Asia Conference on Kinesiology 2018
2018 亞洲運動科學研討會

# ACK 2018 Nov.2-5

## Program 會議手冊

Organized by : Society for Sport & Exercise Psychology of Taiwan
主辦單位：台灣運動心理學會

Location : National Taiwan University of Sport
會議地點：國立臺灣體育運動大學

# Contents

| Organizing Committee of<br>2018 Asia Conference on Kinesiology, Taichung, Taiwan | | |
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# Opening Remarks

Opening Remarks of President of
Society for Sport and Exercise Psychology of Taiwan

Distinguished guests, ladies and gentleman, welcome you all to 2018 Asia conference of Kinesiology.

This is president of Society for Sport and Exercise Psychology of Taiwan, my name is Yen-hui Chuang. On behalf of SSEPT, we welcome all of you to join this conference. We are very honor to host the 2018 Asia conference of kinesiology. Without your participation and support, the success cannot be achieved. Participants who come from outside of Taiwan should be the most thankful one to have. With all our sincerely thankfulness, to those who from South Korea, Malaysia, Singapore, Japan, Hong Kong, China, Indonesia, Germany and US. Also, I would like to thank President of the National Taiwan University of Sport, Professor Hua-Wei Lin, for his fully support to this conference, especially for us to have such brand new venue.

There are eight renown keynote speaker from US, South Korea, Australia and Taiwan were invited to 2018ACK and we hope to bring the latest sport and exercise science knowledge to you. Beside the keynote speech, we also included over 110 oral and poster presentation and our “sport and exercise psychology rookie PhD presentation” in our schedule. We wish all of you can find some research interests and social connection through conference participation in this academic festival.

All in all, wish you could have a wonderful experience in our brand new building.

President, Society for Sport and Exercise Psychology of Taiwan

Yen-Hui Chuang
National Taiwan University of Sport

Welcome Messages from the Chair of
2018 Asia Conference of Kinesiology Organizing Committee

Dear ACK friends,

On behalf of the Organization Committee of the 2018 Asia Conference of Kinesiology (ACK), I would like to extend a sincere welcome for the friends coming from all over the world and Asia in specific. The 2108 ACK will be held on November 2-5$^{th}$ 2018 in Taichung, Taiwan, at the National Taiwan University of Sport.

As the 3$^{rd}$ largest city of Taiwan, the "2018 ACK in Taichung" will be an unforgettable experience for you in this annual conference of Asia Society of Kinesiology ( ASK). During the time of November, Taichung is famous for its mild temperature in average 21-Celsius degree (18$^0$C - 27$^0$C) that situating you in a pleasant atmosphere neither too cold nor too hot.

To make this conference becomes a reality, I would like to thank those staffs of the Society of Sport and Exercise Psychology for Taiwan (SSEPT) including current president - professor Chuang, Yen-Huei; general secretary- professor Lin, Ching-Er; former president of SSEPT- professor San-Fu Kao; former general secretary of SSEPT and many others who have been working for the 2018 ACK conference more than 15 months. They arrange all sort of programs such as keynotes, symposia, interactive posters, workshops, Young Investigator Award (YIA), short oral presentations, social parties, and of course, city tour.

Also, my appreciation toward the sponsors including the National Taiwan University of Sport for providing conference venue; the Ministry of Education (MOE), Ministry of Science and Technology (MOST), and City Government of Taichung for providing financial supports, and many sporting goods companies who exhibiting sports science books and equipment.

While you stay in the 2018 ACK conference, I suggest you don't miss the opportunity to explore many traveling wonders in Taichung such as Miyahara ophthalmology clinic, the rainbow military residents, Lihpao wonderland, National Taichung Theater, Calligraphy Greenway, and many others. Also, you may bring your family to taste local traditional Chinese foods or other Asian cuisines including Japanese, Korean, Vietnam, Thai, and Malaysian foods. The prices and the tastes of foods are fairly affordable and satisfied. Or, if you may try some luxurious foods in Michelin restaurants such as Putien, Lemut, Beluga, and Han-Lai restaurant.

In sum, I hope your visiting to 2018 ACK is a pleasant journey mixed with academic sharing, inspiring, nurturing, and joyful life experiences.

Chair, 2018 Asia Conference of Kinesiology (ACK) organizing committee

Frank J.H. Lu Ph.D.
Chinese Culture University

Opening Remarks from the President of the
Asian Society of Kinesiology

Dear friends, colleagues, and students,

I am very delighted to meet you at National Taiwan University of Sport for the 3rd annual meeting of the Asian Society of Kinesiology (ASK) and the 9th Asia Conference on Kinesiology (ACK) in 2018 in Taichung, Taiwan.

On behalf of the ASK, I would like to extend my heartfelt thanks to Professor Dr. Hua-Wei Lin, the president of National Taiwan University of Sport for providing this beautiful venue for ACK 2018 and Professor Dr. Yen-Huei Chuang, the president of the Society of Sport and Exercise Psychology of Taiwan (SSEPT) for his leadership in organizing our conference. Also I thank Professor Dr. Frank J.H Lu, the Chair of the ACK Local Organizing Committee and student volunteers from the National Taiwan University of Sport for their commitment to ACK2018.

Kinesiology (運動學) emerged by shifting away from an educational model as the sole focus for study of physical activity in higher education to a disciplinary focus in the United State of America in the late 1960's. The American Kinesiology Association (AKA) defines Kinesiology as the study of physical activity and its impact on health, society, and the quality of life as the academic discipline.

In 2010, some countries in Northeast Asia which have the term '運動' participated in the Northeast Conference on Kinesiology (NACK) to discuss Kinesiology, identifying departments related to physical activity with various names and expanding job opportunities. The ASK was established during the 7th ACK in 2016, which was renamed after the 6th NACK.

Dear Kinesiologists,

In modern society, interest in physical activity is increasing day by day in a variety of fields. The perception that "exercise is medicine" is spreading in the world. But exercise is both poisonous and medicinal as physiological stress to homeostasis, especially exercise intensity. Exercise intensity is the most acute stressor and should be treated with caution to maximize the effect of exercise, which is depended on exercise volume.

We believe that enhancing the value of physical activity is the goal of kinesiology as well as the role of kinesiologists. So, the ASK aims to provide opportunities for in-depth exchanges of information, experience and expertise among kinesiologists, discuss advanced educational programs, and develop appropriate certification systems to create ~~the~~ job opportunities for kinesiologists. In order to achieve our objectives, the ASK as a representative society in Asia is hosting the ACK and publishing the Asian Journal of Kinesiology (AJK). Soon we will be preparing for the Integrated Kinesiologist Qualification System (IKQS) which will be an effective evaluation process for training competent kinesiologists capable of performing in a variety of fields.

Dear ACK 2018 participants,

It is my hope that you will enjoy the culture of Taiwan in Taichung, and take home happy and unforgettable memories of the ASK. And I have high expectations that you will make the vision of the ASK widely known to your friends and colleagues.

I am looking forward to your continuous participation in the ACK which is set to take place periodically across Asia.

Thank you very much.

Jung Sok Oak, Ph.D.
President, Asian Society of Kinesiology

# 2018 Asia Conference of Kinesiology
# Program

| Time | Program | | Moderator | Location<br>ChangChi Building |
|---|---|---|---|---|
| Friday, November, 2nd, 2018 | | | | |
| 16:00<br>17:00 | Registration | | | Lobby |
| Saturday, November 3rd, 2018 | | | | |
| 08:00<br>09:00 | Registration | | | Lobby |
| 09:00<br>09:30 | Opening Ceremony | | | 5F International Conference Hall |
| 09:30<br>10:30 | Keynote Speech 1<br>The effects of branchedchain amino acids, arginine, citrulline on cognitive function and exercise performance in athletes<br>Speaker: Dr. Chen-Kang Chang | | Likang Chi | 5F International Conference Hall |
| 10:30<br>10:50 | Tea Time | | | 6F |
| 10:50<br>11:50 | Keynote Speech 2<br>Acute exercise, cognitive function, and brain: The update and future direction<br>Speaker: Dr. Yu-Kai Chang | | Sheng Kuan Wu | 5F International Conference Hall |
| 11:50<br>13:00 | Lunch | | | Gymnasium |
| | The Joint Meeting of the Asian Society of Kinesiology Managing Council Members & The Asian Journal of Kinesiology Editorial Committee Members (12:20-14:00) | | | 5F Roundtable Conference Room |
| | Bulletin of Sport and Exercise Psychology of Taiwan Editorial Committee Members (12:20- ) | | | 4F Group Counseling Room |
| 13:00<br>14:00 | Keynote Speech 3<br>Digital sensors in sport science<br>Speaker: Dr. Tzyy-Yuang Shiang | | Chu-Min Liao | 5F International Conference Hall |
| 14:00<br>14:10 | Break | | | |
| 14:10<br>15:10 | Keynote Speech 4<br>Strategy for developing norms for healthrelated physical fitness and conditioning in Asia<br>Speaker: Dr. Young-Sub Kwon | | Chung Ru Huang | 5F International Conference Hall |
| 15:10<br>15:30 | Tea Time | | | |
| 15:30<br>16:30 | Poster Presentation 1 (P1~P41) | | Chi-Chang Chen<br>Mei-Hua Chen<br>Hsiu-Tin Wu<br>Ching-Er Lin | Lobby |
| 16:30<br>18:00 | Oral Presentation 1 | O1~O8 | Yu-Kai Chang | 5F International Conference Hall |
| | | O9~O15 | Chiao-Lin Nien | 5F Roundtable Conference Room |
| | | O16~O24 | Hsiu-Hui Chen | 2F Library |
| 18:20<br>20:00 | Welcome Dinner | | | Gymnasium |

# 2018 Asia Conference of Kinesiology
# Program

| Time | Program | | Moderator | Location ChangChi Building |
|---|---|---|---|---|
| Sunday, November 4th, 2018 | | | | |
| 08:30<br>09:30 | Doctoral Dissertation Presentation of Physical Activity Psychology | | Yeou Teh Liu | 5F International Conference Hall |
| | Poster Presentation 2 (P42~P73) | | Li-Chin Yeh<br>Lin Chi<br>Ju-Han Lin<br>Gou-Hwa Ku | Lobby |
| 09:30<br>09:50 | Tea Time | | | |
| 09:50<br>10:50 | Keynote Speech 5<br>Moderate exercise is better medicine than polyphenol supplementation for the obeseinduced metabolic complication<br>Speaker: Dr. Wanglok Lee | | Tsung-Min Hung | 5F International Conference Hall |
| 10:50<br>11:00 | Break | | | |
| 11:00<br>12:00 | Keynote Speech 6<br>Mood profiling in sport and exercise: Recent developments and future directions<br>Speaker: Dr. Peter Terry | | Frank Jing-Horng Lu | 5F International Conference Hall |
| 12:00<br>13:30 | Lunch | | | Gymnasium |
| | Membership General Assembly of Society for Sport and Exercise Psychology of Taiwan (12:30-13:20) | | | 5F International Conference Hall |
| 13:30<br>14:30 | Special Fellow Keynote Speech 7<br>Cognitive neuroscience research and application for precision sports<br>Speaker: Dr. Tsung-Min Hung | | San-Fu Kao | 5F International Conference Hall |
| 14:30<br>14:40 | Break | | | |
| 14:40<br>15:40 | Keynote Speech 8<br>Enhancing athletes' motivation and wellbeing: The application of empowering and disempowering motivational climate<br>Speaker: Dr. Likang Chi | | Suyen Liu | 5F International Conference Hall |
| 15:40<br>15:50 | Break | | | |
| 15:50<br>17:20 | Oral Presentation 2 | O25~O30 | Ying-Che Huang | 5F International Conference Hall |
| | | O31~O37 | Shih-Chiung Lai | 5F Roundtable Conference Room |
| | | O38~O43 | Huai-Hsiao Chiang | 2F Library |
| 17:20<br>17:50 | Closing Ceremony | | | 5F International Conference Hall |
| Monday, November 5th, 2018 | | | | |
| | Farwell | | | |

# Brief Introductions of Keynote Speakers

Keynote Speech 1

# The effects of branched-chain amino acids, arginine, citrulline on cognitive function and exercise performance in athletes

**Chen-Kang Chang, Ph.D.**
National Taiwan University of Sport

國立臺灣體育運動大學
運動事業管理學系教授
國立臺灣體育運動大學
研發處教授且兼任研發長
國立臺灣體育運動大學
副校長室教授且兼任副校長
國立臺灣體育學院
教授且兼任運動科學研究中心主任

## 補充支鏈胺基酸、精胺酸、瓜胺酸對運動員認知功能及運動表現的影響

認知功能及體能表現是運動競賽獲勝的二大要素。支鏈胺基酸、精胺酸與瓜胺酸具有多重生理功能，支鏈胺基酸可能減少色胺酸進入大腦，進而降低血清素合成，但會造成運動期間血氨上升；精胺酸與瓜胺酸則可能增加一氧化氮合成，並促進尿素循環，促進血氨移除，合併補充上述這五種胺基酸，可能降低運動誘發之中樞疲勞。本研究群已針對網球、跆拳道、中長跑等項目之運動員，進行專項體能及認知功能測試，結果顯示補充上述胺基酸可能透過抑制中樞疲勞，避免運動後認知功能下降，並提升體能表現。

## The effects of branched-chain amino acids, arginine, citrulline on cognitive function and exercise performance in athletes

Both cognitive function and physical capacity are crucial factors in athletic success. Branched-chain amino acids (BCAA), arginine, and citrulline have multiple physiological functions. BCAA could reduce cerebral uptake of tryptophan, leading to decreased synthesis of serotonin in the brain. On the other hand, BCAA supplementation would result in hyperammonemia during exercise. Arginine and citrulline could reduce exercise-induced hyperammonemia by increasing nitric oxide synthesis and urea cycle. The combination of these supplements could alleviate exercise-induced central fatigue. Our group investigated the effects of these supplements by applying sport-specific tests on physical performance and cognitive function on tennis, taekwondo, and endurance athletes. The results indicated that the supplementation of these amino acids could prevent the decline in perceptual cognitive function and physical performance in these athletes.

# Keynote Speech 2

## Acute exercise, cognitive function, and brain: The update and future direction

**Yu-Kai Chang, Ph.D.**
National Taiwan Normal University

Dr. Yu-Kai Chang received his Ph.D. degree from Department of Exercise and Sport Science at the University of North Carolina at Greensboro (UNCG), USA in 2008. Dr. Chang is distinguished professor in Department of Physical Education at National Taiwan Normal University, Taiwan and the director of Physical Activity & Cognitive Neuroscience Laboratory. Dr. Chang is also Vice President of Society for Sport and Exercise Psychology of Taiwan (SSEPT) as well as Managing Council member in both International Society of Sport Psychology (ISSP) and Asian-South Pacific Association of Sport Psychology (ASPASP). Dr. Chang's research focuses on sport and exercise psychology, specifically in the exercise and cognition through experimental psychology and cognitive neuroscience approaches. To date, Dr. Chang has published more than 150 research papers in reputed journals including Sport Medicine, Health Psychology, Medicine and Science in Sports and Exercise, NeuroImage, Journal of Sport and Exercise Psychology (JSEP), Psychology for Sport and Exercise, Psychophysiology and etc. Dr. Chang is the recipient of 2014 Early Career Distinguished Scholar Award of North American Society for the Psychology of Sport and Physical Activity (NASPSPA); 2013 Developing Scholar Award of ISSP; 2012 Chinese Young Scholar Award of International Journal of Sport and Exercise Psychology; and 2008 Outstanding Dissertation Award of UNCG. Dr. Chang is also an associate editor in Journal of Sport and Health Science (SSCI/SCI), section editor in international Journal of Sport and Exercise Psychology (Scopus), and editorial board member in JSEP (SCI/SSCI).

Keynote Speech 3

# Digital sensors in sport science

**Tzyy-Yuang Shiang, Ph.D.**
National Taiwan Normal University

台灣運動科技發展協會
理事長
教育部體育署運動科學團隊
總召集人
國立臺灣師範大學運動科學研究所
特聘教授
台灣生物力學學會
理事長
國立臺灣師範大學
運動科學研究所教授
International Society of Biomechanics
Execute Council

## Digital sensors in sport science

The digital sensors can provide exercise information by measuring movement parameters such as acceleration, angular velocity, or physiologic parameters such as heart rate, body temperature, or other signal such as information from Global Positioning System. These sensors became very useful and powerful tools for sport science research. The purposes of this abstract were to briefly introduce the sensors which have been widely used in wearable technology such as inertial sensors, heart rate monitor, GPS, and etc. as well as to investigate the analysis methods of sensor signals, including the calculation of parameters like energy expenditure, duration and intensity of exercise. Finally, to provide the future directions of sensor technology in sports science such as more thorough platform and coaching system.

Keynote Speech 4

# Strategy for developing norms for healthrelated physical fitness and conditioning in Asia

**Young-Sub Kwon, Ph.D.**
Humboldt State University

ACSM

Registered Clinical Exercise Physiologist

NSCA

Certified Strength & Conditioning Specialist

Humboldt State University

Assistant Professor

Department of Kinesiology and Recreation

& Administration

Human Performance Laboratory

Director

Keynote Speech 5

# Moderate exercise is better medicine than polyphenol supplementation for the obeseinduced metabolic complication

**Wanglok Lee, Ph.D.**
Chungnam National University

Chungnam National University

Professor

Iowa State University

Post doctorate

Seoul National University

Exercise physiology major

# Keynote Speech 6

## Mood profiling in sport and exercise: Recent developments and future directions

**Peter Terry, Ph.D.**
University of Southern Queensland

Dr Peter Terry is Director of Research Training & Development and Professor of Psychology at the University of Southern Queensland. Internationally renowned for his research in the areas of mood responses, applications of music in sport and exercise, and psychometrics, Peter is author of over 250 publications, including five books, 25 book chapters, and 70 peer-reviewed journal articles. He has been cited 6,500 times in the scientific literature and has an H-index of 40. Peter has delivered keynote addresses at international conferences around the globe, and given more than 30 invited presentations to organisations such as the Royal Society of Medicine, the Oxford Union, and the International Olympic Committee. His 2011 book, *Inside Sport Psychology* (with Karageorghis), is a bestseller in its class and his e-text, *Secrets of Asian Sport Psychology*, (released in August 2014) is the world's first textbook on sport psychology published under a Creative Commons licence. Peter is Past-President of the Asian-South Pacific Association of Sport Psychology (ASPASP) and a Fellow of the Australian Psychological Society (APS), the Australian Sport Medicine Federation (ASMF), the Royal Society of Medicine (RSM), and the British Association of Sport and Exercise Sciences (BASES). As an applied practitioner over the past 35 years, he has provided psychological support to more than 1,000 international and professional performers, including a host of Olympic medallists. He has worked as a sport psychologist at nine Olympic Games and more than 100 other international events. Peter played sport at representative level in rugby, soccer and track and field, competed in the national bobsled championships, and ran a three-hour marathon.

# Special Fellow Keynote Speech 7

## Cognitive neuroscience research and application for precision sports

**Tsung-Min Hung, Ph.D.**
National Taiwan Normal University

2018 年美國人體運動學學會院士
(National Academy of Kinesiology, NAK)

Tsung-Min Hung (Ernest) is a Research Chair Professor at the Department of Physical Education, National Taiwan Normal University, Taiwan. He is a fellow for the National Academy of Kinesiology (US) and a member for the Sport Science and Medical Committee at ITTF. He has been the sport psychology consultant for Taiwan's elite athletes for the past 20 years. Ernest's research interests are in the sport and exercise cognitive neuroscience. He has published more than 140 articles in peer-reviewed journals and 24 book chapters. He is in editorial board for PSE, IJSEP, and Peerj, and also reviewer for more than 20 high impact journals in sport science and neuroscience.

Keynote Speech 8

# Enhancing athletes' motivation and wellbeing: The application of empowering and disempowering motivational climate

**Li-Kang Chi, Ph.D.**
National Taiwan Normal University

國立臺灣師範大學體育學系
教授

國立體育學院教練研究所
教授

# 增進運動員動機與福祉：賦權與削權動機氣候之應用

在競技運動中，二個社會認知取向的動機理論，成就目標理論（AGT; Nicholls, 1989）和自我決定理論（SDT; Deci & Ryan, 2000），闡述教練所塑造的環境對於選手的動機有正面及負面的影響。Duda（2013）整合成就目標理論以及自我決定理論的動機環境特徵，提出層次及多面向的動機氣候構念。Duda 認為動機氣候可以包括賦權及削權的動機環境。本次演講主要的目的在於：（1）介紹教練所塑造的賦權及削權的動機氣候的概念以及測量。（2）整理及評述在競技運動中賦權及削權動機氣候的相關研究。（3）提出賦權與削權動機氣候在實務上的應用，如何增進運動員的動機及福祉。最後提出未來研究方向的建議。

# Enhancing Athletes' Motivation and Well-being: The Application of Empowering and Disempowering Motivational Climate

Two social-cognitive theories of motivation that identify both adaptive as well as maladaptive facets of the coaching environment are achievement goal theory (AGT; Nicholls, 1989) and self-determination theory (SDT; Deci & Ryan, 2000). I draw from Duda's (2013) conceptualization of the coach-created motivational environment as a hierarchical and multidimensional construct integrating motivationally relevant features of the environment as proffered in both AGT and SDT. According to Duda (2013), the motivational climate can be characterized hierarchically with a number of broad environment dimensions. These dimensions capture key coaching practices that represent motivationally "empowering" and "disempowering" environments.The Aim of this presentation is three-fold, first, to introduce the concept and measurement of empowering and disempowering motivation climate created by sport coach. Second, to review the literature related to empowering and disempowering motivation in sport setting. Third, to provide the suggestions for the applications and future directions of empowering and disempowering motivational climate in terms of enhancing athletes' motivation and well-being.

# Oral / Poster Presentation Specifications

## 2018 ACK Oral Presentation Specifications

Carefully check the program for your presentation time. You have 8 minutes to present and 2 minutes for Q & A (totally 10 minutes for each presentation).
When you arrive at the conference please load your presentation onto the appropriate computer in advance of your session (e.g. during lunch).

- Bring your presentation on a memory stick (Suggesting that you e-mail yourself the files you need in case of loss).
- The computers at the conference are PC and loaded with Windows.
- If you do have video embedded-sound will be available only the microphone only.

## 2018 ACK Poster Presentation Specifications

The poster presentation format offers an opportunity to illustrate your research graphically, using charts, photos, diagrams and text on a poster board. The format also affords an opportunity for dialogue about the research with convention attendees circulating among the poster boards. **Please complete the layout of your poster before the your session. One author must remain by the poster board for the time indicated in the program. Also, preparing one minute to verbally present your research. And then the moderator will deliver the certificate after your verbal presentation.** It may be helpful if you bring a one or two pages hand-out for distribution. Include contact information such as your e-mail address on the hand-out.
Consult the FINAL Program to identify the number assigned to your presentation and use the board with the corresponding number. Poster materials should include:

- Title
- Authors
- Abstract
- Introduction or literature review
- Method (including participants, measures, procedure)
- Results (visual displays such as graphs & charts)
- Discussion
- A list of key references, if appropriate

There are no fixed requirements for font style or size; however, it is important that you prepare your poster so that it is easily readable from several feet away. An example of a research poster board display appears below to stimulate some ideas. There will be instructions in the program as to when you should stick up your poster.
**Maximum Size: 90cm WIDE * 110cm HIGH**

| Oral Presentation 1<br>Saturday, November 3rd, 2018 16:30-18:00 | | |
|---|---|---|
| 5th Floor International Conference Hall-YIA Moderator: Yu-Kai Chang | | |
| Oral No. | Acceptance No. | Title / Author |
| O-1 | 2018ACK-1-25-O | The influence of the asymmetry of myodynamia on bilateral lower limbs on kinetics and kinematics performance<br>Kai-Xiang Weng, Xiao Hou, & Yi-Fan Lu |
| O-2 | 2018ACK-1-19-O | The relationship between the glenohumeral joint internal rotation deficit (GIRD) and trunk compensation movement in Taiwan high school baseball pitchers<br>Ting-Yu Wan, Chun-Hao Chang, Chin-Shan Ho, & Shih-Chung Cheng |
| O-3 | 2018ACK-1-35-O | Dark side of sport: from the horizons of Halbwachs and Goffman to analyze the forgotten subjects in competitive sport<br>Chia-Ting Sun |
| O-4 | 2018ACK-1-35-2-O | Intervention of gene and assisted reproductive technology: The future and possibility of competitive sports<br>Chia-Ting Sun |
| O-5 | 2018ACK-2-92-O | Gender difference in throwing motion in baseball pitchers, focusing on stride length and knee flexion angle of the stride leg<br>Ruo Hashimoto, Yukio Urabe, Junpei Sasadai, Somu Kotoshiba, & Noriaki Maeda |
| O-6 | 2018ACK-2-94-O | The influence of slipping phenomenon on the infraspinatus muscle activity during throwing motion in baseball players with throwing injury<br>Somu Kotoshiba, Yukio Urabe, Noriaki Maeda, Junpei Sasadai, & Masafumi Hara |
| O-7 | 2018ACK-1-5-O | Miss your putts? The key EEG index to achieve the superior performance in golf putting<br>Ming-Yang Cheng, Kuo-Ping Wang, Dirk Koester, Tsung-Min Hung, & Thomas Schack |
| O-8 | 2018ACK-1-16-O | Building theoretical sound tools for Taiwan on a sample of cyclists: Measurement of SDT motivation scales of SMS-II and BREQ-3<br>Hsin-Hui Wang, & Chiao-Lin Nien |
| 5th Floor Roundtable Conference Room-YIA Moderator: Chiao-Lin Nien | | |
| O-9 | 2018ACK-1-2-O | Efficacy of core training program on balance and core endurance in trainee rider without low back pain history<br>Fung-Chun Hin Jonathan |
| O-10 | 2018ACK-2-100-O | The role of upper body strength characteristics on vertical jumping performance<br>Tsung-Tse Chiang, Chie-Ying Chiang, & Chien-Chun Chang |
| O-11 | 2018ACK-2-102-O | Can selected kinetic variables from Push Jerk exercise relate to countermovement jump performance?<br>Ping-Hai Rao, Chien-Ying Chiang, Mao-Sen Sang, & Chien-Chun Chang |

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| O-12 | 2018ACK-2-105-O | The relationships between lower body dynamic strength and repeat effort sprints ability on high school rugby players<br>Bing-Xuan Wu, Chien-Ying Chiang, & Chien-Chun Chang |
| O-13 | 2018ACK-1-11-O | Effect of water fitness on physical fitness and function movement screening of female students<br>Ye Wang |
| O-14 | 2018ACK-1-24-O | Effects of different intensity exercise on anti-oxidation ability of liver in rats exposed to dioxin<br>Xiao Hou, Kai-Xiang Weng, & Jing-Min Liu |
| O-15 | 2018ACK-1-33-O | Effects of probiotics on the HPA axis of swimming mice<br>Yu-Jie Liu, Hui-Zhen Hao, Jing-Min Liu, & Zheng-Yan Tang |
| 2nd Floor Library | | Moderator: Hsiu-Hui Chen |
| O-16 | 2018ACK-1-20-O | Research on 3000-meter-running exercise intensity and load variation of male college students in different physical activity level<br>Jing-Min Liu, & Jian Guan |
| O-17 | 2018ACK-1-39-O | The relationship between physical activity level and body composition index of elderly women in China<br>Zheng-Yan Tang, Jing-Min Liu, & Yu-Jie Liu |
| O-18 | 2018ACK-2-103-O | Does high-volume resistance training affect jumping performance on elite female basketball player?<br>Yu-Ta Tsai, Chien-Ying Chiang, Hui-Yun Cheng, & Chien-Chun Chang |
| O-19 | 2018ACK-2-130-O | Effects of chronic sodium bicarbonate ingestion on prolonged endurance running performance and recovery in trained runners<br>Hui-Yin Ler, Cornelius Pang-Yew Ting, & Eng-Hoe Wee |
| O-20 | 2018ACK-2-Official-03-O | Health-Related Fitness Status of Adolescents among 8 Asian Countries<br>Govindasamy Balasekaran, Stanley Sai-Chuen Hui, Koya Suzuki, Hishashi Naito, Jong Kook Song, Yiing Mei Liou, Dajiang Lu, Bee Koon Poh, Kallaya Kijboonchoo, Visvasuresh Victor Govindaswamy, & Peggy Boey, Ng Yew Cheo |
| O-21 | 2018ACK-1-26-O | 追求「夢想」還是「妄想」? 運動事業作為青少年職志發展的轉變與限制<br>Ka-Ki Chan, & Pui-Lim Cheung |
| O-22 | 2018ACK-1-21-O | 一雷二閃：發現及發展生涯技能的球類運動介入手法<br>張沛廉 |
| O-23 | 2018ACK-2-Official-08-O | Neuromodulation in rehabilitation: Its current applications and future direction<br>Muhammad Hafiz Hanafi |
| O-24 | 2018ACK-2-122-O | 空氣槍射擊瞄準軌跡回饋效果之探討<br>莊于萱、陳秀惠 |

| Oral Presentation 2<br>Sunday, November 4th, 2018 15:50-17:20 | | |
|---|---|---|
| 5th Floor International Conference Hall | | Moderator: Ying-Che Huang |
| Oral No. | Acceptance No. | Title / Author |
| O-25 | 2018ACK-1-22-O | Issues of using team cohesion measurement in Taiwan: A published journal articles approach<br>Pi-Chao Hsu, Chiao-Lin Nien |
| O-26 | 2018ACK-2-118-O | 探討拔河選手減重的極端環境下心理韌性的結構<br>林敬淳、吳修廷、黃晉安 |
| O-27 | 2018ACK-2-120-O | 以吳慧卿(2001)團隊凝聚力工具看國內凝聚力碩博士論文研究結果<br>黃晉安、聶喬齡 |
| O-28 | 2018ACK-2-123-O | 女性運動員性別角色與愛情關係之探究<br>伍芷涵、高三福 |
| O-29 | 2018ACK-2-107-O | 意圖對身體活動的影響：行動計畫的中介效果與預期遺憾的調節式中介效果之探討<br>黃耀宗、東方介德、季力康 |
| O-30 | 2018ACK-2-110-O | 高中教練轉型領導與運動員生涯發展關係的探討<br>梅哲祥、高三福 |
| 5th Floor Roundtable Conference Room | | Moderator: Shih-Chiung Lai |
| O-31 | 2018ACK-1-4-O | 無氧耐力對肌肉乳酸形成率之影響<br>申孝祥、張嘉澤 |
| O-32 | 2018ACK-1-17-O | Effects of passively isokinetic training with electrical stimulation to the hamstrings on jump and sprint performance<br>Hara Keisuke, Otani Daisuke, Miki Suguru, & Ogiso Kazuyuki |
| O-33 | 2018ACK-1-18-O | Effects of passively isokinetic electromyostimulation exercise on hip joint torque<br>Miki Suguru, Otani Daisuke, Hara Keisuke, & Ogiso Kazuyuki |
| O-34 | 2018ACK-2-112-O | 四週彈跳床訓練對國中生下肢運動表現之影響<br>張祐偉、朱永暉、陳婉菁 |
| O-35 | 2018ACK-2-108-O | 不同深蹲速度下加速規與測力板之相關性比較<br>朱詠暉、蘇裕鈞、陳婉菁 |
| O-36 | 2018ACK-2-Official-02-O | Combination of swimming and estrogen replacement therapy prevents arrhythmia in postovariectomy rats<br>Denny Agustiningsih, Agnilia Octia Sari, Aike Karunia Putri, & Rahimi Syaidah |
| O-37 | 2018ACK-2-Official-04-O | Effects of exercise training on ER stress of the cardiac muscle in high-fat diet-induced obese rats<br>Kijin Kim, Nayoung Ahn, Jusik Park, & Hongsoo Kim |

| 2nd Floor Library | | Moderator: Huai-Hsiao Chiang |
|---|---|---|
| O-38 | 2018ACK-1-28-O | Fascicle behavior depends on muscle length, region and contraction velocity and joint angle<br>Otani Daisuke, Hara Keisuke, Miki Suguru, & Ogiso Kazuyuki |
| O-39 | 2018ACK-2-104-O | The impact of brain breaks on educational learning in physical education<br>Hosung So, Takeshi Miyazawa, & Young-Sub Kwon |
| O-40 | 2018ACK-2-Official-07-O | Utilization of traditional children-play in optimazing development of foundamental motor skills<br>Wawan S. Suherman |
| O-41 | 2018ACK-2-87-O | 改良式單腳硬舉活化內收大肌對跑步之影響<br>張雁如、劉明聖、張維綱、黃啟煌 |
| O-42 | 2018ACK-2-106-O | 準備動作影響個體之知覺與實際接球能力<br>蘇育賢、郭孟汎、李崇傑、李英瑋、張智惠 |
| O-43 | 2018ACK-2-81-O | Investigation of dietary behavior and lifestyle among collegiate football players<br>Qun Zuo |

## Doctoral Dissertation Presentation of Physical Activity Psychology
## Sunday, November 4th, 2018 08:30-09:30

| 5th Floor International Conference Hall | Moderator: Yeou Teh Liu |
|---|---|
| No. | Title / Author |
| 1 | The effects of physical activity training on executive function in older adults: A meta-analytic review of randomized control trials<br>Feng-Tzu Chen |
| 2 | 多媒體行動裝置與障礙物型態引致穿越間隙之行動與知覺<br>黃嘉笙 |

O-1, 2018ACK-1-25-O

# The influence of the asymmetry of myodynamia on bilateral lower limbs on kinetics and kinematics performance

Kai-Xiang Weng[1], Xiao Hou[2], & Yi-Fan Lu[1]
[1]Beijing Sport University, [2]Tsing Hua University

Object: The experiment aims to research the kinetics and kinematics differences between bilateral lower limbs of athletes who have the asymmetry of myodynamia on bilateral lower limbs, and summarize the simple evaluating indexes, which can judge the asymmetry of myodynamia on bilateral lower limbs of athletes. Methods: The experiment test subjects' Peak Torque (Nm) of their extensor kinematic chain of bilateral lower limbs. Define subjects whose difference value of eak torque is great than 10% as the experimental group, the rest is the control group. Each group has 10 subjects. Two groups will finish 3 kinematics tests items including running on full power, triple jump by left leg and triple jump by right leg, 4 kinetics test items including drop jump, vertical jump by two legs, vertical jump by left leg and vertical jump by right leg on the force platform. Results: In the experimental group, the peak force and impulse in the takeoff phase of vertical jump by two legs, the peak impulse in the takeoff phase of vertical jump by single leg and the peak force in the takeoff phase of drop jump,these four indexes of lateralization is much higher that the opposite side. After comparing the difference value between lateralization and the opposite side separately, we find a distinctive difference between two groups on the peak force in the takeoff phase of vertical jump by two legs and vertical jump by single leg. The peak impulse of vertical jump by single leg and the proportion of step size of triple jump by single leg in experimental group is significantly higher than the control group. Conclusions: 1.There are no significant influence on the sports performance of running, jumping and drop-jumping caused by asymmetry of myodynamia of bilateral lower limbs when the PT (Nm) is lower than 27%, but it will have a great significant influence on sports performance and sports ability of some relative movements like long jump with single leg and vertical jump with single leg. 2.Asymmetry of myodynamia of bilateral lower limbs doesn't have significant impact on the coordination-dominant movement, but has a great impact on these movements which are highly related to strength quality. In sports training, differences of time or commencing height of single leg between bilateral lower limbs can be regarded as a fast and simple method or index through the sports test, and it provides theoretical basis for sports practicing.

Keywords: sports biomechanics, asymmetry of myodynamia, bilateral lower limbs, sports performance

Corresponding author: Yi-Fan Lu

O-2, 2018ACK-1-19-O

# The relationship between the glenohumeral joint internal rotation deficit (GIRD) and trunk compensation movement in Taiwan high school baseball pitchers

Ting-Yu Wan, Chun-Hao Chang, Chin-Shan Ho, & Shih-Chung Cheng
National Taiwan Sport University

Background: GIRD is commonly seen in the dominant arm of baseball pitchers. Pitching requires integrity of the kinetic chain. When the upper limb motion changes, compensation movement may develop in other body segments. Past study suggested GIRD might affect pitching control in young pitchers; however, high school pitchers may have already adjusted pitching control with trunk compensation or other strategies. Purpose: The aims of this study were (1) to compare the kinematic parameters of the trunk between pitchers with or without GIRD, and (2) to identify GIRD as the potential risk factor for compensation with excessive trunk movement that may lead to sports injuries. Methods: 26 Taiwanese high school baseball pitchers were recruited in study. We evaluated shoulder internal and external rotation ROM. Those with GIRD in dominant arm for more than 20 degrees comparing to non-dominant arm were defined as GIRD group, the rest were non-GIRD. We used 10-camera Vicon motion system with sampling rate of 200Hz to analyze the kinematic parameters of the trunk motion during pitching. Independent t-test was used to compare the differences between groups. Results: There was significant decreased trunk flexion in GIRD group ($p=.023$) and non-significant trend toward more trunk rotation in GIRD group during ball releasing ($p=.087$) was also found. Conclusion: GIRD pitchers tend to use less trunk flexion but more rotation to adjust the pitching control. Pitching with less trunk flexion may negatively affect the linear momentum transfer and ball velocity. Moreover, additional rotation may add excessive pressure to spine. In conclusion, GIRD changes pitching biomechanics that lead to adverse effects on performance and sports injuries.

Keywords: baseball, pitcher, glenohumeral internal rotation deficit (GIRD), throw, kinematics, biomechanics.

Corresponding author: Shih-Chung Cheng

O-3, 2018ACK-1-35-O

Dark side of sport: from the horizons of Halbwachs and Goffman to analysis the forgotten subjects in competitive sport

Chia-Ting Sun
National Chiao Tung University

Promoting integration and peace by sport is a common idea, but people often ignore the exclusiveness and dark side of sport. Various factors may cause athletes' psychological trauma and spoiled identity in the high-intensity sport events, they may feel difficultly to continue their sports in the relatively closed, similar, day-to-day hard training environment. Therefore, the memory theory of Halbwachs is used in this study to analyze the patterns of athletes' traumatic memory, the Goffman's concept of stigma is used to describe how these athletes face their stigma and develop their own way to manage their spoiled identity. The study found that over-commercial and utilitarian-oriented competitive situation will increases the chances that athletes obtain the psychological trauma with multi-level and various types. Because of the differences of situation, social frame and individual interpretation, athletes will develop different strategies of impression and message management and attempt to make a balance between self-identity and the relationship with society.

Keywords: exclusiveness, trauma, stigma, interpretation, social frame

Corresponding author: Chia-Ting Sun

O-4, 2018ACK-1-35-2-O

# Intervention of gene and assisted reproductive technology: The future and possibility of competitive sports

Chia-Ting Sun
National Chiao Tung University

There are a large number of studies on the effects of nutrition, doping and genetic technology on sports performance in contemporary society. Most of the existing researches only focus on how these technologies enhance the athletic performance by "acquired" way, but today's gene technologies and assisted reproductive technologies (ARTs) has been able to intervene and affect the quality of embryonic and genes before the birth of life. Currently, it's still difficult to be perceived and regulated. As the performance of competitive sports are affected by both nature and nurture factors, the sports area is bound to face the impact of gene and assisted reproductive technologies. In order to understand how the biotechnology transforming sport area, textual analysis is used as method and focus on the official documents of UN, IOC, WADA, etc. The field study is also conducted in the above institutions and medical institutions. This study is intended to explore the controversy of eugenics, talent identification and sports ethics from the discussion of embryonic production and selection in the context of the political nature of sports. The study found that the re-discussion of the concepts and meanings of fairness and justice, success and failure, freedom and rights are necessary, the value of competitive sports in the globalization and technologize contemporary society is also have to be reflected by sports area.

Keywords: gene, ethics, eugenics, biotechnology, competitive sport

Corresponding author: Chia-Ting Sun

O-5, 2018ACK-2-92-O

# Gender difference in throwing motion in baseball pitchers, focusing on stride length and knee flexion angle of the stride leg

Ruo Hashimoto, Yukio Urabe, Junpei Sasadai, Somu Kotoshiba, & Noriaki Maeda
Hiroshima University

[Purpose] Recently, the number of female baseball players has been increasing worldwide. The performance of female and male pitchers have indicated by the ball velocity. A previous study on male pitchers reported that the ball velocity increases as the stride is widened (Omuro et al.,2013). However, no studies have investigated the ball velocity and stride length of female pitchers. This study aimed to investigate the gender differences in ball velocity, stride length and knee flexion angle, and to help female pitchers improve their throwing ball velocity. [Methods] Five female and five male pitchers threw a fastball. The ball velocity was measured using a radar gun (Bushnell, America). Pitching motion was captured using a camera for iPhone8 (Apple, America) on the throwing side. Stride length and knee flexion angle were calculated using the Dartfish software (Dartfish, Switzerland). The stride length was normalized to height. The knee flexion angles at Stride Foot Contact (FC), Maximum Shoulder External Rotation (MER), and Ball Release (BR) were compared in gender. Gender differences were tested for each variable using the Student' t test. The significance level was set at $p < 0.05$. [Results] For the female pitchers, ball velocity was 85.4 ± 11.8 km/h and stride length was 69.6 ± 4.8%. For the male pitchers, ball velocity was 112.0 ± 6.7 km/h and stride length was 77.7% ± 1.5%. Significant differences were found in both the ball velocity and slide length between the female and male pitchers ($p < 0.01$). The knee flexion angle at FC was significantly less ($p < 0.01$) and knee flexion angle from FC to MER was significantly larger in the female than in the male pitchers ($p < 0.01$). [Discussion] Male pitchers contacted the knee flexion position and maintained at this position until MER. In contract, the female pitchers made narrow strides and with a small flexion knee angle. Thereafter, the female pitchers flexed the knee joint more. It is said to move the body forward, to transmit the force to the ball (Kageyama et al.,2015). However, the female pitchers' forward body movement was inhibited because of the flexion of the knee joints. This may have affected the ball speed. [Ethical Consideration] This study was conducted in accordance with the Declaration of Helsinki, and the subjects participated after signing the informed consent form.

Keywords: female baseball, throwing, stride length

Corresponding author: Ruo Hashimoto

O-6, 2018ACK-2-94-O

# The influence of slipping phenomenon on the infraspinatus muscle activity during throwing motion in baseball players with throwing injury

Somu Kotoshiba[1], Yukio Urabe[1], Noriaki Maeda[1], Junpei Sasadai[1], & Masafumi Hara[2]
[1]Hiroshima University, [2]Hisatsune Hospital

[Purpose] The infraspinatus muscle activity in throwing motion is important to the stability of the glenohumeral joint during follow through phase (Kibler et al, 2007). We reported that baseball players with throwing injury had the characteristic of high activity of infraspinatus during acceleration phase (Kotoshiba et al, 2017). As an evaluation of throwing injury, Hara (2007) classified baseball players with throwing injury into four type (A, B, C, S) using X-ray with the zero positioned. Type S was recognized slipping phenomenon which posterior or lateral sliding of the humeral head was found at the zero positioned, and it was involved with the instability of the glenohumeral joint (Hara, 1999). The aim of this study was to investigate infraspinatus activity during throwing motion of baseball players who were admitted a slipping phenomenon. [Methods] Thirty baseball players with throwing injury participated in this study. Participants were separated into two groups (Slipping and Non-Slipping group). Type S was defined as the center of the humeral head was positioned on the outside of the lateral edge of the glenoid in the zero positioned. The throwing motions were recorded by two high-speed cameras, and shoulder external rotator muscle activity was measured using electromyography. EMG sensors were placed on the infraspinatus and deltoid posterior as shoulder external rotators. According to the video analysis, the throwing motion was divided into four event segments as follows: early cocking, late cocking, acceleration, and follow through phases. [Results] In the acceleration phase, the infraspinatus activity revealed a significantly greater value in the Slipping group (65.6±36.2%MVC) than that of the Non-Slipping group (35.1±15.4%MVC) ($p<0.05$). There was no significant difference in deltoid posterior activity between both groups. [Discussion] This study suggested that the slipping phenomenon involved in infraspinatus high activity during the acceleration phase. Type S has instability of the glenohumeral joint at the elevation position. Therefore, it was considered to indicate high activity of infraspinatus for stability. By repetitive pitching with hyper activity of infraspinatus on the slipping shoulder may cause fatigue and dysfunction. [Ethnical Consideration] This study was carried out based on the Declaration of Helsinki and subjects participated after signing informed consent.

Keywords: infraspinatus, throwing injury, throwing motion

Corresponding author: Somu Kotoshiba

O-7, 2018ACK-1-5-O

# Miss your putts? The key EEG index to achieve the superior performance in golf putting

Ming-Yang Cheng [1], Kuo-Ping Wang [2], Dirk Koester[1], Tsung-Min Hung[2], & Thomas Schack[1]
[1]Bielefeld University, [2]National Taiwan Normal University

Objective: Psychomotor efficiency refers to the processing efficiency in the cortical activity in sports performance. Superior performers achieve the high psychomotor efficiency by attenuating the irrelevant cortical processing. Encouraging reports from previous studies pointed out a close relationship between the cortical activity in the sensorimotor area and psychomotor efficiency. This study puts forward sensorimotor rhythm (SMR), 12–15 Hz of the electroencephalogram (EEG) in the sensorimotor area, serves as a promising EEG marker which might become the primary training target for the neurofeedback training in sports performance enhancement. Methods: Thirty-six pre-elite golfers were recruited to perform 40 putts on an artificial green while EEG was recorded. To understand the SMR activity in the superior putting performance, we extracted and compared the SMR activity from the best ten putts and the worst ten putts. Results: The best putting performance is associated with higher SMR power during the last second before the backswing when compared with the worst putting performance. In both performances pool, no other changes were observed on the flanking frequency bands, such as theta and low beta bands. Conclusion: This finding suggests that reduced interference at the sensorimotor area, as reflected by higher SMR power, may lead to superior psychomotor efficiency during the putting preparation. We conclude that SMR may be a promising component in understanding the psychomotor efficiency for precision sports performance.

Keywords: EEG, automaticity, sensorimotor rhythm, neurofeedback, psychomotor efficiency

Corresponding author: Ming-Yang Cheng

O-8, 2018ACK-1-16-O

# Building theoretical sound tools for Taiwan on a sample of cyclists: Measurement of sdt motivation scales of SMS-II and BREQ-3

Hsin-Hui Wang, & Chiao-Lin Nien
National Taiwan University of Sport

Cycling in Taiwan has become one of the most popular exercises in the last decade. Cyclists doing this exercise for a variety of reasons, for fun, achievement as well as healthy and social relations. Therefore, motivation issues have become one of the major focuses on sport and exercise psychology research of cycling. There are several theories have cover motivation as a part of their argument, however, one of the most popular focus on sport and exercise domain is Deci and Ryan's self-determination theory (Deci, E. L. & Ryan, R. M. (1985) Intrinsic motivation and self-determination in human behavior. New York: Plenum). In their theoretical argument based on organismic integration theory, there are six different motivational regulations lay on the continuum of self-determination. Most of the studies have conducted on cross-sectional manner. Without doubt, all those findings rely on validity and reliability of measurement tools. The present study is going to modify instruments which based on theoretical argument and also without compromise their reliability and validity. Two target tools were translated, including SMS-II and BREQ-3 and both are going to survey on a sample of 250-300 regular cyclists after ethic approval was approved. We hope to bring a reliable and valid instrument of measuring SDT motivation in sport and exercise setting in Taiwan.

Keywords: motivation regulation, SMS-II, BREQ-3, RAI, SDT

Corresponding author: Hsin-Hui Wang

O-9, 2018ACK-1-2-O

# Efficacy of core training program on balance and core endurance in trainee rider without low back pain history

Fung-Chun Hin Jonathan
Technological and Higher Education Institute of Hong Kong

The study investigates the effectiveness of CTP in core endurance and balance of trainee riders. 12 trainee riders underwent a CTP focused on core endurance and balance. Pre and post-test aimed to measure core endurance and dynamic balance. There were significant differences in core endurance and balance. No significant difference in SBKT. SBKT requires further study.

Keywords: core training program, low back pain, horse racing, trainee riders, core endurance, balance.

Corresponding author: Fung-Chun Hin Jonathan

O-10, 2018ACK-2-100-O

# The role of upper body strength characteristics on vertical jumping performance

Tsung-Tse Chiang, Chie-Ying Chiang, & Chien-Chun Chang
National Taiwan Sport University

Purpose: Vertical jumping is an important factor of improving an athlete's performance, and there are lots of researches discussing how lower body strength improves vertical redundant. The relationships between upper body strength characteristics and countermovement jumping (CMJ) height have not been well-studied. The aim of this present study was to exam whether the superior upper body strength could contribute to CMJ performance. Methods: 10 healthy male (height: 176.8±8.39cm, weight: 78.46±11.71kg) participants with at least 1-year strength training experience were recruited in this study. Two types of CMJ (with and without arm swing) were tested on a force plate. The jumping height differences (JHD) were measured for further analyses. The upper body strength characteristic (UBSC) tests included 1RM bench press (1RM BP), isometric bench press (IBP), and ballistic bench throw (BBT). The PASCO force plates were used to receive the peak force (PF) of IBP and BBT, and a linear position transducer was used to receive the peak power (PP) of BBT. All strength characteristics were normalized by body weight (BW). Pearson correlation coefficient was used to analyze the relations between JHD and UBSC. Result: Weak to moderate correlations were revealed between JHD, PF of IBP, and 1 RM BP/BW ($r = .20$, $p = .57$; $r = .53$, $p = .11$, respectively). However, JHD showed moderate to strong correlations with the PF of BBT and the PP of BBT ($r = .452$, $p = .190$; $r = .782$, $p < .05$ respectively). Discussion: The result from this study indicated that those who have superior upper body strength and power may have better contributions on CMJ height.

Keywords: maximal strength, power output, countermovement jump

Corresponding author: Chie-Ying Chiang

O-11, 2018ACK-2-102-O

Can selected kinetic variables from Push Jerk exercise relate to countermovement jump performance?

Ping-Hai Rao, Chien-Ying Chiang, Mao-Sen Sang, & Chien-Chun Chang
National Taiwan Sport University

Purpose: The push jerk and countermovement jump (CMJ) are explosive movements which previous research had confirmed their kinematic similarities. However, the kinetic aspects between these two movements are relatively unknown. The aim of this present study was to investigate the relationships between push jerk power outputs and CMJ performance. Methods: Ten healthy males (height, 184.8 ± 9.0cm; body mass, 86.7 ± 14.5kg) with at least 1 year resistance training experience participated in this study. They performed push jerk exercises from 60, 70, 80 and 90% of their pre-determined push jerk 1RM on a force plate. Maximum power output (Pmax) from each intensity was recorded. CMJ was performed on a force plate, jump height (JH) and CMJ peak power (CMJPP) were measured for further statistical analyses. Results: The results showed very large and significant relations between push jerk Pmax and JH ( $r = .827$, $p = .003$ ). Furthermore, push jerk Pmax and CMJPP revealed very large and statistical significant relationships ( $r = .792$, $p = .006$ ).Conclusion: We found that those who perform higher Pmax from the push jerk exercise had better CMJ performance. Therefore, the ability to perform push jerk is associated with explosive vertical jumping.

Keywords: power outpull, training monitoring, ballistic performance

Corresponding author: Chien-Ying Chiang

O-12, 2018ACK-2-105-O

# The relationships between lower body dynamic strength and repeat effort sprints ability on high school rugby players

Bing-Xuan Wu[1], Chien-Ying Chiang[1], Jian-Lin Li [2,] & Chien-Chun Chang[1]
[1]National Taiwan Sport University, [2] New Taipei Municipal Zhuwei High School

Purpose: Vertical jumps (VJs) are commonly used for measuring lower body dynamic strength in rugby papulations. However, the relation between VJs and rugby repeated effort ability (REA) is unknown. The purpose of this study was to investigate the relationships between VJs and rugby specific REA. Methods: Twenty-five male senior high school rugby players (ages, 15.5 ± 0.5years; body mass, 76 ± 7.5kg; height, 176.6 ± 1.9cm) participated in this study. Subjects performed REA test (12 times x 20 m sprints with collision) with 20 seconds between each repetition, REA total times(s) were recorded; Lower body dynamic strength was measured under two different VJs (Countermovement jump, CMJ, and Squat jump, SJ) with two conditionings (unloaded <1kg stick and loaded 20kg Olympic barbell). Pearson product moment correlation coefficient was used to determine and analysis the relationships between REA and CMJ, SJ jumps height. Results: Negative and statistical moderate to small relationships *(r = -0.29~049, p<.05)* were shown between CMJs and SJs height and REA total times. Conclusion: The results showed that the better jumping heights of CMJs and SJs under two different conditionings, the shorter the REA total times(s). High school rugby players with superior lower body dynamic strength demonstrated the better repeated sprint ability.

Keywords: vertical jump, power, monitoring

Corresponding author: Chien-Ying Chiang

O-13, 2018ACK-1-11-O

Effect of water fitness on physical fitness and function movement screening of female students

Ye Wang
Tsinghua University

To research the influence of water fitness on the physical fitness and functional movement screening of female college students, 40 female college students who participated in water fitness course in Tsinghua University were selected and compared with 78 female students participated in swimming course. Test indicators include: the closed-eye-standing on one foot, sit and reach, circling over the shoulder, grip strength, vital capacity, standing long jump, sit ups, body weight, body composition and functional movement screening(FMS). The result shows: (1) water fitness can significantly improve the female students' ability of flexibility, balance, strength and breath, and reduce the body weight and body fat percent; (2) water fitness can significantly improve the FMS scores of female students, and the quality of lower limb and core strength, stability and balance; (3) compared with the swimming control group, water fitness can improve both the ability of balance, flexibility muscle strength and the score of FMS more obviously, also can reduce the body fat rate more significantly.

Keywords: water fitness, female college students, physical fitness, functional movement screening

Corresponding author: Ye Wang

O-14, 2018ACK-1-24-O

# Effects of different intensity exercise on anti-oxidation ability of liver in rats exposed to dioxin

Xiao Hou[1], Kai-Xiang Weng[2], & Jing-Min Liu[1]
[1]Tsinghua University, [2]Beijing Sport University

Object: To research the effect of different Intensity exercise on the 2,3,7,8-TCDD exposed rats' hepatic histopathological features, serum markers, liver tissue enzyme activity and other biochemical indicators. And to explore the feasibility of exercise in improving the liver's anti-oxidation ability of the 2,3,7,8-TCDD exposed rats, and then provide effective basis and guidance for public exercise intervention in the haze environment. Method:60 Eight-week-old male Sprague-Dawley rats were randomly divided into six groups: control group(C),exercise group (E1,E2);TCDD-exposed group(T), TCDD-exposed and exercise group (ET1,ET2).All the rats in T; ET1; ET2 are given an intraperitoneal injection of 2,3,7,8-TCDD at a dose of 10 μg/kg•bw, and the rats in other groups are injected with the same dose of corn oil. Rats in C and T are rested for 4 weeks, the other 4 groups were on the treadmill and exercised for 5 days per week for 60 minutes per day. The exercise intensity of E1 and ET1 : 8.2m/min (slope 0°), low-intensity ; the exercise intensity of E2 and ET2 : 15.2m/min (slope 5°), moderate-intensity . After the fourth week, weigh and kill rats, and then measure the rats' liver weight; the activity of serum AST, ALT, and LDH; liver's SOD, CAT, GSH-Px, NOS; the volume of MDA, NO, SOD/MDA, NO/NOS and observe the histopathological changes of liver. Results: TCDD could affect the activity of liver's antioxidant enzymes SOD, CAT, GSH- Px. After 4 weeks of low-intensity exercise, the activity of serum AST of rats in E1 and ET1 increased ($p<0.01$) , and the activity of liver tissue CAT ($p<0.05$), SOD/MDA ratio ($p<0.01$) decreased, liver cells were arranged disorderly, and cytoplasm was filled with fat cavitation. But after 4 weeks of moderate-intensity exercise, the activity of antioxidant enzymes in serum and liver tissue in E2 and ET2 did not change significantly. Conclusion: 1.The anti-oxidation ability of liver tissue of rats will decrease and the level of oxidative stress will increase after being exposed to TCDD for 4 weeks. 2.The 4-week low-intensity exercise could not effectively alleviate the decrease of liver anti-oxidation ability caused by TCDD and its oxidative stress level. Moderate-intensity exercise can effectively relieve oxidative stress caused by TCDD. And it has a certain repairing effect on liver lesions after acute exposure, and can effectively improve the liver's anti-oxidation ability in TCDD-exposed rats.

Keywords: different Intensity exercise, 2,3,7,8-TCDD, anti-oxidation ability of liver tissue

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O-15, 2018ACK-1-33-O

# Effects of probiotics on the HPA axis of swimming mice

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Objective: To study the regulation effect of Lactobacillus rhamnosus GG (LGG) on the HPA axis-releasing hormones in mice after one-time high-intensity swimming exercise. Method: 48 SPF male BALB/C mice, which were divided in 8 groups randomly. The mice in the distilled water group and the probiotics group were divided into quiet group, draw materials 3h, 12h and 24h after exercise group respectively. LGG diluted to the concentration of 109CFU/ml by distilled water, and then each groups of rats were given by gavage for 2 weeks, 5ml/kg. The quiet group needed no exercise, other groups were treated by one-time swimming training with 6% weight after twice adaptive training. Measured the concentration of corticosterone and adrenocorticotropic hormone (ACTH) in serum and the concentration of corticotropin releasing hormone (CRH) and 5-HT in brain tissue. Results: 1) Hormones released by HPA axis: In the distilled water group, the concentration of CRH was rising at first and then declining and finally rising again ($P<0.01$), the concentration of ACTH increased dramatically ($P<0.01$) in 3 and 12 h after exercise, but had no change in 24 and 12 h after exercise, the concentration of corticosterone in 3 h after exercise had no significantly change compared with the quiet group, but increased highly in 12 and 24 h after exercise ($P<0.05$). As for the probiotic group, the concentrations of hormones released by HPA axis were all decreased in 3 and 12 h after exercise ($P<0.05$), and finally recovered to the trend of quiet group in 24 h after exercise. 2) 5-HT: The concentration was declining at first and then rising and finally declining ($P<0.01$) in the distilled water group. As for the probiotic group, the concentration was increased highly in 12 h after exercise ($P<0.01$), and there was no significant difference between other time points and quiet time. Conclusion: 1) The trends of the hormones released by HPA axis were roughly the same after one-time high-intensity exercise. 2) Supplementing LGG could promote the recovery of HPA axis hormones after one-time high-intensity exercise and inhibit the fluctuation of 5-HT content in brain tissue, and reduce the occurrence of exercise fatigue. 3) CRH was regulated by 5-HT in brain and the regulatory mechanism of probiotics to the HPA axis might be through the "brain-gut-bacteria" axis for the regulation of 5-HT.

Keywords: one-time high-intensity exercise; lactobacillus rhamnosus, HPA axis, brain-gut-bacteria axis

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O-16, 2018ACK-1-20-O

# Research on 3000-meter-running exercise intensity and load variation of male college students in different physical activity level

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Objective: To explore the male college students in different physical activity level of 3000 meters running exercise intensity and load variation, providing a reference value for the 3000-meter-run training exercise load monitoring and security. Subjects and methods: real-time heart rate of 898 different grade undergraduate students in Tsinghua University were test with Team 2 Polar tester during 3000-meter-run test. The time and performance for the 3000-meter-run test segment timing system for recording. The physical activity was investigated by a self-designed questionnaire. Results: 1. the heart rate has relation to the time during 3000-meter-run: the average speed of first four circles has a significant linear relationship to the average heart rate, the average rate of the last four circles close to the level curve to the average speed, the heart rate reached a plateau in the half past run time, and the relation between speed and heart rate was not obvious. 2. there is a significant difference between the different sport grades of students in running speed. The average speed of the students with high physical activity level is faster, while that of who in low physical activity level is slower. 3. there were significant differences in heart rate among students with different levels of physical activity during 3000-meter-run. The mean of maximum heart rate with lower physical activity level of students was the highest, that of the best physical activity level was the lowest. Conclusions: 1. there are significant difference results between the students with different physical activity levels in the 3000-meter-run. 2. The maximum heart rate of some individual students reached a summit value of 100% maximum heart rate, and maintained for a long time that may be a relatively dangerous region, especially the students of poor level physical activity. There is a high risk when running continuously in the maximum heart rate of 100% level.

Keywords: male college students, physical activity level, 3000-meter-run, exercise heart rate, load intensity

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O-17, 2018ACK-1-39-O

# The relationship between physical activity level and body composition index of elderly women in China

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AIM: The associations between body composition and physical activity in older Chinese women are inconclusive, this study conducted a horizontal study on this. METHODS: We enrolled 3486 elderly women in east of China, aged range from 55-97, divide into groups every 10 years of age. We use International physical activity questionnaire The physical activity intensity and time of the subjects were investigated with the international physical activity questionnaire. And use Bioelectrical impedance analysis to measure body composition, including muscle mass (MM), bone mass(BM), fat mass(FM) and body fat percentage(BFP). RESULTS: High intensity exercise(HIE) and moderate intensity exercise(MIE) time decreased with age。MIE were negatively associated with BFP between the ages of 70-79(r=0.116). And MIE time were positive associated with MM(r=0.127) and BM(r=0.252) between the ages of 70-79. The MM and BM of people with HIE time from highly active to inactive at all ages decreased successively, and the FW and BFP increased successively. However, there was no significant difference between the adjacent exercise intensity groups. There is a similar trend in MIE time and there is a significant difference between inactivity and low activity(P<0.05). MM and BM of the sedentary group were lower than those of the sedentary inactive group, FM and BFP of the sedentary group were higher than those of the sedentary inactive group, there were significant differences in all indicators (P<0.01) except MM between the ages of 55 and 60(P=0.088). Conclusions: Physical activity of different intensity has an influence on various body composition indexes, and the time of MIE has a relatively large influence. Among elderly women, those who are sedentary and inactive have lower MM and BM, higher BFP, and the older they are, the more significant the difference is.

Keywords: elderly women, body composition, physical activity, sedentary

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O-18, 2018ACK-2-103-O

Does high-volume resistance training affect jumping performance on elite female basketball player?

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Purpose: The preparatory phase from block periodization model is known as high-volume training load, which may have negative impact on performance. Therefore the aim of this study was to examine the effect of an eight-weeks high-volume resistance training (RT) on countermovement jump (CMJ) performance. Method: Eight elite female basketball association athletes (age = 22.6 ± 3.6 years; height = 177.1 ± 4 cm;body mass = 69.5 ± 5.5 kg) with at least 8 years of basketball training participated in this study (all participants were selected in national team). CMJs were performed on a force plate, and assessed before and after eight-weeks high-volume RT. Jump height (JH), peak force (PF), rate of force development (RFD), and positive impulse (PI) were analyzed through force-time curves. Whole body, high-volume explosive types of resistance exercises were used for RT program designed. The RT was performed 3 times per week. Paired t tests were conducted to test the differences of CMJ variables before and after eight-weeks high-volume RT; Cohen's d effect sizes and percentage change were also calculated. Result: The result showed a statistically significant decreased in RFD ($p < .05$, -24%, $d = 0.96$), but not in the JH, PF, and IP. However, the improvement of percentage change from the JH and PI were revealed (3.9%, $d = 0.33$; 2.5%, $d = 0.31$). Conclusion: The current results indicate eight-weeks high-volume RT significantly reduced RFD, but not JH and PI of CMJ.

Keywords: general preparatory phase, countermovement jump, rate of force development

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O-19, 2018ACK-2-130-O

# Effects of chronic sodium Bicarbonate ingestion on prolonged endurance running performance and recovery in trained runners

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Sodium Bicarbonate ($NaHCO_3$) has been found to be effective in inducing the blood alkalosis after acute ingestion to enhance sport performance. However, limited studies had investigated the chronic ingestion during prolonged running performance and recovery. Therefore, the purpose of the study was to examine the effects of chronic sodium bicarbonate ingestion ($NaHCO_3$) ($0.5g.kg^{-1}$) on 60 minutes endurance treadmill running performance and recovery rate among trained runners. Seven trained runners were recruited (age: 20.0 ± 2.0 years old; weight: 57.7 ± 6.0 kg; height: 168.4 ± 4.7cm; running experience: 2.7 ± 1.3 years; $VO_{2max}$: 58.4 ± 3.8 $ml.kg^{-1}.min^{-1}$). Subjects were required to complete 1 preliminary testing and 2 experimental trials: $NaHCO_3$ ($0.5g.kg^{-1}$) trial and PLA trial ($0.5g.kg^{-1}$ of NaCI). Subjects were required to ingest either $NHCO_3$ or PLA, 5 days prior to the experimental trials. Each of the experimental trials consisted of 60 minutes endurance running (30 min run at 65% of $VO_{2max}$ followed by self-selected speed of 30-min maximum distance run) and 30 min of recovery period. Each trial was separated at least 14 days apart for the wash out of the alkalosis substance in the body. Results showed that the distance covered for 30 min maximal distance run in $NaHCO_3$ trial was ~ 800m further than the PLA trial (4967.1 ± 79.0m vs 4139.7 ± 100.9; P = 0.032) associated with greater blood lactate level (6.17 ± 2.10 $mmol.L^{-1}$ vs 5.02 ± 2.06 $mmol.L^{-1}$). At post-recovery, no significant difference between $NaHCO_3$ trial and PLA trial in blood lactate level. Blood lactate in $NaHCO_3$ trial showed there is a larger decrement from 6.17 ± 2.10 $mmol.L^{-1}$ to 2.22 ± 0.88 $mmol.L^{-1}$(~64%, P > 0.05) compared to PLA trial which from 5.02 ± 2.06 $mmol.L^{-1}$ to 3.21 ± 1.76 $mmol.L^{-1}$(~36%, P > 0.05). This indicated the $NaHCO_3$ helps in increasing the buffering capacity and facilitate the removal of the hydrogen ions associated with lactic acid from the muscle cell into the blood. In conclusion, the chronic sodium bicarbonate ingestion ($0.5g.kg^{-1}$of BW) has ergogenic benefit to prolonged running performance and recovery in trained runners.

Keywords: maximum distance run, blood lactate, ergogenic

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O-20, 2018ACK-2-Official-03-O

# Health-related fitness status of adolescents among 8 asian countries

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Purpose: Physical fitness and regular physical activity are important aspects in reducing the risk of future cardiovascular diseases for adolescents. This study aimed to measure the physical fitness index of adolescents among Asian countries. Methods: 8 Asian countries involving a total of 12,108 adolescents (5820 females and 6288 males) (age: 13.63±1.01 years, height: 159.97±8.55 cm, weight: 52.94±12.70 kg) participated in this study. Health-related fitness (HRF) variables were measured. Body mass index (BMI, k gm2) (BMI: 20.55±3.98 kg m2) and body fat percentage (BF%) (22.33±10.00 %) were measured using standard methods. Participants completed the Progressive Aerobic Cardiovascular Endurance Run (PACER) test (40.00±21.34 laps), sit-and-reach test (SRT) (53.92±10.81 cm), handgrip strength (HS) test (25.58±7.10 kg) and sit-up test (SUT) (34.01±11.72) which assessed their cardiovascular fitness (CF), flexibility and muscular strength respectively. Results: There were significant high correlations between HRF variables such as, weight and BMI (r=0.90, p=0.00), BMI and BF% (r=0.80, p=0.00). There were moderate significant correlations between weight and BF% (r=0.62, p=0.00), SUT and PACER (r=0.62), p=0.00), weight and HS (r=0.55, p=0.00), HS and PACER (r=0.40, p=0.00). Negative significant correlations were also indicated between BF% and PACER (r=-0.45, p=0.00), BF% and SUT (r=-0.31, p=0.00). Conclusion: Weight, BMI and BF% were significantly correlated that indicated adolescents' health status accurately. This study also concluded that BMI and BF% could improve or hinder cardiovascular fitness in adolescents. Additionally, muscular strength is also an indication of cardiovascular fitness in adolescents. Overall, the Asian adolescents in this study were aerobically fit, with a healthy BF%, indicating low obesity rates. This could be due to the various approaches implemented in improving cardiovascular fitness in the different countries. It is essential for them to continue their regular physical activity to maintain their CF to reduce the risk of cardiovascular diseases during adulthood.

Keywords: health-related fitness variables, cardiovascular fitness, adolescents

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追求「夢想」還是「妄想」?
運動事業作為青少年職志發展的轉變與限制

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以運動作為青年工作的介入手法，在香港青少年服務裡已發展超過五十年。由一九七零年代起，青少年服務透過運動手法介入，擴闊青少年生活圈子、建立自我形象為目標，迄至二千年後運動手法介入的發展再不局限於傳統體能及運動項目為訓練內容，更成為青少年就業輔導手法、甚至確認運動項目及其周邊事業可成為青少年職業發展其中一個出路。本文主要分別有四個部份，旨在探討過去五十年青少年服務裡「運動為本介入手法」的發展及其轉變、運動由介入手法轉變成青少年職志發展的定位及其效果，以及檢視香港運動政策發展的限制及「學術高於運動」的社會氛圍等因素令致青少年服務裡推動運動作為職志發展所面對的困難及障礙。

關鍵字：運動為本入手手法、青少年職志發展、青少年服務、體育產業

通訊作者：Ka-Ki Chan

O-22, 2018ACK-1-21-O

一雷二閃：發現及發展生涯技能的球類運動介入手法

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本文以社會認知生涯理論，生涯技能及運動發展理論為框架，配合運動介入手法中的競賽及團隊要素，從中發現及發展青少年的三大範疇的生涯技能：團體合作，情緒控制及目標訂立。當中我們會以閃避球（躲避球）介入為例，透過介入過程的觀察，訪問，記錄及青少年自身成長故事提供建立生涯技能的實證。

關鍵字：躲避球,閃避球,生涯技能,運動,生涯規劃

通訊作者：張沛廉

O-23, 2018ACK-2-Official-08-O

Neuromodulation in rehabilitation: Its current applications and future direction

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At the cellular or molecular level, learning motor skills are associated with neural plasticity mediated in part by long- term potentiation (LTP) and long-term depression (LTD) . LTP is defined as long lasting synaptic enhancement, whereas LTD by the decrease of synaptic activity, both mediated by AMPA and/or NMDA receptors. LTP and LTD like changes can be induced in healthy and stroke patients using various neuromodulation protocols. Application of low frequency trains of neuromodulator can lead to a significant decrease in cortical excitability that lasts beyond the time of stimulation, while high frequency stimulation of neuromodulator can lead to a significant facilitation of cortical excitability. Integration of kinesiology knowledge and neuromodulatory potential can open a new perspective in helping both disable population and athletes in improving their quality of life and atjleic capability potential. This lecture will try to discuss the commonly used neuromodulators, its applications, outcome measures, clinical importance and potential future directions of researches of kinesiology.

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O-24, 2018ACK-2-122-O

空氣槍射擊瞄準軌跡回饋效果之探討

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空氣槍選手的槍枝總是在晃動的，射手的瞄準線也是圍繞著靶心不停的在變化，因此保持在適當的瞄準區就顯的格外重要。射擊運動是一項技術性強需要許多知覺運動屬性，包含良好的動作穩定性、高水準的手眼協調、平衡協調能力及良好的完成精細動作的能力。利用模擬訓練器記錄並分析擊發前的瞄準軌跡的分佈情形與實際射擊的分數。目的：探討模擬比賽情境中，提供擊發前的瞄準晃動範圍與位置回饋對於射擊表現的影響。方法：6 位空氣步槍選手，利用 SCATT max-02 訓練器，接受模擬比賽 4 次，每次 60 發射擊，每次 60 發射彈中選手可選擇 6-8 次射彈回饋，系統記錄每發射擊的瞄準軌跡、穩定度，並轉換成二維空間座標進行分析。結果：在訓練前後表現差異方面：1.六名選手中，各有一名選手分別在射擊結果分數、瞄準集中、瞄準穩定等表現有顯著的不同。在訓練前後分數與表現的相關變化方面，1.分數與瞄準集中的相關，由訓練前只有一名有顯著相關，增加為五名。2.分數與瞄準穩定的相關，在訓練前後的變化不大。結論：提供擊發前瞄準軌跡回饋訊息，對於空氣步槍選手的表現有正面的影響，但是其影響效果具有個別差異。

關鍵字：空氣步槍、穩定性、瞄準、回饋、模擬器、射擊

通訊作者：莊于萱

O-25, 2018ACK-1-22-O

# Issues of using team cohesion measurement in Taiwan: A published journal articles approach

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One of the most popular topics on sport psychological study in Taiwan is team cohesion. Over the past two decades, using the keyword “team cohesion” to search via the CEPS database, there are over sixty published journal articles, which based on empirical studies will reveal. Those are the evidences of how sport personnel such as coaches, athletes and researchers put their emphases on this particular topic. However, the cores of those findings were established not only on the validity and reliability of the cohesion measurement, but also on the theoretical background of cohesion studies. Therefore, the present study was aimed to review team cohesion in sport studies that conducted in Taiwan in a systematic approach. More specifically, under Carron and colleagues’ argument, studies which using Group Environment Questionnaire, as tools to measure cohesion were included. Results showed that most studies, which conducted before 2000 in Taiwan, were, adopted task and social cohesion approach mainly. After 2000, two types of cohesion and four different cohesion were accepted as parallel. Some measurement issues were raised and discussions were suggested.

Keywords: Group Environment Questionnaire (GEQ), task cohesion, social cohesion, team sport

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O-26, 2018ACK-2-118-O

探討拔河選手減重的極端環境下心理韌性的結構

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極限運動除了追求卓越表現之外，必須面對極端環境的考驗甚至可能會有生命的威脅。除了要具備優秀的身體條件，具有優異心理質量尤其重要。拔河運動以體重總合來分級比賽，過磅前的快速減重和過磅後的快速增重，以獲得比對手更佳的體重和力量優勢，與極限運動面臨的情境相似。過去有研究以心理韌性(mental toughness)探討運動員克服參與嚴峻生心理挑戰運動的心理歷程。然而拔河運動的減重歷程是團隊共同面對並且會受到隊友的影響，以及減重失敗則無法比賽的壓力，與極限運動獨自面對挑戰且可隨時放棄再次挑戰，有很大差異，故本研究想探討拔河選手減重極端環境下心理韌性的結構。以半結構式訪談為資料蒐集的方法，分別深入晤談 3 位曾在世界級的比賽獲得前三名的男子拔河選手（平均年齡 25.66 歲; 平均參與拔河 13.66 年），參考 Strauss 與 Corbin (1990)的研究以內容分析歸納資料。分析結果歸納拔河選手的心理韌性包含接受/承擔、決心、自我信念、身體韌性、目標、動機/渴望、信任、推向極限、團隊價值、個人價值、家人支持，心理韌性理解 11 項，其中決心、推向極限、團隊價值、個人價值與極限運動有差異。

關鍵字：心理韌性、極限運動、減重

通訊作者：吳修廷

O-27, 2018ACK-2-120-O

# 以吳慧卿(2001)團隊凝聚力工具看國內凝聚力碩博士論文研究結果

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團隊凝聚力的研究在國內有悠久的歷史。早期的研究多以工作和社會凝聚力的方式定義與建構。近期的研究中，以吳慧卿 2001 年完成的博士論文中，最接近原始建構。本研究以國內近期團隊凝聚力的碩博士論文為對象，進行測量工具的比對，找出未出版的研究中，測量工具間的差異，以及因此而產生和國外系統或後設分析結果間，不同的地方。資料蒐集的方式，以臺灣博碩士論文系統中，以運動團隊為對象，以問卷為測量方式進行之可獲得全文之研究為蒐集對象，進行分析比對。期望能發現測量工具選擇對於研究效度與發現之影響。

關鍵字：團隊、工作凝聚力、社會凝聚力、後設分析、問卷調查

通訊作者：聶喬齡

O-28, 2018ACK-2-123-O

# 女性運動員性別角色與愛情關係之探究

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運動領域中，對女性存在著刻板印象，相較男性運動員，女性運動員面臨沈重的性別角色期望。我國的教育課綱，2006 年將性別平等教育納入課綱，藉由學校教育落實性別平等教育，以消彌因歧視所產生出的霸凌與框限。因此，本研究目的在探討女性運動員之性別角色，以及性別角色與愛情關係適應的關係。本研究以回顧文獻法，整理相關理論與文獻。發現如下：首先，性別角色取向分為：男性化、女性化、兩性化與未分化，衡量方式是以工具性及表達性向度之中數作為臨界點。其次，愛情三角理論中三種要素，親密、激情、決定/承諾，分別代表於愛情關係中的情感、動機與認知層面的狀態，理論上三者同時具備為完美愛情。第三，性別角色取向與愛情關係相關研究指出，兼具男性女性特質的兩性化者，其感情表達、愛情關係、滿意度較佳，而未分化者各項親密關係均最差。第四，從適應的觀點，人際關係中的適應是連續的過程，會對人生旅途中與他人互動所出現的壓力和障礙因應，目的在互動時取得協調一致的狀態。總之，性別平等的推動，體育領域開始重視性別平等，女性運動員在運動領域中的地位提升，建立了女性運動員典範形象。女性運動員性別角色與愛情關係是一個重要且值得研究的主題。

關鍵字：女性運動員、性別角色、愛情關係

通訊作者：伍芷涵

O-29, 2018ACK-2-107-O

# 意圖對身體活動的影響：行動計畫的中介效果與預期遺憾的調節式中介效果之探討

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早期的身體活動行為理論主要聚焦在行為為何會產生，如：意圖與動機。然而，近期的研究逐漸著重在行為如何產生，也就是身體活動的意圖或動機如何轉化為實際的行為，中間的機制為何。本研究探討身體活動意圖對身體活動行為的影響，行動計畫中介意圖與行為的效果，並檢驗預期遺憾對此中介機制的調節意涵。採用問卷調查法，蒐集臺灣北部某大學共 306 位大學生的資料。研究結果發現：一、意圖、行動計畫與預期遺憾皆對身體活動有顯著的正向影響效果。二、意圖與預期遺憾皆對行動計畫有顯著的正向影響效果。三、預期遺憾在行動計畫與身體活動間有顯著的正向調節效果，但在意圖與行動計畫間的調節效果不顯著。四、行動計畫部分中介意圖與身體活動間的關係。五、預期遺憾，在行動計畫中介意圖對身體活動之影響上有正向調節作用，具有調節式中介效果。最後根據研究結果對實務應用及後續研究提出相關建議。

關鍵字：執行意圖、健身運動、健康行為、動機

通訊作者：東方介德

O-30, 2018ACK-2-110-O

# 高中教練轉型領導與運動員生涯發展關係的探討

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許多文獻已經指出，教練的轉型領導風格對運動員具有重大的影響，但教練的轉型領導風格與運動員的生涯發展的關係是如何，目前仍缺少系統性的探討。高中運動員正值青少年時期，許多研究指出此時期也是重要的生涯發展時期，此階段的運動員正在學校進行求學、專項訓練及累積經驗，並面臨未來選擇繼續從事專項運動、轉入一般科系或進入職場等自我檢討、角色試探及職業探索等方面的個人生涯發展階段。身為運動員的指導教練，做為生涯發展的重要他人，對運動員的生涯發展有何影響，頗值得瞭解。因此本研究的目的是探討高中教練的轉型領導行為與運動員生涯發展的關係。本研究整理與分析相關文獻，整合 Bass (1985)的轉型領導理論與生涯發展理論，發現教練轉型領導與青少年階段的運動員在生涯發展上有密切的關係，轉型領導的領導風格能形塑運動員的態度與想法，藉由與執行轉型領導的教練能讓正值生涯轉銜階段的高中運動員在面對生涯發展及規劃上，有明確的方向及良好的態度。

關鍵字：轉型領導、生涯發展、橄欖球

通訊作者：梅哲祥

O-31, 2018ACK-1-4-O

# 無氧耐力對肌肉乳酸形成率之影響

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本研究目的為探討無運動習慣者肌肉無氧代謝機制反應。方法：受試者為 6 位成人 (男性)，平均年齡 33±3 歲,體重 78±8.3kg。研究測試一次個人最大速度 1000 m 跑步。生物參數採集血液乳酸為恢復期第 3 分鐘，並紀錄速度時間。結果：1000 m 速度介於 3.0 – 4.1 m/s,乳酸形成率則介於 0.5 – 0.8 mmol/l*s 之間。兩項呈現負相關 (r = -0.6 )。結論：結果分析發現，速度高者，其乳酸形成率也是比較低。這個現象與運動員相同的反應機制。

關鍵字：無氧耐力、乳酸形成率、無氧代謝

通訊作者：申孝祥

O-32, 2018ACK-1-17-O

# Effects of passively isokinetic training with electrical stimulation to the hamstrings on jump and sprint performance

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Introduction: This study was designed to investigate the effects of three-week (3 times a week) training periods of passively isokinetic exercise with electrical stimulation (ES) to the hamstring muscles on the vertical jump and sprint performance. Since the hamstring muscles act as both the knee flexor and hip extensor, we also compared which movement exercise has greater influence on their performance. Method Subjects were randomly assigned to knee extension – flexion (K group) and hip extension - flexion training group (H group). The knee or hip joint was passively moved over 90 deg at 90deg/s while the ES was being applied to the hamstring muscles. They performed it 100 times per training while sitting or lying in the supine position on a dynamometer seat. Maximum voluntary isometric knee-flexion torque at 60deg of the knee joint (MVIk) and hip-extension torque at 45deg of the hip joint (MVIh), isokinetically maximum voluntary knee-flexion (IMVk) and hip-extension (IMVh) torque at 90deg/s, 50 meters sprint time and vertical jump height were measured. The sprint and jump movements were filmed and analyzed. Results The H group showed significant increases in MVIh, IMVh, moving distance and velocity of the hip joint in the horizontal direction from the start signal to the take-off from a starting block. The sprint time was also improved significantly. These increases were not observed in the K group. There were no significant changes in the vertical jump height and movement in both groups. Discussion Passive hip extension - flexion training while the ES was being applied to the hamstring muscles increased the hip extension torque. Since the extension of the whole support leg around the hip joint play an important role in improving the sprint performance, this training would contribute to moving the body horizontally and improve the sprint time. On the other hand, the present results clearly indicate that passive knee extension - flexion training has little impact on the horizontal performance.

Keywords: isokinetic training, electrical stimulation, hamstring muscles, sprint

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O-33, 2018ACK-1-18-O

# Effects of passively isokinetic electromyostimulation exercise on hip joint torque

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Introduction: This study was designed to investigate the effects of passively isokinetic hip extension-flexion training with electromyostimulation (EMS) to the hip extensor or flexor on the hip extension and flexion torque. Methods: Thirteen healthy men lay in the supine position on a dynamometer seat and performed two 50-consecutive hip extension-flexion exercises with EMS twice a week for 7 weeks. The hip joint was passively rotated over 90deg at 90deg/s. The EMS was applied to the gluteus maximum muscle and iliopsoas muscle, respectively. Each exercise was performed at an interval of 5 min. Maximum voluntary isometric extension (MVIE) and flexion (MVIF) torque at 45deg of the hip joint and isokinetically maximum voluntary extension (IMVE) and flexion (IMVF) torque over 90deg at 90deg/s were measured every week. Results When the EMS was applied to the hip extensor during training, the MVIE and IMVE torque significantly increased, whereas the MVIF and IMVF torque remained unchanged. No significant changes in their torque were observed when the EMS was applied to the hip flexor. Discussion The present results indicate that the hip extension torque increases without effort when the EMS is applied to the hip extensor being moved passively, suggesting a possibility of being effective as a means of rehabilitation. On the other hand, no effects of EMS to the hip flexor on the hip-flexion torque were observed. This may be due to technical problems such as positional misalignment of electrodes occurring during hip motion.

Keywords: isokinetic exercise, hip extensor, hipflexsor

Corresponding author: Suguru Miki

O-34, 2018ACK-2-112-O

四週彈跳床訓練對國中生下肢運動表現之影響

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國中階段是傳統武術運動員轉為競技武術的重要時期，而競技武術運動需較好的下肢運動能力，因此，本研究旨要探討經過四週彈跳床跳躍訓練是否可增進青少年的動、靜態平衡及下肢爆發力表現？招募習武滿一年的國中生 15 位，隨機均分為跳床組、跳躍組與控制組共三組，每組五位。所有參與者均接受每週兩次約兩小時傳統武術訓練，跳床組與跳躍組均於武術訓練後再接受 100 下來回彈跳床（跳床組）或等高高台（跳躍組）的跳躍訓練，上下來回各一秒，控制組則無跳躍訓練。在四周研究實驗前、後進行平衡木來回走、閉眼單足立、下肢肌力、下肢爆發力表現檢測。以二因子變異數分析，比較不同組別在訓練前、後的運動表現差異。結果：跳床組及跳躍組在平衡木表現分別進步 2.7 秒及 2.0 秒，但控制組只有 0.8 秒；而三組在靜態平衡表現中前、後偏移量分別減少 0.61 公分、0.77 公分及 0.07 公分；在蹲跳表現則無明顯進步情形。結論：經過四周跳床及跳躍訓練對平衡能力都有優良表現，又以跳床較佳。

關鍵字：垂直跳、動態平衡

通訊作者：陳婉菁

O-35, 2018ACK-2-108-O

# 不同深蹲速度下加速規與測力板之相關性比較

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深蹲是一種常見的功能性動作，且常被運用在下肢肌力訓練，先前常見以測力板進行運動強度之評估，但因體積較為龐大，藉此希望利用加速規取代為更便利的評估工具，因此本研究將比較不同深蹲動作速度及兩種常見配帶位置，加速規與測力板之相關性差異。方法:招募五名健康男性，將三軸加速規配戴於髖部及手腕上，在測力板進行六種速度的深蹲運動，動作週期為一秒下一秒上(1-1)、一秒下兩秒上、兩秒下一秒上、三秒下一秒上、一秒下三秒上、兩秒下兩秒上(2-2)，過程中雙手需插腰，下蹲至大腿與地面平行後站立，每種速度十回合。計算第五下到第十下的深蹲動作，髖部及手腕上三軸加速規合加速度，與測力板垂直力的相關係數再進行比較。結果:由快(1-1)到慢(2-2)在髖部(RH)及手腕(RW)的相關係數為 RH:.76±.01、.68±.05、.68±.07、.59±.13、.54±.20、.20±.26。RW:.77±.04、.65±.13±.68±.07、.79±.04、.69±.15、.54±.20、.55±.07、.66±.05 結論:較快的深蹲速度髖部及手腕處配戴加速規皆可評估深蹲運動強度，但較慢的深蹲速度應佩戴在手腕較宜。

關鍵字：微感測器、運動強度、合加速度、健身運動

通訊作者：陳婉菁

O-36, 2018ACK-2-Official-02-O

# Combination of swimming and estrogen replacement therapy prevents arrhythmia in postovariectomy rats

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Premenopausal women have a lower risk and incidence of cardiovascular disease (CVD), including arrhythmia, compared to age-matched men and this sex advantage for women gradually disappears after menopause. Suggesting that sex hormones play a cardioprotective role, especially in the cardiac electrical properties. However, randomized prospective primary or secondary prevention trials failed to confirm that hormone replacement therapy (HRT) affords cardioprotection. The purpose of this study was to study regularly swimming prevent arrhythmia by shortening the duration of cardiac muscle repolarization in ovariectomized rat combine with estrogen replacement therapy. The design of this study was the pre-post test control group with subjects of 24 Sprague Dawley rats aged 40-50 days that had bilateral ovariectomy. The conclusion of this study is combination 10 weeks swimming with estrogen replacement therapy in ovariectomized rats can prevent prolonged repolarization duration of ovariectomized rat cardiac muscle better than swimming alone or ERT alone.

Keywords: exercise, ovariectomized, estrogen replacement therapy, arrhythmia

Corresponding author: Denny Agustiningsih

O-37, 2018ACK-2-Official-04-O

# Effects of exercise training on ER stress of the cardiac muscle in high-fat diet-induced obese rats

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Introduction: Age-related alterations in muscle cells are mainly caused by increased ER stress, altered metabolism, intracellular oxidative stress resulting from qualitative and quantitative changes in mitochondria, and modified Ca2+ signaling (Carter et al. 2015). To identify an exercise method capable of effectively preventing cardiovascular diseases through protection of cardiac muscle, this study compared the effects of two 12-week exercise regimes (aerobic or resistance) on ER stress and mitochondrial biogenesis in the cardiac muscle of middle-aged rats with high-fat-diet-induced obesity. Methods: 30 male, middle-aged Sprague-Dawley rats were induced to become obese with 6 weeks of a high-fat diet, and were randomly divided into three experimental groups: sedentary control (SC), resistance exercise (RE), and aerobic exercise (AE). The exercising groups underwent high-intensity intermittent training using a ladder-climbing and weight exercise or treadmill-running exercises 3 days/week for a total of 12 weeks. Heart tissue was analyzed the protein expressions of phospho-PERK, PERK, CHOP, GRP78, cytochrome c, PGC-1α, phospho-AMPK, AMPK, or β-actin by western blotting. Results: Rats in the AE group showed significantly lower increases in body weight and intraperitoneal fat than those in SC group ($p<.05$). The 12-week exercise regimes resulted in significantly increased expression of mitochondrial biogenesis markers and levels of PGC-1α, an upstream signaling molecule, in the cardiac muscle of obese middle-aged rats ($p<.05$), but these factors did not differ according to exercise type. Phosphorylation of PERK, an ER stress marker, decreased significantly ($p<.05$) after the exercise training. Although a trend for decreased CHOP protein expression was observed in both exercise groups, only AE led to a statistically significant decrease ($p<.05$). Levels of GRP78, an ER stress marker that protects cardiac muscle, did not significantly differ among the groups. Although only AE decreased body weight and fat mass, the two exercise regimes had similar effects on cardiac muscle. Discussion & Conclusion: Chronic ER stress causes oxidative stress and inflammatory responses, and obesity is known to increase ER stress in metabolically active tissues (Paula et al. 2017). In this study, phosphorylation of PERK and expression of CHOP protein, which are markers of ER stress (Hong et al. 2017), significantly decreased after exercise training. We observed increased mitochondrial biogenesis and decreased ER stress after RE, comprising ladder climbing, and AE, consisting of treadmill running. Therefore, aerobic training resulting in weight loss, as well as resistance training not necessarily leading to weight loss, can contribute to the prevention of aging- and obesity-associated decreases in cardiac function.

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O-38, 2018ACK-1-28-O

# Fascicle behavior depends on muscle length, region and contraction velocity and joint angle

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Introduction: This study was designed to investigate whether behavior of the fascicle depends on the joint angle, region and contraction velocity of the muscle. Methods Twelve men performed two kinds of the maximum voluntary isometric knee extension (MVIC) at 30deg, 60deg and 90deg of the knee joint angle (full extension = 0deg). One was ramp condition which gradually increased force over five seconds, and another was quick condition which increased force suddenly. Ultrasound images of the rectus femoris (RF) and vastus lateralis (VL) were taken in the distal, middle and proximal regions along their long axis. Moving distance of an intersection of the fascicle and deep aponeurosis (P) were measured from the images. Results In the RF and VL, moving distance of P was larger at 60deg and 90deg than at 30deg. The distal region of their muscles showed larger moving distance of P than the middle and proximal regions. Discussion Behavior of the fascicle altered depending on the muscle length, region and contraction velocity. In this study, the moving distance of P was larger with long muscle length (60deg and 90deg of the knee joint angle) than with short muscle length. Since MVIC is exerted at about 70deg, this result may support it. Lager moving distance of P at the distal region may suggest that the muscle strain is easy to occur at the distal end of muscle.

Keywords: contraction velocity, knee joint angle, knee extension

Corresponding author: Otani Daisuke

O-39, 2018ACK-2-104-O

# The impact of brain breaks on educational learning in physical education

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Physical activity (PA) plays a critical role in neuromuscular development, energy balance, and obesity prevention among children during their early years. Recent studies found that an optimal level of PA can positively influence cortical and sub-cortical brain neurogenesis, neuromuscular system maturation, primitive reflex and stereotypical postures reduction, improvement of concentration, planning, coordination processes and increase of executive control, on-task behavior and academic performance. An effort to change sedentary lifestyle and lack of physical activity among children and adolescents has been identified as a key to promote health. There is a need to initiate PA programs which promote curiosity and fun to school aged children. Research suggests that participation in PA can offer students an opportunity to develop a “cheerful and joyous spirit” and provide for a source of enjoyment. Through experiences and opportunities in PA, physical characteristics of physical growth, social/emotional, cognitive and motor development are developing. Research has found that students who get regular physical activity experience improvements not just in their fitness levels, but in brain function. Studies show as children stand and move, memory, attention, mood, and academic achievement all improve. Current trends in educational neuroscience indicate that the brain needs frequent downtime for optimal learning. Brain breaks are a quick and effective way of changing or focusing the physical and mental state of the learners. However, there is a lack of resources for physical education teachers to implement PA in the classroom and these students are not getting the amount of exercise they need. This presentation reviews the theoretical and conceptual foundations of brain breaks and their effectiveness in promoting physical activity and increasing academic performance and behaviors in school. Activities and examples of brain breaks are also introduced and demonstrated in this presentation.

Keywords: physical activity, brain breaks

Corresponding author: Hosung So

O-40, 2018ACK-2-Official-07-O

# Utilization of traditional children-play in optimizing development of foundamental motor skills

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Children's foundamental motor skills development is an important aspect of children development, which is having tremendous impact on the whole development of children. The purpose of this report is to describe the utilization of children traditional play in optimizing early foundamental motor skills development. This study employed the research and development approach, which was used to develop an instructional model base on traditional children plays. The process of foundamental motor skills development is influenced by a variety of internal and external factors. One important factor that has contributed significantly to children's growth and development is physical activity. One of the physical activity that is known and suitable for children is a traditional children play. Traditional children play helps children develop physically, mentally, emotionally and socially. Children play has an important meaning for foundamental motor skills development of children. There are thirty two traditional children plays that can be utilize in teaching-learning process at Kindergarten in optimazing foundamental motor skills development. By utilizing traditional children play, optimal foundamental motor skills development will be experienced by children.

Keywords: traditional children play, fundamental motor skills, kindergarten

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O-41, 2018ACK-2-87-O

# 改良式單腳硬舉活化內收大肌對跑步之影響

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目的：內收大肌在跑步期間提供骨盆穩定，並輔以髖關節屈曲及伸展，有助於加速及減速功能。本研究透過改良式單腳硬舉 (one leg dead lift) 刺激內收大肌，探討其對跑步著地期之影響。方法:收取 6 名 20~30 歲有規律跑步習慣的女性，取慣用腳之內收大肌、臀中肌、股直肌、股二頭肌之肌電活化情形。受試者在跑步機上跑步，於第三分鐘達平時均速，並收取足跟著地至腳趾離地期五步肌電活化資料。結果:運動訓練介入前測與後測相比結果發現，於足跟著地至腳趾離地過程，股直肌(0.051±0.021 vs. 0.045±0.020, p=.232)、股二頭肌(0.064±0.040 vs. 0.090±0.075,p=.402) 均有差異 (p< .05)，內收大肌 (0.089±0.070 vs. 0.099±0.101,p=.521)、臀中肌(0.081±0.040 vs. 0.083±0.025,p=.868) 無顯著增加。結論:由研究結果得知，介入改良式單腳硬舉後肌電數值雖無顯著差異，但足跟著地至腳趾離地期間，肌電活化曲線均趨於平緩。因此推論刺激內收大肌能提升髖部在跑步行進間的運用進而提升運動效能。

關鍵字：內收大肌、肌肉活化、跑步

通訊作者：黃啟煌

O-42, 2018ACK-2-106-O

# 準備動作影響個體之知覺與實際接球能力

蘇育賢、郭孟汎、李崇傑、李英瑋、張智惠
國立高雄師範大學

目的：本研究檢驗個體不同高、低重心準備動作，對知覺與實際接球表現之影響。方法：研究參與者為 30 名男性 (年齡 22.16 ± 1.63 歲)。參與者依受試者內設計以平衡消去 (counter-balanced) 順序在不同高、低重心準備動作下，依發球機發射的網球 (平均球速 32.04 ± 0.81mph) 進行知覺與實際接球任務。知覺時，參與者判斷是否能接到來球，並以 7 分制信心量表紀錄信心程度；實際接球時，參與者移動身體盡力接起來球，以高速攝影機 (120Hz) 拍攝接球落點進行分析。結果：不同準備動作情境之知覺與實際接球成功率皆無顯著差異。低重心準備動作之知覺信心程度與實際接球成功率顯著高於高重心 $t(31) = 2.08, 2.43$，$p < .05$；並且，低重心準備動作之成功接球前移動距離顯著大於高重心 $t(32) = 4.13$，$p < .001$。結論：個體不論以何種姿勢為準備動作，皆能準確判斷是否能接到球，即個體依個人之行動潛能為度量尺度知覺環境提供之行動可能性也就是環境賦使 (affordance) (Gibson, 1979 / 1986)，且不同準備動作會影響個體的知覺與接球能力。

關鍵字：環境賦使、準備動作、知覺、行動、接球

通訊作者：蘇育賢

O-43, 2018ACK-2-81-O

Investigation of dietary behavior and lifestyle among collegiate football players

Qun Zuo
Shanghai University of Sport

[PURPOSE] The aim of this study was to investigate the dietary behavior and lifestyle among collegiate football players, in order to learn the current status of the dietary behavior and lifestyle of these people. [METHODS] 290 questionnaires were distributed to the collegiate football players of China University Football League. [RESULTS] (1) The data showed that 17.24% (n=50) players studied sports nutrition course in school, and 36.90% (n=107) of players noticed food reasonable collocation in the daily diet, 15.86% (n=46) preferred those foods that they liked, the rest ate optionally. (2) The data showed that more than half of players had very late bedtime and 11.38% (n=33) often stayed up late. 14.82% (n=43) players often drank, 21.73% (n=63) smoked each day, and 27.93% (n=81) experienced smoking more than 2 years. (3) Over half players had misconceptions about nutritional factors influencing football physical ability and fatigue, only 10% (n=29) players drank water rightly during competition and 27% (n=78) players ate rightly after training or competition. [CONCLUSIONS] Most of collegiate football players had inadequate dietary behavior and poor lifestyle, and should be educated with healthy dietary behavior and lifestyle.

Keywords: campus football; collegiate students; dietary behavior; lifestyle

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Doctoral Dissertation Presentation of Physical Activity Psychology-1

The effects of physical activity training on executive function in older adults: a meta-analytic review of randomized control trials

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National Taiwan Sport University

Background and purpose—Several studies have demonstrated a positive relationship between physical activity (PA) and executive function (EF) in older adults. However, the effect of PA on EF might be affected by moderators, including the classification of EF, exercise prescriptions, and sample characteristics. Therefore, the present meta-analysis was designed to investigate the effects of PA training on EF in older populations with normal cognitive status or memory impairments. Data sources and eligibility criteria—The electronic databases EMBASE (Scopus) and Medline (PubMed) were searched for studies published from January 2003 to January 2018. Randomized control trials of PA training interventions were identified in order to examine the associated EF outcomes in older adults. Results—Thirty-four studies with a total of 7,934 participants were analyzed in the effect size calculations. The main analysis showed a significant improvement in overall EF with a small effect size (Hedges' g = 0.23). For different EF domains, the moderator analysis demonstrated significantly positive effects of PA on inhibition, updating/working memory, and shifting. Regarding specific exercise prescriptions, different frequencies [i.e. low frequency (1-2 times per week) and moderate frequency (3-4 times per week)], intensities (i.e. moderate and vigorous), types [e.g. aerobic exercise, resistance exercise, Tai Chi and yoga, multiple PA exercise, and others (dance, coordination exercise)], session times (< 45 min, 45-60 min, and > 60 min), and lengths (1-3 month, 4-6 month, and >6 month) of PA training interventions were found to have significant positive effects. In terms of sample characteristics, the analysis indicated that PA training interventions resulted in improved EF in both male and female participants and in both sedentary and physically fit participants. However, we only found significantly positive effects on EF among young-old participants (i.e. those aged 55-65 years old) and mid-old participants (66-70 years), while not finding any significant effects among old-old participants (71-80 years). Significantly positive effects were also only found in older adults with normal cognitive status, while not being found in those with impaired cognitive status. Conclusions—This meta-analysis showed a significantly positive and small effect of PA training on EF in older adults. The findings further support previous literature suggesting that PA training interventions constitute an effective strategy for decreasing cognitive declines in older populations.

Keywords: cognitive function, executive function, moderators, chronic exercise

Doctoral Dissertation Presentation of Physical Activity Psychology-2

多媒體行動裝置與障礙物型態引致穿越間隙之行動與知覺

黃嘉笙
國立臺灣師範大學

穿越環境中的間隙是人類在移動中最常面臨的情境，維持清晰的偵查能力有助於準確知覺穿越間隙的可能性。然而，多媒體行動裝置除了帶來日常生活上的便利性之外，卻可能在不適當的使用情況下影響使用者的動作行為與安全。本研究立基於生態心理學觀點，旨在探討個體操作行動裝置的形式、障礙型態、分心活動、與認知負荷是否影響穿越間隙的知覺與動作表現。以隨機方式分派 84 名實驗參與者為 6 組實驗組與 1 組控制組，實驗組包含（1）免持式接聽電話、自傳式回憶問題，（2）免持式接聽、回應算術問題，（3）手持式接聽電話、自傳式回憶問題，（4）手持式接聽、回應算術問題，（5）以觸控螢幕傳輸簡訊、自傳式回憶問題，（6）傳輸簡訊、回應算術問題，共六種操作手機的情境。實驗過程中除了控制組（無操作手機）之外，參與者皆被要求以指定的操作方式使用智慧型手機，並穿越由人或圓柱體兩種障礙物型態構成的間隙；臨界值係以最小可穿越間隙寬度和參與者肩寬計算獲得，並以三維動作擷取系統蒐集包含行走速度、轉肩角度、與安全限界等運動學參數，最後採用 NASA-TLX 量表主觀評估實驗工作的負荷。研究發現：（一）個體穿越以人構成的間隙，相較於穿越圓柱障礙物，有較快的平均行走速度、接近速度、以及穿越間隙瞬時速度，而且會提前出現轉肩動作，並呈現較大範圍的安全限界；（二）無論以任何一種形式操作手機，當穿越雙人構成的間隙時，臨界值皆明顯大於穿越圓柱障礙物；（三）通訊內容產生的認知負荷效應，當執行相對高認知負荷的算術工作，穿越間隙的轉肩角度與工作負荷指數皆大於從事相對低認知的作業，但穿越間隙的臨界值沒有不同。

關鍵詞：環境賦使、安全限界、注意力、認知負荷、雙重任務

| Poster Presentation 1<br>Saturday, November 3rd, 2018 15:30-16:30 | | |
|---|---|---|
| 1st Floor Lobby | | |
| | | Moderator: Chi-Chang Chen |
| Poster No. | Acceptance No. | Title / Author |
| P-1 | 2018ACK-1-7-P | Revision of the organizational stressor indicator for sport performers (OSI-SP) in Taiwan: Validity and reliability<br>Hong-Yu Liu, Ching-Wen Ko, Yu-Hui Chiu, & Frank J.H. Lu |
| P-2 | 2018ACK-1-9-P | The influence of parents' educational expectation and physical self-concept on sport achievement<br>Chih-Chuan Wang, & His-Yen Lin |
| P-3 | 2018ACK-1-12-P | Relationships among participation motivation, flow experiences and exercise attendances in weight trainers<br>Ching-Wen Ko, & Frank J.H. Lu |
| P-4 | 2018ACK-1-31-P | 運動員的信任教練、運動成就與賽前焦慮、自信心之關係<br>潘緯澄、高三福、陳韋霖、潘天財 |
| P-5 | 2018ACK-1-36-P | 運動傷害產生倦怠與退出因素之探究<br>王潔玲 |
| P-6 | 2018ACK-1-40-P | 不同運動項目心理堅韌力之回顧<br>葉千如、林如瀚 |
| P-7 | 2018ACK-2-49-P | PETTLEP 意象模式訓練對高中乙組籃球員罰球表現之影響<br>簡廷紘、季力康 |
| P-8 | 2018ACK-2-52-P | The application of the test of performance strategies in sports: Literature review<br>Yu-Hui Chiu, Hong-Yu Liu, Ching-Wen Ko, & Frank J.H. Lu |
| P-9 | 2018ACK-2-147-P | 不同背景變項網球教練對運動心理諮詢態度之差異<br>陳佳莉、陳泰廷、楊梓楣、洪聰敏 |
| P-10 | 2018ACK-2-54-P | 運動心理介入對跆拳道選手突破心理障礙之實作<br>林瑋軒、莊艷惠 |
| | | Moderator: Mei-Hua Chen |
| P-11 | 2018ACK-2-63-P | What is athletic mental energy? An initial exploration<br>Hsiang-Sean Liu, & Frank J.H. Lu |
| P-12 | 2018ACK-2-64-P | A systematic review of athletic mental energy in sports<br>Wen-Chuan Chuang, Frank J.H. Lu, Chih-Hsuan Yu, & Yu-Chan Lee |
| P-13 | 2018ACK-2-65-P | The effects of PETTLEP imagery training on enhancing sports performance: A systematic review<br>Yu-Chan Lee, Frank J.H. Lu, Chih-Hsuan Yu, & Wen-Chuan Chuang |
| P-14 | 2018ACK-2-72-P | 運動員生活壓力對運動員負面心理影響：系統性回顧<br>余致萱、盧俊宏、莊紋娟、李祐丞 |
| P-15 | 2018ACK-2-109-P | 競技運動父母涉入問卷發展與檢驗<br>王亭文 |
| P-16 | 2018ACK-2-111-P | A new statistic of basketball game evaluating the offensive and defensive effectiveness simultaneously<br>Yi-Wei Lee, Chen-Yuh Kuo, & Yen-Sheng Chen |

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| P-17 | 2018ACK-2-113-P | Lower top-down attention and higher motor control are associated with better putting performance in expert golfer<br>Cheng-Wei Kao, Kuo-Pin Wang, Tai-Ting Chen, Ming-Yang Cheng, & Tsung-Min Hung |
| P-18 | 2018ACK-2-116-P | Skilled golf putting was characterized by higher visuo-spatial attention<br>Wen-Hsuan Chang, Kuo-Pin Wang, Tai-Ting Chen, Ming-Yang Cheng, & Tsung-Min Hung |
| P-19 | 2018ACK-2-117-P | 探討韻律體操運動員從事個人和團體項目所使用意象的型態與角度<br>古妮臻、吳修廷、林敬淳 |
| P-20 | 2018ACK-1-13-2-P | Self-Esteem predicted by physical activity?<br>Hosung So, Yeon-Sook Kim, Young-Lee Kim, Min-Hyun Kim, Min-Jo Kim, & Takeshi Miyazawa |
| | | Moderator: Hsiu-Tin Wu |
| P-21 | 2018ACK-2-83-P | The effect of acute exercise on executive function: The moderating role of family income<br>Lin Chi, Feng-Tzu Chen, Chun-Chih Wang, Yu-Min Ho, & Yu-Kai Chang |
| P-22 | 2018ACK-2-84-P | 氣功為基礎之正念訓練對注意力及壓力情境之探討<br>豐東洋、蔣憶德、郭正煜、林惟鐘 |
| P-23 | 2018ACK-2-76-P | 賦權與削權動機氣候對高中體育課學生責任之預測<br>王鵬宇、季力康 |
| P-24 | 2018ACK-2-121-P | 以 Gentile 技能分類法來探討韻律體操個人和團體項目動作複雜程度的差異<br>龔芸、吳修廷 |
| P-25 | 2018ACK-2-85-2-P | 女子競技體操平衡木項目單腳挺身前空翻動作分段訓練法之探討<br>盧彥廷、戴筱純 |
| P-26 | 2018ACK-2-Official-01-P | An assessment of walking speed in moderate traumatic brain injury<br>Muhammad Hafiz Hanafi, Alhafiz Ibrahim, Nur Karyatee Kassim, Jafri Malin Abdullah, & Lydia Abdul Latif |
| P-27 | 2018ACK-2-Official-05-P | The development of a program to educate general kinesiologist in integrated kinesiologist qualification system (IKQS)<br>Jung-Sok Oak, Deog-Jo Jung, Ji-Hoon Cho, Byung-Joo Noh, & Keun-Ok An |
| P-28 | 2018ACK-1-43-P | Soft-landing warm-up exercise for prevention of ACL injuries in female athletes<br>Ming-Sheng Liou, Yu-Cyuan Cheng, Ya-Lin Chen, & Wei-Gang Chang |
| P-29 | 2018ACK-1-44-P | The difference between suspension training and traditional resistance training<br>Chia-Hsin Chen, & Wei-Gang Chang |
| P-30 | 2018ACK-1-32-P | 效果預期影響貼紮後知覺及自信心之改變<br>洪瑞禧、楊梓楣、卓俊伶、黃嘉笙 |
| | | Moderator: Ching-Er Lin |
| P-31 | 2018ACK-1-37-P | 視覺、訊息與運動表現之關係探討<br>李瑞鴻、林如瀚 |

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| P-32 | 2018ACK-1-42-P | 技能水準與工作限制對體操交換分腿跳的交互影響<br>高士傑、楊梓楣、卓俊伶、陳重佑 |
| P-33 | 2018ACK-2-68-P | Recurrences of information method and perception-action coupling make accurate response in table tennis<br>Ming-Yuan Tang, Chih-Mei Yang, & Hank Jun-Ling Jwo |
| P-34 | 2018ACK-2-119-P | 探討不同注意力焦點對於棒球投手投變化球效果之影響<br>魏琮霖、劉有德 |
| P-35 | 2018ACK-2-132-P | 客家舞蹈《桐花雪舞》全民運開幕舞蹈的編創歷程：<br>Newell 限制模式的觀點<br>吳怡如、陳重佑 |
| P-36 | 2018ACK-1-19-2-P | The relationship between the glenohumeral joint internal rotation deficit (GIRD) and the hip rotation in Taiwan high school baseball pitchers<br>Ting-Yu Wan, & Shih-Chung Cheng |
| P-37 | 2018ACK-1-23-P | Inter-rater reliability of portable ultrasound measurement of quadriceps and hamstrings muscle thickness<br>Jae-Ho Yang, Ji-Yeon Jeong, Dong-Ho Park, & Eun-Wook Chang |
| P-38 | 2018ACK-2-90-P | Effects of four different recovery methods on physical performance, rating of perceived exertion, and blood lactate in Jiu-Jitsu players during and after a Simulated Game<br>Jong-Hyeon Park, Sang-Hyun Lee, Yang-Jung Kim, Su-Jin Kim, & Dong-Ho Park |
| P-39 | 2018ACK-2-149-P | Effects of 10-week exercise program on body composition, national fitness 100 senior test, and blood variables rural elderly women in Korea<br>Hyunseung Rhyu |
| P-40 | 2018ACK-2-150-P | Effects of short-term weight loss on body composition, physical fitness and blood variables in college ssireum athletes<br>Hyunseung Rhyu, Youngki Lee, Jangwon Lee, Keunsu Kim, Jean Choi, & Inki Kim |
| P-41 | 2018ACK-2-151-P | Effects of middle-term weight loss on body composition, physical fitness and blood variables in college ssireum athletes<br>Hyunseung Rhyu, Youngki Lee, Jangwon Lee, Keunsu Kim, & Wooseop Eom |

| Poster Presentation 2<br>Sunday, November 4th, 2018 08:30-09:30 | | |
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| 1st Floor Lobby | | |
| | | Moderator: Li-Ching Yeh |
| Poster No. | Acceptance No. | Title / Author |
| P-42 | 2018ACK-2-75-P | 核心肌肉對於運動表現之探討 - 以捷泳為例<br>洪晟軒、楊佳元、吳志銘 |
| P-43 | 2018ACK-1-27-P | Kinematic analysis of the roundhouse kick on pivot knee joint<br>Zi-Yuan Guo, Tai-Chu Chiang, Wei-Gang Chang, & Mu-Yen Chu |
| P-44 | 2018ACK-1-30-P | The effect of the kicking distance on muscle activation of pivot leg during the round horse kick<br>Kuan-Yu Lin, Zi-Yuan Guo, Wei-Gang Chang, & Hui-Ting Tang |
| P-45 | 2018ACK-1-34-P | Differences of neuromuscular control on pivot hip during a roundhouse kick<br>Tai-Chu Chiang, I-An Hsu, Wei-Gang Chang, & Jung-San Chang |
| P-46 | 2018ACK-1-38-P | Kinematic analysis of baseball pitching motion with range of motion deficit of the shoulder girdle in the non-pitching arm<br>Atsushi Ueda, Aoi Matsumura, Takeshi Oki, & Yasuo Nakamura |
| P-47 | 2018ACK-1-41-P | The effect of the kicking height on muscle activation of pivot leg during the round horse kick<br>I-An Hsu, Kuan-Yu Lin, Wei-Gang Chang, Ming-Shen Liu |
| P-48 | 2018ACK-1-43-2-P | Effect of improved single-leg deadlifts on the electromyography of the Vasti muscles during running<br>Ming-Sheng Liou, Yan-Ru Zhang, Tong-Hsien Chow, & Wei-Gang Chang |
| P-49 | 2018ACK-1-44-2-P | The effects of different position of accelerometer wearing on the detection of acceleration during jumping in water<br>Chia-Hsin Chen, Wei-Gang Chang, Kuei-Yu Chien, & Wan-Chin Chen |
| | | Moderator: Lin Chi |
| P-50 | 2018ACK-2-85-P | 競技體操分腿全旋動作之肩部肌肉活化分析<br>盧彥廷、張維綱 |
| P-51 | 2018ACK-2-86-P | Effect of single core induced exercise on trunk muscle activation during climbing stair test<br>Yu-Cyuan Cheng, Ming-Sheng Liou, Tong-Hsien Chow, & Wei-Gang Chang |
| P-52 | 2018ACK-2-140-P | The relationship between the landing points of the ball and reproducibility of the swing motion of approach shot in golf<br>Takuya Harada, & Shinji Sakurai |
| P-53 | 2018ACK-2-131-P | Qualitative analysis of Pirouette en dehors in ballet<br>Pei-Ti Tsai, Ti-Yu Chen, & Chung-Yu Chen |
| P-54 | 2018ACK-1-29-P | Effect of cervical alignment on neck disorder index<br>Il-Yong Park, & Jae-Ho Khil |
| P-55 | 2018ACK-2-95-P | Relationship between tensiomyographic neuromuscular characteristics and quadriceps and hamstring muscles torque at least 24 months after anterior cruciate ligament reconstruction |

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| | | Noriaki Maeda, Yukio Urabe, Junpei Sasadai, Yukio Mikami, & Hiroaki Kimura |
| P-56 | 2018ACK-2-97-P | Middle-aged postmenopausal women have different response on BMC between proximal femur and distal radius<br>Takeru Kato, & Yasuhiro Sugajima |
| P-57 | 2018ACK-2-124-P | The effect of an 8-week different modes resistance exercise program on athletic ability and performance in collegiate volleyball players<br>Pin-Chao Huang, Chien-Chang Ho, Li-Yun Chen, Po-Fu Lee, & Che-Yi Yang |
| | | Moderator: Ju-Han Lin |
| P-58 | 2018ACK-2-128-P | Associations of resting heart rate and basal metabolic rate with athletic ability and performance among collegiate volleyball players in Taiwan<br>Ou-Kai Li, Chien-Chang Ho, Jenn-Woei Hsieh, Po-Fu Lee, & Yun-Chi Chang |
| P-59 | 2018ACK-2-101-P | Optimal distance of approach-run for running long jump calculated using quadratic regression equation approximation for college students in a PE class<br>Kazuhiro Matsui, & Akihiro Azuma |
| P-60 | 2018ACK-2-115-P | 排球防守後反擊效益分析-以企業十三年男女排球聯賽男子組為例<br>張峻豪、劉有德 |
| P-61 | 2018ACK-1-3-P | Comparing the acute effect of cryotherapy and thermotherapy on muscle contractile properties and vertical jump performance in recreational basketball players<br>Hiu-Yu Kwok, Chung-Ki Kwong, Hoi-Ting Charlie Lam, Man-Chun Keith Li, & Ho-Yin Liu |
| P-62 | 2018ACK-1-6-P | Longitudinal study on the relationship between the level of Fitness and Metabolic Syndrome incidence among adult aged 40 and over-For adults above 40 years old in rural area<br>Seungmin Shin |
| P-63 | 2018ACK-2-88-P | The relationship between physical performance and BMD in community-dwelling Korean Elderly<br>Jae-Soon Chung |
| P-64 | 2018ACK-2-89-P | Effects of exercise on anxiety-like behaviors due to acute stress in rats<br>Jin-Hee Seo |
| P-65 | 2018ACK-2-125-P | Effects of combined TRX suspension and traditional resistance training on athletic ability and performance in collegiate volleyball players: A randomized-controlled study<br>Shu Liu, Chien-Chang Ho, Yun Li, & Po-Fu Lee |
| | | Moderator: Gou-Hwa Ku |
| P-66 | 2018ACK-2-129-P | The neurophysiological responses to laboratory-induced aggression in the different physical contact types athletes<br>Su-Yen Liu, Xi-Tim Lai, & Yuan-Hung Lee |
| P-67 | 2018ACK-1-13-P | Effects of physical activity on physical self-esteem and psychological well-being<br>Hosung So, Min-Jo Kim, Yeon-Sook Kim, Young-Lee Kim, Min-Hyun Kim, & Takeshi Miyazawa |
| P-68 | 2018ACK-1-14-P | 花蓮縣議長盃體育休閒活動調查研究（105-107 年）<br>王美娟、林如瀚 |
| P-69 | 2018ACK-1-15-P | 運動觀光產業發展的影響因素<br>高美惠、林如瀚 |

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| P-70 | 2018ACK-2-126-P | 體育課程模組化教學效益探究<br>林敬敏、林如瀚 |
| P-71 | 2018ACK-2-Official-06-P | Association between meeting the physical activity guidelines and participation in ‘sports for all’ and the risk of hypertension in community-dwelling korean adults<br>Deog-Jo Jung, Keun-Ok An, & Junghoon Kim |
| P-72 | 2018ACK-2-53-P | 跆拳道選手面臨驟死賽之反應及因應策略<br>夏顯詠、莊艷惠、何品莉 |
| P-73 | 2018ACK-2-143-P | Dynapenia, obesity and the risk of mortality in Korean:<br>A 10 years prospective national cohort study<br>Jung-Hoon Kim |

P-1, 2018ACK-1-7-P

Revision of the organizational stressor indicator for sport performers (OSI-SP) in Taiwan: Validity and reliability

Hong-Yu Liu, Ching-Wen Ko, Yu-Hui Chiu, & Frank Jing-Horng Lu
Chinese Culture University

The aim of this study was to validate Arnold and her colleagues' (Arnold, Fletcher, & Daniels, 2013) Organizational Stressor Indicator for Sport Performers (OSI-SP) into Chinese and examine its psychometric properties with Taiwanese athletes. In study 1, the psychometric properties of the items and the underlying structure of the translated Chinese OSI-SP were examined. In study 2, we used confirmatory factor analysis (CFA) to examine the factorial structure and examined measurement invariance across genders. In study 3, we examined concurrent and discriminant validity via correlations among the Chinese OSI-SP, coping self-efficacy, perceived stress, and burnout to provide further evidence of criterion validity. Study 4 examined the test-retest reliability of the Chinese OSI-SP. Across these phases, results showed the 5-factor, 16-item Chinese OSI-SP had adequate factor structure, measurement invariance, criterion validity, and reliabilities. We suggest future studies may use this revised Chinese OSI-SP in Taiwan and other Chinese athletic settings.

Keywords: competitive sports, perceived stress, cross-cultural validation, psychometrics

Corresponding author: Frank Jing-Horng Lu

P-2, 2018ACK-1-9-P

# The influence of parents' educational expectation and physical self-concept on sport achievement

Chih-Chuan Wang[1], & His-Yen Lin [2]
[1]National Chiao Tung University, [2]Hsin Ke Junior high school

The purpose of this study is to investigate the influence of parent's educational expectation on sport achievement and explored the mediating effect of physical self-concept. A questionnaire survey is conducted based on junior high school students from physical education class in Taiwan, and 385 effective samples are retrieved. The data are analyzed using descriptive statistics, confirmatory factor analyses, and structural equation modeling. The results show that parent's educational expectation has a positive effect on physical self-concept and sport achievement; physical self-concept has a positive effect on sport achievement. Regarding the mediating effects, physical self-concept completely mediates parent's educational expectation and sport achievement. These findings confirm the parent's educational expectation on sport achievement, and also evidence the physical self-concept to act actually as the medication factor between them. In addition, our study also suggests that parents' expectation plays a significant role in children's education and some future works are also discussed.

Key words: parent's educational expectation, physical self-concept, sport achievement, structural equation modeling, mediation

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P-3, 2018ACK-1-12-P

# Relationships among participation motivation, flow experiences and exercise attendances in weight trainers

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We adopted self-determination theory (Ryan & Deci, 2017) as guiding framework to examine weight trainers' participation motivation, flow experiences and attendances, and to compare the differences of these variables in terms of their backgrounds. This study investigated 354 (males=223; females=131) members of the Fitness Center in New Taipei City, Taiwan. A t-test and ANOVA analyses found there were significant differences in weight trainers' participation motivation, flow experiences, and attendances in terms of their education and job location. Pearson correlation analyses found participation motivation of weight training positively correlated with flow experiences and exercise attendances. It is suggested that weight trainers' participation motivation can be an important variable that influences flow and exercise attendance in weight training. Future study may examine the mechanism under this relationship.

Keywords: exercise behavior, psychological well-being, physical activity, optimal

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P-4, 2018ACK-1-31-P

# 運動員的信任教練、運動成就與賽前焦慮、自信心之關係

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目的：探討高中田徑運動員信任教練、運動成就與賽前焦慮、自信心的關係。方法：採用問卷調查法，以新北市中等學校運動會的高中田徑運動員 (男 125 人、女 60 人) 為研究對象。研究資料分二階段進行蒐集，第一階段在比賽前一週測量運動員的信任教練，第二階段在預賽前測量運動員的賽前焦慮及自信心。運動成就則是以是否進入決賽做為判定標準，進入決賽資料則是從大會公佈資訊所取得。蒐集資料以皮爾遜積差相關分析信任教練與認知焦慮、身體焦慮及自信心的關係，再以獨立樣本 T 檢定檢驗是否進入決賽在前述三個依變項的差異。結果：信任教練和自信心、認知焦慮呈顯著正相關和身體焦慮呈顯著負相關；進入決賽的運動員有明顯較高的自信心以及較低的身體焦慮。結論：高中田徑運動員越信任教練其自信心、認知焦慮會越高，而身體焦慮會越低；以進入決賽做為運動成就，進入決賽的運動員有較高的自信心及較低的身體焦慮。本研究結果可以提供教練提升運動員自信心與降低運動員焦慮的參考。

關鍵字：田徑、賽前調整、運動心理、運動員

通訊作者：潘緯澄

P-5, 2018ACK-1-36-P

# 運動傷害產生倦怠與退出因素之探究

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運動傷害的心理恢復，國內近年來受到相當的關注（王潔玲，2018；涂俊苑、盧俊宏，2001；賴玠豪、顏克典、楊榮俊，2012；黎俊彥、林威秀、黃啟煌，1997)，國際間傷害對於技能表現的影響也受到一定的注意(Armatas, Chondrou, Yiannakos, Galazoulas, & Velkopoulos, 2007; Levy, Polman, Clough, & McNaughton, 2006)。然而，在剛從事運動初期的青少年受到運動傷害而導致倦怠或退出的現象，國內卻缺乏相關的探討。本文透過國外調查性研究的分析，發現過度專業化(overspecialization)與過度訓練(overtraining)，是導致青少年運動傷害的最主要原因，而退出則是因為運動無法引起生理與心理的滿足產生四階段的倦怠，而導致慢性壓力(chronic stress)反應。最後建議國內可以進一步針對青少年因運動傷害退出運動的因素及反應調查，以建立國內對於青少年運動員因受傷而引起倦怠的預防及保護機制，奠定國內運動拔尖的基礎。

關鍵字：青少年運動員、過度專業化、過度訓練

通訊作者：王潔玲

P-6, 2018ACK-1-40-P

# 不同運動項目心理堅韌力之回顧

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心理堅韌力會影響運動員的運動表現，國內大約在 15 年前逐漸被討論(黃崇儒，2002)。之後，許多相關研究也紛紛出爐，但大多是探討各單項運動隊心理堅韌力的影響，對於整合型知識較缺乏敘述。故，本研究主要目的在整合國內本土性的運動心理堅韌力的結果，希望能對心理堅韌力的研究再提供更進一步的視野。研究搜集：網球、羽球、棒球、桌球、柔道、跆拳道、角力及慢跑等實證性研究結果發現，所有專項透過運動的參與即可提升心理堅韌力的表現，且強化對機能提升心裡堅韌力的能力。另就技擊性運動來看，心理技能訓練的處方能提高其心理堅韌力，但在特質性與狀態性心理堅韌性上沒有差別。最後建議，對於挑戰型與表現型運動對心理堅韌力的影響，未來還有進一步探討的空間。

關鍵字：特質性心理堅韌性、狀態性心理堅韌性

通訊作者：葉千如

P-7, 2018ACK-2-49-P

# PETTLEP 意象模式訓練對高中乙組籃球員罰球表現之影響

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研究目的：探討 PETTLEP 意象模式訓練對高中乙組籃球員的罰球表現是否有顯著影響。PETTLEP 為產生功能等同性（functionally equivalent）的意象訓練指導模式，本研究欲探討 PETTLEP 模式中七種不同要素（身體、環境、任務、時間、學習、情緒、觀點）介入訓練後，對罰球表現的影響。研究方法：以 22 位高中乙組籃球員（意象組 12 名、控制組 10 名）為研究對象，以隊為單位隨機分配為意象組和控制組。兩組分別進行前測後，意象組進行為期四週，每週 2 次，共 8 次的意象訓練，控制組則不進行任何訓練，四週後再分別進行後測。意象組穿著正式比賽服裝並手持籃球（身體要素），站於籃球場罰球線前（環境要素），聆聽意象指導語（任務、時間、學習、情緒、觀點要素）。所得資料以混合設計二因子變異數分析，再考驗兩組在罰球前、後測的表現差異情形。研究結果：交互作用顯示，意象組和控制組之前測無顯著差異，意象組之後測則顯著優於控制組，而意象組在後測顯著優於前測，控制組在前後測則無顯著差異。結論與建議：PETTLEP 意象模式能夠提升籃球運動員罰球表現，希望未來能夠針對不同項目、年齡以及技能水準運動員加以探討。

關鍵字：意象訓練、功能等同性、罰球表現、高中籃球員

通訊作者：季力康

P-8, 2018ACK-2-52-P

# The application of the test of performance strategies in sports: Literature review

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[Purpose] Extensive research shows that sports psychological skills are the determinants of athletic performance in both in practice and competition. Built on past psychological skills measures (e.g., PPI, PSIS, ACSI-28, OMSAT) that lack of adequate reliability and validity, the Test of Performance Strategies (TOPS, Thomas, Murphy, & Hardy, 1999) is a reliable and valid measure to assess athletes' psychological skills. However, how many studies used TOPS to examine its association with related psychological responses, or what is the difference between athletes' demographic background has never been systematically examined. Hence, the purpose of this study was to a systematically examine the research that uses TOPS. [Methods] We used related keywords such as TOPS, psychological skills, and three major databases, including PsycINFO, MEDLINE and ERIC, to analysis the literature published during 2000-2018. [Results] Totally, 173 papers have been identified. After manual reading, a total of 154 unsuitable documents were deleted. After criteria selection, 19 papers have met our research purpose. We found most research use TOPS for studies can be categorized by three major domain: (a) to examine the relationship between TOPS and other psychological responses such as self-efficacy, competition anxiety, and athletic performance; (b) to examine the individual differences in terms of gender, age, skill levels, and culture; (c) to examine psychometric properties of TOPS in different versions and cultures. [Conclusions] We suggest future study may quantitatively examine the association between TOPS and other psychological responses. Or, to examine the effects of athletes' psychological skills which used TOPS as a measure of athletic performance.

Keywords: TOPS, psychological skills, databases

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P-9, 2018ACK-2-147-P

# 不同背景變項網球教練對運動心理諮詢態度之差異

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在網球訓練過程中，大都以訓練技能、體能、戰略應用為主，但很多研究指出心理技能對網球表現也非常重要。然而教練在訓練課表中通常以技術為主，對於選手的心理技能培養，與能否接受專業運動心理諮詢，這都要端看教練對運動心理諮詢的態度。因此，本研究目的主要是探討網球教練對運動心理諮詢的態度，以瞭解這態度會如何促進或妨礙運動員對運動心理諮詢的使用。研究工具為「教練對運動心理諮詢的態度」問卷，總共發放 30 份問卷（國小教練有 12 人、國高中教練 8 人、大專教練 10 人，其中男性 22 人、女性 8 人），分析不同背景變項的網球教練使用運動心理諮詢的現況和態度及對未來使用運動心理諮詢的期望。結果如下：一、教練們在過去 12 個月內，有曾尋求相關運動心理資訊的佔 16.7%；二、曾有跟運動心理諮詢師一起工作的佔 10%；三、運動心理諮詢師曾跟團隊或運動員合作的佔 23.3%；四、都期望能有免費資源來使用運動心理諮詢。綜上所述，目前跟運動心理諮詢師合作的教練還是佔少數比例，由此可見，增加團隊經費補助、提高運動心理諮詢相關的教育與介入成效，可能能增加教練們主動尋求相關運動心理資訊使用的意願。

關鍵詞：專注力、自信心、壓力調適

通訊作者：陳佳莉

P-10, 2018ACK-2-54-P

# 運動心理介入對跆拳道選手突破心理障礙之實作

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前言：跆拳道運動攻守之霎那都處在一種不確定性中，競技運動員在生理及技術到達一定水準時，更需要的是強化心理能力，本研究參考 Butler 與 Hardy 提出的運動心理技能訓練之六個階段流程，通過 2 個月的持續心理介入，協助一位備戰全中運跆拳道選手進行個別化有計劃性的心理訓練。目的：本研究旨探討運動心理介入對高中跆拳道選手比賽心理突破之成效。方法：運動心理介入內容主要協助選手學習自我察覺、負面思想停止法、理性治療、自我對談及意象訓練等心理技巧。藉由每週一次的見面，維持 2 個月的心理訓練，備戰 107 年全國中學校運動會的重要賽事。結果：選手自陳已開始懂得使用心理技能訓練幫助自己，在負面思想出現時，第一時間會使用理情行為治療與負面思想停止法，現在於比賽或練習時，遇到狀況不好，會多利用自我對談幫助自己，正向的自我對話，更懂得隨時隨地使用運動心理技能。討論：筆者認為為提高心理介入的成效，應該在平時練習賽時加入心理訓練同時進行。過程中雖有請教合格的運動心理師督導，但許多的理論與介入技巧仍不夠成熟，需要與督導老師進一步討論後，才能設計出因應辦法提供選手建議，建議長期集訓的運動隊伍，還是以專業分工協助選手為宜。

關鍵字：理情治療、意象訓練、自信心、認知焦慮

通訊作者：莊艷惠

P-11, 2018ACK-2-63-P

# What is athletic mental energy? An initial exploration

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Background and purpose: In natural science, energy is a common term that has been used by many scientists. In psychology, researchers also interested in mental energy which is defined as “maintaining long hours of working with high attention on a given task (Cook & Davis, 2006).” Yet, the concept of Athletic Mental Energy (AME) has never been conceptualized. Hence, we hope that this study could offer a preliminary theoretical concept of AME.Materials and Methods: Qualitative designs were used in this study, the first stage of the study adopted a focus group to explore experts’ general opinions, and to seek a definition of AME. The second stage, an in-depth interview was adopted to explore two elite athletes’ experiences of AME.
Results: AME was defined as “..an athlete’s perceived existing state of energy which is characterized by having a high in motivation, sport spirit, confidence, concentration, and vigor but low in anxiety.”; (b) AME could be affected by daily life, interpersonal relationships, training, nutrition, social interaction, and even weather; (c) The sources of AME came from many factors such as people, individual, social, environmental, material variables, and subsequences of AME include emotion, motivation, cognition, and performance. But the mechanism of AME (e.g. how it works, or could it predict athletic performance), still rely on future research to make a better understanding.Conclusions: We suggest future research may examine the relationship between athletes’ AME and psychological responses, or interventions to increase athletes’ mental energy, and even the predictability of AME on athletic performance.

Keywords: peak performance, elite athlete, sport excellence, positive state of mind

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P-12, 2018ACK-2-64-P

# A systematic review of athletic mental energy in sports

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Purpose: Mental Energy is defined as “maintaining long hours of working with high attention on a given task” (Cook & Davis, 2006). Individuals with higher mental energy showed the abilities of continuing long hours of thinking, better concentration, and blocking distractions (Lykenn, 2005). In addition, literatures also indicated that mental energy influences academic works, athletic performance, commitment, and sales performance, but only few scientists have discussed this topic (Cook & Davis, 2006). Hence, the purpose of this study was to systematically examine the concept of mental energy by literature review, and specifically towards the research in sports.
Materials and Methods: Several keywords were used and conducted a comprehensive literature search through databases including PubMed/MEDLINE, Scopus, Web of Science, and SPORT Discus. Results: By definition, athletic mental energy can be defined as “an individual’s perception of the existing energy state characterized by having an optimal experience of emotions, confidence, motivation, and concentration”. Also, it is found athletic mental energy should be conceptualized by a multidimensional perspective. Mental energy is considered to enhance individuals and athletes’ performance, and it comprises at least 5 major components –positive emotion, motivation, confidence, concentration, low anxiety, and vigor. Conclusions: We suggest future research should start to examine the antecedents and consequences of athletic mental energy. Also, researchers may examine if psychological skills training (PST) or interventions could enhance athletes’ mental energy.

Keywords: performance, multidimensional, positive emotion, motivation, vigor

Corresponding author: Frank J.H. Lu

P-13, 2018ACK-2-65-P

# The effects of PETTLEP imagery training on enhancing sports performance: A systematic review

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Background and purpose: PETTLEP imagery model was developed by Holmes and Collins (2001). This model is based on neuro science research findings, particularly the discovery that the same neurophysiological processes underlie imagery and actual movement (Decety&Jeannerod,1996). Numerous studies had shown that PETTLEP imagery can be an effective intervention in enhancing athletic performance (Wakefield & Smith,2009; Post, Young, & Simpson, 2018 ). Accordingly, the aim of this study was to systematically review the benefits of PETTLEP imagery on improving sports performance.Methods: We use the keywords “imagery, motor imagery, PETTLEP, mental practice” to search the following databases: PubMed, SportDiscus, Medline, Eric, Elsevier and hand-searched to the related literature of past decades (2007-2018). Results:Of 88 retrieved studies, 13 studies have passed the inclusion criteria. Most studies provide the PETTLEP intervention training more than 6 weeks and showed a significant improvement from pre-test to post-test. The PETTLEP imagery enhanced participants’ sports performance no matter it was evaluated by an objective score or subjective score, also the effects of the PETTLEP intervention training can cross over novice and experienced sport participants.Conclusions:We concluded that the PETTLEP imagery is an effective psychological skill that can improve and enhance sports participants’ performance. However, only if we practice the PETTLEP imagery correctly. That means the participants should practice the imagery in a period of time (atleast twice a week for six weeks). The effects of PETTLEP imagery covered a extensive range of sports and population. We suggest that future research may examine how the PETTLEP imagery improves middle and older adults’ sports performance. In addition, we suggest future study may also examine the effects of the PETTLEP imagery on athletes’ competition strategies.

Keywords: PETTLEP, motor imagery, performance, mental practice

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P-14, 2018ACK-2-72-P

運動員生活壓力對運動員負面心理影響：系統性回顧

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本研究的目的在使用系統性文獻回顧的方式，探討運動員生活壓力對運動員負面心理的影響。本研究搜尋文獻的來源主要由 Pubmed、EBSCO 兩個資料庫以及網站 Google Scholar，透過關鍵字 Athlete、Life stress、Depression、Anxiety、Injury 和 Burnout，搜尋 2000 年 1 月 1 日至 2018 年 12 月 31 日，出版語言為中英文之研究文獻，所有的研究文獻受試者必須為運動員，結果須有明確的數據說明生活壓力與負面心理因素的關係，此外，一般性回顧文章也不納入此研究，經過篩選，最後確定共 22 篇納入研究。本研究初步結果發現，生活壓力、沮喪、焦慮、運動傷害以及倦怠對運動員都有顯著的影響。本研究結論指出運動員會因為生活壓力造成各種負面心理，教練、家長和行政人員應該注意這方面的問題適當輔導，以維護運動員心理康寧。

關鍵字：青少年運動員、心理健康、生活壓力、競技運動

通訊作者：盧俊宏

P-15, 2018ACK-2-109-P

# 競技運動父母涉入問卷發展與檢驗

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近年來，相當多的研究注意到父母在孩童及青少年競技運動參與中所扮演的角色，而父母涉入 (parental involvement) 被認為是影響孩童及青少年競技運動參與的重要因素之一。本研究目的為發展測量競技運動父母涉入的初步問卷。研究方法以質性研究結果發展初步問卷題項，接著進行探索性因素分析、項目分析、內部一致性考驗確認量表初步的適切性後；接著以驗證性因素分析及效標關聯效度檢驗問卷結構與構念效度。研究結果顯示，初步統計檢驗反應出四個向度，分別為父母的指導行為、負向管教行為、場邊行為及後勤支持行為，共有 16 題，Cronbach’s alpha 值分布為 0.66 至 0.93；最後，驗證性因素分析顯示具有良好的模式適配度，效標關聯效度檢驗亦顯示出良好的預測效度；問卷整體解釋變異度為 69.22 %。本研究提供初步測量競技運動父母涉入的研究工具，未來需要更多研究共同檢驗問卷適切性與實用性。

關鍵詞：半結構式訪談、家庭影響、孩童運動員

通訊作者：王亭文

P-16, 2018ACK-2-111-P

# A new statistic of basketball game evaluating the offensive and defensive effectiveness simultaneously

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Today, basketball is a prevailed sport around the world. This sport is closely related to a player's height, strength, speed, and shooting accuracy. Furthermore, basketball needs high bond with teammates and strategies. In a game of basketball, a winner will not be determined until the buzzer went off. Due to tension in the game, it connects the hearts of players, coaches, and audiences all together. Therefore, basketball has become one of the most popular sports around the world. The goal of this study is to develop new offensive and defensive statistics from the conventional data collections used by Super Basketball League (SBL), University Basketball Association (UBA), High School Basketball League (HBL). The conventional data that are used in a game show only scores, shooting percentage, boards, assists and so on, but this approach neglects the defense efficiency of a player. In contrast, we propose new statistics that analyze the pluses and minuses of a player's offence as well as defense, and thus we are able to determine the contribution that a player has made in the game. By using the new statistics, a coach has better understanding of opponent's states and strategies before starting a game. In addition, the proposed statistics also provide clear understanding of player's situation, and they allow coaches react to the game more efficiently. Similarly, a coach has clearer awareness of the team's weaknesses, and he or she will be able to strengthen the weakness during practices. As compared to the conventional data sheets, this study points out that the conventional way only tells how well a player perform in offense, yet the proposed one shows not only offensive but also defensive states. The proposed technique is supplemented with game statistics in history. By such, the proposed approach is able to identify the player that is influential during the game.

Keywords: basketball, offensive and defensive statistic, contribution

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Lower top-down attention and higher motor control are associated with better putting performance in expert golfer

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Objective: This study investigated the relationship between EEGs, which involve Fz Theta (sustained attention) and Mu (motor control), and putting performance in expert golfers. Methods: Twenty-eight expert golfers performed 60 putts while EEGs were recorded. To examine the relationship between EEGs and the performance, a correlational analysis between EEGs and distance from the hole were performed. Results: 1) A positive relationship was exhibited between the Fz theta power and the distance from the hole, indicating that lower Fz theta power is associated with better putting performance. 2) A positive relationship was exhibited between Mu power and the distance from the hole, indicating that lower Mu power is associated with better putting performance. Conclusion: Our research suggested that lower top down attention and higher motor control preceded better putting performance. These findings signify the importance of measuring multiple EEG components associated with cognitive processes relevant to motor performance.

Keywords: top-down attention, motor control, performance

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P-18, 2018ACK-2-116-P

Skilled golf putting was characterized by higher visuo-spatial attention

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Skilled golfers need to adjust their putting in a challenging situation. How visuo-spatial attention affect the putting performance is the question that will be examined. OBJECTIVE: To examine the difference in visuo-spatial attention between the successful and unsuccessful putting performance in skilled golfer in a challenging situation. METHOD: 36 right-handed skilled golfers performed 60 putting with the participants' personalized 50% successful putting distance, while alpha power (8-13Hz) of the electroencephalograms were derived from right temporal region(T4) before the putting (T2 =-2000~-1000ms, T1=-1000~0ms). A 2(time: T2, T1) x 2 (performance: successful, unsuccessful) two-way repeated measures ANOVA was used to analyze the data. Control analysis for regional specificity included right hemisphere (F4, C4, P4, O2). RESULTS: Compared with unsuccessful performance, the successful performance was preceded by a lower alpha power at T2(time) of the right temporal region. Control analysis showed that there was no difference at the right hemisphere except temporal region between successful and unsuccessful putting. CONCLUSION: When the skilled golfer is in a challenging situation, successful putting performance was preceded by more visuo-spatial attention at the beginning of the putting preparation period. The findings of this study may have important implication for assisting golfers.

Keywords: T4α, EEG, golf

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P-19, 2018ACK-2-117-P

# 探討韻律體操運動員從事個人和團體項目所使用意象的型態與角度

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運動員除了身體技能和戰術外，心理技能往往是決定勝負的關鍵。過去許多研究結果顯示在心理技能訓練中意象訓練是最廣泛使用的技能之一。韻律體操是一項運動員會同時從事個人及團體運動的項目，此外韻律體操的個人和團體項目的運動型態差異很大，團體項目除了需要顧慮自己的動作外還需與隊友及手具的相互配合跟個人項目單純只需顧慮自己有很大的差異。故本究想探討韻律體操運動員從事個人和團體項目所使用意象的型態與角度。本研究以立意取樣選取獲得 2017 世大運團體 2 面銀牌的五位選手，經受試者同意後進行半結構式訪談，以內容分析法獲得訪談結果，並請一名研究同儕共同分析進行相互檢核。結果歸納分析發現，在團體項目兩種視角皆會使用，個人項目較常使用內在視角。其次，團體在初期在還不熟悉動作的情形下較常使用內在特定認知，在後期動作精熟後使用較多外在一般精熟動機，主要是因可以看到整體畫面所以信賴隊友相信能給予力量並感受隊友的存在進而增強信心程度。在個人項目中不論前期後期皆以內在特定認知為普遍使用。以上研究發現運動員使用意象的視角及內容會應個人喜好及習慣而有所不同，但對於運動員都有正向的幫助。

關鍵字：意象

通訊作者：吳修廷

P-20, 2018ACK-1-13-2-P

# Self-esteem predicated by physical activity?

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Exercise is well known to bring benefits to a sense of competence, both physical and mental, and thus to enhance self-esteem. The ACSM (2012) recommends that most adults engage in moderate-intensity cardiorespiratory exercise training for ≥30 min·d−1 on ≥5 d·wk−1 for a total of ≥150 min·wk−1, vigorous-intensity cardiorespiratory exercise training for ≥20 min·d−1 on ≥3 d·wk−1 (≥75 min·wk−1), or a combination of moderate- and vigorous-intensity exercise to achieve a total energy expenditure of ≥500-1000 MET·min·wk−1. However, it has yet to be found there is proven formula for how much or how often to exercise to affect self-esteem. The purpose of this study was to examine how frequency, intensity, and time of physical activity affect self-esteem among college students and by their majors (i.e., Kinesiology, Health-related, and non-Health-related). A total of 1,160 college students (604 females and 556 males) in a comprehensive university located in Southern California completed questionnaires, including age, height and weight for BMI, frequency, intensity, and time for physical activity, and Rosenberg's 10-item self-esteem scale. The findings from this study using multiple regression analysis indicate that frequency of physical activity was a significant predictor for self-esteem. There were statistically significant differences on frequency, time, intensity, and self-esteem by majors. Kinesiology majors showed significant higher responses and scores on frequency, time, intensity, and self-esteem than non-Kinesiology majors and health-related majors (e.g., biology, nursing, pre-medicine, health education, and nutrition). Physical activity and exercise behaviors among Kinesiology majors may be indirectly related to enhanced self-esteem by taking more activity classes, which should be further investigated in the future.

Keywords: physical activity, self-esteem, FIT

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P-21, 2018ACK-2-83-P

# The effect of acute exercise on executive function: The moderating role of family income

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Introduction: Studies indicate that low-socioeconomic status is related to poor executive function. For low-family income people, stress might be a factor negatively influencing executive functions. Fortunately, acute exercise can be a strategy to facilitate executive function. Therefore, the first purpose was to explore whether acute exercise can influence multiple sub-components of executive function, which include planning and inhibition aspects. Secondly, the objective was to determine whether acute exercise influence executive function performance as family income involved as moderator. Method: Forty college students were recruited and assigned to either high- or low-income groups according to their family incomes, with 20 participants for each group. All suitable participants attended both exercise and control conditions on two separate days. Participants in the exercise condition performed 30 minutes of moderate intensity treadmill exercise, and participants in the control condition sat silently on chairs while reading sports-related books. After each condition, the participants completed the Tower of London and Stroop task. Results: Related to control condition, participants in exercise condition show positive effect on two executive function tasks. As involving family income as moderator, the results revealed acute exercise facilitates executive function no matter high or low-income. Conclusion: According to the results, our findings extend the current knowledge suggesting acute exercise has positive effect on executive function. Regarding family income not influencing the effect of acute exercise, the results of present study could establish the basis foundation of exercise promotion and further provide the environmental factors that improve executive functions.

Keywords: executive function, family income, stress, acute exercise

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P-22, 2018ACK-2-84-P

# 氣功為基礎之正念訓練對注意力及壓力情境之探討

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正念練習是源自佛教屬於禪修的一種修煉方式，融合道家「無為」的概念，以接納且不具判斷的態度，強調當下身心狀態的覺察基於正念練習的二種重要概念～專注性注意力及開放性的監控，本研究的目的在探討以氣功為基礎的 10 週正念訓練課程對於個體腦波頻譜功率的差異及注意力表現的效果。這項研究徵召 40 位無氣功及正念練習經驗之健康成人隨機分為實驗組及對照組，實驗組會接受 10 週以氣功為基礎的正念訓練課程，在正念訓練前後進行腦波及心理量表(中文版止觀覺察注意量表、正負面情緒量表、運動引起的感覺量表)的評估。研究結果顯示：1.實驗組參與者接受正念訓練後可以改善負面情緒、提高平靜放鬆的知覺；但也因知覺敏感度增加，也提高生理耗竭的知覺。2.控制組在後測安靜狀態、正念情境一及正念情境二之 beta 波功率顯著高於實驗組；控制組在後測安靜狀態及正念情境一之 gamma 波功率顯著高於實驗組。3.實驗組在正念情境一之額葉中線 theta 波顯著高於控制組。結論：10 週以氣功為基礎的正念課程，可以改善心理的負面情緒及提高平靜放鬆的知覺，降低壓力的感受，及提高注意力的效果。

關鍵字：正念、氣功、腦波、頻譜功率

通訊作者：豐東洋

P-23, 2018ACK-2-76-P

# 賦權與削權動機氣候對高中體育課學生責任之預測

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研究目的：在體育課產生的心理環境中，動機氣候是一個非常重要的因素，本研究探討賦權動機氣候是否可對學生個人與社會責任進行預測。研究方法：本研究以台北市的高中一般學生為研究對象，共發出 399 份問卷，有效問卷 314 份，其中男生共 140 名，女生 174 名，平均年齡為 16.56 歲。本研究採用問卷調查法，以「體育課學生責任量表」、改編為體育課情境之「賦權與削權動機氣候量表」為研究工具，並以描述性統計、皮爾森積差相關和線性迴歸進行資料分析。研究結果：賦權動機氣候能夠正向預測體育課中學生的尊重（β=.21）、努力（β=.54）、遵守課堂常規（β=.14）、自我導向（β=.52）、幫助（β=.47）與合作(β=.36)，而削權動機氣候能夠負向預測體育課中學生的尊重（β=-.10）與遵守課堂常規（β=-16）。賦權動機氣候可提高學生個人與社會責任，但削權動機氣候對學生的尊重與遵守課堂常規有負向的影響。討論與建議：教師在體育課個人與社會責任教學模式中加入賦權動機氣候來提高教學效果，從而增強學生的個人與社會責任。建議未來研究通過介入來探討學生在不同的時間與課堂情境中，賦權動機氣候對學生個人與社會責任產生的影響。

關鍵字：賦權動機氣候、削權動機氣候、學生責任

通訊作者：王鵬宇

P-24, 2018ACK-2-121-P

以 Gentile 技能分類法來探討韻律體操個人和團體項目動作複雜程度的差異

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韻律體操運動包括個人與團體項目，運動員必須手持道具且在音樂伴奏下執行技巧動作，通常個人項目所需的動作技術要求高於團體運動，然而團體與個人項目最大的差別在團體項目需與隊友互相拋接交換手具，其動作複雜度及變數似乎比個人多。Gentile 技能分類法是由個體動作及環境背景兩個維度所構成之二維分類方式，依據個體動作（身體固定或移動及有無操作物品）與環境背景（周遭環境移動與否及是否可被預測）之複雜程度高低，劃分為 16 種類。本研究以 Gentile 技能分類法來探討韻律體操個人和團體項目動作複雜程度的差異。以 2018 年喀山世界盃入圍決賽者為研究樣本共 48 套動作（個人 32 套和團體 16 套）。先將 Gentile 的 16 種技能分類由簡至繁分為 7 個等級並自定分值，每套動作等級得分越高代表動作複雜度越高。由於個人與團體項目成套時間不同動作數量也不一，重複出現的技能種類只計算一次。以獨立樣本 T 檢定檢驗個人和團體動作難度複雜度的差異。結果顯示有顯著差異，團體項目的動作複雜度高於個人項目。可能是團體項目因要面對隊友交換或協作所產生環境背景變異而提高了複雜度，未來教練可設計有環境背景變異之訓練內容協助團體訓練。

關鍵字：韻律體操、Gentile 技能分類法、技能學習

通訊作者：龔芸

P-25, 2018ACK-2-85-2-P

# 女子競技體操平衡木項目單腳挺身前空翻動作分段訓練法之探討

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平衡木是女子競技體操獨有的項目，也是女性特色項目之一。單腳挺身前空翻為目前國內外女子競技體操選手編排整套動作時，常使用的向前系列高難度空翻動作。本研究針對單腳挺身前空翻動作的訓練方法來進行探討，透過近年相關文獻資料的方式，結合本人實務教學經驗，細分將此專項技術動作的訓練法為四個階段：蹬地階段、擺腿階段、騰空階段及落地階段，須進行分段技術訓練。分段訓練需特別注意各階段的基礎能力訓練與銜接，應落實強化選手核心柔韌度及前手翻蹬地擺腿動作，並加強動態核心肌群訓練及下肢肌力。落地階段則容易產生重心位移，導致因著地時的重心後傾產生失敗，教練在旁協助保護的方式則十分重要，可縮短修正錯誤技術的時間及有效預防運動傷害的發生。本文章整合近年文獻與教練實務經驗，希翼給予基層體操教育者或教練在指導女子競技體操平衡木項目單腳挺身前空翻訓練之參考依據。

關鍵字：競技體操、平衡木、單腳挺身前空翻

通訊作者：盧彥廷

P-26, 2018ACK-2-Official-01-P

# An assessment of walking speed in moderate traumatic brain injury

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INTRODUCTION: The efficiency of human brain as the processing center connecting information between the outside world and the body becomes seriously compromised when brain injury causes disruption of the internal connectivity between neurons and damage to its structure. Gait speed is one of the outcome measures used to quantify the treatment progress and improvement of quality of life in traumatic brain injury (TBI) patients. OBJECTIVE: To assess the gait speed improvement of moderate TBI patients after 3 months of rehabilitation treatment using 6-minutes-walking test. METHODS: 10 male participants with ages ranging from 20 to 40 years old were recruited to this controlled study. These 10 participants include the control group (5 non-athlete participants) and the moderate traumatic brain injury group (5 patients of at least 6-monts post injury) were asked to walk on a flat surface track at their undistracted walking speed for 6 minutes. Their walking speeds were calculated and the TBI group only will continue their rehabilitation program. After 3 months, the walking speed were recalculated for both groups and analyzed. RESULTS: Subjects with moderate TBI (0.15 ± 0.27 m/s) walked slower compare to the control (0.89 ± 0.21 m/s). Slower walking was due to decreased stride lengths and not cadence. After 3 months of rehabilitation, the moderate TBI group (0.32 ± 0.27 m/s) showed improvement in walking speed although not achieve the speed of the control. CONCLUSION: The consequences of TBI can cause a lifelong consequence for some people, while others may be able to recover and resume activities they enjoyed before the injury. Walking speed can be reliable predictor in assessing the effectiveness of the rehabilitation program.

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P-27, 2018ACK-2-Official-05-P

# The development of a program to educate general kinesiologist in Integrated Kinesiologist Qualification System (IKQS)

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[Introduction] The Asian Society of Kinesiology (ASK) is going to establish the Integrated Kinesiologist Qualification System (IKQS), which is classified into General Kinesiologist (GK) and Specialized Kinesiologist (SK). Examination subjects for the ASK-GK certification and subjects required for university ASK-GK educational programs were proposed at the 2nd ASK Annual Meeting (2017). The purpose of this study is to develop the content of each subject needed for training competent Kinesiologists efficiently through the IKQS suggested by the ASK and to provide university credits for each subject as well as educational time for theory and practical courses in the ASK-GK certification workshop offered off campus. [Methods] For the ASK-GK program, we integrated each of the certifications administrated by the following organizations: The National Strength and Conditioning Association (NSCA), the American College of Sports Medicine (ACSM), the National Athletic Trainers' Association (NATA), and the National Association of Sports Medicine (NASM). Those certifications include NSCA's Certified Strength and Conditioning Specialist (CSCS), ACSM's Certified Exercise Physiologist (EP-C), NATA's Certified Athletic Trainer (ATC), and NASM's Corrective Exercise Specialist (CES). The Delphi method was used to achieve the goal of this study. First, nine specialized books related to those four certifications were analyzed. Based off that analysis, we determined the details of our goal which we then used to conduct interviews with 36 professors who have been teaching the current Korean workshop, discussing specifications with each on three different occasions. From this, subject content needed for the ASK-GK program, university credits, and ASK-GK certification workshop time were determined. [Results] The ASK-GK educational programs were divided into three fields: Health Fitness (HF), Athletic Injuries (AI), and Clinical Exercise (CE). Three subjects were then assigned to the HF field: Personal Training (PT, 9 chapters), Exercise Training (ET, 7 chapters), and Corrective Exercise (CE, 7 chapters). Along with that, it was proposed that the HF field should be a total of 10 university credits (PT-4, ET-3, CE-3) and a total of 82 hours was needed for the ASK-GK certification workshop (37 hours for theory courses / 45 hours for practical courses). Two subjects, Assessment of Athletic Injuries (AAI, 17 chapters) and Therapeutic Exercise (TE, 6 chapters), were assigned to the AI field and will be a total of 8 university credits (AAI-5, TE-3), needing 71 hours for the certification workshop (29 hours for theory courses / 42 hours for practical courses). Finally, two subjects, Pathologic Physiology (PP, 8 chapters) and Exercise Testing and Prescription (ETP, 7

chapters), were assigned to the CE field and will be a total of 6 university credits (PP-3, ETP-3), needing 51 hours for the certification workshop (46 hours for theory courses / 5 hours for practical courses). [Conclusion] It was concluded that seven subjects (24 credits / 61chapters) in three fields are required for university ASK-GK educational programs. It was also suggested that 204 hours (112 hours for the theory course and 92 hours for practical course) should be required for intensive education in the ASK-GK certification workshop.

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P-28, 2018ACK-1-43-P

# Soft-landing warm-up exercise for prevention of ACL injuries in female athletes

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Background: Anywhere from ACL injury is one of the most serious problem in an athlete's life, and the injury rate of female athletes is higher than other injuries. Researchers indicate tht the wrong posture of landing in sports is one of the main reasons of injuries. To decrease injury rate of female athletes, the soft-landing is widely used to prevent stiff-landing and wrong postures recently. Objective: A review for investigating the designs of strategies that can lower ACL injury rate in female athletes in recent years. Method: Collecting researches of preventiv training and warm-up to prevent female athletes from injuries in ball sports, and integrating the participants' traits, types of sports, intervention types and time. Results & Discussion: Researchers recommend that the warm-up program should includes (1) lower extremity and core muscles strengthening; (2) plyometrics training; (3) continual feedback to athletes regarding proper technique; (4) sufficient doses; (5) minimal-to-no additional equipment; (6) balance training along with optional components of stretching and agility exercises. can improve knee poor flexion, knee valgus and stabilizer muscles imbalance, and to decrease ACL injury rate. By using core muscles and lower extremity strengthening combine, repeating squats, jump landing and side jumping to lead into improving motion skills. The ability of balance and stability training can improving player the function of shift the gravity during rapid movement, and increasing the lower limb's stability and coordination (Trojian, et al., 2017). Conclusion : Soft-landing training or warm-up should includes core strengthening, lower extremity strengthening, landing skills, plyometric training and balance training so that female athletes can use more stable and safe motion before exercising. These are important for decreasing the injury rate of ACL in female athletes. The suggestion is that people can collect more information in other different sports except balls sports to increase effects of injury prevention.

Keywords: ACL injuries, soft-landing, warm-up programme

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P-29, 2018ACK-1-44-P

# The difference between suspension training and traditional resistance training

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The suspension training system which included total body resistance exercise (TRX), Crosscore and Terapi Master system, etc. is relative popular among physical fitness, athlete training and group courses in recent years. The difference between suspension training system and traditional resistance training is the body position while practice. In suspension training system, we hold the grip by hands with foots on the floors or put the sole of the foot into the shoe-cover and hands on the floor. The adjustment of loading density depending on the angle of the body tilt or use different load changes the intensity. In addition, suspension training allows the trunk to be in the state of long axis without support. It's means more core muscles should be activated to cooperated for support our body posture during suspension training system than traditional resistance training. Due to less contact with the floor or support area, it's need more strength to keep our body balance during operation which may enhanced the training of our proprioception and nerve conduction ability. The method of suspension training is also closer to life and the arena, and the trunk is maintained in a stable training process during the process of making limbs with skillful movements. The core muscle groups are relatively weak link in many explosive sports events. Many studies have shown that suspension training can strengthen the weaker links, maintain the stability of the trunk, and increase the strength and coordination of the limbs. The ability to control the nerves increases the explosive power and other sports special ability, and achieves the effect of balanced development and injury prevention of the muscle groups. Suspension training may be a popular trend nowadays, but this equipment is not a panacea. We should intervene in suitable training equipment according to the training group and the set goals, so as to help more people in general get health and stay away from injury through exercise.

Keywords: suspension training, total body resistance exercise, TRX, core training

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P-30, 2018ACK-1-32-P

# 效果預期影響貼紮後知覺及自信心之改變

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貼紮在現今運動場域中廣被使用，許多研究都指出貼紮對人肢體關節在力學上有穩定及預防性的助益，亦可能對心理層面造成影響。本研究透過檢證知覺及自信心等心理變項，探討貼紮對人的心理影響。方法：以體育系學生為招募對象，在無貼紮及貼紮兩情境下進行最大跳躍高度知覺判斷，並針對其判斷的最大跳躍高度及+10cm 後的調整高度進行自信心評估，且在實驗結束後詢問參與者對貼紮的效果預期。採用相依樣本 t-test 及混和設計二因子變異數分析進行統計考驗。結果：本實驗招募之參與者中，對貼紮效果正向預期者 14 名；負向預期者 12 名。在不考慮預期的情況下，參與者貼紮前後的知覺最大跳躍高度及自信心並無顯著差異。但將預期因子加入考驗後，結果顯示對貼紮效果正向預期者，貼紮後會顯著知覺較高的最大跳躍高度。自信心方面，對貼紮效果負向預期者，貼紮後自信心顯著降低。不管在何種情境下，自信心皆隨著難度提高而下降，但下降情況並不受預期影響。因此本研究發現，貼紮的影響會因參與者對效果的不同預期而有差異。認為貼紮有幫助者，會覺得自己貼紮後有較佳的跳躍能力；而將貼紮視為某種限制者，在貼紮後對自己成功跳躍的信心會降低。

關鍵字：直接知覺、自信心、最大跳躍高度、貼紮效果預期

通訊作者：洪瑞禧

P-31, 2018ACK-1-37-P

視覺、訊息與運動表現之關係探討

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有許多研究指出運動員對訊息來源的注意力，對於運動學習與運動表現是一項極為重要的因素(Ferrel-Chapus & Tahej, 2010; Lohse, Wulf, & Lewthwaite, 2012)。而此結果可能是由於視覺搜索策略的不同，導致決策時機的不同 (Takeuchi & Inomata, 2009)。本研究主要目的是在瞭解視覺、訊息與運動表現的相互關係，透過文獻的分析，我們發現運動員因為不同的水平的能力，會透過視覺『搜尋』不同外在的訊息，而產生不同的反應變項與反應時間，最後影響了運動表現。文末建議欲增加運動員的反應除了可加強其刺激-反應的能力外，讓選手了解訊息來源，或許亦可協助其改善運動反應的時間。

關鍵字：反應時間、注意力、運動學習

通訊作者：李瑞鴻

P-32, 2018ACK-1-42-P

技能水準與工作限制對體操交換分腿跳的交互影響

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本研究旨在探討工作限制對不同技能水準體操交換分腿跳之交互影響情形。根據限制與環境賦使觀點，環境中的配置會與個體以及特定工作互動改變動作表現，並可能帶給個體提升表現的功能。本研究參與者是 20 位大專院校學生，皆具備體操相關經驗，依國際體操總會規則區分為高、低技能水準組別，工作限制條件為墊子高度 (平地、15 公分、30 公分)，採用平衡對抗法進行 6 次試作，並收集不同條件下交換分腿跳的運動學參數藉以分析動作表現，所得資料以 2 (技能水準) × 3 (墊子高度) 混合設計二因子變異數分析，其中高度為重複量數，並以 LSD 法進行事後比較；結果發現相依因子在低技能組有顯著差異，參與者在墊子 15 與 30 公分交換分腿跳角度顯著大於在平地的表現，15 與 30 公分的表現無顯著差異；高技能組在平地或增加墊子的情境，其分腿角度皆無明顯差異，另經獨立因子分析結果顯示兩組在工作限制下的分腿角度皆達顯著差異。從本研究得知，技能水準與工作限制的交互影響主要顯現在低技能水準的體操選手，透過增加起跳高度可提升交換分腿跳表現，建議未來可再增加高度條件或其他限制因素，探討促進效果的最佳點。

關鍵字：體操、交換分腿跳、限制、 限制、 環境賦使 、表現

通訊作者：高士傑

P-33, 2018ACK-2-68-P

# Recurrences of information method and perception-action coupling make accurate response in table tennis

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An ecological approach to perceptual learning emphasizes that people achieve their functional purposes by exploring and detecting environmental information directly. However, the cognitive psychology stresses that people need through their brain to process information to execute their behavior.This study examined information acquisition methods for improving judgments. Three sorts of stance (squat, stand, and stand stiffly) and six kinds of placement (right, middle, and left at the upper and bottom positions) were designed to investigate the hypothesis of perception and action coupling. Fifteen participants, who were novices of table tennis, were randomly assigned to the information on recurrences (IR) group, the knowledge of results (KR) group, and the control group. All participated in the three types of stance repeatedly. The IR group made a response, and then they watched the same film again. The KR group also made a response; then they obtained the outcome. The control group did a response and the experimenter did not give any augmented information. Participants were requested to observe a table tennis athlete topspin serve. Then they held the pen to response the placement of the ball. The result revealed that when participants were asked to employ squat to respond, they made small radius errors at the left bottom and middle positions. Furthermore, the IR group had a minor constant error than the KR group and control group. The information on recurrences could be another mechanism to improve judgments, so the knowledge of results would not be essential for facilitating judgment. Moreover, as participants took squat to judge the landing directions, they could carry out more exploration and detection to pick up useful information to boost their response accuracy.

Keywords: ecological psychology, exploration and detection, knowledge of results

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P-34, 2018ACK-2-119-P

# 探討不同注意力焦點對於棒球投手投變化球效果之影響

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外在注意力焦點係指將注意力集中於身體以外、與工作目的有關的物體或事件，相對於將注意力集中於與執行動作有關的肢體部位，在力量、速度、平衡等動作表現上有較佳效果的現象。然而注意力焦點對不同經驗者的影響效果，目前仍有不一致的研究結果。本研究探討不同注意力焦點對大專乙組棒球投手投擲滑球表現的影響。實驗參與者在三種指導語情境-控制：無注意力焦點；內在注意力焦點：注意手指；及外在注意力焦點：注意飛行軌跡-下進行六次滑球試作，利用兩台高速攝影機拍攝滑球之飛行軌跡，以 SimiMotion 軟體擷取三維數據，計算滑球飛行軌跡垂直與水平面最大變化量及變化時宜，再以單因子重複量數變異數分析，檢驗注意力焦點效果之影響。結果顯示三種情境之水平面與垂直變化時宜及變化量無顯著差異。本研究結果未發現外在注意力焦點情境對大專乙組棒球投手投滑球表現的優勢，未來將檢視更高層級棒球投手的表現，以對內、外在注意力焦點在不同層級運動員的影響效果有更完整的了解。

關鍵字：外在注意力焦點、滑球、飛行軌跡、運動表現

通訊作者：魏琮霖

P-35, 2018 ACK-2-132-P

客家舞蹈《桐花雪舞》全民運開幕舞蹈的編創歷程：Newell 限制模式的觀點

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行為受到環境、工作、個體等限制的交互作用影響，而突現產生特有的行為樣貌。本研究基於此 Newell 限制模式，說明苗栗縣承辦 2018 年全民運動會活動，在開幕表演的編創過程。以工作限制的觀點，承辦單位定位為臺灣客家族群的重要原鄉，表演單位則選擇客家文化特色為主題的舞碼，並配合承辦單位多年來辦理桐花季的城市印象，參與表演的舞者需手持大型桐花道具表現動作，表演主題訂定為《桐花雪舞》。全民運動會的開幕場地位於苗栗巨蛋體育館內，表演人員 21 名在體育館中央，須以大型道具協助填補場地的空間，再加上場地四周均有觀眾需要照顧，圓形開放式舞台有別於過去表演人員熟悉的鏡框式舞台，場地又以 LED 燈光設置於地面作為表演人員的背景，因此，環境限制則有自上向下觀看、以貴賓席為主要觀眾、手持大型道具的身體動作表現局限性。演出舞者為舞蹈班七、八、九年級學生，雖然這些具舞蹈經驗的舞者身形勻稱、筋開腰軟、動作記憶和反應迅速，但因年齡不同、身高差距、個別動作能力等個體限制，就必須考量隊形編排的層次，例如：身型矮小者在前面、分組隊形的落差避免過大等，從動作能力進行分組時，側翻、前軟翻等動作即為考量的重點。

關鍵詞：動作行為、舞台表演

通訊作者：吳怡如

P-36, 2018ACK-1-19-2-P

# The relationship between the glenohumeral joint internal rotation deficit (GIRD) and the hip rotation in Taiwan high school baseball pitchers

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Background: GIRD is commonly seen in the dominant arm in baseball pitchers. When the upper limb motion changes, compensation movement may develop in other body segments and lead to a change of hip ROM. Past study had investigated the hip ROM in baseball pitchers, but not in GIRD pitchers, especially. Purpose: The aim of this study is (1) to compare bilateral hip rotation ROM between pitchers with or without GIRD and (2) to determine the relationship between glenohumeral and hip rotation ROM. Methods: 26 Taiwanese high school baseball pitchers were recruited in study. We evaluated shoulder internal and external rotation ROM. Those with GIRD in dominant arm for more than 20 degrees comparing to non-dominant arm were defined as GIRD group, the rest were non-GIRD. We also evaluate hip internal(IR) and external rotation(ER) ROM for all pitchers. Independent t-test was used to compare the ROM difference between two groups. A Pearson's correlation was used to determine the relationship between dominant glenohumeral and bilateral hip rotation ROM. Results: There was significant less trail hip total rotation ROM in GIRD(p=.045), and also had non-significant trend toward less trail hip IR ROM in GIRD (p=.061). Glenohumeral IR revealed significant correlation with stride hip ER in all pitchers (r=.461,p=.018) and non-significant trend in GIRD (r=.523,p=.067). There was also found that glenohumeral ER had non-significant trend toward correlation with trail hip IR in all pitchers (r=.355, p=.067) . Conclusions: Taiwan high school pitchers with GIRD were not only limit in glenohumeral ROM but also in hip ROM. There also had relationship between glenohumeral and hip rotation ROM. In conclusion, we should focus not only on the upper limb but also hip joint flexibility to avoid the sports injuries in pitchers.

Keywords: baseball, pitcher, glenohumeral internal rotation deficit (GIRD), hip, range of motion

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P-37, 2018ACK-1-23-P

# Inter-rater reliability of portable ultrasound measurement of quadriceps and hamstrings muscle thickness

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PURPOSE: The purpose of this study was to evaluate inter-rater reliability of the portable ultrasound measurement for the quadriceps (rectus femoris: RF, vastus intermedius: VI, vastus lateralis: VL, vastus medialis: VM, vastus medialis oblique: VMO) and hamstrings (biceps femoris: BF, semitendinosus: ST, semimembranosus: SM) muscle thickness. METHODS: Thirty six healthy individuals (20 Males and 16 Females, Age=22.2 ± 2.0years, Height=171.7 ± 9.6cm, Mass=67.4 ± 11.3kg) were participated in the study. Dominant leg's muscle thickness was imaged using the portable ultrasound (7.5MHz transducer, Healcerion, Seoul, Korea) in a random order by two raters. RF, VI, and VL were measured at 50% on the line between anterior superior iliac spine (ASIS) and superior patella pole and VM was measured at 20% of the same line. VMO was measured at 4cm superior and 3cm medial from superior patella pole. BF, ST and SM were measured at 50% of the length between the greater trochanter of the hip and lateral knee joint line. While VM and VMO were measured by longitudinal plane, others were measured by transverse plane. The three valid images were recorded in a random order for each muscle. ImageJ software was used to measure a muscle thickness. Average value of the three measurements were utilized to statistical analysis. Inter-rater reliability was calculated by intraclass correlation coefficients (ICCs). RESULTS: Mean values(mm) of the first rater for each muscle were RF=21.67, VI=22.01, VM=30.0, VL=25.25, VMO=20.46, BF=19.71, ST=21.52, SM=17.96. And mean values of the second rater for each muscle were RF=23.31, VI=22.12, VM=28.92, VL=25.61, VMO=20.51, BF=22.43, ST=22.38, SM=17.99. Inter-rater reliability was good (0.6-0.75) to excellent (0.76-1.0) with ICCs (95% confidence interval) for all muscles; RF=0.9 (0.78-0.94), VI=0.87 (0.74-0.93), VM=0.89 (0.79-0.94), VL=0.95 (0.9-0.97), VMO=0.77 (0.52-0.88), BF=0.72 (0.46-0.86), ST=0.75 (0.51-0.87), SM=0.81 (0.63-0.9) DISCUSSION: The measurement of the quadriceps and hamstring muscle thickness using the portable ultrasound exhibited a good (BF, ST) to excellent (RF, VI, VM, VL, VMO, SM) inter-rater reliability. The results suggest that the quadriceps and hamstrings muscle thickness measurement using the portable ultrasound would be useful and beneficial for clinicians, and health care professionals such as athletic trainers and physical therapists for clinical assessment.

Keywords: portable ultrasound, intraclass correlation coefficients, inter-rater reliability, quadriceps, hamstrings, muscle thickness

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P-38, 2018ACK-2-90-P

# Effects of four different recovery methods on physical performance, rating of perceived exertion, and blood lactate in Jiu-Jitsu players during and after a Simulated Game

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PURPOSE: Jiu-Jitsu players face multiple maximal-exertion events during competition. Strenuous physical exercise leads to fatigue but limited research has examined the influence of recovery modalities on Jiu-Jitsu performance. Thus, we investigated to evaluate the effects of four recovery protocols: passive recovery (PR), active recovery (AR), icing (ICE), and oxygen supplementation (OS) on rating of perceived exertion (RPE), physical performance, blood lactate (BLa) concentration, and blood variables such as creatine kinase (CK) and c-reactive protein (CRP) in Jiu-Jitsu players during and after a simulated game. METHODS: 8 male Jiu-Jitsu elite athletes (28.3 ± 3.6 years, 176.6 ± 3.6 cm, 76.8 ± 8.6 kg, 14.9±4.6 % fat) performed a 4-round Jiu-Jitsu Fight Gone Bad (JFGB) bout that consisted of six different movements, each of which was performed for one minute, so one round consisted of 6-minute, with a 12-minute break between each round on four occasions separated by 1 wk. On each occasion, they had to perform a 4-round JFGB bout (4 round × 6 min with a 12-minute break between each round) until volitional exhaustion. Four recovery methods were used in randomized order: passive recovery, active recovery (walking left and right, spreading arms up and down), oxygen supplementation (1.8 liters oxygen with purity 99.5% breath per minute for 10 minutes, $O_2$ Korea, Korea ) and icing (Icepack, Korea) on the both palm and sole alternately at intervals of 30 seconds. Recovery treatment was performed for 10 minutes except for 1 minute after the end of the round and 1 minute before the start of the round between the 12 minute break. Physical performance was determined by the number of counts of six different movements per round. RPE, BLa, CK, and CRP were recorded and analyzed at designated time points. RESULTS: There were no differences in RPE (10 time points), BLa (10 time points), physical performance, and blood variables (2 time points) among four types of recovery methods. CONCLUSION: It was concluded that AR, ICE, and OS recovery did not enhance lactate removal, RPE, and subsequent performance of repeated work bouts compared to PR recovery in simulated Jiu-Jitsu play.

Keywords: Jiu-Jitsu, recovery, physical performance, blood lactate, fatigue

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P-39, 2018ACK-2-149-P

# Effects of 10-week exercise program on body composition, national fitness 100 senior test, and blood variables rural elderly women in Korea

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The purpose of this study was to investigate changes in body Composition, physical fitness, and blood variables as a result of the silver care exercise program in the community participation program of rural elderly people. Subjects participated in this study included 20 women aged 65 or older who live in G area. The participants consisted of participants who wanted to participate in the program and the exercise program was conducted twice a week for 10 weeks. The exercise program consisted of warm-up (10 min), main exercise (70 min: New-Sport, strength exercise, fall prevention exercise, dementia prevention exercise, aerobic exercise) and cool-down(10 min). Before and after the experiment, body composition analysis, National Fitness 100 Senior Test and blood variables were analyzed. Data were analyzed using the SPSS 21.0 program using the corresponding sample t-test. The significance level was conducted at .05. The study showed a significant decrease in body weight, BMI, and %body fat. As a result of the National Fitness 100 Senior test, there was no significant difference in Blance, cardiopulmonary endurance, and co-ordination, although muscle strength, muscle endurance, and flexibility were significantly increased. Finally, glucose and LDL cholesterol were decreased in serum, but total cholesterol and HDL cholesterol did not change significantly. In conclusion, participation of elderly women in rural areas has a positive effect on body Composition, physical fitness, and blood variables. However, most of the elderly in rural areas are not easy to participate in leisure activities, and the majority of working hours are occupied. Therefore, local governments and the Ministry of Health and Welfare should promote healthy life for the elderly by distributing the exercise program and the home visiting exercise instruction program which are continuous and able to participate in the welfare subsidized rural areas and fishing villages.

Keywords: rural areas, body composition, national fitness 100 senior test, blood variables

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P-40, 2018ACK-2-150-P

# Effects of middle-term weight loss on body composition, physical fitness and blood variables in college ssireum athletes

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The purpose of this study was to investigate ths change of body composition, physical fitness, and blood variables according to middle-term weight loss of college Ssireum Athletes.The subjects who participated in this study are those who have more than 5 years of career and 6 students who participated in the ssireum game. In this study, the average weight of athletes was reduced by 5% for 2 weeks, and the weight loss method was performed through diet, exercise, and sauna. Before and after the experiment, body composition analysis, basic physical strength and blood lipid composition were analyzed. Data were analyzed using the SPSS 21.0 program using the corresponding sample t-test. The significance level was conducted at .05. The result tends to decrease with the lean body mass and body fat with weight loss appeared, did not have the muscle strength and muscle endurance, and power changes appear, showed a tendency to improve the cardiovascular endurance and flexibility. In addition, there was a positive change in blood lipids.Based on the above results, weight loss during middle-term has a positive effect on muscle strength, muscle endurance, flexibility, and cardiovascular endurance, which are considered to be important in Ssireum Players. Did not affect the physical fitness of the athletes, and it was concluded that weight loss during middle-term was effective.

Keywords: middle-term weight loss, ssireum athletes, body composition, physical fitness and blood variables

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P-41, 2018ACK-2-151-P

# Effects of short-term weight loss on body composition, physical fitness and blood variables in college ssireum athletes

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The purpose of this study was to investigate the change of body composition, physical fitness, and blood variables according to short-term weight loss of college Ssireum athletes. The subjects who participated in this study are those who have more than 5 years of career and 6 students who participated in the ssireum game. In this study, the average weight of athletes was reduced by 5% for 3 days, and the weight loss method was performed through diet, exercise, and sauna. Before and after the experiment, body composition analysis, basic physical strength and blood lipid composition were analyzed. Data were analyzed using the SPSS 21.0 program using the corresponding sample t-test. The significance level was conducted at .05. As a result, weight loss and body fat decreased together. Muscle strength, muscle endurance and power decreased while endurance and flexibility were improved. In addition, there was a positive change in blood lipids. Based on the above results, it was found that short-term weight loss had a negative effect on muscle strength, muscle endurance, and power which are considered to be important in Ssireum, and that longer duration of weight loss would reduce these factors.

Keyword: short-term weight loss, ssireum athletes, body composition, physical fitness and blood variables

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P-42, 2018ACK-2-75-P

# 核心肌肉對於運動表現之探討 - 以捷泳為例

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現今核心運動越來越推廣，讓更多人了解到這項運動的好處，可以增加運動表現及效能，也可以防止運動傷害，結合游泳運動表現下去探討。目的：本文藉由游泳運動肌力訓練下去做初探文獻為背景，探討核心肌肉訓練幫助運動表現之效能。方法：本研究採用文獻回顧法，以肌力訓練、游泳運動、核心肌群、彼拉提斯訓練、等關鍵詞，於華藝資料庫搜尋進行文獻選查（年代：2010-2017），篩選出關鍵文獻。結果：經文獻回顧後發現，核心肌肉訓練在於很多種運動都是有良好表現，可以增加軀幹穩定度，在游泳運動能在水中保持流線型動作，讓身體穩定抓水力氣更加容易，游泳的成績會更快更好。結論：核心肌肉，對於游泳訓練有效幫助，可以增加游泳效能及速度，也可以保護運動員的身體不受到傷害，身體核心肌群訓練，能夠幫助軀幹穩定達到良好的姿勢，在陸上訓練時能更達到有效的訓練，藉由近身端肌力帶動遠身端肌力，能避免過度訓練受傷，且有效保護運動員的運動的壽命。

關鍵字：核心肌肉訓練、捷泳、彼拉提斯訓練

通訊作者：洪晟軒

P-43, 2018ACK-1-27-P

# Kinematic analysis of the roundhouse kick on pivot knee joint

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Purpose: To examined whether there were different coronal and horizontal plane angles on the knee joint of pivot leg during kicking the more higher and farther positions. Methods: In this experiment, six active taekwondo players (age=20.67±0.96, height=168.17±6.99, weight=58.17±3.44) were recruited to perform 5 times round horse kick (RHK) on each attack position (including normal position (NP) (100% leg length, self chest height), upper position (UP) (100% leg length, self head height) and farther position(FP) (120% leg length, self chest height). The Vicon Nexus motion analysis system used to capture the reflective balls attached on the subjects. Matlab 2016 was used to analyze the three-dimensional angular kinematic angle of the lower extremity by the Euler angle formula. Pair-t tests were used to identify the difference (UP vs NP; FP vs NP) about the knee maximum valgus angle and internal rotation angle during acceleration period (attack feet off the ground to kick the target) of RHK in pivot leg. All motion time of acceleration period were normalized to a percentage of time intervals. Results: Attacking UP induced significant larger angle on the maximum knee valgus of pivot leg than NP (NP=6.24°±3.56°, UP=9.33°±3.96°, $p<.05$), but there was no significant difference between attacking FP and NP (NP=6.2°4±3.56°, FP=5.72°±3.31°, $p=.32$). The timing of maximal knee valgus angles of pivot leg were appear about 94-97% of the acceleration period during RHK. In addition, there was no significant difference in the maximum knee internal rotation angle of pivot leg between attacking FP and NP (NP=14.19°±6.97°, FP=16.48°±8.55°, $p=.43$), and there were also no significant difference between attacking UP and NP (NP=14.19°±6.97°, UP=12.56°±8.01°, $p=.23$). The timing of maximum knee internal rotation angle of pivot leg were appear about 1-10% and 65%-70% during the acceleration period of the RHK. After 70% of the accleration period, the knee was gradually produce external rotation in pivot, until to 100%. Discussion: The results showed that the torsion angle of pivot leg during RHK is not affected by kicking of different height or distance target, But the valgus angle of knee joint angle was increased synchronization with the valgus angle of knee joint in pivot leg. This makes the knee joint at a dangerous posture of the pivot foot, especially before and after kicking to the target.

Keywords: taekwondo, biomechanics, valgus

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# The effect of the kicking distance on muscle activation of pivot leg during the round horse kick

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Introduction: Round horse kick is a common scoring skill in taekwondo competition, the pivot leg usually plays an important role in a perfect attack. The larger range of kicking also increase the possibility of gaining scorings, but it also increases the muscle loading of the pivot leg. The co-activation index (CI) of quadriceps and hamstring muscle can reflect to knee joint protection upon impact (Federico Quinzi, F. & Camomilla, V., 2015). Purpose: The purpose of this study was to analysis the pivot leg during a best effort round horse kick among the 3 different attack distance. Methods: We recruited 7 taekwondo athletes (3 males and 4 females) without serious lower limbs injury, height:168.00±7.00cm, body weight:60.14±6.26kg. First, all participants had a standard 10 minutes warm-up and stretch process. The 3 different attack distances were decided by the participants' pivot leg's length, 80% leg length(D080)、100% leg length(D100), 120% leg length(D120). In the beginning of kicking, we fixed the EMG amplifier on their pivot leg to collect the lower limb muscles (Rectus femoris(RF), biceps femoris (BF)) EMG signal during the kicking. The data of kicking were be analyzed in two sections: acceleration period (kicking leg get off to attack the target), deceleration period (attack the target to touch the ground ). All the EMG data were normalized to a percentage of maximal voluntary isometric contraction (%MVIC). Result: The results of this study were in the acceleration period, D120 had higher CI than D080($p<.05$) and D100 ($p<.05$) (D080=0.30±0.15;D100=0.33±0.15;D120=0.39±0.14). In the deceleration period, D120 had lower CI than D080($p<.05$) and D100 ($p<.05$) (D080=0.42±0.11, D100=0.38±0.16, D120=0.33±0.12). Conclusion: In the far distance kicking, hamstring muscles of pivot leg had higher antagonism. This represent that in this section the knee joint need more co-contract ability to stabilize. Especially there is a higher CI in the 60-75% intervals of acceleration period and in the 1-75% intervals of deceleration period of round horse kick, we supposed that kicking a far target, the quadriceps of pivot leg need make the knee extend, thus hamstring muscle produce a relatively antagonistic response, especially before and after attacking moment.

Keywords: taekwondo, EMG, co-activation, quadriceps, hamstring

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# Differences of neuromuscular control on pivot hip during a roundhouse kick

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Introduction: The main purpose of our study is to figure outanalysis the neuromuscular control on pivot hip during a round-horse kick in Taekwondo. The different iEMG activity among the Rectus femoris (RF), Biceps femoris (BF), Adductors (AD) and Gluteus medius (GM) of the pivot leg. Method: 78 Taekwondo black-belt athletes (3 males and 4 females, 20.86±1.12? years old) doing 5 maximum effort of round-horse kick. The target were set at the distance depended on the athlete's leg length and at the height depended on the athlete's chest. Every kick should be in a maximum effort and need to kick the center of the target. We used Delisys EMG system to collect the stability muscles of hip (RF, BF, AD & GM) of the pivot leg during the kicking. And we separated the kicking into 3 phases: (1) prepare phase: start from the knee of the pivot leg moves to the moment when the kicking leg leave the ground. (2) acceleration phase: start from the kicking leg leaves the ground to the kicking leg kicks the target. (3) deceleration phase: start from the kicking leg kicks the target to the kicking leg touches the ground. Result: Every muscles of pivot leg have different degrees levels of iEMG activity in different phases. First, most muscles (RF, AD, & GM) significantly increased iEMG activity in the acceleration ($p<.05$) and deceleration phase ($p<.05$) than the prepare phase. But BF only significantly increased iEMG activity in the acceleration phase than the prepare phase. There were not different between accelerated and decelerated phase in foureach muscles during performing round-house kick. Second, there were significant different of iEMG activity levels among four muscles of pivot leg in the acceleration phase ($p<.05$) and deceleration phase ($p<.05$) of the round-horse kick. RF, AD and GM have more iEMG activities than BF. Especially, in addititonaddition to RF, AD and GM have much more activity than BF in both phases. It showed lateral hip antagonistic machine were also important for performing round-hours kick. Conclusion: According to the result, we suggested that the Taekwondo athlete should strengthen the AD and GM of pivot leg for doing a maximum effort of round-horse kick. If the BF neuromuscular function of pivot leg were not a closed to RF in pivot leg, it may result in sport injuries in knee joint.

Keywords: EMG, taekwondo, roundhouse kick

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# Kinematic analysis of baseball pitching motion with range of motion deficit of the shoulder girdle in the non-pitching arm

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Most previous studies have investigated the kinematics and kinetics of baseball pitching arm. Few studies have reported the kinematics and kinetics of the non-pitching (NP) arm motion. However, the shoulder girdle (SG) motion in the NP arm during the pitching motion was not clarified. This SG motion is associated with trunk motion and may affect pitching performance. To investigate the function of SG motion, this study aimed to analyze the baseball pitching motion with decreasing range of motion of SG in the NP arm. We included 23 healthy male baseball players (age, 19.8±2.2 years; height, 175.2±7.7 cm; weight, 71.1±9.2 kg; competition history, 11.3±1.3 years). Pitching motions were examined using a motion capture system. Pitchers threw a ball under two conditions: unrestricted pitching (normal condition) and pitching with partially restricted SG motion in the NP arm (fixed condition). A non-stretched tape was attached around the non-pitching shoulder to restrict SG motion. The kinematic and kinetic parameters were calculated from the start period (ST) to ball release (BR). Ball velocities in the normal and fixed conditions were 110 and 103.8 km/h, respectively. The following results represented the fixed condition compared with the normal condition. The angular displacement of the NP shoulder girdle protraction from ST to stride foot contact (SFC) decreased significantly. The trunk twist toward the throwing side in the SFC period was significantly decreased. The peak trunk rotation angular velocity toward the NP arm from SFC to BR was significantly smaller. Previous studies reported that a large trunk twist increased the muscle force by stored elastic energy (Asmussen, 1974) and induced stretch reflex (Dietz, et al 1979). The fixed condition showed smaller angular displacement of SG protraction and small angle of the trunk twist. The decrement in the trunk twist may reduce the elastic energy. The energy exerted by the musculature and transferred to the pitching arm may decrease. Therefore, the peak trunk rotation angular velocity and ball velocity were significantly smaller in the fixed condition than in the normal condition. This study suggested that limited motion of SG in the NP arm reduces ball velocity and trunk rotation.

Keywords: baseball pitching motion, non-pitching arm, shoulder girdle

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P-47, 2018ACK-1-41-P

# The effect of the kicking height on muscle activation of pivot leg during the round horse kick

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Introduction: Taekwondo is very fierce and has different scores depending on different parts. In favorable circumstances, the player often chooses a higher scoring position to kick in order to increase the score of the game. However, kicks of different heights may impact the supporting foot. The extensor antagonistic co-contraction index (CI) is an observable exercise benefit of the muscles of the lower limbs (Kim, et al., 2016).Purpose: This study is expected to explore the differences in the co-contraction values of the antagonistic muscles in the kicker's muscles during different kicks.Method: In this experiment, 7 Tae Kwon Do athletes (age 20.8±1.21 years, height 168±7 cm, weight 60.1±6.26 kg) were trained on their own best efforts for each of five different height positions five times, respectively. ) (Section of self head, SH), middle section (chest) (Section of self Chest, SC) and lower section (of the abdomen) (Section of self abdomen, SA) after the kick kick kick, the kick distance is defined from Axis foot foot to kick target horizontal distance of about 100% leg length. During the kicking process, Nexus Motion Capture Software and six high-speed cameras were used to collect data on the EMG and the reflected ball of the rectus femoris (RF) and biceps femoris (BF) of the subject's habitual feet, and through the motion analysis system. The process of the subject's movement is staged, including the acceleration period (kicking of the foot from the moment of the ground to the moment of kicking the target object) and the deceleration period (the moment of kicking the target object to touch the ground), raw data After EMG filtering, MVIC standardization and time standardization were performed by Matlab 2016 software, the co-contraction value of the supporting foot during different periods was analyzed and calculated. The co-contracting value (CI) formula was used in this study as BF/(RF+ BF). Result: The experimental results showed that there was no significant difference in the average CI value between the three kick heights during the acceleration of the kick (CISH = 0.39 ± 0.17, CISC = 0.37 ± 0.16, CISA = 0.33 ± 0.15, p =. 76) The mean CI value and time-normalized CI data for each percentage are also analyzed and compared, respectively, and there is no difference between different heights. However, in particular, the results of this experiment showed that there was no significant difference in axial CI between the three kick heights in the deceleration phase (CISH=0.33±0.15, CISC = 0.33±0.15, CISA = 0.43±0.16, p= .36), but again based on the correlation analysis of the sample T test found that CISH>CISC (p<.05) and CISC>CISA (p<.05), found in each 1 percent data normalized at the time of comparison, were different in deceleration at different heights. The main significant range of axial CI values during the period is between 48 and 80%, which is probably

the most important area for the axis foot when kicking a higher position. Conclusion: The head and thorax and abdomen are the locations with the most scored attacks. The results of this experiment show that the higher the player's kick position, the less the degree of muscle contraction in the acceleration phase has any effect on the acceleration period, but the higher the support level for the deceleration period. In the kicking position, the more biceps femoris muscles are required to be used together to participate in antagonizing the stabilization of the lower extremities. This also reflects the possibility that the deceleration process (especially in the mid and late stages) when the player is attacking the head, such as improper exertion or muscle weakness, is May cause joint damage.

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# Effect of improved single-leg deadlifts on the electromyography of the Vasti muscles during running

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Introduction: Dynamic Warm-up can promote muscle activation and improve muscle coordination. Muscle imbalance can cause kinematic imbalances that cause many joint and muscle damage symptoms. Therefore, this study uses improved single-leg hard lifting to guide correct movements as a dynamic warm-up training way.Methods: A total of 6 healthy women in the study(age: 23.4±2.2 years, body weight: 56.5±9.2 kg, height: 162.3±3.3 cm). Under the guidance of the athletic trainer, the improved single-leg deadlifts was mainly carried out after the one-legged deep squat body was stable. For the knee flexion, the trunk was flexed and straight, and the hip hinge movement was performed in three sets, each set was 15 times. Every 3 to 5 seconds, the number of times was reduced or increased according to the subject's situation to the correct execution of the action. The pre-test and post-test were respectively jogging for 3 minutes, the first score was jogging at 7 km/h, the second score was up to 8 km/h, and the third score was up to 9 km/h.The Delsys Trigno Wireless EMG system and Vicon Nexus motion analysis system were used to collect electromyography and kinematic data during the test. The RMS EMG activation values of the vastus lateralis(VL) and the vastus medialis oblique (VMO) of the last five steps of the dominant foot and the posterior side of the dominant foot were analyzed. Results: There was no significant difference in VMO between the treadmill tests performed before and after exercise(pre-test80.1±13.9%MVC, post-test 80.4±36.2%MVC, p=0.97). There was also no significant difference in the activation of myoelectric activation of VL(pre-test 70.5±13.9%MVC, post test 70.7±22.2%MVC, p=0.97). There was no significant difference in the mean value of VMO/VL ratio(pre-test 1.1±1.1, post-test 1.1±1.1, p=0.839). The VMO/VL ratio has a change of 1 in the middle and late. Discussion & Conclusion: Although this functional muscle-induced exercise failed to affect the amount of myoelectric activation of VMO and VL during running, the activation ratio of the two muscles during running was slightly more balanced, and the effect may appear middle and late sections of the running support period(58%~76%). It is shown that the exercise induced by this modified muscle may help balance the use of the knee muscles, and the rectus muscle during the support period assists the upward movement of the tibia to be more stable. It is suggested that more different exercise tests can be verified in the future.

Keywords: dynamic warm-up, vastus lateralis, vastus medialis oblique

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# The effects of different position of accelerometer wearing on the detection of acceleration during jumping in water

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[Purpose] The purpose of this study was to investigate the differences in accumulative accelerations collected by accelerometers worn on different parts of the body when jumping in water. [Methods] There are 20 female subjects in this study. The average age was 56.5±4.02 years and the average height was 158.9±4.48 cm, weight 54.0±7.30 kg and BMI 21.3±2.66 kg/m2. The subjects who were going to be tested are wearing a three-axis accelerometer on the 7th cervical vertebra, 5th lumbar vertebra, and the inner region of the ankle respectively. The jumping actions including CMJ (counter movement jump), JOLA (jumping opening legs and arms), and LJ. (lunge jump), Skip. Each actions was performed for consecutive 30-second jumps and tested for two cycles. Four different forms of jump motion were calculated by accelerating the acceleration integration of the 50Hz low-pass filtered accelerometers. Statistical analysis was performed using the One-way ANOVA test. [Results] In the 30-second jump process, the acceleration integration of CMJ movement is was significantly greater than JOLA, LJ and SKIP at neck position ($p<.05$). At the lumbar region, the value of acceleration integration of CMJ is significantly larger than JOLA and SKIP, and SKIP is significantly smaller than CMJ and LJ ($p<.05$). The acceleration integration data at ankle part, CMJ, JOLA, and LJ were significantly greater than SKIP ($p<.05$). The result of average unit jump acceleration at the neck acceleration gauge showed CMJ> LJ> SKIP> JOLA. At the lumbar, CMJ> LJ> SKIP> JOLA and CMJ> LJ> JOLA> SKIP at the ankle. The accelerometer and the force plate worn on the C7 and L5 positions are highly correlated in the three motions of the CMJ, LJ and SKIP. But, the accelerometers and force plates worn on the ankle position had low degree of correlation in all four actions. [Discussion] This study found that the neck has similar assessment results of the other two locations, and also can significantly estimate the ground reaction force values. This indicate that the accelerometer wearing at the C7 position is a good consideration, especially when the jump movement is arranged in the water. At the time, it is recommended to develop the reference for the design of underwater wearable devices in the future.

Keywords: accelerometer, jump

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P-50, 2018ACK-2-85-P

# 競技體操分腿全旋動作之肩部肌肉活化分析

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競技體操分腿全旋動作，是目前國內外選手經常使用的全旋動作，此動作需依賴肩部肌肉穩定才能產生良好的協調動作與控制能力。本研究目的是在探討實施分腿全旋動作過程中時，肩部穩定肌群肌肉活化之變化情形。本研究以一名具全大運第一名男子競技體操選手，實施進行三次連續五圈的分腿全旋。請受試者接受 10 分鐘標準化的熱身後，在受試者雙側胸大肌、三角肌及斜方肌裝設 EMG 放大器，蒐集分腿全旋的肌電訊號，透過動作分析系統對分腿全旋動作過程進行分期，包含：擺進時期、仰臥時期、擺出時期及俯臥時期；原始數據藉由軟體進行 EMG 濾波，與時間標準化後，再分析計算動作不同期間的肌肉 RMS 活化值，以單因子變異數分析與事後檢定進行不同時期肌肉活化差異比較。研究與討論實施分腿全旋動作過程時，左側胸大肌主肌肉活化集中在擺進時期及俯撐時期作用較其他時期多 ($p<.05$)，右側上斜方肌則仰撐及擺出時期活化程度較其他時期高 ($p<.05$)，其他肌群的活化則多數顯示集中在擺進時期以外的時期 ($p<.05$)。造成肌群與動作技術特性時期差異，然而不同肌肉發力可能受到及動作實施方向有關，致使兩側手部在支撐地面時卻會產生不同的活化傾向。

關鍵字：競技體操、鞍馬、分腿全旋

通訊作者：盧彥廷

P-51, 2018ACK-2-86-P

# Effect of single core induced exercise on trunk muscle activation during climbing stair test

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Introduction: Low back pain is a widespread disease, and its treatment methods include drug therapy, exercise therapy, and physical therapy (Roy & Vanichkachorn, 2013) . When it comes to asymmetric lower limb movement tasks, such as running, climbing, and climbing, it requires coordinated synchronization between the pelvis and the trunk (Tsao, Galea & Hodges, 2010). However, it is still unclear that control of the trunk muscles performing stepping after the core stability exercise. Methods: A total of 6 healthy males in the research (age 23.3±1.5 years, height 172.3±4.2 cm, weight 71.8±12.9 kg). Everyone accepted the core muscle-induced movement of the Bird dog from the same instructor. Each exercise was at least 3 seconds intra-abdominal oblique muscle (IO) and extra-abdominal oblique muscle (EO) activation that was confirmed by EMG, and 10 times on both sides. EMG activation of bilateral IO, EO, rectus abdominis (RA), thoracic erector spinae (ES), and lumbar ES were recorded in the test procedure using the Delsys EMG system (2000 Hz). All data were filtered and converted to the maximum isometric contraction percentage (%MVC). The data were staged by the Vicon motion analysis system and the high-speed camera taking the kinematics information (100 Hz) of the step-up process. Using the paired t-test to determine the difference in EMG activation before and after exercise among the three ascending step stages. Results: The activation of the first stage of the left thoracic ES (right heel strike to left toe off) was significantly reduced after exercise (pre-test 15.6% ± 7.3%, post-test 13.2% ± 6.3%, $p = 0.03$.). Right IO in second stage (left toe off to left heel strike) (pre-test 24.2% ±17.7%, post-test 21.6% ± 17.3%, $p = 0.03$.) and third stage (left heel strike to right toe off) (pre-test 30.2% ± 18.3%, post-test 25.4% ± 14.9%, $p = 0.05$) were significantly decreased after exercise. There was no significant difference in the activation of the EO, RA, and ES between pre- and post-test. Discussion & Recommendations: The left thoracic ES and the right IO showed lower activation in the part of supporting phase on stepping exercise after the core stability exercise, and there was no significant difference in muscle activation between the lumbar ES between pre- and post-test. The subjects in this study were healthy individuals. The core stability exercise before stepping could increase the stability of trunk, so that reduce some muscles activations in complete the same task. It is recommended that this discovery be applied to the daily training of patients with lower back pain.

Keywords: LBP, bird dog, abdominal muscle

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# The relationship between the landing points of the ball and reproducibility of the swing motion of approach shot in golf

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The aim of the approach shot in golf is to hit the balls closer to the flag. The accuracy of this shot directly affects the total score. There is a characteristic that generally player hit the ball toward various distances with one type of golf club in the approach shot. It has been reported that the accuracy decreases when the distance to the target is longer (James, 2008). There are several researches about the swing motion of the approach shot. (Sugao et al., 2000; Kim, 2017) However, their researches did not consider the accuracy or the reproducibility of the swing movements. Therefore, the purpose of this study was to investigate the effect of the kinematics during the swing on the accuracy of the approach shot when hitting to the targets with different distances. A male skilled golfer (handicap 7) hit 20 balls each towards the targets of 20 yards, 40 yards, and 60 yards. The swing motion was recorded using a motion capture system(500Hz). The ball parameters were recorded using one high speed camera(1000Hz). The landing points of the ball were measured. The variation of the landing points of the balls of each distances was quantified using 95% confidence ellipse. The golf swing was divided into three phases (address, top of the back swing, and impact). The relationship between variation of the landing point of the balls and kinematic variables (launch angle and initial velocity of the ball, club head speed, left wrist angle, shoulder rotation angle and pelvis rotation angle) were investigated. The variations of these kinematic variables were quantified by standard deviation. As a result, the longer distance towards the targets were, the larger area of 95% confidence ellipse (20 yards : 14.3 ㎡, 40 yards : 69 ㎡, 60 yards : 116 ㎡). The largest variation of the kinematics for 20, 40 and 60 yards were the left wrist angle at the address position, the shoulder rotation angle at the address position, and the shoulder rotation angle at the top of the backswing, respectively. This study indicated that the player swing with different movement strategies when hitting different distances in the approach shot.

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# Qualitative analysis of pirouette en dehors in ballet

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The classical ballet is the most elegant dance in the posture and alignment of motion and stance that is based on the foundational techniques of the maximum turn-out, precise positions and directions, and lengthened and straight lower extremity. It is the most difficult part to control the body to jump and to turn for the asked movements of ballet. The practice programs from the barre work to the center are always focus on these single or combinational techniques for the well control and coordinative of the feet and the legs using. The turning movement of ballet emphasizes the amount of turn and the rapidity of jump and rotation with the requirements of the erect knee joint, the curvaceous plantar flexion, the variety of well-shaped feet and arms, and the light and silence landing after turning movement. The purpose of this study was to investigate the qualitative characteristics of the ballet movement of pirouette en dehors for the enhancement of stability and the gracility of technique through the analysis of body component. The movement of pirouette en dehors is divided into four temporal phases: preparatory (PRE), turning with double-leg support (TDS), turning with single-leg support in swing (TSS), and ending (END) for the specifics of beginning/end of movement and the descriptions of movement requirement. The components of legs, arms, and head and trunk are respective to elucidate the sequences of movement and the usual defect of movement. Finally, this study provide the relationship of the movement of pirouette en dehors and the fundamental movements of barre work to develop the sequences of practice. The results of this qualitative analysis provide the benefit that the ballet teacher or dancer to modify and assess the detail movement of pirouette en dehors for the enhancement of turning.

Keywords: component analysis, motor skill

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Effect of cervical alignment on neck disorder index

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[Purpose] The purpose of this study is to analyze the effect of cervical alignment on neck disability index. [Methods] We recruited participants who felt pain or discomfort in their neck. X-rays were measured for the participants in the experiment and classified into three groups; Cervical lordosis (LG/n = 9), cervical kyphosis (KG/n = 9) and normal cervical alignment group (NG/n = 17). LG and KG were classified as lordosis of the cervical vertebra. LG and KG treated complex exercise program three times a week for 8 weeks and treated chiropractic once a week. The pre - and post - mortem indexes of the two groups were compared. All data was analyzed by means of repeated measures of two-way ANOVA using SPSS 23.0 for Windows program. In order to verify the intergroup interactions, and to verify the differences among the groups in the interactions, a corresponding sample t-test was conducted to verify the change according to the time in the group. The statistical significance level (α) of all analyzation was set to .05. [Results] There was a significant difference ($p < .05$) in the pre-post-measured postmenopausal index ($p < .05$) and a significant difference ($p < .05$) in the severity index according to cervical alignment. Post-measured neck disability indexes were close to the normal cervical alignment group, and chiropractic and combined exercise treatments was more effective in the group with only cervical vertebrae than those with cervical vertebrae reduction. [Conclusion] Musculoskeletal disorders should also be analyzed psychologically. The difference in cervical alignment is a psychological variable that has different effects on the neck disorder index. Therefore, it is necessary to study the cervical alignment by dividing the cervical alignment with the reduction of the cervical vertebrae and the posterior cervical vertebrae. [Discussion] The differences in cervical alignment have different effects.

Keywords: kyphosis, lordships, cervical alignment, neck disorder index

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P-55, 2018ACK-2-95-P

Relationship between tensiomyographic neuromuscular characteristics and quadriceps and hamstring muscles torque at least 24 months after anterior cruciate ligament reconstruction

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[Purpose] This study aimed to evaluate motor unit recruitment in the quadriceps and hamstring muscles after ACL reconstruction (ACLR), hypothesizing that tensiomyography (TMG) can effectively evaluate quadriceps and hamstring muscle strength in patients at least 24 months after ACLR. [Methods] Subjects included 6 women at 24 months after ACL reconstruction (ACLR) and 6 women with no history of knee injury. The same values were obtained from a sex, sports level-matched control group. TMG was evaluated by a single investigator with experience measuring TMG between groups. A portable TMG unit detected digitally-converted elicited muscle contractions induced by electrical stimulation to the muscle belly with a digital transducer (DC-DC Trans-Tek; GK 40; Panoptik doo, Ljubljana, Slovenia). The maximal displacement (Dm), contraction time (Tc) were obtained for the following muscles in all subjects: vastus medialis (VM), vastus laterals (VL), rectus femoris (RF), semitendinosus (ST), and biceps femoris (BF). Additionally, Normalized Peak Torque (NPT), and Normalized Maximum Work Done (NMW) were calculated as isokinetic peak torque measured isokinetically. [Results] Dm of VM and BF with ACLR side was significantly higher than control subjects. NPT and NMW of ACLR side of patients was not significantly different from that of Non-ACLR side or control subjects. [Discussion] This study reveals the possibility that the remaining long-term muscle atrophy of VM and BF. The presence of these deficits suggests the need of long-term training after post-operative and the importance for recovery of muscle response and velocity as well as the muscle strength. [Ethnical Consideration] All participants provided informed consent to participate in the study, and all procedures were approved by the Ethics Committee of the Graduate School of Health Sciences, Hiroshima University (#1474).

Keywords: anterior cruciate ligament reconstruction, Tensiomyography, muscle response

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P-56, 2018ACK-2-97-P

# Middle-aged postmenopausal women have different response on BMC between proximal femur and distal radius

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Background and Aim: It has been acknowledged that a high-impact weight-bearing exercise is effective stimulus for increasing osteogenic response. Underwater exercise has been very popular for middle-aged elderly women, but the underwater exercise including such as swimming, underwater waling and aquatic exercises are not the ideal exercise for increasing bone strength due to the effect of buoyancy and the reduction of movement speed caused by increasing viscous resistance of water. The purpose of this investigation was to clarify the response of bone mineral content (BMC) and bone mineral density (BMD) at the different site in postmenopausal middle-aged swimmers. METHODS: The subjects were 31 middle-aged postmenopausal women (average age 66.0±6.1 years old, height 156.0±4.8 cm, body weight 51.4±5.4 kg). The amount of bone mineral content at the proximal femur and the distal part of the radius were measured by one nationally registered medical radiologist by the double energy X-ray absorptiometry method. We analyzed 16 participates who were able to measure the both initial and final measurements in 7 months. RESULTS: There was no significant difference between the initial and final measurements on BMC at femoral neck, 1/3, 1/6 and 1/10 the distance from distal end of radius (3.170±0.349mg vs 3.204±0.391mg, 0.575±0.094mg vs 0.571±0.083mg, 0.557±0.102mg vs 0.551±0.085mg, 0.631±0.108mg vs 0.624±0.105mg), respectively. BMC at the total proximal femur was significantly digressed from the initial to the final measurements (25.803±2.373mg vs 24.352±2.539mg). CONCLUSION: Middle-aged postmenopausal swimmers go to the swimming school at least twice a week, seven times at the maximum. They swam at least 1.0 km a day, so that 40 times (indoor 25 m heated pool) kicks the wall of the pool and kicking out into the water swiftly. For middle-aged postmenopausal regular swimmer to swim a certain distance, although buoyancy and viscous resistance work in the water, it is suggested that there may be a moderate load applied at the femoral neck regions.

Keywords: DXA measurements, proximal femur, distal radius

Corresponding author: Takeru Kato

P-57, 2018ACK-2-124-P

# The effect of an 8-week different modes resistance exercise program on athletic ability and performance in collegiate volleyball players

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Total resistance exercise (TRX) training is a specific method that could benefit the athletes on their ability and performance. This study aims to recognize the effectiveness between TRX training and the combination of TRX and traditional resistance training (CRT) on athletic ability and performance in collegiate volleyball players. Present study investigated 21 college volleyball players within eight-week of intervention. The subjects are divided into two groups randomly (11 for TRX, 10 for CRT). Each group took training twice a week during experiment. The data of subjects' athletic ability and performance before and after the intervention were collected. The results indicated that, in general, the evaluations in TRX group were significant improved. More specifically, the waist–hip ratio (WHR) was significant reduced (-0.02, p =.013), fat mass (FM) decreased 0.91 kg, right hand grip (HG) was 2.38 kg increased, bench press was 4.82 kg increased, squat was 7.1 kg increased. The vertical jump height on right foot was 3.5 cm increased with a 34.3 watt of improvement on power, the left leg was 22.6 watt improved as well. Besides, the average spike speed of the subjects was 9.22 mph increased. On the other hand, some significant improvement were also observed in CRT group. For instance, BF in CRT was 1.32% reduced in CRT group, FM decreased 0.49 kg, left HG had a 2.43 kg of improvement, and bench press was 5.2 kg increased. The vertical jump height on right leg was 6.14 cm improved as well as 4.72 cm on left leg, with a 45.7 and 17.1 watt of improvement on power. Furthermore, the spike speed and accuracy of this group were also improved (6.82 mph; 2.92 of score). However, the average serve speed was unexpectedly reduced after intervention (-8.99 mph). In addition, the CRT group has better performance on WHR (p =.016), Left HG (p =.002), and spike speed (p =.038). In summary, both training methods are significant in improving physical fitness and sports performance, while subjects in CRT groups performed better in smash and left-hand grip test.

Keywords: combined training, TRX, ability, performance, volleyball players

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P-58, 2018ACK-2-128-P

Associations of resting heart rate and basal metabolic rate with athletic ability among collegiate volleyball players in Taiwan

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The objective of this study was to investigate the associations of resting heart rate (HRrest) and basal metabolic rate (BMR) with athletic ability and performance among collegiate volleyball players in Taiwan. Thirty-two collegiate volleyball players were recruited from the Fu-Jen Catholic University. All subjects were conducted to measure their HRrest, BMR, athletic ability and performance. These results showed that the HRrest in collegiate volleyball players was a significant negative relationship with left hand grip ($r$ = 0.52, $p$ = 0.016), squat ($r$ = 0.57, $p$ = 0.006), and vertical jump height on left leg ($r$ = 0.45, $p$ = 0.043) after adjusting for potential confounders while BMRs was a significant positive relationship with function score left hand grip ($r$ = 0.54, $p$ = 0.012), right hand grip ($r$ = 0.51, $p$ = 0.019), deep squat ($r$ = 0.54, $p$ = 0.012), vertical-jump power on left leg ($r$ = 0.60, $p$ = 0.004), and vertical-jump power on right leg ($r$ = 0.64, $p$ = 0.002). However, there was non-significant relationship of HRrest and BMR with athletic performance ($p > .05$). This study indicates that there are significant relationships of HRrest and BMR with athletic ability among collegiate volleyball players in Taiwan.

Keywords: resting heart rate, basal metabolic rate, athletic ability, volleyball players

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P-59, 2018ACK-2-101-P

# Optimal distance of approach-run for running long jump calculated using quadratic regression equation approximation for college students in a PE class

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An objective technique for determining the optimal approach-run distance for novice running long jumpers has not been establish. This study aimed to examine whether calculation-based distance (CBD) of approach run obtained using quadratic regression equation approximation was optimal for jump distance in running long jump. Subjects were healthy college students enrolled in a PE class (male, n = 82; female, n = 47; age, 17.2 ± 0.4 years ). As a learning activity, subjects calculated, using a graphing calculator, their CBDs based on four different jump distances and approach run distances (including self-selected distances (SSDs)). The analysis of variance revealed that the SSD was significantly greater than the CBD (main effect of approach run distance, $P < 0.05$). No significant difference between jump distance in SSD (JDSSD) and jump distance in CBD (JDCBD) was found. However, in male students, the correlation coefficient between SEI, defined as the ratio between the actual jump distance and estimated jump distance derived by substituting the subject's 50-m run time into a linear regression equation correlating 50-m run time with an actual jump distance, and the delta in JDCBD−JDSSD was statistically significant ($r = -0.43$, $P < 0.05$) . In conclusion, our results suggest that the technique of quadratic regression equation approximation obtained a sufficient distance of approach run (CBD) for maximum jump distance in male and female students and gave an optimal approach run distance, especially for male students who used their sprint speeds inefficiently.

Keywords: approach run distance, gender difference, jump skill, jump distance

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P-60, 2018ACK-2-115-P

# 排球防守後反擊效益分析 -以企業十三年男女排球聯賽男子組為例

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排球比賽中的攻擊進攻模式是主要的得分方式。隨著第一波進攻得分現象普遍，為了能與實力相當的對手拉開比分差距，在防守球質越好得分機會亦應該越高的理想情境下，第二波防守的品質成為不可忽視的因素之一。本研究的目的為探討在排球比賽情境中防守表現、防守後反擊得失分效益以及比賽結果間之關聯性。本研究以企聯十三年男子排球五支隊伍四十場比賽為研究範圍，以官方網站授權之比賽影片為資料來源，使用 Simi Scout 標記軟體設計紀錄系統，標記比賽防守表現及反擊效果等內容，以 SPSS 23.0 進行卡方獨立性考驗，檢驗防守球質與反擊效果之關關聯性。結果顯示，無論以所有比賽紀錄為範圍或是以各隊比賽紀錄為範圍，均有球質越好得分效果亦越好的趨勢；其中修正球後的反擊效果與比賽結果的排名有顯著關聯性：第一名的球隊在修正球時反擊後得分的比例顯著的高而第五名的球隊則有顯著低的反擊後得分率。本研究以台灣高水準排球比賽之比賽表現數據進行分析，以實證研究的結果支持防守表現對得分效益的關聯性，防守雖無法造成直接得分，但防守的球質越好越可能得分。未來研究將對修正球的防守及反擊表現作進一步的探討，以提供高水準排球訓練的參考。

關鍵字：防守球質、防守成效、第二波防守

通訊作者：張峻豪

P-61, 2018ACK-1-3-P

# Comparing the acute effect of cryotherapy and thermotherapy on muscle contractile properties and vertical jump performance in recreational basketball players

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This study compared the acute effect on muscle contractile properties including maximal radial displacement and contraction time in rectus femoris and lateral gastrocnemius muscle on dominant leg using TMG and the jump height and flight time achieved in drop jump test using KMS within recreational basketball players.

Keywords: cryotherapy, thermotherapy, muscle contractile properties, drop jump, vertical jump performance

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P-62, 2018ACK-1-6-P

# Longitudinal study on the relationship between the level of fitness and metabolic syndrome incidence among adult aged 40 and over- for adults above 40 years old in rural area

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The purpose of this study was to investigate the relationship between level of physical fitness and metabolic syndrome prevalence and incidence based on the cross-sectional study and longitudinal study. This study analyzed 2,633 persons over the 40years old who participated in “Y” area cohort survey during 2007~2011. Measurement for height, body weight, waist circumference, resting blood pressure, fasting Lipids, and glucose were taken during baseline examination and follow-up examination also have same methods. Baseline muscle strength was quantified as Grip-strength & Leg-strength. Cardiorespiratory fitness measured by YMCA-step test. Metabolic syndrome was defined with NCEP ATP-III criteria. During mean follow-up 769.53 days 672 persons was censored and 63 men(11.1%), 126 women(13.5%) developed metabolic syndrome. Adjusted confound factor as age, sex, drink alcohol, smoke and calcium intake. First. Adjusted confound factor metabolic syndrome prevalence was significantly decrease as increase Grip-strength (p-trend<0.001), metabolic syndrome incidence was significantly decrease as increase Grip-strength (p-trend<0.003) and metabolic syndrome prevalence was significantly decrease as increase Leg-strength (p-trend<0.001), metabolic syndrome incidence was decrease as increase Grip-strength but not significantly (p-trend=0.1784) and metabolic syndrome prevalence was significantly decrease as increase cardio-respiratory fitness(p-trend<0.001), metabolic syndrome incidence was decrease as increase cardio-respiratory fitness but not significantly (p-trend=0.2505). Second. Adjusted confound factor central obesity (waist circumference) and hypertension were significantly decrease as increase Grip-strength (p-trend<0.007), As increase Leg-strength central obesity was significantly decrease(p-trend=0.0001) and hypertension were decrease but not significantly(p-trend=0.1358). low-HDL incidence risk; HR=0.56 95%CI(0.26-0.99) compares between highest cardio-respiratory group and lowest cardio-respiratory group. In conclusion, muscle strength and cardio-respiratory fitness are strong predictor of metabolic syndrome prevalence and incidence. Specially grip-strength is sensitive predictor of central obesity and hypertension risk.

Keywords: grip-strength, Leg-strength, cardio-respiratory fitness, metabolic syndrome, longitudinal study

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P-63, 2018ACK-2-88-P

# The relationship between physical performance and BMD in community-dwelling Korean Elderly

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Purpose: The Short Physical Performance Battery(SPPB) is a standardized measure of physical performance that includes walking, balance, and chair stands test, and has been used in a broad range of epidemiological studies of aging. Some prospective studies have also indicated these measures as predictors of mortality. It has therefore been suggested that physical performance measures should be implemented in clinical as well as research settings to improve the evaluation of older persons. The relationship between SPPB and other measures of body composition, such as bone mineral density (BMD), also remain unclear. The aim of the present study was to evaluate the relationship between physical performance and BMD in community-dwelling Korean Elderly. Methods: Participants were 313(70.9+4.3) healthy elderly. Exclusion criteria included: (1) inability to walk independently; (2) institutionalisation; (3) previous history of hip fracture or bilateral hip replacement; (4) inability to understand or answer the study questionnaires. All participants were tested SPPB and handgrip strength. SPPB is based on three timed tests: walking speed (performed on a 6-m course), repeated chair stands, and balance tests. BMD was measured in the right calcaneus by quantitative ultrasound (Mark 6000®,Medison). All data were analyzed by T-test and Pearson Correlation of SPSS. Results: In the whole subjects group, significant correlation coefficients between SPPB(walking speed, repeated chair stands, and balance tests) and BMD(r=.23, .26, .19). In the subgroup, SPPB and BMD were significantly differences between sex. Conclusions: SPPB and BMD measured the efficacy of preventive strategies was public health and successful aging in the Korean elderly.

Keywords: SPPB, BMD, elderly

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P-64, 2018ACK-2-89-P

Effects of exercise on anxiety-like behaviors due to acute stress in rats

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Its characteristic symptoms are re-experiencing phenomena, avoidance of stimuli, emotional numbing, and increased arousal. Many studies have suggested possibility that exercise has protective effect on neuropsychiatric diseases. PURPOSE: The present study, we evaluated whether treadmill exercise exerts alleviating effect on the symptoms of stress-induced during adolescence. METHODS: To induce stress in adolescence rat, rats were exposed to an inescapable electric foot shock. Electric foot shock time was 6 seconds, repeated 10 times with a 30 sec interval 3 times/day. Exposure of rats to the electric foot shock was performed from 7 days. Rats receiving Stress-induced during adolescence exhibited anxiety-like behaviors. The rats in the exercise groups were forced to run on a motorized treadmill for 30 min once a day for 4 weeks, stating one day after finishing last electric food shock. Rats receiving predator stress during adolescence showed anxiety-like behaviors. RESULTS: The expressions of c-Fos and neuronal nitric oxide synthases (nNOS) in the hypothalamus and locus coeruleus were higher in the rats receiving stress than unstressed rats. In contrast, treadmill exercise ameliorated anxiety-like behaviors and reduced the expressions of c-Fos, and nNOS in the Stress-induced rats. CONCLUSIONS: The present results suggest that exercise can be used as a therapeutic strategy to reduce anxiety-related disorders including stress.

Keywords: anxiety-like behaviors, stress, neuronal nitric oxide synthases, c-Fos

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P-65, 2018ACK-2-125-P

# Effects of combined TRX suspension and traditional resistance training on athletic ability and performance in collegiate volleyball players: A randomized-controlled study

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The purpose of this study was to compare the effects of eight-week combined and traditional resistance training intervention on the athletic abilities and performances in college volleyball players. Twenty-one collegiate volleyball players were randomly divided into the combined TRX suspension and traditional resistance training group (CRT, n = 10) and the traditional resistance training group (TRT, n = 11). Both groups were trained for eight weeks. The ability and performance of the athletes was tested before and after training. The results of data analysis showing that the athletic abilities of CRT group was generally improved. Specifically, the left hand grip (HG) was 2.43 improved in average, the test result of bench press was 5.16 kg increased, the vertical jump height on right and left legs were 6.16 and 4.72 cm improved as well as the increases on the power were 45.7 and 17.1 watt (W) respectively. There were significant differences on the athletic performance between pre- and post-test results. For instance, the spike speed was 6.82 mph improved, the spike accuracy was 2.92 of the score ahead after intervention. However, the average serve speed of the subjects was 9.19 mph decreased unexpectedly. A further examination is warranted. On the other hand, the exercise abilities in TRT group received an 8.3 kg of improvement on bench press, 16.6 kg on squat, the results of vertical jump height have shown 6.94 cm increased on right leg with 33.4 of power (watt) improved; the power on left leg was significantly improved as well (17.19 W). In terms of performance, the serve speed in TRT group was also decreased by 10.86 mph, spike speed has 7.74 increased significantly ($p < .05$). By compared the two groups, there was a significant difference between the CRT group and the TRT group in HG-Left ($p=.008$) and spike accuracy ($p=.046$). These results indicate that both CRT and TRT training methods have significantly improved the athletic abilities and athletic performances of college volleyball players; while the CRT has better improvement in HG-Left and spike accuracy than TRT.

Keywords: TRX, resistance training, athletic ability, athletic performance, volleyball players

Corresponding author: Shu Liu

P-66, 2018ACK-2-129-P

# The neurophysiological responses to laboratory-induced aggression in the different physical contact types athletes

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The methodology for previous studies of aggression in sport context mainly used questionnaires and interviews. The purpose of this study was to investigate the differences of neurophysiological responses to laboratory-Induced aggression between physical contact athletes, non- physical contact athletes and control group. Method: A total of 35 university students age range from 18~24 yrs were recruited from basketball players, volleyball players, and control group respectively to perform Taylor aggression paradigm first and followed by filling in an Angry questionnaire. The dependent variables were the angry scores and the behavior scores (the aggressive scores of hostile, proactive and reactive in Taylor aggression task). Results: There were no significant differences in aggressive scores and angry scores among three groups. In the Taylor aggression task, there were no significant differences in aggressive scores of hostile, proactive and reactive among three groups. However, there were significant interaction effect between groups and attack level. In the Taylor aggression task there were significant differences on attack level in physical contact group and control group. The higher punish level had higher reactive scores. Conclusions: 1. Sport training will not aggravate athletes' aggressive behavior. Athletes do not have higher aggressive behavior than individuals. 2. The higher attack level caused higher punish reaction (reactive scores) in physical contact group and control group which indicated that these two groups should receive better emotion regulation education especially when they face highly aggressive context.

Keywords: contact type, competition, aggression, conflict, emotion

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P-67, 2018ACK-1-13-P

# Effects of physical activity on physical self-esteem and psychological well-being

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Being physically active is one of the most important steps that people can take to improve their health. The 2008 Physical Activity Guidelines for Americans recommends that adults participate in at least 2 hours and 30 minutes (150 minutes) a week of moderate-intensity aerobic physical activity and at least two or more times a week of muscle-strengthening activities for health benefits. There is now overwhelming evidence that regular physical activity has important and wide-ranging health benefits. There appears to be good rationale for health scientists to focus on self-esteem as the variable most indicative of emotional adjustment. Developing a positive and healthy self-concept is considered as one of the most important developmental tasks of human beings (Bracken & Lamprecht, 2003). Therefore, the purpose of this study was to examine effects of physical activity on physical self-esteem and psychological well-being among American college students. A random sample of 318 American college students from a comprehensive university located in Southern California participated in this study. Participants were 318 students (143 females, 175 males; M = 23.1, SD = .49 years of age) and completed demographic questions, the Godin Leisure-Time Exercise Questionnaire (GLTEQ; Godin & Shephard, 1985), the Physical Self-Description Questionnaire (PSDQ; Marsh, Richards, Johnson, Roche, & Tremayne, 1994) and a 20-item version of the General Well-Being (10 items each for psychological distress, PD and psychological well-being; PWB) from the Mental Health Inventory (MHI; Heubeck & Neil, 2000). Results showed significant gender differences on most variables (except health, body fat, and psychological distress), with the vigorous physical activity group reporting more positive and higher physical self-perception and psychological well-being compared with low and physically inactive groups. Results of this study support previous research findings that have shown gender differences and physical and psychological benefits of regular physical activity. Despite the practical implications associated with the current findings, several limitations should be further discussed for interpreting the results and planning future research with the physical activity, physical self-perception and psychological well-being among college students.

Keywords: physical activity, self-esteem, psychological well-being

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P-68, 2018ACK-1-14-P

# 花蓮縣議長盃體育休閒活動調查研究(105 年—107 年)

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調查研究，乃是社會科學與其他學術領域經常使用的研究方法，在政府和民間許多部門也經常利用這種方法進行資料收集與研究（陳啟榮，100）。本研究目的在分析 105 至 107 年期間,花蓮縣議會舉辦議長盃各項活動之情形。調查內容包括:活動種類、活動性質、活動屬性、參與人數、參與人性別、參與人年齡、參與對象等，範圍以 105 至 107 年議長盃活動舉辦之申請計畫書為資料來源。結果發現:活動種類以體育活動佔 47%,活動性質全部都為競賽性活動，活動屬性以社團活動佔 90%,總參與人數為 13,012 人，參與男女均衡，且無年齡限制，對象為社團會員與社區民眾為主。結論建議地方性運動社團除中央機關外，應多利用議會活動的資源，以利推廣全民運動，發揮凝聚居民向心力與對社區產生認同感的力量，並可藉由活動推行相關政策。

關鍵字：社團活動、全民運動、休閒活動

通訊作者：王美娟

P-69, 2018ACK-1-15-P

# 運動觀光產業發展的影響因素

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運動觀光在國外早已行之有年，而觀光在與運動結合之後，除得以提高國際知名度與附加產值外，對整體國家產業之發展更可發揮綜效，創造效益之極大化。在國內運動觀光發展也呈現相同的趨勢，每年眾多運動賽會的舉辦以及政府相關政策導引，促使運動觀光為國人旅遊活動之新興選項(黃蕙娟，2014)。在政府機關重視及推動下，策略性的分析思考運動觀光發展的方向為本文論述之目的。因此，本文藉由台灣觀光產業的現況，論述影響運動觀光產業發展因素。結果發現：法規未盡完備、吸引力待提升、淡旺季差異大、旅遊業的投入不足、交通建設待加強、人口結構的改變、國際市場知名度低等發展影響因素，並拙予提出：成立跨部會管理平臺、強化運動旅遊軟硬體、建立運動旅遊資源分級制度、賡續推動觀光運動產業政策、開發特色運動旅遊深化國際市場、加強與旅遊服務業者合作等策略性建議，希冀提供產、官、學界未來在發展運動觀光策略性方針時，有更完備的思考方向。

關鍵字：運動產業、運動旅遊、觀光發展

通訊作者：高美惠

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# 體育課程模組化教學效益探究

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透過熱身、比賽、討論、返回、分享的模組化體育課程近年來受到相當熱烈的討論，特別是全國多縣市的教育主管單位都已推動相關教學方式。特別值得一提的教育部今年在 22 縣市，針對四項體育教學模組課程內容（低/ 中/ 高年級球類教學模組攻守入侵、打擊守備、隔網及動作教育模組）進行培訓認證，計有 68 位種子教師通過認證考核（教育部，2017），這一連串的改革使得以素養為核心的十二年國教，在注重結果也同時關心歷程的教學方法逐漸受到重視。因此本研究主要目的在透過實地觀察與文獻探討，提出模組化教學在體育課的優劣與省思。研究結果就分組方式、技能教導、時間運用、課程推廣等四大面向提出相關建議，主要希望未來在套入模組教學的同時，也能關注體育課程的特殊性與本質。

關鍵字：運動技能、十二年國教

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Association between meeting the physical activity guidelines and participation in ‘sports for all’ and the risk of hypertension in community-dwelling Korean adults

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Objectives: We aimed to evaluate physical activity patterns according to participation in the ‘sports for all’ programs in community-dwelling Korean adults. We also investigated the association between meeting physical activity guidelines and participation in sports activities and the risk of hypertension. Methods: For the present study, we clustered and randomly selected participants from Chungcheongbuk-do in Korea. From a total of 520 participants, 493 completed the survey, and the response rate was 92%. After excluding participants who had missing data for physical activity, demographics, health-related behaviors, and clinical health conditions, a total of 481 participants were included in the study. Results: We observed a lower risk of hypertension in the sports activities group than in the inactive group after adjustment for age and sex (OR: 0.42, 95% CI: 0.17-0.99). The results were unchanged after adjustment for education levels and household income. In the fully adjusted model, the ORs for hypertension were 0.36 (95% CI: 0.13-0.97) for the sports activity group and 0.33 (95% CI: 0.14-0.78) for those who met the physical activity guidelines. Conclusion: The criterion of meeting the physical activity guidelines was significantly associated with a decreased risk of hypertension. In addition, participation in the sports for all program without meeting the recommended level of physical activity was independently associated with a lower risk of hypertension.

Keywords: physical activity, leisure time, sports, hypertension, blood pressure

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# 跆拳道選手面臨驟死賽之反應及因應策略

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前言：跆拳道運動是一種高對抗性的比賽，當雙方實力不分上下，三回合結束分數仍然持平時，選手是否能在黃金得分賽（舊稱：驟死賽）制中，於有限的時間內踢出決勝一腳獲得勝利，是選手都有可能遇上的艱鉅挑戰，而這特定情境下，選手容易產生高度的壓力感，為了奪得比賽的勝利，此時心裡開始浮現出想得分、不可失分的想法，而這些想法往往就是造成選手在驟死賽的壓力來源之一。目的：本研究旨探討跆拳道選手面臨驟死賽時會如何反應及選擇因應之策略。方法：本研究採用立意取樣，針對大專甲組跆拳道隊選手，過去一年期間，曾經歷過驟死賽情境者 3 男 3 女為研究資料收集來源，以半結構式訪談與研究參與者進行一對一的晤談。結果：選手於驟死賽時容易將注意力導向結果目標以及自我不利的負面思想，也因為過於謹慎導致無法放手一博而影響運動表現，此外當選手以後來居上之情境進入驟死賽，則有利於心理狀態迎戰，反之先盛後衰時，則產生較多負面自證預言。討論：面臨驟死賽時，選手會產生高度認知焦慮狀態以及前三回合的賽況都會影響選手面對黃金得分賽的心境，在高漲的壓力之下，選手會依賴教練的指示，此時教練於選手上場前或競賽中的臨場指導行為對於選手來說即產生重要的影響力。

關鍵字：黃金得分賽、狀態焦慮

通訊作者：夏顯詠

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Dynapenia, Obesity and the Risk of Mortality in Korean: A 10 Years Prospective National Cohort Study

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Objectives: The prospective association of both dynapenia and obesity with the risk of all-cause and premature mortality in a general population remains unknown. The aims of this study were to investigate the prospective effects of dynapenia and obesity on risk for all-cause and premature mortality over 10 years using a large nationwide sample of Korean adults. We also investigated synergistic effects of dynapenic obesity on the increased risk of mortality. Methods:The study participants included 9,229 (4,139 male and 5,098 female) middle and older adults (33,554 person-years of follow-up). Muscular strength was measured using the handgrip strength. Dynapenia was defined using the sex-specific handgrip strength index based on the Asian Working Group for Sarcopenia. We also defined obesity based on the diagnosis from the Korean obesity society using body mass index. The primary outcome was all-cause mortality assessed based on death certificate. Results:The hazard ratio (HR) for all-cause mortality was significantly higher in dynapenia group independent of potential confounding factors (HR: 1.80, 95% confidence interval [CI]: 1.57–2.06 for low vs. normal-high group). However, obesity was not associated with the risk of mortality. When examined using combined dynapenia and obesity, a higher risk of mortality was found dynapenic obesity compared with normal group (HR: 1.30, 95% CI: 1.02–1.65). In addition, we could not found any evidence on synergistic effects of combined dynapenia and obesity for the increased risk for mortality.
Conclusions:We found that dynapenia was associated with increased risk of all-cause and premature mortality over 10 years of follow-up in the general Korean adults.

Keywords: handgrip strength, sarcopenia, dynapenia, muscle strength, mortality

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