss.
Department of Health, Leisure, and Exercise Science, Appalachian State University, Boone, North Carolina.

Editor's Note: The commercially formulated water is "an oxygenated microcluster water." The claims of increased rate of delivery to the cells and thus improved hydration, were not supported in this study.

Zuniga, J., Housh TJ, Mielke, M., Camic, C., Hendrix, C., Johnson GO, Housh, D. J., & Schmidt, R. (2009). Validity of fat-free weight equations for estimating mean and peak power in high school wrestlers. ***Pediatr Exerc Sci***, 21, 100-112.
Keywords: Body Composition/fat-free mass/peak power/power
Abstract: The purpose of this study was to cross-validate the fat-free weight (FFW) equations derived on nonathletic children and adolescents for estimating mean power (MP) and peak power (PP) in high school wrestlers. One hundred and three male high school wrestlers performed the Wingate Anaerobic Test to estimate MP and PP, as well as underwater weighing to determine FFW. The following equations were used to estimate the MP and PP of the wrestlers in the current study.MP (w) = 9.3 (FFW) - 109.8 EQ.1. PP (W) = 14.1 (FFW) - 162.1 EQ. 2. The results in the current study indicated that as percent of the mean values, the equation that predicted MP resulted in a substantially greater total error (TE; 19.9% of the mean) than the equation that predicted PP (8.3% of the mean). These findings indicated that the equation that was derived on nonathletes did not accurately estimate MP in the high school wrestlers. The equation for estimating PP, however, was valid when applied to the current sample of high school wrestlers. These findings supported previous studies that have shown that in adolescent males, exercise training improves the metabolic capabilities of the anaerobic glycolytic system, but not the phosphagen system.

FILA COACHES CLINIC ANALYSIS OF THE GRECO-ROMAN WORLD CHAMPIONSHIPS

BY PROF. DR. HAROLD TUNNEMANN

1. Current tendencies in combat behaviour against the background of new competition rules 2009

This analysis is to start with thanks to the organisers of the championships having performed a superb feat of world champion level. These championships were organised excellently, and the multimedia fireworks accompanying the competitions was particularly brilliant. We have had an enormous increase of media interests and the presence of various TV companies assisted FILA's efforts towards promotion wrestling in the world. At the same time this is a challenge for more discipline by athletes and coaches to come onto the mat in time after calling.

The Danish organizers have had a lot of ideas to present our sport on a high level and the results were excellent and useful for promotion our sports. All events were well attended and the audience supported the athletes with euphoric enthusiasm. The journalists were happy and the new competition schedule with start 1:00 pm gave way for more interesting activities in the morning before the sessions.

For example the great idea of a Youth camp. And the Youth camp became a highlight of this Championship. About 300 young wrestlers, age 12 to 18 from USA, Great Britain, Turkey, Finland, Sweden, Norway, Italy, Austria, Germany and Denmark were trained by famous international coaches from Japan, USA, Iran, Poland, Ukraine, Italy and Austria. During the Greco Roman competition James Johnson and Nate Engell (USA) and Nasser Noorbakhish, as well as Jamshid Kirabadi from the Islamic Republic of Iran showed Greco Roman wrestling so it reminded of art.

There were some tricks that made even the most tired wrestler, stare up. The hopeful wrestling youth could learn wrestling from the best coaches of the world thanks to the outstanding involvement of the Danish organizers Palle Nielson and Esben Fonnesbek.

The FILA has introduced in 2009 some important changes regarding the design competition. The spectators were thrilled by the presentation of the challenge on large video screens and for the athletes the changing modalities of the video evidence, were one more step towards Fairness.

The amendments of the wrestling rules taken by the FILA Board in June 2009 especially for Greco Roman Wrestling have had their influence to the wrestling behavior and it will deal with this analysis. After the World Championships 2007 and the Olympic Games in Beijing we have a clear decrease of the points per minute in Greco-Roman Wrestling from 1.6 in Beijing to 1.1 in Herning (fig.1).

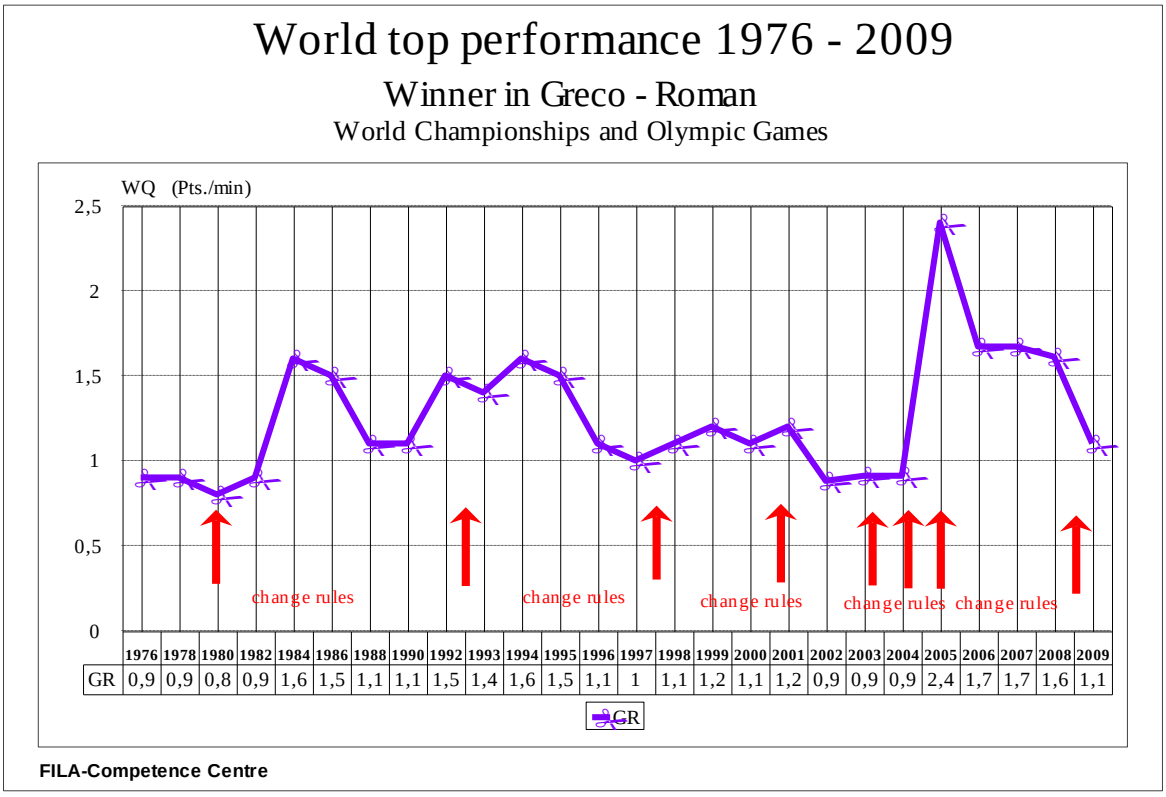


Fig. 1 Development of the points per minute made by the winner since 1976

The reason is very clear. Because of the rule changes 2009 we have only one clinch per round instead of two in Beijing. But it is a positive surprise that this decline to the average value of the last 20 years leads to a spectacular wrestling and more happiness of the spectators. The best wrestlers adapted their strategy to make points during the first minute and 30 seconds to have an advantage before the clinch. This positive trend in wrestling behaviour can be underlined by the next figure (fig.2).

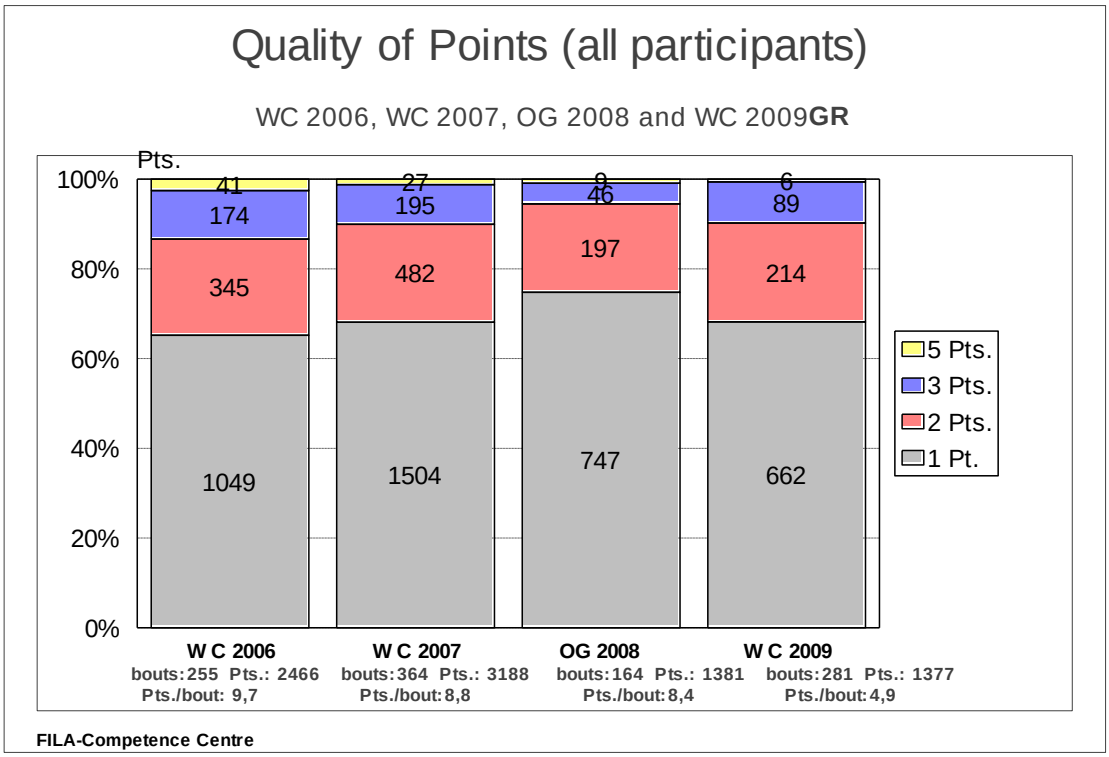
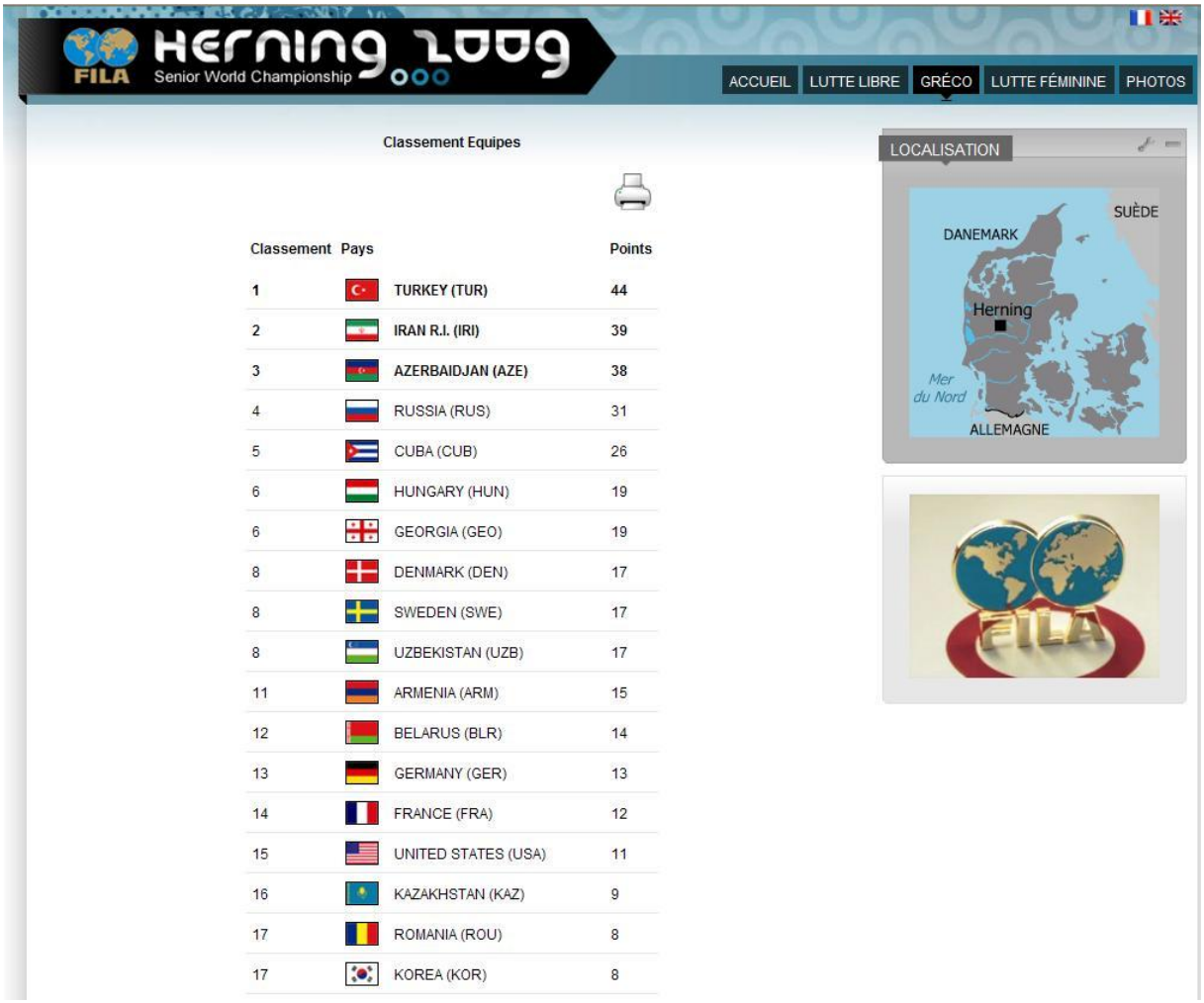


Fig. 2 Development of the quality of points since 2006

Although we have had only 4.9 points per bout in Herning vs. 8.4 in Beijing there is an increase of more 3-points and 2 points techniques in Herning. This is a clear indication for a quality improvement of wrestling. It is also a very good sign that we have had 11 falls (one during a final match by Lopez Nunez, Cuba).

2. Country-specific aspects of performance in competition

Lots of nations utilize the post-Olympic year to rejuvenate their national teams. Like previous world championships at the beginning of a new Olympic cycle those of Herning have been marked by a mixture of experienced athletes and younger newcomers. Congratulation to the athletes and coaches of Turkey, Iran, Azerbaijan, Russia and Cuba to their outstanding results! They served as an example FILA's modern philosophy of wrestling.



Classement	Pays	Points
1	TURKEY (TUR)	44
2	IRAN R.I. (IRI)	39
3	AZERBAIDJAN (AZE)	38
4	RUSSIA (RUS)	31
5	CUBA (CUB)	26
6	HUNGARY (HUN)	19
6	GEORGIA (GEO)	19
8	DENMARK (DEN)	17
8	SWEDEN (SWE)	17
8	UZBEKISTAN (UZB)	17
11	ARMENIA (ARM)	15
12	BELARUS (BLR)	14
13	GERMANY (GER)	13
14	FRANCE (FRA)	12
15	UNITED STATES (USA)	11
16	KAZAKHSTAN (KAZ)	9
17	ROMANIA (ROU)	8
17	KOREA (KOR)	8

It does not come every day before a national team that will be received by the President of the state. This honor was given to the Turkish wrestlers. This is also a great honor and simultaneous promotion of our sport.

The wrestlers of Azerbaijan and Turkey reached the most finals (5) followed by Iran (4) and Cuba and Russia (3 each). A group of high-performance countries like Hungary Georgia, Denmark, Sweden, Uzbekistan and Armenia followed the best of five countries with a distance. With a comparison of the country specific results of 2008 and 2009 we can see which countries have changed their training concepts and competition strategy successfully (fig. 3).

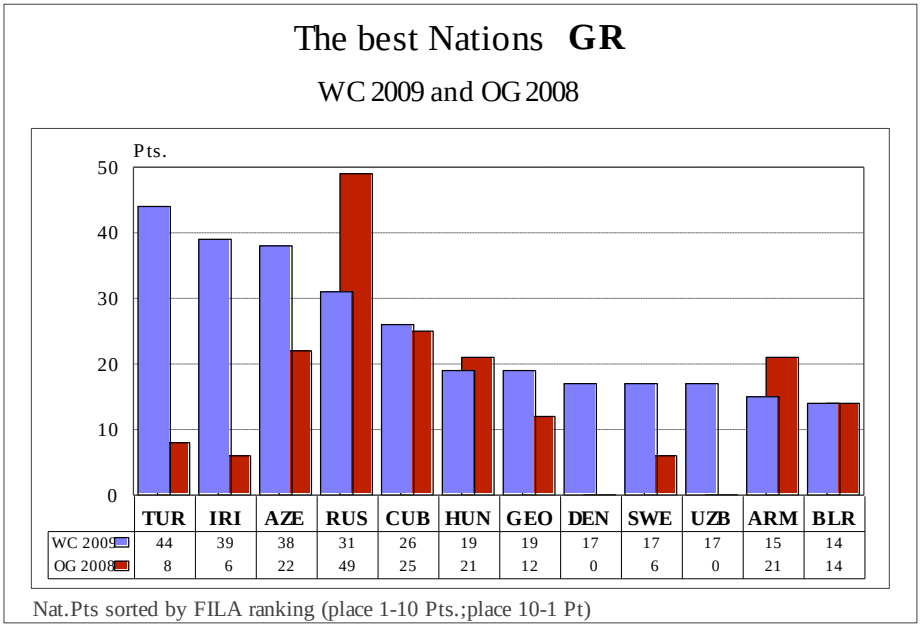


Fig. 3 Comparison of the 12 best nations in GR WC 2009 and OG 2008

We can see the fantastic improvement of performance of Turkey and Iran. They could increase their Nation points to more than 30 points! The wrestlers from Azerbaijan, Denmark, Uzbekistan and Sweden could improve their results remarkable also while Russia and Armenia had to suffer losses.

3. Qualitative analysis of combat behaviour 3.1 Combat behaviour of the nations

With the Performance index you can very good describe the technical-tactical abilities of a given nation or athlete. In this case the realized points will be set into relation to the points given away to the opponent (fig 4).

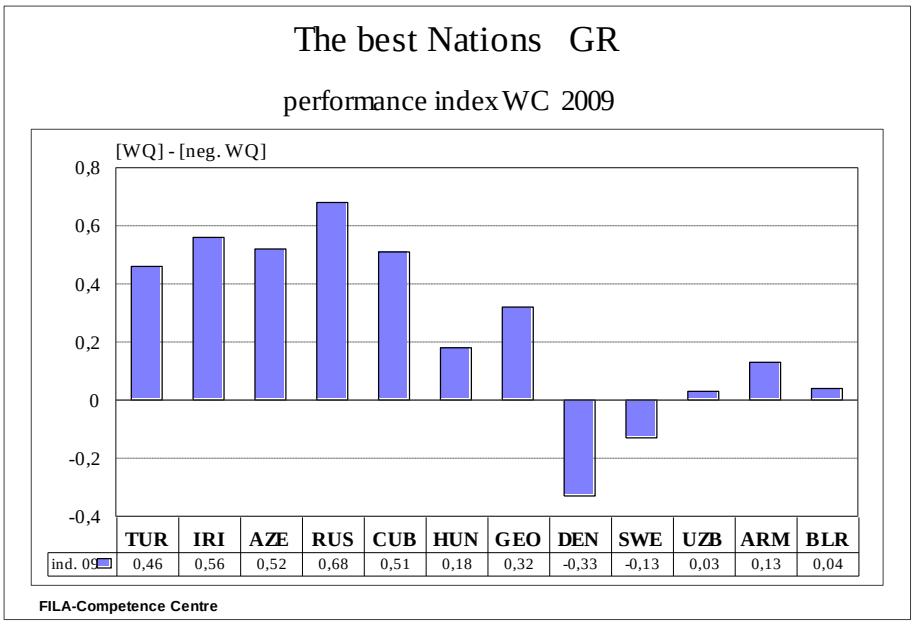
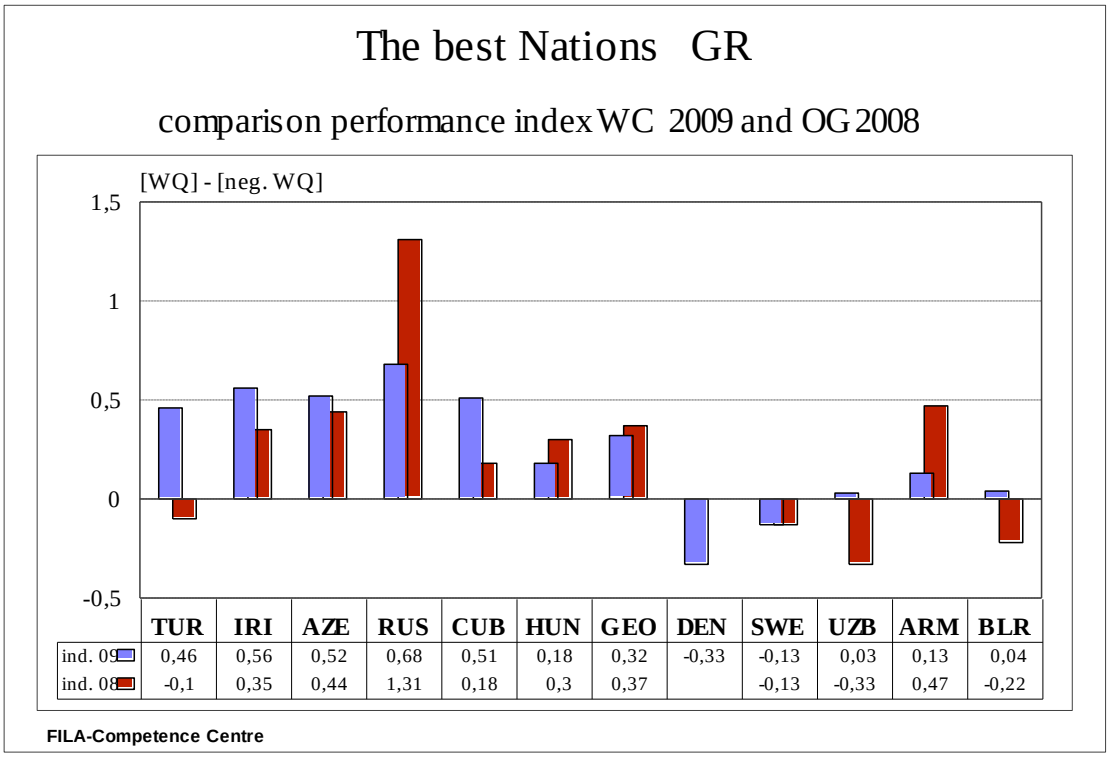


Fig. 4 Quality of wrestling in GR 2009

Seen from this point of view the Russian wrestlers could realize the best technical tactical performance together with the wrestlers from Iran, Turkey, Azerbaijan and Cuba. If we compare this qualitative aspect of wrestling to the Olympic Games 2008 (fig. 5) we consider an enormous decline for the Russian wrestlers and the improvement of Turkey, Iran, Azerbaijan and Cuba. The wrestlers from Armenia could not improve their technical tactical abilities since 2008.



	TUR	IRI	AZE	RUS	CUB	HUN	GEO	DEN	SWE	UZB	ARM	BLR
ind. 09	0,46	0,56	0,52	0,68	0,51	0,18	0,32	-0,33	-0,13	0,03	0,13	0,04
ind. 08	-0,1	0,35	0,44	1,31	0,18	0,3	0,37		-0,13	-0,33	0,47	-0,22

Fig. 5 Quality of wrestling in comparison 2009 to 2008 in GR

If we take a deeper look into the quality we can see right now the typical indications of strategies in Greco-Roman wrestling. With a positive exception of Russia the most of the 12 best wrestling nations are realizing less than 1 point per minute in their attack actions and in fact these are essentially the points realized by clinch (fig. 6). This statement will be supported by the fact when we are analyzing the amount of periods in Beijing and Herning (26 percent of the periods finished in Beijing with 1:0 or 1:1 while in Herning 48 percent of all periods finished 1:0). Only the World Champions are better that we can see later.

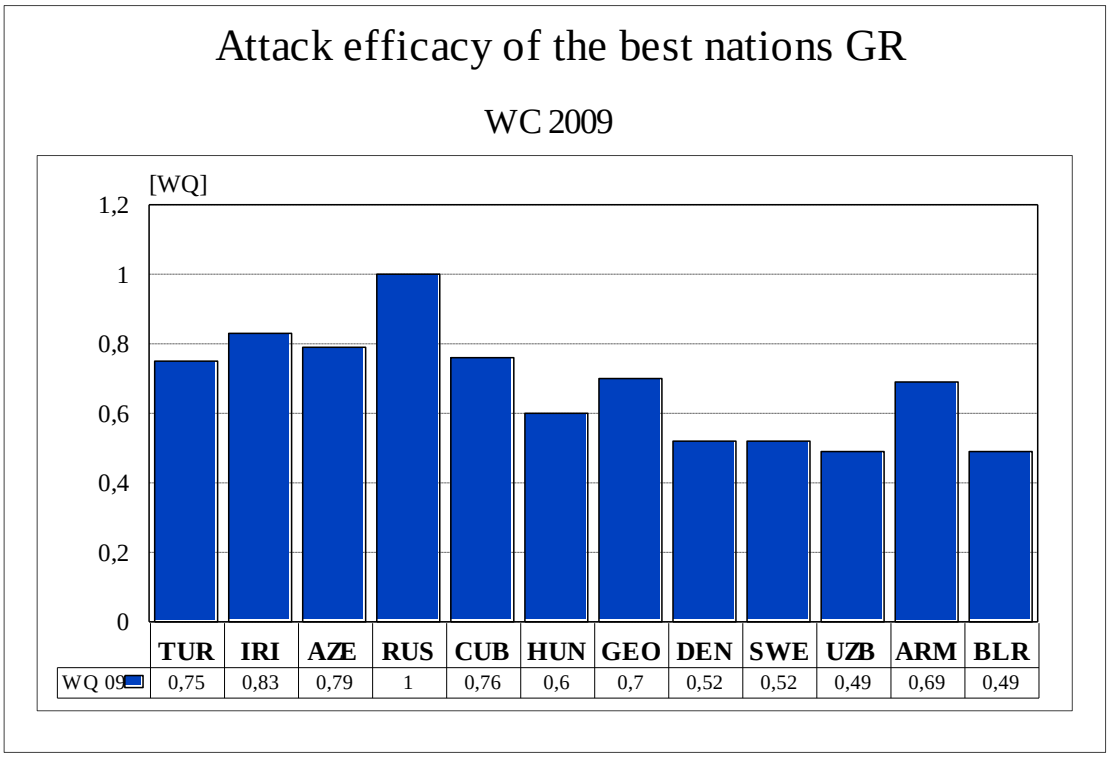


Fig. 6 Best values of the attack efficacy (nations)

The reduction to one clinch per period leads inevitable to a decline of the value of point per minute (WQ) in 2009 (fig. 7). With Denmark we have only one positive exception.

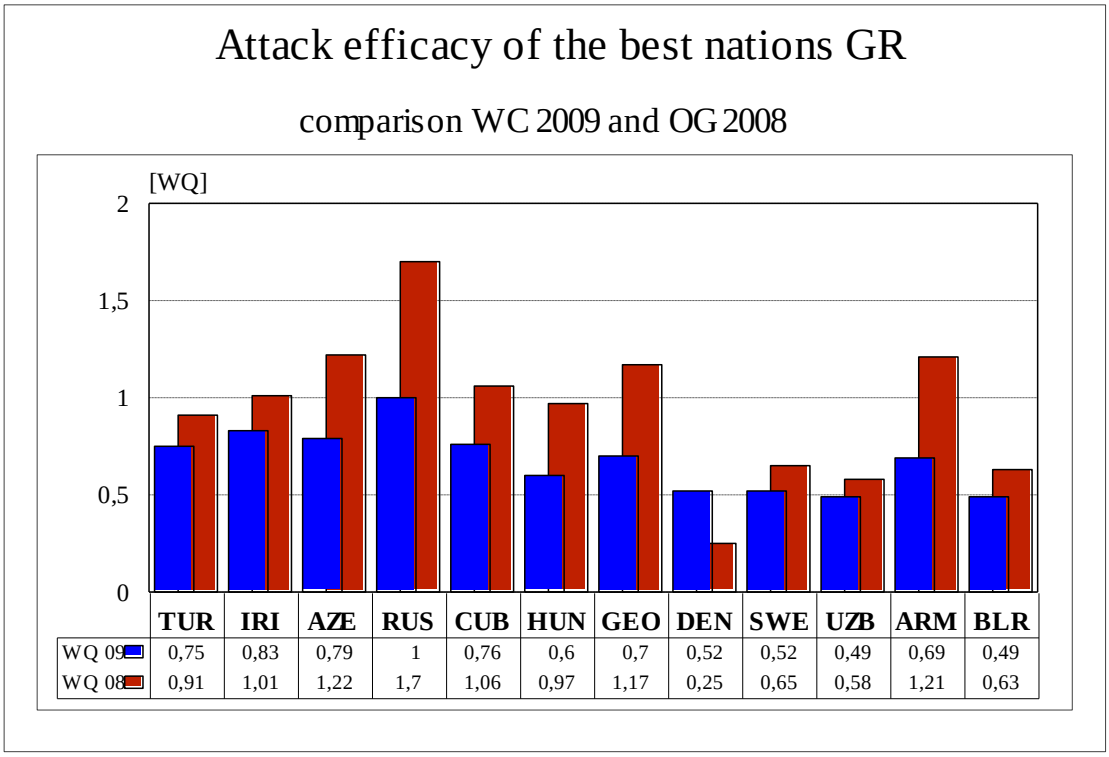


Fig. 7 Attack efficacy (nations) 2009 and 2008 in GR

On the other hand the reduction of the clinch leads to an improvement of the “Defense values”. All nations are losing less points in the clinch situations (fig. 8,9).

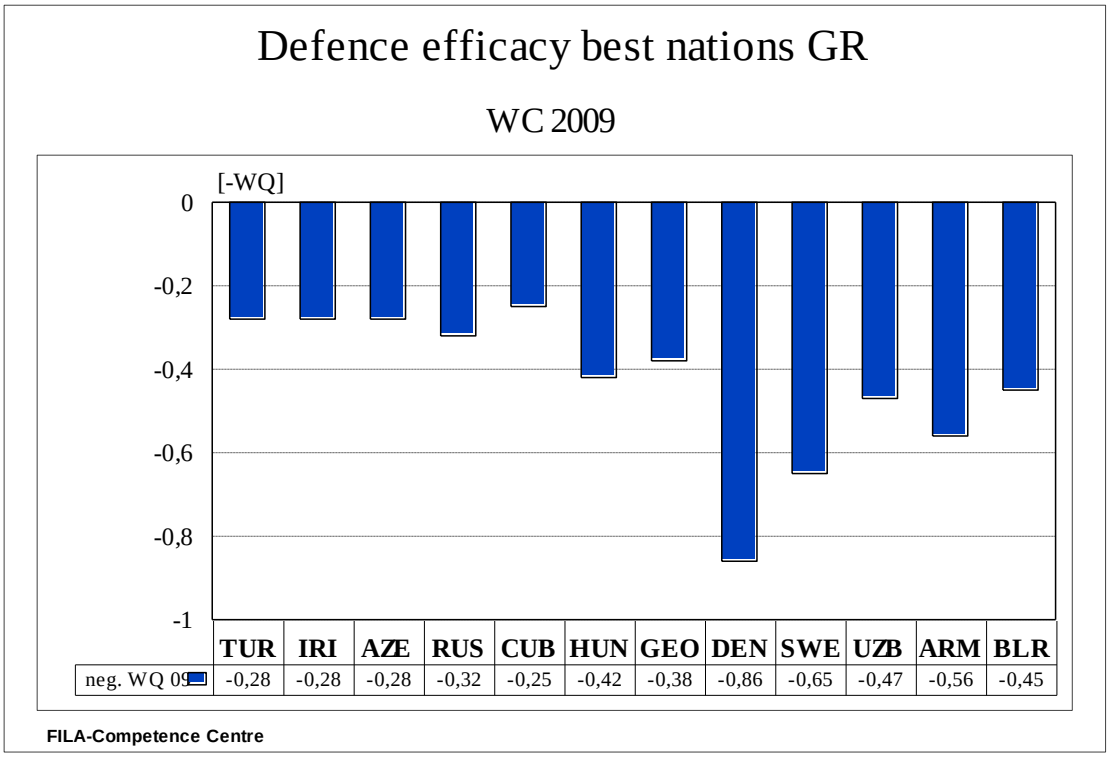


Fig. 8 Best defence efficacy values in GR 2009

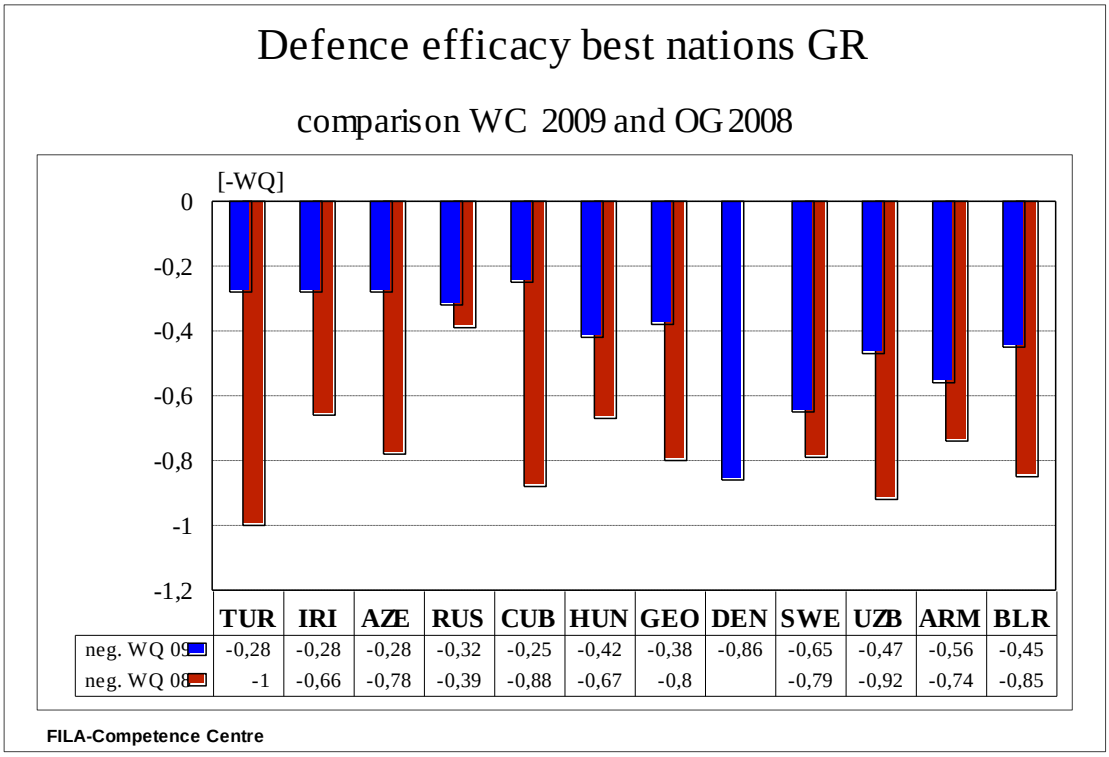
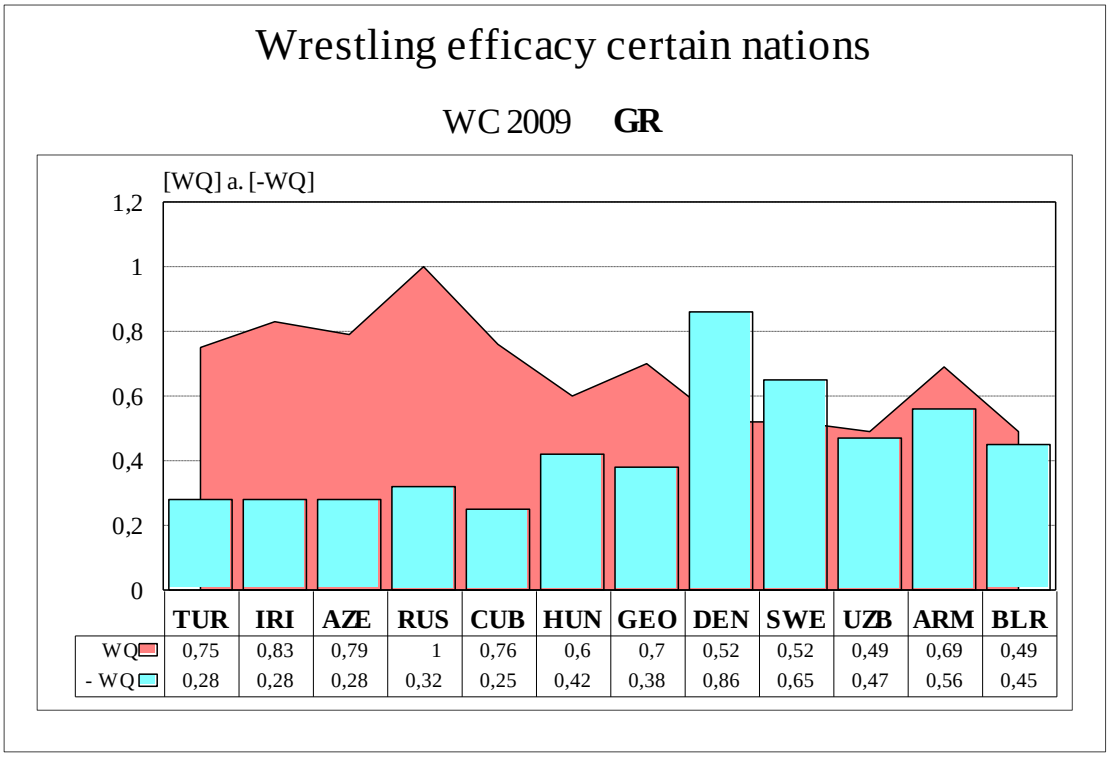


Fig. 9 Defence efficacy values in GR 2009 in comparison to 2008

Responsible for this development is not only the reduction of clinch but also the fact that the wrestlers after leading during the first minute and 30 seconds there is no necessity to fight for more points during the clinch situation.



	TUR	IRI	AZE	RUS	CUB	HUN	GEO	DEN	SWE	UZB	ARM	BLR
WQ	0,75	0,83	0,79	1	0,76	0,6	0,7	0,52	0,52	0,49	0,69	0,49
- WQ	0,28	0,28	0,28	0,32	0,25	0,42	0,38	0,86	0,65	0,47	0,56	0,45

Fig. 10 Wrestling efficacy of the 12 best nations in GR 2009

Summarizing the Wrestling efficacy of the Greco-Roman wrestlers (fig. 10) we consider an outstanding quality of the Russian wrestlers followed by, Iran, Turkey, Azerbaijan, Cuba, Hungary, Georgia, Armenia and Uzbekistan.

The Danish and Swedish wrestlers could improve their good results if they become better in their defence efficacy.

3.2 Combat behaviour of the winner

We consider a different picture concerning the performance index, which describes the technical-tactical abilities of the winner (fig. 11).
Especially Reihanpour, 55kg (IRI), and Lopez, 120kg (CUB) demonstrated an outstanding technical-tactical wrestling performance under the World Champions 2009.

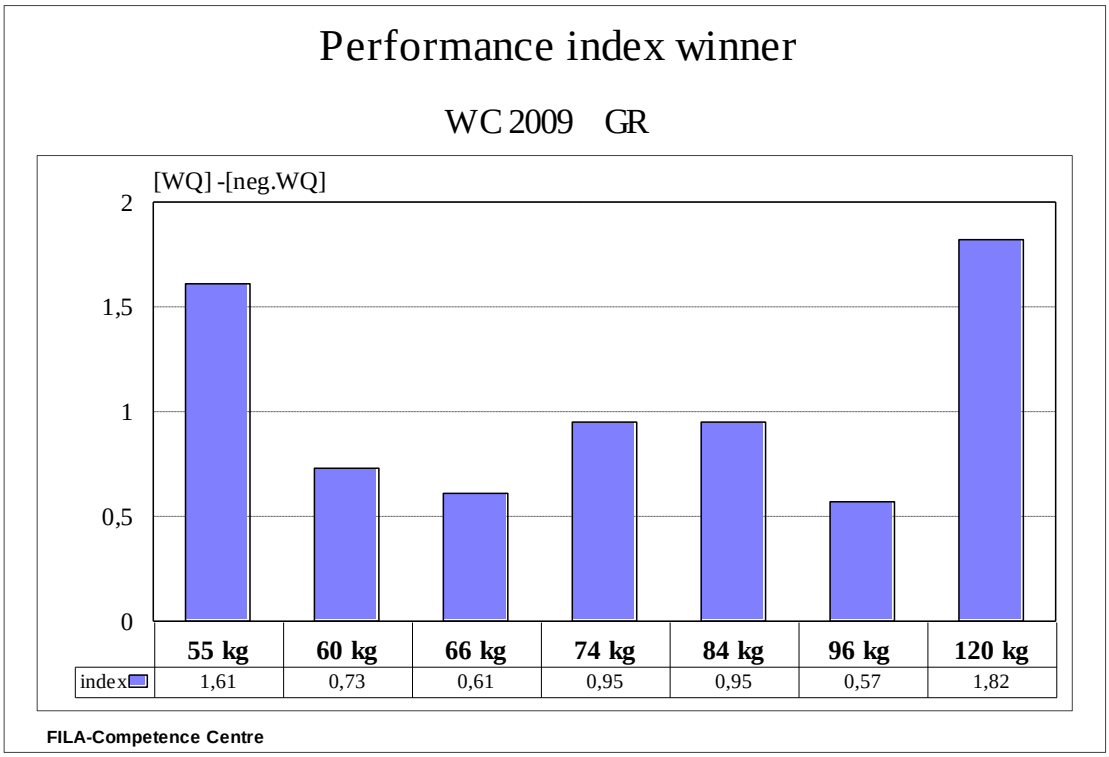


Fig. 11 Wrestling performance of the winner GR 2009

It is rather difficult to compare the wrestling abilities of the Olympic champions 2008 and the World Champions 2009 because of the influence of the rule changing 2009. Even if we reduce the values from 2009 (1 point per period in Herning versus 1 point per minute in Beijing because of the automatically ordered two times of clinch), we consider in general an increase in 2009 with the exception of the World Champions in the 96 kg, 60 kg and 74 kg class (fig. 12).

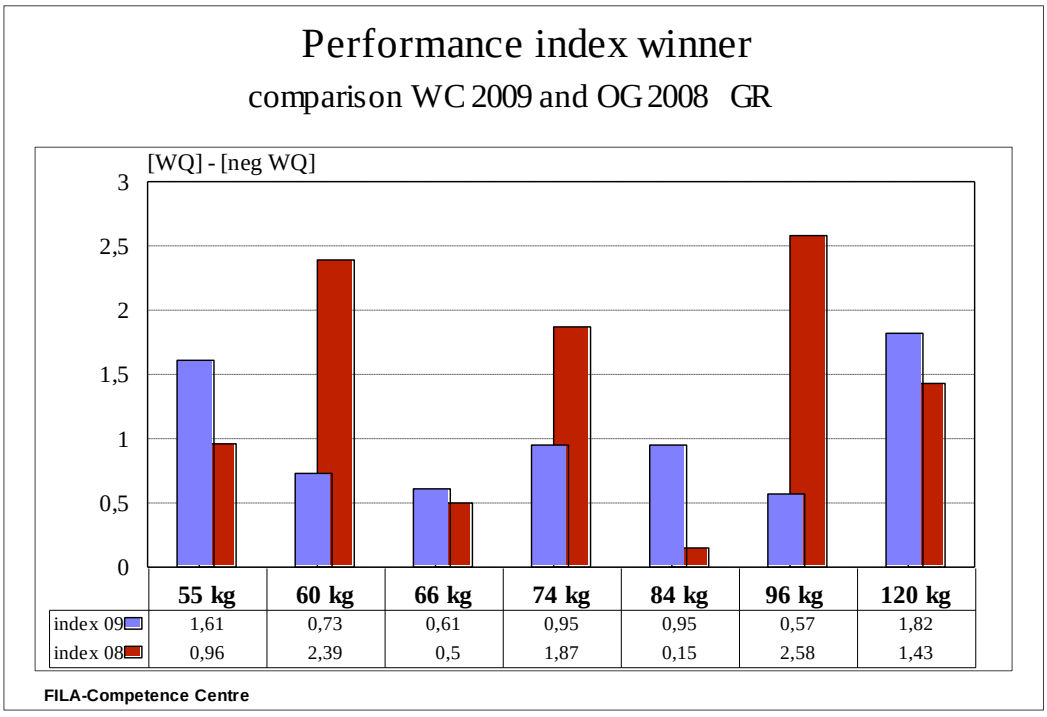


Fig. 12 Comparison of the wrestling performance (winner) WC 2009 to OG 2008

Especially the success of the two best wrestlers of the tournament Reihanpour and Nunez made it clear it's worth making the effort ***to use offensive wrestling strategy under the new rules*** (fig.13).

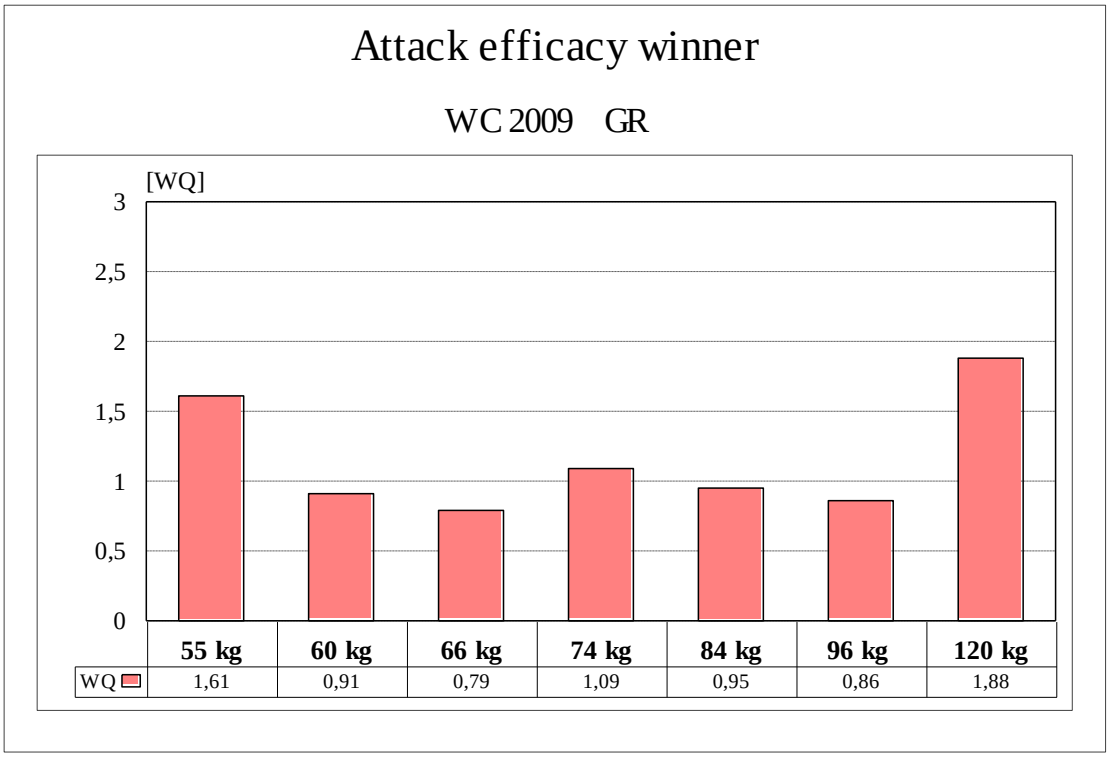


Fig. 13 Attack efficacy of the World Champions 2009 in Herning

Both made more attacking points per minute in Herning as it happened in Beijing. Negative values under this point of views we could see in the weight categories 96, 74 and 60kg
(fig. 14). May the Russian wrestler Albiev has forgotten his successful offensive winning strategy from Beijing.

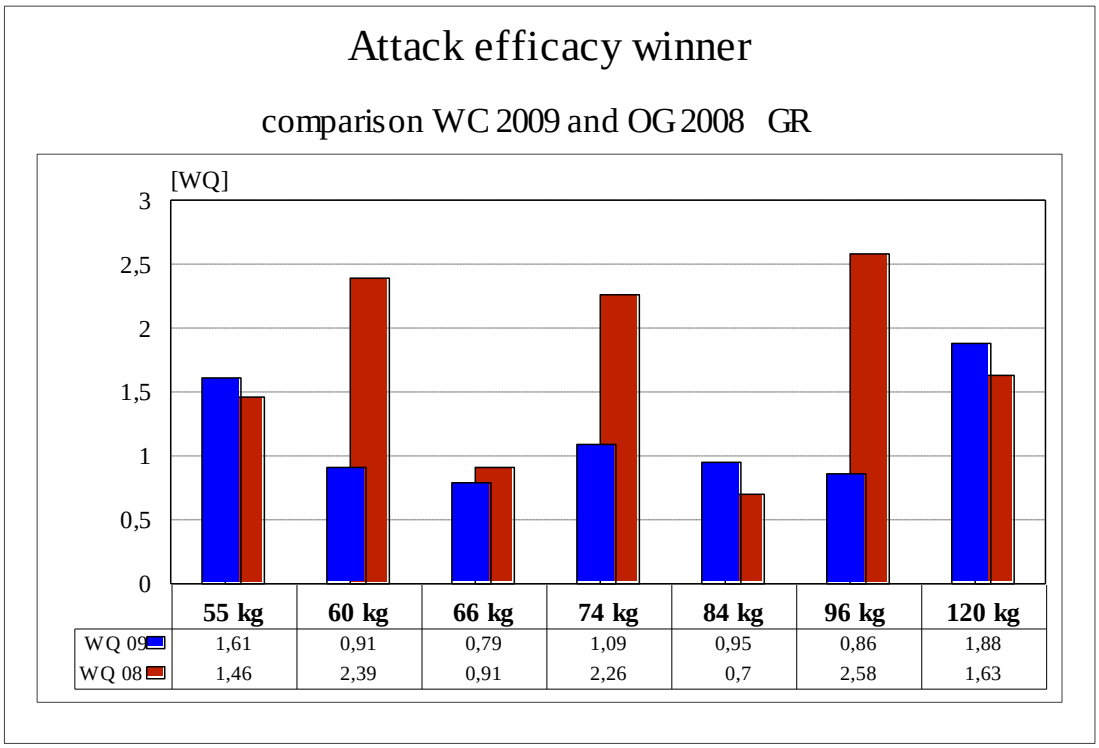


Fig. 14 Comparison of the attack efficacy of the World Champions 2009 in Herning and OG 2008

Together with Avluca, Reihanpour and Nunez belonging to the most stable wrestlers against the opponent's attacks (fig. 15).

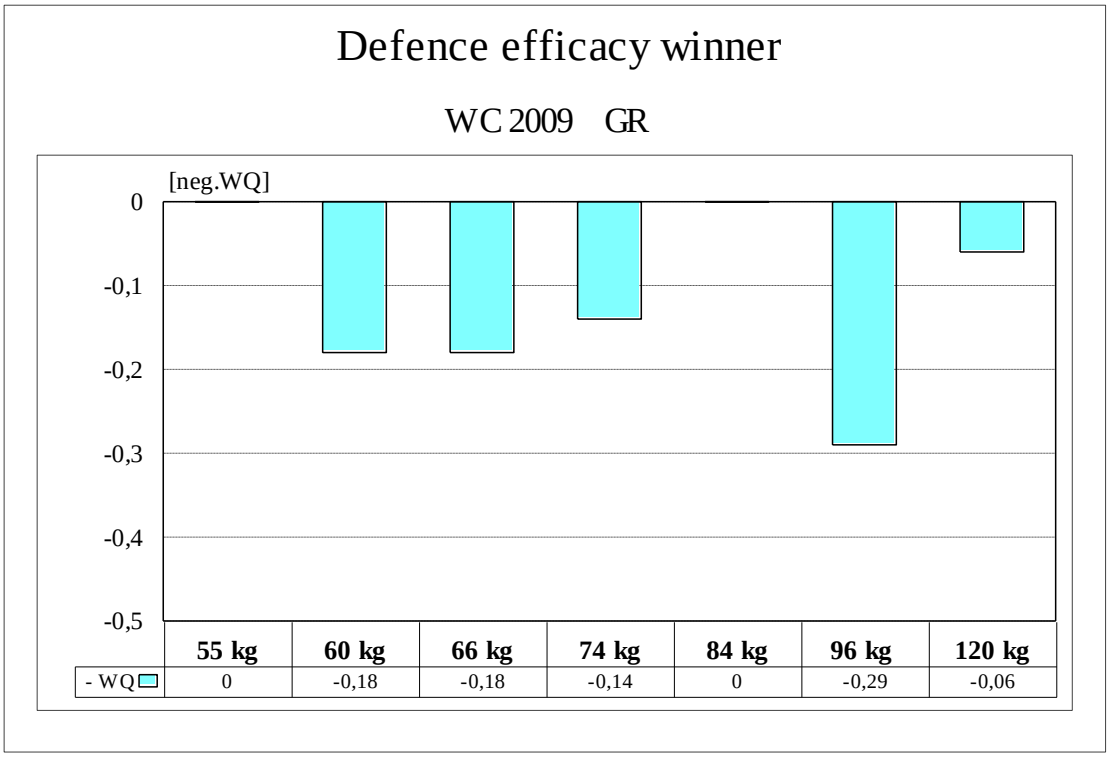


Fig. 15 Defence abilities of the World Champions 2009 in Herning

Reihanpour and Avluca let their opponents not a single point. Summarizing we can say that Nunez, Reihanpour, and the both Turkish wrestlers Cebi and Avluca had been the best qualitative winners of the World Championships 2009 (fig. 16). This is the starting point for a deeper analyze of the technical structure and of more tactical details of the best wrestlers.

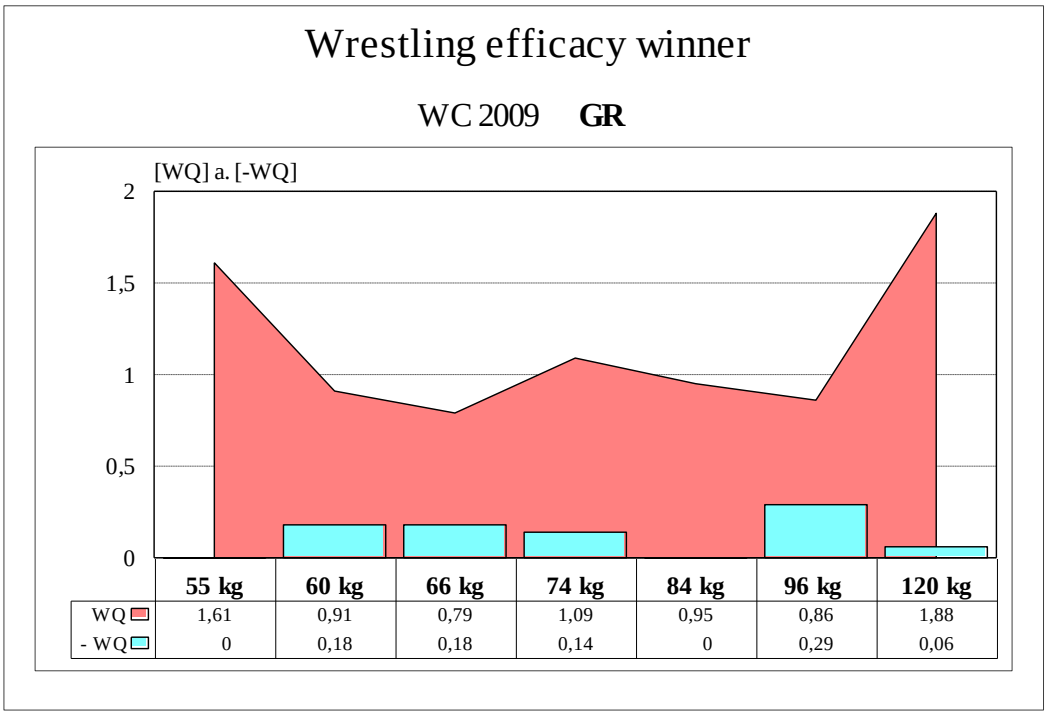


Fig. 16 Wrestling efficacy of the World Champions 2009 in Herning

3.3 Technical-tactical developments after the rule changes 2009 in Greco-Roman Wrestling

Following the demands of coaches for prolongation the time of bout at the beginning of the match FILA extended the time by 30 seconds. But the wrestlers did not use this prolongation for making more points. Only the best wrestlers, the World Champions used this prolongation for more successful activities and positive strategy changes. Although the progress is rather poor with an increase from 0,5 in 2006 to 0,6 points per minute in 2009. However if we compare the points of the first minute to the total points per minute we have a relation in % from 29 during the first minute to 71 total in 2006 and 45 to 55 in 2009. But we have a clear improvement of the relation between standing and parterre wrestling (fig. 17, 18).

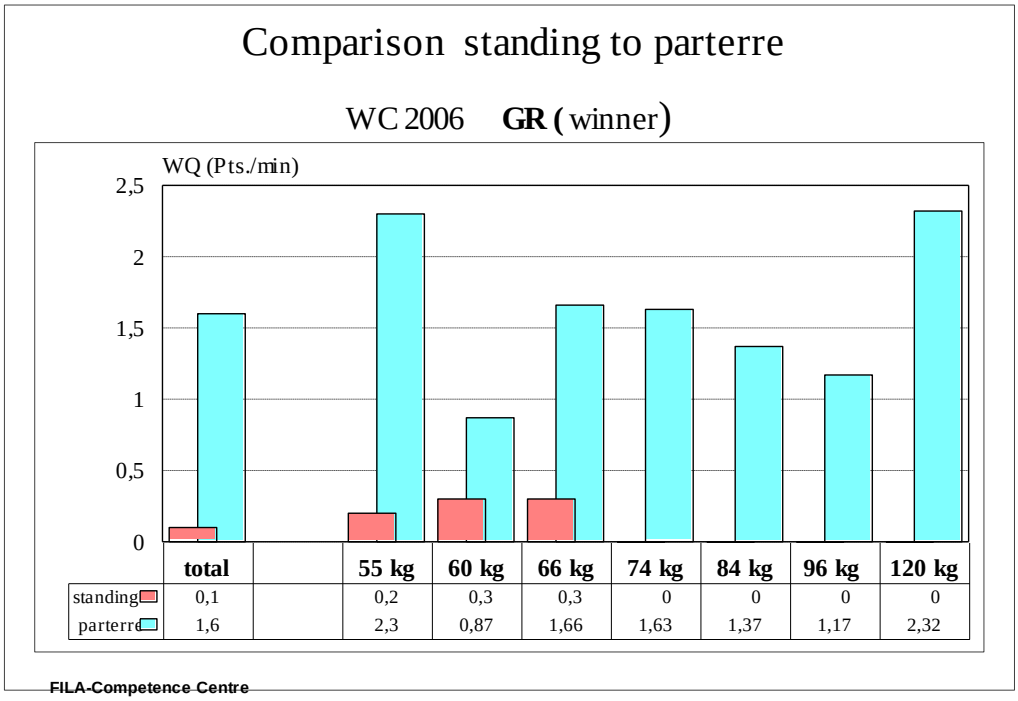


Fig. 17 Comparison standing and parterre wrestling WC 2006

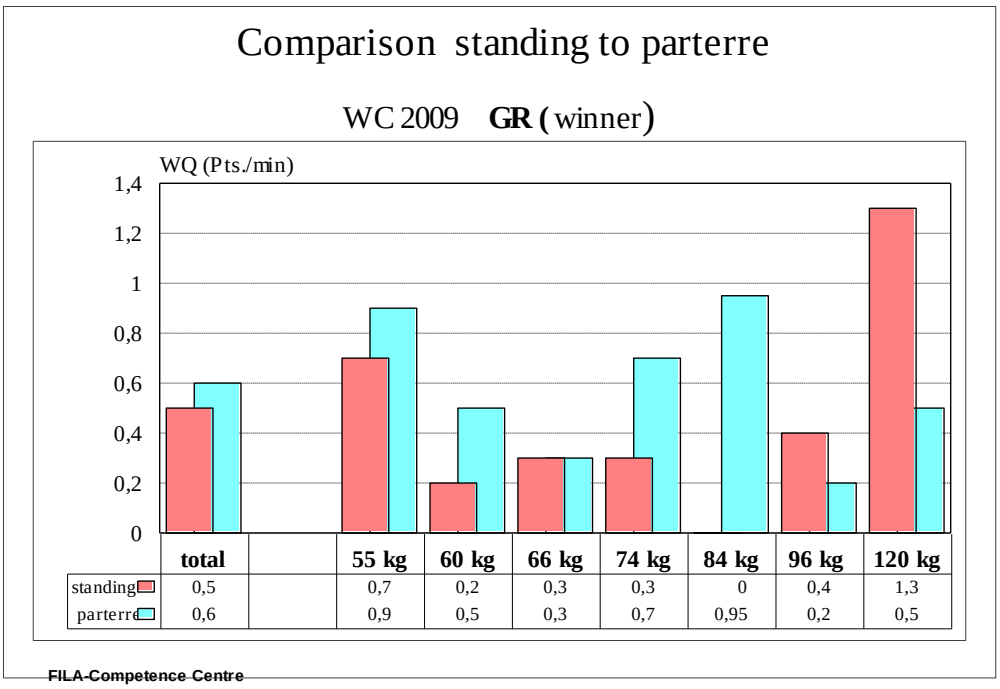


Fig. 18 Comparison standing and parterre wrestling WC 2009 in Herning

Whereas we have had in 2006 94% points of parterre techniques, the relation between parterre and standing techniques in 2009 has been 55 % to 45 %. Only the Hungarian World Champion Kiss is here an exception with the dominating of parterre wrestling. There is also an improvement of the relation from Clinch points without techniques to clinch points with techniques in 2009. The clinch points without techniques has been clearly reduced 2009 from 30 % to 12 % (fig. 19).

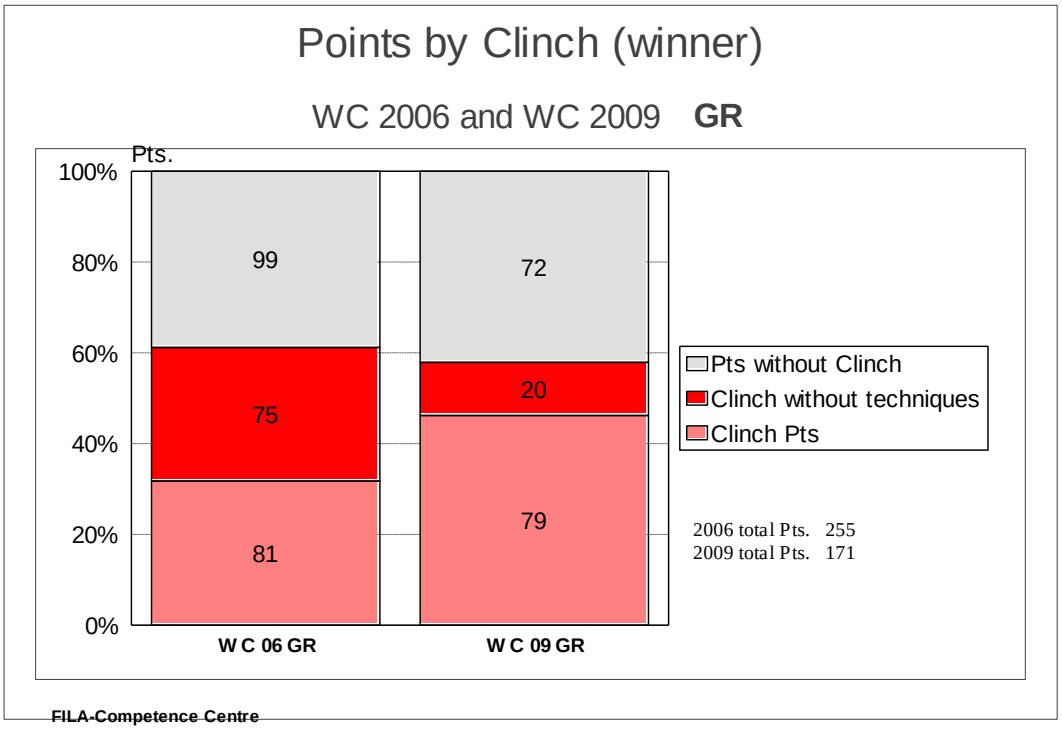


Fig. 19 Comparison clinch points WC 2006 and 2009 in Herning

It becomes also very clear when we have a look to the figures 20 and 21.

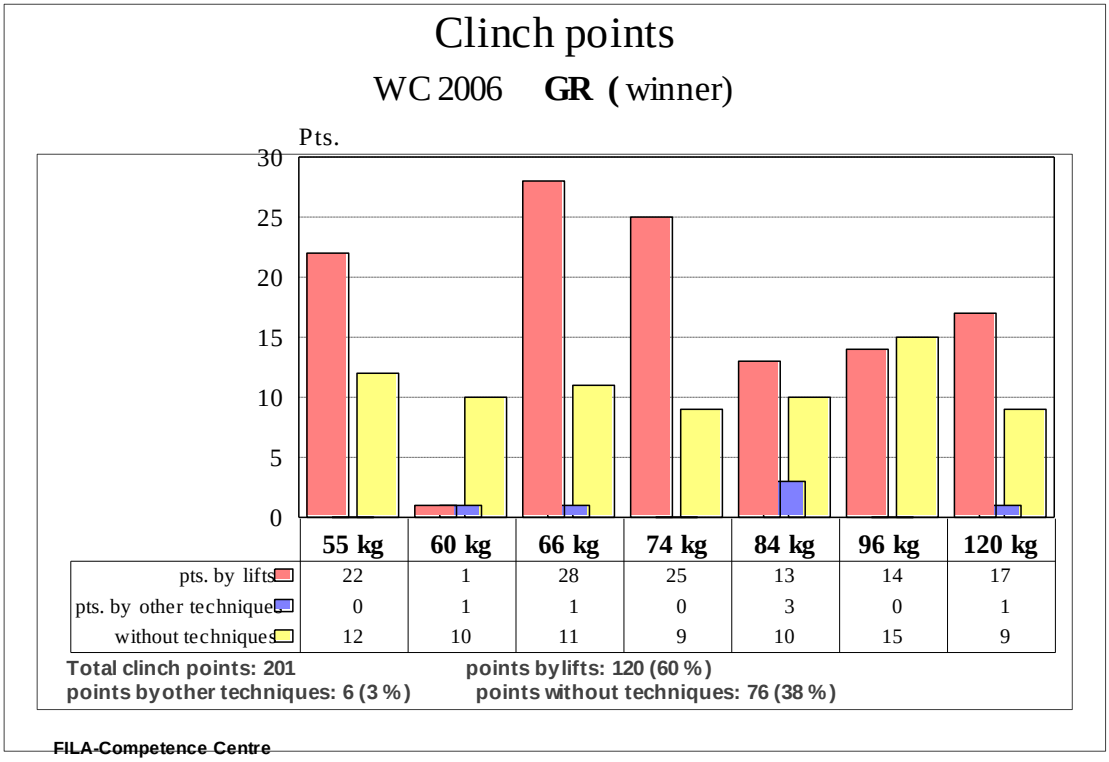


Fig. 20 Clinch points WC 2006 winner GR

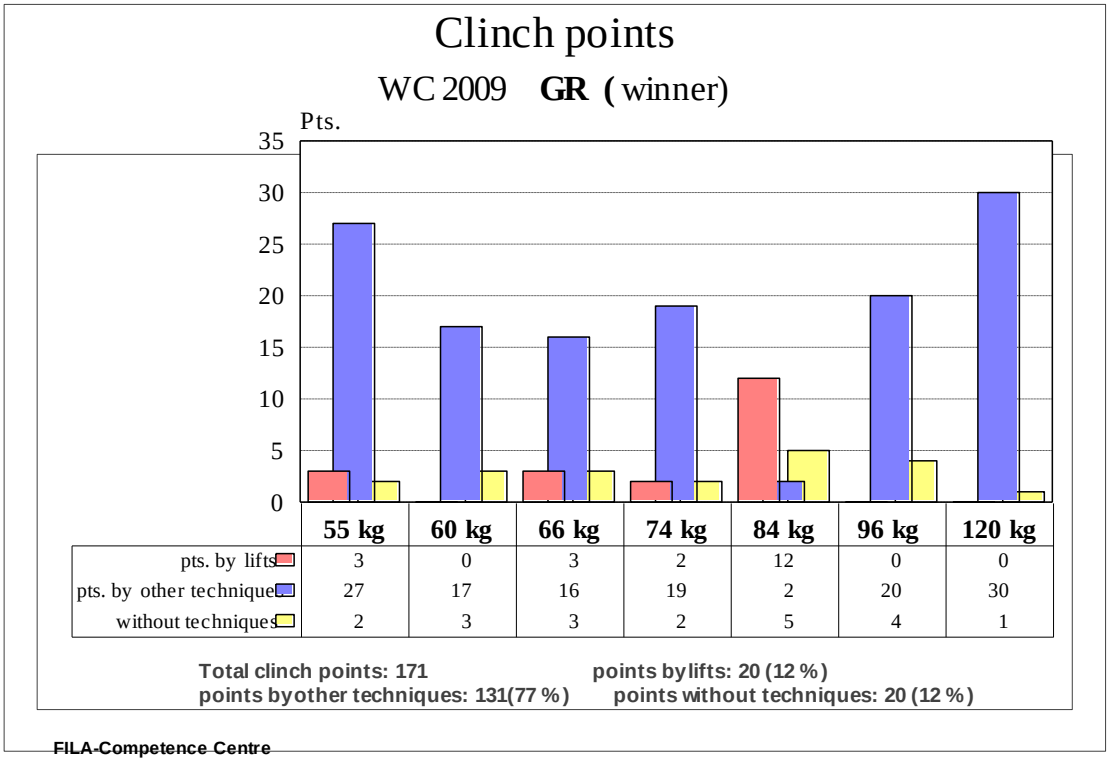


Fig. 21 Clinch points WC 2009 winner GR

Whereas 2006 the clinch points by lifts and without techniques were dominating (red and yellow colour) the most clinch points 2009 had been realized with other techniques and lifts as well as clinch without techniques did not play any role.

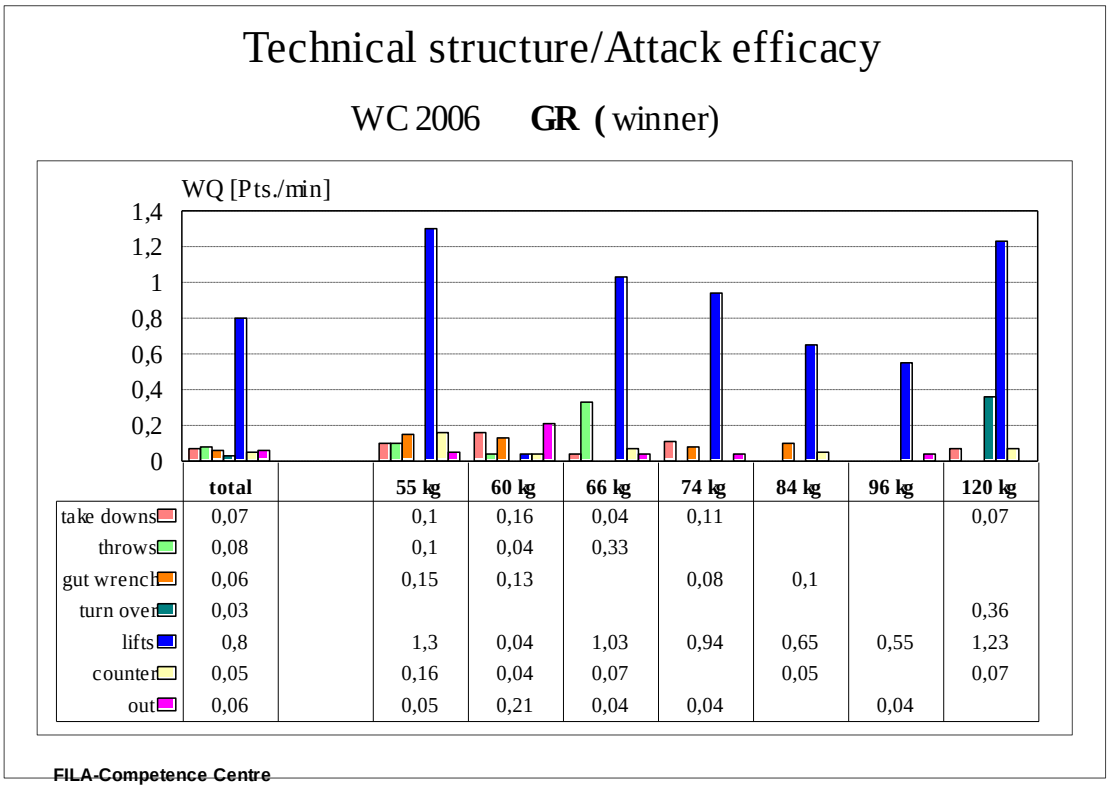
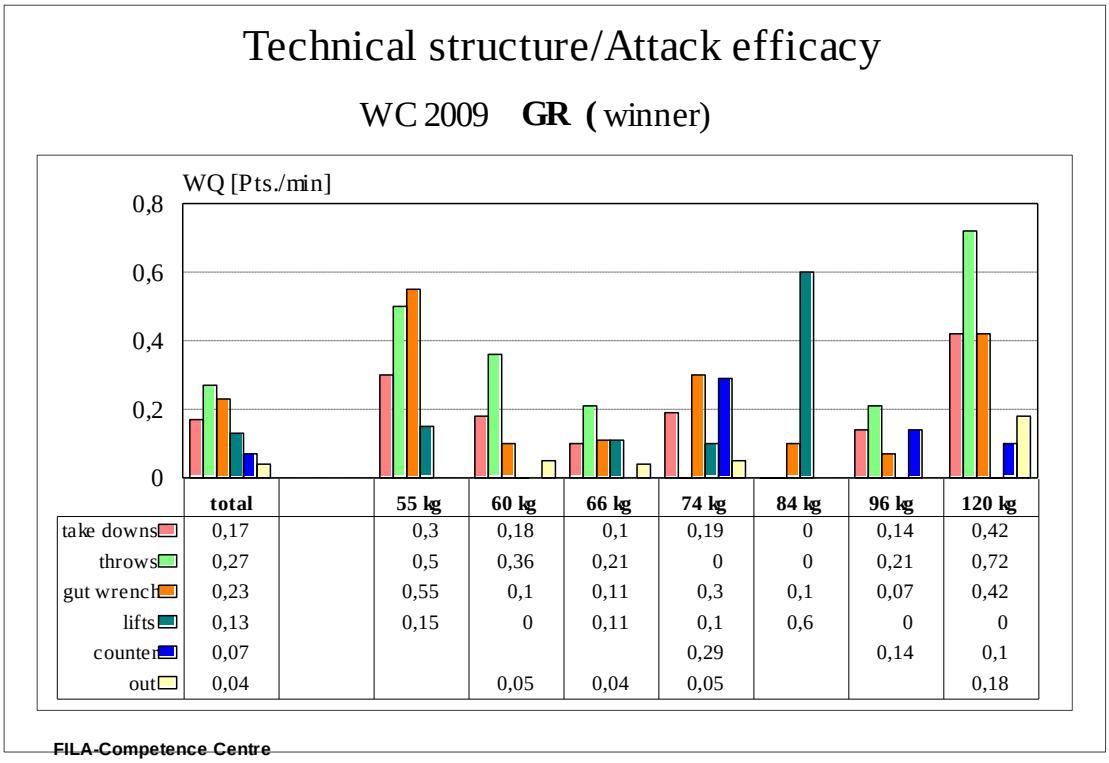


Fig. 22 Technical structure WC 2006 winner GR

But the greatest advantage 2009 under the technical tactical aspect is the improvement of the technical variety in 2009 fig (22, 23).



	total		55 kg	60 kg	66 kg	74 kg	84 kg	96 kg	120 kg
take downs	0,17		0,3	0,18	0,1	0,19	0	0,14	0,42
throws	0,27		0,5	0,36	0,21	0	0	0,21	0,72
gut wrench	0,23		0,55	0,1	0,11	0,3	0,1	0,07	0,42
lifts	0,13		0,15	0	0,11	0,1	0,6	0	0
counter	0,07					0,29		0,14	0,1
out	0,04			0,05	0,04	0,05			0,18

Fig. 23 Technical structure WC 2009 winner GR

We see the dominating lift technique and poor technical variety in 2006 and 2009 the improvement of the technical variety and especially the increase of throw techniques.

Summarizing we can stress out, that the technical-tactical improvement 2009 by implementation the amendments applies primarily to the world champions. But the champions are the shining examples and it is for the young to emulate this role of examples in order to achieve its technical and tactical quality. The amendments of 2009 have had their influence not only to the technical tactical behavior but also to higher demands to the special physical abilities. Five bouts in one session from 1:00 to 9:00 pm is a hard task for the wrestlers. They have to adapt their strategy and tactics to this situation. Maybe they can save power if they make their points at the beginning of the bout or if they make big points (5 or two times three points) at the beginning of the match and they will get a reward by finishing the bout earlier.

ANALYSIS OF THE FREESTYLE MEN WORLD CHAMPIONSHIPS 2009 IN HERNING
PROF. DR. HAROLD TÜNNEMANN

1. Current tendencies in combat behaviour against the background of new competition rules 2009

This analysis is to start with thanks to the organisers of the championships having performed a superb feat of world champion level. These championships were organised excellently, and the multimedia fireworks accompanying the competitions was particularly brilliant. We have had an enormous increase of media interests and the presence of various TV companies assisted FILA's efforts towards promotion wrestling in the world. At the same time this is a challenge for more discipline by athletes and coaches to come onto the mat in time after calling.
The Danish organizers have had a lot of ideas to present our sport on a high level and the results were excellent and useful for promotion our sports. All events were well attended and the audience supported the athletes with euphoric enthusiasm. The journalists were happy and the new competition schedule with start 1:00 pm gave way for more interesting activities in the morning before the sessions.
For example the great idea of a Youth camp. And the Youth camp became a highlight of this Championship. About 300 young wrestlers, age 12 to 18 from USA, Great Britain, Turkey, Finland, Sweden, Norway, Italy, Austria, Germany and Denmark were trained by famous international coaches from Japan, USA, Iran, Poland, Ukraine, Italy and Austria. During the Freestyle competition James Johnson, Jamil Kelly and Mark Manning (USA) as well as Mr. Danko from Ukraine mad Freestyle wrestling so it reminded of art. There were some tricks that made even the most tired wrestler, stare up. The hopeful wrestling youth could learn wrestling from the best coaches of the world thanks to the outstanding involvement of the Danish organizers Palle Nielson and Esben Fonnesbek.

The FILA has introduced in 2009 some important changes regarding the design competition. The spectators were thrilled by the presentation of the challenge on large video screens and for the athletes the changing modalities of the video evidence, were one more step towards Fairness. After the World Championships 2006 we have a clear decrease of the points per minute in Freestyle

Wrestling from 1.4 to 1.1 in Beijing and in Herning (fig.1). This is going to conform with a decline of the attractively wrestling. The wrestlers make sure 1 point during the period on a basis of a general defence strategy (see later the analysis of techniques).

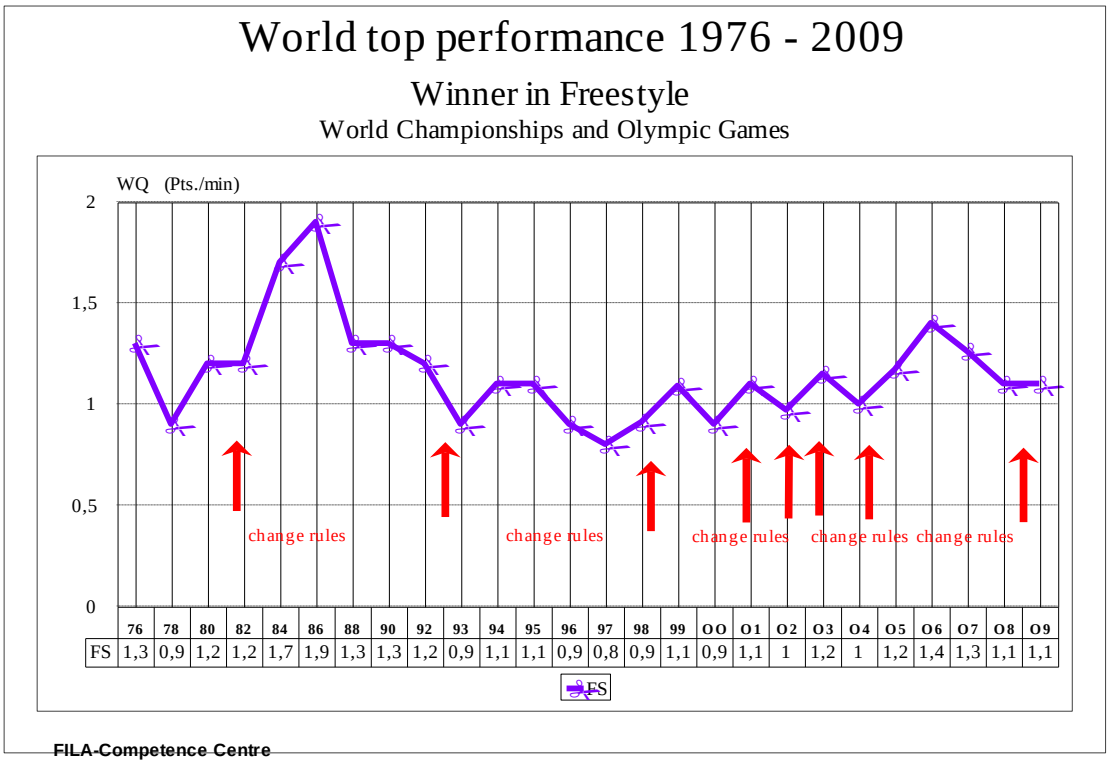


Fig. 1 Development of the points per minute made by the winner (FS) since 1976

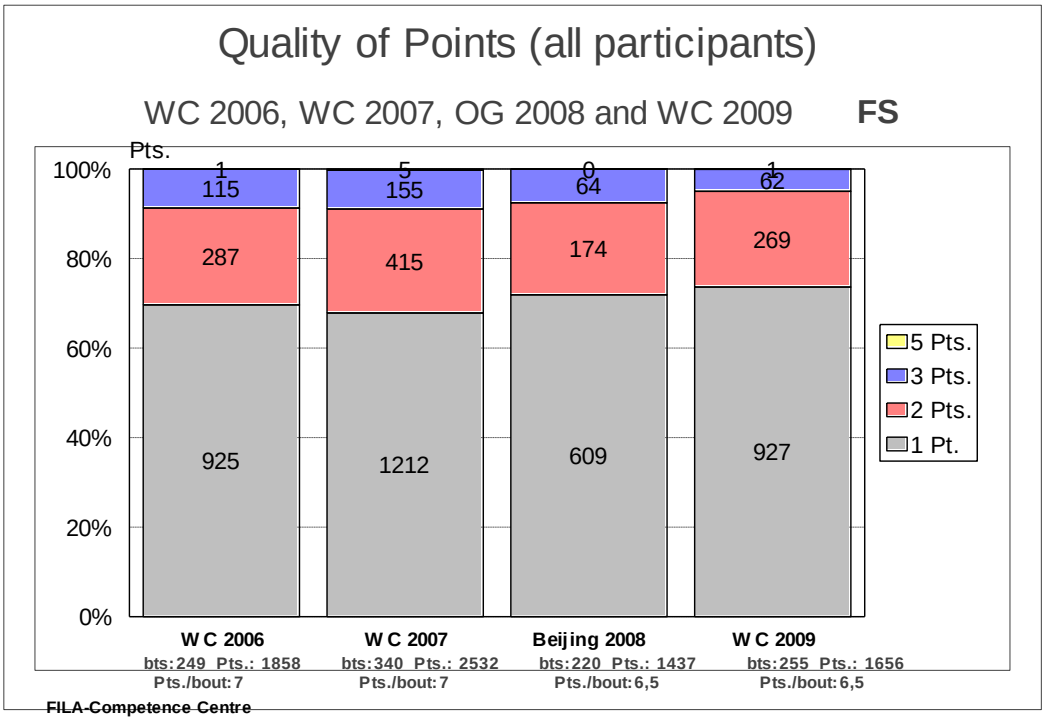


Fig. 2 Development of the quality of points since 2006 in Freestyle Wrestling

The decline of the attractiveness becomes clear also if we have a look at the quality of points (fig. 2). The relation of 2- and 3-point techniques is going down against the 1-point actions.

2. Country-specific aspects of performance in competition

Lots of nations utilize the post-Olympic year to rejuvenate their national teams. Like previous world championships at the beginning of a new Olympic cycle those of Herning have been marked by a mixture of experienced athletes and younger newcomers. Congratulation to the athletes and coaches of Russia, Azerbaijan and Iran to their outstanding results! Turkey, Ukraine and Belarus also reached very good results (fig. 3).

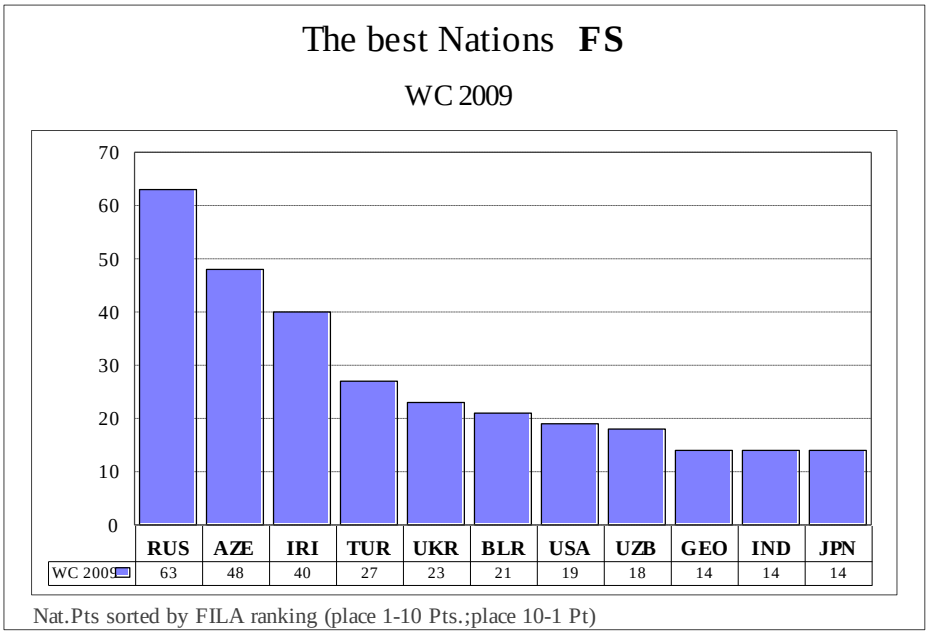


Fig. 3 The best Nations 2009 in Freestyle Wrestling

The wrestlers of Russia reached the most finals (7) followed by Azerbaijan and Iran (5 each). With a comparison of the country specific results of 2008 and 2009 we can see which countries have changed their training concepts and competition strategy successfully (fig 4).

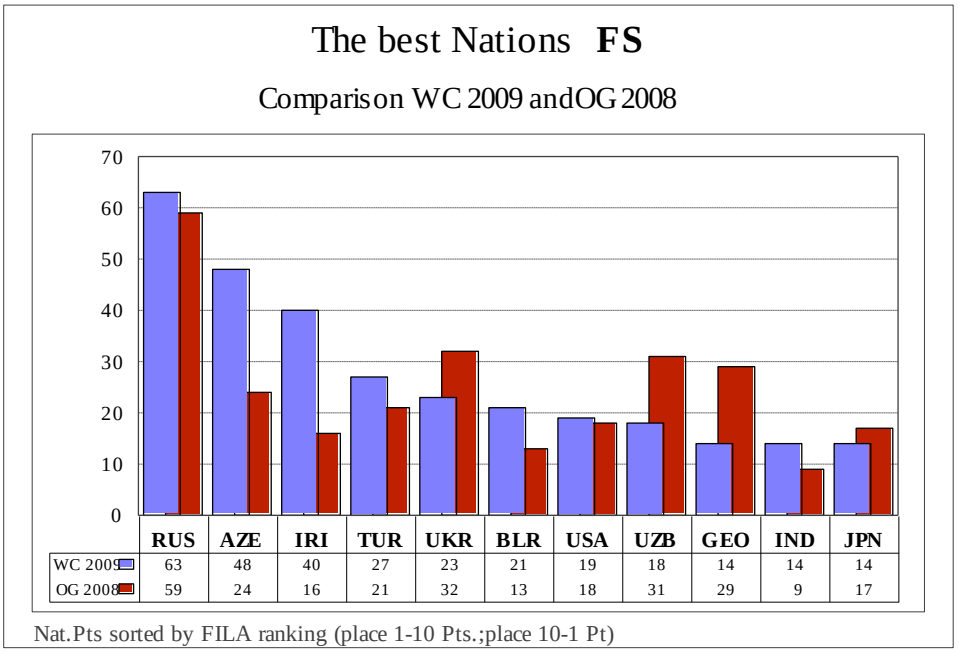


Fig. 4 Comparison of the 11 best nations in Freestyle WC 2009 and OG 2008

We can see the very good improvement of performance of Azerbaijan, Iran and Turkey. They could increase their Nation points to more than 30 points! The wrestlers from Russia, Belarus, and India could improve their results also while Ukraine, Uzbekistan and Georgia had to suffer losses.

3. Qualitative analysis of combat behaviour 3.1 Combat behaviour of the nations

With the Performance index you can very good describe the technical-tactical abilities of a given nation or athlete. In this case the realized points will be set into relation to the points given away to the opponent (fig 5). Seen from this point of view the Russian wrestlers from Russia, Azerbaijan and Turkey could realize the best technical tactical performance together with the wrestlers from Belarus, Iran and Uzbekistan.

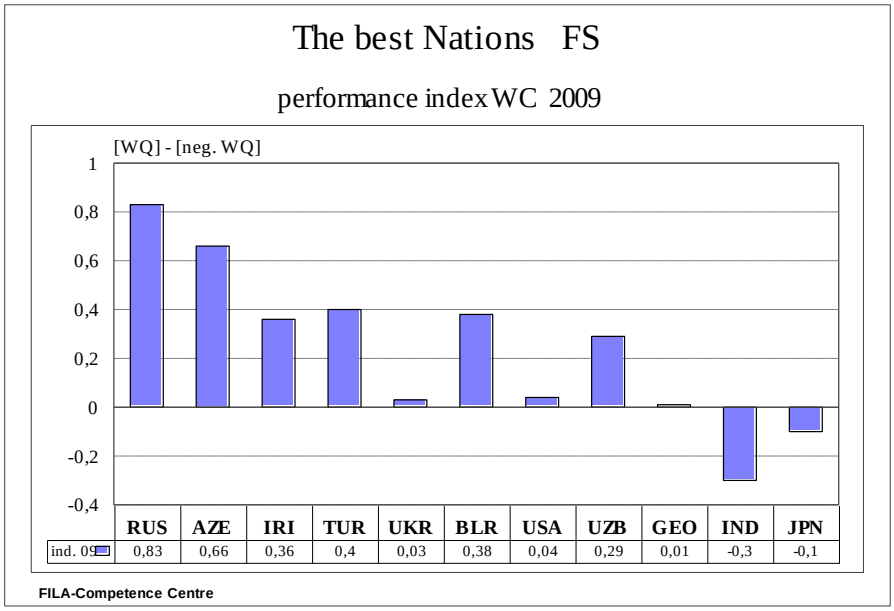


Fig. 5 Quality of wrestling in FS 2009

If we compare this qualitative aspect of wrestling to the Olympic Games 2008 (fig. 6) we consider wrestlers and the improvement of Turkey, Iran, Azerbaijan and Russia as well as an enormous decline for the wrestlers of Ukraine, Georgia and Japan.

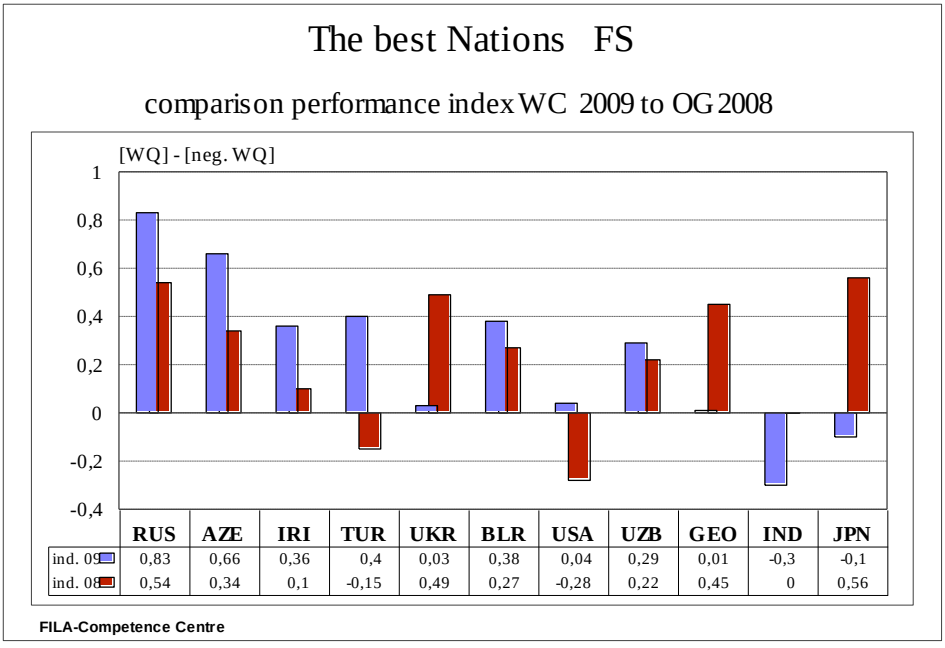


Fig. 6 Quality of wrestling in comparison 2009 to 2008 in FS

If we take a deeper look into the quality we can see right now the typical indications of strategies in Freestyle wrestling. With a little positive exception of Azerbaijan and Russia the most of the 11 best wrestling nations are realizing less than 1 point per minute in their attack actions (fig. 7).

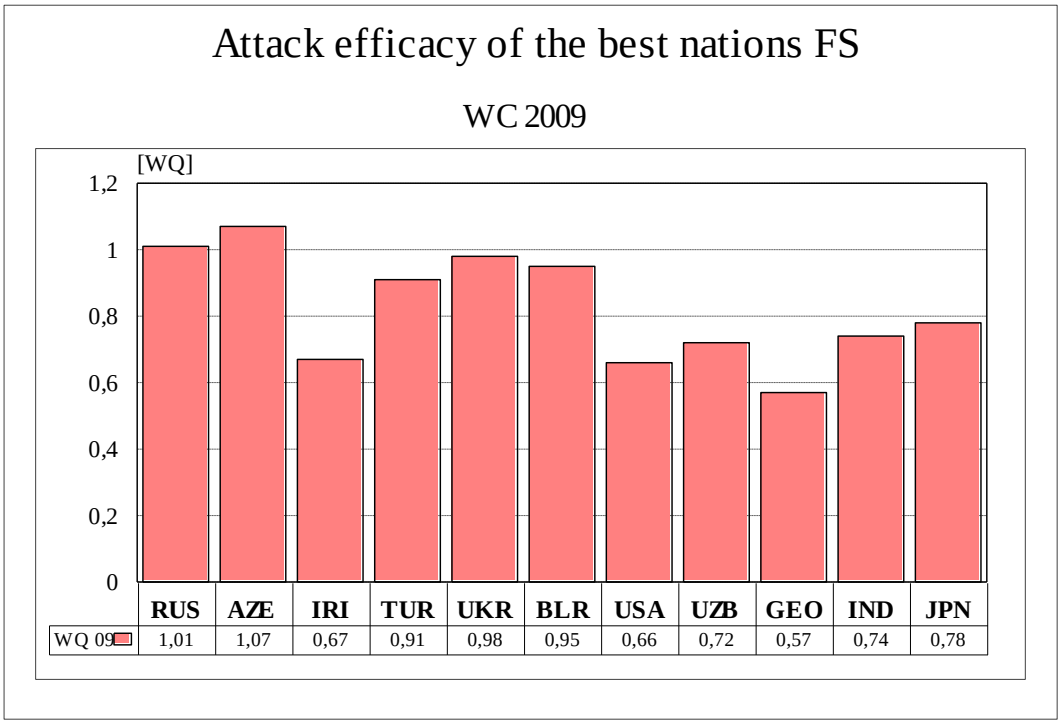


Fig. 7 Best values of the attack efficacy (nations)

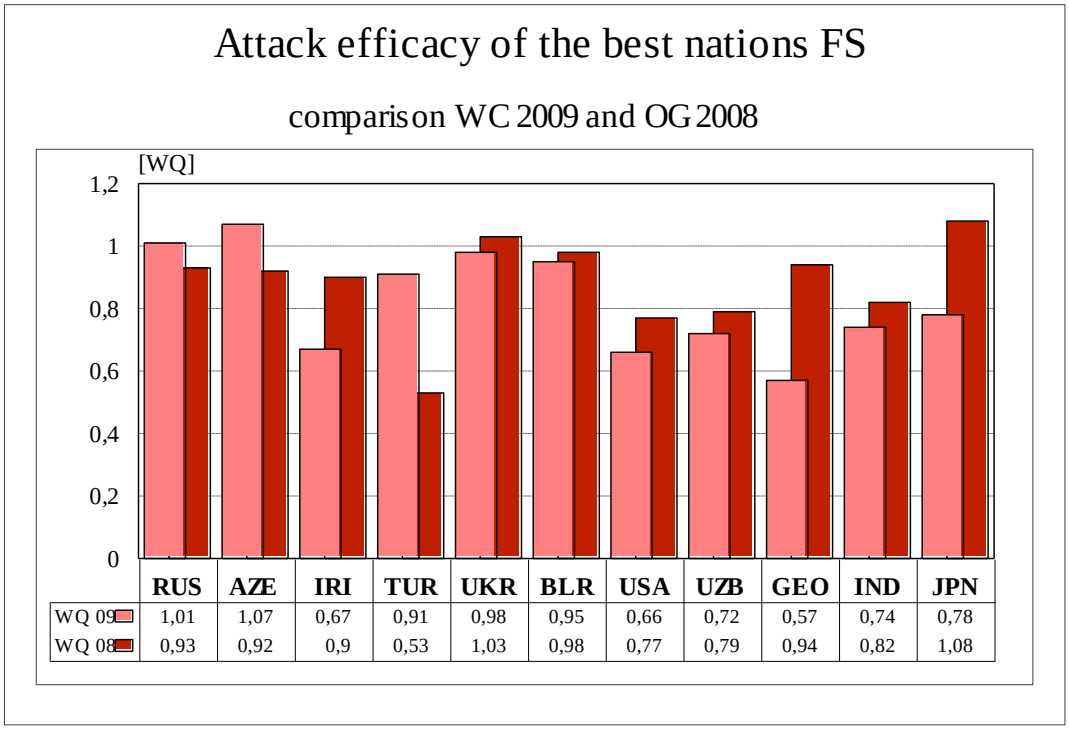


Fig.8 Attack efficacy (nations) 2009 and 2008 in FS

But the biggest progress within the attack efficacy since 2008 reached the wrestlers from Turkey (fig. 8). They have increased their attack efficacy from 0.53 in Beijing to 0.98 in Herning! The wrestlers of Russia, Iran, Azerbaijan, Uzbekistan and Turkey are very strong in their defense abilities (fig. 9). On the other hand the wrestlers from Ukraine, India, Japan and USA could be better if they could improve their defense quality.

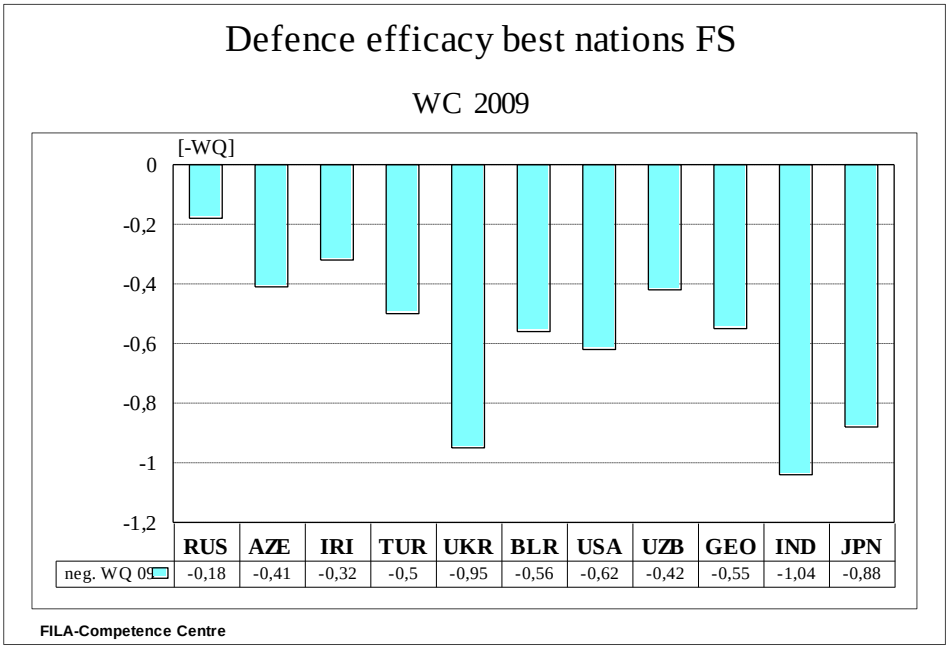


Fig. 9 Best defense efficacy values in FS 2009

If we compare the defense values from 2008 to 2009 we have to consider that some nations have had improve their defense efficacy since 2008 (fig. 10). These are the wrestlers from USA, Iran, Turkey, Russia and Azerbaijan. Summarizing the Wrestling efficacy of the Freestyle wrestlers (fig. 11) we consider an outstanding quality of the Russian wrestlers followed by Azerbaijan, Iran, Turkey, and Belarus. The wrestlers from Ukraine, USA, Georgia, India and Japan could improve their good results if they become better in their defence efficacy.

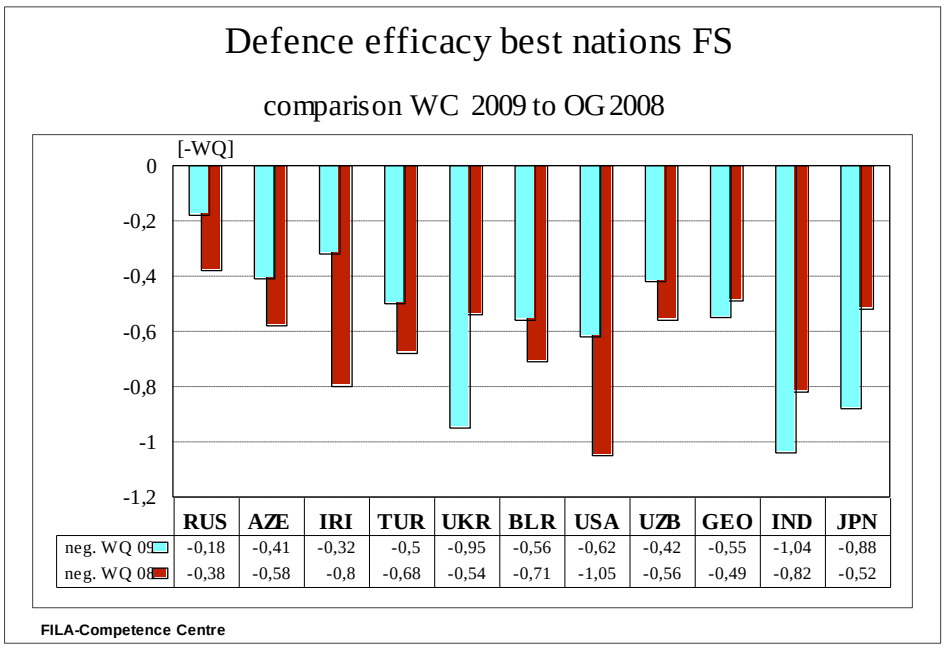
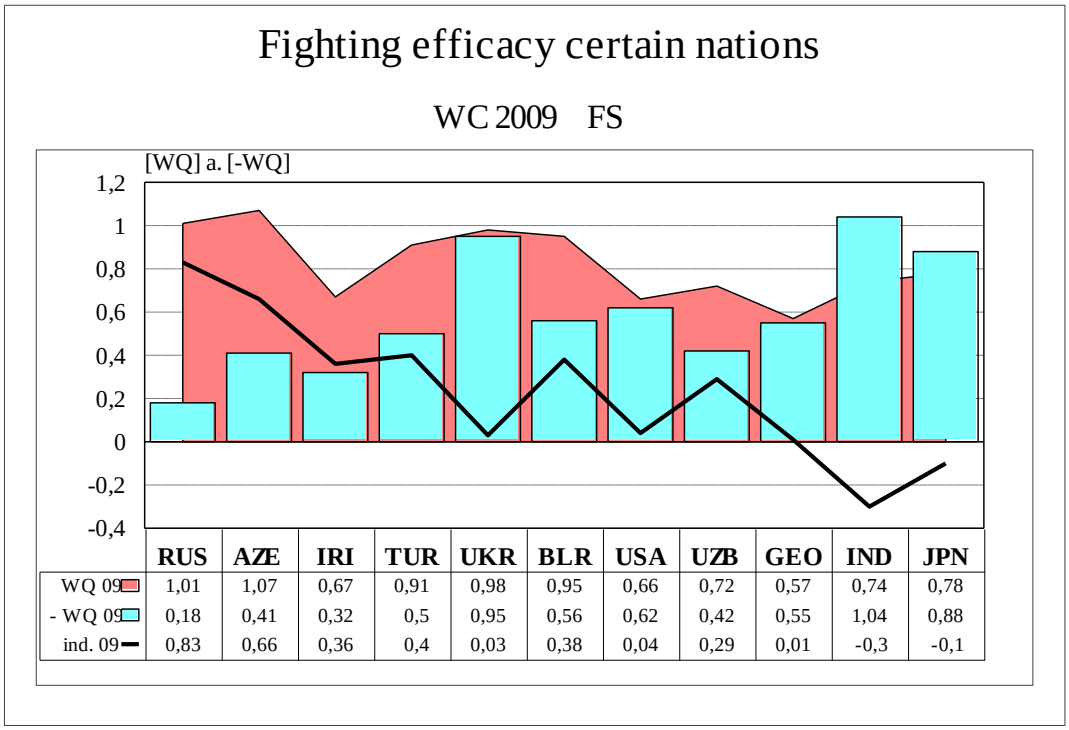


Fig.10 defense efficacy values in FR 2009 in comparison to 2008

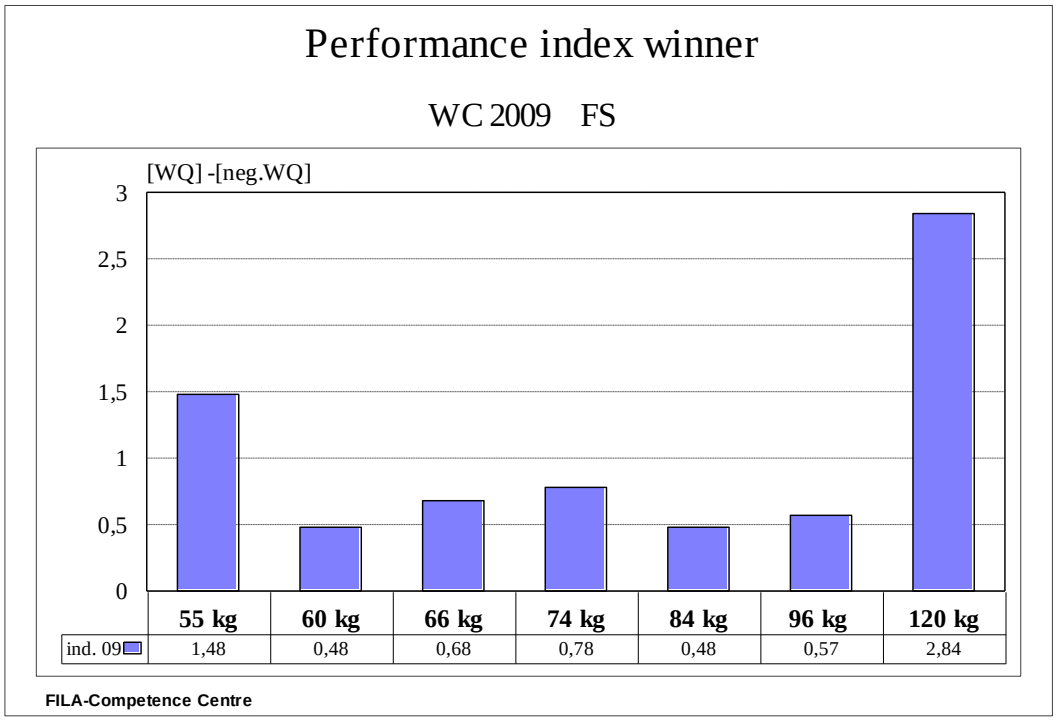


	RUS	AZE	IRI	TUR	UKR	BLR	USA	UZB	GEO	IND	JPN
WQ 09	1,01	1,07	0,67	0,91	0,98	0,95	0,66	0,72	0,57	0,74	0,78
- WQ 09	0,18	0,41	0,32	0,5	0,95	0,56	0,62	0,42	0,55	1,04	0,88
ind. 09	0,83	0,66	0,36	0,4	0,03	0,38	0,04	0,29	0,01	-0,3	-0,1

Fig. 11 Wrestling efficacy of the 11 best nations in FS 2009

3.3 Combat behaviour of the winner

We consider a different picture concerning the performance index, which describes the technical-tactical abilities of the winner (fig. 12). Especially Young Kyong-Il, 55kg (PRK), and Bilyal Makhov, 120kg (RUS) have demonstrated an outstanding technical-tactical wrestling performance under the World Champions 2009. What a poor wrestling quality and strategy of all the other World Champions! These World champions are happy with an performance index from about 0.5 per minute that means 1 point in one period and this is not what you can imagine yourself under attractive wrestling!



	55 kg	60 kg	66 kg	74 kg	84 kg	96 kg	120 kg
ind. 09	1,48	0,48	0,68	0,78	0,48	0,57	2,84

Fig. 12 Wrestling performance of the winner FS 2000

The comparison between 2008 and 2009 show the outstanding performance of the 55kg and 120kg World Champions of Herning (fig. 13).

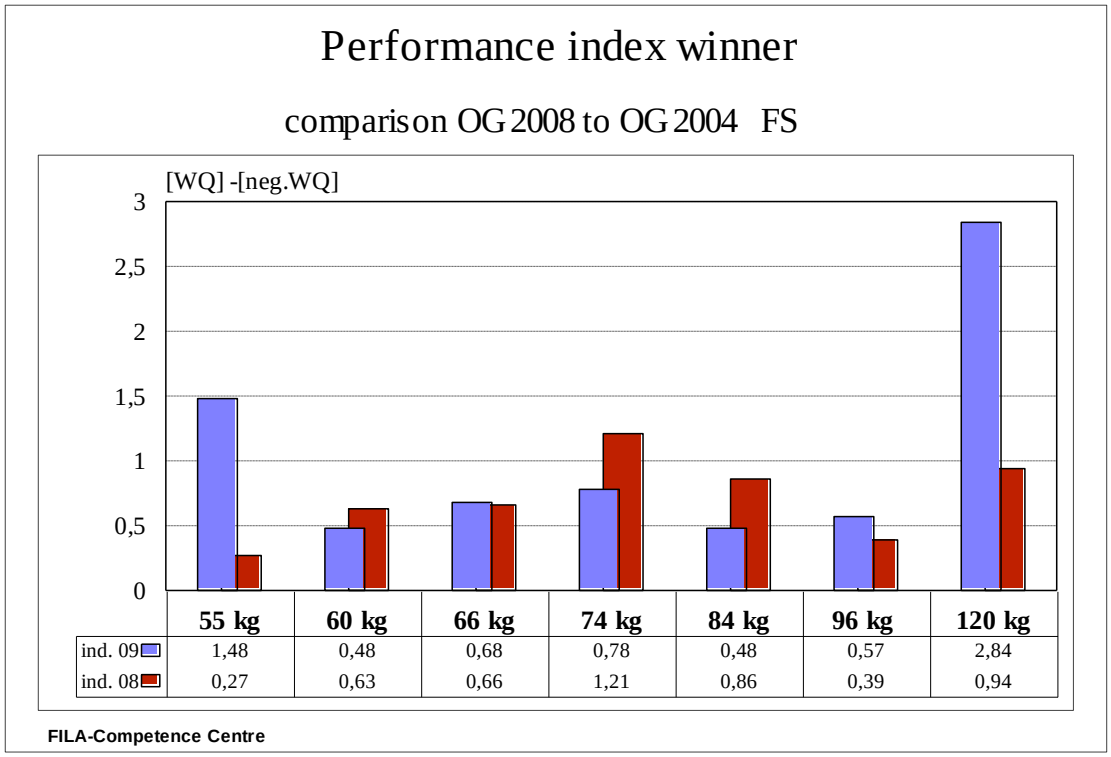


Fig. 13 Comparison of the wrestling performance (winner) WC 2009 to OG 2008

Especially the attacking efficacy of these two wrestlers with 2.84 points per minute of Makhow and 1.9 points per minute of Young is in comparison to the other World Champions excellent (fig. 14).

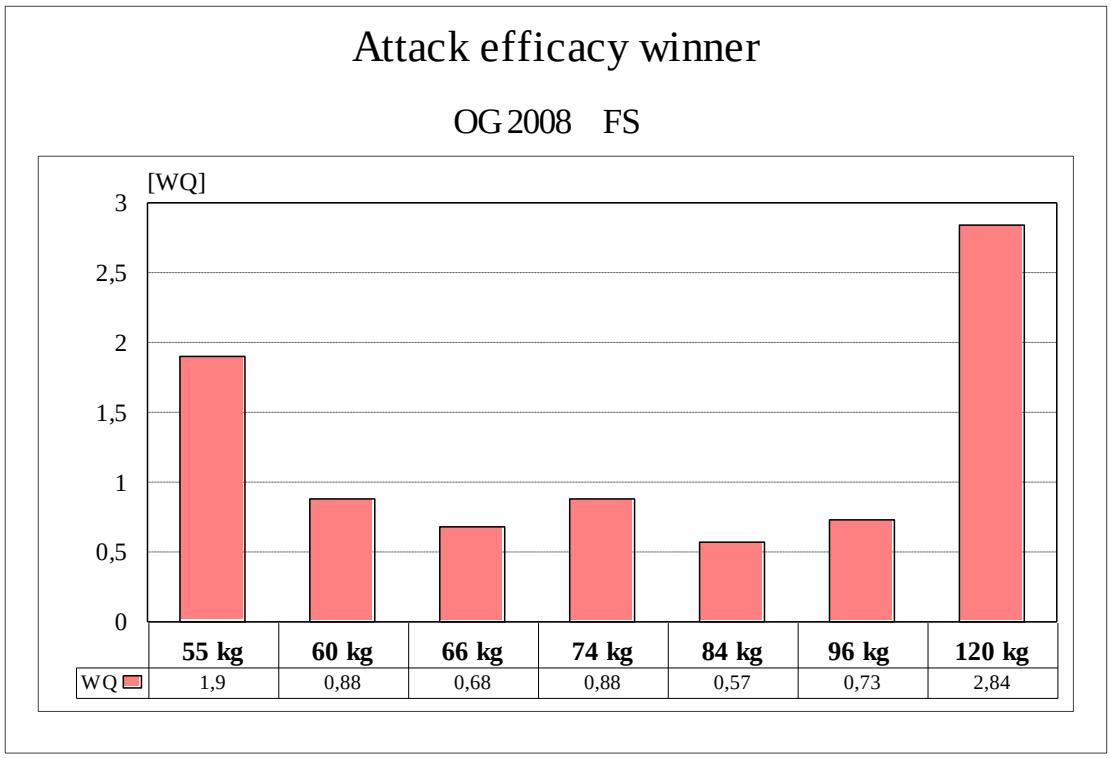
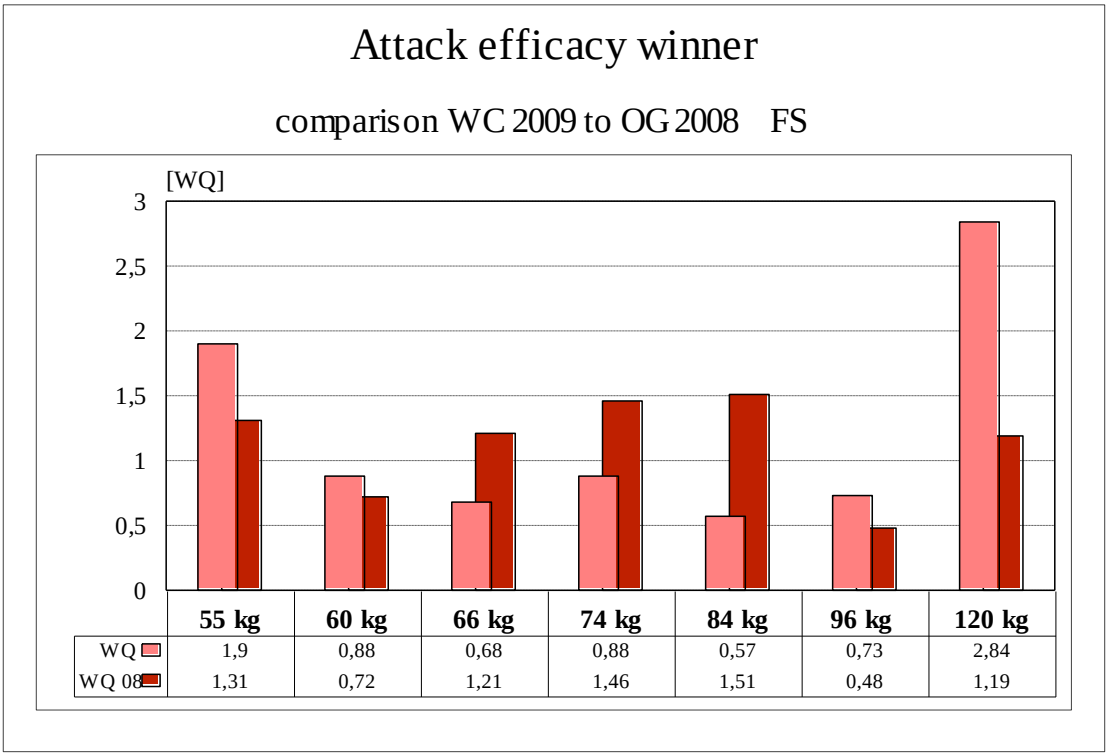


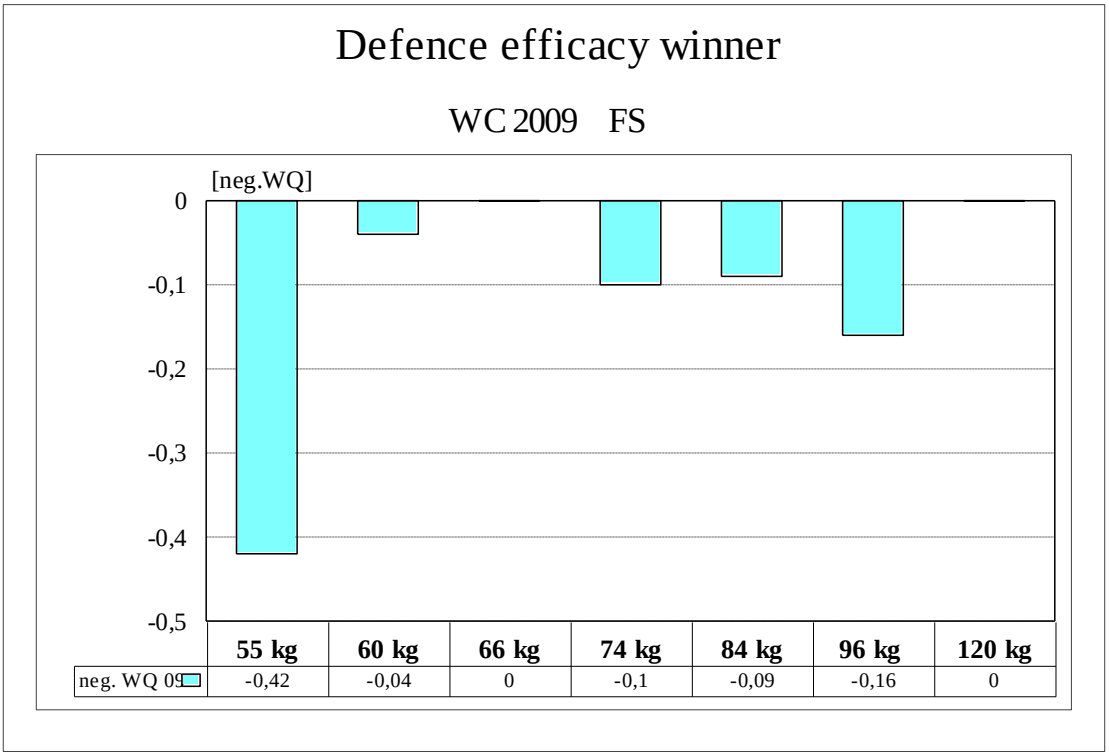
Fig. 14 Attack efficacy of the World Champions in 2009 Freestyle

The great success of the two best wrestlers of the tournament Young and Makhov made it clear it's worth making the effort ***to use offensive wrestling strategy.*** (fig. 15). Both made more attacking points per minute in Herning as it happened in Beijing. Negative values under this point of views we could see in the weight categories 66, 74 and 84kg



	55 kg	60 kg	66 kg	74 kg	84 kg	96 kg	120 kg
WQ	1,9	0,88	0,68	0,88	0,57	0,73	2,84
WQ 08	1,31	0,72	1,21	1,46	1,51	0,48	1,19

Fig. 15 Comparison of the attack efficacy of the World Champions 2009 in Herning and OG 2008, FS



	55 kg	60 kg	66 kg	74 kg	84 kg	96 kg	120 kg
neg. WQ 09	-0,42	-0,04	0	-0,1	-0,09	-0,16	0

Fig. 16 defense abilities of the World Champions 2009 in Herning

Makhov (Russia), Thaghavi Kermany (Iran) and Kudoukov (Russia) belonging to the most stable wrestlers against the opponent's attacks (fig. 16). They let their opponents during the whole tournament not a single point. And even Young (55kg) with a value from -0.4 let his opponents less than 1 point per period!

If we compare the defense ability between 2008 and 2009 it becomes clear the enormous improvement of the values from 2009 (fig. 17). That means equally a dominating defense strategy of the World Champions 2009 with the negative effects on the attractiveness that we have mentioned before and that we will see at the analysis of the technical structure later.

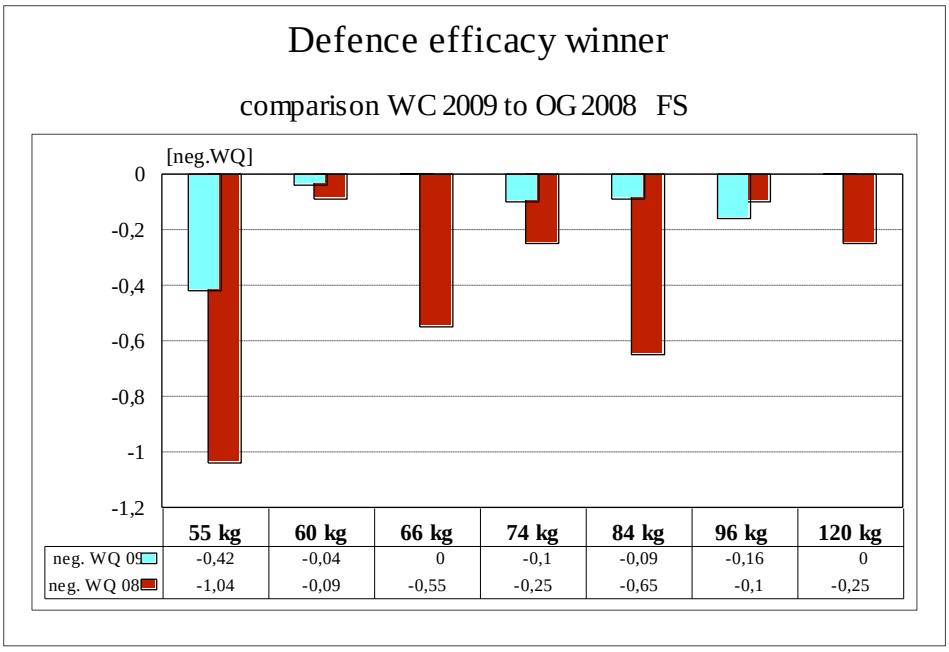


Fig. 17 Comparison of the defense efficacy of the World Champions 2009 in Herning and OG 2008, FS

Summarizing we can say that Makhov (Russia), Young (PRK) and Tsargush (Russia) had been the best qualitative winners of the World Championships 2009 (fig. 18). This is the starting point for a deeper analyze of the technical structure of the Champions 2009.

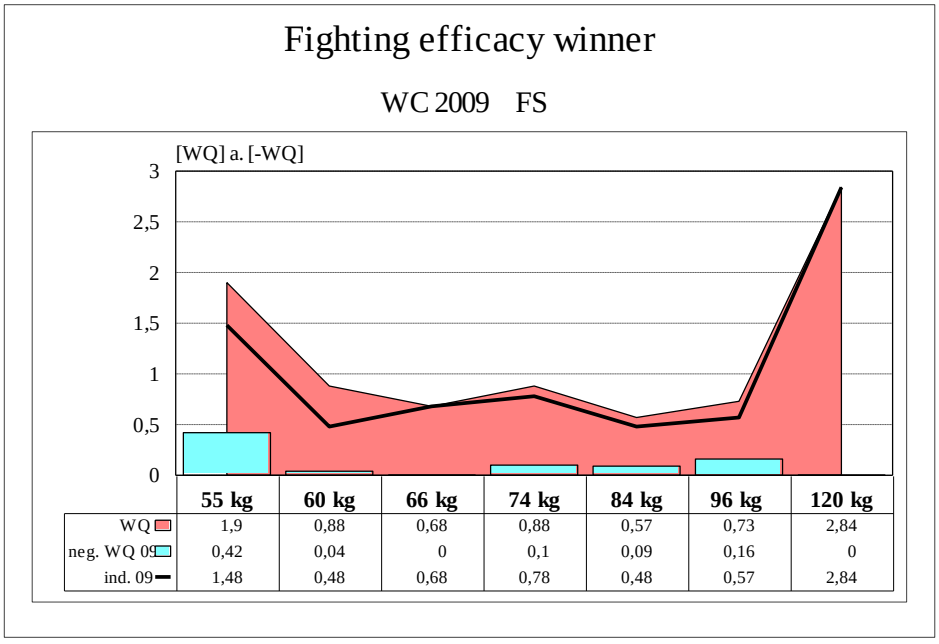
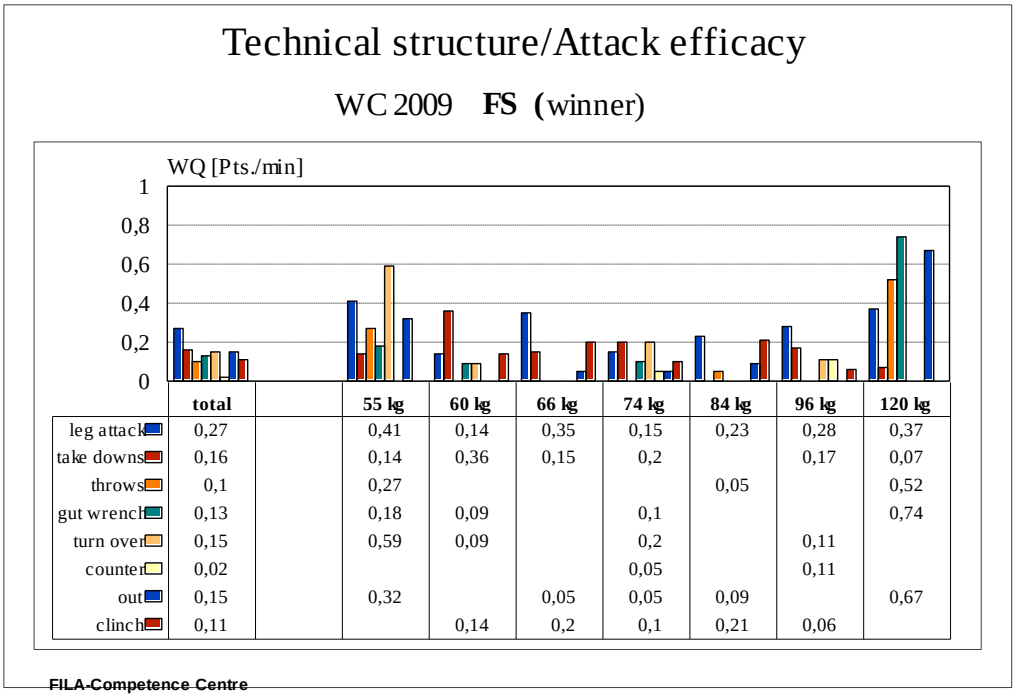


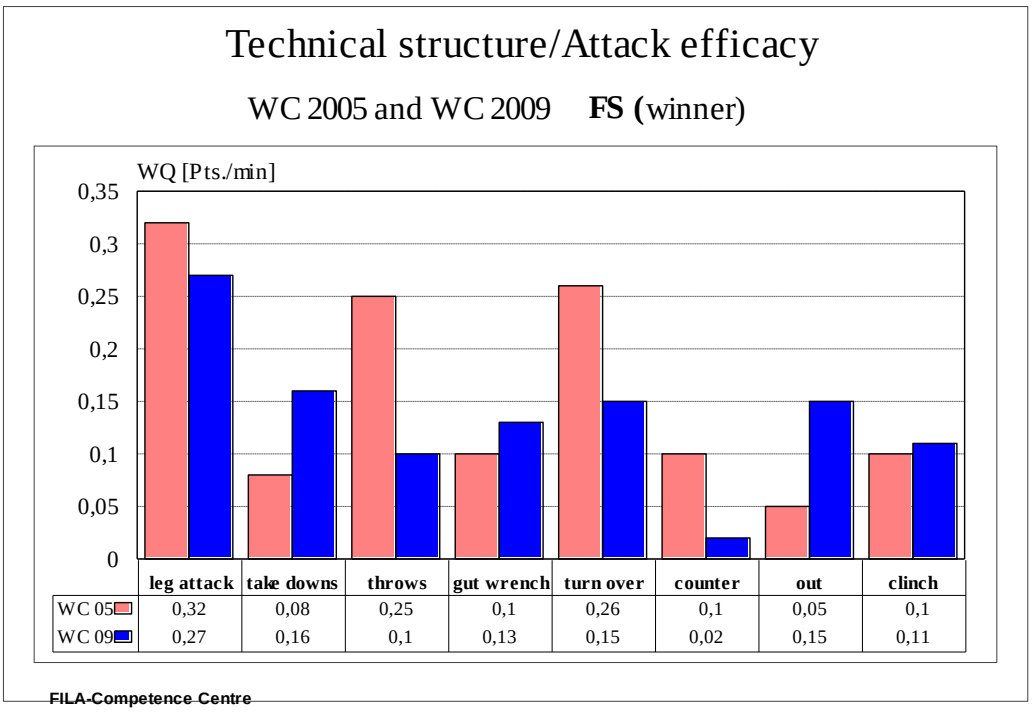
Fig. 18 Wrestling efficacy of the World Champions 2009 in Herning, FS



	total		55 kg	60 kg	66 kg	74 kg	84 kg	96 kg	120 kg
leg attack	0,27		0,41	0,14	0,35	0,15	0,23	0,28	0,37
take downs	0,16		0,14	0,36	0,15	0,2		0,17	0,07
throws	0,1		0,27				0,05		0,52
gut wrench	0,13		0,18	0,09		0,1			0,74
turn over	0,15		0,59	0,09		0,2		0,11	
counter	0,02					0,05		0,11	
out	0,15		0,32		0,05	0,05	0,09		0,67
clinch	0,11			0,14	0,2	0,1	0,21	0,06	

Fig. 19 Technical structure of the World Champions 2009 in Herning, FS

The dominating techniques are still the leg attacks though only Makhov (120kg) and Young (55kg) are using effective these techniques (fig. 19). Beside the leg attacks Young is effective in parterre wrestling with the turn over and Makhov with the gut wrench but in poor technical quality because he is rolling all the time over his shoulders (autotouche) as we can see in the video analysis.



	leg attack	take downs	throws	gut wrench	turn over	counter	out	clinch
WC 05	0,32	0,08	0,25	0,1	0,26	0,1	0,05	0,1
WC 09	0,27	0,16	0,1	0,13	0,15	0,02	0,15	0,11

Fig. 20 Comparison of the technical structure of the World Champions 2009 and 2005, FS

If we compare the technical structure 2009 with 2005 we can realize big differences (fig. 20). We consider an increase of “simple” techniques in 2009 like take down and take out and in opposite a decrease of throws, turn over and counter.

ANALYSIS OF THE FEMALE WORLD CHAMPIONSHIPS 2009 IN HERNING
PROF. DR. HAROLD TÜNNEMANN

1. Current tendencies in combat behaviour against the background of new competition rules 2009

This analysis is to start with thanks to the organisers of the championships having performed a superb feat of world champion level. These championships were organised excellently, and the multimedia fireworks accompanying the competitions was particularly brilliant. We have had an enormous increase of media interests and the presence of various TV companies assisted FILA's efforts towards promotion wrestling in the world. At the same time this is a challenge for more discipline by athletes and coaches to come onto the mat in time after calling.

Herning was an example for the upwards trend of the Olympic female wrestling. With 52 participating countries we have had for the first time more than Countries in Freestyle Men (49).

The Danish organizers have had a lot of ideas to present our sport on a high level and the results were excellent and useful for promotion our sports. All events were well attended and the audience supported the athletes with euphoric enthusiasm. The journalists were happy and the new competition schedule with start 1:00 pm gave way for more interesting activities in the morning before the sessions.

For example the great idea of a Youth camp. And the Youth camp became a highlight of this Championship. About 300 young wrestlers, age 12 to 18 from USA, Great Britain, Turkey, Finland, Sweden, Norway, Italy, Austria, Germany and Denmark were trained by famous international coaches from Japan, USA, Iran, Poland, Ukraine, Italy and Austria. During the Female competition the very successfully head coach Kazuhito Sakae together with six times world champion Hitomi Sakamoto and Fijikawa as well as Kinase from Japan showed Female wrestling so it reminded of art.

There were some tricks that made even the most tired wrestler, stare up. The hopeful wrestling youth could learn wrestling from the best coaches of the world thanks to the outstanding involvement of the Danish organizers Palle Nielson and Esben Fonnesbek.

The FILA has introduced in 2009 some important changes regarding the design competition. The spectators were thrilled by the presentation of the challenge on large video screens and for the athletes the changing modalities of the video evidence, were one more step towards Fairness.

2. Country-specific aspects of performance in competition

Lots of nations utilize the post-Olympic year to rejuvenate their national teams. Like previous world championships at the beginning of a new Olympic cycle those of Herning have been marked by a mixture of experienced athletes and younger newcomers. If we are taking into account the Junior World Championships 2009 we can especially congratulate the coaches and wrestlers of Tunis. These shooting stars of female wrestling had taken part for the first time and won three medals and took the 6th place within the nation ranking!

Coming back to Herning we would like to congratulate the athletes and coaches of Azerbaijan, Japan, Canada and Ukraine to their outstanding results! They served as an example FILA's modern philosophy of wrestling. A group of high-performance countries like Russia, USA, Mongolia, Peoples Republic of Korea, Kazakhstan, China and Poland followed the best of four countries with a distance (fig.1).

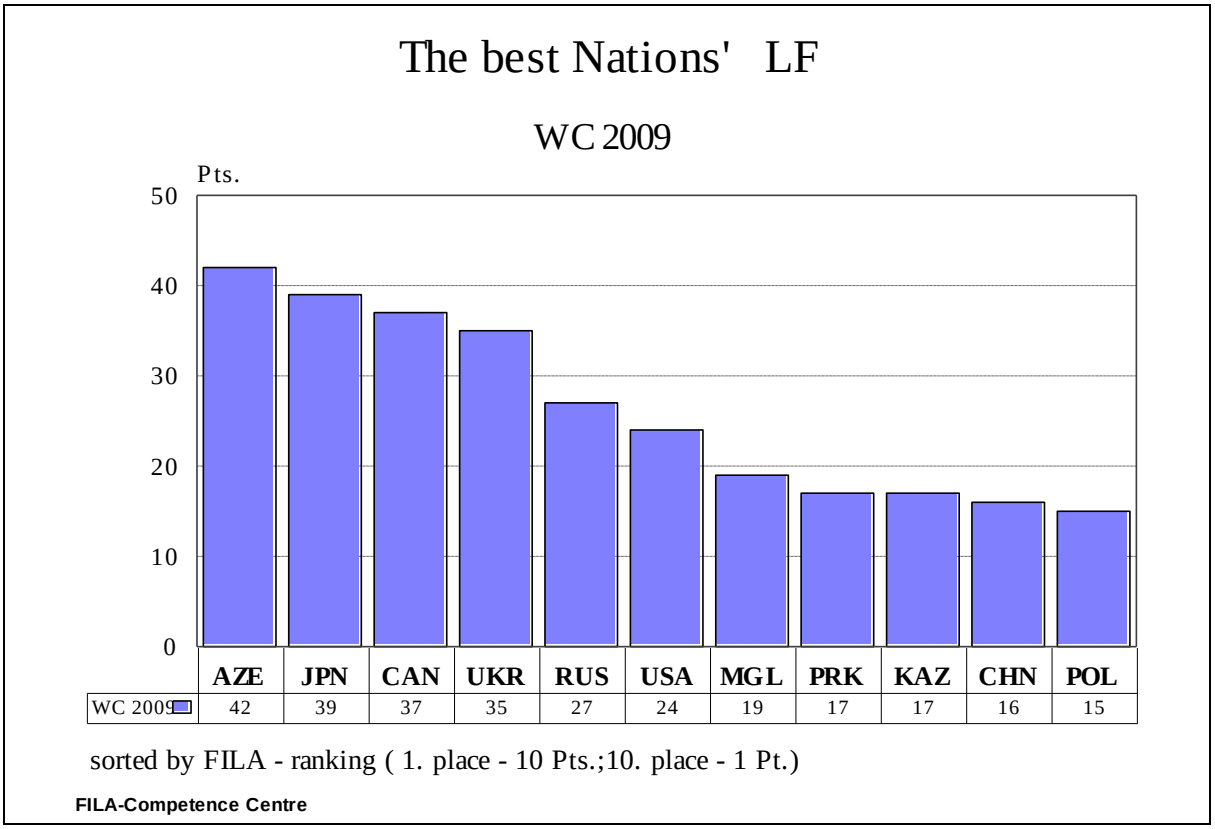


Fig. 1 The 11 best nations in Herning 2009

The wrestlers of Azerbaijan, Canada, Japan and Ukraine reached the most finals (4) followed by USA and Russia (3.)

With a comparison of the country specific results of 2007 and 2009 we can see which countries have changed their training concepts and competition strategy successfully (fig. 2).

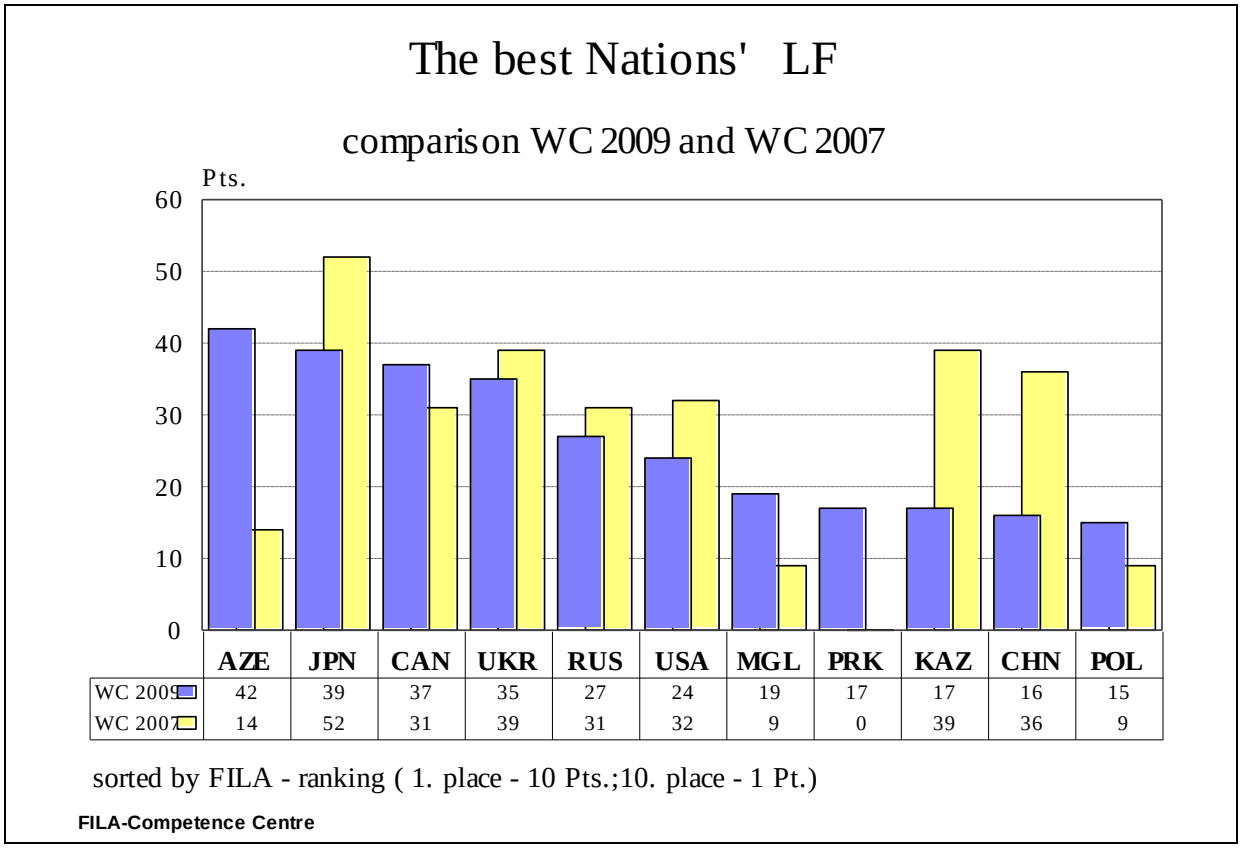


Fig. 2 Comparison of the 11 best nations in FW WC 2009 and WC 2007

We can see the fantastic improvement of performance of Azerbaijan with 42 Nation points, followed by Canada, Mongolia, Poland and Peoples of Republic of Korea. All the other nations had to suffer losses. This is especially for the Asian countries Kazakhstan, China and Japan.

Just one year after the Olympic Games 2008 is the question interesting how successful are the leading nations in developing their new generation. Therefore we will integrate the performance of the Junior World Championships in this analyze. (fig. 3).

The world's elite in junior wrestling of Russia, Ukraine and Japan is extraordinary if we compare it with the senior wrestlers. But also the wrestlers of Tunisia, Sweden, USA, India, Bulgaria, and Poland have demonstrated distinct progresses in their junior training concepts. In other countries like Azerbaijan, PRK, Mongolia and China could be used possibilities for improving their performances in the future with the young generation.

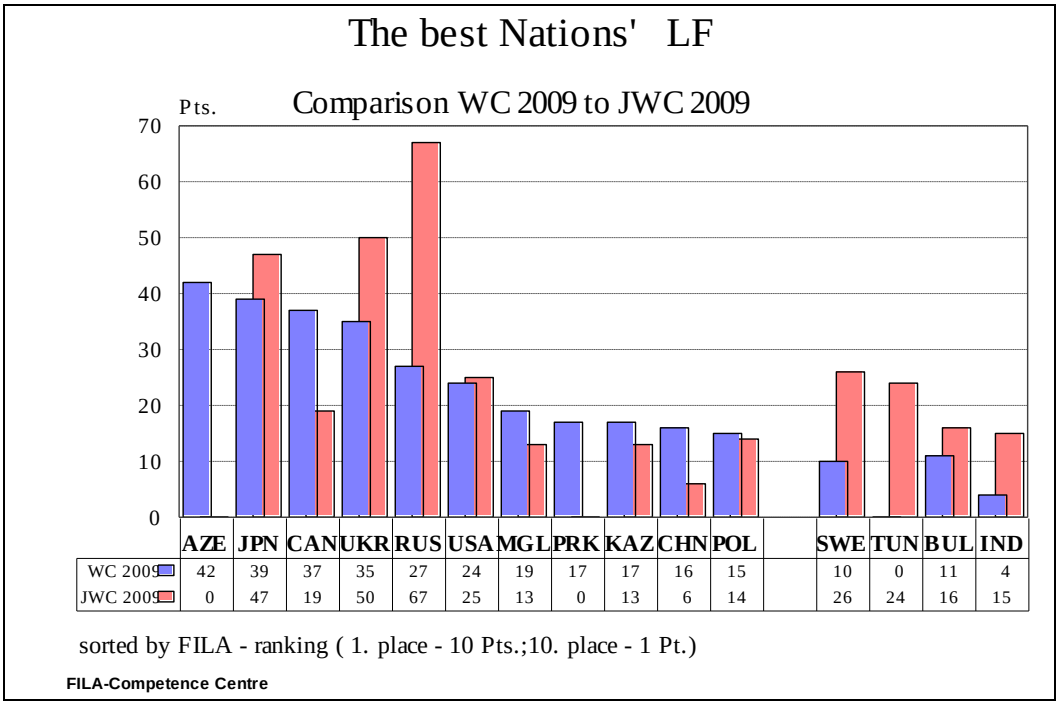


Fig 3 Comparison of the 15 best nations in FW WC 2009 and JWC 2009

3. Qualitative analysis of combat behaviour

The Female championships like the ones in freestyle men and Greco-Roman wrestling have been characterized by current changes to the rules. Other than in Greco-Roman wrestling, there are considerably less problems with the realization of the new rules and so the impacts on the quality of combat behavior have been lower. Coaches and athletes have adapted to the new competitions rules and they have modified training regarding the special strength and endurance abilities as well as the technical-tactical challenges. The realization of 4 to 5 bouts a day requires enormous improvements of the special physical conditional abilities. If we have look at a parameter of the quality of wrestling - the average number of scored points per minute – it becomes clear that 2009 the quality of females wrestling has approached to freestyle wrestling of the men (fig. 4).

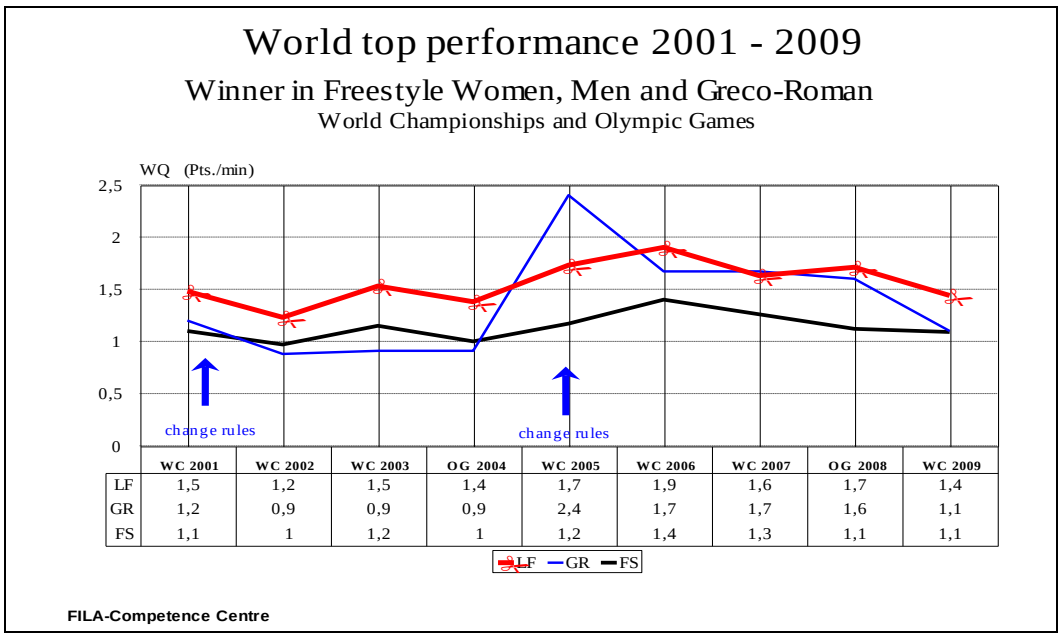


Fig 4 World top performance 2001 – 2009 in three Olympic disciplines of wrestling

This will be underlined if we have a look at the quality of points (fig. 5). There is a clear increase of 1-point actions 2009 against 2007.

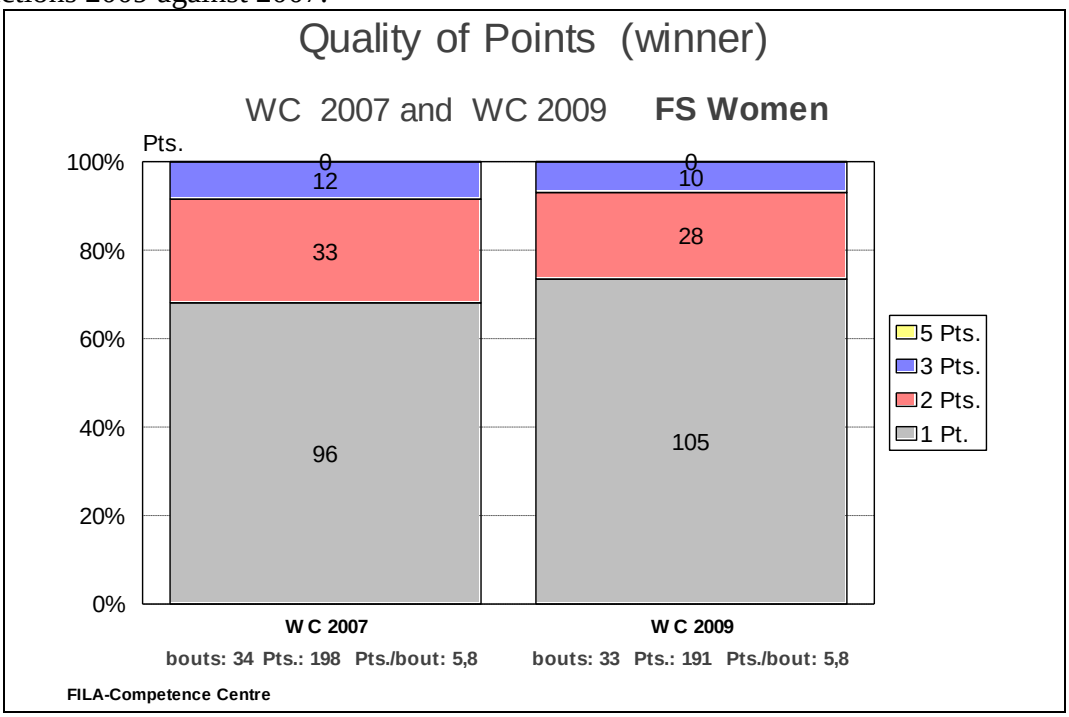


Fig. 5 Quality of points Female World Championships 2007 and 2009

3.1 Combat behaviour of the nations

With the Performance index you can very good describe the technical-tactical abilities of a given nation or athlete. In this case the realized points will be set into relation to the points given away to the opponent (fig 6). In a longitudinal view it is a surprise that Azerbaijan entered the stage only 2007 and jumped to the same qualitative level of Ukraine leaving behind them Russia and USA. On the other hand if we are taking into account the quality of wrestling Japan and Canada are still in front.

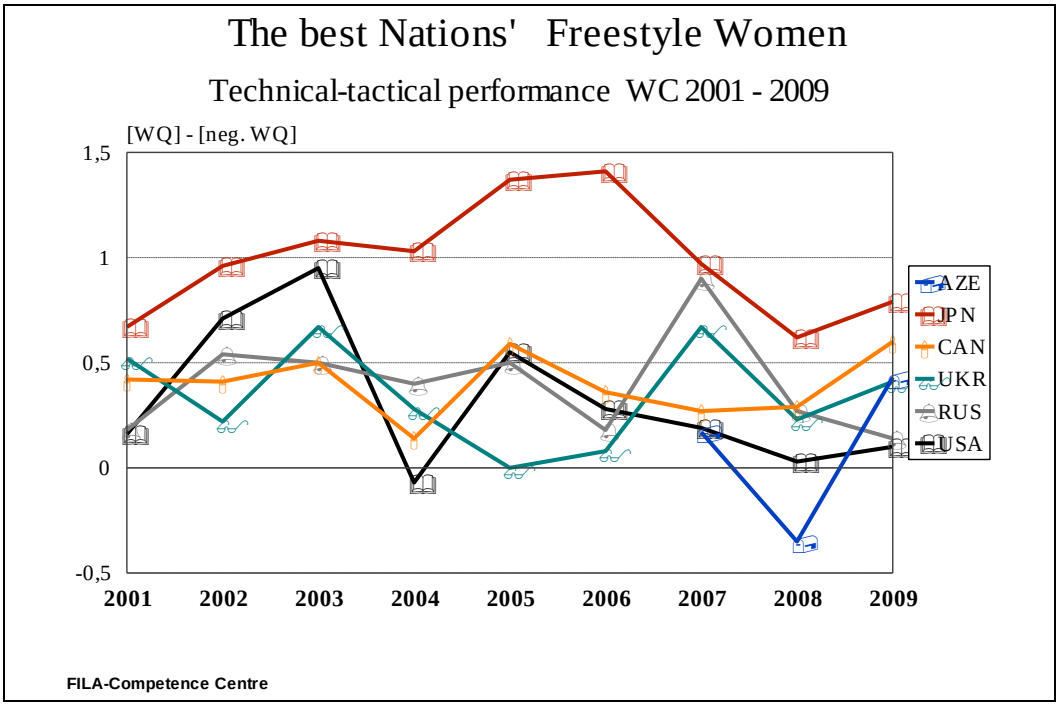


Fig. 6 Wrestling performance of female wrestling in a longitudinal view

The quality of attack is an indication of a higher attractiveness of combat behavior (fig. 7). The Peoples Republic of Korea, Canada, Japan and Azerbaijan achieved best values in this parameter in 2009 close followed by USA and Ukraine.

PRK, Canada and Azerbaijan made the greatest strides in comparison with 2007 (fig 8) followed by USA and Poland. PRK as a newcomer was more successful in their attack abilities than for instance the established countries Ukraine and Russia. Concerning the attack efficacy Russia, China and Ukraine had to suffer losses in the attack efficacy since 2007.

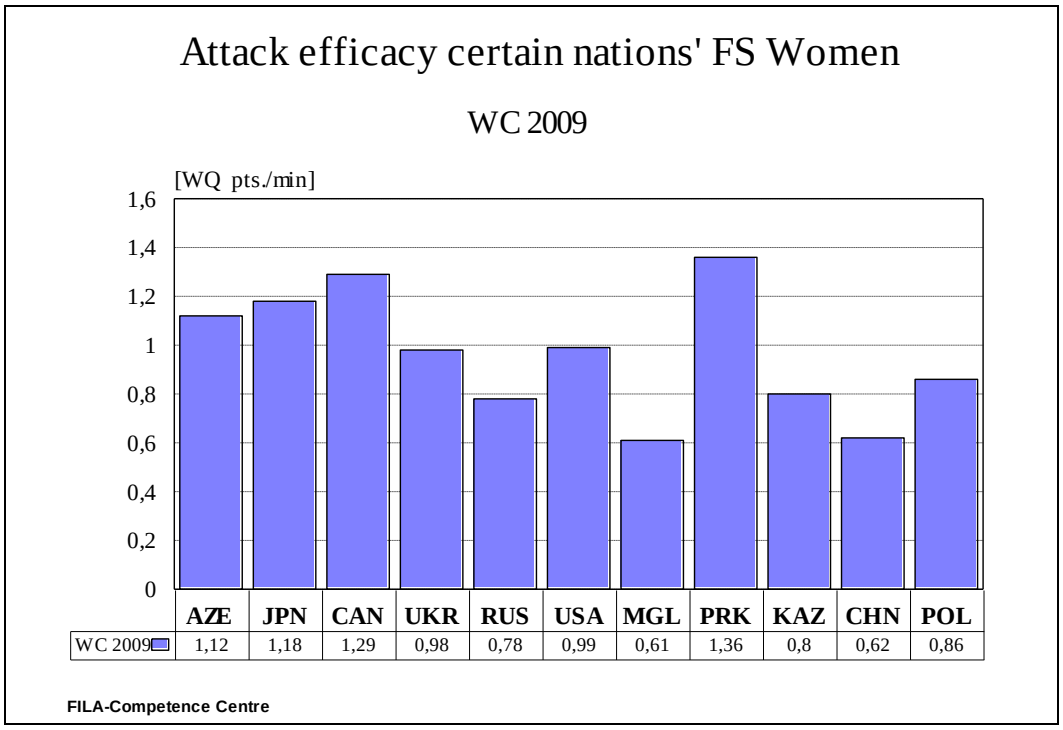


Fig. 7 Attack efficacy WC 2009

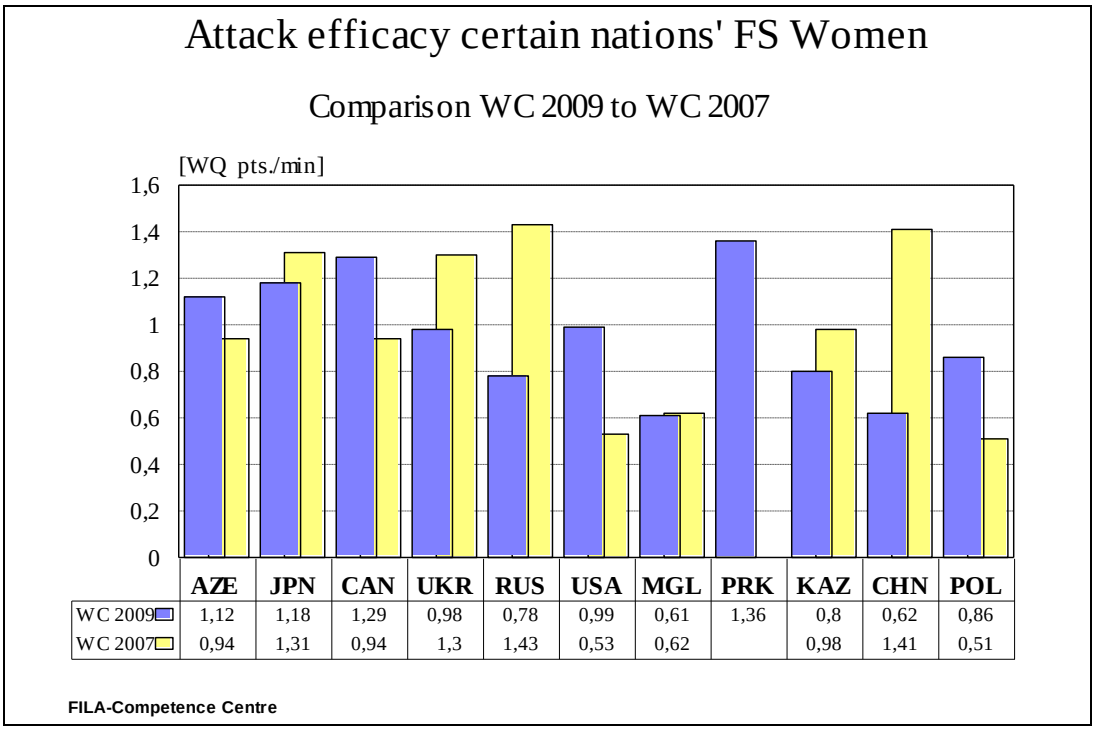


Fig. 8 Comparison of the attack efficacy 11 best nations in FW WC 2009 and WC 2007

The attack efficacy and as a result the attractively youth training concepts of Japan, USA, Russia and Mongolia is very clear (fig. 9). Canada, AZE and China could do a little bit more for their promising youth talents.

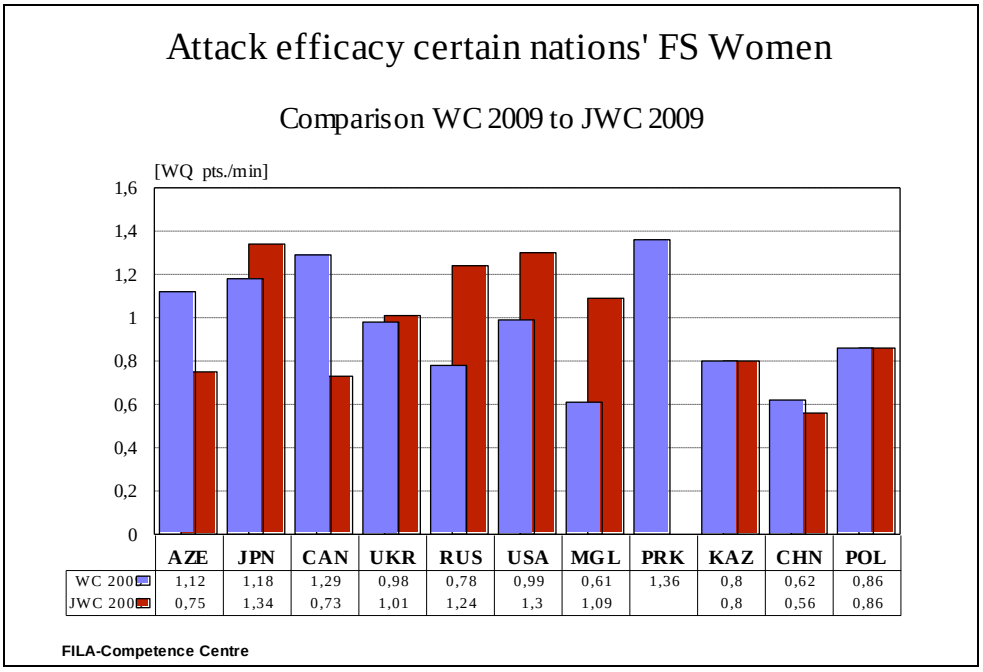


Fig. 9 Attack efficacy (nations) WC 2009 and Junior WC 2009

The best nations are very stable against the attacking opponents in 2009 (fig. 10). Still, as ever the female wrestlers of Japan are the best of the world in defense efficacy followed by China, Russia and Ukraine. It could be of interest for us to have a look to the defense efficacy of the Senior World Championships 2009 in comparison to the Junior World Championships 2009 (fig. 11). The best "defending nations" during the Junior World Championships 2009 are Russia, Japan, Azerbaijan and Ukraine while Canada, Mongolia, Kazakhstan and China could improve their defense abilities within their training concepts.

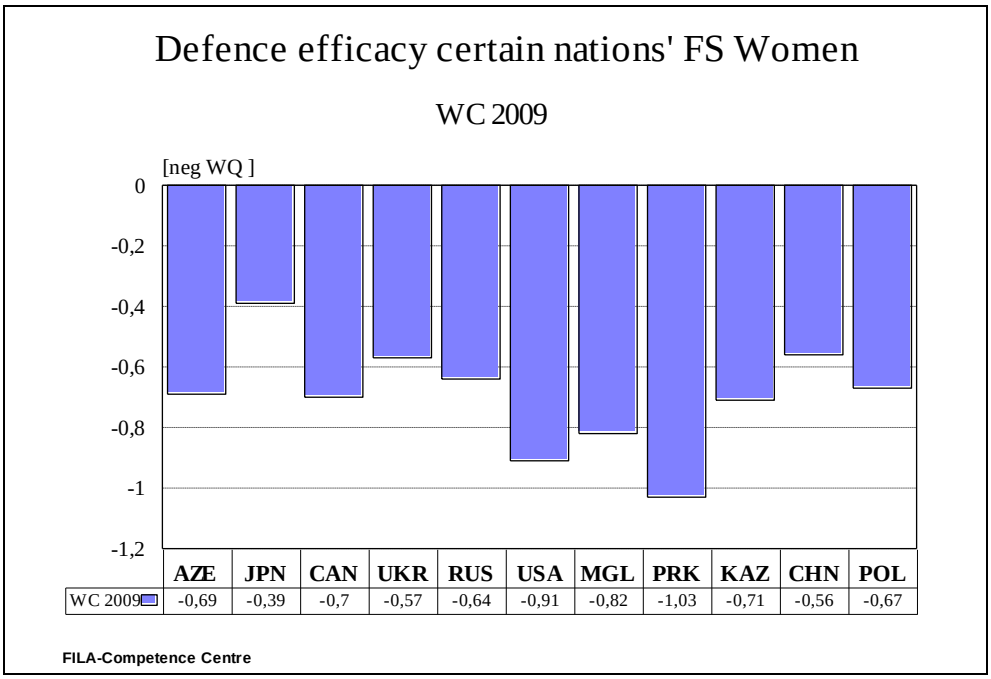
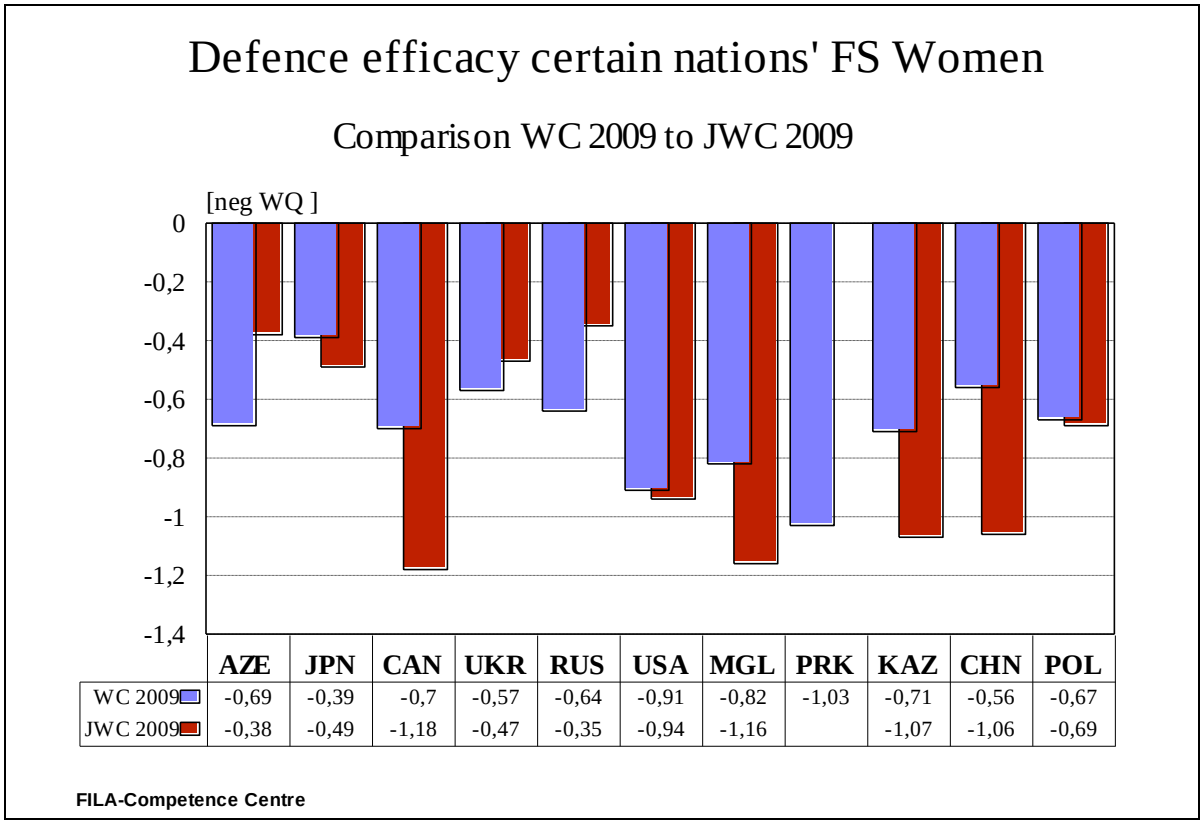


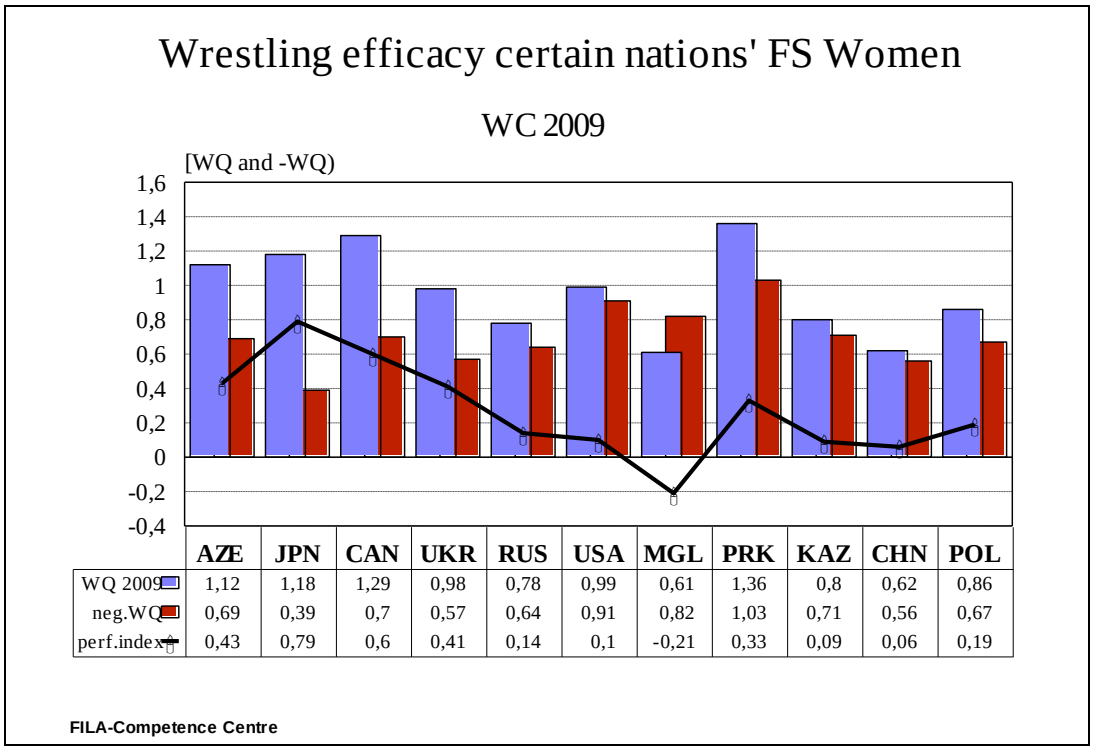
Fig. 10 Best defense efficacy values in FW 2009



	AZE	JPN	CAN	UKR	RUS	USA	MGL	PRK	KAZ	CHN	POL
WC 2009	-0,69	-0,39	-0,7	-0,57	-0,64	-0,91	-0,82	-1,03	-0,71	-0,56	-0,67
JWC 2009	-0,38	-0,49	-1,18	-0,47	-0,35	-0,94	-1,16		-1,07	-1,06	-0,69

Fig. 11 Defense efficacy (nations) FW 2009 and Junior WC 2009

Summarizing the Wrestling efficacy of the female wrestlers (fig. 12) we consider an outstanding quality of the Japanese wrestlers followed by Canada, Azerbaijan, Ukraine and PRK.

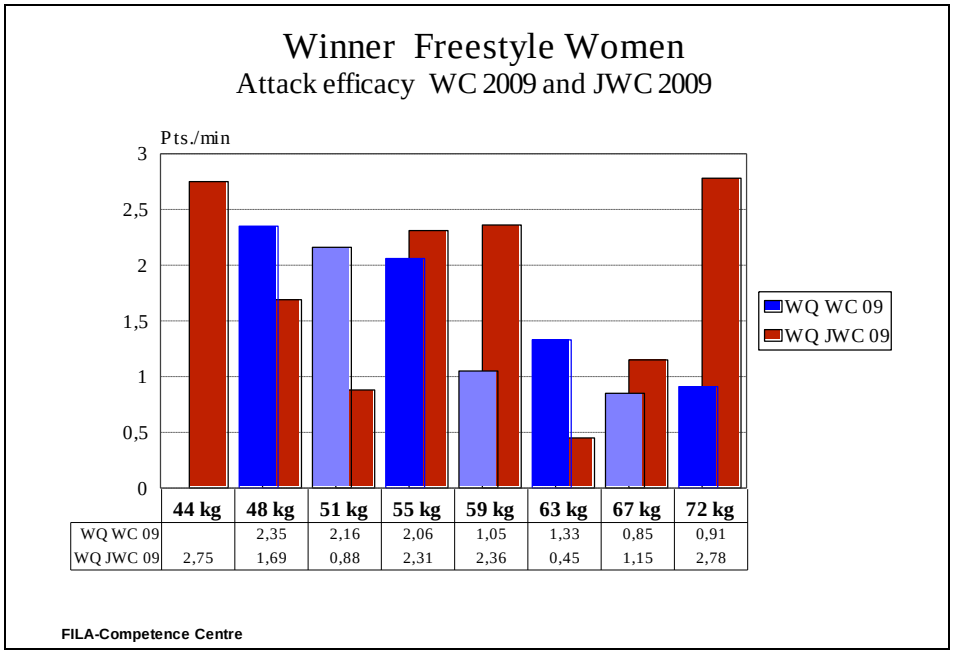


	AZE	JPN	CAN	UKR	RUS	USA	MGL	PRK	KAZ	CHN	POL
WQ 2009	1,12	1,18	1,29	0,98	0,78	0,99	0,61	1,36	0,8	0,62	0,86
neg.WQ	0,69	0,39	0,7	0,57	0,64	0,91	0,82	1,03	0,71	0,56	0,67
perf.index	0,43	0,79	0,6	0,41	0,14	0,1	-0,21	0,33	0,09	0,06	0,19

Fig. 12 Wrestling efficacy of the 11 best nations in FW 2009

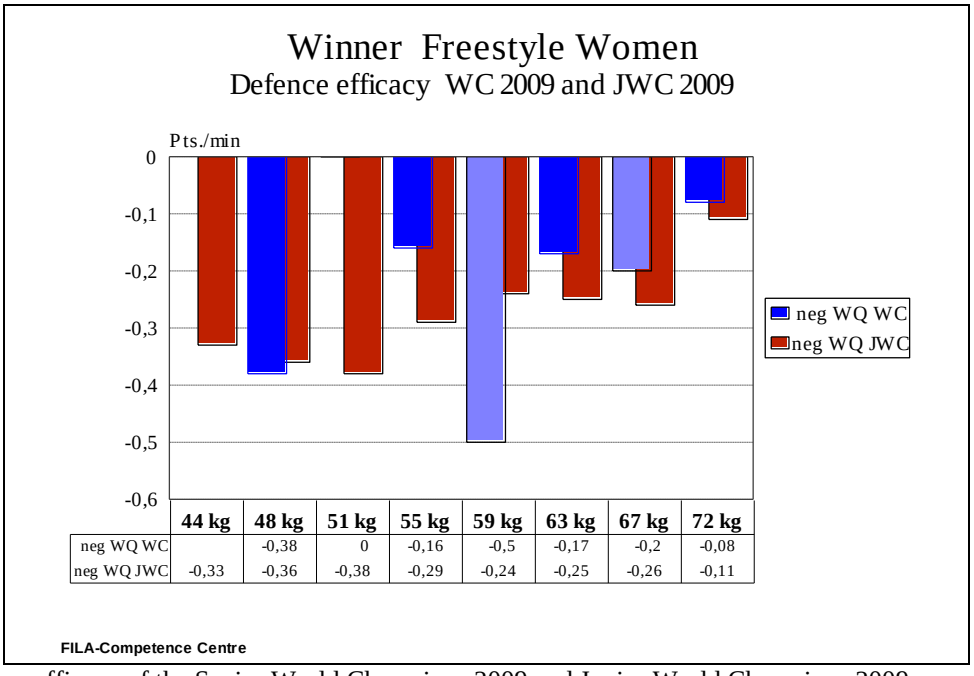
3.4 Combat behaviour of the winner

We consider a different picture concerning the attack efficacy of the World Champions if we compare the values from the seniors to the Junior World Champions (fig. 13). Especially the Youth World Champions from 2009 are very aggressive. Natalia Vorobyeva from Russia (72kg) with 2.78 points per minute, Victoria Anthony from USA (44kg) with 2.75 points per minute, Ekatarina Melnikova from Russia (59kg) with 2.36 points per minute and Yulia Blahinya from Ukraine (55kg) with 2.31 points per minute had shown us an outstanding attack efficacy. From the Senior World Champions we can underline Maria Stadnik from Azerbaijan (48kg) with 2.35 points per minute, Sofia Mattsson from Sweden (51kg) with 2.16 points per minute and Saori Yoshida from Japan (55kg) with 2.06 points per minute. If we have a look at the best defense abilities of the Junior and Senior World Champions 2009 we have an opposite picture (fig. 14).



	44 kg	48 kg	51 kg	55 kg	59 kg	63 kg	67 kg	72 kg
WQ WC 09		2,35	2,16	2,06	1,05	1,33	0,85	0,91
WQ JWC 09	2,75	1,69	0,88	2,31	2,36	0,45	1,15	2,78

Fig 13 Attack efficacy (winner) WC 2009 and Junior WC 2009

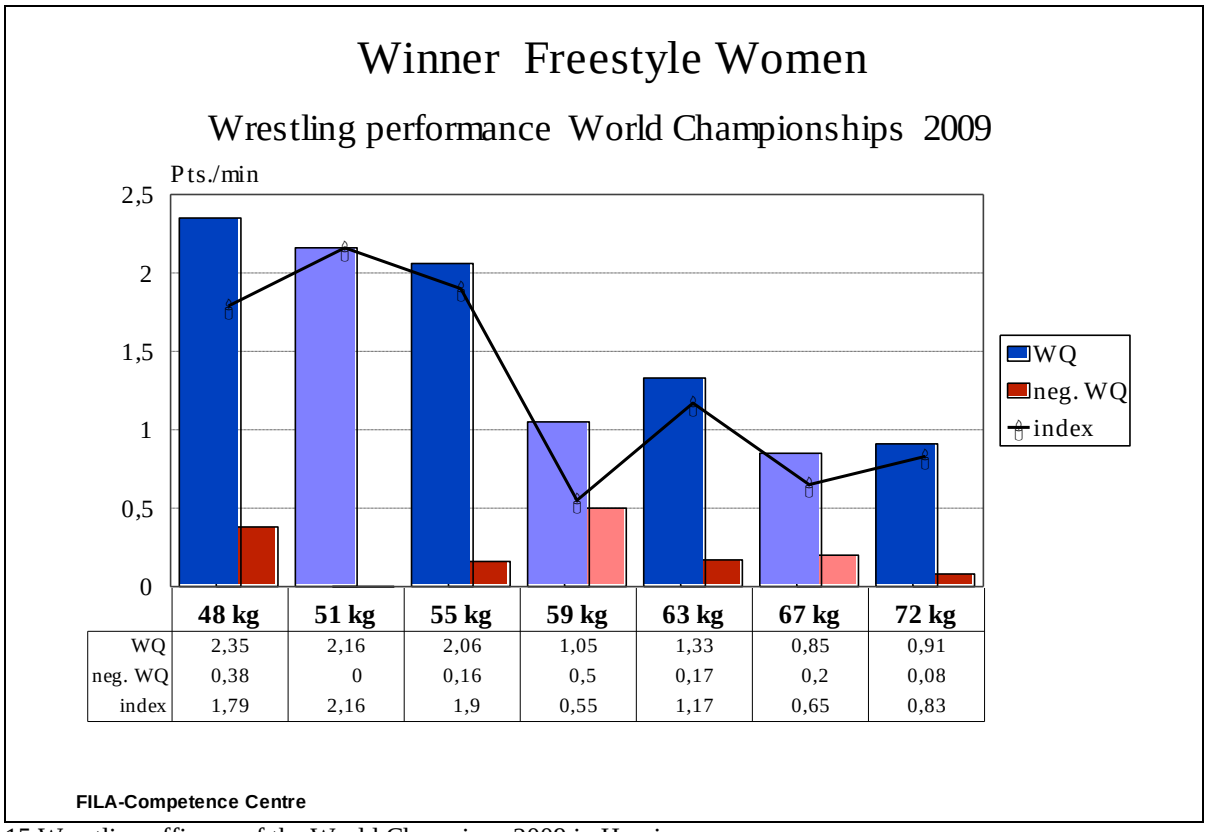


	44 kg	48 kg	51 kg	55 kg	59 kg	63 kg	67 kg	72 kg
neg WQ WC		-0,38	0	-0,16	-0,5	-0,17	-0,2	-0,08
neg WQ JWC	-0,33	-0,36	-0,38	-0,29	-0,24	-0,25	-0,26	-0,11

Fig. 14 Defense efficacy of the Senior World Champions 2009 and Junior World Champions 2009

Obviously it is a privilege of the youth to be unconcerned aggressive while the experienced senior ladies take care of an effective defense. The values of the Senior World Champions are better than those of the juniors with the exception of Julia Ratkevich (AZE) and Maria Stadnik (AZE). Both World Champions could be still better if they could improve their defense abilities. The best defense efficacy show of the Senior World Champions Xiaoqing Qin from China (72kg) with –0.08 points per minute and of the Junior World Champions Natalja Vorobyeva from Russia (72kg) with 0.11 points per minute.

Summarizing the Wrestling efficacy of the female World Champions wrestlers 2009 in Herning (fig. 15) we consider an outstanding quality of the Swedish wrestler Sofia Mattson (51kg) with an performance index from 2.16 (she let their opponents not only one point) followed by Saori Yoshida (55kg) with 1.9 and Maria Stadnik with 1.79. All the other World Champions are not so head and shoulders above their opponents.

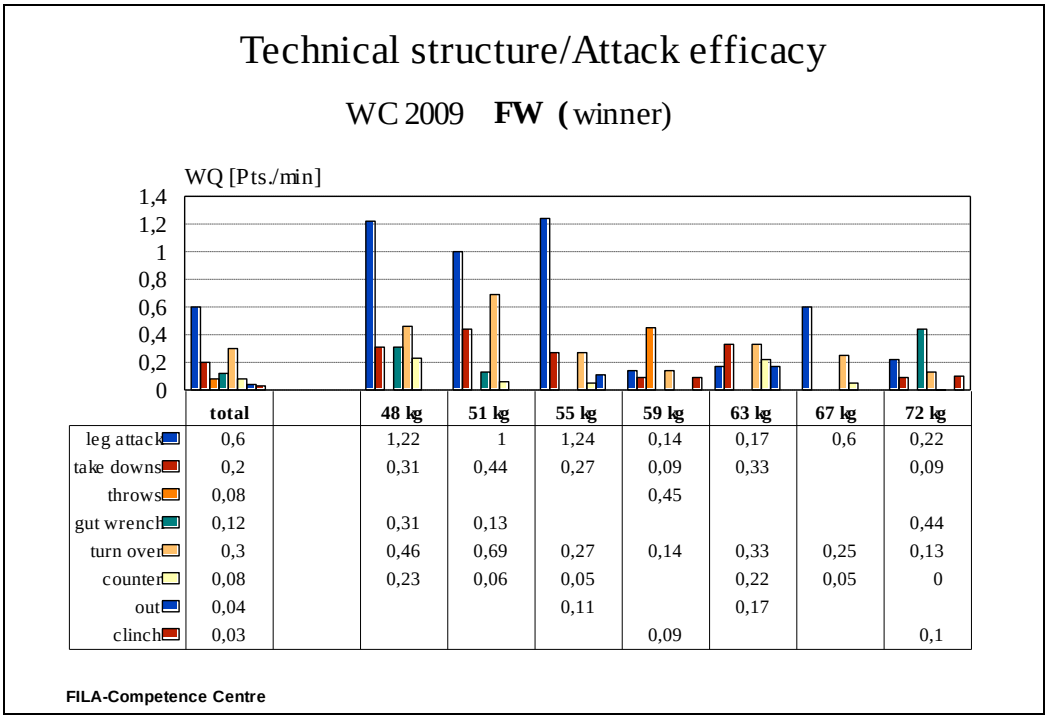


	48 kg	51 kg	55 kg	59 kg	63 kg	67 kg	72 kg
WQ	2,35	2,16	2,06	1,05	1,33	0,85	0,91
neg. WQ	0,38	0	0,16	0,5	0,17	0,2	0,08
index	1,79	2,16	1,9	0,55	1,17	0,65	0,83

Fig. 15 Wrestling efficacy of the World Champions 2009 in Herning

It is for the coaches very important to analyze the technical-tactical structure of the winner. It is important for the analysis of technical capacity of their athletes to compare this with the top athletes of the weight class. It is also very important for the planning of the technical training process as well as for the training concepts of the promising young talents.

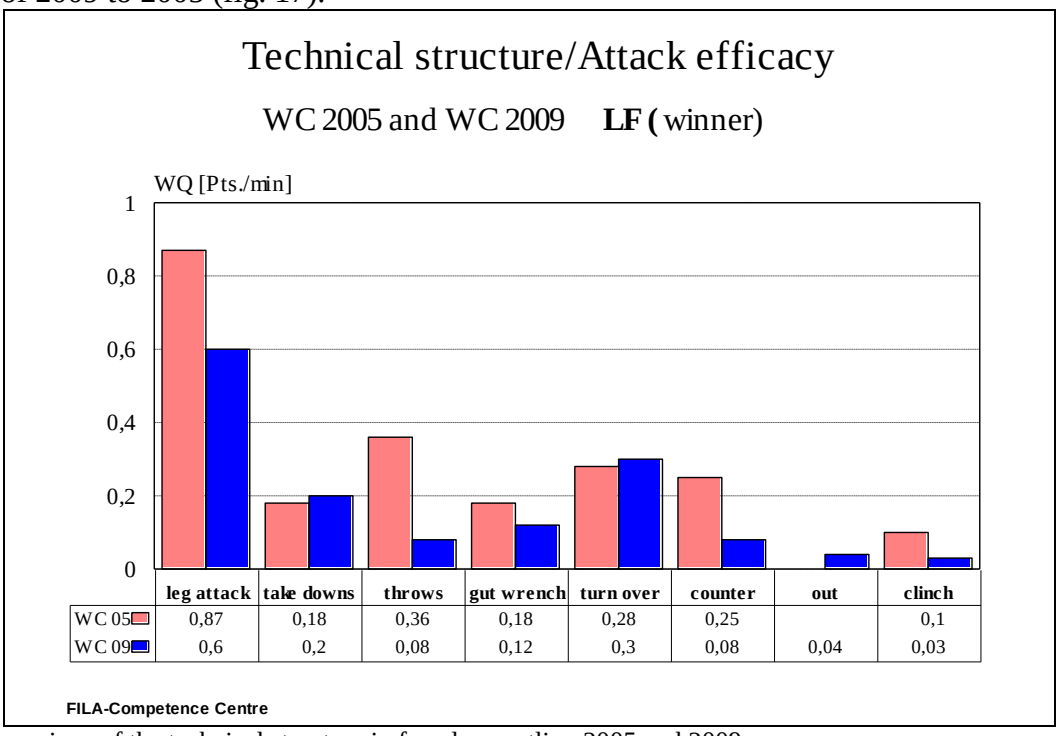
We see in Herning leg attacks, turn over and take downs as the dominating techniques (fig. 16). This tendency is obviously in the weight categories 48kg, 51kg and 55kg.



	total		48 kg	51 kg	55 kg	59 kg	63 kg	67 kg	72 kg
leg attack	0,6		1,22	1	1,24	0,14	0,17	0,6	0,22
take downs	0,2		0,31	0,44	0,27	0,09	0,33		0,09
throws	0,08					0,45			
gut wrench	0,12		0,31	0,13					0,44
turn over	0,3		0,46	0,69	0,27	0,14	0,33	0,25	0,13
counter	0,08		0,23	0,06	0,05		0,22	0,05	0
out	0,04				0,11		0,17		
clinch	0,03					0,09			0,1

Fig. 16 Technical structure and efficacy of the World Champions 2009

We can see a dynamic technical development in Female wrestling if we compare the technical structure of 2009 to 2005 (fig. 17).



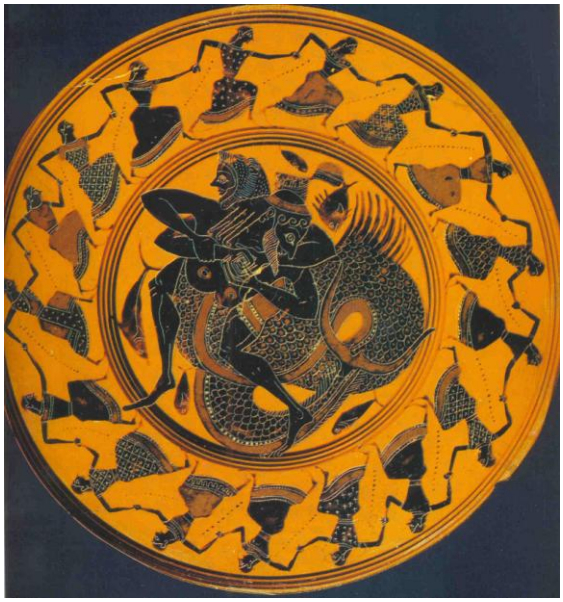
	leg attack	take downs	throws	gut wrench	turn over	counter	out	clinch
WC 05	0,87	0,18	0,36	0,18	0,28	0,25		0,1
WC 09	0,6	0,2	0,08	0,12	0,3	0,08	0,04	0,03

Fig. 17 Comparison of the technical structure in female wrestling 2005 and 2009

The technical-tactical behaviour of the female wrestling approach to the freestyle men as we stressed out already. In general the realized technical points per minutes are going down from 2006 (1.9) to 2009 (1.4) see also fig. 4. That means the female wrestlers became stronger in their defence abilities, they are stronger in their physical abilities and they are avoiding complicating techniques. The dominating techniques are still the leg attacks while the throw techniques and counter techniques are not so significant in 2009.

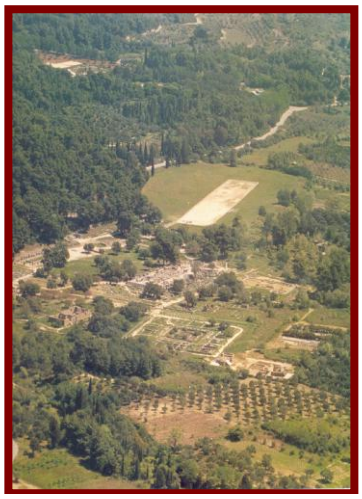
WRESTLING AS A SUPERIOR ATHLETIC EVENT OF THE ANCIENT OLYMPIC GAMES: COMPARISONS REFERENCED TO MODERN WRESTLING AND ITS ROUTE IN MODERN OLYMPIC GAMES.

CHONDRONASIOS N. CHARILAOS

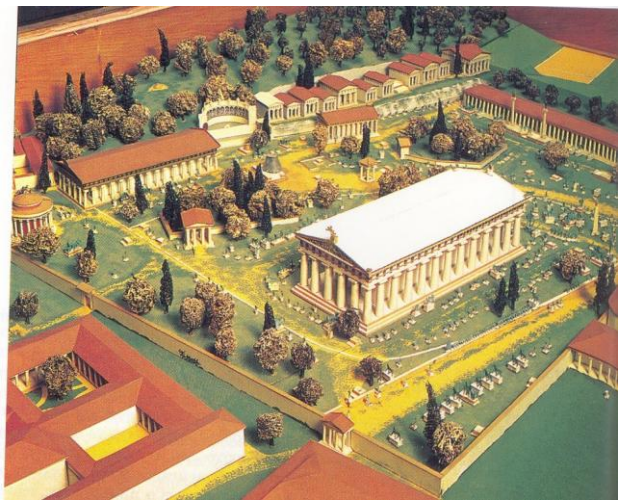


Paper presented at the 17th International Congress of Physical Education and Sport (I.C.P.E.S.) Department of Physical Education and Sport Sciences of the Democritus University of Thrace (Komotini, Greece). May 22-24, 2009.

Wrestling, as a physical human activity, we could say exists since man first appeared on earth and started struggling to conquer and impose himself in the world. We could also say that for each civilization wrestling means enjoyment, exercise, self-defence or a method of combat. However, the sacred place where wrestling first appears, as an athletic game taking place with professional wrestling referees, officially accepted by governmental authorities in permanent athletic facilities and as a part of the religious worship, was ancient Olympia, an area of the unique ancient Greek civilization.



Archeological site of Olympia



Ancient Olympia sanctuaries, Temple of Zeus

After examining more thoroughly the religiousness and the most important athletic games in ancient Greece, we could say that Athletics are not only related with the worship customs, but also involve the philosophical background of faith and its expression to gods. In ancient Greece, they used to honour the dead heroes with funeral games. The initiation ceremonies of almost all the rites in ancient Greece were funeral or mortuary rites. Their theme was the death and the resurrection of a beloved person, a hero, or a god.

Ancient Greek people worship their gods-heroes and honour them with athletic games. Gods-heroes were themselves athletes and Agonothetes. We also have to mention that organized athletic games with the form of gymnastic and other games (ex. Chariot races), appeared for the first time in the ancient Greek civilization as a religious performance and later on started to present both cultural and political interest.

The Olympic Flame Lighting Ceremony

The Temple of Ira.

In modern times, all religions such as Christianity, Islamism, Judaism, etc. are opposed to athletics. Especially as far as Christianity is concerned, we have the example of the Emperor Theodosius I', with both temporal and religious authority in Byzantine Empire, who with a decree in 394 A.D., he forbade the Olympic Games.

Philostratus gives us the "information" about Hermes' daughter Palaestra, who lived in the woods of Arcadia and used to praise the value of wrestling.

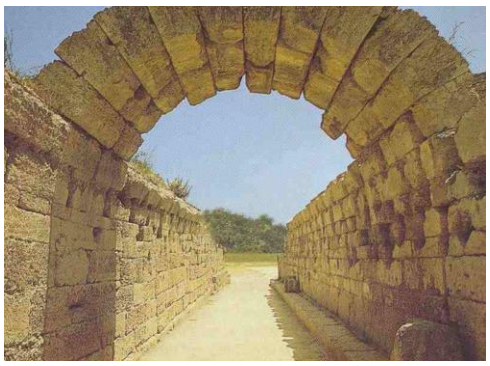
The athletes that participated in the games held in Olympia are guided to the Vouleutirio, in front of the altar of Horkios Zeus, and stepping on dismembered male genital organs of a pig take their oath. They swear that they have full political rights, that they have kept the presumed time period of full exercise, and that they are not going to break the rules. The statue of Horkios Zeus scares the athletes and also their fathers, their brothers and their trainers who escort them and take an oath too.

Oath-taking in Olympia

Statue of Zeus

As a result, this was the background in which wrestling started to progress. However, nowadays, it still has a lot of the basic technical characteristics of the ancient period.

All the Olympic Games ceremonies are based in an initiation-pedagogic system, with which the athlete and possibly a future Olympic champion, enters the stadium passing through the crypt, being under oath to compete according to the rules (code of ethics) and with one and only aim; to win.



The Crypt of the Olympia

The Stadium of Olympia

The sequence of the different athletic events was not at all accidental. At the beginning, running events were held, which presupposed basically athletes' physical abilities, such as speed and endurance. Then, they were held the wrestling, the boxing and Pankratio, which demanded physical strength and technique. Finally, it was held the hoplitodromia, named after the Greek word for a heavily armed soldier, and runners were running wearing armour. This sporting event symbolized the end of the Olympic armistice.

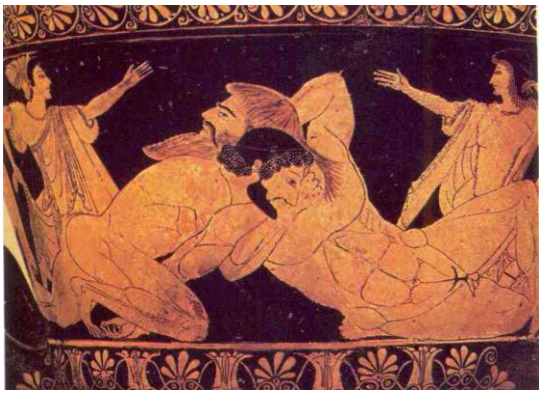
The relationship of ancient people with the environment and nature, and the fact that people with physical abilities were considered great, were the reasons why athletics were progressing rapidly at that time. Furthermore, the personal competition and the final victory against other athletes (something that has social and political impact, since the wars at that time involved close quarter combats), made wresting one of the most favourite and popular sporting events. We have to mention that boxing and Pankration had a lot of supporters, too (violence as a spectacle is a long story…). However, athletes with permanent brain damage and corporal damages and in most cases the dead defeated athletes and the athletes that had won, did not let these sporting events to have more and more supporters, since the aim of Wrestling is not to kill your competitor, but to defeat him.

Wrestling symbolizes human efforts to control the Nature and the Environment, without causing any damage, something that includes the most important Philosophical idea and one of the basic aims of Athletics.

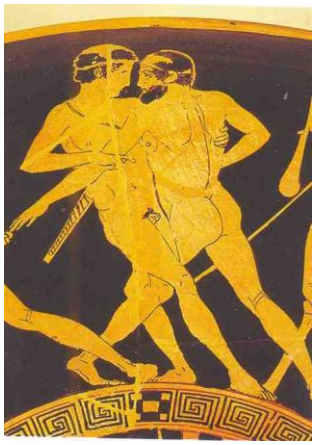
The Gymnasium and the Palaestra were the main places where young people could exercise and educate themselves at the same time. The only difference was that while a Palaestra could offer full education to people, a Gymnasium could not without the Palaestra.

Palaestra in ancient Greece was not just the place where wrestlers used to exercise themselves, but it was also an institution and had the role of an educational institution.

There are a lot of examples of great ancient athletes and men that were involved with wrestling. I will present some of the most typical examples of mythology and literature, Zeus himself, Hermes, Hercules, Theseus, Peleus, and Odysseus are well-known for their abilities and their performance in wrestling.



Hercules wrestling Antaeus
(Louvre museum, Paris)



Theseus wrestling Kerkionas
(British Museum)

The great philosopher Plato characterized this sporting event as *"the most complicated Olympic event and an Olympic event that demanded great intelligence to participate"*, while he himself

was a wrestler with a successful participation in very important games such as the Isthmian Games. In these Games among the spectators were his mentor Socrates. Plato's student, Aristotle, and teacher of Alexander the Great, emphasizes on the importance of wrestling and also Pythagoras, despite his dislike for wrestling, changed his mind when he first met the greatest wrestler of his era, Milo. Particularly Pythagoras mentions that during a symposium, when an earthquake happened and the building started to collapse it was Milo that saved his friends and he was saved, too.

Philostratus in his comments for the victory of Athenians at the battle of Marathon compares it with a wrestling match, while for the Battle of Thermopylae we know that when the last soldiers lost their armour, surrendered to Persian army without arms.

(Paintings of Nikos Panou)

The popular Aristophanes compares the Athenian victory at Marathon with the physical ability that is necessary for wrestling and criticizes all those who are not involved with gymnastics and Palaestras. According to Plutarch, the victory of Thebes against Sparta in the Battle of Leuctra was attributed to the superiority of people of Thebes in wrestling. Also, according to Pausanias, Spartans honoured the wrestler Iposthenis (6 times Olympic champion), by building a temple and worshiping him as a god, the god Poseidon.

Then I am going to present the basic characteristics and the technical ones of wrestling in ancient years and the main differences and similarities with the modern wrestling. There were two basic types of wrestling, the standing wrestling and the rolling wrestling.

The first type, which was the most favourite is the standing wrestling and the aim was to knock down the opponent. In order to win one of the two athletes, he had to knock down his opponent two times in three wrestling matches or three times in five wrestling matches. In the other type of wrestling, the rolling one, the match started in standing position and continued after the fall and ended only when one of the contestants admitted his defeat. In case that both athletes fell down simultaneously the match stopped and continued from the position before the fall. There were not allowed, something that is still in force, strikes, grips in genital organs and biting or scratching with nails. There were no restrictions for the contestants' lives and neck grips were allowed as well as the twisting of arms and legs.

Grabbing the legs of the opponent was not allowed, or athletes just avoided it because it was considered dangerous. Also, there are no references stating that there was a kind of break.

Argives wrestlers that were considered the most important athletes in ancient years, used their legs to knock down their opponent, and according to Plutarch, the wrestling match was accompanied by the sounds of flute, not only for entertainment but also for psychological reasons. Nowadays, in most cases of traditional wrestling matches there are wind and percussion musical instruments.

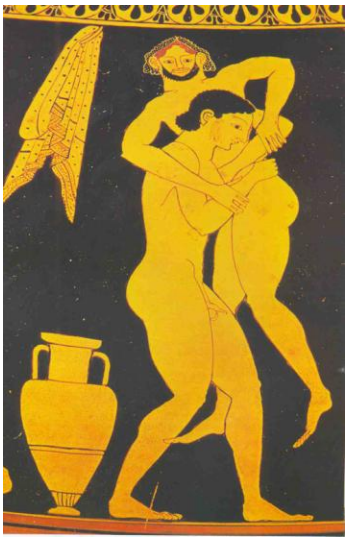
Traditional wrestling matches (Serres –Macedonia)

Boxers training with flute (Metropolitan Museum of New York)

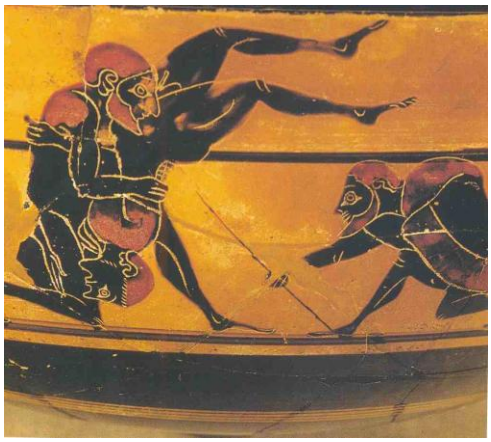
From one region to the other different techniques and methods of wrestling were developed, such as the Sicilian wrestling which was greatly improved by Orkidamos and was based in intelligence, according to Aelianus. There was also the method of Spartans which did not allow play-acting and was based in strength. In addition, we have wrestling from Thessaly, Cyprus, Crete, Argos and N. Africa.

In general, grips and techniques do not present any significant changes, since wrestling as a physical sport follows the rule of energy saving in order to be as effective as possible. Apart from this, there are also a lot of descriptions in Plutarch, Plato and Polydeuces' works where common characteristics are presented in detail concerning the methods of wrestling of ancient and modern wrestlers, such as lifting, transposition, knocking down from a standing position, grabbing of legs, neck grips and waist locks.

Starting position
(The State Hermitage Museum, St. Petersburg)

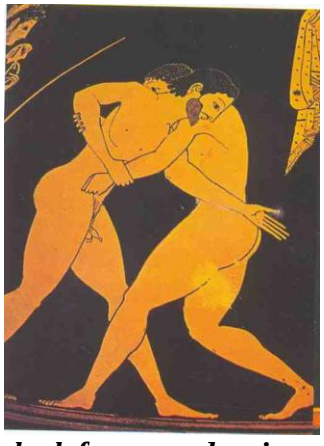


Waist lock
(Berlin Museum)



Front throw
(Archaeological Museum of Florence)

Arm – Head
(Turin Museum)



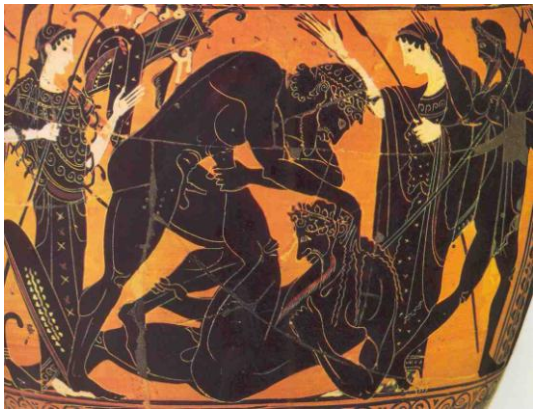
Attack to the left arm and waist counter-attack
(Berlin Museum)

Waist Throw
(British Museum)

There were no winners or defeated and the victory conditions were to knock down the opponent tree times or the athlete's admittance of defeat in rolling type of wrestling, because of neck grip or twisting of arms or legs.

Many researchers support that the criteria for victory in standing wrestling was the contact of the athlete's back with the ground three times, but this was impossible to happen without changing the type of wrestling from standing to rolling one, while at the same time this would be a lot time consumable.

Brass Statue (Munich Museum)



Hercules-Antaeus Rolling Wrestling (Munich Museum)

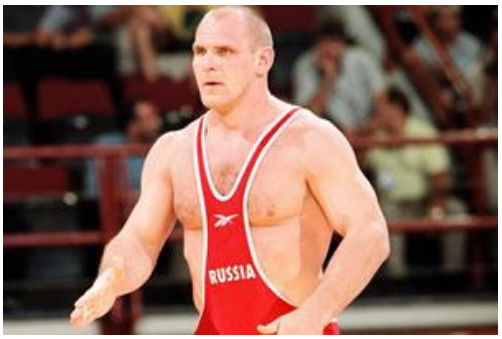
It is possible that sometime the victory conditions were the contact of the athlete's back with the ground in rolling wrestling and there was also an especially built place in ancient Olympia, so as the signs of the defeat to be shown in the athlete's back.

According to Lucian's comments for the place that games were held, the pit, which was full of sand or mud, *aimed mostly to limit the unnecessary movements of athletes during the match, so as to focus on wrestling, rather than to make the falls less painful.*

Timasitheos followed the method of avoiding deviation, so as to win the great Milo in his last participation in the Olympic Games. Timasitheos finally made his opponent to let him win, without Milo standing up, a fact that was highly appreciated by his supporters and despite his defeat he was frantically applauded.

There is a great similarity with the Greco-Roman wrestling match at the weight-class of Men's 130kg in the Sydney Olympic Games, where the greatest wrestler Alexander Karelin was defeated by his younger American opponent R. Gardner.

The referee's decision was to assess a caution to Karelin so as the American opponent to win. However, many people doubted this decision, while others were wondering why Russia, a country with great athletes and especially wrestlers, did not react at all to that decision. But it was the Karelin's greatness and prestige that made him not to accept an ambiguous victory, and show his respect in the referee's decision and admit his defeat.



In ancient years, when Milo was competing, athletes had the most important role for the games, since the criteria for the victory were simple and obvious; to knock down their opponent or to make him admit his defeat.

The Judges were standing away from the wrestling area and they were responsible for the contestants' anti-athletic behaviour.

Nowadays, especially when A. Karelin was competing, there are different victory conditions:

- Win by Fall
- Win by Technical Superiority
- Win by Superiority in 15-12-10-6-10 technical points.
- Win by Superiority in technical points.
- Win by Disqualification (the winner is determined by the number of cautions for penalties)
- Win by opponent's Passivity
- Win by opponent's Injury
- Win by Decision (the winner is determined by the last scored technical point)
- Win by impossibility to apply the technique of grappling

Also, referees nowadays, are in the wrestling area and in case that there are no obvious victory criteria, the match depends on them since they can either assess penalty points in an athlete, or decide whether the match will be continued from the standing or rolling position or from a certain position (Grappling).

The rules of modern wrestling give the wrestlers the possibility to win their opponents by technical superiority, which does not have to do necessarily with a right grip, but with the right application of a method, in order to promote the opponent's passivity and not his fall.

This is a fact that results in the decrease of the number of grips and the referees' ability in a certain time of an ambiguous wrestling match to determine the winner.

Russian researchers Guskov P. Oleg and Spanov I. Vitali in their study "The perfection of training methods and the difficult control of the athletes' preparation in the wrestling matches" categorized the external characteristics of the different types of athletic wrestling matches according to game, technique and operational indexes.

In the following table we present the data concerning the game's profile in the different types, and obviously according to the data, wrestling has the highest index of Defence Security up to 0,70 (the highest rate is 1).

This observed superiority of wrestlers in defence is the most important obstacle in the increase of the number of spectators. It is obvious that in a wrestling match athletes are competing aiming not to cause the most grips, but to accept less of them. And this is not an enjoyable spectacle.

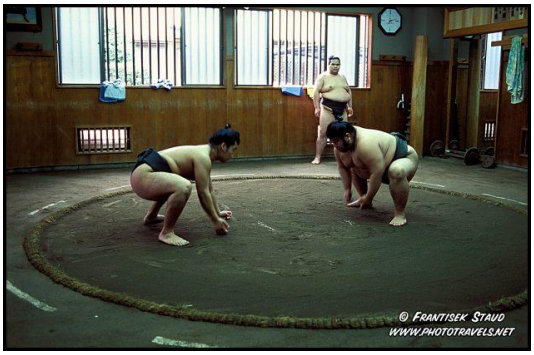
	TYPES OF SPORTS				
	1 GROUP	2 GROUP		3 GROUP	
COMPARISON INDEXES	**Boxing up to 71kg**	**Greco-Roman Wrestling**	**Freestyle Wrestling**	**Judo up to 71kg**	**Fencing**
NUMBER OF OFFENCES (PER GAME)	40 to 50	12 to 18	12 to 18	5 to 10	5 to 10
DEFENCE SECURITY (D.S. = Total of athlete's techniques / Total of athlete's techniques + opponent's techniques	0,22 to 0, 25	0,50 to 0,70	0,50 to 0,70	0,35 to 0,40	0,35 to 0,40

These findings have an impact on the final spectacle which is negative and difficult to understand, not only for the spectators but also for all the people involved with the sport.

In the Olympic Games in Barcelona, Juan Antonio Samaranch, mentioned during the wrestling matches: *…it is obvious that the main aim in your events is the effort to grapple your opponent. But how we can explain the fact that after grappling him once, you leave him and try to grapple him again… ?*

Sport fans – spectators nowadays are entering the stadiums to entertain themselves with the matches and obviously not to perform their religious duties. But finally, what is this that makes a wrestling event favourite and popular? But of course, the spectacle! As it happens with all sports, it is easy for the spectator to distinguish the winner from the defeated, because of a goal for example, a fall or a throw. Throwing is the main victory condition in more types of traditional wrestling.

It is worth mentioning some of the most typical types of traditional wrestling such as:



Sumo

Mongolian Wrestling

Belarus Wrestling

Traditional Balkan Wrestling

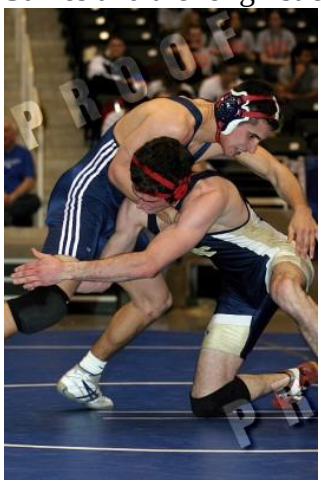
Nigerian Traditional Wrestling

Georgian Wrestling (Chidaoba)

As we have already mentioned, every nation and every culture has its own tradition in wrestling, and in many countries wrestling remains a predominant or even a national sport.

I. I. Alikhanov in his book "The technique of freestyle wrestling" will quote the following: *"... the technique of freestyle wrestling was created by the best wrestlers and the most creative coaches who took the best types of wrestling from the people of the former USSR using various creative methods and a lot of elements of the classical style. This technique year by year became extremely variable and interesting..."* This fact along with the interest that the governments of USSR showed for athletics explains the development of wrestling after the Second World War to those countries, which even today; 20 years after the fall of USSR, continue to give high class wrestlers.

It is worth mentioning that wrestling was equally loved in the "competitor" of the USSR, the United States of America. **Freestyle wrestling is a basic aspect of the subject of physical education in the public obligatory education**. The kind of infrastructure in the school sports of this country with the 200.000 citizens justifies the increase of USA in the level of the Olympic Games and the long list of winners in the Olympic Games the last decades.



American Folkstyle Wrestling

The World Federation of Wrestling **FILA** is of the most ancient ones and was present almost in all the modern Olympic Games, while wrestling has been among the most popular sports, as well as the other classic sports. It is worth mentioning the personal experience of the historian and sportscaster Petros Linardos.

The great historian tells us in an interview for the newspaper "TA NEA". *"I was barely eight years old when my father took me to the Panathinaiko Stadium, where more than 70.000 people had come (1933-34) to see the legendary Jim Londos in a match with the enormous wrestler Kavariani. Jim Londos was the winner using his famous technique! It was something I will remember forever. However, I couldn't applaud because my father had tied me to his left wrist by a rope, in order to save me from getting lost in the crowd. When he was applauding he pulled my arm towards his. At least I could shout.*

This unprecedented incident shows the love of the spectators for wrestling of that not so long ago era. However, after the end of the war, the team sports will win the spectators' interest. The evolution of technology and television will change radically the way of life and the habits of people. In the Olympic Games of 1896 in Athens 311 athletes took part from 13 countries and

competed in 15 sports, while the I.O.C until 1996 included 197 countries in 29 sports and more than 10.000 athletes, only for the summer Olympic Games.

This radical progress of sports concerns FILA as well, **which is nowadays one of the biggest Federations of an Olympic sport worldwide**. The reason lies to the fact that wrestling is part of the culture of every country and the fact that it is an excellent means of physical preparation and pedagogy. However, nowadays it doesn't have the glow and the publicity that it used to have. But why does that happen? **One possible explanation that must be taken seriously into consideration by the people of FILA could be the fact that they keep changing the rules after the end of every Olympic Games**. **Due to this practice FILA has made wrestling as the sport with the more rule changes in the history of the Olympic Games!**

One of the most important moments in the decrease of the sport's publicity is in August 2002, when the IOC Commission proposed the idea of excluding from the Olympic Games some sports with low television rating, among these there was one of the two wrestling styles …!
FILA showed its intense reaction, but two years later the very well-known newspaper "Kathimerini" in a relating to the organization of the event "Kypelo Acropolis" article, comments on the changes of wrestling rules … *Abnormal people, members of the administration committee and the techniques committee of the World Federation of Wrestling, when they have nothing to do start thinking of how to make the champions' lives difficult and how to transform this enjoyable sport in a sport difficult to understand for the spectators, dislikable for the athletes, but unfair as well, since it is possible to win a match depending on a lots! …all these make people to have a dislike for wrestling and to change their preference into judo…*

After all, it is obvious that wrestling as a spectacle does not satisfy even people involving with it. This is a reason to set as a main goal an international meeting in order to discuss and find methods and ways to increase its ratings.

I personally believe that:

- If for example we stop giving points for the transposition in the ground, we could have more time for standing wrestling and the possibilities of a throw would increase.
- Also, in rolling wrestling, I don't believe it is important to mark the rolls that do not cause a fall or place the athlete in a difficult position.
- Furthermore, in rolling wrestling, we could allow some types of neck grips and twisting of arms and legs.
- A slight decrease of the wrestling area would significantly limit the wrestlers' useless movements and their passivity.
- It is also important to stop the match and nominate winner the athlete with a 5 point grip.
- It could also be feasible, along with the great international events to take place games or to organize traditional wrestling festivals by FILA.

However the most important of all is to be recognized by the World Federation and to start a dialogue about the radical reforming of the image that a wrestling match gives.

Moreover they should consider the fact that the traditional forms of wrestling keep gaining supporters and there are being organized festivals with international participations and thousands of spectators, while the World Federation of Traditional Wrestling is now a solid fact!

It is about time the modern wrestling to redefine its Philosophy and above all the evaluation system of the points and its criteria for victory.

The style of wrestling of a country or a civilization is a basic element of its culture such as music, dance, literature, painting, architecture, etc and the people responsible for the development of this spectacular and wonderful sport should face wrestling as a World Heritage Element and as a common sport.

A COMPARATIVE STUDY OF BODY COMPOSITION, AEROBIC POWER, ANAEROBIC POWER AND STRENGTH OF IRANIAN FREE-STYLE AND GRECO-ROMAN WRESTLERS PARTICIPATING IN THE BEIJING OLYMPIC GAMES 2008

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International Congress of Physical Education and Sport – Komotini, Greece 2009

"The sport of wrestling today and its development in the future"

Introduction

-Wrestling, one of the earliest recorded sport
-Wrestling, the most popular sport in Iran
-Wrestling, extremely dynamic in nature

-There are few studies regarding differences wrestlers

The aim of present study:

Review of literature

- **Callan, S.D., et al.** (2000) → Physiological profiles of elite freestyle wrestlers.
- **Horswill, C.A., et al.** (1989) → Comparison of maximum aerobic power, maximum anaerobic power, and skinfold thickness of elite and nonelite junior wrestlers
- **Sharratt, M.T., et al.** (1986) → A physiological profile of elite Canadian freestyle wrestlers
- **Utter, A.C., et al.** (2002) → Physiological profile of an elite free style wrestler preparing for competition
- **Yoon, J.** (2002) → Physiological profiles of elite senior wrestlers
- **vardar et al.** (2007) → The relationship between body composition and Anaerobic performance of elite young wrestlers
- **Baić et al.** (2007) → **Difference in physical fitness levels between the classical and free style wrestlers.**

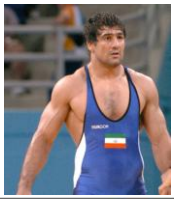
Methods

- Participants

	N	*Age*	*Height*	*BF%*
Free-Style	**7**	**22.8 ± 3.9**	**172.7 ± 6.3**	**11.1 ± 2.8**
Greco-Roman	**5**	**23.8 ± 1.6**	**179.2 ± 7**	**11.8 ± 4.4**

Measurements

FFM & %FM → Bio electrical impedance method
(Body composition analyzer)



Aerobic Power

VO_{2max} → Graded treadmill exercise test (*GXT*)
(gas analyzing method)

Maximal anaerobic power

Monark Cycle ergometer
Time : 8 seconds

Leg & arm Wingate test

Load : 0.090 kg x.kg^{-1}

warm up : pedaling or arm cranking for 3 min against 30 watt load → 5min rest → pedaling as fast as possible

Ergo-jump (Bossco test)

Repetitive jumping
Time : 30 seconds

Muscular strength tests

- *dead lift*
- *chest press*
- *abdominal crunch*
- *upper back*
- *grip strength*

Statistical analysis

- ***Mean and SD***
- ***Independent-samples t test***

...Results

	N	*LBM (KG)*	*VO2max ml.kg^{-1}.min^{-1}*	*Arm Wingate (W)*	*Leg Wingate (W)*	*Ergo-jump (scor*
FS	7	73.63 (± 5.98)	59.12* (± 2.39)	352.42 (± 33.10)	487 (± 33.83)	43.70* (± 3.02)
GR	5	77.47 (± 7.44)	53.91 (± 1.70)	399.40* (± 69.12)	502.80* (± 41.96)	40.20 (± 4.18)

	N	*chest press*	*abdominal crunch*	*upper back*	*hand grip*	*dead lift*
FS	7	105.21 (± 12.4)	76.14 (± 8.9)	101.71* (± 9.8)	76.71 (± 2.3)	144.28 (± 13.5)
GR	5	117* (± 10.7)	80 (± 10.6)	95.80 (± 10.6)	86.20* (± 3.4)	185.10* (± 11.4)

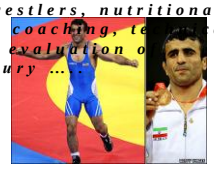
Discussion

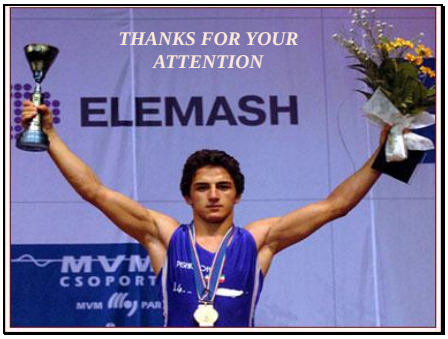
- ***Better result obtained by GR wrestlers in anaerobic power & absolute strength***
- ***Better result obtained by FS wrestlers in aerobic power & Ergo-jump***
- ***Other reports …***

Conclusions

The present findings show that generally, in some variables the Iranian Wrestlers have a profile similar to elite wrestlers from other countries. But we should notice that besides physical fitness there are other factors affecting wrestlers performance including:

Psychological status of wrestlers, nutritional status of wrestlers, proper coaching, technical and tactical skills, proper evaluation of opponents, disease and injury ……





17th International Congress of Physical Education and Sport
22nd -24th of May 2009,
Komotini (Greece).

SYMPOSIUM: THE SPORT OF WRESTLING TODAY AND ITS DEVELOPMENT IN THE FUTURE

Roundtable:

Dr. Ramazan SavranbaĢi
Member of Department FILA Master Degrees and Promotions
The Popularity Problem in Wrestling

Dr. David Curby
Chair of USA Wrestling Sport Science Committee
Promotion of Wrestling & the International Network of Wrestling Researchers

Dr. Mirzaei Bahman
Assistant Professor University of Guilan, Iran
Member of Department FILA Technical Committee
Possible Obstacles Facing Today's Wrestling

Dr. Ioannis Barbas
Ass. Prof. of the Department of Physical Education and Sport Science of the Democritus University of Thrace
Member of Wrestling Coaches Association FILA
Moderator

THE POPULARITY PROBLEM IN WRESTLING

Dr. Ramazan Savranbasi
Member of Department FILA Master Degrees and Promotions
Department of Kinesiology and Training Sciences, Celal Bayar University
Manisa-Turkey
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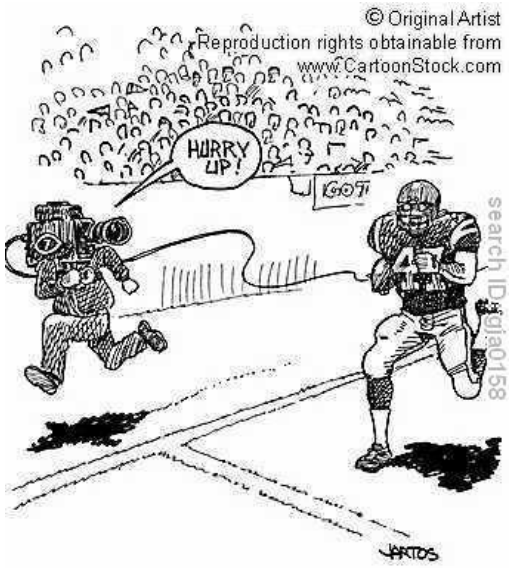
When we study wrestling as a sportive and social phenomenon, it is quite clear that it is one of the oldest sport. It is also one of the few sports disciplines which always existed in ancient and modern Olympics and which has remained the same as of today. However, due to lack of interest of public and the number of spectators decreasing for the last 20-25 years, many discussions have been made on this subject. The points that these discussions focus on are as follows; the changes in the rules of competitions made frequently, lack of use of media and other mass communication means in wrestling.

There are common views suggesting that the changes in rules destroy the structure of wrestling and prevent showing its aesthetic and dynamic values. This common belief strongly defends that rule changes lead to a decrease in the number of spectators and lack of mass communication means in wrestling. In today's world the popularity like in every field depends on using qualified production and suitable introduction tools. These tools used for introduction must be well understood.

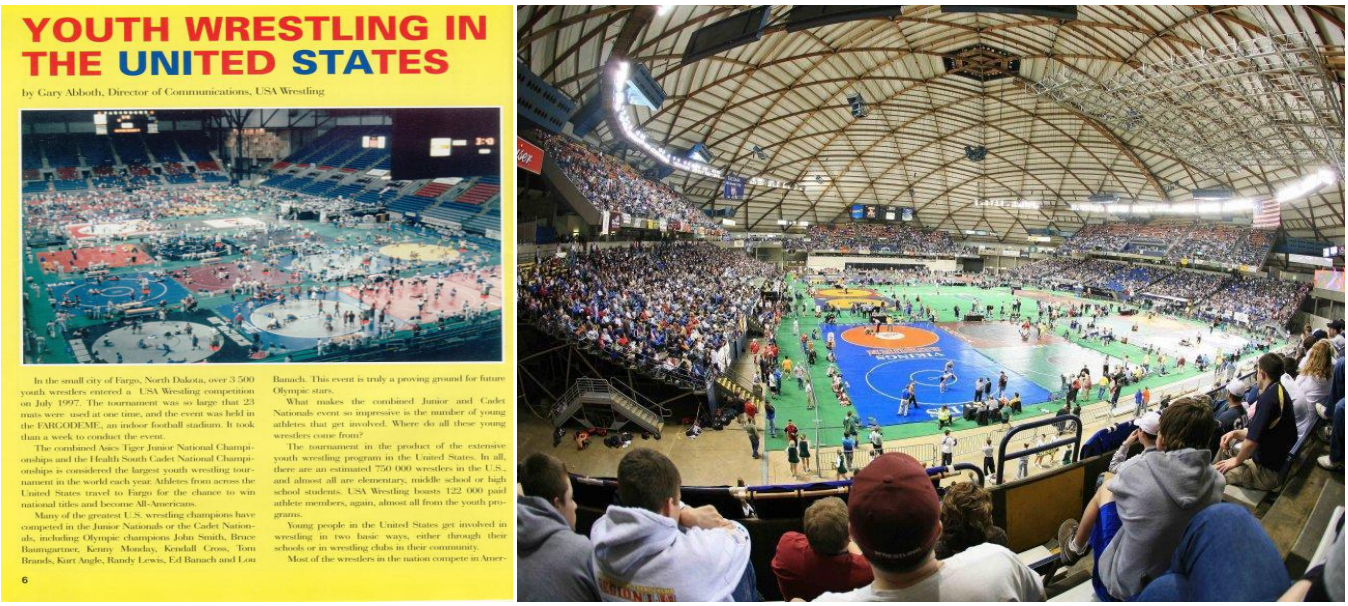
MEDIA AS A FACTOR INCREASING THE POPULARITY

In order to find the correct solution to the problem of popularity in wrestling we should consider the issue from several views. We must analyze the factors which both increase and decrease the popularity. First of all, before analyzing these factors, we need to make some explanations by defining the term" popularity". In wrestling like in every field, the athlete and number of spectators are the two major respects in defining popularity. These aspects are related with media (mass communication) such as TV, newspaper and internet and the institutions interested in wrestling like sports industry.



To understand this, it is enough to have a look at some sports disciplines (football, basketball, volleyball, gymnastics, athletics…), means of mass communication as the factors increasing popularity are the basic ones. However, there must be some conditions for media to be involved in wrestling phenomenon. In order to form these phenomena there must be:

•an increase in the number of people who are dealing with wrestling.
•an increase in the number of spectators who are watching wrestling competitions.



YOUTH WRESTLING IN THE UNITED STATES

by Gary Abboth, Director of Communications, USA Wrestling

In the small city of Fargo, North Dakota, over 3 500 youth wrestlers entered a USA Wrestling competition on July 1997. The tournament was so large that 23 mats were used at one time, and the event was held in the FARGODOME, an indoor football stadium. It took than a week to conduct the event.

The combined Asics Tiger Junior National Championships and the Health South Cadet National Championships is considered the largest youth wrestling tournament in the world each year. Athletes from across the United States travel to Fargo for the chance to win national titles and become All-Americans.

Many of the greatest U.S. wrestling champions have competed in the Junior Nationals or the Cadet Nationals, including Olympic champions John Smith, Bruce Baumgartner, Kenny Monday, Kendall Cross, Tom Brands, Kurt Angle, Randy Lewis, Ed Banach and Lou Banach. This event is truly a proving ground for future Olympic stars.

What makes the combined Junior and Cadet Nationals event so impressive is the number of young athletes that get involved. Where do all these young wrestlers come from?

The tournament in the product of the extensive youth wrestling program in the United States. In all, there are an estimated 750 000 wrestlers in the U.S., and almost all are elementary, middle school or high school students. USA Wrestling boasts 122 000 paid athlete members, again, almost all from the youth programs.

Young people in the United States get involved in wrestling in two basic ways, either through their schools or in wrestling clubs in their community.

Most of the wrestlers in the nation compete in Amer-

6

At the first step, in order to improve the above conditions, means of mass communication are needed and also there must be an effort and organization in order to use these main factors in wrestling. However, tough there are some efforts media cannot be involved in wrestling. First of all, there must be an answer to this question; "Why media institutions are not interested enough in wrestling?" To find the answer of this question, a second question must be answered. And this question is under what conditions media is interested in any kind of sports.

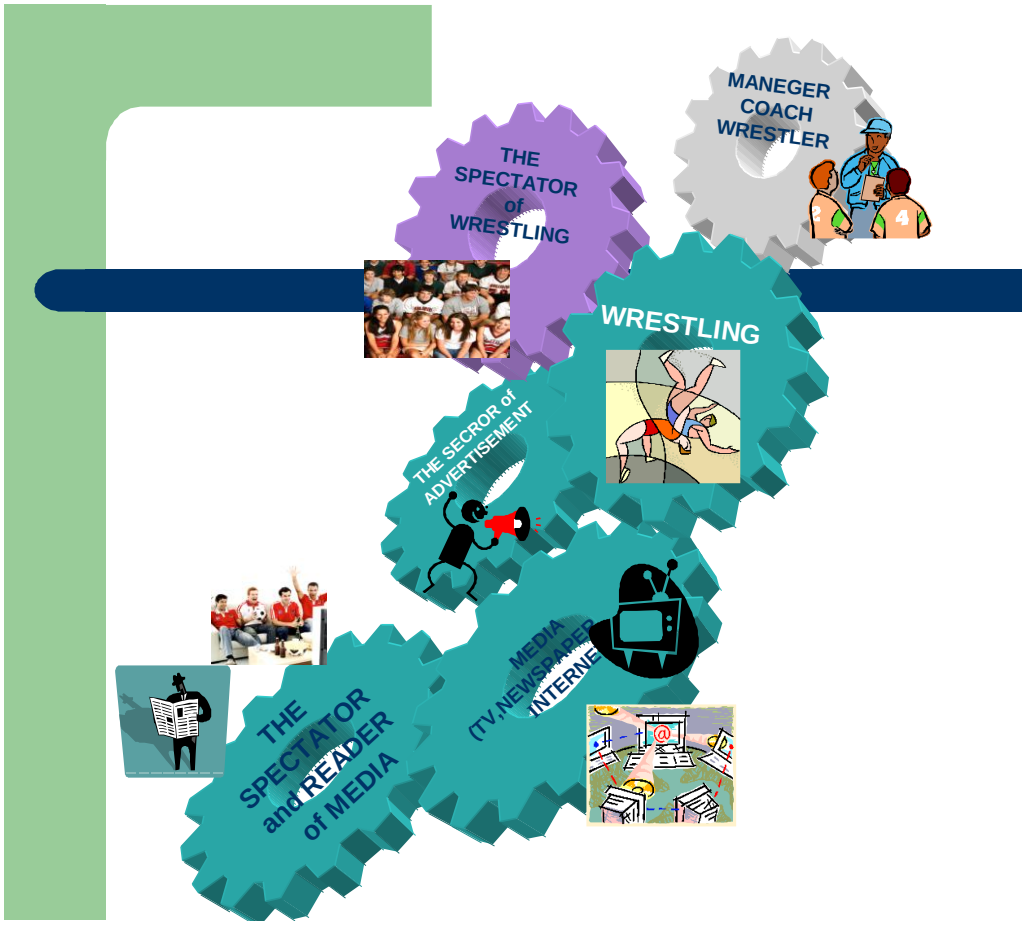
These conditions are as follows;

the attraction of the subject at issue (wrestling competitions).
the economic contribution of the so-called subject to media (the advertisement yield depending on sale of newspaper and TV, broadcast)

When we discussed the above factors in detail, we should mention the structural fact of media. Media is a commercial institution and there are people who buy the products of it. These are the readers and the spectators of media. These two respects are the reason for the existence of media and media has monetary income thanks to these two factors. The source of this income is the sector of advertisement.

As seen in figure1, there is a toothed wheel gearing and they operate together. The first toothed Wheel includes the managers, coach and athlete who make wrestling aesthetic, exciting, enjoyable, and attractive. In relation to this wheel there is also the interest of the spectators, the

interested media, the advertisements supporting media financially and the spectator – reader mass.



THE PROBLEM OF SPECTATOR AND THE INDIFERENCE OF MEDIA

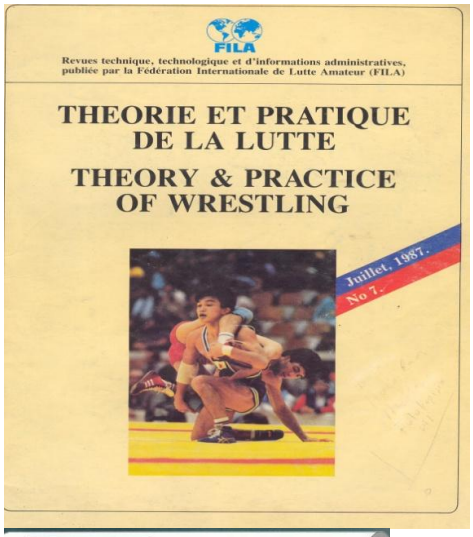
In Turkey, wrestling which is the most successful branch of sports within the last 15 years hasn't been at the desired level in terms of media though we had many World and Europe championship as team for several times and won many golden medals. Furthermore, there hasn't been enough interest of the spectators in the case of wrestling competitions. In spite of the great achievements in wrestling, media has explained the reason for undesired situation of wrestling that the lack of interest on the part of the spectators causes media not to mention the news about wrestling in a sufficient way. So, indirectly the authorities of media focus that the sports competitions which the public is not interested in has no value to broadcast. On the other hand, the branches of sports which don't take part in media have an introduction

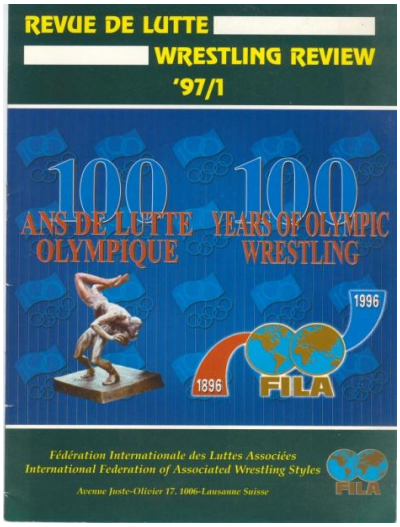
Media declares as a principle: "We don't exist where there are no public masses", while public masses express that they have lack of interest due to the communication problem that wrestling is not involved in media. Both of these views are shallow and they are a kind of simple approach to the problem. This issue must be considered from different and deep views. As the people who are included in wrestling, we must review the wrestling quality that we introduce to public masses and media as a product.

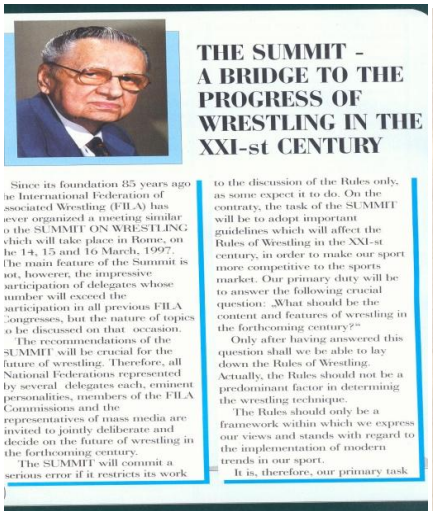
WHAT IS THE QUALTIY PROBLEM IN WRESTLING?

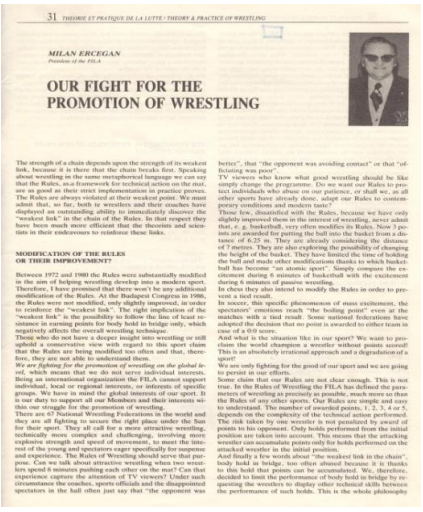
For the last 20-25 years, there are many views of people dealing with wrestling suggesting that the rules in wrestling are often changing and besides there are unsuitable rules, than quality of competition is decreasing. Generally speaking, it is claimed that the insufficient rules cannot reflect the real dynamism and aesthetic (techniques) of wrestling. However, there are of course reasons for these changes of rules in wrestling.

When we have a look at the records of FILA, most of the rule changes were made during the presidency of Milan Ercegan, honorary president. As the wrestler and coach of that period and as a person of science and education through my observations and experiences, I would like to say that the main problem in wrestling is the "passivity" problem. This passivity issue has also been the problem of wrestling today. I suggest you to read the old articles which I have listed.









WHAT IS QUALITY WRESTLING?

When compared to many other branches of sports, wrestling is a kind of sport which has the ability to create technical and tactical methods. There are nearly 400 holds and more than 100

other techniques in wrestling. This richness enables the coach and the wrestler to have many different opportunities both technically and tactically to win. This is where the coach and the wrestler show their creativity.

In order to understand the concept of quality wrestling better, I think it is better for you to remember some of the greatest wrestlers:

- (Turkey) Celal Atik, Mustafa Dağıstanlı, Hüseyin AKBAğ, Ahmet Ayık, Hamza Yerlikaya, Geref EROĞLU
- (USA) Lee KEMP (USA), Bruce BAUMGARTNER (USA), John SMITH (USA)
- (Russia) Ali ALIEV, Alexander MEDVED, Nikolai BALBOSHIN, Levan TEDIASHVILI, Sergey BELOGLAZOV, Alexander KARELIN
- Uzbekistan) Arsen FADZAYEV
- (Japan) Shozo SASAHARA, Yuji TAKADA
- (Iran) Gholamreza TAKHTI, Abdullah ARDABILI MOVAHED
- (PRK) Il KIM
- (Hungary) Imre POLYAK, Istvan KOZMA, Dr. Csaba HEGEDUES
- (Bulgaria) Eniu VALCHEV-DIMOV, Boyan RADEV, Alexander TOMOV, Petar KIROV, Valentin JORDANOV, Armen NAZARIAN
- (Italy) Vincenzo MAENZA
- (Sweden) Frank ANDERSSON
- (Germany) Maik BULLMANN
- (Greece) Petros GALAKTOPOULOS

We can write many more names on this list. These people are not only the champions, but also the athletes who appreciated wrestling in their countries as an "**idol,"** who encouraged children and young people to be interested in wrestling and who increased the popularity of wrestling. These champions led to the creation of wrestling quality in world wrestling through their technical and tactical abilities. But of course it hasn't been a coincidence to discover and train these kinds of champions. The coaches who discovered and trained them cannot be disregarded.

THE COMPETITION RULES AS THE FACTORS INCREASING OR DECREASING THE QUALITY IN WRESTLING

I also criticized some of rule changes made in recent years. FILA has changed many delayed rules with the important changes together. When we consider the last few years, the wrestling techniques used to be on ground position. The techniques carried out in standing position used to be not applied. With the last rule change, FILA brought the "par tere" rule by making "draw" at the end of the pointless period and gave the wrestler winning the draw the right to clinch to his competitor, while the priority was given to the wrestler with red suit in Greco-Roman style. This has been a quite positive rule change in terms of minimizing the factor of chance.

The first applications in Greco-Roman style created a remarkable action, but these improvements haven't produced desired results yet. However, I believe that the expected results couldn't be achieved in terms of quality in wrestling. Anyway, is it only the rules to be considered as a problem? Or the problem is with the coach or with the wrestler?

THE COMPETITION RULES –COACH –WRESTLER

The competition rules, like in all sports branches, determine the structure and the content of competition in wrestling. These rules are just like a chain and are formed of rings. The coach trains his/her athlete according to the rules. Therefore, the coach must truly understand the basic philosophy of the rules. Like in all other branch of sports, the rules in wrestling cover some penal sanctions.

The most recent and discussed ones are penalties for pointless and passive wrestling. The main purpose of these penalties is to activate both of the wrestlers and consequently to make the wrestling more dynamic, aesthetic, exciting and worth watching. This situation shouldn't be strange by anyone. Generally, the ones who cannot win blame the draw, in other words they blame their lack of chance. However, there isn't such a penalty for those who have technical scores (points).

Nevertheless, much more advantages have been given to those having technical fall points (6-0), and fall scores. However, for the last few years, the majority of coaches and wrestlers have preferred passive wrestling as a tactical model instead of dynamic and active wrestling, so chance has become important. FILA, which forms the rules is considered as responsible for it! On the other hand, in many branches of sports, for example in football there are many penalties and free-kicks and the score is determined by penalties in single and final matches. If we understand the basic philosophy of the competition rules, we can easily consider that there is no rule which prevents a wrestler who desires wrestling by attacking technically. The draw and clinch as rules, are not included at the beginning periods of competition. These penalties are applied for the wrestlers who don't have technical points at the end of the periods.

The main purpose of this presentation is to highlight that the paradigm changes are inevitable in terms of competition rules for coaches and wrestlers by criticizing passive wrestling. For the last few years the observations and statistical studies have shown that the number of techniques in competition has decreased. Both of the wrestlers have waited for the draw by remaining passive in the first 1.5 moments of each period of Greco-Roman competition and this has mostly determined the score of competition. This leads to decrease in the number of spectator and lack of interest on the part of media by harming the dynamism and aesthetics of wrestling. Wrestling without media causes the popularity of wrestling to decrease.

The main architect of establishing the structure of wrestling is the coach. The spectators prefer to sit and look at the chronometer on the scoreboard and watch the wrestler who is waiting for the draw. Nobody wants to support the coach and wrestler who blame their chance of the draw for the defeat. In life like in every field, no success can be achieved without taking any risk and there is no guarantee for success, and even for luck.

Wrestling has a very rich repertoire both technically and tactically. There are techniques both in standing and ground positions for every type of wrestlers. The coach must train the wrestler through planned and regular trainings by determining suitable methods from this rich repertoire and by wrestling more dynamically and by taking risk with true purposes. He must never prefer to achieve success through a shortcut.

Unfortunately, in the last few years some coaches have preferred and adopted the weakest links of the competition rules as a winning strategy. This draws the picture of wrestling. But today there are sufficient scientific data of lake to increase the performance in sports. As long as the coaches benefit from these data, they will contribute to the performance of the wrestlers. In order to get a more dynamic, aesthetic, exciting and attractive wrestling, **we need more qualified coaches who have much more information about wrestling and who are real philosophers.**

POSSIBLE OBSTACLES IN FRONT OF TODAY'S WRESTLING

Dr. Bahman Mirzaei
Assistant Professor University of Guilan, Iran
Member of Department FILA Technical Committee

A. Link between science & wrestling

Historically, amateur wrestling has been a topic of study for the well over 60 years, despite this background, unfortunately, in many countries the link between science and sport is not very strong in our sport, wrestling . It means that wrestling community needs to have more practical research and scientific courses than FILA annual coaches' clinic to promote the level of knowledge in the coaches and wrestlers.

***** Each year, Dr. David Curby compiles an annotated bibliography of the scientific research, published in English, during the year in review, and shares with those who work in the wrestling community. This work can spark further research in wrestling.

Some of the sport federations like Judo, Soccer, martial arts etc. have an international scientific conference regarding latest knowledge and findings to improve mentioned sports, but, there is no something like this in our sport, wrestling. Currently, Curby is trying to organize an international network for wrestling researchers and I am grateful for the chance to collaborate with him.

As a solution:

I think holding courses and clinics for coaches in collaborating with academic institutes and universities to expand coaches' knowledge in how to advance our great sport is a good solution.

B. Health concerns and wrestling injuries

B_1. Injuries:

According to the medical report of Dr. Shadgan, in comparison to 2004 Athens Olympic Games, the rate and severity of injuries in all wrestling styles showed a very significant reduction. Statistical analysis of the collected data during 2004 Athens and 2008 Beijing Olympic Games demonstrates a huge decline in injury rate (9.3% in Beijing versus 46.26% in Athens). **Shadgan** concluded that the modification of wrestling rules; better education of athletes and coaches and a serious fight against doping in wrestling during the recent years have had a great influence on prevention of injuries in wrestling competitions of 2008 Beijing Olympic Games.

***** Despite this report, unfortunately, the results of survey and retrospective studies regarding injuries among Iranian top level wrestlers who had taken part in preparation camps in Tehran show that the prevalence and rate of chronic injuries are high. As I experienced, many times we had considerable cases of injuries during our training camps. The majority of direct injuries occur during training sessions, with a trend toward more injuries in the low- and middle-weight classes and those who were competing at high performance and experience levels. I think it is not easy to describe possible risk factors affecting this phenomenon.

Among Iranian wrestlers, the results of the studies also show that the takedown position, especially for the attacking wrestler who faces a counter attack, is the most common activity at the time of injury.
In **my opinion**, the main reasons for significant decrease in amount of injuries in Beijing 2008 in comparison to the Athens 2004 are as follows:
1- Most outstanding countries in wrestling are using supportive team (like masseur, nutritionist, physician, exercise physiologist, trainer, psychologist etc.) in their preparation process. I think these persons have an essential role in the prevention of injuries in the wrestling events.
2- Changing wrestling rule from "chest to chest" to "clinch" after Athens 2004 is another reason. I think chest to chest position was more dangerous than clinch (especially, in GR style, because down position has a lower degree of risk than former standing position in chest to chest)
3- The ability of qualified referees to prevent and control of high risk situations during execution of ballistic techniques.
4- Another reason is related to the role of coaches. Coaches have the essential role in their proper instruction, appropriate supervision and to dictate "**assertive action instead of aggressive action".**

B_2. Drug abuse

Despite serious fight against Doping in wrestling during the recent years, use of banned drugs still is a big thread for the today's wrestling.
Many pharmacologists and sport scientists believe that cheater can not be stopped and drug testing is a jock because the progress of drug companies is much more than drug laboratories for detecting banned substances in the blood and urinary samples of athletes.
So, many new substances and drugs many be undetectable. Therefore, not only wrestling, but also many other sport events are going into a biochemical challenge.

As a solution:
I think use of nutritionist in the wrestling clubs and appropriate supplementation instead of taking drugs can be a good solution.

B_3. Unhealthy and rapid weight loss among young wrestlers

Of the many sports in which weight plays a role in competition, wrestling has many concerns. Unfortunately, the results of studies show that the prevalence of unhealthy weight loss practices among young wrestlers is increasing. These practices include **use of laxative**, **diuretics**, **emetic**, **excessive food & fluid restriction**, **diet pills**, **self-induced vomiting**, **saunas & steam rooms**… among wrestlers.

These unhealthy methods can impair athletic performance and increase injury risk. They also may result in medical complication including: **Delayed physical maturation**, **development of eating disorders**, **Potential Permanent growth impairment**, **an increase incidence of infection diseases**, **changes in the cardio-vascular**, endocrine, gastrointestinal, renal and thermoregulatory system and depression.

As a suggestion: I think weight loss, when necessary, should be gradual and should not exceed **1.5%** of the total body weight per week.

C. Modification of wrestling rules

The problem of making wrestling more attractive at competitions is a rather complex one, which means that it cannot be solved by merely modifying the rules of wrestling. Actually the idea behind every FILA's modification to the rules has been to encourage the wrestlers to foster attractive wrestling which both the specialists and amateurs would understand and appreciate. Indeed, the modification to the rules is only the first, but not the only step in an effort to make wrestling attractive. Starting with the important decisions of the 2004 Olympic wrestling congress in Athens, the face of wrestling has changed. After this revolutionary change of wrestling rules, the modern development of this great sport was on the edge of a new era.

I think it has been very important and necessary to change the rules before the world championships in Budapest 2005. But the results of statistical analysis show that after an enormous performance leap as regards the technical world top performance and attack efficacy in Budapest 2005, we had a clear decline in Guangzhou 2006, Baku 2007 and Beijing Olympic Games 2008. When analysing the 2005 World Championship in Greco-Roman wrestling we found a significant increase of the mean number of points awarded during one bout. The reason for that development has been the inflation of so called clinch situations. The defending wrestlers had not yet found successful strategies against this special new technical-tactical element. The attacking wrestlers were able to win many points by applying the technique of a reverse body lock. After that, for the World championships in Guangzhou 2006, coaches and athletes had worked hard to find defensive strategies aiming at successfully mastering clinch situations.

I think, over the past 3 years, FILA had no success to make wrestling more attractive because the results of analysis show that many wrestlers, especially in GR, cannot score any point in the first minute of each period. Therefore, they will wait until the clinch. A good example in this case is report of Curby regarding **Scoring of GR wrestlers** in the first minute of each period during the Beijing Olympic Games. He reported that there was no scoring in **82%** of these periods. This resulted in 316 draws for the ball. And this is against the FILA aims.

PROMOTION OF WRESTLING AND THE INTERNATIONAL NETWORK OF WRESTLING RESEARCHERS

DAVID CURBY, EdD

What are the major problems confronting today's wrestling? How can we attract future wrestlers? What should be the role of wrestling sport scientists? The following is my response.

I feel that a key element in answering the above questions involves bringing young wrestlers into the sport. In order to attract more athletes, there must be a positive image in the public for our sport. This public perception includes parents, and of course mothers, who are first and foremost concerned with the safety and well-being of their children. The aspect of danger must be minimized. This involves **risk reduction** and injury **prevention**. Some of this can be achieved through well-educated and professional coaches. These coaches will use progression of teaching, age appropriate activities, appropriate space and mats, proper matching of athletes, appropriate conditioning and physical preparation and progression, employing teaching techniques that develop a healthy psyche, and the teaching of safety and hygiene to the athletes are all important. Some coaches only see competitive excellence as their objective, but for the beginning athlete there are things more important than wins and losses. There are appropriate priorities for each levels of coaching. These should be thought out and identified, be based on sound coaching principles, and be applied in a balanced fashion.

Youth programs must emphasize the broader goals of physical development, increased self-confidence, and fun. If winning becomes the primary focus, young people who are not the early-maturers, often drop out of the sport as they are failures. Pushing for earlier and younger championships at a national level can only add to this problem. There is the additional problem of burn-out among some athletes who compete too much and at too young an age. Avoidance of early specialization in one sport can help to can help address this phenomenon.

Wrestling must be maintained in the physical education programs for all youth. This means that the preparation programs for physical educators must also include how to teach this sport. While it is easy for even the worst physical education teacher to organize a game of basketball or soccer, wrestling demands a higher level of technical expertise for safe and satisfying instruction. The emphasis must be on the physical development, games and folk wrestling, and acquisition of technique. We must prepare sound and interesting instructions and examples for lessons, based on modern pedagogy, so wrestling is included in the physical education curriculum

As I view the sport from an American perspective, there are a number of social phenomena affecting how the sport of wrestling is received. With the rise in technology, work and play patterns have changed. There is less physical activity. In many industrialized nations we are seeing our youngsters grow fatter and a rise in obesity in all segments of the population. The extreme demands of wrestling when viewed against this backdrop of a “softer” youth, make it harder to recruit. It seems ironic that for a long time the major negative associated with wrestling has been that of excessive weight loss, but in today’s world, the weight control aspects of wrestling and the wrestler’s drive toward leanness can be used as a positive. Such an approach

would emphasize the benefits of maintaining a healthy/optimal body composition, without the employment of dangerous rapid weight loss techniques.

Another positive promotional tool that should be emphasized is that there is a place for all sizes and body builds in wrestling. Many popular sports such as American football and basketball generally require either great mass or height. An average body build of 5'9" and 170 pounds is considered small by the standards of these sports.

Going back to the possible barriers to the recruitment of young wrestlers, I would also include cauliflower ear and skin infections. First for cauliflower ear - Many people outside the sport, such as mothers, view this permanent disfigurement as an indicator of the brutal nature of the sport. This is a conundrum, since the wrestlers themselves view it as a "badge of honor." This is the paradox of our sport, as what repels some is what attracts others!

While some dermatological concerns, such as tinea corporis, can be dismissed as more or less a nuisance, some can have more serious complications. In fact, with the rise of MRSA infections in the athletic population, hygiene and sanitation must be a primary concern for the coach.

Well-educated and ethical coaches often hold the key as to how the public perceives these issues. They are important role models, along with the older, successful wrestlers, who ultimately attract athletes to our sport.

The expansion and integration of sport into the daily life of modern society, has been facilitated in part by the advances in sports medicine and sport science. Our understanding of the human body, and its need for activity, has increased exponentially. The people involved with the sport science of wrestling must make sure that our scientific base of knowledge is fully employed and utilized. We must be assertive in guiding our athletes and coaches to base their methods on the most scientifically sound practices. We must also be assertive in seeking that decisions made within the sport are based on the best information.

We in sport science all must work to keep wrestling in the spotlight. Conferences such as this beautiful symposium must be repeated in other countries. We must take advantage of major competitions to hold similar scientific congresses and publicize the activities.

From initial discussions with Dr. Mirzaei, an idea was conceived in Almaty for an organization for those who work in the area of wrestling sport science. I have sent information requests from Chicago to many around the world to consider joining such an organization. And I believe that we are now in a position in Komotini, Greece for the International Network of Wrestling Researchers to be born!

INTERNATIONAL NETWORK

OF WRESTLING RESEARCHERS

(INWR)

The genesis of this proposal stems from conversations with several colleagues from around the world (Turkey, Iran, Hungary, Sweden, Germany, Greece, Bulgaria and the USA) regarding the support such an organization can provide our sport, as well as providing collegial support and some important camaraderie in our work that relates to wrestling. My correspondence with a researcher in judo, Dr. Michel Calmet of France (http://www.apc-scolaire.fr) began in 2007, and it was a critical event, as he described to me the recent formation of the International Association of Judo Researchers (http://www.judoresearch.org/). I am proposing the formation of a similar organization for those of us working in wrestling.

Aims and Objectives:

The aims of the International Network of Wrestling Researchers (INWR) are to "Facilitate the development of wrestling through international and intercultural understanding and cooperation; and to support wrestling-related research and education."

Proposed Objectives are:

- Identify Wrestling Researchers and scientists around the world.
- Create opportunities for researchers to connect and share ideas through a communication network.
- To provide expert advice for decision-makers in our sport.
- To provide researchers with opportunities for publications and presentations.

- To improve the availability of research-related sources.
- To improve the quality of wrestling-related research through providing education and scholarships.
- To encourage and support wrestling-related educational activities.
- To support and facilitate wrestling teaching and coaching methods.
- To work collaboratively and explore partnerships with other organizations and programs who can benefit from the intellectual resources of this organization.
- Providing a discussion forum to enable communication between all those who use an official website.
- Encourage and support wrestling related activities between students and researchers.
- Another purpose will be to create a database of wrestling-related research articles for open access. There is currently limited access to places where students can search for scientific or scholarly articles of wrestling. The continuation of this resource would be a plus for the development and expansion of wrestling around the world. It would also be a valuable resource providing important, practical information to teachers, coaches, referees, officials, athletes, and administrators.

Registration will occur via a website (temporarily located at **www.curbywrestling.com** and follow INWR link) and interested individuals will be required to complete an application form containing personal experiences and interests. We need to identify the pool of interested people around the world. An initial task is to establish at least one contact person in each country that has national wrestling governing body. I am sharing this proposal with my network of contacts throughout the world, and would hope that they, in turn share with their colleagues and other appropriate scholars.

Membership is open to persons who have a major academic qualification in a wrestling related discipline or other related academic disciplines, and who show evidence of interest in wrestling related sport science research. We will encourage the registration of student members. Undergraduate and graduate students who are studying or carrying out research in the area of wrestling research or related disciplines are also encouraged to register.

Please complete the following information request and return to Dr. David Curby at:
davcurb@gmail.com

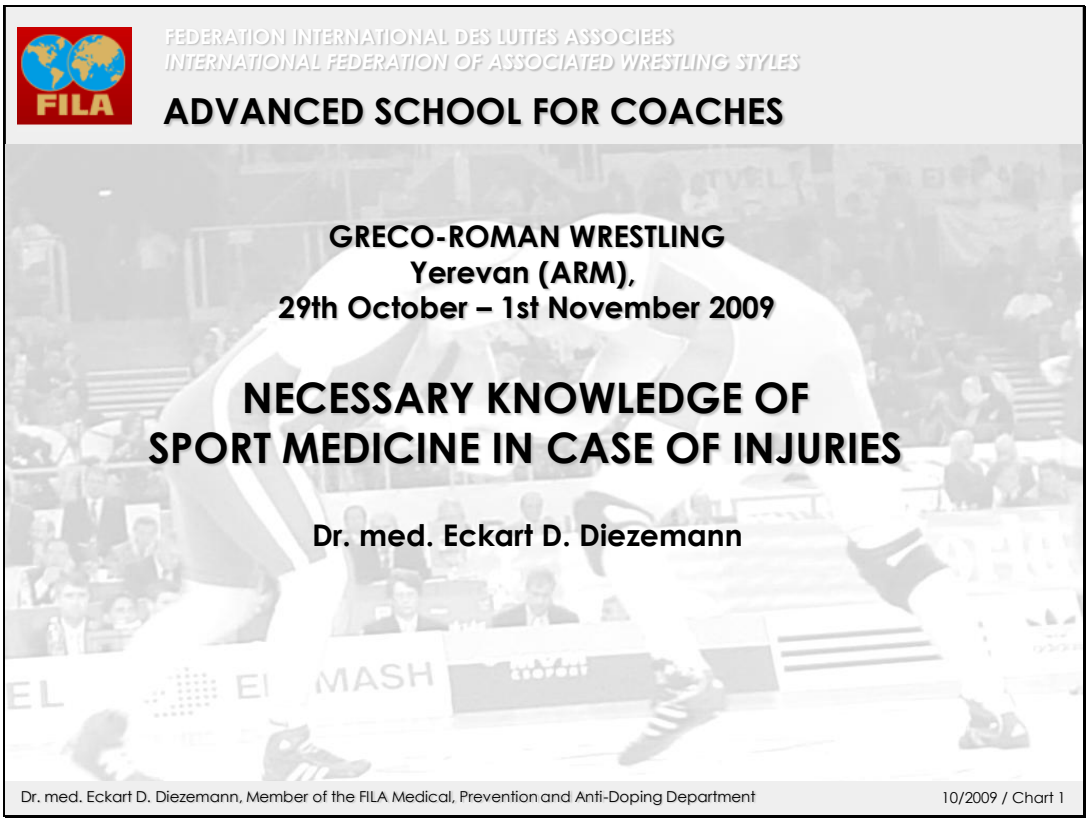
Name:
Email:
Institution/Organization:
Mailing Address:
Country:
Current Areas of Interest:
Completed Wrestling Research:

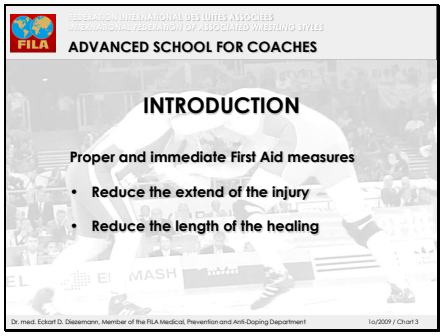
(If possible attach your picture)

PLEASE SHARE WITH COLLEAGUES WHO SHOULD BE ON OUR MAILING LIST!

NECESSARY KNOWLEDGE OF SPORT MEDICINE IN CASE OF INJURIES

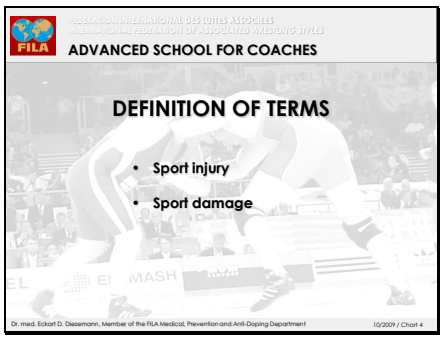
Eckart Diezemann, MD



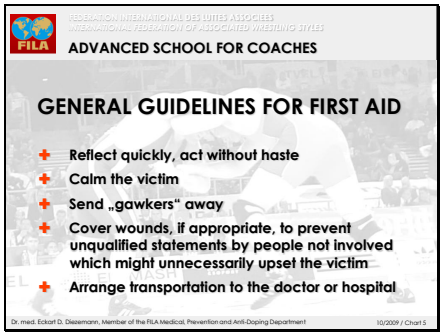


Introduction:

First aid measures in sports injuries – and not only in wrestling –are often decisive to the extent of the injury and thus also in the length of the healing process. It is therefore imperative to create the best conditions for a favourable healing process by means of immediate and proper measures. These measures can be applied not only by doctors, but equally well by trained laymen. Since the trainers are usually the people to provide first aid in case of injury, this presentation is addressed especially to them. I would like to discuss the most important measures and procedures which we apply in Germany.

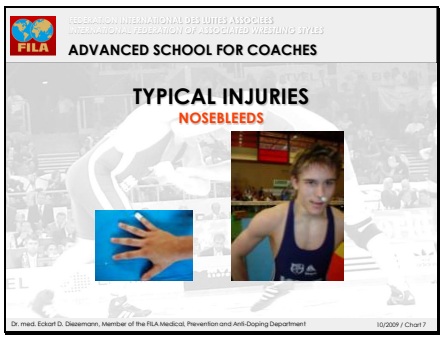


Before I go into details, I have to define a few terms to avoid any misunderstanding later. By definition, an accident is any sudden event which affects the human body and causes physical and/or emotional damage, in other words an **injury**. In addition to external causes of injury, there are also internal causes, such as defence movements which may result in damage to muscles, tendons or meniscus, or in strain fractures.
Sports damage must be differentiated from these injuries. Sports damage arises as a result of microtraumata with chronic effects. In everyday medical practice, we speak of chronic microtraumata, overexertion consequences or improper loading. The essential cause of these "injuries" is a disproportion between the individual possible work capacity of the connective and supporting tissues and the strain actually arising during training and competition. I will limit my presentation to the first aid measures in injuries particularly in wrestling.

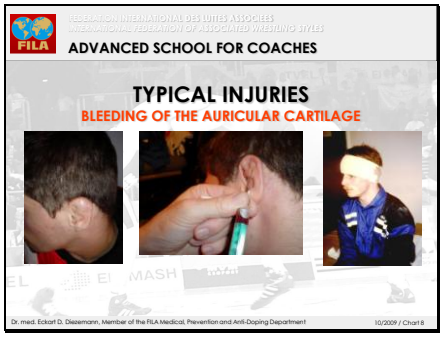


General Guidelines for First Aid
First aid comprises the first measures for assistance which are initiated at the time and place of injury before the injured persor treated by a doctor. In the majority of cases, first aid is performe by a person who is not medically trained. Effective first aid requires very good training. It is very important that the person giving first aid clearly recognizes his abilities and his limitations order to avoid incorrect decisions and improper measures. It is often more intelligent to stick to simple, easy-to-apply measures which one has mastered and leave other measures to the doctor. From this, we can deduce the following important guidelines.

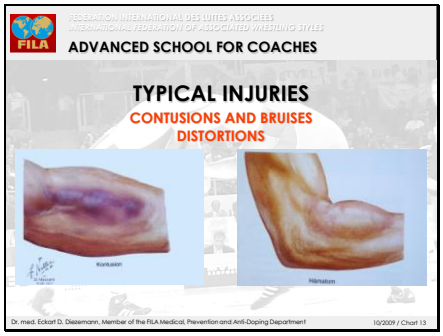
Skin injuries:
Most frequently in wrestling, we encounter injuries to the skin (abrasions = mat burn, lacerations especially in the head). In training and competition, circular tape bandages have proven helpful for these cases. All other bandages slip after a short time and are thus ineffective. If the bleeding under the tape bandage does not stop after a few minutes, the training or competition must be terminated and the injury treated by a doctor. This is especially true for lacerations, which must sometimes be treated surgically. If medical treatment is not necessary, every wound must be cleaned and treated with a disinfectant before it is finally bandaged.



Nosebleeds:
Nosebleeds are the second most frequent injury. Trainers and physiotherapists involved in wrestling have their own ideas about the treatment of nosebleeds. I have found tampons in a mini-form to be helpful (OB-Mini). I cut them in half and have two possibilities of using them for nosebleeds. The tampon should not be inserted too deeply into the nostril. A little bit should remain outside the nose to make removal easy.
I warn you urgently against applying medications to the nasal tampon. These medications enter the blood very rapidly and are thus transported to the kidneys and into the urine. There is danger of a positive doping control!

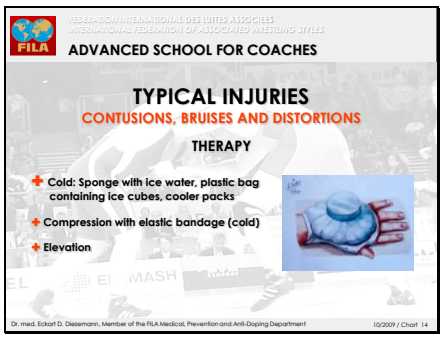


Bleeding of the Auricular Cartilage
Bleeding of the auricular cartilage is not uncommon in wrestling. It is observed especially after training and competition. Local cooling can be applied as first aid. If there is a marked haematoma, it should be drained by a doctor. This must be performed under sterile conditions. Then a compression bandage is required for several hours to prevent leakage. Unfortunately, the athletes often reject such a compression bandage.

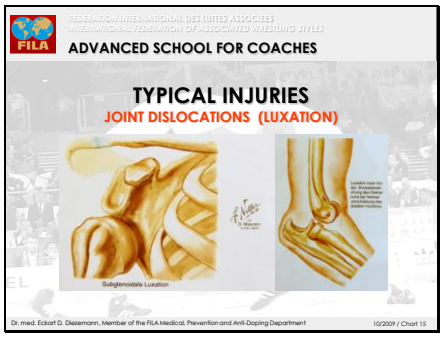


Contusions and Bruises
Contusions and bruises are the next most-common injuries. They are caused by blunt shocks or hits. Depending on the intensity and duration of the force, more or less extensive injuries occur in the soft tissues. This is expressed as swelling. The quicker swelling occurs, the greater the likelihood of haematoma. Haematoma is always a sign that blood vessels have been injured. A doctor should be consulted if one is not certain about the extent of the injury. A typical example of this type of injury is the “horse kiss” (contusion of the upper thigh muscles) which occurs often in soccer. The first aid measures required will be cited after the next point, since they are identical.

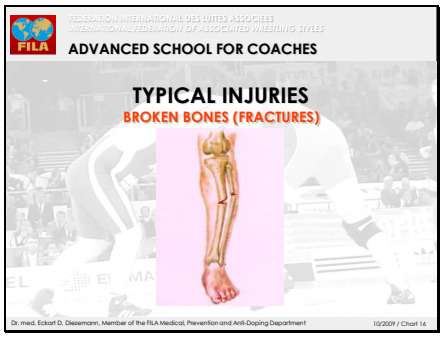
Distortions
When joints are distorted, there is also injury to the surrounding soft tissues. In serious distortions, however, important ligaments can also be damaged. For this reason, there should be medical examination.



Immediate local application of cold for about 20 minutes followed by gentle compression has been found effective in reducing swelling and keeping a possible haematoma to a minimum in **both of the two injuries just cited.** Elevation of the injured part of the body during the cooling phase is recommended. Massages and applications of heat should be avoided in all acute injuries.



Joint Dislocations (Luxation)
Joint dislocations (luxations) occur less frequently in wrestling. Most often the shoulder joint, elbow joint and finger joints are affected. Luxation can be recognized by the abnormal position of the joints coupled with considerable pain. If a doctor is present, an attempt at immediate repositioning can be undertaken. If this is not successful, the patient should be brought as soon as possible – with appropriate splints – to the hospital. I warn against any layman's attempts at repositioning. This may lead to additional injuries (nerves). The severity of the injury will only become worse as a result.

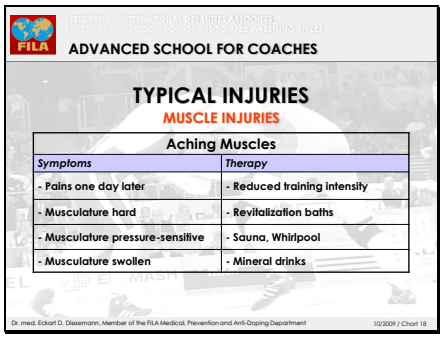


Broken Bones (Fractures)
The wrestler should be moved as little as possible when a broken bone is suspected. In no case should one attempt to return the bones to their normal position. If a wound has also occurred, this must be covered with sterile cloths. The athlete should be positioned as comfortably as possible, with the doctor's assistance.

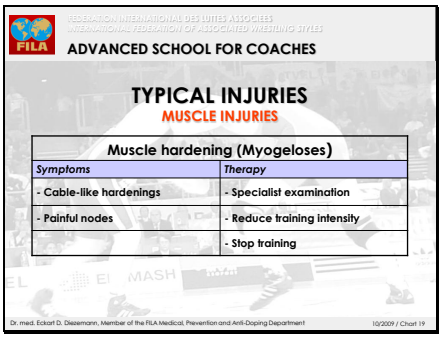
Injuries to the **spinal column,** especially the cervical spine, are not infrequent. In most cases, these are sprains and strains rather than broken bones. Attention must always be paid in such injuries to impaired sensations and muscle weakness in the arms or legs. If pain is severe, training must be immediately ceased and the athlete transported with a doctor's assistance to the clinic in protected transportation with ruff bandage and vacuum mattress

Muscle Injuries

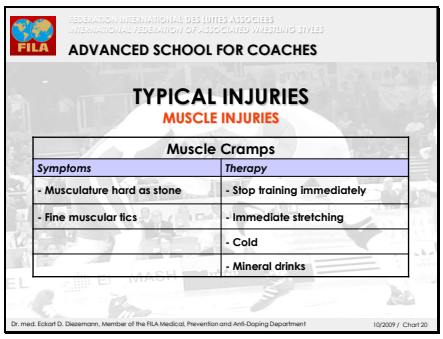
Muscle injuries are, with 6 to 14%, the most common but neglected and underestimated sport injuries. These may take a long time to heal and have an unfavourable influence on the athlete's performance morale. Considerable late-onset damage, up to sports invalidity, is not uncommon. Such injuries occur more often – as described above – from internal cause (defence movements). Therefore, when there is no external force, these injuries are often underestimated. The prognosis and the length of treatment are greatly influenced by the quality of first aid administered at the accident site. Simple measures such as compression, elevation, ice and rest can easily be carried out at this site. Let me give you some more details about these injuries and their first aid.



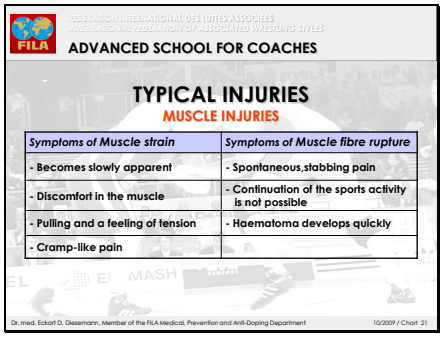
Aching muscles are a transient painfulness of the musculature. The complaints generally do not occur during exertion but usually one day later. The affected musculature is hard, pressure-sensitive and swollen. The entire muscle is always pressure-sensitive in the case of aching muscles. The athlete himself feels the increased tension of the hardened musculature best. Therapeutically, the exertion or training should not be stopped, but the intensity should be greatly reduced. Revitalization baths or movement baths (35˚C with hayflower extract for ca. 15 minutes), loosening gymnastics in warm water and visits to the sauna or whirlpool are recommended. Also recommended are mineral drinks to improve the nutritional status of the muscle. Massages should be given only after the pain subsides.



After long-lasting, fatiguing muscle work or chronic muscular overexertion, we observe local **myogeloses (muscle hardening).** These are cable-like hardenings of the musculature. Painful nodes can be felt in the musculature. Such muscle hardening is observed primarily in the area of the shoulder girdle and in the dorsal leg area. Specialist examination and clarification of the cause are required prior to therapy in such cases. Training should be discontinued until then, or the intensity reduced.

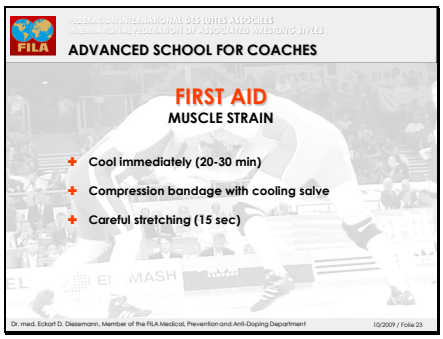


Muscle cramps are not only observed in leisure athletes. These are involuntary muscle contractions which occur suddenly after athletic exercise as a sign of fatigue. The muscles of the calf and thigh are most often affected. The cause is an imbalance in the fluid and mineral households. Muscle cramps are observed especially in the weight-reduction phase. Movement must be immediately stopped. The musculature is as hard as stone, fine muscular tics are observed around the cramped area. Therapy consists of immediate stretching of the affected muscle, application of cold and fluid substitution with mineral additives.

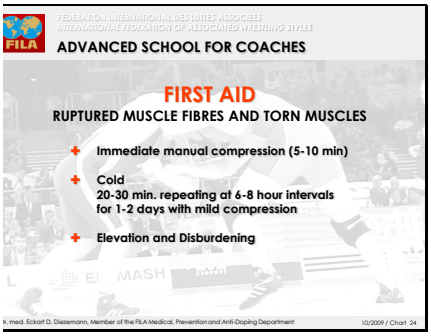


In **muscle strain,** there is over-stretching of the muscle structures without any real injury. Muscle fibre ruptures and torn muscular fascicles and also contusions of the musculature must be differentiated from muscle strain. How can I recognize muscle strain? Contrary to torn muscle fibres, muscle strain becomes slowly apparent. The athlete complains of discomfort in the muscles, but there is no limitation to movement. Then there is a pulling coupled with a feeling of tension, followed by cramp-like pain. The longer the muscle is exerted in such a situation, the more intensive the strain becomes. The athlete feels as though a vise is applied to the muscle and he becomes uneasy. He attempts to shake the muscle loose, but there is no effect.

Ruptured muscle fibres are characterized by spontaneous, stabbing pain. Continuation of the sports activity is not possible. Several muscle fibres always tear at once and haematoma develops quickly, often in related parts of the body.
In the case of **torn muscle fascicles,** haematoma develops quickly with palpable gaps in the musculature and local pain.



First aid measures for muscle strain are: Cool immediately, not with ice spray, but with sponge soaked in ice water, a plastic bag of ice cubes or ice packs (20-30 minutes). Then apply a compression bandage with cooling salve. Then careful stretching of the muscle for ca. 15 seconds, repeated several times, helps. Do not jerk up and down! If the strain is recognized early and treated as described, the athlete will soon be able to continue his sports activity. But only if he no longer has pain.



The **first aid measures** are the same **for ruptured muscle fibres** and **torn muscle fascicles**. The easiest self-therapy measure, which is always available and instinctively applied, is immediate manual compression of the injured area by the athlete himself, then by the trainer. On the one hand, this results in early stopping of bleeding and on the other to good pain reduction via reflectory pathways. The compression should last about 5-10 minutes at tolerable intensity. This should be followed directly by application of cold. The purpose of applying cold is to mute the inflammation reaction in the musculature, which causes further tissue damage and inhibits healing. The application should last 20-30 minutes and repeating at 6 to 8-hour intervals for 1-2 days is beneficial. Sponges soaked in ice water and cold packs which are practical in application with mild compression are suitable for cold application. Cold sprays only have a brief, reflectory superficial effect. They are therefore not suitable for first aid in muscle injuries. They can only be used as immediate pain-relieving reflex therapy. But be careful in using ice sprays; they may cause local freezing of the skin. Cold therapy should be followed by disburdening and elevation. Elevation should be maintained as strictly as possible, especially in the first 20 minutes. It further reduces bleeding into the tissues while improving the venous and lymphatic outflow to minimize swelling. Medical treatment is necessary as early as possible.

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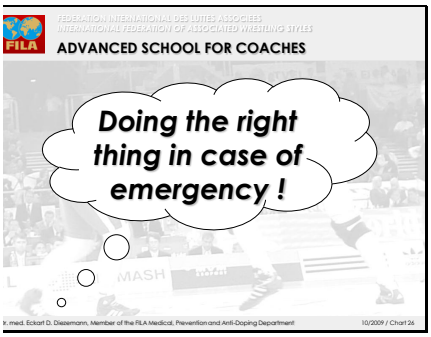
ADVANCED SCHOOL FOR COACHES

RECOMMENDATIONS FOR A FIRST AID PHARMACY

- Bandage, Elastic Bandage
- Cooler Pack
- Cooling Salve
- Disinfectant
- Dressing Material
- Plaster
- Tape

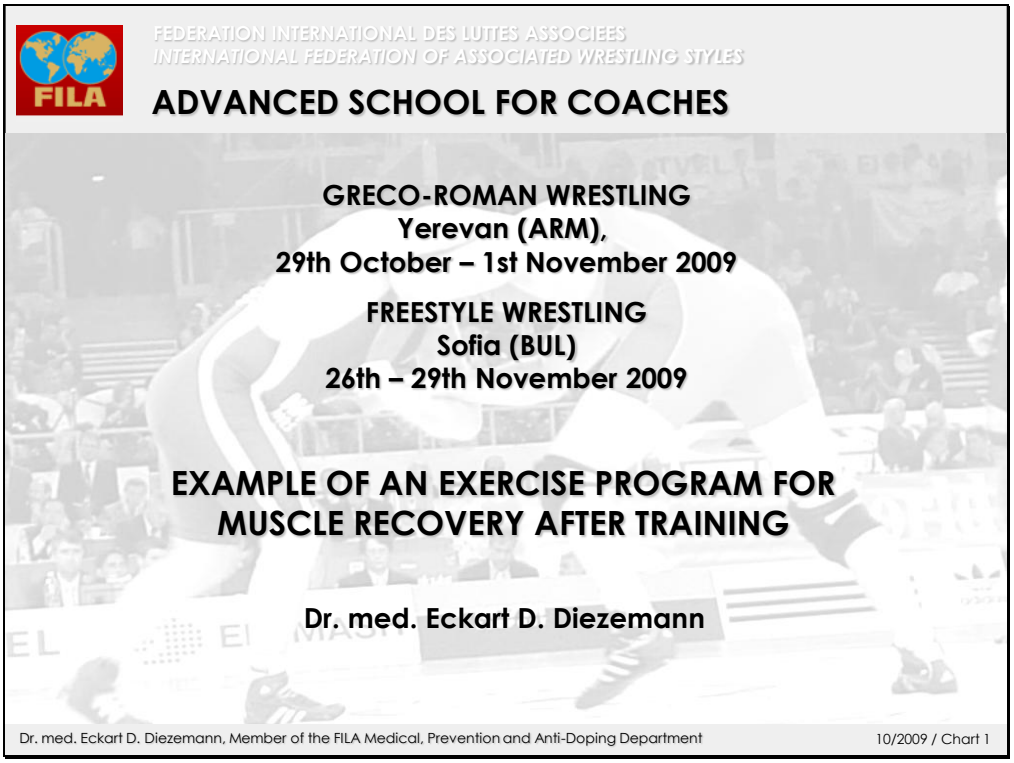
Dr. med. Eckart D. Diezemann, Member of the FILA Medical, Prevention and Anti-Doping Department 10/2009 / Chart 25

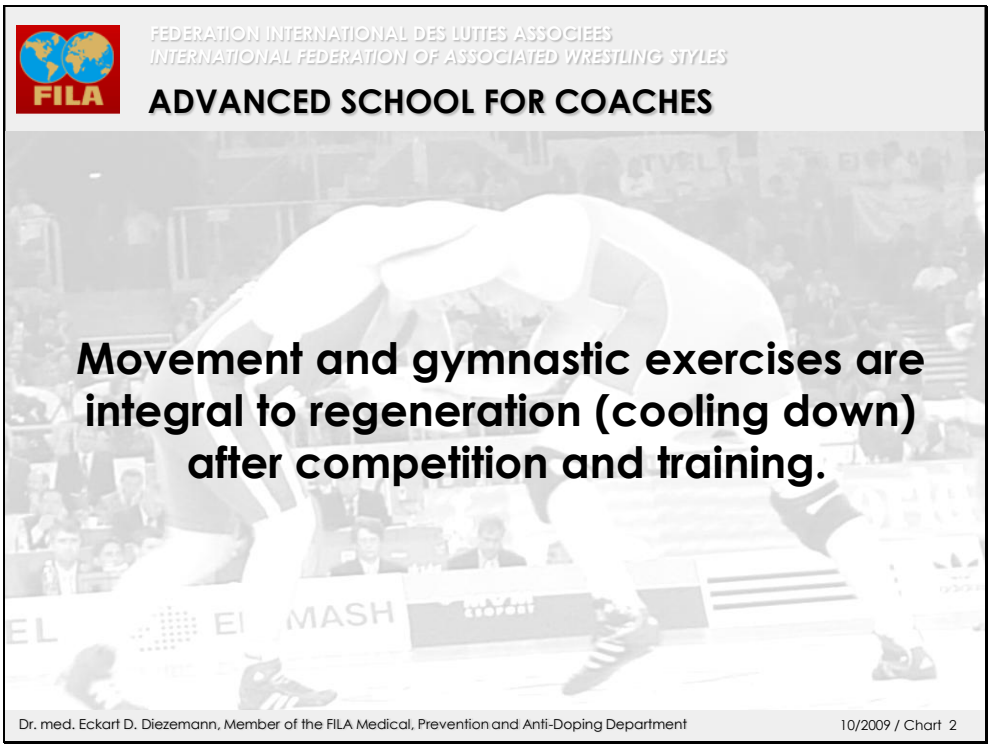


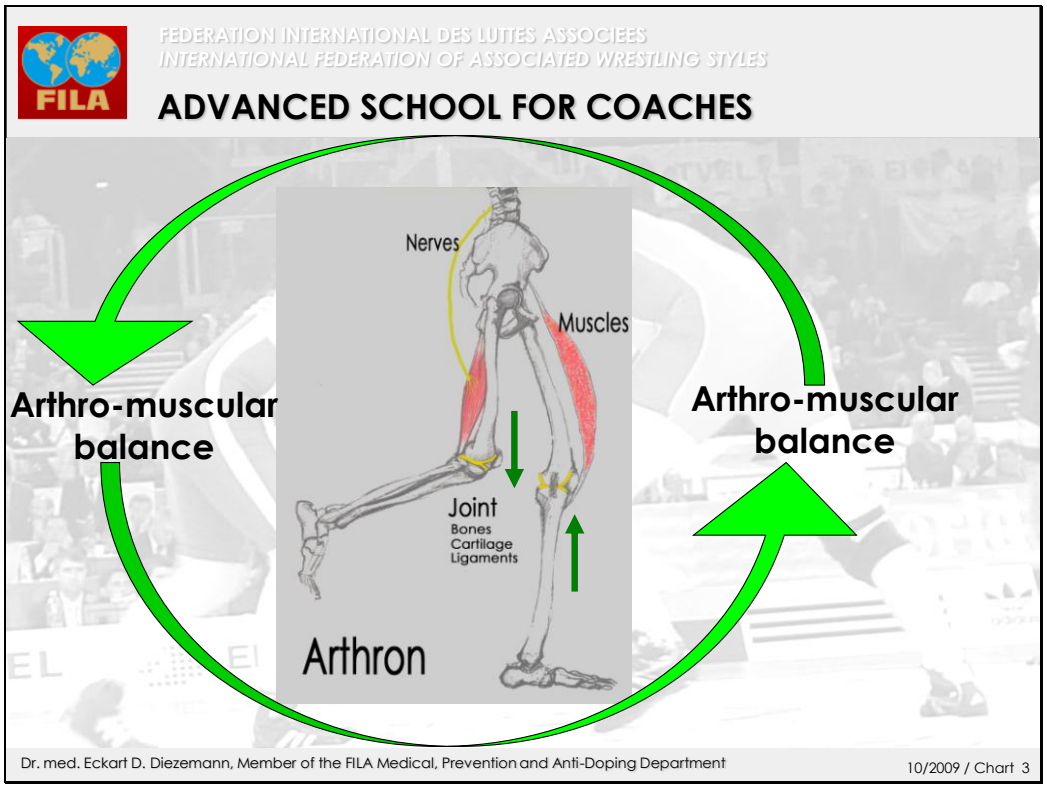
This presentation is addressed primarily to the trainers. It is intended to assist in doing the right thing in case of emergency. It is, of course, not intended to make medical treatment by a doctor unnecessary if the injuries described should occur.

EXAMPLE OF AN EXERCISE PROGRAM FOR MUSCLE RECOVERY AFTER TRAINING

DR. ECKART DIEZEMANN







The condition of the muscles characterizes a person, especially an athlete. An athlete's exercise capacity depends primarily on the performance capacity of his muscles. These and the tendon connections to the bones set natural limits to trainability. The muscles and their tendons must adapt in both structures and function during training. Training-related signs of adaptation in respiration and the cardiovascular system limit the performance of wrestlers less than the acute and chronic signs of overexertion of muscles and tendons. The passive support and motoric organs adapt in similar ways as the other organ systems, but the connective and supporting tissues adapt more slowly than the musculature and the cardiovascular system. Attention must be paid in training to this delayed adaptation, especially if the athlete is still a child or a teenager.

One approach is given in the fact of the functional unity of musculature and joints. We have the passively moved joint itself with the bones, the cartilage and the ligaments, the muscles creating the active movement and the nerves responsible for control and trophism. These structures comprise a functional and reflectory unit.

In addition to joint congruence and ligamentary stability, steady development of the musculature surrounding the joint is of decisive importance. Arthro-muscular balance is guaranteed when the joint is in equilibrium, when the joint surface is evenly stressed. There are close reflectory relationships between the musculature and the individual joint structures.

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ADVANCED SCHOOL FOR COACHES

Aspects for including stretching in the daily training process

Static Stretching (SS) is especially suitable:

- Increasing and maintaining mobility
- Regenerative effects

Static Stretching (SS) isn't suitable:

- Joint control close to the mobility limit
- Warm up effects
- Strengthening effects

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ADVANCED SCHOOL FOR COACHES

STRECHING GUIDELINES

The following guidelines were to be followed:

1. **Stretching of the musculature was to occur slowly. Sudden abrupt movements, bouncing or rocking (teetering) had to be avoided. Each exercise should be performed lightly and gently and thus free of risk. Dogged forced effort and torture has nothing to do with stretching. During the stretching, the athlete should breath normally and relax.**

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ADVANCED SCHOOL FOR COACHES

STRECHING GUIDELINES

2. The best-possible stretching can only occur when the origin and insertion point of the muscle or muscle group are as far from each other as possible. This makes current performance necessary.

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ADVANCED SCHOOL FOR COACHES

STRECHING GUIDELINES

3. A feeling of mild strain in the muscle or the muscle group is normal. Pain is a sign of damaging over-stretching.

4. The stretch position was held for 30 sec.followed by a pause of about 10 – 15 sec. Each exercise was performed 3 times for each half of the body.

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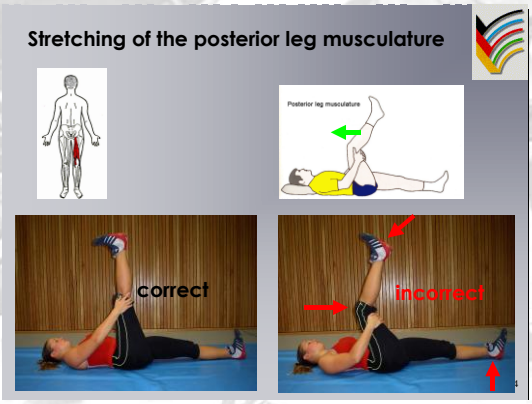
ADVANCED SCHOOL FOR COACHES

Dehnung der ischiocruralen Muskelgruppe
Stretching of the posterior leg musculature



Technique: Athlete on his back. One leg stretched out on the mat. The other leg is bent to a 90° angle from the hip and grasped with both hands on the thigh. Then the knee joint of this leg is extended. It is important that the toes on both feet are drawn toward the upper body. The hip angle is kept constant during stretching. Repeat with the other leg.

Possible errors: The knee joint is not completely extended. The toes are not drawn toward the upper body. The hip angle is not maintained.

Result: The entire posterior musculature of the leg is stretched.

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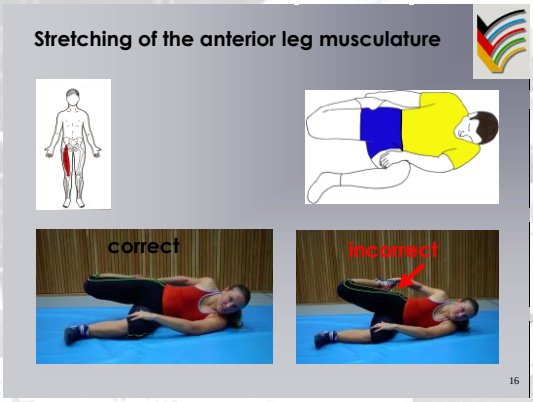
ADVANCED SCHOOL FOR COACHES

Dehnung der Quadricepsmuskulatur
Stretching of the anterior leg musculature



Technique: First for example, lying on the left side. The left leg, witch is under the right leg, is bent at the hip to a 90° angle and is held in this position by the left hand. The right hand grasps the instep of the right foot and pulls it with the thigh backwards toward the buttocks. A mild, stretching pain should be felt on the anterior side of the whole right leg. Repeat on the other side.

Possible errors: Not completely on the side. Turning of the pelvis toward posterior must be avoided. Do not bend the knee too much to prevent pain.

Result: The entire anterior leg musculature is stretched.

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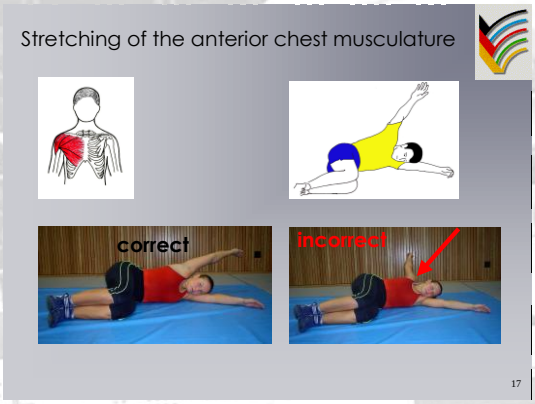
ADVANCED SCHOOL FOR COACHES

Dehnung des Musculus pectoralis major
Stretching of the anterior chest musculature



Technique: The completely extended upper arm is turned backward, upward and toward the outside. Stretching occurs due to gravity. Repeat with the other arm.

Possible errors: Not completely on the side. The upper arm is not completely extended through the ellbow.

***Result*:** The entire anterior chest musculature is stretched.

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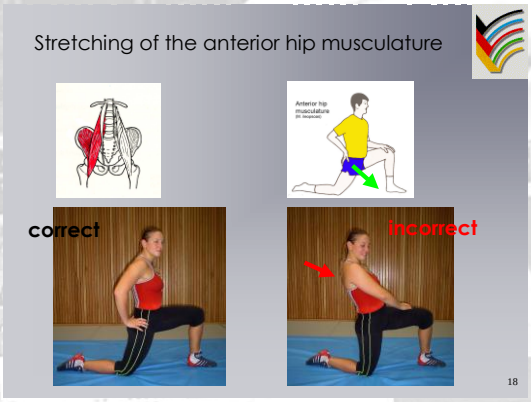
ADVANCED SCHOOL FOR COACHES

Dehnung des Musculus iliopsoas
Stretching of the anterior hip musculature



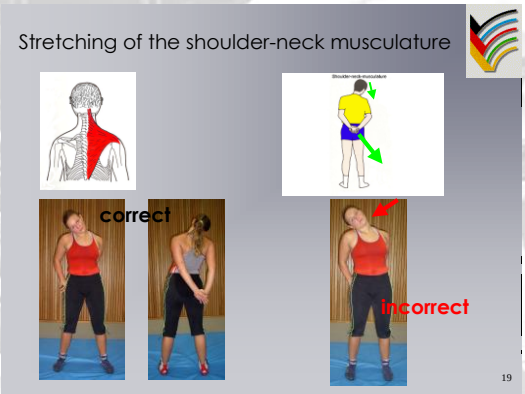
Technique: The athlete kneels then places his left foot so far forward that the knee joint is above the ankle. The left foot must be flat on the mat. The right knee and entire lower leg remain flat on the mat. Now, the bodyweight, that is the right hip, is shifted forward and down until a mild stretching pain is felt in the right hip musculature. This movement can be supported by the right hand, which pushes the pelvis forward and down.

Possible errors: The upper body is not kept upright. The athlete leans forward. No sway back. The feet should be positioned exactly forward or backward. The hips should not be pushed outward.

Result: The anterior hip musculature is stretched.

ADVANCED SCHOOL FOR COACHES

Dehnung der Schulter-Nacken-Muskulatur
Stretching of the Shoulder-neck-musculature

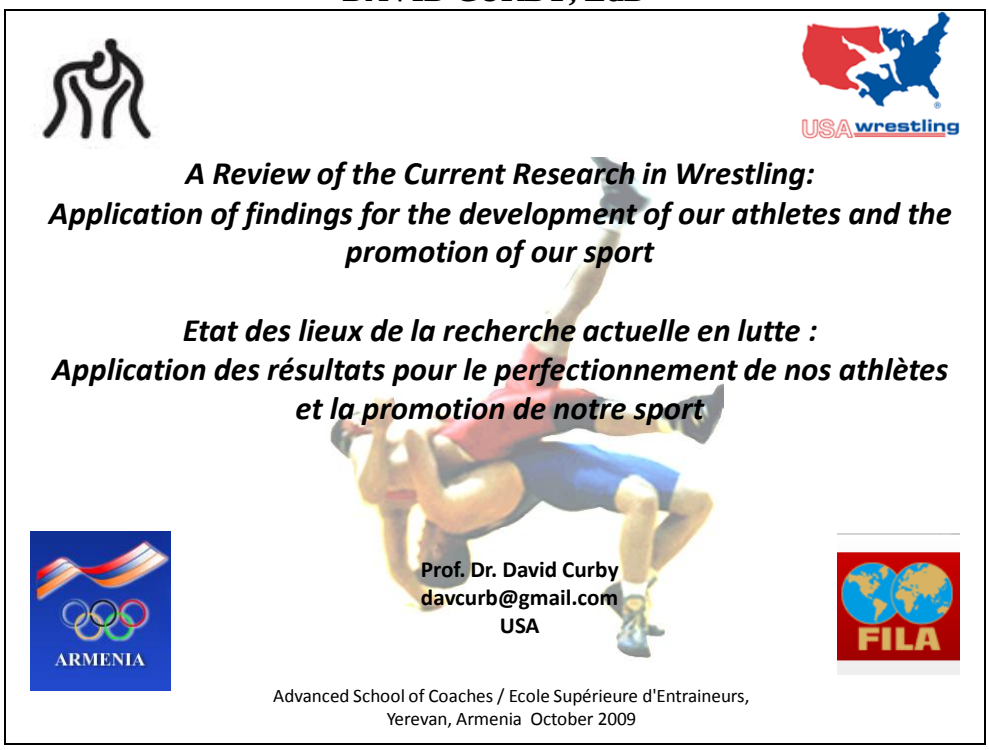


Technique: Stand firmly with the legs slightly apart. First, the left arm is placed behind the body and pulled with the right hand downward to the right. Now attempt to place the right ear on the right shoulder. In this position, there should be a marked stretching feeling in the left shoulder-neck musculature. Then repeat on the other side.

Possible errors: The spine must be kept straight. The upper body should be held upright. Do not turn the head, but tilt the head toward the shoulder.

Result: The shoulder-neck musculature is stretched.

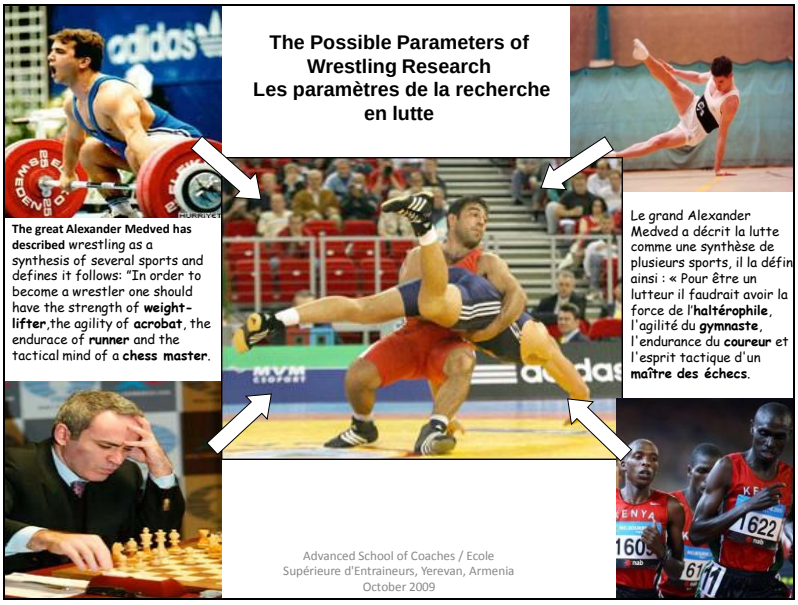
A REVIEW OF THE CURRENT RESEARCH IN WRESTLING
DAVID CURBY, EdD



Mr. President Marinetti, Mr. Karapetyan (ARM), Prof. Kazarian, Mr. Dusson and Mr. Ayik I am privileged to speak this morning. My plan is to share with you, the members of the **FILA WRESTLING COACHES' ASSOCIATION,** a means by which you can remain current with the wrestling sport science research from around the world and continue to be "life-long learners." Inspired by the reference and database collection at the IAT in Leipzig, and currently maintained by Helmut Sandor, I maintain a database of wrestling research that contains almost 3,000 articles, and each year issue an annual summary and review of research published during that year. This is emailed to 300 friends around the world.

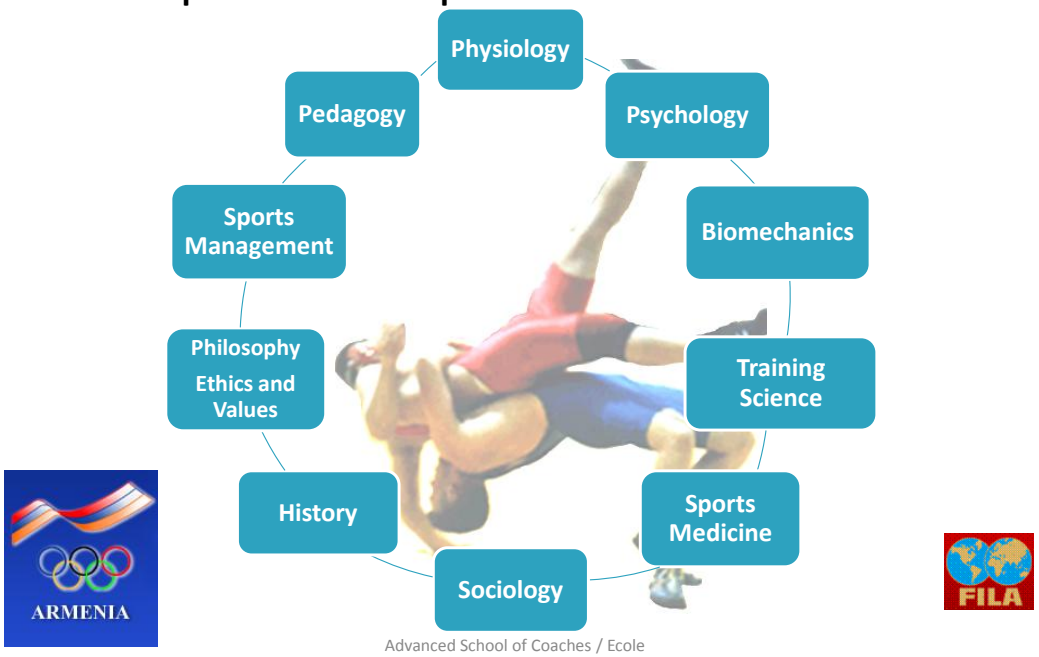
There have been approximately 200 articles published in English since the Athens Games.

In the introduction of the book from the first FILA Coaches Clinic in 1976, President Milan Ercegan stated, "It is no longer possible for a wrestling coach to limit his work to on the mat training only. Modern training implies the increasing impact of several scientific disciplines. The coach should know the theory of his sport, the methodology of sports training, and the principles of anatomy, physiology, psychology, and biomechanics. Finally, his work must not be limited to only working with the outstanding sportsman, he should equally devote himself to the work with children and young sportsmen. It is on you, the wrestling coaches that the future of the sport depends." Let us discuss some of these academic disciplines.



I have used a quote from a lecture from my friend Dr. Ramazan Savranbasi: The great Alexander Medved has described wrestling as a synthesis of several sports and defines it follows: "In order to become a wrestler one should have the strength of a **weight-lifter**, the agility of a **gymnast**, the endurace of a **runner** and the tactical mind of a **chess master**.

The Possible Parameters of Wrestling Research
Les paramètres de la possibilité de luttes recherche



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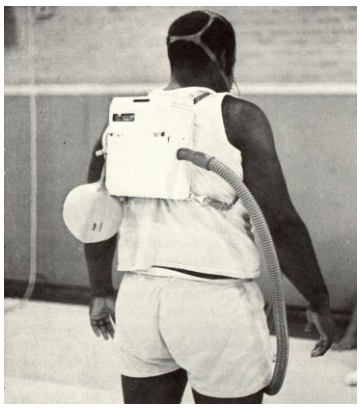
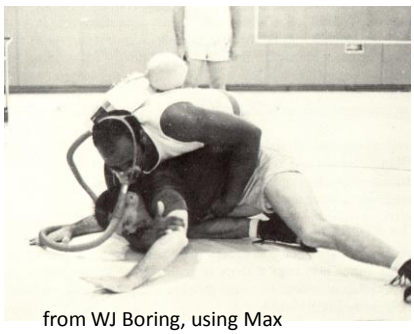
When we examine the academic publications regarding wrestling, we see even more categories. Each of these areas provide fertile ground for research and can add to our sport.

Problems Encountered in Testing Wrestling
Problèmes rencontrés dans les tests en lutte





from WJ Boring, using Max Planke respirometer, circa 1970

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Wrestling is classified as an "open-skill" sport, as opposed to a "closed sport skill" such as running, swimming, or rowing, and it is difficult to measure our athletes while actually wrestling. There have been some ingenious attempts. Here are some pictures from the '70s attempting to measure O_2 uptake while wrestling.

Research Performed at Competitions
Recherche effectuée en compétitions

Spanish Grande Prix 2007
Dr. Pedro Benito

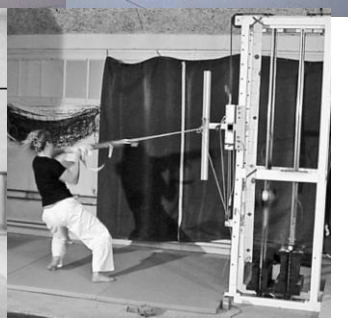
Advanced School of Coaches / Ecole Supérieure d'Entraineurs, Yerevan, Armenia October 2009

There have been some efforts to test wrestlers during competition. Most of the time it is done immediately after a bout. Here are some pictures of research being done at the Spanish Grand Prix. Dr. Ramazan Savranbasi has presented lactate data from the WC from Hamza Yerlikaya. This has to be repeated, since it was done before the new rules.

Examples from the Sport of Judo
Exemples en judo

Calmet M. (2007) Developing ecological research in judo. ***Percept Mot Skills 105 (2):646-648.***
Keller, B., Coelho, R., Okazaki, F., & Santos, S. (2007).
(Recherche écologique se développante dans le judo.)

Blais, L., Trilles, F., & Lacouture, P. (2007). Validation of a specific machine to the strength training of judokas. ***J Strength Cond Res, 21, 409-412.***
(Validation d'une machine spécifique à la formation de force des judokas)



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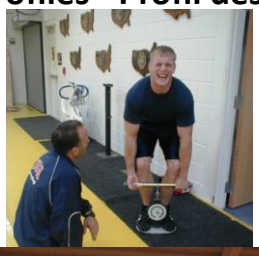
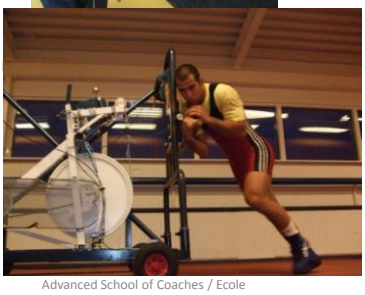
We can learn from other combative sports, especially judo. The bottom two pictures contain some interesting application of sport specific strength training and measurement.

Wrestler Profiles - Profil des lutteurs

Rahmani-Nia, F., Mirzaei, B., & Nuri, R. (2007). Physiological profile of elite Iranian junior Greco-Roman wrestlers. ***International Journal of Fitness, 3, 49-54.***

(Profil physiologique des lutteurs Greco-Romains juniors iraniens d'élite.)





I show a picture of testing the back strength of some GR athletes at the USOEC in Marquette Michigan, and the bottom picture from Sweden shown pushing a "powerbox."
The listed reference is a typical study attempting to develop an athlete profile.
The keys to testing are sport specificity and standardization of procedures so the data are meaningful.

Maximal oxygen uptake, flexibility, agility and speed (Mean ± SD)
Absorption maximale d'oxygène, flexibilité, réactivité et vitesse (moyenne ± SD)

Variables / Subjects	N	Sit and reach (cm)	4 × 9 m running (s)	40 yd running (s)	$VO_{2\,max}$ ($ml.kg^{-1}.min^{-1}$)
50 kg	9	41.2 ± 6.9	9.15 ± 0.2	5.2 ± 0.3	51.7 ± 3
55 kg	9	41.7 ± 2	8.63 ± 0.5	5.1 ± 0.1	53 ± 4.4
60 kg	10	38.7 ± 7	8.59 ± 0.58	5.2 ± 0.31	51.7 ±4
66 kg	11	41.9 ± 4.8	8.68 ± 1.1	5.14 ± 0.24	51.2 ± 3.7
74 kg	6	41.5 ± 4	9.17 ± 0.42	5.03± 0.1	51.2 ± 3
84 kg	11	43.2 ± 6.3	9.12 ± 0.62	5.11± 0.15	50.7±2.9
96 kg	9	40.6 ± 2.6	9.03± 0.42	5.29 ± 0.26	46.2 ± 2.2
120 kg	6	38.3 ± 6.4	9.27 ± 0.57	5.35 ± 0.17	40.5 ± 2

These data from my friend Dr. Bahman Mirzaei of Iran, who is a member of the FILA Technical Committee, is useful as it is broken down by weight class.

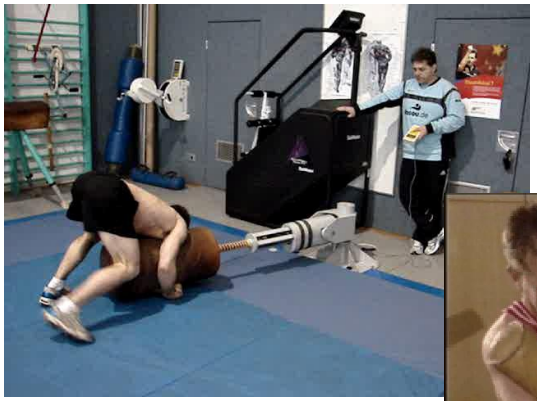
Muscular endurance and strength (Mean ± SD)
Endurance musculaire et force (moyenne ± SD)

Variables Subjects	N	Sit – ups (n / min)	Push – ups (n / min)	Pull – ups (n)	Squat ($W.kg^{-1}$)	Bench press ($W.kg^{-1}$)	Grip strength ($W.N^{-1}$)
50 kg	9	66 ± 4	59 ± 5	46 ± 13	1.9 ± 0.15	1.4 ± 0.1	0.95 ± 0.11
55 kg	9	70 ± 4	70 ± 7	35 ± 7	1.9 ± 0.1	1.56± 0.11	0.96 ± 0.15
60 kg	10	68 ± 4	69 ± 9	37 ± 15	1.85±0.17	1.6 ± 0.26	0.9 ± 0.19
66 kg	11	65 ± 6	70 ± 7	29 ± 11	1.83 ± 0.2	1.52± 0.16	0.89 ± 0.11
74 kg	6	73 ± 5	66 ± 7	34 ± 8	1.65±0.16	1.4 ± 0.16	0.85 ± 0.13
84 kg	11	64 ± 12	69 ± 5	29 ± 12	1.7 ± 0.2	1.47 ± 0.1	0.91 ± 0.13
96 kg	9	68 ± 7	70 ± 6	22 ± 3	1.71±0.16	1.34± 0.13	0.9 ± 0.11
120 kg	6	61 ± 4	53 ± 5	17 ± 7	1.38 ± 0.1	1.27 ± 0.1	0.74 ± 0.05

Here are some muscular strength and endurance factors. Testing such as this can detect athlete weaknesses, set standards, and provide motivation. I recommend that we search for more sport specific measures such as the testing of neck strength such as done by:

Rezasoltani, A. Ahmadi, M. Nehzate-Khoshroh, F. Forohideh, and J. Ylinen. Cervical muscle strength measurement in two groups of elite Greco-Roman and free style wrestlers and a group of non-athletic subjects. Br J Sports Med 39 (7):440-443, 2005.

Cybernetic Devices developed in Germany (IAT, Leipzig)
Appareils cybernétiques développés en Allemagne



Gut Wrench Machine

Electrohydraulic
Bout Simulator

Some of the most unique and interesting testing has been documented by Dr. Tünnemann and the IAT. I had some American athletes tested on the gut wrench machine while in Frankfurt/Oder about a year ago. The electrohydraulic bout simulator is one of a kind. Dr. Tünnemann says that we must remember, that when these machines were developed, there were approximately 700 scientists, researchers and engineers working in Leipzig!

Athlete Testing
Tests sportifs pour les lutteurs

Hubner-Wosniak, E.; Kosmol, A.; Kusior, A.
(2006) ***Research Yearbook 12 (2), 218-221.***

The Evaluation of Upper Limb Muscles Anaerobic Performance of Elite Wrestlers and Boxers

Arm cranking on bike ergometers is quite appropriate for testing the important upper body parameters in wrestlers.

From: Sandor Csergo (SWE)

L'évaluation de la performance anaérobique des muscles des membres supérieurs chez les lutteurs et les boxeurs.

Le vélo ergomètre pour les membres supérieurs est tout à fait approprié pour tester les paramètres importants du torse des lutteurs.

Arm cranking on bike ergometers is quite appropriate for testing the important upper-body parameters in wrestlers. Huber-Wozniak has helped to develop protocols for wrestlers using the Polish National Team. Anaerobic performance of the upper limb muscles and how the repetition test reflects the potential of muscles to derive the energy via the glycolytic pathway were investigated. Notice the grip employed by similar testing by Sandor Csergo in Sweden.

Wingate-type Arm Cranking
Wingate-test pour bras

8 x 15 sec sprints with 7 g per kg body weight loading

Sprints de 8 x 15 s avec charge de 7 g par kg de poids corporel

This research has helped us evolve from the basic 30 second Wingate test to repeated bursts. We use 8 x 15 sec sprints with 7 g per kg body weight loading over a five minute period. Everyone is strong on the first sprint!

Wingate-type Arm Cranking
Wingate-test pour bras

Advanced School of Coaches / Ecole Supérieure d'Entraineurs, Yerevan, Armenia October 2009

Here is a video clip over several sprint segments. We chart the fatigue curve over the eight sprints.

Training Control
Contrôle de l'entrainement

Ežerskis, M. & Poderys, J. (2008). Dynamics of muscle performance and cardiovascular changes under influence of concentrated speed and power training loads in cohort of Lithuanian elite wrestlers during preparation to world championship. ***Education-Physical Training- Sport***

Recovery after heavy training loads is an essential part of the training process and long-term adaptation depends on this much. Using the rather new technique of ***Heart Rate Variability***, researchers are gaining new information on the autonomic nervous system.

Ežerskis, M. & Poderys, j. (2008). Dynamique des performances musculaires et cardiovasculaires modifications sous influence de concentré de vitesse et de la formation de puissance se charge dans la cohorte de lituaniens lutteurs élites au cours de préparation au Championnat du monde. ***L'éducation -Physique formation-Sport.***

Récupération après la formation de lourdes charges est une composante essentielle du processus de formation et adaptation à long terme dépend de ce bien. À l'aide de la nouvelle plutôt technique des variations de fréquence cardiaque, les chercheurs gagnent de nouvelles informations sur le système nerveux autonome.

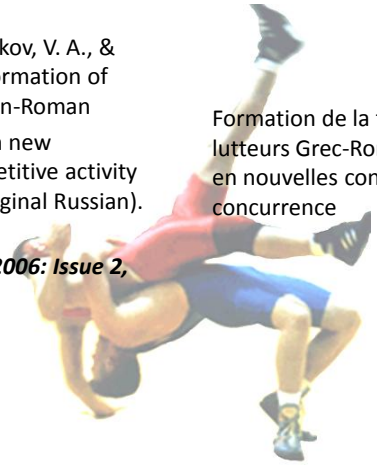
Advanced School of Coaches / Ecole Supérieure d'Entraineurs, Yerevan, Armenia October 2009

Recovery after heavy training loads is an essential part of the training process and long-term adaptation depends on this much. Using the rather new technique of ***Heart Rate Variability***, researchers are gaining new information on the autonomic nervous system. This study from Dr. Poderys and Ezerkis is very interesting. I want to employ their methods while athletes are actually wrestling and am experimenting with a means to keep the transmitter in place.
One final important note is that Mindaugas Ežerskis is completing his doctoral studies while also performing as an elite wrestler for Lithuania. He placed 7th in the Beijing Olympics in Greco-Roman at 96kg.

Training Specificity
Contrôle de la Formation de Sport (spécifique)

Akopyan, A. O., Pankov, V. A., & Kim, A. Y. (2006). Formation of technique of Grecian-Roman wrestlers training in new conditions of competitive activity (translated from original Russian). ***Teoria i Praktika Fiziceskoj Kul'tury 2006: Issue 2, 21-23.***

Formation de la technique des lutteurs Grec-Romains s'exerçant en nouvelles conditions de concurrence



ARMENIA

Here is another outstanding example of research which can be applied! The reduction in the length of matches, coupled with the opportunity to score from the reverse lift position, have reduced the need for power endurance, placing a premium on the speed-strength capabilities of the Greco-roman wrestler.

Weight Control
Effets de la Perte de Poids

Karila, T., Sarkkinen, P., Marttinen, M., Seppälä, T., Mero, A., & Tallroth, K. (2008). Rapid Weight Loss Decreases Serum Testosterone. ***Int J Sports Med 29(11):872-7.***

Testostérone sérum diminue de perte de poids rapide

This study was conducted by Finnish Olympian and World Medalist, Dr. Tuomo Karila with wrestlers in preparation for their national championships. The results suggest that even short-term weight reduction may have marked effects on body composition, blood chemistry and hormonal parameters. It may constitute a possible health risk at least in a growing adolescent athlete.

Cette étude a été menée par les finlandais Olympien et médaillé de mondiale, Dr Tuomo Karila avec lutteurs en préparation de leurs championnats nationaux. Les résultats suggèrent que même à court terme réduire le poids peut ont marqué des effets sur la composition du corps, de la chimie de sang et de paramètres hormonaux. Il peut constituer un risque possible pour la santé au moins dans un athlète adolescent en pleine croissance.

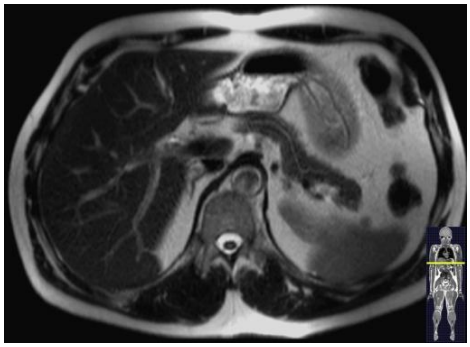
Weight management and weight loss effects generate a great deal of research. This study was conducted by Finnish Olympian and World Medalist, Dr. Tuomo Karila with wrestlers in preparation for their national championships. The results suggest that even short-term weight reduction may have marked effects on body composition, blood chemistry and hormonal parameters. It may constitute a possible health risk at least in a growing adolescent athlete.

Weight Control
Effets de la Perte de Poids

Kukidome, T., Shirai, K., Kubo, J., Nakashima, Y., Yanagisawa, O., Homma, T., & Aizawa, K. (2008). MRI evaluation of body composition changes in wrestlers undergoing rapid weight loss.

Br J Sports Med, 42(10):51-8

L'évaluation de MRI de composition de corps change dans les lutteurs subissant la perte rapide de poids.



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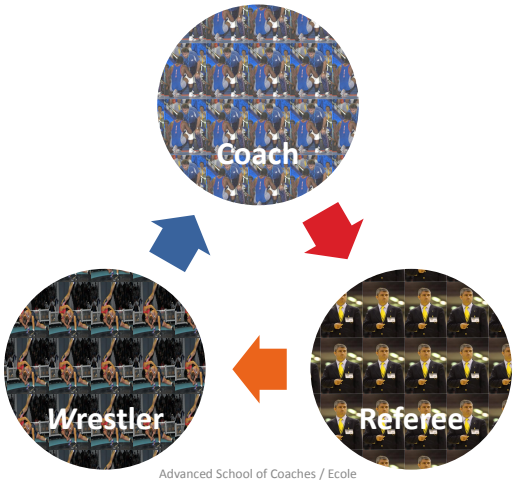
Kukidome, T., Shirai, K., Kubo, J., Nakashima, Y., Yanagisawa, O., Homma, T., & Aizawa, K. (2008). MRI evaluation of body composition changes in wrestlers undergoing rapid weight loss. The information gained from MRI allows us see exactly where the loss of body mass is occurring during the "making weight" process. While many coaches think that losses stem primarily from fat stores, the amount of muscle mass can be significant. This research can help to document this process.

Psychology-Psychologie



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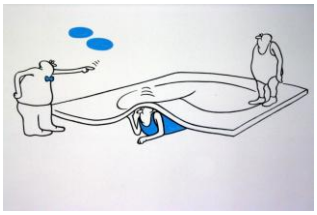
Psychology is another very complicated and rich area for research. I share two studies, one involving the wrestlers and another of the referees.



Competitive Stress Control
Contrôle du stress en compétition

The effect of precompetitive and postcompetitive climate on salivary cortisol and stress levels among top - ranking Brazilian wrestlers. ***Journal of Sport and Exercise Psychology, 29, S20-S21.***

L'effet de la période précompétitive et postcompétitive sur les niveaux de de cortisol salivaire et les niveaux de stress parmi les meilleurs lutteurs brésiliens.

Kristiansen, E., Roberts, G. C., & Abrahamsen, F. E. (2007). Achievement involvement and stress coping in elite wrestling. ***Scand J Med Sci Sports***

Changements de l'ambition et du stress chez les lutteurs de haut-niveau

These are very interesting studies with some information which can be used by coaches. Some athletes are not able to perform to their full potential when it is needed the most. This is often the result of the stress of the competition. Kristiansen finds that athletes are sometimes vague in describing how they cope with stress, because some athletes are not aware of their coping efforts. This study is valuable, in part, because it includes some very elite wrestlers (World and Olympic medalists), as well as the detailed interview techniques used. The more successful wrestlers were "task -oriented" - they functioned in the present, whereas, the ego-oriented wrestler focused on the end result of winning. The study from Brazil investigates the use of cortisol measures from saliva to measure stress.

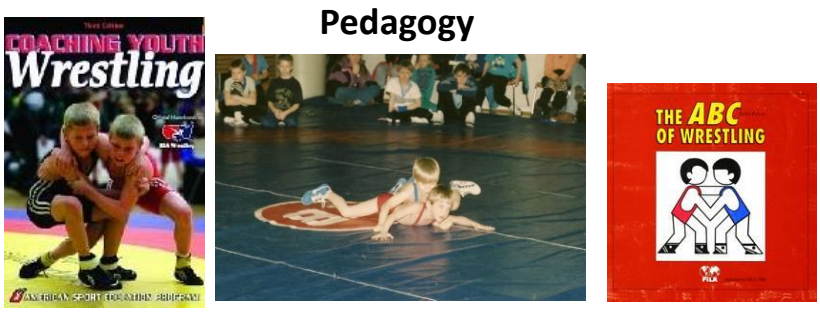
Research Regarding Referees
Recherche sur les arbitres

DEMOCRITUS UNIVERSITY OF THRACE-Hellas, Dr. Ioannis Barbas, et al

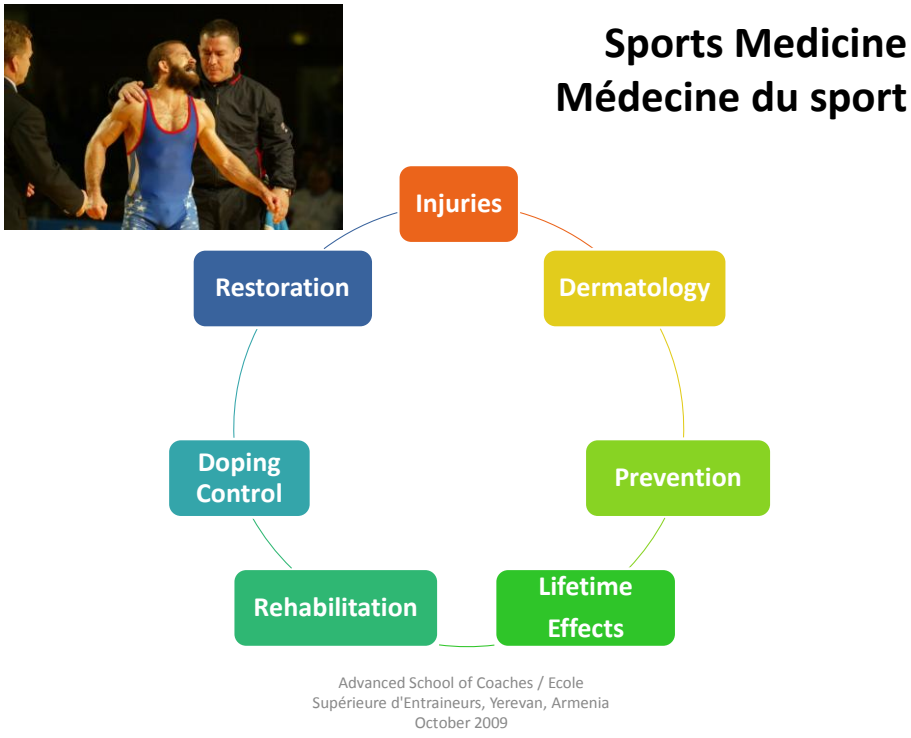
The aim of the study is the investigation of the motivation aspects of the referees. Are the referees engaged to their work because they like and enjoy it or because they will get something out of it; Also, we will try to find any possible differences among them, according to their nationality, education level, age and gender.

L'objectif de l'étude est de connaître les aspects de la motivation des arbitres. Les arbitres sont-ils engagés parce qu'ils aiment et apprécient leur tâche ou parce qu'ils vont en obtenir quelque chose? Nous allons essayer de trouver, parmi eux, toutes les différences possibles, concernant leur nationalité, leur niveau d'éducation, leur âge et genre.

This study is in progress and involves an important group that is not typically studied-the referees. Dr. Barbas' study is the investigation of the motivation aspects of the referees. Are the referees engaged to their work because they like and enjoy it or because they will get something out of it?; Also, they will try to find any possible differences among them, according to their nationality, education level, age and gender. He surveyed referees from three continents. We look forward to the results.



Pedagogy-the art and science of teaching. I wish to focus on how we teach the youth. We have a large number beautiful books regarding the teaching of wrestling. I share with you a popular book by Dr. Raiko Petrov, which has been translated into many languages, and also a book produced by USA Wrestling. We now need studies that tell us how to attract youngsters to our sport in this modern age. In the USA we have seen a decline in the inclusion of wrestling in Physical Education curricula.



I have listed some of the important areas that are a part of sports medicine.

Treatment and Rehabilitation
Traitement et réhabilitation des blessures

Schmidt, A., Akbar, M., Kunz, M., & Johann, K. (2006). ***Sportverletz Sportschaden, 20, 43-45.***
[Olympia participation 6 months after surgical replacement of a cruciate ligament -- optimal rehabilitation of a top athlete]

We present the medical history of an Olympic wrestler who suffered a rupture of the anterior cruciate ligament. Operative reconstruction of the anterior cruciate ligament was performed using an autogenous semitendinosus-gracilis-tendon-transplant. The operation was followed by an aggressive rehabilitation program set up to meet the individual requirements. Six months later the athlete was able to compete at the 2004 Olympic Games in Athens.

[Participation aux Jeux Olympiques 6 mois après l'opération d'un ligament croisé -- réhabilitation optimale pour un athlète de haut-niveau]

Nous présentons les antécédents médicaux d'un lutteur Olympique qui a subi une rupture du ligament croisé antérieur. La reconstruction du dispositif du ligament croisé antérieur a été effectuée par une transplantation du tendon du semi-tendineux. L'opération a été suivie d'un programme de réhabilitation important configuré pour répondre aux exigences individuelles. Six mois plus tard l'athlète a pu concourir aux Jeux Olympiques de 2004 à Athènes.

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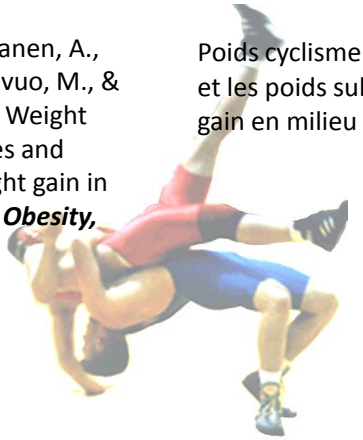
There are many articles that discuss the treatment of specific "wrestling injuries." The selected research is such an example, and describes the medical history of an Olympic wrestler who suffered a rupture of the anterior cruciate ligament. Operative reconstruction of the anterior cruciate ligament was performed using an autogenous semitendinosus-gracilis-tendon-transplant. The operation was followed by an aggressive rehabilitation program set up to meet the individual requirements. Six months later the athlete was able to compete at the 2004 Olympic Games in Athens!

Long-term Health Effects
Effets à long terme sur la santé

Saarni, S. E., Rissanen, A., Sarna, S., Koskenvuo, M., & Kaprio, J. (2006). Weight cycling of athletes and subsequent weight gain in middle age. ***Int J Obesity,*** March 28.

Poids cyclisme des athlètes et les poids subséquente gain en milieu âge



ARMENIA

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The long-term health effects of being a wrestler are important, although most athletes do not care while they are young! Dr. Saarni of Finland has studied the life span of athletes. In this study he examined whether the weight-cycling of having to repeatedly make weight was associated with excessive weight gain later in life. He seems to find a connection, however there may be other factors involved, one being the tendency of mesomorphs to acquire more fat as they move through life.

Sport Management and Administration
Gestion et administration du sport

Promotion, Organization of Competitions

Examples of research in Efficacy of Rules Changes via scoring analyses:

H. Tünnemann. Analysis of performance development in wrestling during the Olympic cycle 1992-1996 and conclusions for further developmental perspectives. 1996.

H. Tünnemann. Analysis of the Olympic games in Sydney and of the Olympic cycle 1997/2000. FILA. 2000.

(more than 50 analyses of WC and OG in wrestling since 1991)

Curby, D.G. 17th International Congress of Physical Education and Sport, Komotini Greece. Analysis of the 2008 Olympic Greco-Roman Wrestling Competition. May, 2009

Promotion, organisation des compétitions

Exemples de recherche dans l'efficacité des changements de règles via la notation des analyses :

H. Tünnemann. Analyse des performances de développement dans la lutte durant le cycle olympique de 1992 à 1996 et les conclusions pour de plus les perspectives du développement. 1996.

H. Tünnemann. Analyse des jeux Olympiques de Sydney et de l'ACNO cycle 1997/2000. FILA. 2000. (plus de 50 analyses des WC et OG en lutte depuis 1991)

Curby, D.G. XVIIe Congrès International de l'éducation physique et du sport, la Grèce Komotiní. Analyse de la compétition de lutte de la gréco-romaine olympique 2008. Mai 2009

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The use of scoring analysis can be used by FILA to assist in making informed decisions. Dr. Tünnemann is the giant in this area and we always look forward to his fine reports.

History Histoire
Philostratos "On Gymnastics"

"…Let us turn to the wrestlers. The proper wrestler should be rather taller than one who is precisely proportioned, but formed like those who are precisely proportioned with a neck which is neither long nor set down into the shoulder. The latter is, to be sure, suitable, but it looks more deformed than athletic, just as among the statues of Herakles, the more pleasing and god-like are those which are noble and without short necks. The neck should , then, be upright like that of a horse which is beautiful and knows it, and the throat should come down to the collarbone on either side."

«… Venons-en aux lutteurs. Le lutteur approprié devrait être plutôt plus grand que celui qui est harmonieusement proportionné, mais formé comme ceux qui sont harmonieusement proportionnés avec un cou ni trop long ni trop enfoncé dans les épaules. Ce dernier est convenable, mais il semble plus déformé qu'athlétique, juste parmi les statues d'Héraclès, les plus agréables et les plus divins sont nobles et sans cou court. Le cou devrait être dressé comme celui d'un cheval qui est beau et le sait, et la gorge devrait descendre à la clavicule de chaque côté.»

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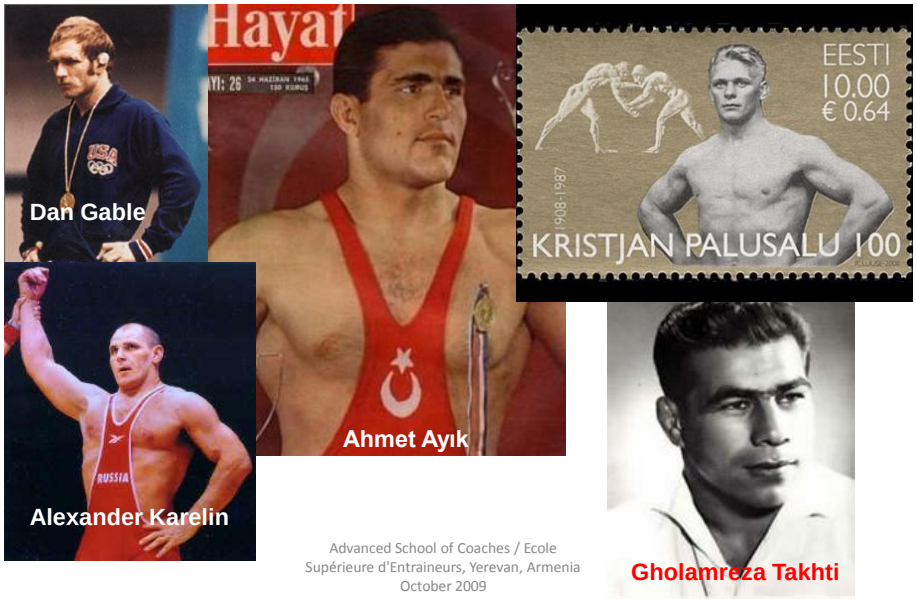
We have a very rich history! Philostratos wrote his training manual ca. AD 230. Although it was written later than the time of the peak of Greek athletics, it still contains much information regarding the training practices employed earlier. In his work, he describes the physical profile needed in the most popular sports. Let us continue to study and share it!

Document the Biographies of our Heroes
Détailler les biographies de nos héros



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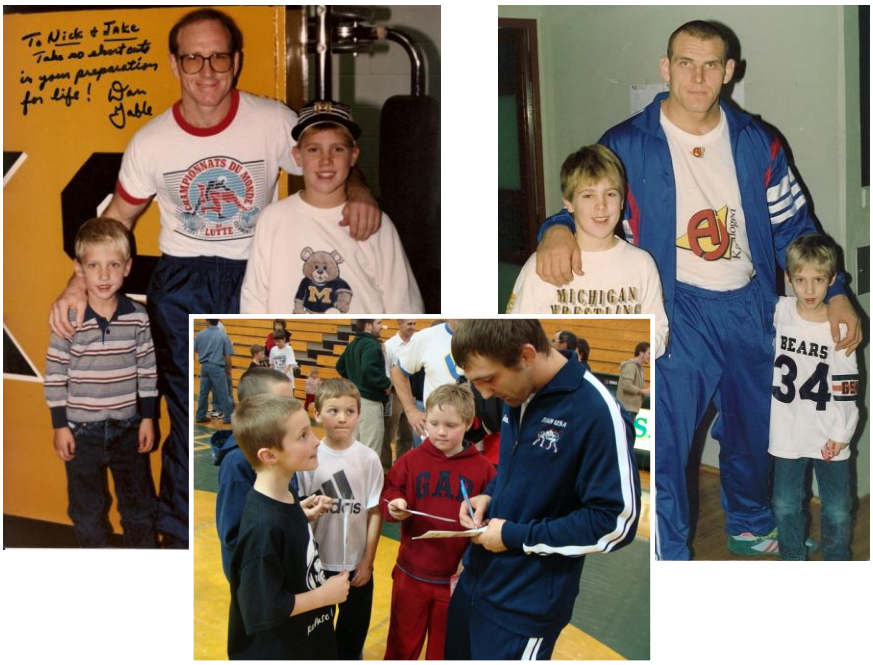
We need to encourage the writing of biographies, and production of movies of our greats.

Provide Inspirational Role Models for Our Young Sportmen
Proposer des modèles représentatifs pour nos jeunes sportifs



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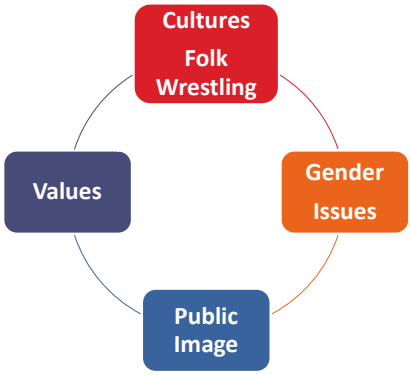
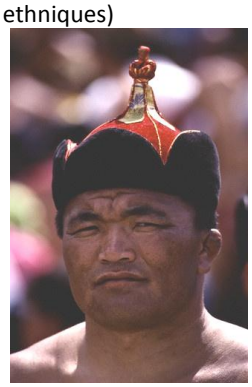
This will help to keep our sport in the public mind.

Sociology
Sociologie



Tomikowa, R. (2006). Mongolian Wrestling (Bukh) and Ethnicity. ***Int J Sport Health Science, 4, 103-109.***
(MONGOLE lutte (Bukh) et problèmes ethniques)



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Another discipline that we need to continue to study in relation to wrestling is sociology. I include the need to study the place of folk wrestling in our cultures.

We must document the rich history of folkstyle wrestling!
Nous devons documenter la riche histoire des luttes folkloriques!

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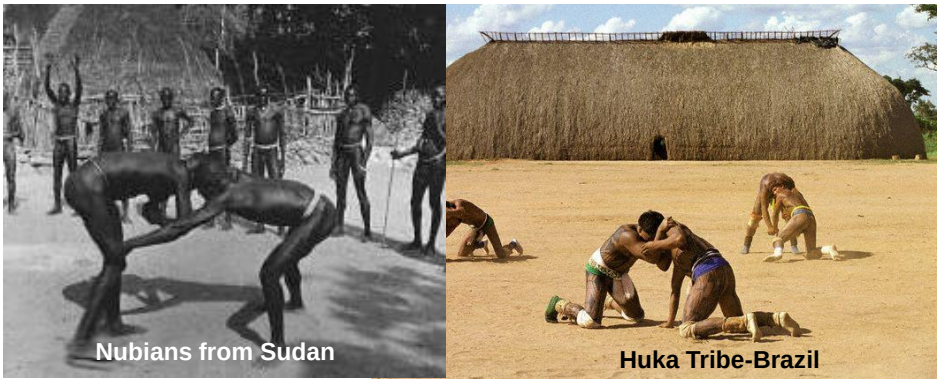
There are many styles of wrestling which have been developed throughout history around the world, and are an important part of the folklore or culture of the region. Each of the continents that have indigenous populations provide examples of these "folkstyles" of wrestling.

We must produce video documentaries before it is too late!
Nous devons produire les documentaires visuels avant qu'il soit trop tard !



We can trace wrestling from the interior of Africa through the Nubians (left) who were mentioned in references from the Ancient Egyptians. Yawalapiti Indians (right) practice Huka Huka wrestling in the center of their village in the Alto Xingu area, in the lower Amazon 2002. A communal hut, which houses the head of a family, his children's families and grandchildren, can be seen in the background. Huka Huka freestyle wrestling is the main sport practiced by Xinguano tribes. The Yawalipiti are one of 17 tribes living inside the Xingu Indigenous Park, a reserve created in 1961 roughly the size of Belgium, to protect the Indians.

Շնորհակալություն
Merci!
Thank you!
Please, now for your comments or questions.
Vous pouvez poser vos commentaires ou questions, maintenant s'il vous plaît.

(Many thanks to Dr. Michel Calmet for assisting in the French translation)

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In Memoriam

This work, as well as all of my remaining wrestling related work done in the remainder of my life, is dedicated to the memory of my son, who passed away suddenly, while in the prime of life. Jake was a member of the U.S. National Greco-Roman Team, but most importantly, was a kind and decent young man and the finest son for which a father could hope to have.