

THE 11TH
INTERNATIONAL TABLE TENNIS FEDERATION
SPORTS SCIENCE CONGRESS

BOOK
of
PROGRAMME and ABSTRACTS

25-27 April, 2009

Yokohama Sports Medical Center, Yokohama, Japan

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Preface

Yutaka Tsuji

Chair of 11th ITTF Sports Science Congress

Professor emeritus of Osaka University

It is a great pleasure and honor for the JTTA-SMSC (JTTA Sports and Medical Science Committee) to host SSC11 (the 11th ITTF Sports Science Congress). It is the third time that SSC takes place in Japan. As described in the web-site of the congress, SSC began under the leadership of the late Mr. Ichiro Ogimura and with the passion of late Prof. Nobuo Yuza. 20 years have passed since the first one. Some of the participants in SSC11 have been involved with SSC from the first one. I have an impression that from SSC1 to SSC7, the Japanese group headed by Prof. Yuza worked hard for every SSC, not only in Japan but also in other countries. From SSC8, people of the WTTC venue have been taking initiatives and conducting SSC in their power. At last, the 10th anniversary SSC, SSC10, was held 2 years ago in Zagreb. SSC10 was very successful thanks to Prof. Miran Kondric and his co-workers. SSC11 is the first step to the next 10th anniversary.

I think that sports science is the science dealing with interaction between organic bodies and inorganic bodies. I mean human bodies by organic bodies and equipments and facilities by inorganic bodies. Many kinds of scientific fields are related from both organic and inorganic sides; medical science, kinesiology, nutrition psychology etc. are on the organic side. Dynamics, material science, chemistry, computer technology etc. are on the inorganic side. In general, real scientific communication is not easy between the organic side and inorganic side. However, if you are proud of being a specialist of sports science, you should have interest in the opposite side. SSC is the place where people with many different backgrounds on both sides meet and develop mutual understanding.

I would like to express sincere appreciation for people, organizations and companies supporting SSC11. Dr. Kahn and members of the ITTF Sports Science Committee have been always encouraging me and giving me good advice during the process of planning. Members of JTTA Sports and Medical Committee share the work for SSC11. Particularly, Prof. Kasai and members of the National Organizing Committee have been engaged in the preparatory work of every detail. It should be pointed out that financial support by Ezaki Glico Co. LTD., San-Ei Corp., Tamasu Co. LTD., Yasaka Co. LTD, Yamato Takkyu Co. LTD. and Shin Nihon Kigyo Co. LTD. is of great help. The success of SSC11 has been possible only thanks to these cooperation.

PROGRAMME

1. Schedule (25th April – 27th April, 2009)

Saturday, 25th	10:30 – 11:00	Opening Ceremony
	11:00 – 12:00	Keynote Lecture
	12:00 – 13:00	Lunch
	13:00 – 14:30	Oral Session (A)
		Coffee Break
	15:00 – 16:30	Oral Session (B)
		Coffee Break
17:00 – 18:30	Poster Session (A)	
Sunday, 26th	10:30 – 12:00	Oral Session (C)
	12:00 – 13:00	Lunch
	13:00 – 14:30	Oral Session (D)
		Coffee Break
	15:00 – 16:30	Poster Session (B)
	18:00 –	Banquet
Monday, 27th	10:30 – 12:00	Poster Session (C)
	12:00 – 13:00	Lunch
	13:00 – 15:00	Get-together Table Tennis Tournament

2. Venue

Yokohama Sports Medical Center, Yokohama, Japan

Address: 3302-5, Kozukue-cho, Kohoku-ku, Yokohama-shi, Kanagawa, Japan

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3. Time Table

Saturday 25 April, 2009

10:30 – 11:00: Opening Ceremony

Conference Room [A]

11:00 – 12:00: Keynote Lecture

Conference Room [A]

Chairman: Prof. Jun-ichi Kasai(JPN), Prof. Suguru Araki (JPN)

Effective Nutrition Support for Table Tennis Players

Dr. Michiyo Kimura (JPN)

12:00 – 13:00: Lunch

13:00 – 14:30: Oral Session A*

Chairman: Prof. Shuichi Hiruta (JPN)

Conference Room [A]

*Presentation (15 minutes) and discussion (5 minutes) for each oral address.

13:00 - 13:20: O-25-01-01-Ro

**Proposal for Rationalizing the Initiation and Training Activities for
Beginners in Table Tennis by Means of the Instructional Project**

Nicolae Ochiana, Gabriela Ochiana (ROU)

13:20 - 13:40: O-25-02-02-Jp

Research on Table Tennis Player's Cardio-respiratory Endurance

Jun-ichi Kasai, Ohta Akira, Jung Tae Eung, Takshi Mori (JPN)

13:40 - 14:00: O-25-03-03-Ch

**Monitoring and Regulation on Physical Function of Key Players from
Chinese Table Tennis Team in Preparation for Beijing Olympic Games in
2008**

Chunying You, Biao Huang, Xuedong Shang, Xiaopeng Zhang, Yanrong Li,
Wenzhong Zhao, Dandan Xiao, Yongsheng Liang, Hongfan Shi, Qing Wang, Sufen
Yuan, Yunqiu Gao (CHN)

14:00 - 14:20: O-25-04-04-Ir

**The Study of Exercise Aerobically in Pulmonary Function Children
Ahwaz City**

Mohsen Ghanbarzadeh, Abdolhamid Habibi, Nadereh Kalantar (IRI)

Coffee Break

15:00 – 16:30: Oral Session B*

Chairman: Dr. Zhang Xiaopeng (CHN)

Conference Room [A]

*Presentation (15 minutes) and discussion (5 minutes) for each oral address.

15:00 - 15:20: O-25-05-05-Tw

**A Study on the Compilation of a Behavioral Scale or Timeout Decision of
Taiwan's Table Tennis Players**

Ming-Yueh Wang, Chih-En Chen, Shish-Chang Lee, Chi-Yueh Hsu (TPE)

15:20 - 15:40: O-25-06-06-Ph

Perceived Motivational Climate of Female Table Tennis Athletes

Oscar Yoshihiro S.Santelices, Ma. Vanessa G. Vinarao (PHI)

15:40 - 16:00: O-25-07-07-Cw

**Sport Students' Motivation for Participating in Table Tennis at the
Faculty of Kinesiology in Zagreb**

Gordana Furjan-Mandić, Miran Kondrič, Matej Tušak, Nikola Rausavljević, Lija
Kondrič (CRO)

16:00 - 16:20: O-25-08-08-Tw

**Investigation of Underlying Psychological Factors in Elite Table Tennis
Players**

I-Ting Chen, Chiao-Ling Hung, Ling-Chun Chen, Tsung-Min Hung (TPE)

Coffee break

17:00 – 18:30: Poster Session (A)

Conference Room [B]

P-25-01-01-Ca: Nutrition for Table Tennis Competitors

Chandra Madhosingh (CAN)

- P-25-02-02-Ch: The Effect of Home Advantage in China Table Tennis Super League**
Liang Li, Qing Tao (CHN)
- P-25-03-03-Ch: The Analysis and Research on Backhand Loop Drive of Zhang Yining, the Table Tennis World Champion**
Dazhong Wang, Guilan Shi, Yujing Zhong (CHN)
- P-25-04-04-Ch: Research on the Backhand Drive with Reversed Side Technique and Tactics**
Yanyan Shen, Lei Wang, Yingqiu Zhang (CHN)
- P-25-05-05-Ch: Analysis on Team Array of the Chinese Table Tennis Club Super League**
Yongqiang Wang, Xin Zhao (CHN)
- P-25-06-06-Ch: The Scientific Research and Service of Improving the Athletes' Competitive Mental Abilities of Chinese Women Table Tennis Team**
Zhi Wang, Qun Ma (CHN)
- P-25-07-07-Ch: Kinematics Character of Racket when the Table Tennis Players Using Attack and Loop Drive Technique of Positive Hand**
Gao Yuan, Dandan Xiao (CHN)
- P-25-08-08-Ch: Biomechanics Research of Key Techniques of the Elite Athletes of the Chinese Male National Table Tennis Team Preparing for the 2008 Olympic Games**
Qing Wang, Dandan Xiao, Jingping Wu, Hui Liu, Piren Su, Xiaodong Zhang (CHN)
- P-25-09-09-Ch: The Preliminary Research on the Kinematics Character of the Table Tennis Player's Footwork**
Xiaodong Zhang, Dandan Xiao (CHN)
- P-25-10-10-Ch: Monitoring and Control of the Competitive State of the Elite athletes of the Chinese National Table Tennis Team Preparing for the 2008 Olympic Games**
Xiaopeng Zhang, Qing Wang, Xia Zhao, Dandan Xiao, Fei Wu (CHN)
- P-25-11-11-Ch: Research on the Development Countermeasures of Chinese Table Tennis Association Membership**
Yingqiu Zhang, Yixi Sun (CHN)
- P-25-12-12-Ch: Research on the Current Status of Chinese Table Tennis Association Membership**
Yixi Sun, Yingqiu Zhang (CHN)

- P-25-13-13-Ch: Analysis on Technique and Tactics of Lin Ma and Hao Wang in the Men's Single Table Tennis Final in the 29th Olympic Games**
Zhe Hao, Zhensheng Tian, Yujiao Hao, Jili Song (CHN)
- P-25-14-14-Ch: Analysis of the Tactic and Technique of China Table Tennis player Ma-Long**
Zhu Hong, Peng Bo (CHN)
- P-25-15-15-Cz: A Comparison of Exercise Intensity on Different Player Levels in Table Tennis**
Aleš Suchomel (CZE)
- P-25-16-16-Eg: Analytical study for Some Offensive Skills for Advanced Level Junior Players in ITTF Pro-Tour Egypt 2008**
Yasser Kamal Ghoniem, Ahmed Soubhy Salem (EGY)
- P-25-17-17-In: Construction of Norms for Skill Test Table Tennis Players**
Pushpendra Purashwani, A. K. Datta, Manoj Purashwani (IND)
- P-25-18-18-Jm: Coaching: Table Tennis in Reggae Land**
Samuel Lamount (JMC)
- P-25-19-19-Ni: The Playing Posture, Activities and Health of the Table Tennis Player**
Omitiran Folorunso, Amao Mutiu, Owoeye Ademola (NGR)
- P-25-20-20-Ph: Effectiveness of Shadow Practice in Learning the Standard Table Tennis Backhand Drive**
Mark Andrew D. Flores, Dave T. Bercades, Fernando P. Florendo (PHI)
- P-25-21-21-Ph: Historical, Traditional and Cultural Significance: The Untold Story of "Liha"/Sandpaper Rackets of Table Tennis in the Philippines**
Oscar Yoshihiro Santelices, Peter S. Cua (PHI)

Sunday 26 April, 2009

10:30 – 12:00: Oral Session C*

Conference Room [A]

Chairman: Prof. Tsung-Min Hung (CHN)

*Presentation (15 minutes) and discussion (5 minutes) for each oral address.

10:30 - 10:50: O-26-01-09-Me

Software Used as Tactical Tool and of Training for Table Tennis

Arturo Méndez Patiño, Juan J. D. Delgado R., Marcos A. Martínez Peiró (MEX)

10:50 - 11:10: O-26-02-10-Ch

The Method of the Quick Video Feedback and Diagnosis of Technique and Tactics in Table Tennis Match

Dandan Xiao , Piren Su, Xiaopeng Zhang (CHN)

11:10 - 11:30: O-26-03-11-Gr

Comparison of Rally Time in XXIX Beijing (2008) and XXVII Athens (2004) Olympic Table Tennis Tournaments

Michail Katsikadelis, Theofilos Pilianidis, Alexandra Misihroni (GRE)

11:30 - 11:50: O-26-04-12-It

Footwork in Relationship with Strokes and Efficacy during the 29th Olympic Games Table Tennis Final

Malagoli Lanzoni Ivan, Lobietti Roberto, Merni Franco (ITA)

12:00 – 13:00: Lunch

13:00 – 14:30: Oral Session D*:

Conference Room [A]

Chairman: Prof. Miran Kondric (SLO)

*Presentation (15 minutes) and discussion (5 minutes) for each oral address.

13:00 - 13:20: O-26-05-13-Jp

The Effects of Racket Mass on the Kinematics of the Table Tennis Topspin Forehand

Yoichi Iino, Takeji Kojima (JPN)

13:20 - 13:40: O-26-06-14-Sp

Grip Strength in Young Top-level Table Tennis Players

Luís Carrasco, Francisco Pradas, Pablo Floría, Aldo Martínez, Rafael Herrero, José Antonio González (SPN)

13:40 - 14:00: O-26-07-15-Ch

Puzzlement that the Edge Ball Dispute Brings to Table Tennis Match and Its Solution

Dazhong Wang, Peng Chen, Weiqiang Huang (CHN)

14:00 - 14:20: O-26-08-16-Ir

Some Strategies for the Development Paralympic Table Tennis a Study of Short Services Rules in Sitting Classes 1 & 2

Moradi Dasht Shamin, Limoochi Sima (IRI)

Coffee break

15:00 - 16:30: Poster Session (B)

Conference Room [B]

P-26-01-22-Ir: Investigating the Level of T.T. Sport's Family Transference (Generation by Generation) in Iran National Champions

Fariba Ghavamzadeh Alazavi, Nasim Habibzade (IRI)

P-26-02-23-Ir: The Impact of a Period of Corrective & Therapeutic Exercises on Back Hyperlordosis Dysmenorrhea in Non-Athletic Women

Fazlollah Fatholahi Shoorabe, Behnam Ghasemi (IRI)

P-26-03-24-Ir: The Impact of a Period of Corrective & Therapeutic Exercises on Back Hyperlordosis & Menstruation Irregularity in Non-Athletic Women

Behnam Ghasemi, Fazlollah Fatholahi Shoorabe (IRI)

P-26-04-25-Ir: The Relationship between Self-Esteem and Locus of Control with Athletic Performance among Professionals Table Tennis Athletes

Mohammad Ali Memar (IRI)

P-26-05-26-Ir: Incidence of Dysmenorrhea between Different Types of Behavior in University Female Student Athletes and Non-Athletes

Lamia MIR HEIDARI, Morteza JOURKESH, Mohammad A.Azarbayjani, Sergej M. OSTOJIC (IRI)

P-26-06-27-Ir: The Effect of Walking Program on Table Tennis Girls' Bones Mass Density

Habibzadeh.N., Daneshmandi.H. (IRI)

P-26-07-28-Ir: The Study and Influence Exercise Program on the Respiratory Function of Adolescents With kyphosis in Personal N.I.O.C

Abdolrahman Mehdipour, Simindokht Dezfouly, Mohsen Ghanbarzadeh (IRI)

P-26-08-29-Jp: The Measuring Ball Spin at the Service in Table Tennis by Junior Player

Shinji Iizuka, Yukihiko Ushiyama, Kazuto Yoshida, Yang Fei, Zhang Huan Yu, Kei kamijima (JPN)

P-26-09-30-Jp : The Examination for Evaluating Skills during the Rally of the Table Tennis Game

Kei Kamijima, Yukihiko Ushiyama, Zhang Huan Yu, Yang Fei, Shinji Iizuka (JPN)

- P-26-10-31-Jp: The Analysis Method of the Ball Fall Point in Table Tennis Game**
Fei Yang, Yukihiro Ushiyama, Huan Yu Zhang, Shinji Iizuka, Kei Kamijima(JPN)
- P-26-11-32-Jp: Estimation of Energy Consumption Quantity from Heart Rate of Chinese Professional Table Tennis Player in Training**
Huan Yu Zhang, Yukihiro Ushiyama, Fei Yang, Shinji Iizuka, Kei Kamijima (JPN)
- P-26-12-33-Jp: The Effects of Glue containing Volatile Organic Compounds on Health**
Nariaki Matsuura, Yuhki Yokoyama, Yoshinosuke Hamada, Naomasa Kawaguchi, Yutaka Tsuji (JPN)
- P-26-13-34-Jp: A Historical Study on the Doubles Game in Table Tennis as Introduced by Dr Yasumasa Nagayama in the Early 1930s' Japan: His Contributions and the First Step towards the Internationalization of Table Tennis in Japan**
Sakakibara Hiroaki (JPN)
- P-26-14-35-Jp: High-Speed Video Image Analysis of Air Flow around a Table Tennis Ball**
Fujio Yamamoto, Jun-ichi Kasai, Hiromasa Hirakawa, Satoshi Soomeya, Koji Okamoto (JPN)
- P-26-15-36-Jp: Differences between EMGs of Forearm Skeletal Muscles for Flick Strokes against Backspin and No-spin Services in Table Tennis**
Kazuto YOSHIDA, Koji SUGIYAMA, Shin Murakoshi (JPN)
- P-26-16-37-Jp: The Study on Providing the Instant Tournament Chart System on the Internet**
Yukihiro Ushiyama, Tohru Tamaki, Hisato Igarashi, Osamu Hashimoto (JPN)
- P-26-17-38-Ro: Study Concerning the Impact of Table Tennis Competitions on the Development of the Professional Table Tennis in the County of Bacau-Rominia**
Nicolae Ochiana (ROU)
- P-26-19-39-Se: The Table Tennis Shoulder**
Branko Sbutega, Gorica Sbutega Milošević (SRB)
- P-26-20-40-Sl: Physiological Demands and Testing in Table Tennis**
Miran Kondric, Gordana Furjan-Mandic, Lija Kondric (SLO), Alejandra Gabaglio(ARG)
- P-26-21-41-Sl: Where is it? A simple Guide to Table tennis Information**
Lija Kondrič, Miran Kondrič, Jože Štihec(SLO), Gordana Furjan–Mandić (CRO)

Monday 27 April, 2009

10:30 - 12:00: Poster Session (C)

Conference Room [B]

P-27-01-42-Sp: Somatotype and Body Composition of Young Top-level Table Tennis Players

Luís Carrasco, Francisco Pradas, Aldo Martínez (ESP)

P-27-02-43-Sp: Muscular Power of Leg Extensor Muscles in Young Top-level Table Tennis

Francisco Pradas, Luís Carrasco, Pablo Floría (ESP)

P-27-03-44-Sp: Design and Development of an Observational Tool for Evaluating Table Tennis Singles Matches

Francisco Pradas, Pablo Floría, Luís Carrasco, Alfonso Beamonte, José Antonio González (ESP)

P-27-04-45-Tw : Energy expenditure and cardiorespiratory responses during training and simulated table tennis match

Shu- Chuan Shieh, Ju-Ping Chou, Ying-Hao Kao (TPE)

P-27-05-46-Tw: How to Harness the Characteristics of the 11 point Scoring System for Winning a Table Tennis

Techeng Wu, Piren Su (TPE)

P-27-06-47-Tw: How to Coach World-Class Athletes of Table Tennis

Techeng Wu, Piren Su (TPE)

P-27-07-48-Tw: A Study on Table Tennis Players' Psychological Skills, sport Injury, and Tournament Satisfaction in 49th World Championship

Chang-Yong Chu, Tsung-Min Hung (TPE)

P-27-08-49-Tw: A Study In Taiwan College Table Tennis Players' Competition Confidence and Its Inference

Chih-En Chen, Ming-Yueh Wang (TPE)

P-27-09-50-Tw: The Table Tennis Player's Training Satisfaction to the Influence of Team Support, Team Promise and Intention to Leave Take University Sports Games General Group Table Tennis Players as An Example

Ching-Tsai Wen, Jin-Chang Kong (TPE)

P-27-10-51-Tw: The Training Satisfaction of the University Table Tennis Players of General Group

Ching-Tsai Wen (TPE)

P-27-11-52-Tw: A Study of Athletes' Satisfaction for Participating 2008 National Collegiate Teacher's Table Tennis Tournament in Taiwan

Wei-Li Hung, Chia-Chang Chang, Yu-Numg Lee, Chen-Yu Chang (TPE)

P-27-12-53-Tw: A Study on the Impeding Factors of Disability Participate in Table Tennis in Taiwan

Chen-Hua Huang, Tsun-I Hsiao, Ming-Chen Kou, Hsuan-Jung Hsieh(TPE)

P-27-13-54-Tw: Survey Analysis for the Current Utilization Status of Wheelchair Table Tennis Athletic Equipments

Chen-Hua Huang, Ming-Chen Gou, Tsun-I Hsiao, Hsuan-Jun Hsieh (TPE)

P-27-14-55-Tw: The Behavior of Leisure Participation of College Table Tennis Athletes

Chung-Ju Chang, Ming-Yueh Wang, Shu-Hua Hung (TPE)

P-27-15-56-Tw: Satisfaction of Spectator Attendance at the National Table Tennis Championship in Taiwan

Mei-Jen Hunag(TPE)

P-27-16-57-Tw: The Study of College Students' Exercise Participative Motivation and Exercise Involvement in Table Tennis

Shu-Ching Wu, Ming-Hua Hsu (TPE)

P-27-17-58-Tw: A Study on the Technical Analysis and Attack-Defense Performance of Men's Top Four Single Players in 2008 Olympic Games

Ming-Hua Hsu (TPE)

P-27-18-59-Ug: Social Aspects to Promote International Friendship and Cooperation

Matsyetsye Emmanuel (UGA)

P-27-19-60-Uk: Peculiarities of Training Table Tennis Sportswomen

Y.Posevin, Y.Pokholenchuk (UKR)

P-27-20-61-Ve: Biomechanical Characteristics of the Active Phase of the Hit of the Forehand Topspin, Execute by Athletes Participants in World Junior Championship, Madrid, Spain 2008

Marco Gomez, Mihai Zissu (VEN)

12:00 – 13:00: Lunch

13:00 – 15:00: Friendship Table Tennis Tournament

ABSTRACTS

Keynote Lecture

Effective Nutrition Support for Table Tennis Players

Dr. Michiyo Kimura (JPN)

When I first attended the World Table Tennis Championship in 2004 as nutrition support staff, many trainers and players from Japan and other countries found it curious that a dietitian joined the support team. Seemingly, not too many people in the field of table tennis recognize the potential impact of nutrition on sporting performance.

The exercise intensity of table tennis is lower than that required for other sports. However, table tennis players need to have higher physical fitness level since they are often required to complete prolonged training sessions and play in numerous matches in a championship tournament throughout the day.

Naturally, top-class players dedicate themselves to physical training to prepare for matches; however, for their best performances, the pre-match preparation should also include mental, emotional, and nutritional strategies. Nutrition strategies to support players by increasing physical fitness and maintaining an adequate energy supply during the matches can be a key factor to win the games.

Since 1999, the Japan Table Tennis Association has recruited dietitians as members of the sports and medical science committee to provide nutrition education programs for players of various age groups.

Our nutrition education covers the following topics: proper ways to balance nutrient intakes in Japanese dietary patterns, recommended food intake levels, tips on snacking (including the eating of unhealthy junk foods), how to increase muscle mass and strength, dietary approaches to improve endurance and avoid injury, recommendations for the use of dietary supplements, weight control strategies, pre-match conditioning, anti-jet lag measures, adequate hydration, notes on eating in foreign countries, and others.

In this lecture, we will share effective nutrition education strategies that improve the performance levels of table tennis players, aiming to raise awareness of those who are working in the field of sports and nutrition.

**Keywords: Sports Nutrition, Body Composition, Glycogen loading,
Eating for competition, Sports Supplements, Nutritional support**

ORAL PRESENTATIONS

O-25-01-01-Ro

Proposal for Rationalizing the Initiation and Training Activities for Beginners in Table Tennis by Means of the Instructional Project

Nicolae Ochiana, Gabriela Ochiana (ROU)

The rationalizing has as a purpose to improve the didactic technology, to develop the training strategies, to save time, as well as material and financial resources, to simplify the training process in order to achieve the quality of the training process efficiency. The precision instrument for rationalizing is the scientific project or, to be more specific, in our case the instructional project. Rationalizing supposes a thinking process, pondering upon what we intend to do, and then aiming at the actual drawing up of the training plan. Drawing up the instructional project supposes preliminary operations for assessing the whole activity of the previous season and especially the competitive and training pattern. Each stage is marked by a set of pragmatic questions. The more correct is the answer to the 5 questions: which are the objectives of the athletes' training, which are the resources of the training process, which is the instructional strategy, how is it put into practice and which is the assessment method, the easier it is to solve the 15 didactic operations and thus the results will be better. The instructional project drawn up aims at being accessible, easy and flexible, and to insure the achievement of the suggested objectives eliminating the risk at different strategic moments.

Key words: Rationalizing, Instructional project, initiation, Table tennis

O-25-02-02-Jp

Research on Table Tennis Player's Cardio-respiratory Endurance

Jun-ichi Kasai, Ohta Akira, Jung Tae Eung, Takshi Mori (JPN)

The cardio-respiratory endurance of the high level is needed so that the table tennis player may play for 30 minutes or more. The evaluation of player's cardio-respiratory endurance is possible from the measurement of the oxygen uptake. The players are evaluated from the measurement result of the oxygen uptake during the maximum effort.

Subjects are six players who belong to the table tennis club of Waseda University. Six players have the ranking in the Kanto Student Championships, the all-Japan student Championships and World Junior Championships.

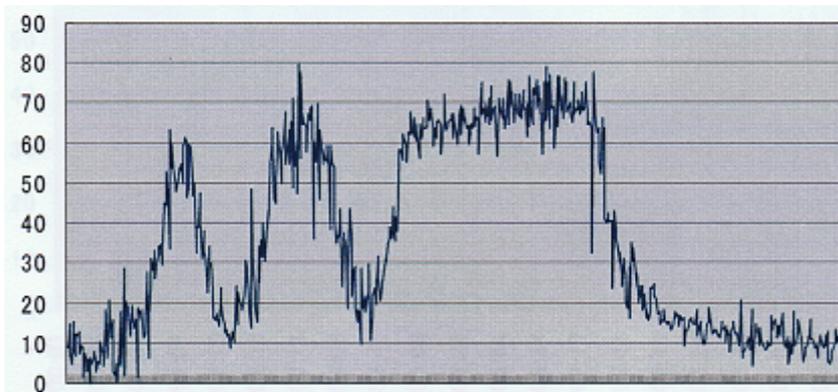
K4B2 which is a portable oxygen uptake measurement machine analyzes a player's expiration, and has the function to transmit the result to a personal computer. The players hit the ball by forehand long (L), a forehand drive (D), and the forehand smash (S) continuously for 1 minute, respectively. In addition, between each trial, it sat on the chair for 2 minutes rest (R).

Only in the forehand smash, the continuation hit the ball was performed to complete exhaustion. Rest was taken from the moment of being completely exhausted, and oxygen uptake was measured until the heart rate decreased to 100 beats per minute.

Under the conditions which carry out hitting the ball by forehand smash, a player's oxygen uptake (ml/min/kg) showed maximal. Under the conditions which carry out a hit ball by forehand smash, several players' oxygen uptake (ml/min/kg) showed maximal. When a hit ball was continuously carried out until it was completely exhausted by the forehand smash, the player's maximal oxygen uptake and a maximal heart rate showed maximal. Fig1 shows the oxygen uptake (ml/min/kg) of the player.

Moreover, the analysis from the viewpoint whether the energy efficiency of moving is high becomes important as for the evaluation of ability of player.

Oxygen uptake (ml/min/kg)



O-25-03-03-Ch

Monitoring and Regulation on Physical Function of Key Players from Chinese Table Tennis Team in Preparation for Beijing Olympic Games in 2008

Chunying You, Biao Huang, Xuedong Shang, Xiaopeng Zhang, Yanrong Li, Wenzhong Zhao, Dandan Xiao, Yongsheng Liang, Hongfan Shi, Qing Wang, Sufen Yuan, Yunqiu Gao (CHN)

The Chinese Table Tennis Team won all the gold medals both in Atlanta Olympic Games in 1996 and Sydney Olympic Games in 2000, but lost the gold medal of man's team title. To gain all the gold medals in Beijing Olympic Games was the goal of the team. Thus, monitoring and regulating the key players' physical function was important to preparation for Beijing Olympic Games in 2008 in order to promote recovery from fatigue and to keep favourable physical function for international matches before the Games.

In this study, hemoglobin, white blood cell, urea nitrogen, creative kinase, testosterone, cortisol and testosterone/cortisol in blood or serum were used as the monitoring parameters to evaluate the oxygen transport, nutritional status, muscle reaction, immune system, fatigue recovery, and to make individual plan for nutritional supplementation, to regulate physical function for the key players (20 males and 20 females) from the National Team of Table Tennis during the high intensity or closed training periods respectively for Doha Asia Games in 2006, The 49th World Table Tennis Match, and Beijing Olympic Games in 2008. The basic methods were carried out to improve low levels of hemoglobin and immune system, bad recovery, muscle fiber damage. We concluded firstly a long periodic and systematic monitoring and regulation is needed on intense training of the key players from the national team; secondly the biochemical, endocrinal, immune parameters should be combined together with the physical function change and characteristics before and after the training in order to analyze the player's adaptation to training; thirdly the monitoring and regulation should be carried out according to individual feature of player to avoid an unreal evaluation resulted from different individuality.

The data base of physical function of male and female key player of the National Team of Table tennis during the different periods of intense training and closed pre-match training was established in this study. The range and mean of parameters for physical function of the different individual player were measured and would be useful for later monitoring and regulation. A fast feedback of the physical function to the coaches and players would provide objective reference for their scientific training. The achievements from this study were consented and approved by the coaches, players and team doctors from the National Team of Table Tennis because of their effectivity.

The Chinese Table Tennis Team won all the gold medals in the male, female single and team items in Beijing Olympic Games in 2008.

Key Words: Table-tennis Player , Preparation for Beijing Olympic Games , Physical Function Evaluation , Biochemical Parameter

O-25-04-04-Ir

The Study of Exercise Aerobically in Pulmonary Function Children Ahwaz City

Mohsen Ghanbarzadeh, Abdolhamid Habibi, Nadereh Kalantar (IRI)

We studied mechanical ventilator constraints in 13 aerobically trained (Tr) and 11 untrained (UT) prepubescent children by plotting the exercise flow-volume (F-V) loops within the maximal F-V loop (MFVL) measured at rest. The MFVL allowed determining forced vital capacity (FVC) and maximal expiratory flows. Expiratory and inspiratory reserve volumes relative to FVC (ERV/FVC and IRV/FVC, respectively) were measured during a progressive exercise test until exhaustion. Breathing reserve (BR) and expiratory flow limitation (expFL), expressed in percentage of tidal volume (VT) and defined as the part of the tidal breath meeting the boundary of the MFVL, were measured. Higher FVC and maximal expiratory flows were found in Tr than UT ($P < 0.05$) at rest. Our results have shown that during exercise, excepting one subject, all Tr regulated their VT within FVC similarly during exercise, by breathing at low lung volume at the beginning of exercise followed breathing at high lung volume at strenuous exercise. In UT, ERV/FVC and IRV/FVC were regulated during exercise in many ways. The proportion of children who presented an expFL was nearly the same in both groups (~70% with a range of 14 to 65% of VT), and no significant difference was found during exercise concerning expFL. However, higher ventilation (E), ERV/FVC, and dispend associated with lower BR, IRV/FVC, and Sa_{O_2} were reported at peak power in Tr than UT ($P < 0.05$). These results suggest that, because of their higher E level, trained children presented higher ventilator constraints than untrained. These may influence negatively the Sa_{O_2} level and dispend during strenuous exercise.

Keywords: exercise aerobically; pulmonary function; healthy children

O-25-05-05-Tw

A Study on the Compilation of A Behavioral Scale or Timeout Decision of Taiwan's Table Tennis Players

Ming-Yueh Wang, Chih-En Chen, Shish-Chang Lee, Chi-Yueh Hsu (TPE)

Objective: This study aims to explore the time-out article in the table tennis tournament, and to develop a set of time-out decision-making behavior scale with reliability and validity. Method: First of all, through the method of literature review the decision making behavior questionnaire are established, and by the item analysis and exploratory factor analysis, the discrimination and structural factors of the initial scale can be checked. A total of 360 questionnaires were issued, and 352 valid ones were recovered. The recovery of the valid questionnaires is 97.78 percent. Results: Through statistical verification of structural equation modeling. the overall model fit well ($\chi^2 = 193.59$, $df = 86$, $\chi^2/df = 2.25$, $GFI = 0.96$, $SRMR = 0.042$, $RMSEA = 0.054$, $NNFI = 0.95$, $CFI = 0.96$, $PNFI = 0.76$, $PGFI = 0.67$, $CN = 222.45$).

Conclusion: The time-out decision-making behavior scale is a measuring tool in line with the empirical study, and the follow-up researchers can use the scale that is built in this study for the further related research.

Key words: table tennis; the laws of table tennis; the time-out decision-making

O-25-06-06-Ph

Perceived Motivational Climate of Female Table Tennis Athletes

Oscar Yoshihiro S. Santelices, Ma. Vanessa G. Vinarao (PHI)

The study determined the perceived motivational climate among the eight(8) Women's National Collegiate Athletic Association (WNCAA) table tennis school teams and its athletes according to skill level: beginner, intermediate, and advanced. Respondents included 37 athletes from the 2007-2008 season (3 beginners, 24 intermediate and 10 advanced athletes) who completed the 33-item Perceived Motivational Climate Sport Questionnaire– 2(Newton,Duda,&Yin,2000) on a 5-point Likert scale. They consist 90% of the total population from the eight (8)participating school teams. This was utilized to assess the imperceptions of the degree to which the irrespective team's motivational climate is characterized in terms of the two higher-order scales/ constructs, labeled, the perceived mastery climate and perceived performance climate (Newton,et.al.,2000; Reinboth&Duda,2006). Descriptive statistics and ANOVA were used to analyze the results. Responses indicated that among all the athletes of the WNCAA school teams and across all skill levels, the identified perception of the prevailing motivational climate was more of a mastery climate which indicated a very high means called escription of 4.52 than of a performance climate which obtained a2.645moderate mean score. The advanced level and intermediate level athletes' degree on their perception of the motivational climate registered a Very High Mastery Climate– Moderate Performance Climate; where as in the beginner's level, athletes registered a Very High Mastery Climate– Low Performance Climate. It also revealed that the rewereno significant differences that emerged between the perceived motivational climate of the athletes among all school teams and across all skill levels, thus, accepting the hypotheses. It clearly indicated that the school teams' motivational climate set by the coach and peers value den couragement, effort/improvement and that athletes under the ircarereported having a more positive experience with their sport and team structure. While improving and refining a player's technical and tactical skill are crucial for enhancing the quality of play, it is the improvement of the psychological aspect and eventually an established motivational climate that would eventually allow her to elevate her play to a much higher level.

Keywords: Perceived motivational climate , Master climate, Performance climate

O-25-07-07-Cw

Sport Students' Motivation for Participating in Table Tennis at the Faculty of Kinesiology in Zagreb

Gordana Furjan-Mandić, Miran Kondrič, Matej Tušak, Nikola Rausavljević, Lija Kondrič (CRO)

The purpose of this study was to find out the sports students' motives for participating in table tennis sport course at the Faculty of Kinesiology in Zagreb. The research aim was to provide findings for better planning of the programs. The subjects of this research were 138 students (114 males & 24 females), who took the course in table tennis at the University of Zagreb, Faculty of Kinesiology (KIF). The questionnaire used in this investigation to assess students' motivation consisted of 30 items. It was designed by Gill, Gross & Huddleston (1983) and is called "Participation Motivation Questionnaire". The PMQ was distributed to the subjects at the end of the semester. The data were analyzed by descriptive statistics, factor analysis and one way ANOVA. To analyse the motivational space the main component method was used and the number of factors was determined after Varimax rotation Method with Kaiser Normalization.

The top three motives for choosing table tennis were: "I Want to stay in a good shape;," "I love doing things I am good at;," and "I want to stay in good physical shape and healthy". It is interesting that females have the same top three motives as males and that the values are even higher than by males. For the sports students their intrinsic motivation is important and that's why at the bottom of the results scale there are assertions about extrinsic factors such as: "My parents and friends want me to compete", "I like to feel important" and "I want to be popular". The obtained results also indicate students' preference for a wider variety in table tennis, an increase in the challenge level in physical education classes and an increase in student motivation for participating in table tennis activities with higher demand of physical preparation.

O-25-08-08-Tw

Investigation of Underlying Psychological Factors in Elite Table Tennis Players

I-Ting Chen, Chiao-Ling Hung, Ling-Chun Chen, Tsung-Min Hung (TPE)

The importance of psychological factors in successful sports performance has been acknowledged both academically and anecdotally. Yet the amount of time that coaches and athletes actually spend on mental practice as compared to physical practice belies its significance. A key component in developing a foundation for psychological intervention programs is to understand the psychological status of athletes. Thus, the purpose of this investigation was to identify the psychological factors that influence the performance of elite table tennis players in Taiwan. Participants were 130 elite table tennis players (Mean age = 18.73, Mean sport years = 10.01, Males = 84, Females = 46), who were recruited during the National Squad Try Out. Two questionnaires designed by the authors were utilized for data collection including a) Demographic Information Sheet; and b) Table Tennis Player Psychological Skills Inventory. Descriptive statistics was computed for data analysis.

The results indicated that

- a) "Lacking Confidence", "Overstress", and "Unable to Cope with Opponent's Tactics", were the top three psychological factors which interfered with the player's performance during competition.
- b) "Dwelling on early mistakes", "Focusing too much on competition outcome", and "Focusing too much on body mechanics and movements", were the top three barriers that prevented players from focusing their attention during competition.
- c) "Worrying about opponent's ability", "Perceived low skill", and "Poor performance before competition" were the top three causes of "Lacking confidence". d) "Fear in unable to achieve specific goal", "Too strong desire to win", and "Expectation of significant others" were the top three causes of "Overstress". e) "Muscle tensed up", "Poor technique", and "Applying inappropriate tactic" were the top three causes of "Unable to cope with opponent's tactics".
- f) "Not feeling good physically", "No goals", and "This competition is not important to me" were the top three causes of "Lack of Desire to Win".
- g) "Non-optimal condition in training", "Non-optimal mental preparation and readiness", and "Don't know how to prepare" were the top three causes of "Poor pre-competitive mental preparation".
- h) "Understand coach's instruction but can't do it technically", "Unable to hear coach's instruction and mind blank during competition", and "Unable to understand coach's instruction" were the top three causes of "Problems in following coach's instruction".

Keywords: Table tennis, Psychological factors, Psychological skill training

O-26-01-09-Me

Software Used as Tactical Tool and of Training for Table Tennis

Arturo Méndez Patiño, Juan J. D. Delgado R., Marcos A. Martínez Peiró (MEX)

A common technique for evaluating the performance of a player is to count the errors and successes in a match, this can be automated with an auxiliary software installed in the laptop of the coach of a player, and it can be used as tactical tool and of training, for the account of each type of error and/or success, as drive vs underspin; topspin vs topspin; backhand vs topspin; or any another combination that the coach choose. In this way, the coach can get instantaneous statistics of errors and/or successes; and therefore to suggest the adequate changes to improve the play of the player or for to obtain better results in the scoreboard in a tournament match. With this software, the coach only needs to type the name of each type of error and/or success to count, in each button; and it starts counting. Optionally, if a network of electronics scoreboard is available, also it needs to select the number of scoreboard (same as the number of table) to receive. For each type of error/success there is: one button; one counter per each game and a total counter. Also, for each counter, there is a percentage indicator. In this way, the coach can see the quantity and percentage of errors and successes: per type; for each game and for the entire match, it making clear where are the weaknesses and fortresses of his player, in order to propose tactical changes in a match or specific exercises in training sessions with the goal of to improve the play of his player. The same buttons and counters are available for both players of a match; therefore also it can be used in order to find the weaknesses of the opponent player and to take advantage of these. This auxiliary software stores the sequence of accounts and (if is available) scoreboard sequence in a Microsoft Access type file; therefore the entire information can be reviewed and analyzed later. It can be used in tournaments or in training sessions together with, or without, the electronics scoreboards. It can be used periodically to see the evolution of the player. In the Table Tennis, the use of electronic scoreboards, controlled by the assistant umpire, and interconnected in a Local Area Network, it can be profitable. It has benefits as: a special computer connected to the network and to internet, it can automatically broadcast the scores from all the tables to the entire world through internet; anyone with a laptop connected to the local network and with special software, it can receive all the scores or only one in particular. This software is ready to receive the score from any electronic scoreboard (any table) in the network, it complementing the information of the counters with the score information. It only receives information from the scoreboards and do not send any data or command to them, in consequence it can not interferer the normal performance of the scoreboards.

Keywords: Tactical Tool and of Training, Auxiliary Software, Electronic Scoreboard.

O-26-02-10-Ch

The Method of the Quick Video Feedback and Diagnosis of Technique and Tactics in Table Tennis Match

Dandan Xiao , Piren Su, Xiaopeng Zhang (CHN)

The paper had a research on the method of quick video feedback and diagnosis of techniques and tactics in table tennis match. The research inherited the “three stages evaluation method” which were established by the former researchers , combined with the video analysis software of the technique and tactics which called Simi Scout in the practice of national table tennis team. Main conclusions were as follows:

- (1) With the analysis software of the technique and tactics video feedback of the Simi Scout Software, the spot quick feedback and diagnosis of the table tennis match can be attained, which had a good effect on the training of the Chinese national table tennis team.
- (2) There were five steps on the quick video feedback and diagnosis of the technique and tactics in table tennis match. The first , collecting a table tennis game into the record image in computer. The second, building up the technique and tactics analysis model of table tennis match. The third, marking and identifying each point. The fourth , having the statistics and analysis on the technique and tactics results. The fifth, carrying on comprehensive diagnosis.
- (3) Building up the technique and tactics model of the table tennis match is the key in the whole procedure of quick video feedback and technique and tactics diagnosis, which is based on the foundation of analysis the actual problem in the Chinese table tennis team training and the practice.
- (4) The technique and tactics models of the single, double, Wang Hao, Wang Liqin and Wang Hao were established, which were proved to be effective in the practice of the Chinese table tennis team training.

Keywords: table tennis, technique and tactics model, video, diagnosis, feedback

O-26-03-11-Gr

Comparison of Rally Time in XXIX Beijing (2008) and XXVII Athens (2004) Olympic Table Tennis Tournaments

Michail Katsikadelis, Theofilos Pilianidis, Alexandra Misihroni (GRE)

The XXIX Olympic games of Beijing (2008) are the second Olympic tournaments organized under the modification of Table Tennis regulations (series of two serves, 11th points set). The purpose of this study was to compare the rally time of the Beijing (2008) and Athens (2004) Olympic tournaments. Rally time differences for Men and Women in both Olympic tournaments by the phase of first round up to the quarter finals were also studied. The sample of the study was the total of single games that were carried out at the duration of Olympic Games in Beijing (n=119, male=60 & female=59). The results showed that rally time oscillated from 4:48'' to 7:31'' in total. Men's rally time in set fluctuated from 4:48'' to 5:33'' and Women's from 5:00'' to 7:31''. The two factors repeated measures analysis of variance (Olympic tournaments x rounds) was used in order to determine if significant variance existed between Olympic tournaments. The analysis of data revealed that Women's set rally time increased in Beijing (2008). Significant differences were found for Women in Olympic tournaments ($p < 0.05$) and also in first three rounds in Beijing Olympic Tournament ($p < 0.05$). These findings indicate that longer rally time in table tennis may take in consideration and should be more examined in next high level tournaments especially after prohibition of speed glue. Thus, knowledge of the above characteristics should help coaches to provide the appropriate methods for table tennis training.

Keywords: Rally, Olympic tournaments, Match analysis

O-26-04-12-It

Footwork in Relationship with Strokes and Efficacy during the 29th Olympic Games Table Tennis Final

Malagoli Lanzoni Ivan, Lobietti Roberto, Merni Franco (ITA)

Introduction and Aim of the study

Table tennis literature displays many studies about the development of the game technique or about the match and notational analysis (1)(2). Such works were principally based on the observation and survey of some of the most important aspects: the strokes, the direction of the movements and the efficacy (won, lose, mistakes, etc). This study aims to elaborate a complete type of analysis including the footwork technique (different kind of steps) (3). The most important thing, considering the best player technique, is the best execution of the movement and steps, for reaching in the shortest time the right position, and playing the best stroke (3).

Methods

1. Analysis of Man's table tennis singles final of the 29th Olympic Games in China (video recorded from television). The players were the n°1 (W. H.) and the n°2 (M. L.) in the world ranking.
2. Data have been recorded considering for every player: footwork technique (different kind of steps), strokes and efficacy.
3. Analysis of the contingency table about Footwork/Strokes and Footwork/Efficacy.

Results and discussion

The two players considered use more frequently the One step (83% and 73%) to return the services, W.H. uses very often the Turn step (47%) to hit the ball with Topspin or Conter topspin. M.L. prefers to use a footwork technique more balanced, using Chassè and Turn step in the same way (38% and 37%). W.H. uses more frequently the topspin (14%) and the Counter topspin (15%), M.L. prefers the Counter topspin (17%) followed by Topspin (13%). It's possible to notice that the players don't use one step (13%-11%) during the game phases and W.H. doesn't use one step in particular to hit the ball with a forehand Topspin (10%). The players use in particular the One step in a neutral way (without efficacy, 63% and 71%), W.H. uses the Turn step with good results (25%) but also in a negative way (21%). During the match M.L. is able to use with more positive results every different kind of steps. He shows negative performances using the Chassè (25%) and the Crossover (23%).

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**Keywords: Footwork technique, Strokes, Match analysis, Performance analysis,
29th Olympic Games**

O-26-05-13-Jp

The Effects of Racket Mass on the Kinematics of the Table Tennis Topspin Forehand

Yoichi Iino, Takeji Kojima (JPN)

Introduction: Table tennis racket mass varies widely depending on individual rackets and rubbers used. Intuitively, it seems that one can make the racket speed at ball impact higher when he or she uses a lighter racket. However, no study has revealed the effect of racket mass on the racket speed. The purpose of this study was to investigate the effects of racket mass on the kinematics of the table tennis topspin forehand.

Methods: Eight male advanced table tennis players participated in this study. The participants were Division I collegiate players. The mean \pm sd age, height and body mass were 20.4 ± 1.0 years, 1.71 ± 0.06 m and 62.3 ± 4.7 kg, respectively. The participants provided written informed consent. The participants with retro reflective markers on their bodies and the rackets hit topspin forehands against backspin balls using three rackets of different mass (157.5g, 171.5g, 185g) as hard as possible. The backspin balls were fed by a ball machine. The three rackets were a same shake hands grip racket blade (W. Schlager, Tamasu Butterfly) with a rubber (Sriver MAX thickness, Tamasu Butterfly) on the forehand side of the blade and with different rubbers on the backhand side. Five high-speed cameras

(HAS-220 and HAS-200, Ditect) were used to record the images of the strokes at 200 frames per second. Two successful strokes per each racket per each participant were analyzed. The 3D coordinates of the markers were determined with a direct linear transformation method. The coordinate data were smoothed with a fourth order zero phase lag Butterworth low pass filter. The kinematic variables were averaged across the two strokes of each racket for each participant.

Results: Table 1 shows the racket speed at ball impact and the maximum rate of increase in racket speed for strokes with different racket mass. There was no significant effect of the racket mass on the racket speed at impact and the maximum rate of increase in racket speed. Other kinematic variables will be presented in the conference. Table 1 Racket speed at ball impact and the maximum rate of increase in the speed. Light Intermediate Heavy Racket speed at ball impact (m/s) Mean 20.5 20.1 20.2 sd 1.5 1.1 1.7 Mean 258 267 260 sd 74 70 53 Maximum rate of increase in racket speed (m/s/s)

Discussion: It seems that for the measured range of racket mass, the racket speed at ball impact does not vary with racket mass in the topspin forehand with maximum effort. The result of the maximum rate of increase in racket speed implies that the players accelerated the rackets with different mass with a similar level of quickness. The reasons for the obtained results are not clear and must be investigated in future studies.

Keywords: Biomechanics, Racket mass, Racket speed

O-26-06-14-Sp

Grip Strength in Young Top-level Table Tennis Players

Luís Carrasco, Francisco Pradas, Pablo Floría, Aldo Martínez, Rafael Herrero, José Antonio González (SPN)

Introduction. Table tennis is an individual and asymmetric sport in which a great number of shots are performed at high speed and power involving the dominant body side. The aim of this study was to determine the presence of strength differences between dominant and non-dominant upper limbs in young top-level table tennis players. **Methods.** A total of 63 players (38 males and 25 females), aged between 10 and 13 years were included in the study. All subjects carried out a simple grip strength test using an isometric handgrip dynamometer (Takei 5101; Tokio, Japan). Once handgrip dynamometer was adjusted to the size of the player's hands, each subject performed three attempts alternating each hand trying to reach the peak force in the three first seconds. A rest period of two minutes was established between each attempt. Test were executed maintaining the standard position (from stand position, extended arm next to the body and maintaining a neutral grip with the palm oriented to the tight) and the best result for each hand was registered. A 2x2 ANOVA was performed in order to assess the interaction between sex group and laterality (dominant and non-dominant hand).

Results. Males showed higher levels of grip strength than females regarding both dominant and non-dominant hand (20.2 ± 3.5 and 18.0 ± 4.1 Kgf for dominant and non-dominant hand in female players, respectively vs. 27.8 ± 2.9 and 24.6 ± 3.8 Kgf for dominant and non-dominant hand in male players, respectively). Moreover, male and female players showed higher levels of grip strength when they used the dominant hand.

Conclusions. Although in this age interval sex differences in force production are not clear, higher levels of grip strength have been registered in male players. Force production is more evident when forearm and hand muscles from dominant upper limb are activated, regardless of sex factor. These differences could be the reflex of an excessive unilateral training or the lack of balanced resistance training practice. This makes necessary the design of complementary resistance training programs in order to avoid certain spinal injuries.

Keywords: Handgrip dinamometry, Isometric force, Laterality, Young players.

O-26-07-15-Ch

Puzzlement that the Edge Ball Dispute Brings to Table Tennis Match and Its Solution

Dazhong Wang, Peng Chen, Weiqiang Huang (CHN)

The table tennis match has adopted 11-point-system which increased the victorious contingency of both sides of match and made the contention of the competition fiercer too. In the match, with the increasing of the scope of striking the ball by athletes, the chance that the ball touches the edge of the playing surface at the both sides of the table is obviously enhanced. Edge ball or outside, a point difference may influence the result of win or defeat of the match. In the various table tennis matches of the most recent two years, the edge ball dispute appeared again and again and often broke the competition especially at the side of the table nearest to the assistant umpire. This kind of situation is perplexing the normal operation of the match. Even in the table tennis match of Beijing 2008 Olympic Games, suspension of the match to the dispute of edge ball judgments appeared many times too, the longest dispute broke competition for 4 minutes and 30 seconds. The factors of the dispute mainly include the following several respects:

1. The color of the ball of table tennis is white, and the color of the table side line is white too, the two are basically the same; however, the color on the edge of side of the table is light gray, which is very similar with the color of the ball. In view of contrast of the color difference, it is not being very clear whether the ball touching the edge of white side line and light gray side or touching the light gray side which has caused certain difficulties to accurate judgments.

2. The height of deputy umpire's seat is generally relatively low. Assistant umpire's sight after sitting down is to look at the table straight ahead. While assistant umpire deciding whether or not the ball in play touches the edge of the playing surface at the side of the table nearest to him, who can only see the coincidence to the side of ball and table from the top down; lack the suitable observation angle as to the placement of the ball.

3. Some athletes fight for the edge ball every time and totally ignore the other side's view; some athletes adhere to the personal opinion obstinately and put forward the objection repeatedly to the judgments that the referee makes; other a few athletes lack the sportsmanship and the consciousness of fair play, they refuse to take a just attitude to the edge ball that the other side shows while the dispute appears.

Solving the dispute of the edge ball, referees should pay more attention and improve the observing angle to make the accurate judgment; Coaches and athletes should be in line with spirit of respecting the fact and fair play, respect referees' final judgments.

Keywords: Edge ball, Table side, Umpire, Fair play

O-26-08-16-Ir

Some Strategies for the Development Paralympic Table Tennis a Study of Short Services Rules in Sitting Classes 1 & 2

Moradi Dasht Shamin, Limoochi Sima (IRI)

Sport appeals to people in both aspects of sport for all and sport for competition level. Championship can be considered as a strong motivation for people to participate in sport activities. Table Tennis has proved to be the pioneer sport in attracting people with a physical disability In this regard some rules have been changed in order to fairly help and give the players encouragement to continue this sport. Some services are neither too short to be called a let, nor long enough for the receiver to reach the ball due to the movement limitations of the trunk in sitting classes especially for class 1 and 2 players.

The aim of this paper is to study such services which are not included in the rules, and try to find way to resolve the problem and make suggestions for consideration of relevant rules.

The data was gathered through observation and review of sitting classes from 2006 Montreux World Championship, 2007 Malaysia Asian Paralympic Games, and 2008 Beijing Paralympic Games

After the analyses of the data and based on the medical facts of the sitting players in classes 1 and 2.it was concluded that they are not able to move their trunk in the sagittal plane. Therefore, they fail to receive the ball in the mentioned services. This kind of services are not fair to be considered a point for the servicer. Therefore, it is suggested that such services be considered a let, or a good service should be long enough for the receiver in classes 1 and 2 to reach the ball.

Keywords: championship, paralympic, classification, movement limitation, sagittal plane, service, receiver, rules, a let

POSTER PRESENTATIONS

P-25-01-01-Ca

Nutrition for Table Tennis Competitors

Chandra Madhosingh (CAN)

Good health, growth and maturation depend mainly in a proper diet. It can have a significant effect in the ability of Table Tennis athletes to train and perform well during competition. Maintaining proper dietary habits plays an important role in establishing a healthy life style and will drive the Table Tennis athletes to better performance and also enhancing recovery. Our athletes usually have several matches in one day and a competition may last for 2-7 days. During some multi-sport events, Table Tennis players can be active for 10 or more days. Specific problems like combining foods based on their glycemic index, commercial products, eating disorders, special diets, weight management and vegetarianism are well beyond the scope of this paper. Parents and coaches should consult a sport nutritionist when necessary. Here you will find simple and practical recommendations about diet and hydration for training and competition.

Keywords: Carbohydrates, Dehydration, Fats, Hyponatremia, Oxalates.

P-25-02-02-Ch

The Effect of Home Advantage in China Table Tennis Super League

Liang Li, Qing Tao (CHN)

By dividing different levels and using a comparative way, the study explored the law of home advantage in China table tennis super league (CTTSL). The object of the study was all clubs participating CTTSL from 2005 to 2007 season, including 32 men's teams respectively. After analysing the results of all participating teams by independent sample T test and one-way variance test, it was concluded that:

There was significant home advantage effect in men's teams in CTTSL and the effect became stronger with the increase of the teams' technical strength. Some interesting results in the field of home advantage effect in CTTSL were found in the study. In men's teams, the teams with the stronger strength used the home advantage effect better than others.

Keywords: table tennis super league home advantage

P-25-03-03-Ch

The Analysis and Research on Backhand Loop Drive of Zhang Yining, the Table Tennis World Champion

Dazhong Wang, Guilan Shi, Yujing Zhong (CHN)

This article makes statistics and an analysis of backhand loop drive used in the Olympic Games, the World Table Tennis Championships and the ITTF Pro-Tour Finals. The result shows that nowadays in order to adapt to the trend of women's techniques with the man-style characteristics, the Chinese women team's leader make a good command of not only women's comprehensive skills, but also certain men's skills in which backhand loop drive is included of course. Although Zhang Yining's techniques and tactics are super-first-class among the world women table tennis players, her backhand skills are weaker than her forehand ones, among which her backhand loop drive is much weaker. Training in Backhand loop drive should be strengthened to further raise Zhang Yining's whole level. Hope that references are provided for her training prepared for the year 2008 Olympic Games in Beijing by the statistics and analysis of Zhang Yining's backhand loop drive.

Keywords: Yining Zhang, Backhand loop drive

P-25-04-04-Ch

Research on the Backhand Drive with Reversed Side Technique and Tactics

Yanyan Shen, Lei Wang, Yingqiu Zhang (CHN)

The Backhand drive with reversed side was an advanced play style for penholder players. For research and improve this player style, we analysis many games of Wang Hao and Ma Lin, and we found:

1. At present, The Backhand drive with reversed side has two styles: the first, like Wang Hao, just only use backhand drive with reversed side; the second, like Ma Lin, not only use backhand drive with reversed side but also use backhand push.
2. The Techniques and tactics of backhand drive with reversed side is developing from the transition means to directly get a goal means, but be not mainly get a goal means. In the meantime is keep clapping necessary skill military tactics of quickly offended contestant means.
3. From the offensive aspect, backhand drive with reversed side technique increased to keep plank to offend contestant quickly of anti- hand aggression the ability be mutually holding a segment more active. Quick moving offend is the main means to get a goal. in the same time to build up the clout a rate and score rate of the backhand drive with reversed side technique, we also need to insist positive hand aggression as principle of strategic military tactics.
4. From the technique, the backhand drive with reversed side technique can well develop advantage to keep clapping to strike against a method quickly, to keep clapping to strike against a method quickly much more vivid changed, to strengthen the ability of clapping to strike against method contestant quickly of time, also raised to keep clapping to strike against a method quickly during the sampan.
5. As the progressing unremittingly of ping-pong technique and renew, we should have an overall technique, keep plank and offend contestant quickly vivid effectively will keep clapping the by-blow make use of a game, and steady with cruelty, quickly organic combine, strengthen and connect consciousness of delivering the ball and ex- three knothole advantages on one's own initiative, strengthen and mutually hold the countercharge of the segment in the meantime.

P-25-05-05-Ch

Analysis on Team Array of the Chinese Table Tennis Club Super League

Yongqiang Wang, Xin Zhao (CHN)

December 15, 2005 Olympic Committee was held in Linz, Austria and ITTF decided that in 2008 Olympic Games table tennis tournament canceled the men's doubles and women's doubles two projects instead men's and women's groups. This is the first time in Olympic when table tennis team event of the form is used. At the same time, the ITTF's Olympic Committee will make the doubles match included as a part of the team event. This game system avoid a repeat play, no two palyers will encounter each other twice in a team event competition. The author access to a large number of literature on the research of the array or the team event and interview some experts in the Beijing Sports University, this study provides a theoretical basis and first-hand information. By analysis to 20 Chinese table tennis Super League clubs in 2006 to 2007 come to the conclusion:

- 1) Arraying of the team event is restrict by style of palyer in the team .
- 2) According to the latest rules on team ervent , the doubles match is the turning point in the overall competition.
- 3) The capacity of the doubles can decide the level of tactics in the game.
- 4) Pairing for the doubles match should be composed of two different style of player.
- 5) Due to the specificity of chopping play, the use of that palyer should be more careful.
- 6) New game system to some extent to reduce the appreciation of the competition.

Keywords: table tennis, team match, array, doubles

P-25-06-06-Ch

The Scientific Research and Service of Improving the Athletes' Competitive Mental Abilities of Chinese Women Table Tennis Team

Zhi Wang, Qun Ma (CHN)

As the traditional advantage event in our country ,table tennis was expected to do really well in Beijing Olympic Games. At the same time , the competition rules of table tennis has been changed during BeijingOlympic Games , which increased the difficulty in recreating the glory for Chinese women table tennis team. In that case , The Olympic athletes were required with tough psychological quality as well as advanced technique and excellent physical fitness. We have taken in charge of the program of national women table tennis team's mental preparation for Olympic Games since 2006. The whole process can be divided into 3 phases: exploring and applying of psychological training modal , training basic psychological skills , and the final preparation just before the competition. According to their different personality , The athletes has been nurtured with five basic mental skills, including stabile confidence , concentration ,rational self judgment , thought controlling and emotional regulation; Analyzing the competitive mental skill and training artifice of home performing and enhance their athletic mental skills; helping athletes to build their psychological strategies pool as the psychological preparing for the competition. Our work provided a steady psychological basement for the athletes' well-being during the Olympic Games.

Keywords: mental skills, competitive mental abilities, psychological strategies pool for competition, mental preparation

P-25-07-07-Ch

Kinematics Character of Racket when the Table Tennis Players Using Attack and Loop Drive Technique of Positive Hand

Gao Yuan, Dandan Xiao (CHN)

10 ping-pong athletes' attack and loop drive techniques of the positive hand were tested , using the measurement methods of the QUALISYS kinematics measurements system and a camera (Panasonic M9500).Each technique was performed by two types of force , the middle strength and the full strength. The techniques of attacking were divided into four phases. Kinematics Character of racket was described , when the table tennis players using attack and loop drive technique of positive hand. The followings were concluded:

(1)At the ending moment of shaking racket backward , the racket speed of driving and attacking with full strength are higher than those with middle strength each. At the moment of batting the ball , the racket speed of attacking and driving with middle strength was lower than those with full strength , and the racket speed of attacking with middle strength was lower than it with full strength.

(2)The whole time of driving was longer than attacking.

(3)The whole distance of driving was further than attacking.

Keywords: Table tennis, Kinematics, Attack technique, Loop drive technique, Racket

P-25-08-08-Ch

Biomechanics Research of Key Techniques of the Elite Athletes of the Chinese Male National Table Tennis Team Preparing for the 2008 Olympic Games

Qing Wang, Dandan Xiao, Jingping Wu, Hui Liu, Piren Su, Xiaodong Zhang (CHN)

According to the needs of the tasks and sport training of the 2008 Olympic Games , and in the research and technical services for regular training programs of the national team , its preparation competitions and the closed training program for the 2008 Olympic Games , this project made some useful trial analysis over the key techniques of China's male national team members and their main competitors in the biomechanics field. Many sport biomechanics test methods such as high-speed video recording have been effectively introduced and sensitive biomechanics indexes designed for the action techniques in the table tennis event have been built preliminarily , some breakthroughs and creations have been made in the research methods and tools for scientific and technical researches and services , and a combination of qualitative and quantitative analysis has been made over the action techniques of the athletes. Taken together , the above contributions offered micro references for training athletes' action techniques and effectively supported the coach's work.

Keywords: table tennis, male team, action technique, biomechanics, high-speed, kinematics

P-25-09-09-Ch

The Preliminary Research on the Kinematics Character of the Table Tennis Player's Footwork

Xiaodong Zhang, Dandan Xiao (CHN)

1 Introduction

By studying and the manufacture on a table tennis footwork testing system, the authors were trying to get an experimental method to discover the kinematics character of the table tennis player's footwork ambulation quantitatively.

2 Methods

A set of table tennis footwork mat system, including the footwork mat experiment instrument and a set of footwork mat testing analytical software were carried out. The table tennis athlete's footwork of one player in match was tested by using the table tennis footwork mat test system.

3 Results and Conclusions

The main results and conclusions were as follows:

1. The table tennis footwork mat testing system could be used to test the footwork of players in table tennis match. The kinematics parameters of the footwork could be acquired, including the time parameter (the stand and empty time of double feet, and single foot, the number of stand and empty), the space parameter (the scope, range of the footwork ambulation), and the parameter of the speed and frequency of footwork ambulation, etc.

2. Using the newly table tennis footwork mat test system, a table tennis player's footwork was tested and analyzed. The kinetics characteristic of the table tennis player footwork ambulation in a match was generalized for:

- (1)The table tennis player made footwork ambulation on a high frequency of 1.59 ± 0.04 times/s, in the scope of 8.04 m^2 , which is near the left of the table. The average step was small, which was 8.02 ± 7.28 cm.
- (2)The player was moving about half of total time in table tennis. The table tennis player's footwork ambulation was mainly by single foot, fewer by double feet.
- (3)The total times of moving of the player were 1437. The total distance of moving was 115.54m;
- (4)The distance of the right foot moving was bigger than that of left foot in each step and each game.

Keywords: table tennis, footwork, kinematics

P-25-10-10-Ch

Monitoring and Control of the Competitive State of the Elite athletes of the Chinese National Table Tennis Team Preparing for the 2008 Olympic Games

Xiaopeng Zhang, Qing Wang, Xia Zhao, Dandan Xiao, Fei Wu (CHN)

Focusing on the key issue of techniques and tactics diagnosis and monitoring in the training programs and competitions designed for the preparation for the 2008 Olympic Games of the elite athletes of the national table tennis team, the members of this project conducted a productive research and offered effective technical services. In nearly 4 years of techniques and tactics diagnosis and monitoring work, the project members stayed with the athletes of the national table tennis team for long and offered technical services according to their needs. Some breakthroughs and creations in research methods and tools have been made, and strong scientific and technical support for the elite athletes to maintain sound competitive state in the 2008 Olympic Games and other world competitions and make excellent achievements has been offered. The main research results are as follows:

- (1) quick video diagnosis and feedback of techniques and tactics in table tennis competitions has been realized, and new forms of techniques and tactics research discussions have been established.;
- (2) deep and thorough analysis and researches over the techniques and tactics of China's main competing athletes and their main foreign competitors have been made;
- (3) systematic monitoring over the training quality of China's leading table tennis players have been conducted;
- (4) a video data base for table tennis techniques and tactics has been built;
- (5) technical files have been enriched and improved;
- (6) biomechanics test and analysis over the fundamental action techniques of the athletes haven been conducted.

Keywords: table tennis, competitive state, techniques and tactics, training monitoring, data base, biomechanics

P-25-11-11-Ch

Research on the Development Countermeasures of Chinese Table Tennis Association Membership

Yingqiu Zhang, Yixi Sun (CHN)

Table tennis can be effectively absorbed by people of all ages, is a national fitness campaign with wide adaptability. Chinese Table Tennis Association membership has a great impact on spreading of table tennis, research on the development countermeasure of membership has great significance in the development of China's table tennis and even the development of world's table tennis.

Through broad collecting and reading of information, investigation and interviews, the author found that the problems existed since the implementation of membership focus on five issues: the lack of an effective management system; propaganda is not enough; the lack of qualified personnel, fund and scientific research support; imperfect mechanism for services; the building of grassroots is weak.

There are recommends in the development of membership, efforts should be put in the following areas: structural reforming, speeding up the process of Chinese Table Tennis Association entity; the establishment of the Chinese Table Tennis Association Membership Federation, the formation of a standardized system; changes in membership management, changes in the development of mechanisms; enhancing the propaganda of membership, setting up brand; exploring market-oriented development of membership, making integration of social resources to solve the fund problem; promoting the standardization, organization and scientific development of membership to solve human resources, scientific research problems; relying on the management committee of Chinese Table Tennis Association Membership, to build a member service network; in accordance with the demands, forming a multi-level match system of diversity; innovating sports form to increase the interest and enjoyment of table tennis competition; putting emphasis on the grassroots building, paying attention to the development of member in community club and amateur club to raise the coverage rate of member.

P-25-12-12-Ch

Research on the Current Status of Chinese Table Tennis Association Membership

Yixi Sun, Yingqiu Zhang (CHN)

Table tennis is not only our country's important competitive sports for winning gold medals, but also people's favorite exercise mean in our country, it has a strong mass foundation in China, is a physical exercising way with strong vitality.

For Chinese Table Tennis Association, membership has a great impact on spreading of table tennis and making more people to use table tennis as body-building activitiy, research on the status of membership has great significance in the development of China's table tennis and even the development of world's table tennis. Through literature, expert interviews and questionnaires, after studies on the source, promotion, implementation strategies, matches and activities, the author comes to the following conclusions.

1 . Membership was officially put into effect in 2000, after 8 years, the Chinese Table Tennis Association membership develops from scratch to be an important strategy of table tennis promotion.

2 . Through a series of policies, regulations, matches and activities, Chinese Table Tennis Association effectively promoted membership development, member numbers increases significantly, member league booms quickly.

3 . Some of the competitions that members can take part in begain early, have great participants number, and have become regular games. In 2007 and 2008, Chinese Table Tennis Association launched member leagues that have played a good role of model and leading for the the developing of memberships.

4 . More than 80% of the surveyed people want to become member of Chinese Table Tennis Association, but only less than 8% of these people has been member of Chinese Table Tennis Association, it shows that there are problems in the propaganda and implementation of membership.

P-25-13-13-Ch

Analysis on Technique and Tactics of Lin Ma and Hao Wang in the Men's Single Table Tennis Final in the 29th Olympic Games

Zhe Hao, Zhensheng Tian, Yujiao Hao, Jili Song (CHN)

The competition for the most important gold medal of the men's single table tennis final in the 29th Olympic Games in Beijing, was between two players with pen-hold grip of China, Lin Ma and Hao Wang. During the competition, the two of them both took fully advantage of the characteristic of pen-hold grip, which made the game a very classic example. In order to prove up the characteristics of the tactics and technique of Lin Ma and Hao Wang and to supply some references for the players with pen-hold grip. With the methods of three-phase indexes, documentary review, video observation, and taking Lin Ma and Hao Wang as the research target, the characteristics of Lin Ma and Hao Wang's tactics and technique in the men's single table tennis final of the 29th Olympic Games in Beijing were systematically analysed and done some research. The analysis and statistical results were that Lin Ma's score rate was 64.7%, the applied rate 17.9% in phase of attack after service; the score rate was 56.3%, the applied rate 33.7% in phase of attack after receiving; the score rate was 45.7%, the applied rate 48.4% in phase of be locked in stalemate. Hao Wang's score rate was 52.2%, the applied rate 24.2% in phase of attack after service; the score rate was 50%, the applied rate 27.4% in phase of attack after receiving; the score rate was 43.5%, the applied rate 48.4% in phase of be locked in stalemate. The data indicate the score rates and applied rates of both the players are all excellent in phase of attack after receiving, which efficiently shows that the two players with pen-hold grip have very good ability in dealing with receiving and attack after receiving. During the competition, the two players all took fully advantage of pen-hold grip, they are fast attack in close-table, wrist is agility, and they are good at dealing with pick-hitting in short court. Lin Ma's consciousness of tactics was correct and clear, he weakened and restrained from Hao Wang's attack after receiving by some change of service, took the initiative of the competition. And Hao Wang's service failed to restrain the attack after receiving of Lin. Ma.

Keywords: Table tennis, Lin Ma, Hao Wang, Analysis on technique and tactics

P-25-14-14-Ch

Analysis of the Tactic and Technique of China Table Tennis player Ma-Long

Zhu Hong, Peng Bo (CHN)

By applying reviewing documents , analyzing game video and statistics , the tactic and technique of the world championship table tennis player Ma-Long? in three matches at the world cup 2008 and three matches at world ground tournament 2008 was analyzed , and found that Ma-Long's tactic and technique of service has been steadily improved and stable , and he has diversified the method of return-service and attack. While his technique of service , return-service and attack was overpowered by his opponent ,his performance was not as good as he was. Ma Lin is good at persistence and has some advantage in speed , however , he may need to improve on his aggressiveness. In current stage , how to improve the execution of Ma Lin's forehand attack should be the most important issue.

Keywords: table tennis, Ma-Long, tactic, technique analysis research

P-25-15-15-Cz

A Comparison of Exercise Intensity on Different Player Levels in Table Tennis

Aleš Suchomel (CZE)

The purpose of this study was to compare the exercise intensity during a table tennis singles match with special reference to the different player levels. Thirty-three healthy men between the ages 18 and 30 volunteered to participate in this study. The subjects were divided with regard to their player (skill) levels into three samples with 11 individuals: a) recreational level – beginners, b) regional level - players from Liberec regional competition; c) league level - players from the first Czech league. All players were subjected to a maximal treadmill test. The subjects characteristics (mean \pm standard deviation) of age, height, weight, aerobic capacity (VO_{2max}), resting heart rate (SF_{min}) and maximum heart rate (SF_{max}) were: a) the recreational players: 25.4 ± 2.5 years, 177.8 ± 7.2 cm, 81.6 ± 7.8 kg, 42.7 ± 4.2 ml/kg/min, 67 ± 5 bpm and 189 ± 5 bpm; b) the regional players: 23.6 ± 3.1 years, 185.4 ± 7.7 cm, 86.9 ± 9.3 kg, 48.6 ± 4.8 ml/kg/min, 62 ± 4 bpm and 191 ± 6 bpm; c) the league players 24.7 ± 4.6 years, 174.1 ± 6.8 cm, 71.6 ± 5.2 kg, 62.1 ± 5.1 ml/kg/min, 54 ± 4 bpm and 196 ± 5 bpm. The results showed significant differences in aerobic capacity and resting heart rate between the players on the recreational, regional and league level ($p < 0.05$). The best values were in the league players. The average values (\pm SD) of heart rate responses (the monitors Polar RS800) during three official competition matches were: a) the recreational players: 115 ± 11 bpm, b) the regional players: 141 ± 12 bpm, c) the league players: 156 ± 15 bpm. We found a significant positive relationship ($p < 0.01$) between player levels and heart rate responses. The table tennis skill level was a significant factor in the level of exercise intensity in the official matches.

Keywords: Exercise intensity, Table tennis, Heart rate

P-25-16-16-Eg

Analytical study for Some Offensive Skills for Advanced Level Junior Players in ITTF Pro-Tour Egypt 2008

Yasser Kamal Ghoniem, Ahmed Soubhy Salem (EGY)

The research aims for studying some of the offensive skills for table tennis advanced level juniors in the ITTF pro-tour championship that was held in Egypt 2008 using the descriptive survey method on a sample of (1760) strokes in (15) matches starting from the semi-quarter finals.

The most important results can be summarized as follows:

The most efficient stroke was the smash stroke, comes after the spin stroke then the counter stroke.

The most efficient smash strokes were the ones dropped into areas 4, 5, 6.

The most efficient spin strokes were the ones dropped into areas 7, 8, 9.

The presence of significant increase in the efficiency of offensive smashes and spin and counter stroke in the second game.

Key words: Analysis, offensive skills, advanced level juniors.

P-25-17-17-In

Construction of Norms for Skill Test Table Tennis Players

Pushendra Purashwani, A. K. Datta, Manoj Purashwani (IND)

The purpose of this study was to construct the norms for evaluating performance of players in Table Tennis Skill Test. Since, there is a lack of standardized evaluative criteria in Table Tennis for assessing the ability, grading and predicting the performance of Table-Tennis players, an effort was undertaken to construct Norms for Skill Test for junior and senior Table Tennis Players. For this purpose 816 male, 410 Junior and 406 Senior, state and national level Table-Tennis players of different states in India were randomly selected to serve as subjects. The performance of Table Tennis players in Table Tennis test battery of four test items, Namely, Alternate Push Test, Target Service Test, Alternate Counter Test and Fore Hand Drive on Target Test with foot movement after playing backhand push, constructed by Pushendra Purashwani and Dr. A.K. Datta, was chosen for the purpose of the study. The data was collected by administering the test for the selected test items during the Summer Coaching Camps and Regular Training Sessions of various districts, different Ranking Table Tennis Tournaments and State and Inter-District Table-Tennis Championships in the year 2006. The data, which was collected by administering tests, was statistically treated to develop norms for all the test items. The two normative scales, namely, the Percentile Scale and 7 Sigma Scale were constructed for the junior and senior table tennis players of state and national level. The norms were constructed by using Percentile and 7 Sigma Scale techniques analyzed through statistical packages, the scores were further classified into five grades i.e. very good, good, average, poor and very poor under Normal Distribution.

Keywords: Skill Test, Norms, Scales, Grades, Normal Distribution

P-25-18-18-Jm

Coaching: Table Tennis in Reggae Land

Samuel Lamount (JMC)

Douglas who competed for England was born in Jamaica. A number of players have been dominant in the Caribbean at certain times. Orville Haslam, Furnado Roberts, Dave Foster, Monica Desouza, Anita Belnavis and Stephen Hylton are among this list. This has helped to create a love for the game and this love affair is more than fifty years old. Joy Foster created history by becoming the youngest ever international champion when she won the Caribbean singles women's championship at age eight.

The Jamaican public and the media looks forward to the day when the country can produce table tennis players who can medal at the Olympics and the World Championship. This feat can only be achieved via proper coaching and the establishment of a pathway for international exposure. Today, the ITTF has opened the way for many small and poor table tennis nations via programmes like the ITTF Junior Circuit, the Cadet programmes and the ITTF PRO TOUR. Hence I would like to present an article on coaching table tennis in Jamaica popularly known as Reggae Land.

P-25-19-19-Ni

The Playing Posture, Activities and Health of the Table Tennis Player

Omitiran Folorunso, Amao Mutiu, Owwoeye Ademola (NGR)

Background

A close observation of a typical table tennis player shows that the posture (while playing) reveals a peculiarity which might put excessive biomechanical pressure on the waist/hip region of the player's dominant side. Also, it could be observed that the dominant upper limb exhibited relative hypertrophy which might make the dominant limb more predisposed to biomechanical syndromes.

Aim

To find out any adverse effect(s) the peculiar playing posture and the high level of shoulder girdle muscle activity of the table tennis player may have on their health (both in and out of play) and suggest ways of reducing such effect(s).

Method

A study was carried out on some able bodied and challenged players. Questionnaires were given out to all the players, asking for history of unilateral pain on the dominant upper limb, the waist/hip region of same side and how long the athlete had been involved in the game. Measurements of the circumference of the midpoint between the shoulder and the elbow joint of both upper limbs were compared (and used as a measure of the activity of the dominant upper limb)

Result

A significant percentage (25%) of the respondents reported nagging pain on the dominant upper limb. This was made up of challenged amateur and professionals; no able bodied athlete (amateur and professional), reported upper limb pain. 25% of the respondents reported troublesome unilateral hip/waist pain; this was made up of challenged athletes only. No able bodied athlete (amateur or professional) reported unilateral hip pain

Conclusion

The study shows that the characteristic posture of the athlete and the high level of physical involvement of the dominant limb no doubt predispose the player to peculiar biomechanical changes; this could lead to the development of chronic discomfort and pain. The above applies especially to the challenged athlete.

The table tennis player may benefit from specially designed physical therapy measures which emphasize strengthening of rotator cuff muscles of the dominant side. It might also serve some useful purpose if postural correction maneuvers are performed often (out of play) by both the athlete and the therapist alike.

Keywords: Posture, Biomechanical effects, Health.

P-25-20-20-Ph

Effectiveness of Shadow Practice in Learning the Standard Table Tennis Backhand Drive

Mark Andrew D. Flores, Dave T. Bercades, Fernando P. Florendo (PHI)

The study was conducted based on the recommendations of the study on the Effectiveness of Shadow Practice in Learning the Table Tennis Standard Forehand Drive (pg. 342 10th ITTF Science Congress Proceedings Book). The aforementioned study recommended that a study be conducted if using block practice could still facilitate learning another foundational skill which in this case is the standard backhand drive.

The purpose of the study was to examine the performance of college students using shadow practice in learning the standard Table Tennis backhand drive. Twelve students from different Physical Education classes were divided into two groups. The Experimental Group was asked to do shadow practice in combination with multi-ball practice. The Control Group performed single ball backhand drills for every pair of subjects alternating with multi-ball practice. The two groups were analyzed in three testing stages. The test was conducted on one subject at a time. Each subject was instructed to hit the fed balls to the designated target area at the opposite court (crosscourt) within the optimal height. The number of balls that hit the specified target area and cleared the optimum height marker was counted and became the subject's score. First, the pre-test, which was conducted after being given instructions on how the backhand drive is done. Second, a post-test was done after the sixth day of continuous training. And finally, the retention test was given after three calendar days after the post-test. There was a significant improvement of the mean and standard deviation scores from the pre-test to post-test in both the Experimental and Control Groups. The Experimental Group went from a mean score of 67.2 ± 17.8 to 81 ± 10.37 while the Control Group went from 64.57 ± 20.59 to 81 ± 14.25 . Both groups were able to retain their mean scores in the retention test (83.6 ± 13.01 for the Experimental Group and 78.9 ± 10.88 for the Control Group). Although the mean score of the Experimental Group was higher, there were no significant differences in the scores from the Post to the Retention tests of both groups ($p > 0.05$). The study revealed that both the Experimental Group and Control Group had a significant change in their scores in the post-test phase of testing. Both Experimental Group and Control Group were able to retain their scores.

Keywords: Backhand Drive, Learning, Block Practice

P-25-21-21-Ph

Historical, Traditional and Cultural Significance: The Untold Story of “Liha”/Sandpaper Rackets of Table Tennis in the Philippines

Oscar Yoshihiro Santelices, Peter S. Cua (PHI)

With the advent of technology, the use of table tennis rackets has become significant in the development and propagation of the sport where it has greatly affected the speed and spin of the ball, style and the level of play. Little has been known about the sandpaper or “Liha” (in Filipino term) rackets by most modern player now, unlike the “Hardbat” which the Americans have popularized. However, both “liha” and hardbat have been popularly played in the Philippines during the American colonization. It has its own humble beginnings and has great influence in the contemporary games of Philippine table tennis. The study aims to explore “Liha” table tennis rackets and its influence in the Philippine table tennis setting. Using a cultural-historical activity theory approach, the researchers have drawn from a widespread database that included published materials, pictures and video transcripts of events, interviews, field notes and texts produced by prominent table tennis personalities and the Table Tennis Association of the Philippines (TATAP). The following data were gathered:

- I. Popularity – Hardbat and Liha became so popular during the American colony of the Philippines through the efforts of TATAP’s first president, the late Senator Sergio Osmeña when several world-class players in the likes of Martin Reisman, Richard Bergman and Johnny Leach were invited to play in the 1st Philippine Invitational of Champions in 1952
- II. Events conducted – Included in some regional and national table tennis events
- III. Underground “Liha”- The unrevealed story where it is being kept privately in most areas especially in Cebu City where the late Mr. Sergio Osmeña resided
- IV. Champions produced which started off as Liha players – The late Teofilo Ybanez and current Southeast Asian Champion Richard Gonzales
- V. Physical fitness for elders at Marikina and Malabon Table Tennis Club in Metro Manila
- VI. Fiestas-“Liha” events in fiestas; e.g. Sinulog Fiesta of Cebu City –Central Philippines
- VII. Rules – Modified Rules compared from the ITTF Rules

In conclusion, the game of table tennis using “Liha” rackets has its benefits in the Philippine table tennis scene. The researchers do not wish to propose and inform the table tennis community to include “liha” to its present “rubber” tournaments but rather suggest having it as an added “variant” to be legalized and recognized in table tennis events. It can be played by young and old individuals who do not only want to enjoy the game because of its longer rallies but also to maintain an optimum level of fitness , fun and a “fallback” grounds from the present fast-paced game of table tennis.

Keywords: “liha”, cultural historical activity theory, variant

P-26-01-22-Ir

Investigating the Level of T.T. Sport's Family Transference (Generation by Generation) in Iran National Champions

Fariba Ghavamzadeh Alazavi, Nasim Habibzade (IRI)

The objective of this research is to study the level of family transference and training in T.T. in national champions of this field in Iran.

Method: This study is a descriptive one and has been carried out by means of telephone and face – to – face interview. The statistic population of this study is composed of Iran. T.T. players, among whom 232 people (131 female, 61 male) were interviewed. To analyze data (chi – square) non – parametric statistical method in $\alpha < 0/05$ level was used.

The results show that about half of this population were 30 (n=122) and about another half were above 30 (n=110). Moreover from 232 individuals 129 people were playing at national level, and finally the main result of research shows that amount of family training has a meaningful relation with the amount of championship level. ($\chi^2 = 0/043$). So it can be concluded from this study that the families who in this way cause developing championship level and should be supported and we can use the champion's family in order to develop and train championship.

Keywords: family transference, training champions, interview, T.T. sport, T.T. players.

P-26-02-23-Ir

The Impact of a Period of Corrective & Therapeutic Exercises on Back Hyperlordosis Dysmenorrheal in Non-Athletic Women

Fazlollah Fatholahi Shoorabe, Behnam Ghasemi (IRI)

The aim of this research was to test the probable impact of a period of corrective and therapeutic exercises on non-athletic women with back Hyperlordosis and dysmenorrheal. The population included 1000 females studying in Lorestan Higher Education. First, the participants filled in the Health Questionnaire, sent by the *Ministry of Science, Research, and Technology* to all universities in order to check its own students. Second, a sample of 60 participants were selected in line with the following criteria: 1) Those aged between 20 to 24; 2) those approximating menstruation; 3) those with a height of 162 cm; 4) those weighing 52 kg; 5) and those approaching their menarche with the average age of 21, weight of 62, height of 168, BMI of 22 and menarche age of 14. The sample was randomly assigned to two groups of experimental and control. The treatment in the experimental group consisted of 12 weeks of correctives exercises, three sessions a week. After the 12-week period, the questionnaire was again given to both groups, and it became obvious that there was a significant difference between the two groups (p value = 0.000). The general conclusion was that the corrective exercises given to the experimental group had a positive effect on the lessening of the rate of the unnatural back lordosis, and also on diminishing dysmenorrheal (p value = 0.000), which, of course, this rate was not observed in the control group. The analysis of the data, with the help of MINITAB, pointed to the fact that there was a significant relationship between back Hyperlordosis and dysmenorrheal. Also, there was a significant relationship between the corrective and therapeutic exercises and a reduction on Hyperlordosis. As a result, the participants with a back Hyperlordosis and dysmenorrheal recovered by the help of the corrective and therapeutic exercises. It could be argued that women with lordosis could prevent dysmenorrheal through corrective and therapeutic exercises.

Keywords: Corrective Exercises, Back lordosis, Dysmenorrheal, Non-Athletic Women

P-26-03-24-Ir

The Impact of a Period of Corrective & Therapeutic Exercises on Back Hyperlordosis & Menstruation Irregularity in Non-Athletic Women

Behnam Ghasemi, Fazlollah Fathollahi Shoorabe (IRI)

The aim of this research was to test the probable impact of a period of corrective and therapeutic exercises on non-athletic women with back Hyperlordosis and menstruation irregularity. The population included 1000 females studying in Lorestan Higher Education. First, the participants filled in the Health Questionnaire, sent by the *Ministry of Science, Research, and Technology* to all universities in order to check its own students. Second, a sample of 60 participants were selected in line with the following criteria: 1) Those aged between 20 to 24; 2) those approximating menstruation; 3) those with a height of 162 cm; 4) those weighing 52 kg; 5) and those approaching their menarche with the average age of 21, weight of 62, height of 168, BMI of 22 and menarche age of 14. The sample was randomly assigned to two groups of experimental and control. The treatment in the experimental group consisted of 12 weeks of correctives exercises, three sessions a week. and one hour and a half in every session of corrective exercises. After the 12-week period, the questionnaire was again given to both groups, and it became obvious that there was a significant difference between the two groups ($p \text{ value} = 0.000$). The general conclusion was that the corrective exercises given to the experimental group had a positive effect on the lessening of the rate of the unnatural back lordosis, and also on diminishing dysmenorrhea ($p \text{ value} = 0.000$), which, of course, this rate was not observed in the control group. The analysis of the data, with the help of MINITAB, pointed to the fact that there was a significant relationship between back Hyperlordosis and menstruation irregularity. Also, there was a significant relationship between the corrective and therapeutic exercises and a reduction on Hyperlordosis. As a result, the participants with a back Hyperlordosis and menstruation irregularity recovered by the help of the corrective and therapeutic exercises. It could be argued that women with lordosis could prevent menstruation irregularity through corrective and therapeutic exercises.

Keywords: Corrective Exercises, Back lordosis, menstruation irregularity, Non-Athletic Women

P-26-04-25-Ir

The Relationship between Self-Esteem and Locus of Control with Athletic Performance among Professionals Table Tennis Athletes

Mohammad Ali Memar (IRI)

The purpose of the present study was to determine the relationship between self-esteem and locus of control with athletic performance. Numerous studies have examined the relationship between personality and athletic performance, but there is little information about the relationship between self-esteem and locus of control with athletic performance. Self-concept is an area of research that has been widely explored over the years. The most often discussed evaluative component or aspect of self-concept is self-esteem. It can be defined as the positivity self evaluation by person. It represents the global value judgment about the self. A motive to achieve and maintain high self-esteem is one of the strongest motives of personality. Rotter (1966) originally formulated locus of control as a generalized belief about contingency between one's action and actual outcome, brought about through social learning mechanisms. Locus of Control personality refers to the extent to which individuals believe that they can control events affecting them. Individuals who have an internal Locus of Control believe that the events in their lives are generally the result of their own behavior and actions. Individuals who have an external Locus of Control, on the other hand, believe that events in their lives are generally determined by chance, fate or other people. The participants in this study were 120 Professionals Table Tennis players, consisted of 60 males and 60 females, ranging in age 19-28, that attends in competitions, held by table tennis federation of Iran on August 2008. In the present study, we analyzed data concerning self-esteem, locus of control and number of wins. Data collected using the Rosenberg's General Self-Esteem rating Scale and the Rotter's Internal-External locus of control Scale as instruments. Statistical analysis of data using Pearson correlation showed there is a positive and significant correlation between self-esteem and athletic performance ($p=0.01$). Results also showed there is a negative and statistically significant correlation between locus of control and athletic performance in male subjects ($p=0.02$). Those with an external locus of control showed lower levels of win. Female subjects did not show such significant correlation. By using t-test for equality of means, male subjects showed significantly higher level internal locus of control than females ($t = 2.162$, $p=0.03$).

P-26-05-26-Ir

Incidence of Dysmenorrheal between Different Types of Behavior in University Female Student Athletes and Non-Athletes

**Lamia MIR HEIDARI, Morteza JOURKESH, Mohammad A. Azarbayjani,
Sergej M. OSTOJIC (IRI)**

Purpose: The purpose of this study was to examine and compare the incidence of dysmenorrheal between behavioral types A and B in female athletic and non-athletic University students. **Methods:** Three hundred ($n = 300$) healthy female students participated in this study with average age of 21 years, height of 150 cm and weight of 58 kg. Subjects were assigned to sampled two groups with 150 athletes and 150 non-athletes according to their physical activity level. Subjects completed standard Fridman & Olmer questionnaire and menstruation pattern questionnaire. **Results:** No significant difference in rate of dysmenorrheal was observed between athletes and non-athletes ($p > 0.05$). Moreover, we didn't found significant difference in rate of dysmenorrheal between subjects with behavioral type A and B ($p > 0.05$). **Conclusion:** The results of the present study suggest similarity in dysmenorrheal pattern between athletic and non-athletic female students.

Keywords: dysmenorrheal, behavior, athletes, non-athletes

P-26-06-27-Ir

The Effect of Walking Program on Table Tennis Girls' Bones Mass Density

Habibzadeh.N., Daneshmandi.H. (IRI)

Purpose: This study aims to investigate the effect of walking program on table tennis girls' players bone mass density in order to prevent bone loss and osteoporosis.

Method: For this purpose twenty table tennis girls' players volunteer took place in this study and then they were divided randomly in two experimental group (n=10; age: 21.10 ± 1.73 year, BMI: 17.73 ± 1.05 kg/m²) and control group (n=10; age: 21.90 ± 1.29 year, BMI: 17.51 ± 1.21 kg/m²). At first all subject's bone mass density in both area hip and spinal (L₂-L₄) by using dual energy x-ray absorptiometry (DEXA) was determined. Also serum estrogen with radioimmunoassay was assessed and serum calcium and phosphorus were measured by routine laboratory test. Then the experimental group started to do exercise program that involved 30 mins walking at intensity 50-75 of HRmax, 3 sessions in a week for 2 month. After 2 month all measurement were repeat. Data were analyzed by student-t test at the level of (p<0.05).

Results: The result of this study showed that walking program increased experimental girls' bone mass density in both area (p< 0.05) but no change occurred in control groups' bone mass density, also the level of serum estrogen in the experimental group was more than the control group (p= 0.04), but had no effect on serum calcium and phosphorus in both group.

Conclusion: We conclude that bone loss can be prevented by walking program in table tennis girls' players and it seems to be beneficial in maintaining BMD in them.

Keywords: osteoporosis, table tennis, bone mass density, walking program

P-26-07-28-Ir

The Study and Influence Exercise Program on the Respiratory Function of Adolescents With kyphosis in Personal N.I.O.C.

Abdolrahman Mehdipour, Simindokht Dezfully, Mohsen Ghanbarzadeh (IRI)

Clinical and radiographic evaluations of the vertebral deformity, chest radiographs, PFT
Background: Idiopathic adolescent kyphosis causes not only spinal deformities but rib cage abnormalities that lead to abnormal volumes and pulmonary capacity on pulmonary function testing (PFT). The objective of this study was to analyze the impact of a physical activity program on respiratory function in surgical patients with kyphosis. Pre-senting with kyphosis and a thoracic curvature between 45° and 88° were studied. *Methods:* From October 2006 to October 2007, a total of 34 patients (age range, 22 to 42 years) prospectively at a medicine sport clinical in nation Iranian oil company (N.I.O.C). The patients underwent, evaluation of peak expiratory flow, and 6-min walk tests (6MWTs) before and after joining a physical activity program for 4 months. *Results:* An improvement in FVC, inspiratory capacity, FEV₁, expiratory reserve volume, and performance assessed by 6MWT were observed after activity. *Conclusions:* Global conditioning improved after the exercise program. This was expressed by both PFT and 6MWT results.

P-26-08-29-Jp

The Measuring Ball Spin at the Service in Table Tennis by Junior Player

Shinji Iizuka, Yukihiro Ushiyama, Kazuto Yoshida, Yang Fei, Zhang Huan Yu, Kei Kamijima
(JPN)

At table tennis competition, the spin of the ball is the very important factor. The better players spin the ball stronger, and the spin's axis become more complicated, during playing table tennis actually. Therefore it is very important for players to know how much the ball they hit around because they keep the advantage of the game. On the other hand, for instructors, too. Then, this research aimed to measure the amount of the spin of the service of the player with a high speed camera for junior's top player, and to use it to strengthen the service of the player.

The amount of the spin of the service of junior's top player was measured over two times. It was measured again about three month later since the first measurement. An optical axis of the camera was set on the extension line of the end line of the table and measuring was conducted with the high-speed video. Then, each subject conduct service about three times. The ball was marked at random and measured the spin of the ball by the shift of the mark on the ball. Moreover, the result of the first time and second time measurement were compared.

As a result, the amount of the spin of the ball was not convergent in the first measurement. However, in the second measurement, the amount of the spin of the ball was apt to be constant. Moreover, the amount of the rotation of the ball by service tended to increase. Thus, we suppose that to find player's own amount of the rotation of the ball leads to the improvement of the performance, and give us other idea from different viewpoint. Henceforth, we think it is necessary to continue this research for the purpose of making the player's practice menu and progress.



Fig. The marked ball used in this research.

Keyword: table tennis, ball spin, high speed camera

P-26-09-30-Jp

The Examination for Evaluating Skills during the Rally of the Table Tennis Game

Kei Kamijima, Yukihiko Ushiyama, Zhang Huan Yu, Yang Fei, Shinji Iizuka(JPN)

The purpose of this study was to examine for evaluating skills of table tennis players during the rally of the table tennis. An incidence angle, velocity, and height of the balls passing above the net in both winners and losers were investigated. In this study, those three factors were defined as the characteristics of the hit ball. In order to observe those three factors, the two infrared sensors were fixed 0.3 m from the net respectively. The intervals of the time which were required for the balls to pass through two fixed sensors were obtained.

Those data were digitized and recorded in a personal computer. The characteristics of the hit ball were calculated. The tendency indicated that a winner has the larger incidence angle than that of the loser's one when rallying. On the other hand, the velocity and height were not important factors in order to win the games. However, higher the skill levels, the higher batted ball position, more velocity, and the larger incidence angle were necessary to win. In conclusion, observing an incidence angle may give coaches and players the possibility to evaluate skills of table tennis even in different skill levels.



Fig.1 The system of the two infrared sensors was fixed 0.3 m from the net respectively.

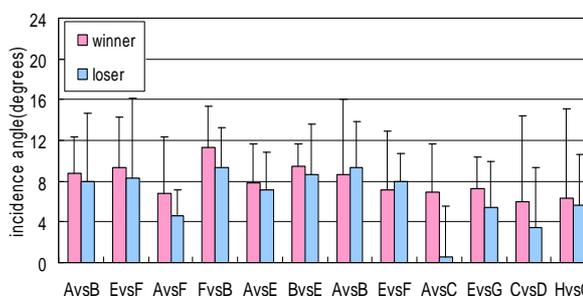


Fig.2 The incidence angle average of the different games in both winner and loser were

Keywords: table tennis, incidence angle, velocity, height, evaluating skill

P-26-10-31-Jp

The Analysis Method of the Ball Fall Point in Table Tennis Game

Fei Yang, Yukihiro Ushiyama, Huan Yu Zhang, Shinji Iizuka, Kei Kamijima(JPN)

When playing a game of table tennis, the coach will use his experience instead of objective data to give players advice. In the ball game, it is thought that it is important to examine the content of the game after was recorded, and the statistical analysis was done. For example, American football began to analysis the match using such methods from long time ago. However, it is very rare for a coach to use the present material of table tennis when the coach gives the player advice. In this research, the coordinate data of the ball fall point of table tennis is analyzed for the university student with a video camera, and the pattern of the attack of the opponent and the other party player and the weak point are clarified. Moreover, it aims to match the experience of the data and the coach, and to examine the methodology that can give good advice and the strategy by the player. The research has resulted in the difference about when player make a score or blunder. The analysis method suggested that appropriate advice about combination of pitches can be given to player.

Key word: Table tennis, Sequence of pitches pattern, Strategy, Ball fall point

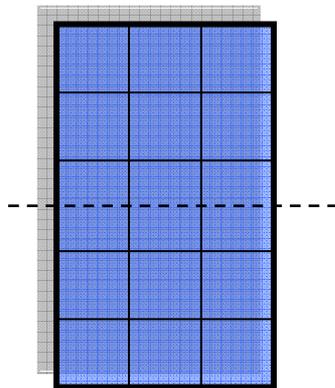


Fig1 In this method, first divide two side in 18 block, then collect the ball fall point in the game.

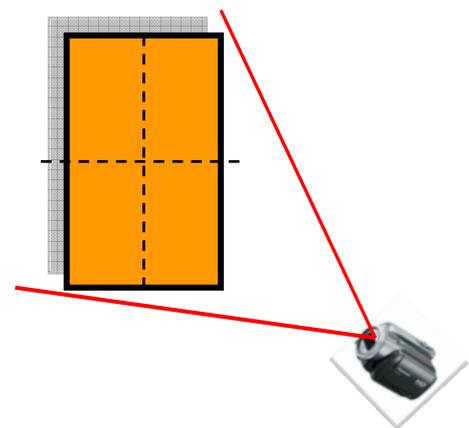


Fig. 2 Film from right back and not hinder the camera beam because of player

P-26-11-32-Jp

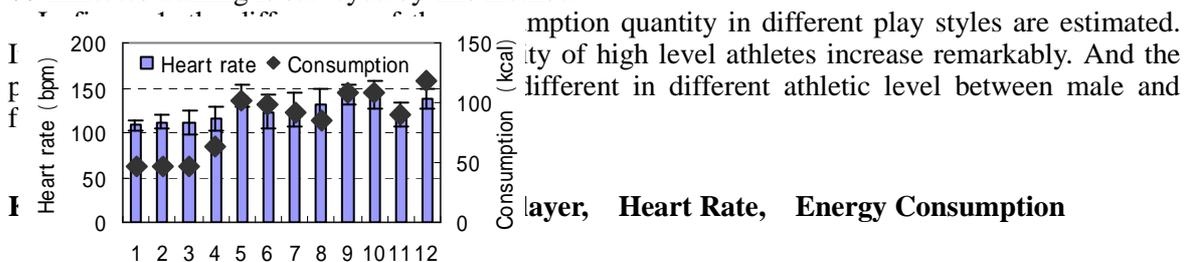
Estimation of Energy Consumption Quantity from Heart Rate of Chinese Professional Table Tennis Player in Training

Huan Yu Zhang, Yukihiro Ushiyama, Fei Yang, Shinji Iizuka, Kei Kamijima(JPN)

According to the characteristic of table tennis, different amateurs have different aims. The movement intensity will be different with aims. It can be expected that the energy consumption quantity in different levels will be different remarkably.

On athletic table tennis, the movement intensity is also different on different athletic levels. For athletes on low athletic level, it is difficult to fight continuously, and the sphere of action will be limited relatively that and consequent reduces the energy consumption quantity. It is contrary for the ones on high athletic level. In order to investigate the difference between movement intensity and consumption quantity among different athletic levels, formerly, common middle-school students and skilled university students are applied as experiment subjects to survey the consumption quantity of 60-minute table tennis practice. On athletic table tennis, for advantaging the skill of contestants, the implementation method of the physical ability and the training should be investigated. Therefore, in this report, professional contestants are applied as subjects to investigate and compare the variety of pulse rate and energy consumption quantity in training.

The experiment subjects are 12 male contestants and 10 female contestants in Heilongjiang professional table tennis team, China. Heart rate is surveyed by Radio electrocardiograph (heart beat meter polars610i). The chest double pole induction electrocardiogram QRS wave is applied to survey the heart rate in every 5 seconds continuously and energy consumption quantity of 60-minutes training is surveyed by this method.



P-26-12-33-Jp

The Effects of Glue containing Volatile Organic Compounds on Health

Nariaki Matsuura, Yuhki Yokoyama, Yoshinosuke Hamada, Naomasa Kawaguchi, Yutaka Tsuji (JPN)

Volatile organic compounds had been present in “speed glues” and popular among many table tennis players since 1970s as the chemical reaction having the effects of providing greater speed and spin when contact is made with the table tennis ball. However, many people were concerned about the harmful effects of volatile organic compounds and ITTF announced the use of glues containing volatile organic compounds was prohibited for affixing racket coverings to blades in September in 2008. In order to elucidate the acute toxic effects of volatile organic compounds, pathological studies were made in mice. Two types of commercially available glues (glue A and glue B) containing volatile organic compounds were put inside the mice airtight cage for 24 hours and the mice were observed carefully for 2 weeks. All the mice were sacrificed to analyze all the organs histopathologically after 2 weeks as well as dead mice were autopsied. Most mice died within 1 hour or after 24 hours when 30 grams of glue A or glue B was given in complete airtight cages. Histologically acute sever changes were observed both in lung and liver of dead mice and moderate injuries were found even in living mice. Other organs revealed no pathological changes apparently. On the other hand all the mice were alive for 2 weeks when 10 grams of either type of glue was given in semi-airtight conditions. While the glue was put inside the cage, mice looked irritable and excited with abnormal behavior such as continuous moving around without resting or sleeping. But no morphological changes were detected in any organs including brain. These results suggested higher concentration of volatile organic compounds are harmful to health. In Japan there was an incident report in 2007 that a 40-year-old male suffered from anaphylaxis-like shock when he used the glue containing volatile organic compound to affix a new rubber to a blade. He was sent to an emergency hospital and was in severe condition with respiratory failure for a while. After 2 weeks he recovered fortunately but he still suffered from renal and hepatic failures. This report seems consistent with our mice study results.

(This study was supported by Japan Table Tennis Association and Japan Olympic Committee/Coca-Cola Japan Aquarius Foundation.)

P-26-13-34-Jp

A Historical Study on the Doubles Game in Table Tennis as Introduced by Dr Yasumasa Nagayama in the Early 1930s' Japan: His Contributions and the First Step towards the Internationalization of Table Tennis in Japan

Sakakibara Hiroaki (JPN)

The late Dr Yasumasa Nagayama (1893-1986) was a famous psychiatrist. After World War II, he contributed to theoretical studies regarding local medical care and practice in the Osaka area. Prior to this from 1929 to 1930, he had been to Germany to conduct a rigorous study on the medical services available there. Later on the 4th World Table Tennis Championships were held in Berlin in 1930. On this occasion, Dr Nagayama contributed valuable insight into European table tennis. He observed the knowledge and expertise that were displayed at the European table tennis competition, including the practice of the doubles game and its conformance to the international rules that prevailed at the time. Dr Nagayama was introduced as the Japanese media's table tennis correspondent. He observed the conditions of table tennis in Europe (Germany and Switzerland) and he reported them in detail. After his return to Japan, Dr Nagayama became Medical Director of Osaka Prefectural Empress Hospital (psychiatry, community medicine). In addition, he contributed to table tennis technical periodicals to enlighten readers about the doubles game competition method and its proliferation in table tennis. He offered guidance and advice at various classes and seminars on the doubles game competition method. In 1932, Dr Nagayama was invited to a national doubles competition which was sponsored by the Japan Table Tennis Company. Subsequently, the competition was known by the title of Dr Nagayama Cup of Table Tennis Doubles Games. Records show that it was announced in a class held in May 1932 that it was Dr Nagayama who had introduced the international style of the doubles game competition method. Dr Nagayama undoubtedly had made a great contribution to the table tennis doubles game in Japan before World War II. These facts were largely unknown until now. The international competition method of the doubles game has made a stronghold in Japan today, and this is due to the introduction by Dr Nagayama. It is essential to engrave this fact in the history of Japanese table tennis.

Keywords: History of Table Tennis in Japan, Doubles Games, The Early 1930s

P-26-14-35-Jp

High-Speed Video Image Analysis of Air Flow around a Table Tennis Ball

Fujio Yamamoto, Jun-ichi Kasai, Hiromasa Hirakawa, Satoshi Soomeya, Koji Okamoto (JPN)

The final goal of this study is to give scientific information about ball motion to table tennis players and coaches who are struggling to develop new tactics. Especially we are interested in a problem whether a so-called knuckle ball without/without rotation at low spinning speed makes fluctuating trajectory in air, or not. In order to solve the problem from a view point of fluid mechanics, it is very useful to analyze air flow around a ball.

The aerodynamic behavior of table tennis ball is not entirely clarified yet because it differs significantly from other sports balls due to its light weight and its smooth surface. Previous studies were conducted in the wind-tunnel with fixed ball, so we could not consider a free motion of the ball. The current study attempts to fill this gap and to investigate the interaction between the motion of ball and the surrounding air flow. Just after the ball was ejected from the training machine, which could give a ball with and without spin, the flow around the ball was visualized by oil mist and YAG laser light sheet with a metal halide light and recoded by a CMOS type of high speed video camera (Fig.1). The images of the air flow were analyzed by using the high time-resolved PIV (Particle Image Velocimetry). As a result, we could quantitatively obtain the velocity map of the air flow (Fig.2) and the wake flow around a ball. We will discuss the problem of fluctuating motion of knuckle ball.

Keywords: Visualization, Table Tennis Ball, PIV(Particle Image Velocimetry), Air Flow, Fluid Mechanics

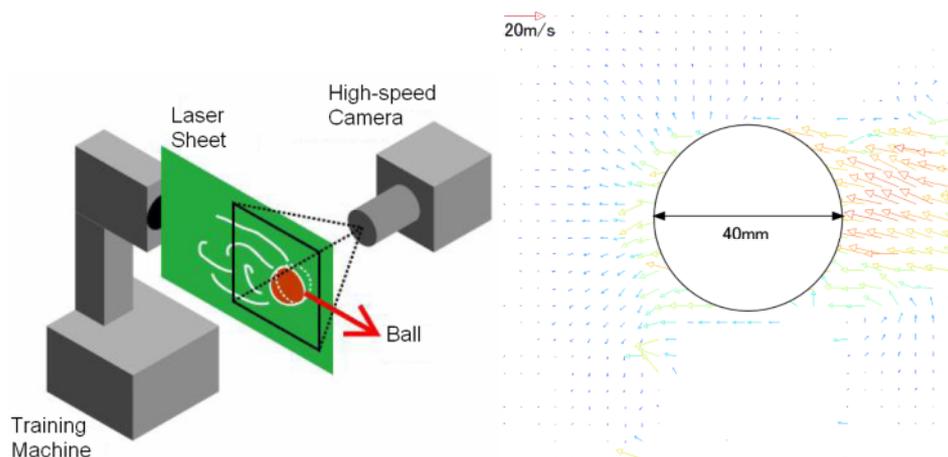


Fig.1 Schematic view of Experimental Setup

Fig.2 Example of velocity vector map

P-26-15-36-Jp

Differences between EMGs of Forearm Skeletal Muscles for Flick Strokes against Backspin and No-spin Services in Table Tennis

Kazuto YOSHIDA, Koji SUGIYAMA, Shin Murakoshi (JPN)

We have conducted an experimental study to clarify the differences between the EMGs for the forearm skeletal muscles when receiving backspin and no-spin services with a forehand flick stroke. The present report is the sequel to our previous report.

An elite Japanese table tennis player participated as a subject in this study. We obtained his agreement to attend the experiment after explaining its purpose and safety aspects. A Chinese coach, acting as a server, sent a service ball and the subject returned it with a forehand flick stroke. The service ball speed was approximately 4 m/s. The receiver was informed whether the service ball had spin or not. The EMG for the skeletal muscles of the forearm and the joint angle for the wrist and elbow were recorded. Measurements of muscular activities were made for the following muscles: extensor carpi ulnaris, extensor digitorum communis, extensor carpi radialis longus and brevis, flexor carpi radialis, pronator teres. Muscular electric discharge was measured by a surface dipole dielectric method. After treatment to reduce skin resistance, miniature bio-electrodes 12mm in diameter (NT-611U: Nihonkoden, Tokyo, Japan) were set at 20mm centers along the line of muscles following the Zipp method.

A significant difference ($p < 0.05$) between the two kinds of services was shown for the electrical discharge amount of M. extensor carpi ulnaris (Backspin: 122.06 ± 42.10 and No-spin: 87.12 ± 36.39 microV). It was also observed that the electrical discharge of the flick stroke against backspin services was greater for M. flexor carpi radialis ($p < 0.06$) (Backspin: 48.79 ± 22.55 and No-spin: 30.98 ± 23.37 microV). There were no significant differences for other muscles. It is assumed that the electrical discharge of M. extensor carpi ulnaris of the subject for 15ms just before the impact is concerned with controlling the racket surface. Future studies are needed to examine the characteristics of racket control when receiving against the two kinds of service spin for other elite table tennis players, classified with respect to each type of technical individual difference by movement analysis.

Keywords: EMG, forehand flick stroke, racket control

P-26-16-37-Jp

The Study on Providing the Instant Tournament Chart System on the Internet

Yukihiko Ushiyama, Tohru Tamaki, Hisato Igarashi, Osamu Hashimoto(JPN)

In the study of designing the web site of the Japan Table Tennis Association, the authors submitted the report regarding the development of the rapid communication system for instant information of the National Table Tennis championship. In the system, match results were stored and organized as database and displayed immediately on the web site. Inputting the athlete's name, affiliation, their prefectures, and the codes of the athletes and matches, the system can retrieve and display the results of the games immediately. Regardless of the systemized database, the instant charts of the tournament weren't established. The tournament charts over 7 events produced more than 33 pages ;therefore, a lot of time was used to draw them. The current procedure doesn't appear to be efficient in the delivery of the chart.

The purpose of this study was to draw the instant tournament charts and to deliver them automatically based on the systemized database we established before. In order to develop the system in this study, the following specifications were determined. Drawing tournament charts was attained by installing VineLinux3.0 (KernelVersion4.2.26-0v115) in the PC, IBM NetVista connecting to the Niigata University LAN. Arranging the charts drawn on the PC, LaTeX was utilized to generate them automatically. Furthermore, for displaying the charts on web site, PDF(Portable Document Format), commonly used format showing the images through Browser, was applied to draw them. Perl, the language used in this study, was served. Reducing tens of working hours and providing the instant charts drawing system improved quality of the service for the web site users. In addition to this, the number of accesses to the server increased.

Keywords: Tournament chart, Drawing system, Internet

P-26-17-38-Ro

Study Concerning the Impact of Table Tennis Competitions on the Development of the Professional Table Tennis in the County of Bacau-Rominia

Nicolae Ochiana (ROU)

At present, the problem of financing different sports activities has become more and more serious, and this fact is due to the economic situation in the environment we are conducting our activity. However, accessing different financial resources can often be achieved only by means of an objective presentation of the logistics necessary for carrying out a certain sports activity.

The purpose of the study was:

- to raise the public awareness and to attract as many subjects as possible into practicing table tennis.
- to channel the participants' interest towards the values of exercise-sports-life
- to take part in the competitions organized by the federation.

Objectives of the study:

- to make table tennis more popular in the city of Bacau
- to attract a greater number of subjects into practicing table tennis individually

Duration of the project: 2005-2008, financial support from the local authorities: 11000 euro, funds raised from our own activities: 20000 euro, competitions organized: 12, number of participants: 1750, children admitted into the selection process: 245, children selected into the training groups: 42, sports associations founded in the field of table tennis: 2, a senior team promoted into the National Championship – division A.

Considering the results, we believe the objectives suggested have been achieved, the impact of the activities being a major one. Table tennis has reappeared in this area in an organized form after 15 years leading, in a relatively short period of time, to a spectacular increase in the number of people practicing it.

Keywords: Study, Table competitions, Development, Table tennis

P-26-19-39-Se

The Table Tennis Shoulder

Branko Sbutega, Gorica Sbutega Milošević (SRB)

The paper is based upon more than three decade of personnel experience of the author as the medical doctor of Yugoslav table tennis national team. This is quite reliable period to notice that the most of the problem is related to overuse injuries of the shoulder region. Introduction of new materials as well as spin stroke contributed to development of degenerative condition of the tendon fibers that attach on the bony prominence of the shoulder blade. The tendons involved are responsible for anchoring the muscles that perform movement of the shoulder girdle. The article explains the common cause of the table tennis shoulder, symptoms and diagnostic procedures, treatment and possible prevention measures.

Keywords: table tennis, shoulder, overuse injuries

P-26-20-40-SI

Physiological Demands and Testing in Table Tennis

Miran Kondric, Gordana Furjan-Mandic, Lija Kondric (SLO), Alejandra Gabaglio(ARG)

The purpose of this review was to support table tennis experts and scientists with up to date science literature regarding physiological measurements of table tennis players. We have noticed that some authors use too old references when comparing data in their researches.

We have consulted literature from all over the world in order to gather interesting information on measurements of physiological characteristics of table tennis players. In the past ten years, there was lack of quantitative data regarding the evaluation of training intensity and physiological loads of table tennis players in training and competition. From this point of view the judgment on the quantity of sports load at the moment depends only on one's observation and experience, which is lacking the indispensable scientific basis. In order to scientifically improve the training of table tennis players and support the table tennis researchers with newer findings, it is necessary to put forward objective evaluation indices for training intensity and physiological loads of table tennis players as well as support scientist with findings of researches which have been already accomplished.

Keywords: table tennis, testing, physiology

P-26-21-41-SI

Where is it? A simple Guide to Table tennis Information

Lija Kondrič, Miran Kondrič, Jože Štihec(SLO), Gordana Furjan-Mandić(CRO)

The purpose of this paper was to support table tennis experts and scientists with up to date information regarding table tennis issues. Due to the internet access, getting information about table tennis today can be very easy but on the other hand also very complicated. The widespread use of the internet and different services have decreased the need of table tennis experts, players and scientists to visit libraries to locate relevant books, journals or conference papers.

This paper would like to outline the need and availability of table tennis information through the internet and databases – especially on one place. Literature from all over the world has been consulted in order to gather interesting information from different fields of table tennis game in one place. In order to increase the attractiveness of table tennis, the International Table Tennis Federation (ITTF) has carried out reforms such as having different combine rubbers on the two sides of the racket, the co-existence of the white and yellow ball, regulations on service, 40-mm ball, shorter sets and lately players are not allowed to use glues containing harmful volatile compounds (VCs). With the development of table tennis equipment, rule changes and changes of players' techniques, the need to get up to date information has grown in all fields of table tennis training and game. The aim of this paper is to give an up to date overview of table tennis literature.

Keywords: table tennis, literature, literature search

P-27-01-42-Sp

Somatotype and Body Composition of Young Top-level Table Tennis Players

Luís Carrasco, Francisco Pradas, Aldo Martínez (ESP)

Introduction. The aim of this study was to analyze the anthropometric profile of young top-level table tennis players belonging to Spanish table Tennis National Team. A total of 63 players (38 males and 25 females), aged between 10 and 13 years were evaluated with the sex as a factor. **Methods.** Different body measurements were recorded following the guidelines proposed by the ISAK: body mass, height, skin folds (biceps, triceps, subscapular, suprailiac, supraspinale, abdominal, anterior thigh, and medial calf), girths (arm flexed and relaxed; arm flexed and tensed, thigh, and calf) and breadths (biepicondylar of the humerus, bistyloid, and biepicondylar of the femur). In addition to anthropometric analysis, body composition and somatotype of participants have been assessed. A t- test for independent samples was performed to examine statistical differences between sex groups and a Pearson's coefficient was applied to evaluate the correlation between variables. **Results.** A mesomorph – endomorph somatotype was registered for the entire group. Analysis, taking into account the sex factor, revealed a balanced mesomorph somatotype for males and a mesomorph - endomorph somatotype for females. Data corresponding to body composition contrasted by sex showed higher body fat percentage in females than in males. **Conclusions.** Within the tested age interval, range body fat content in female players is higher than in male players. Although these differences may be the consequence of a normal growth, it is advisable to integrate educational and nutritional strategies in order to maintain an adequate body fat content.

Keywords: Table Tennis, Body composition, Somatotype, Young players

P-27-02-43-Sp

Muscular Power of Leg Extensor Muscles in Young Top-level Table Tennis

Francisco Pradas, Luís Carrasco, Pablo Floría (ESP)

Introduction. Table tennis is an individual and asymmetric sport in which a great number of shots are performed at high speed developing high levels of muscular power. The aim of this study was to determine the power of leg extensor muscles in young top-level table tennis players.

Methods. A total of 63 players (38 males and 25 females), aged between 10 and 13 years and members of Spanish National Team have been included in the study. After 15-min of easy cycling (cycloergometer Monark 810) subjects randomly carried out three attempts on SJ test and three more on CMJ test (Newtest® contact map). A rest period of two minutes was established between attempts. The test was executed for both jumps following the original protocol. The measured variables were jump height (cm), flight time (ms), power (W), and elasticity index. A t-test for independent samples was performed to examine statistical differences between sex groups.

Results. All variables measured on SJ and CMJ tests showed higher values in female than in male players (with exception of the flight time). Also, data related to CMJ were higher than those registered in SJ, independently from the sex factor (see table below). The elasticity index was higher in female players than in male players.

	SJ			CMJ			EI
	JH (cm)	FT (ms)	P (W)	JH (cm)	FT (s)	P (W)	
Males	15.8±4.2	357.2±44.4	759.3±465.6	16.9±4.8	369.0±49.9	826.3±409.1	7.0±2.9
Females	19.4±6.7	395.5±52.1	822.0±268.7	21.0±6.1	423.0±50.1	956.0±387.5	8.2±3.4

SJ: squat jump; CMJ: counter-movement jump; JH: jump height; FT: flight time; P: power; EI: elasticity index.

Conclusions. Although within the tested age interval, sex differences in generating muscle power are not clear, higher values in female players have been registered for all variables measured, with exception of the elasticity index.

Keywords: Table tennis, Muscular power, Leg extensor muscles, Young players

P-27-03-44-Sp

Design and Development of an Observational Tool for Evaluating Table Tennis Singles Matches

Francisco Pradas, Pablo Floría, Luís Carrasco, Alfonso Beamonte, José Antonio González (ESP)

Introduction. In the field of high level sport performance, evaluation of game actions during competition is a matter of great interest. Systematic assessment of table tennis matches represents a basic method to understand this sport, its physical training as well as its strategy and behavioral techniques. During a table tennis match, we can observe a high number of technical actions in a short decision time between one set and the following one. Due to this complexity, a systematic evaluation model of table tennis game actions is necessary to understand the strategy of each player, possibly improving their performance. The aim of this study was that of developing an observational tool for analyzing the different variables that characterize a table tennis singles matches. **Methods.** An observational method was applied for analyzing each match. The development of this tool was accomplished in different steps: 1. Design of the procedure for match video recording; 2. Development of an observational protocol; 3. Design of a database to organize and store the results; 4. Validation of the tool assessing its reliability. **Results.** The informatic tool provided data recording: the match time structure, the playing technique, the ball touching area on the table, the effectiveness of the playing technique in terms of performance. Data evaluation gave the possibility of predicting the player's game strategy as well as his effectiveness in terms of winning and losing points, through the analysis of frequencies and delays. **Discussion.** The systematic evaluation of the data provided by the informatic tool represents a basic method to understand table tennis. Moreover, this tool allows identifying the physical, tactical and technical profile of the players. **Conclusions.** The informatic tool described in this study allows knowing which single technical-tactical elements led to the final result. The knowledge of these data may help the player and the coach to focus on the weak points and to understand what aspects of the training planning have to be improved or changed. In this way, the training process may be modified in the attempt of reaching the highest level sport performance.

Keywords: Informatic tool, Timing structure, Technical actions, Prediction levels, Notational Analysis

P-27-04-45-Tw

Energy expenditure and cardiorespiratory responses during training and simulated table tennis match

Shu- Chuan Shieh, Ju-Ping Chou, Ying-Hao Kao (TPE)

Objectives: To investigate the energy expenditure and cardiorespiratory responses during training and simulated table tennis match. Sixty university male table tennis players from Division A (thirty, elite player) and Division B (thirty, amateur player) performed both laboratory test and simulated table tennis match. Bruce protocol were used to evaluate their maximum oxygen uptake (Vo^2_{max}) and Cortex Metalyzer 3B were used to evaluate their peak oxygen uptake (Vo^2_{peak}) during simulated table tennis match . The results demonstrated that 1. The mean Vo^2_{max} for all players were 42.1 ± 6.4 ml/kg/min ± 6.4 , the maximum value was 48.5 ml/kg/min, and the minimum value was 37.2 ml/kg/min ; 2. During practice session and simulation match, group A player's oxygen consumption rate during practice session and simulating competition were 29.8 ± 7.2 ml/kg/min and 36.8 ± 13.2 ml/kg/min, respectively. There were no differences between heart rate and oxygen uptake during practice session and forehand and backhand practice; 3. Group B player's Vo^2_{max} during practice session and simulating competition were 33.5 ± 7.5 ml/kg/min and 35.6 ± 18.4 ml/kg/min, respectively, no differences between heart rate and oxygen uptake during practice or forehand and backhand practice sessions. 4. In this experiment the players of oxygen ability and good endurance that will be better exercise performance. 5. During practice session an average METS to be 8.51 ± 1.0 METS ; the simulation match METS to be 8.51 ± 1.0 METS, It belongs to extremely heavy degree of sport to carry on the intensity of movement that table tennis trains according to this research. The intensity of simulation match is fierce sports, the energy that the competition needs to consume is much higher than to training.

Keywords : 40mm table tennis ball, eleven points, oxygen uptake

P-27-05-46-Tw

How to Harness the Characteristics of the 11 point Scoring System for Winning a Table Tennis

Techeng Wu, Piren Su (TPE)

Purpose:

In 2000, the International Table Tennis Federation (ITTF) changed from a 21 to an 11 point scoring system to make games more fast-paced and exciting. For coaches and athletes, it is crucial to understand the nature of the 11 point scoring system, thus controlling the tempo and the key features of the game. Particularly, coaches need to design systematic training plans for group and individual athletes to prepare for the fast-paced matches.

Methods:

This essay is based on former documents and inductive method.

Results:

This essay consists of five parts, including 1) the winning formula, 2) characteristics of the 11 point match, 3) techniques and tactics for fast-paced matches, 4) how to raise the in-game mentality, and 5) endurance and stamina training. These guidelines would be valuable for coaches and athletes to analyze and understand the impact of the 11 point scoring system on training, thus raising athletes' performance in top-level competitions.

Keywords: 11 point scoring system, winning formula, training preparation

P-27-06-47-Tw

How to Coach World-Class Athletes of Table Tennis

Techeng Wu, Piren Su (TPE)

Purpose:

The success of world-class table tennis players heavily relies on the training program provided by their coaches. Although there are unique characters of individual athletes, in this study we summarize the common experience of their coaches in training preparation. We targeted Chinese top coaches and researchers of the sport science of table tennis to understand their philosophy and methodology to help talented players become successful as well as maintain the performance of world-class athletes at the highest level.

Methods:

This study chose 20 top table-tennis coaches and sport-science investigators as the objects of analysis. Inductive method is used.

Results:

The following four points summarize the characteristics of top table-tennis coaches for world-class athletes and their coaching philosophy.

- 1) They master the sport science of table tennis.
- 2) They closely follow the development of new techniques, equipments, and strategies used in table tennis.
- 3) They understand the psyche of their players and motivate individual players based on unique situations.
- 4) They are creative in experimenting new ideas and very aggressive in competition.

Keywords: top table-tennis coach, coaching philosophy, successful experience

P-27-07-48-Tw

A Study on Table Tennis Players' Psychological Skills, sport Injury, and Tournament Satisfaction in 49th World Championship

Chang-Yong Chu, Tsung-Min Hung (TPE)

The purposes of this study were three folds: 1) to investigate the utilization of psychological skills in table tennis players; 2) to survey the sport injury in table tennis players; 3) to survey the satisfaction ratings of the 40th World Championship. One hundred and two participants that represent twenty-three countries were surveyed during the tournament. Participants' demography: Mean age of 23.4 years old with a mean table tennis experience of 15.2 years. Mean height was 170.4 cm, while the mean weight is 63.8 kg. Around 40% are in the top 100 World ranking with a mean of 3.8 participation times in the World table tennis championship. Right handed athletes comprises of 73%, while 27% for the left handed athletes. Penholders comprises of 19%, while 81% are shake-handers. Regarding the athletes' psychological skills: 55% of the participants seek help from sport psychologists, while the mean therapy time is 1.7 hours. During tournaments, psychological need arises from coaches, athletes, physiotherapist, psychologist, team physician, and nutritionist. Psychological problems encountered in training and competitions ranges from lack of concentration, lack of self-confidence, too much pressure, lack of motivation, and recurrence of old injury. Motivations for participating in this world championship are from attain higher achievements, rewards and prizes, gain experience, and accomplish own goal. Regarding the tournament injury, participant athletes' injuries are from the waist, shoulders, knees, thigh, back, legs, arms, and neck areas. Reasons are over training, insufficient warm-up time, incorrect posture, emotional instability, lack of concentration, and cause by previous injuries. Cause of injuries was during forcefully saving the ball, smash, and drive. With regards to tournament's satisfaction, the highest satisfaction rating was the tournament transportation arrangement, event organizers and tournament equipments. The lowest rating was the tournament food arrangements, awards and prizes, and tournament's procedures/arrangements.

Keywords: Table tennis, Psychological skills, Sport injury, satisfaction

P-27-08-49-Tw

A Study In Taiwan College Table Tennis Players' Competition Confidence and Its Inference

Chih-En Chen, Ming-Yueh Wang (TPE)

The purpose of this study was to investigate the relationship between the competition confidence and the career development of college table tennis players in Taiwan. A total of 360 players (256 males and 104 females) were surveyed. The competition confidences of different categories are described. The findings include the career exploration, career orientation, career decision and environmental exploration are presented in contrast with the competitor confidence scale. With the positive correlation of competitor confidence and careers development, but player's academic record with negative correlation.

P-27-09-50-Tw

The Table Tennis Player's Training Satisfaction to the Influence of Team Support, Team Promise and Intention to Leave—Take University Sports Games General Group Table Tennis Players as An Example—

Ching-Tsai Wen, Jin-Chang Kong (TPE)

The studies mainly focus on the correlation between University Table Tennis Players' training factor and team support, team commitment, and tendency of quitting the team as well as the prediction of team support and commitment, and tendency of quitting the team from players' training satisfaction factor. The studying objects are 257 General Group Table Tennis players. The used tool includes training satisfaction generous character form of table tennis players, team to promise quantity form, team to support quantity form, and the form of tendency of quitting the team. The acquired data is analyzed with accumulate to differ by lousy Pierre related and diverse gradually regression. According to the analysis result, the training satisfaction factor is proportioned to team support. Within training satisfaction factor, exercise performance, equipment, teammate relationship, train control, and exercise participation can effectively predict team support. And, exercise to express, teammate relationship, coach profession, and the equipment are the four effective factors to use to predict team commitment. In addition, the two factors including coach profession, ball team welfare can be used to effectively predict to tendency of quitting the team. This research can be a reference for schools, players and coaches for the purpose of follow-up research.

Keywords : Train satisfaction, teams support, the team promise, leave team tendency

P-27-10-51-Tw

The Training Satisfaction of the University Table Tennis Players of General Group

Ching-Tsai Wen (TPE)

The research was mainly lie in inquiring into the university general Group table tennis players; participation trains current conditions and difference factor of satisfaction. Also with the invitational tournament of the Tamkang University table tennis take participate in a game players 257 for investigate object. Obtain data material with the description statistics analyses, item analyses, factor analyses, test, one way (ANOVA). Method carries on data analyses. Make an analysis of detection by statistics : Train a satisfaction factor; include the coach professional ability, technique performance and ball team welfare, place equipment and training control, ball team atmosphere and teammate to relationship to 7 factors. general Group table tennis players training satisfaction factor is one after another the professional ability, ball team atmosphere of the teammate relationship, coach, train control, the performance of the place equipment, ball team welfare and technique; but the male players was in the coach professional control of the ability, place equipment and training 3 factor, marked was taller than female players; Ball age time more long players, express a factor in the technique, marked was higher than a ball age time more short players; Haven't had results to show the players of merit, at professional ability factor, marked be ever higher than before acquiring a whole country several players; Count longer players while training, relate to 3 factor in the coach professional ability, training control and teammate, marked was higher than train count longer players; The coach was are professional physical education background, relate to 2 factor in the coach professional ability, teammate, marked was higher than non-physical education profession and not clear coach background. The research detection was a school, representatives' players and coach, and the reference of follow-up research.

Keywords: table tennis, table tennis players, trains satisfaction

P-27-11-52-Tw

A Study of Athletes' Satisfaction for Participating 2008 National Collegiate Teacher's Table Tennis Tournament in Taiwan

Wei-Li Hung, Chia-Chang Chang, Yu-Numg Lee, Chen-Yu Chang (TPE)

The purpose of this study was to determine the athletes' satisfaction for participating 2008 national collegiate teacher's table-tennis tournament in Taiwan. Subjects for this study were consisted of 121 players. The instrument of this study was by using "Questionnaire of management and administration for 2008 national collegiate teacher's table-tennis tournament" (return rate 91.67%). Data analysis was by descriptive statistic, t-test and one-way analysis of variance. The results of this study indicated that: (1) There are significant differences of athletes satisfaction among athletes with different personal attributes for sub-scales "planning of event", "administration of competition" and "service of event". (2) Athletes have the highest satisfaction on "facility and equipment" in sub-scale "service of event" and followed by the factor is "service of officers". (3) Athletes have the highest satisfaction on "administration of registration" in sub-scale "planning of event" and followed by the factor is "administration of opening ceremony". (4) Athletes have the highest satisfaction on "announcement" in sub-scale "administration of competition" and followed by the factor is "competition results bulletin".

Keywords: table tennis, Satisfaction, Management of Sports Event

P-27-12-53-Tw

A Study on the Impeding Factors of Disability Participate in Table Tennis in Taiwan

Chen-Hua Huang, Tsun-I Hsiao, Ming-Chen Kou, Hsuan-Jung Hsieh(TPE)

The purposes of this study were to investigate current situation and impeding factors of disability participate in table tennis. The research tools adopted is questionnaire. Means of statistics in use in this research include: Descriptive Statistics, t-test and One-way Anova. To analysis different of impeding factors by background variables and disability classification of disability individual who participate in table tennis.

Results of this research are as follows:

1. Disability participate in table tennis almost 80% were male, more than 60% married, more than 50% childless, more than 60% were 40 to 49 years old, 40% education were high school, occupation were military, civil servant and teacher close 35%, about 23% earn less 20,000 per month.
2. Different disability classification of disability who participate in table tennis were, more than 75% were polio, acquired were close 90%, Disability classification of ITTC were more than 50% on TT4 and TT5. Use walking stick help to walk was 34.12% and useless any thing to help walking was 31.76%.
3. Among the background variables, sex, married, child, age, education, occupation, income per month show no significant variance for impeding factors to participate in table tennis.
4. Among the inherent or acquired and classification of disability show significant variance for impeding factors to participate in table tennis.

Keywords: disability, impeding factors, table tennis

P-27-13-54-Tw

Survey Analysis for the Current Utilization Status of Wheelchair Table Tennis Athletic Equipments

Chen-Hua Huang, Ming-Chen Gou, Tsun-I Hsiao, Hsuan-Jun Hsieh (TPE)

This article adopted the research subjects from those who participated in the 2008 Postal Insurance Cup for national bodily and mentally disabled athletes who represented this country. And these athletes participated to the points-accumulated contests for wheelchair teams of the first to fifth levels were of 45 men and 16 women athletes with a total of 61. Research methodologies like documentations, survey queries and mathematical statistics were used to conduct analyses in regards to issues like athletic populations for current Taiwan bodily and mentally disabled wheelchair table tennis players, and current equipment utilization status. And the following are the findings:

1. In the arena of wheelchair table tennis population development, male athletes accounted for 45 persons (74%): 28 persons (62%) of High levels TT4, TT5, 12 (27%) of middle level TT3, and 5 persons (11%) of low level TT1 and TT2. Female athletes accounted for 16 persons (29%) : 10 persons (63%) of TT4 and TT5 levels, 5 persons (31%) of TT3 middle level and 1 person (1%) of low level TT1 and TT2.
2. In paddle grip, the male wheelchair athletes adopted right hand grip with 42 persons (93%), and those with left hand grip were 3 persons (7%). And the female athletes adopted right hand grip were 15 persons (91%) with one in left hand grip (9%). The male wheelchair athletes had 38 persons (84%) adopting handshake grip, 7 persons (19%) adopting pen-hold grip. Female wheelchair athletes had 16 persons (100%) adopting handshake grip.
3. In the area of pad rubber, 31 (69%) of the male athletes adopted pimpled rubber pad, and 14(31%) of them adopted the smooth surface pad. For female wheelchair athletes, there were 12 persons (75%) adopting pimpled pad and only 4 persons (25%) adopting smooth surface pad.
4. In the wheelchair control method and usage, 25 (59%) of the male athletes adopted the lock-released mechanism with only 9 persons (20%) adopting the wheelchair locked approach, and 11 persons (24%) semi-locked. 6 persons (38%) of the female athletes adopted lock-released mechanism, only 4 persons (24%) adopting locked mechanism and 6 persons (38%) with semi-locked.
5. In the wheelchair seat preparation and usage, 33 persons (73%) of the male athletes adopted parallel stance and only 12 (27%) adopted sideways. 8 persons (57%) of the female athletes adopted the parallel stance with only 6 (43%) adopting sideways.

Handshake grip has been the mainstream for Taiwan table tennis sport. Still, the pen-hold has the tactical characteristics in technique. The pad rubber can be pimpled which has the characteristics of enabling the spin with varieties; it allows the player with either the attack or defense, slow or fast maneuvers. And this approach is adopted by most wheelchair players. For those middle and high levels wheelchair athletes, they tend to adopt the lock-released or semi-locked control of wheelchair, which can enhance the agility of wheelchair control.

Keywords: wheelchair, table tennis, disability

P-27-14-55-Tw

The Behavior of Leisure Participation of College Table Tennis Athletes

Chung-Ju Chang, Ming-Yueh Wang, Shu-Hua Hung (TPE)

The purpose of this study was to analyze the mediator effect of degree of sport participation between exercise self-efficacy and behavior of leisure participation, and to explore the current situation of exercise self-efficacy, degree of sport participation, and behavior of leisure participation of college table tennis athletes at 2008 National Intercollegiate Athletic Game. A total response of questionnaires was 400, and the valid sample was 329. The data was analyzed by the descriptive statistics, T-test, one-way ANOVA and hierarchical regression. The results of this study were as followed: 1. The current situation of exercise self-efficacy, degree of sport participation, and behavior of leisure participation of college table tennis athletes. (a) The mean of the total exercise self-efficacy of the subject was 2.88. (b) The percentage of the different degree of sport participation was almost the same. (c) The mean of behavior of leisure participation was 2.71, and the static leisure behavior had the highest mean score ($M=3.84$). 2. The different of demographics of college table tennis athletes were partial significant differences among exercise self-efficacy, degree of sport participation, behavior of leisure participation. 3. There was partial mediator effect of degree of sport participation between exercise self-efficacy and behavior of leisure participation.

Keywords: Exercise Self-efficacy, Degree of Sport Participation, Behavior of Leisure Participation, Mediator, College Table Tennis Athletes

P-27-15-56-Tw

Satisfaction of Spectator Attendance at the National Table Tennis Championship in Taiwan

Mei-Jen Hunag(TPE)

The spectators' contribution has been regarded as the most critical element in determining the success of competitions. However, the table tennis association in Taiwan has been faced with the challenge of attraction of spectator attendance. In fact, understanding satisfaction of spectator is fundamental to promote spectating rates. Therefore, the purpose of this study was to investigate satisfaction of table tennis spectator attendance in order to attract people attending table tennis games. Participants were 200 spectators who were attending the national table tennis championship. Table Tennis Spectator Satisfaction Scale (TTSSS) was used in this study. Descriptive statistic was chosen in the data analysis. There were 12 questions in the questionnaire which was divided into 3 factors: Attraction of game (6 items), comfortable and convenience (3 items), and expertise and promotion (3 items). The results indicated that attraction of game was the top rated satisfaction factor followed by the facility comfortable and convenience factor. Expertise and promotion was the lowest rated satisfaction factor. Suggestions of this study were as follow: (1) Attraction of game was the important satisfaction of spectator attendance; (2) There is a need to improve expertise professional (such as umpire and administrator) and to hold promotion activities in order to attract spectators' attendance; (3) The findings of this study should be taken into consideration in developing strategies for National Table Tennis Association in Taiwan; and (4) There is a need for further study on table tennis spectators.

Keywords: satisfaction, spectator attendance

P-27-16-57-Tw

The Study of College Students' Exercise Participative Motivation and Exercise Involvement in Table Tennis

Shu-Ching Wu, Ming-Hua Hsu (TPE)

The purposes of this study were: 1. to compare the differences of exercise participative motivation in table tennis between the college students with different demographic variables, and 2. to explore the prediction of exercise participative motivation to exercise involvement in table tennis. Two hundred and eighty college students (male 183, female 97) were recruited and administered with the Inventory of Exercise Participative Motivation and the Inventory of Exercise Involvement. The collected data were analyzed by t-test (independent), one-way ANOVA (independent), and multiple stepwise regression analysis. The findings were as follows: 1. Female students' score of "leisure and relaxation" was higher than that of male students. 2. There were no difference of exercise participative motivation and exercise involvement between different grade. 3. The students who had ever taken table tennis course had higher score of "excitement" than that of the students who did not take table tennis course. 4. The students who participated exercise three times per week had higher score of "social needs" than that of the students who participated once, and the students who participated exercise two, four and five times per week had higher scores of "excitement" than that of the students who participated once. 5. "Social needs" and "achievement needs" could validly predict 29.9% of the variance of "fun", and "achievement needs" and "social needs" could validly predict 12% of the variance of "excitement".

Keywords: exercise participative motivation, exercise involvement

P-27-17-58-Tw

A Study on the Technical Analysis and Attack-Defense Performance of Men's Top Four Single Players in 2008 Olympic Games

Ming-Hua Hsu (TPE)

The purpose of this study was to examine the three-stage skill, attack-defense performance, zones of scoring points of elite male table tennis players. The study was observed the semi-finalists (Lin Ma, Hau Wang, Li-gin Wang, and Perrson) of table tennis men's single in 2008 Beijing Olympic Game. We analyzed all games of the four subjects played using three-stage skill and defense-attack skill analysis table. The results as follows:

1. All subjects were "Pass" in most of three-stage skill evaluative index. The using percentage of rally part was below evaluative index in all players.
2. The main scoring techniques of all players were serve-then-attack part (serve point and forehand attack), receive-then-attack part (forehand attack and backhand attack), rally part (forehand attack and backhand attack) in three-stage skill. All players scoring percentage of three-stage skill were significantly higher than all opponents but no difference in using percentage.
3. There were significant differences in attack-defense performance and zones of scoring points but no difference was found in zones of losing points of four players.
4. The multi-regression analysis data showed that the scoring percentage of attack-defense in three-stage skill could be effectively to predict the performance.

Keywords: table tennis, skill analysis, scoring skills, zones of scoring points

P-27-18-59-Ug

Social Aspects to Promote International Friendship and Cooperation

Matsyetsye Emmanuel (UGA)

The Swedish International Development Agency (SIDA) through TWIGA a Swedish NGO has made significant financial contribution to Mbale Tigers since 2005 to facilitate the strategy to identify, train and expose players to local, National, Regional and International Table Tennis competitions and also pursue the millennium development goals. (ref: www.mbaletigers.com/www.twiga.se/www.ittf.com) Children 6-18 years now dominate the national team of Cadet Boys and Girls, Girls and Boys under 17 years and also feature dominantly in the Women's Team. They have started getting to the Men's team category with ease. Kids have benefited from Education seminars and have greatly changed their social behavior, values and attitudes. Reports from schools, families and community members indicate a significant change in the life styles of most of them who happen to be residing in a slum area near the location of the project office-Maluku. Other income generating activities like Bicycle taxi, internet café and workshop for locally making table tennis tables aimed at making Mbale Tigers a self-reliant club in a near future have been implemented and have impacted positively on the outlook of the kids, workers of the club and community. SIDA and TWIGA have twice supported cultural exchange programs in which Mbale Tigers Kids and one leader have traveled to Sweden for at least three weeks to share experiences through tour and travel, competition, Conferences and training in elite Clubs like Angby and Mariedal Sports Clubs. UN Habitat which awarded a certificate of merit to Mbale Tigers in recognition of its involvement of Youth in the Project, recommended that Mbale Tigers replicate this project in the East African countries. The leadership of the Government of Uganda, ATTF, ITTF through its Goodwill Fund, Computer Aid and the population of Ugandan Table Tennis administrators, players and sponsors recognize Mbale Tigers Table Tennis Club Model as the most successful sports organization worth supporting and encouraging if sports in general and Table Tennis in particular has to grow into an Industry for career development, job creation, income generation and proactive innovations to bridge gaps in the social development process in Africa south of the Sahara in general and Uganda in particular.

P-27-19-60-Uk

Peculiarities of Training Table Tennis Sportswomen

Y.Posevin, Y.Pokholenchuk (UKR)

Logical algorithms (A) with a view to age periodization that allow solving any specific problem of learning and training are developed. At the same time it is borne in mind that initial data can be changed within certain measures (mass character A). Logical algorithms (A) in the training practice occur as description of the techniques, tactics etc. Mass character requirements mean that one and the same (A) can be used for the purposes of stage by stage training of the sportswomen in different age groups for many years. At the same time the paper shows the possible ways of modernizing presented methods of analysis for special training, its evaluation and other solutions because periods of priority development of certain mechanisms correspond every respective period of training. So the main guideline of the research in the female table tennis is the search of ways to develop (A) with a view to age groups, physiology, evaluation and ways of applying the reserves of the sportswomen and improving the system of monitoring the training process. The sphere of the scientific activity focused on the control and evaluation of the functional state of the sportswomen, identification of the correction of the training process, development of the specialized training effect and identification of the load standards for the purpose of achieving high level of training for the qualified sportswomen in the table tennis.

P-27-20-61-Ve

Biomechanical Characteristics of the Active Phase of the Hit of the Forehand Topspin, Execute by Athletes Participants in World Junior Championship, Madrid, Spain 2008

Marco Gomez, Mihai Zissu (VEN)

The purpose of the present investigation was the description of the biomechanical characteristics of the active phase of the Forehand Topspin, executed by table tennis participants in world junior championships, Madrid, Spain 2008. The work was a field research, with a descriptive design through a qualitative and quantitative approach. The subjects were ten (10) high performance man athletes. For the collection and analysis of the data, the basic and computerized video-graphic method was used, through the corresponding procedures. It was used the computerized 3D Peak Motus System for the capture and quantification of the results. A descriptive statistical treatment was applied to the results, and they were presented through graphs and tables. It was concludes that, by effect of the actions of the subjects, the ball was projected with high velocity, it described a little trajectory, and it took a little time in arriving at the table of the opposite.

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