

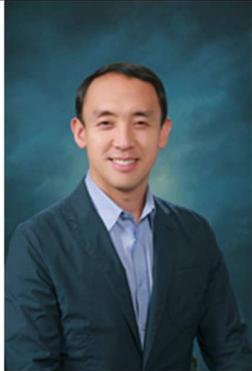


DAY 3: Energy Availability and Bone Health Among Female Athletes

	
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Title	Energy Availability and Bone Health Among Female Athletes
Abstract	<p>Energy availability, defined as dietary intake minus exercise energy expenditure normalized to fat free mass, is the amount of energy available to the body to perform all other functions after the cost of exercise is subtracted. It was found that female athletes reported energy intake of less than their energy demand of sports. Besides, the total energy expenditure for a different type of sports had been reported to be significantly higher than energy intake. Low energy availability which occurred due to insufficient energy intake combined with high energy expenditure, could reduce body weight and body fat of female athletes. These will lead to a reduction of estrogen level which plays an important role in bone formation and thus can negatively affect bone health. However, some studies reported that the reduction of energy availability reduced the rate of bone mineralization without deteriorating the estrogen concentration in the condition of energy deficiency. Other than these factors, a growing body of literature reported that weight-bearing exercises had high bone mechanical loading that could give an advantage for long-term bone health. High impact loading exercises produced osteogenic effects on bone, which occurred when mechanical stimuli was present to stimulate bone formation, and conversely, degraded when such stimuli was absent. These factors are very important to be considered when planning for training programmes which should involve high impact exercises and simultaneously a balance diet to meet the energy requirement for minimizing the risk of bone loss among female athletes.</p>



DAY 3: Exercise and Nutrition Timing System for the Frail Elderly

	
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Title	Exercise and Nutrition Timing System for the Frail Elderly
Abstract	<p>A growing research support the notion that frailty as a medical syndrome that manifests a critical decline in functional and physiological reserves of multiple organic systems. Generally, physical frailty is suggested when at least three of the five following criteria are present: fatigue, poor muscle strength, slowed gait speed, low physical activities and unintentional weight loss. As the older adults with pre-frailty are likely to transition back to a robust state than those who are frail, and so exercise intervention represents an important opportunity to prevent decline and dependence, and thus potentially make gains in health and reductions in disability. Exercise intervention have shown to have beneficial effects for frail elderly on gait speed, physical functioning, mobility, falls, functional abilities, muscle strength, body composition, and frailty.</p> <p>Fighting against lack of physical activity and insufficient nutritional intake are important to maintain healthy life for elderly. Nutritional intake during and after exercise play a critical role in strength gain and muscle building. Nutrition timing system (NTS) for general adults are well founded to apply in training</p>



	<p>program in order to gain maximum benefits from exercise. Although there are many studies and guidelines for NTS for general population, for frail elderly, relatively few studies were conducted and the results are insufficient to draw a conclusion.</p> <p>In this review, we would give relevant guidelines for frail elderly during and after exercise based on nutrition timing system with known existing literatures studied. Because frail elderly shares altered physiology from aging, modified NTS should be applied.</p>
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DAY 3: The Present Situation and Opportunities of China Sports Nutrition Industry

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Title	The Present Situation and Opportunities of China Sports Nutrition Industry
Abstract	<p>China sports nutrition industry started in the 1990s. After nearly 20 years of efforts, china sports nutrition industry entered a stage of rapid development. From 2012-2017, China sports nutrition food compound annual growth rate is more than 20%. Meanwhile, more and more foreign brands is developing rapidly. Chinese market has formed a competitive pattern of overall situation.</p> <p>The fierce market competition promotes the product technology and application technology innovation and development. For example, CPT</p>



develops the present situation, Testosterone increasing technology, slow-release products technology, fat burning technology, muscle gaining technology, which fill the blank of sports nutrition industry technology and meet the subdividing market demands of consumers. In addition, CPT develops physical rehabilitation and nutritional recovery comprehensive technical service system, which provide scientific fitness solutions services for professional athletes and the public fitness crowd. In July, 2017, a new historic moment arrived, China sports nutrition food production license issued, China sports nutrition industry develops into the era of strong regulation, sports nutrition food will be more safe and effective.

In recent years, the macro policy to promote the development of sports industry promulgated successively, 19th CPC National Congress indicate that improve the national health policy, and ensure the delivery of comprehensive lifecycle health services for our people. Also, The consumption structure is improving steadily. Emerging consumption and service consumption is growing fast. Besides, the national fitness movement develops vigorously. The China sports nutrition industry is expected to become a new economic development momentum and a new growth point.



DAY 3 : Herbal Supplements and Sports Performance

	
Name	Dr. Rabindarjeet Singh
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Title	Herbal Supplements and Sports Performance
Abstract	<p>Herbal Supplements And Sports Performance                      Rabindarjeet Singh, PhD, FNSM                      Faculty of Medicine, AIMST University, Semeling, 08100 Bedong,                      Kedah, Malaysia</p> <p>Plants provide us with many nutrients, which are essential for life. Other than these essential nutrients, many plant foods contain naturally occurring substances known as phytochemicals. Herbs, derived from leaves, bark, berries, roots, gums, seeds, stem or flowers of plants do also contain numerous phytochemicals. Therefore herbal supplements, which are defined as plants or plants extracts, are ingested for their therapeutic and health-enhancing properties other than for their caloric or culinary benefits. Although, herbs have been used as medicine throughout history, its use in sports has gained popularity in recent years as some herbs are classified as adaptogens, i.e., they assist in normalization of body system functions which have been altered by stress rather than exerting a stimulatory effect. Persons who exercise often and hard, may use adaptogens because exercise is considered as a form of stress. Hence many athletes who train intensively would have exploited the use of herbal supplements to improve endurance and strength performance, improve</p>



	<p>recovery, build muscle mass, reduce body fat, maintain an optimal immune status and overall health. In search for further gains, the use of herbal supplements is therefore an attractive opportunity. As such numerous herbal supplements are being marketed as ergogenic aids for athletes, although our knowledge concerning the efficacy of some of these herbal ergogenics are anecdotal in nature. This presentation will review the scientific evidence for the use of herbs and herbal extracts as ergogenic aids for enhancing sports performance.</p>
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DAY 3:  $\beta$  Adrenergic Receptor Agonism and The Adaptive Mechanism of Vasculoprotection

		
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Title	$\beta$ Adrenergic Receptor Agonism and The Adaptive Mechanism of Vasculoprotection	
Abstract	<p>cAMP has been shown to inhibit proliferation and migration of vascular smooth muscle cells (VSMC) and exerts a vasculoprotective effect. An exaggerated expression of early growth response factor-1( Egr-1), a zinc finger transcription factor, has been linked with the development of atherosclerosis, intimal hyperplasia and associated vasculopathies. We have recently demonstrated that Ang-II, a key vasoactive peptide implicated in</p>	



the pathophysiology of vascular dysfunction, induces Egr-1 expression via Ca<sup>2+</sup>/ERK-mediated cAMP-response element binding protein (CREB) pathway. However, whether cAMP regulates Ang-II-induced expression of Egr-1 remains unexplored. Therefore, in the present studies, we have examined if  $\beta$ -adrenergic receptor ( $\beta$ -AR) - induced or receptor-independent increase in cAMP would attenuate Ang-II-induced expression of Egr-1 and associated signaling pathways in VSMC. Isoproterenol (ISO), a  $\beta$ AR-agonist and forskolin (FSK), a non-receptor activator of adenylate cyclase attenuated Ang-II-induced Egr-1 expression in a dose-dependent fashion. In addition, cell permeable cAMP, analogs, dibutyryl-cAMP and benzoyl-cAMP, as well as isobutylmethylxanthine, an inhibitor of phosphodiesterase, attenuated Ang-II-induced Egr-1 expression. Furthermore, inhibition of Ang-II-induced Egr-1 expression was accompanied by an increase in phosphorylation of the vasodilator-activated phosphoprotein (VASP), a substrate of PKA and this was associated with a concomitant decrease in ERK phosphorylation. Blockade of PKA using H89 decreased VASP phosphorylation, restored Ang-II-induced ERK phosphorylation and abolished ISO- and FSK-mediated inhibition of Ang-II-induced Egr-1 expression. In summary, these results suggest that suppression of Ang-II-induced Egr-1 expression and phosphorylation of ERK may be among the mechanisms by which  $\beta$ -AR-dependent or independent activation of cAMP/ PKA pathway exerts its vasculoprotective effects. (Supported by grant from CIHR).



DAY 3: Role of Taurine in The Regulation of Excitation-Secretion Coupling and Remodeling of Human Endocardial Endothelial Cells

	
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Title	Role of Taurine in The Regulation of Excitation-Secretion Coupling and Remodeling of Human Endocardial Endothelial Cells
Abstract	<p>Taurine is a non-essential amino acid that is present at a very high concentration in many muscle and non-muscle cell types. In the heart, taurine levels constitute 50% of total amino acids. Presently, taurine supplementation is found in many energy beverages. Many beneficial effects were attributed to taurine supplementation including in the heart. The beneficial effect of taurine on the heart muscle was attributed to its cardioactive, antiarrhythmic, antihypertensive and antioxidant effects. Furthermore, taurine deficiency and low-protein diet were found to be associated with some cardiovascular diseases. Although our knowledge concerning the effect of taurine in the cardiovascular system is plentiful, little is known about its effect on endothelial secretion of cardioactive factors such as endothelin-1 (ET-1) and neuropeptide Y (NPY) and more particularly, in endocardial endothelial cells. These types of cells line the cardiac cavities and constitute a barrier between the circulating blood and</p>



	<p>the adjacent cardiomyocytes. In addition, these cells synthesize and release various cardioactive factors such as ET-1 and NPY. These peptides are implicated in various cardiac pathologies including hypertrophy of cardiomyocytes. In this presentation, using real 3D confocal microscopy imaging, immunofluorescence, ELISA and various molecular biology techniques, we will present evidence that taurine supplementation promotes excitation-secretion coupling in endocardial endothelial cells. This work was supported by the Natural Sciences and Engineering Research Council of Canada (NSERC).</p>
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DAY 3: Psycho-Physiological Stress from Ramadan

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Abstract	<p>Every year during the Muslim holy month of Ramadan, Muslims refrain from eating and drinking from dawn to sunset daily for 30 consecutive days. Ramadan intermittent fasting month imposes an important challenge to Muslim individuals in general and to exercising population in particular. Most Muslim athletes and exercise participants observe this month for socio-religious reasons and therefore go under tremendous disruption of normal daily life not only nutritionally but also in</p>



all aspects of life style including sleeping deprivation in most cases. This may lead to a number of physiological and psychological consequences for most exercise participants. The purpose of the talk is to evaluate the effect of Ramadan fasting on physiological effort and perceptual effort for Muslim exercise participants and athletes. This presentation will focus on studies that have investigated exercise performance, training, exercise perception and selection of exercise intensity during the fasting month of Ramadan. Attention will be giving to the effect of Ramadan fasting on the selection of exercise intensity as it relates to the use of rating of perceived exertion and preferred exercise intensity during Ramadan; and comparing prior, during and post Ramadan variations. Results of some studies which were conducted in different countries and different cultures (Thailand and Jordan) will be presented. The results of most studies indicated that during the month of Ramadan the physiological exercise intensity/stress or performance is decreased when compared to perceptual intensity/stress or even preferred intensities. This suggests a higher level of stress and thus important modifications in exercise program must be considered and trainers may use different coping techniques to overcome the effect of the fasting month.



DAY 3: Benefits of Exercise: Mechanisms, Preventative and Therapeutic Implication

		
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Title	Benefits of Exercise: Mechanisms, Preventative and Therapeutic Implication	
Abstract	<p>Sedentary lifestyle substantially contributes to the increased risk of many chronic diseases, including metabolic, cardiovascular, oncologic and neurodegenerative diseases. This “diseasome of physical inactivity” is the most common cause of morbidity and mortality worldwide. On the other hand, regular physical exercise represents an efficient, physiological and readily available tool for prevention and treatment of chronic diseases. Mechanisms behind exercise-induced health benefits include favourable changes in body composition, increased physical fitness, improved whole-body energy &amp; glucose metabolism, reduction in chronic-systemic inflammation as well as morphological and functional changes at a level of many tissues&amp;organs, including the brain. Furthermore, a higher level of physical fitness, achieved/maintained by regular exercise, is a prerequisite for a better coping with different types of stressors&amp;challenges, resulting in higher physical and psychological resilience. According to evidence, the adaptive response to exercise is orchestrated by bioactive molecules, released from contracting skeletal muscles and other organs during/after</p>	



	<p>exercise. These bioactive molecules, collectively termed exerkinines, represent important mediators of synchronized exercise-induced response. In our studies, we have observed improved motor&amp;cognitive functions, muscle strength and physical fitness as well as selected metabolic parameters and skeletal muscle phenotypes in different patients' populations. Improvements in clinical and muscle phenotypes were associated with shifts in specific bioactive molecules, supporting their role in the adaptive response to exercise. The long-term follow-up of volunteers who exercise on regular basis in the Center of Physical Activity, BMC SAS, indicate sustainability of the supervised training programs and represents the translation of individualized exercise prescription towards clinical practice.</p>
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DAY 3: The efficiency of mental training on different sports performance in global

Name	Dr. A. Palanisamy
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Title	The efficiency of mental training on different sports performance in global
Abstract	<p>Mental training involves the process of developing the mental skills needed to strengthen and condition your mind as you pursuit your performance potential. Mental skills training is systematic training of the mind to enhance sporting performance. Mental skills are a key factor in</p>



achieving sporting success. Mental skills, just like physical skills, take repetition, practice, and game-time application to develop.

When you tell an athlete to concentrate what exactly are you asking them to do? There are different types of concentration or focus or attention and different tasks require the use of different attentional styles. Good performance is dependent on the ability to identify the attentional focus you need for a given task, get this focus, and then switch from this focus of attention to another as the situation demands - you need to focus on the relevant cues while ignoring distractions.

Goal setting is one of the most valuable mental training tools when approached in the correct manner. Goal setting is an effective means of building self-confidence in addition to being an excellent source of motivation. It will also provide a focus for training. Goal setting is like a map. First of all the destination (long term goal) needs to be identified, then the quickest and most economical way to arrive there needs to be determined (each step being a short term goal or “action step”). Through doing this, attention is being directed towards the task in hand and time and energy are not wasted by taking unnecessary detours. Goals should be set for all performance areas (physical, mental, tactical, technical, enjoyment). Goals may be ‘really’ long term (dream goals) or ‘really’ short term (goal for a training run).

The ability to relax your muscles and cope with nerves is important for good athletic performance. Nerves often lead us to contract every muscle in the body instead of just the ones necessary. Consequently, this affects our co-ordination and timing which negatively affects our performance. However, in order to reduce muscle tension, you must first be aware that it exists. Therefore, start to become aware of signs of tension in your body both when skiing and going about your daily activities. Once you have identified tension in your body you can work towards reducing it and becoming more relaxed.

Key words: **Mental training, mental skills, games and sports, self-talk, Anxiety**



DAY 3: Biological Strategy for The Maintenance of Skeletal Muscle Mass

	
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Title	Biological Strategy for The Maintenance of Skeletal Muscle Mass
Abstract	<p>Hibernating mammals including bears experience prolonged periods of torpor and starvation during winter survival. Although long-term periods of physical inactivity and fasting (up to 5-6 months), hibernating bears show limited muscle atrophy and can successfully maintain locomotive function following hibernation. These physiological features attractively allow us to hypothesize that hibernating mammals uniquely alter the regulation of protein and energy metabolisms in skeletal muscle, which then contribute to the “resistance to muscle atrophy and metabolic dysfunction” against to the continued physical inactivity and malnutrition. In this study, alteration of signaling pathways governing protein and energy metabolisms was examined in skeletal muscle of the Japanese black bear (<i>Ursus thibetanus japonicus</i>). Muscle samples from vastus lateralis were collected on late November (pre-hibernation) and early April (post-hibernation). Protein degradation pathways through ubiquitin-proteasome and autophagy-dependent system were significantly activated in skeletal muscle following hibernation. In contrast, activation state of mTOR (mechanistic target of rapamycin) which functions as a central regulator of</p>



	<p>protein synthesis was increased in post-hibernation samples. Gene expression of myostatin, a negative regulator of skeletal muscle mass, was significantly decreased at post-hibernation. In addition, we have also confirmed the phenotype shifting toward slow-oxidative muscle and mitochondrial biogenesis. These observations suggest that protein synthesis rate and oxidative metabolism would be enhanced in skeletal muscle of hibernating bear through modulating intracellular signal transduction (up-regulation of mTOR signaling and down-regulation of myostatin), which then lead to limited loss of muscle mass and maintenance of physical performance.</p>
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DAY 3: Workshop 2: "Young Sports Scientists Opportunity for Overseas Grants: How to Write for NIH Grant (an example)?"

	
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Abstract	-