FAOPS NEWSLETTER

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Prof. Ito is re-elected for the President of FAOPS for the term 1994-1998

FAOPS has recently organized its first General Assembly during the 3 rd FAOPS Congress in Shanghai. The meeting was held in the evening of November 8, 1994 at the Shanghai International Trade Center. About 50 persons including delegates from 15 adhering bodies, Council members and observers were in attendance. The highlight of the meeting is an election of the Officers and Councillors of FAOPS for the years 1994-1998.

Due to the outstanding leadership of the present President, Prof. Masao Ito, he was unanimously re-elected for the second term. Profs. Chok-Yung Chai and Chumpol Pholpramool were also re-elected to the Treasurer and the Secretary, respectively. It is regret that Profs. Surenda Manchanda, John I. Hubbard and Woo Gyeum Kim retired from the Council. Prof. Xiong-Li Yang was, therefore, elected to the 1st Vice President whilst Prof. John A. Young, who will be the Chairman of the Organizing Committee for the 4 th FAOPS Congress in 1998, took the office of the 2nd Vice President. Three new members were elected to Council namely, Prof. Usha Nayar from India, Prof. Sang Ho Lee from Korea and Dr. Rodger Pack from New Zealand.

According to FAOPS's Constitution & By-Law, a Nominating Committee, which consists of not less than 5 members, appointed by the present Council shall propose a list of candidates to the General Assembly for voting at least 6 months in advance of the meeting. This Committee chaired by Prof. B.K.Anand from India was formed since the Council meeting in Glasgow in August 1993. The other four members are Profs. Meng-Chin Chen (China), Toshinori Hongo (Japan), Sang Ho Lee (Korea) and Trefer 0. Morgan (Australia). After several months of searching for, adjusting and approving the names of candidates, the Committee had prepared the slate which was unanimously accepted and voted for by the General Assembly without any changes or proposal for additional names of candidates even though the General Assembly has all rights to do so. The complete list of the new Council is shown below.

President :
Masao Ito (Japan), 2nd term

1 st Vice President :
Xiong-Li Yang (China), 2nd term

2 nd Vice President :
John A. Young (Australia), 2nd term

Treasurer :
Chok-Yung Chai (China, Taipei), 2nd term.

Secretary :
Chumpol Pholpramool (Thailand), 2nd term

Members :
Sang Ho Lee (Korea), 1st term
Fereshteh Motamedi (Iran), 2nd term
Usha Nayar (India), 1st term
Rodger Pack (New Zealand), 1st term
Rami Rahamimoff (Israel), 2nd term
Harbindar Jeet Singh (Malaysia), 2nd term

Details of the agenda of the General Assembly will be reported in the next issue of FAOPS Newsletter. New members of the Council will also be introduced in the following issues.

INSIDE

NEWS FROM COUNCIL

FAOPS OBJECTIVES :

- To encourage the advancement of the physiological sciences,
- To facilitate the exchange and dissemination of knowledge in the field of physiological sciences and related fields,
- To foster and encourage research in the field of physiological sciences in Asia and Oceania,
- To promote the Congress of the Federation of the Asian and Oceanian Physiological Societies (FAOPS Congress),
- To promote such other measures as will contribute to the development of physiological sciences in Asia and Oceania.

Minutes of the 4 th FAOPS Council Meeting, November 6,1994 Shanghai International Trade Center, Shanghai

The meeting was called open at 7.35 p.m. The Council members who attended at the meeting were:

M. Ito	President
S.K. Manchanda	1st Vice President
X.L. Yang	2 nd Vice President
C.Y. Chai	Treasurer
C. Pholpramool	Secretary
J.I. Hubbard	Member
W.G. Kim	Member
F. Motamedi	Member
H.J. Singh	Member
J.A.Young	Member
S. Ginsburg	(representing R.Rahamimoff)
B.K. Anand	(Chairman of the Nominating Committee)
R.E. Kemm	(invited by C.Pholpramool)
M. Robertson	(invited by M.Ito)
D.P. Tan	(invited by X.L. Yang)

Agenda 1:
Greeting by the President

President Ito thanked all Council members who attended the meeting and made an apology for Prof. R. Rahamimoff who was unable to come to Shanghai because of his health problem. Then he welcomed and introduced Profs. S. Ginsburg (representing R. Rahamimoff), B.K. Anand (Chairman of the Nominating Committee), D.P.Tan (Secretary-General of the 3rd FAOPS Congress), R.E.Kemm (representing teaching staff of CAT workshop) and M.Robertson (Managing Director, Blackwell Scientific Publisher) who were invited to the meeting

The President asked for changes of the sequence of agenda and proceeded the meeting.

Agenda 2:
Association between CEPP and FAOPS

This agenda was brought up after Blackwell Science Asia (BSA) approached the President, 2nd Vice President and the Treasurer and expressed its interest in association with FAOPS. Mr. M. Robertson, the Managing Director of BSA, was asked to provide more detailed proposal to the Council. BSA proposed that;

1. FAOPS associates with CEPP (journal ***Clinical and Experimental Pharmacology and Physiology)*** which becomes an adopted journal of FAOPS. However, FAOPS is free to associate with or adopt other journals should it wish.
2. BSA would include single, black and white announcements as supplied by FAOPS in CEPP advertising FAOPS congresses, at no charge.
3. At each FAOPS congress, either BSA would be provided with a free stand in the trade exhibition area at which CEPP and other related BSA publications could be displayed.
4. If BSA could not send personnel to look after the display, the congress organizers would take delivery of leaflets and sample copies of CEPP which would be displayed on a table in the exhibition or registration area and the CEPP leaflet would be included in satchels of delegates.
5. BSA would be provided with camera ready artwork by the congress organizers and would publish congress abstracts as supplementary pages in an issue or two of CEPP after the congress. BSA would make no charge.
6. BSA would allow individual members of societies that are part of FAOPS to subscribe to CEPP at 60% off the normal institutional subscription rate. This discount would be publicized in BSA's promotional material prepared for FAOPS meetings. Individual societies could also bring notice of the discount to their members.
7. At additional cost to the organizers of each congress, BSA could produce abstract booklets for

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Prof. Ito was serving teas to members of FAOPS Councill at the dinner before the meeting on November 6,1994. From left: Prof.Yang (on the back) , Singh, Young, Ginsburg, Ito Anand, Kemm, Manchanda, Hubbard Motamedi and Chai (on the back).

distribution to delegates at the time of each congress, prior to publication in supplementary to CEPP.

After some questions being raised and discussion, most of the proposal was accepted. However, it was suggested that FAOPS should negotiate with BSA so as to obtain more benefits, and the Secretary was asked to do the negotiation provided that this suggestion was approved by the General Assembly (GA).

Agenda 3:

Approval of the Minutes of August 3, 1993 meeting

The Minutes was confirmed and approved without any changes.

Agenda 4:

Business arising from Minutes

There was no other business arising.

Agenda 5:

3rd FAOPS Congress in Shanghai

Prof. X. L. Yang, Chairman of the Organizing Committee, asked Prof. D.P. Tan to report to the Council regarding the organization of the Congress.

There were 490 registered participants (200 from China and 290 from other 25 countries/states), and 460 abstracts were received (>280 for oral presentations and> 170 for poster demonstrations). Seventy eight speakers were invited from 19 different countries/states both in the region and in Europe and America. The scientific program of the main congress included 5 plenary lectures, 19 symposia and 2 sessions of general communication. Workshop on Computer Assisted Teaching (CAT) in Physiology and on Renal Physiology were organized preceding and during the congress, respectively. There were also, satellite symposia held in Guangzhou before the congress (Visual Science) and in Xi'an (Novel Facts on Neuroendocrinology) after the congress.

With regard to the financial status, the revenue were obtained from donations (Millipore Asia Ltd., Brain Science Foundation in Tokyo, IUPS, FAOPS seed money, Hong Kong Pei-Hua Education Foundation Ltd., local agencies) and registrations totaling US$ 118,000- whilst the anticipated expenditure was about US$ 126,150-. The expected deficit would be absorbed by the local organizer.

Agenda 6:

Revision of the Constitution- ARTICLE IV;Membership

Prof. Pholpramool proposed a revision of the Constitution regarding new categories of membership, so as to encourage and accommodate private enterprises to join the Federation and to honor the outstanding and devoted physiologists in the region. The proposed changes were accepted by all members of the Council and recommended for final approval by the GA.

Agenda 7:

Report of the Chairman of the Nominating Committee

According to the 3rd FAOPS Council meeting in Glasgow in 1993, Prof. B.K. Anand was asked to chair the Nominating Committee for new FAOPS Council. Members of the Committee were Profs. Sang Ho Lee (Korea), Toshinori Hongo (Japan), Trefer O. Morgan (Australia) and Meng-Chin Chen (China). Prof. Anand made an apology for not being able to circulate the final slate to all adhering bodies before the GA. The reason was mainly due to the delay in the communications among the committee even though all corre-

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spondences were transmitted by facsimile. Requests for nominations were sent to all adhering bodies and Council members, and a list was prepared from the replies. The list was then circulated to other members of the Nominating Committe for drawing up the first slate in which regional representations are evenly considered. The first slate was again circulated to all adhering societies for further comments/suggestions. Only a slight modification was made in the final list before it was unanimously agreed by the committee. The candidates on the final slate were:

President
Prof. Masao Ito
(Japan)
1st Vice President
Prof. Xiong-Li Yang
(China)
2nd Vice President
Prof. John A.Young
(Australia)
(In case the next Congress to be held in Australia)
Secretary
Dr.Chumpol Pholpramool
(Thailand)
Treasurer
Prof.Chok-Yung Chai
(China, Taipei)
Members
Prof. Usha Nayar (India)
Prof. Sang Ho Lee (Korea)
Dr. Harbindar Jeet Singh
(Malaysia)
Prof. Fereshteh Motamedi
(Iran)
Prof. Rami Rahamimoff
(Israel)
Dr. Rodger Pack
(New Zealand)

There were no questions raised and the slate was accepted by the Council. It was suggested, however, that more rapid means of communication possibly electronic mails should be used in the future.

Agenda 8: Secretary's Report

The Office of the Secretary had the following activities:

1. Memberships:- Attempts to attract new members from the Philippines, Indonesia, Hong Kong, Pakistan, and United Arab Emirates (U.A.E.) had been made. Only U.A.E. applied for an associate member. Hong Kong showed sign of interest but not yet ready to join. Others did not respond. Requests for financial support from many companies and dealers had also been launched. Only ADInstruments Pty Ltd. in Australia had provided support for the CAT workshop in Shanghai.

2. Publications:- Three volumes of FAOPS Newsletter had been published and distributed to each individual members through their adhering societies during 1992-1994. One thousand copies of FAOPS Constitution & By-Laws were printed and mailed to all members of Council and officers of the adhering bodies.

3. CAT workshop:- Due to the illness of Prof. Rahamimoff, the Secretary had helped coordinating the organization of the CAT workshop in Shanghai with Dr. R. E. Kemm.

The application for membership of U.A.E. was welcomed by the Council and was recommended to the GA for approval. In addition, the Council suggested that a nominal fee of US$50-per annum was required and a donation should be asked for.

Agenda 9 : Treasurer's Report

The Treasurer presented his financial report on the FAOPS account which consisted of Taipei account (Treasurer Office), Tokyo account (President Office) and Bangkok account (Secretary Office). Total revenue for the Taipei account came from membership dues and donations amounting US$46,073.03 less the expenses in the amount of US$39,291.67 giving a balance in surplus of US$6,781.36. The Tokyo account was originally opened by the Physiological Society of Japan mainly for supporting the Secretariat. It was now closed. The Bangkok account received a total transfer from Tokyo account in the amount of US$21,566. 63. The total expenses for running the Secretary Office and organizing Council meeting during 1991-1994 was US$18,682.83 giving a balance in surplus of US$2,883.80.

Agenda10: Reports of the Commission's Chairman

a. Commission on Physiology Education- CAT workshop in Shanghai

Since Prof. Rahamimoff was unable to attend, Dr. R. E. Kemm (Head of the teaching group) was asked to present the report.

The workshop was held at the Shanghai Institute of Physiology during November 2-5. There were 21 participants which were divided into 2 groups. In one, trainees were asked to develop their own lessons, and the other were requested to evaluate the existing lessons using both IBM PCs and Apple Macintosh. The latter was kindly lent by ADInstruments in Australia. All students were very enthusiastic and worked hard throughout the 4-day teaching program. Suggestions were made for more workshops of this kind at next regional meetings and main congresses. In addition, an international network for electronic mails among members was requested for. Dr.Kemm would prepare a written report of the workshop in more detail. Publications of the E-mail addresses of all members have been proposed and discussed by the Council.

b. Commission on Fund Raising

Prof. Chai successfully requested for a donation from Millipore Asia Ltd. (Taipei) in the amount of US$10,489.16. This amount was used to support 3rd FAOPS Congress in Shanghai. Korean Physiological Society also donated US$5,000.

c. Commission on Research

Dr. Singh reported, on behalf of the chairman (Prof. J.A. Young), that the Commission had made a survey using questionnaires to obtain information concerning research areas of interest, research techniques

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PHYSIOLOGY UP-DATE

(From Sports Science Exchange, The Gatorade Sports Science Institute)

Detraining and Retention of Training-Induced Adaptations

Edward F. Coyle
Director, Human Performance Laboratory
Deparment of Kinesiology and Health
The University of Texas at Austin.
Member, Sports Medicine Review Board,
Gatorade Sports Science Institute

INTRODUCTION

People involved in physicaltraining programs are aware of the body's amazing ability to respond to the stimulus of regular exercise. After several weeks of training, the cardiovascular, muscular, and nervous systems display adaptations that improve a person's tolerance for the type of exercise encountered in training. The level of adaptation and the magnitude of improvement in exercise tolerance are proportional to the potency of the physical training stimulus.

While physical training promotes a variety of physiological adaptations, long periods of inactivity (detraining) are associated with a reversal of many of the adaptations. The "reversibility concept" holds that when physical training is stopped or reduced, the body readjusts in accordance with the diminished physiological demand, and the beneficial adaptations may be lost. This review focuses upon the time course of the cardiovascular and metabolic changes that accompany detraining.

CARDIOVASCULAR DETRAINING

Maximal Oxygen Uptake

Endurance training induces increases in maximal oxygen uptake (VO_2 max), cardiac output, and stroke volume (1). The increases in VO_2 max produced by endurance training involving exercise of low-to-moderate intensity and duration totally disappears after 2 to 3 months of detraining. When sedentary men participated in a 7-week, low-intensity training program (20 min/d; 3 d/week), VO_2 max increased by an average of 6% and returned to pretraining levels after 8 weeks of detraining (15). In various studies, moderate endurance training increased VO_2max by 10 to 20%; yet again, VO_2max declined to pretraining levels shortly after training is stopped (7 , 8 , 13).

Investigators have not yet conclusively determined if years of intense endurance training result in a more persistent maintenance of VO_2 max after subsequent inactivity than do shorter periods of training. Our present knowledge is limited to studies of trained endurance athletes who agreed to detrain. These data must be carefully interpreted because it is possible that the responses seen following detraining in these subjects could be influenced by genetic characteristics as well as by the persistent effects of training.

Maximal oxygen uptake in highly trained athletes declines rapidly during the first month of inactivity, whereas a slower decline to untrained levels occurs during the second and third months of detraining (6). Figure 1 displays the time course of the decline in VO_2 max (and its components of maximal stroke volume, cardiac output, and arteriovenous O_2 difference) when athletes adopt a sedentary lifestyle after approximately 10 y of run and/or cycle training. The initial mean VO_2max was relatively high in trained subjects (i.e.,62 mL/kg x min) and declined about 16% after 84 d of detraining. A rapid decline in VO_2 max during the first 21 d was related to a reduction in maximal stroke volume. The further 9% decline in VO_2 max during the period from 21 to 84 d was associated with a decline in maximal arteriovenous O_2 difference.

Following the 84-day period of detraining, the average maximal stroke volume stabilized at virtually the same value observed in people who had never engaged in endurance training (Table 1). However, VO_2 max in the detrained subjects remained 17% above that of untrained individuals, primarily because maximal arteriovenous O_2 difference was fairly well maintained. This may be due to the fact that the trained subjects maintained a high density of capillaries in muscle and exhibited only a partial loss of muscle mitochondrial activity during the detraining period (6) *(see Detraining and Muscle Metabolism).*

Stroke Volume And Heart Size

Prolonged and intense endurance training is thought to promote an increase in heart mass, and researchers believe that detraining decreases heart mass (1). What is not clear, however, is whether the training-induced increases in ventricular volume and myocardial wall thickness regress totally with inactvity. Athletes who become sedentary have enlarged hearts and an elevated VO_2max in contrast to people who have never trained (16). It is presently unknown if this represents persistent effects of training or is simply a characteristic that would be present in these individuals even if they had never trained.

One of the most striking effects of detraining in endurance-trained individuals is the rapid decline in stroke volume (Figure 1). This decrease (measured during cycling in the upright position) is caused

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Figure 1.

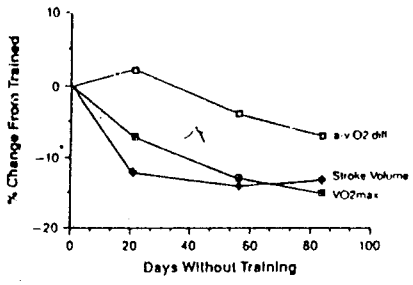

Fig. 1
Percent change in maximal oxgen uptake (VO_2 max), stroke volume, and arteriovenous oxygen difference (a-vO_2 diff) during 84 d of detraining in endurance athletes.

by a reduction in diastolic filling, i.e., the amount of blood filling the heart before each heart beat (14). On the other hand, when subjects are tested during cycling while lying on their backs, heart filling remains at relatively high levels, and stroke volume is maintaind within a few percent of trained levels during 56 d of detraining. It is clear that cardiac filling is an important factor establishing stroke volume during exercise and that when cardiac filling is reduced, stroke volume declines. As we shall see, it is possible that training-induced increases in stroke volume may be due in part to increases in cardiac filling as a result of increases in blood volume.

ROLE OF BLOOD VOLUME

We have found that the rapid reduction in diastolic filling during upright exercise in detrained subjects is related to a decline in blood volume (4). Intense exercise training usually increases blood volume by approximately 500 mL (i.e.,8 to 10%) (3). This adaptation is gained after only a few bouts of exercise, and it is quickly reversed when training ceases. Stroke volume declines and heart rate increases during submaximal exercise after several weeks of detraining. However, these responses can be essentially reversed when the blood volumes of detrained people are expanded to volumes seen when the subjects were trained (4).

The observation that stroke volume during exercise is maintained at levels seen in the trained state when blood volume is high suggests that the ability of the heart to accept blood is not significantly altered by detraining. If ventricular mass does indeed decline a thinning of the ventricular walls, and not a reduction in diameter of the ventricle, is probably involved (14). Thus, reduction in intrinsic heart function is apparently minimal after several weeks of inactivity in men who have trained intensely for several years (4). The large reduction in stroke volume during exercise in the upright position is apparently caused by a decline in blood volume and not by a deterioration of heart function.

DETRAINING AND MUSCLE METABOLISM

Enzymes of Energy Metabolism

Endurance training induces enzymatic adaptations in the exercising musculature that slows the rates of glycogen utilization and lactate production and improve endurance during submaximal exercise (11). One of the more important alterations produced by training is an increase in the activity of mitochondrial enzymes: this results in an increased ability to metabolize fuels in the presence of oxygen. Moderate endurance training of only 2 to 4 months duration increases mitochondrial enzyme activity by 20% to 40% (9 , 13). However, when this rather brief duration of training ceases, the stimulus for adaptation is removed and the increases in mitochondrial activity are quickly and totally reversed. Mitochondrial activity returns to pretraining values within 28 to 56 d after the cessation of training of brief duration (9 , 13).

There is a different pattern of change in mitochondrial enzyme activity when individuals who trained intensely for 10 y stop training for 84 d (Figure 2) (5). Mitochondrial enzyme activity (i.e., citrate synthase) in trained subjects was initially 2.4 fold greater than those in untrained people (Table 1). Enzyme activity declined progressively during the first 56 d of detraining (Figure 2) and stabilized at levels 50% higher than those seen in sedentary control subjects. Once again, it is not clear whether this persistent elevation of mitochondrial enzyme activity above untrained levels is caused by training or by genetic influences.

Figure 2.

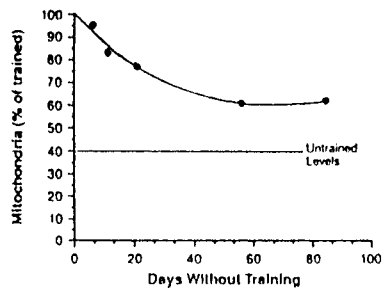

Fig.2
Time course of decline in mitochondrial enzyme activity of the trained skeletal musculature when endurance athletes detrain for84 d. Values are expressed as a percentage of trained values. Note that mitochondrial activity declines in a curvilinear fashion with a half-time of 12 d. Additionally, the mitochondrial activity of the detrained subjects stabilized at levels 50% higher than observed in sedentary subjects.

It is interesting to note that the maintenance of mitochondrial activity tends to occur predominately in fast-twitch muscle fibers (2). The maintenance of mitochon dria in fast-twitch fibers, which are recruited primarily during high-intensity exercise, may partially explain our observation that detrained subjects can exercise at relatively high intensities before displaying an increase in blood lactate concentration *(see Exercise Response of Detrained Subjects).*

Muscle Capillarization

Endurance training promotes increases in the number of capillaries surrounding individual muscle fibers (i.e., capillary density). This adaptation would theoretically prolong the transit time of blood flow through the muscle and reduce diffusion distances, thus improving the delivery of oxygen and nutrients to the muscle and enhancing the removal of metabolic waste products. Moderate endurance training for several months increases muscle capillary density by 20% to 30% above pretraining levels (12, 13). More prolonged and intense training increases capillary density by 40% to 50% above untrained values (Table 1) (6 , 12). It appears that the in-

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MEETING CALENDAR

February,1995

5-8: Australian Physiological and Pharmacological Society and Endocrine Society of Australia joint meeting, Lorne, Australia
For further details:
Dr. Warwick Anderson
Baker Medical Research Institute
P.O.Box 348, Prahan, Vic 3181
Tel: 61-3-5224315
Fax: 61-3-5105472

March, 1995

1-3: First Congress of Federation of Indian Physiological Societies
New Delhi, India
For further details:
Dr. W. Selvamurthy
Defence Institute of Physiology and Allied Sciences
Lucknow Rd., Timarpur
New Delhi 110054
Tel: 91-11-2512035,2937275
Fax: 91-11-2512035
E.mail:wsm@dipas. enet. in

April, 1995

24-28: 2nd Asian-Pacific Symposium on ACE Inhibition, Beijing, China
For further details:
Prof .G.A. McGregor
Fax: 44-81-7830292

May, 1995

2-4: 24th Annual Meeting of the Physiological Society of Thailand, Khonkaen, Thailand
For further details:
Dr. Yupa Kukongviriyapan
Department of Physiology
Faculty of Medicine
Khonkaen University
Khonkaen 40002, Thailand
Tel:66-46-24343 ext,3263,3462
Fax: 66-43-243064

June, 1995

21-23: Third International Conference on Computers in Biomedicine, Milan, Italy
For further details:
Jane Evans
Wessex Instiute of Technology
Ashurst Lodge, Ashurst
Southampton, SO40 7AA, UK
Tel: 44-0-703293223
Fax: 44-0-703292853
E.mail:CMI@uk.ac.rl.ib.

28-30: Second International Meeting on Endothelial Control of Cardiac Performance: Role in Cardiac Failure, Antwerp, Belgium
For further details:
Dirk L. Brutsaert
University of Antwerp
Groenenborgerlaan 171
B-2020 Antwerp-Belgium

28-1 July: 11 th Annual Meeting of the Europian Society of Human Reproduction and Embryology, Hamburg, Germany
For further details:
ESHRE Central Office
c/o Bruno Van den Eede
AZ-VUB
Laarbeeklaan 101,
1090 Brussels, Belgium
Tel: 32-2-4775761
Fax: 32-2-4776727

August, 1995

6-11: 4th International Congress of Comparative Physiology & Biochemistry, Birmingham, UK
For further details:
The Secretariat
Universal Conference Consultants
China Court Business Center,
Ladywell Walk,
Birmingham B5 4RX UK
Tel: 44-21-6223644
Fax: 44-21-6222333

24-26:FISU/CESU Conference (FISU University Sport Study Conference)
Fukuoka, Japan
For further details:
The Organizing Committee for the Universiade 1995,Fukuoka
6-1 Tenjin 2-chome, Chuo-ku
Fukuoka City 810, Japan
Tel: 81-92-7335233
Fax: 81-92-7335235

September, 1995

7-9: International Symposium on Human Sperm Acrosome Reaction, Collioure,France
For further details:
International Symposium on Human Acrosome Reaction
c/o Helene Moutaffian
Laboratoire Theramax
6 Avenue du Prince Hereditaire Albert-98000
Monaco
Tel: 33-92-050779
Fax: 33-92-057000

11-12: 1st Congress of the Federation of European Physiological Societies (FEPS), Maastricht, the Netherlands For further details:
Prof. Christian Bauer
Physilologisches Institut
Winterthurer strasse 190
CH-8057 Zurich, Switzerland
Tel: 41-1-2575011
Fax: 41-1-3640564

25-26: IUPS&UNESCO sponsored meeting on Physiology and Respect for Life, Paris, France
For further details:
Prof. Jean-Didier Vincent
Centre National de la Recherche Scientifique
Avenue de la Terrasse 91198
Gif-Sur-Yvette, Cedex, France
Tel: 33-69823423
Fax: 33-1-69070538

25-27: 62nd Scientic Meeting of the Australian Physiological and Pharmacological Society, Sydney, Australia
For further details:
Dr. Jack Carmody
School of Physiology and Pharmacology
University of New South Wales
P.O.Box l, Kensington, NSW 2033, Australia
Tal: 61-2-6972548
Fax: 61-2-3136043

November, 1995

1-5 The First International Symposium on Altitude Training
Kunming China
For further details:
Mr. Fu Yuanyang
Secretary-General of the International Symposium on Altitude Training
Yunnan Research Instiute of Sports Science
14 Dong Feng Dong Road
Kunming 650041, China
Tel: 871-3310603
Fax:871-3310609,3315246

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available, number of postgraduate students and publications, and room available for visiting researchers. The questionnaires were sent to member societies in 10 countries and those from 7 countries were returned. Neurophysiology, endocrinology and cardiovascular physiology were among the major areas of research activities. In most countries, each researcher had 1-2 students (almost 3 in Japan and Korea). About 50% of the researchers had rooms for visiting scientists (60% in Japan and Malaysia, 80% in Australia). However, only about 18% of the laboratories were able to provide financial support for the visiting researchers. From these information a Directory of Research Techniques and Researchers in FAOPS Member Countries was prepared by Dr.Singh.

Prof. Young added that the major problem in Australia was placement of the postgraduate students. He also suggested that an effective mechanism for selection of good students should be worked out for the success of any research training program.

Aganda 11: Future Congresses

a. 4th FAOPS Congress in 1998

Prof. Young reported that the Australian Physiological and Pharmacological Society (APPS) proposed to hold the 4th FAOPS Congress in September 1998 conjointly with an APPS meeting most likely in Brisbane. The exact venue had not yet been finalized. He expressed his concerns about the cost of expenses which would be relatively high for participants from developing countries and may discourage these people to attend. He kindly offered that if other Asian countries were keen to host the congress in 1998 Australia would be pleased to withdraw the invitation. After discussion, there was no other proposal to replace Australia. An overwhelming vote of reconfirmation for the congress to be held in Australia was received.

b. 5th FAOPS Congress in 2002

The Secretary reported that the 5th Congress in 2002 drew invitations from many adhering bodies from countries such as Malaysia, Korea, India, Myanmar and Vietnam. However, Prof. Manchanda, the President of the Federation of the Indian Physiological Society, withdrew the invitation from India. In view of the strength of local society, infrastructures and economy of the country, the Council felt that only Malaysia and Korea were more capable to host the 5th Congress. Recommendation would be made for the GA to make final decision between Malaysia and Korea.

Agenda 12: Action plans for 1994-1998

President Ito presented the action plans for 1994-1998 as follows:

a. Plans of events;

1995- FAOPS Executive Board meeting may be held conjointly with the 4th IBRO World Congress of Neuroscience in Kyoto during July 9-14,

- a lecture tour in Asia of Prof. Pfaff and his 2-3 colleagues in the Rockefeller University,

1996-FAOPS workshop to be held in Asia would be combined with FAOPS Council meeting,

1997-FAOPS Executive Board meeting in St. Petersburg during the 33rd IUPS Congress in July,

1998- FAOPS Council meeting in Brisbane during the 4th FAOPS Congress in September.

b. Committee and commission activities;

Fund Raising -1996, for FAOPS workshop in Asia

-1997, for supporting physiologists to attend the 33rd IUPS Congress

-1998, for supporting physiologists to attend the 4th FAOPS Congress

Teaching -1997, IUPS Congress Teaching Workshop, circulation of NIPS

Research -1996, FAOPS workshop in Asia

Publication - Journals

c. Other projects;

- FAOPS capacity building fellowship
- FAOPS visiting professorship
- FAOPS information network
- FAOPS centers of excellence

The plans were well accepted. However, there was a discussion about the support for a lecture tour of Prof. Pfaff who was not known to all members of the Council. Prof. Ito would provide more additional information concerning Prof. Pfaff biodata and plan for the tour. Many Council members felt that such a tour was less beneficial compared to a workshop or a transfer of research techniques.

Prof. Young would work out the topic of and the place where a workshop in 1996 to be held.

Agenda 12: Other matters from the floor

President Ito proposed that two honorable and outstanding physiologists namely, Prof. B.K. Anand (India) and Prof. T.P. Feng (China), should be recommended to the GA for Honorary Memberships provided that the revision of FAOPS Constitution was approved. This proposal was unanimously accepted. It was also agreed that Prof. Anand would be introduced to the GA by Prof. Manchanda, and Prof. Feng be introduced by Prof. Yang. There were no other proposals nor other business.

The President moved a vote of thanks to Profs. S.K. Manchanda, W.G. Kim and J.I. Hubbard for their continual enthusiasm in and devotion to FAOPS during their services in the Council from 1990-1994. This was carried by acclamation.

The meeting was closed at 10:50 p.m.

creased capillary density observed in highly-trained people is not lost during 3 months of detraining (Table 1) 6.

Table 1. **The effects of three months of inactivity in previously trained subjects on selected physiological variables.**

		% of SEDENTARY CONTROL	
	SEDENTARY CONTROL	TRAINED SUBJECTS	SUBJECTS FOLLOWING DETRAINING
VO_2 max (mL/kg x min)	43.0	143%	117%
Stroke Volume (mL)	128.0	116%	101%
Arteriovenous O_2 diff. (mL/100 ml)	12.6	120%	111%
Mitochondrial Enzyme Activity			
Citrate Synthase (moles/kg x hr)	4.1	243%	150%
Capillary Density (no./mm2)	318.0	146%	150%

Summary: Muscular Adaptations that Persist with Detraining

The detraining responses in skeletal muscles differ between highly-trained people and those who have trained for only a few months. No loss in muscle capillarization occurs with the cessation of prolonged intense training, although a loss does occur when moderate training is stopped after a few months. The cessation of short-term training results in a complete reversal of the training-induced increases in mitochondrial enzyme activity, whereas only a partial decline occurs with detraining after years of intense endurance training (5 , 9 , 13 , 15). We cannot discount the possibility that the persistant elevated mitochondrial enzyme and capillary density of the detrained athletes who had undergone years of strenuous training, may be a result of genetic characteristics. Additionally, we do not yet know the maximal length of time that these adaptations persist following the cessation of training.

EXERCISE RESPONSES OF DETRAINED SUBJECTS

Following Training of Low-to-Moderate Intensity

It appears that the cardiac and skeletal muscle adaptations observed in those who have undergone short-term endurance training are not maintained above pretraining levels after approximately 8 weeks of inactivity. These individuals exhibit the same capacity for exercise as those who have never exercise retain comparatively elevated muscle and heart function, as well as the capacity for intense exercise. These detrained athletes not only possess a VO_2 max that is well above untrained values, but they also maintain the ability to exercise at a high percentage of VO_2 max before lactic acid begins to accumulate in their blood (5). It is likely that their relatively high VO_2 max is related to genetic factors. However, it is unlikely that their ability to exercise at a high percentage of VO_2max in the detrained state is entirely genetic. Rather, it probably reflects, in part, the maintenance of the various muscular adaptations discussed earlier.

Following Intense and Prolonged Training

Individuals who curtail training after several years of regular exercise retain comparatively elevated muscle and heart function, as well as the capacity for intense exercise. These detrained athletes not only possess a VO_2 max that is well above untrained values, but they also maintain the ability to exercise at a high percentage of VO_2 max before lactic acid begins to accumulate in their blood (5). It is likely that their relatively high VO_2 max is related to genetic factors. However, it is unlikely that their ability to exercise at a high percentage of VO_2max in the detrained state is entirely genetic. Rather, it probably reflects, in part, the maintenance of the various muscular adaptations discussed earlier.

REDUCED TRAINING AS OPPOSED TO DETRAINING

Detraining (the total cessation of exercise training) produces more marked effects than reduced training. Individuals who reduce their training levels have the potential to more effectively maintain cardiovascular and metabolic adaptations. Indeed, Hickson and coworkers (10) demonstrated that training-induced increases in VO_2 max and heart size can be maintained when training frequency is reduced from 6 to 2 d/week, provided that the intensity of the maintenance exercise is high (85% to 100% VO_2max).

EFFECTS OF DETRAINING FOLLOWED BY RETRAINING ON MITOCHONDRIAL ENZYME ACTIVITY

It is logical to suspect that detrained athletes (who display only a partial loss of the adaptations to endurance training) would be able to more quickly restore their physiological function than if they had never trained. This hypothesis, however, has never been directly studied in a controlled setting. We know that detrained athletes can maintain training-induced adaptations in heart size and muscle capillarization for at least three months. Detraining in the individuals mainly causes reductions in blood volume and mitochondrial enzyme activity. Because it is likely that blood volume can be restored within days after re-initiating training the limiting factor determining the time course of retraining may well be the rate of increase in mitochondrial enzyme activity. Unfortunately, we do not yet know how rapidly the decline in mitochondrial activity can be reversed with renewed training. However, it is possible to theoretically estimate the rate of return of mitochondrial activity, which may also reflect the return of endurance performance.

The time courses of these changes are shown in Figure 3. When training is stopped, mitochondrial enzyme activity will decline to a level half-way between trained and detrained levels (i.e., 50%) in a ten-day period. Thus, mitochondrial activity is said to have a half-life of 10 d. During the next 10 d period, (i.e.,from day 10 to day 20), values will decline from 50% to 25%. With each successive ten days it will fall to 12%, 6%, 3%, etc.

Figure 3.

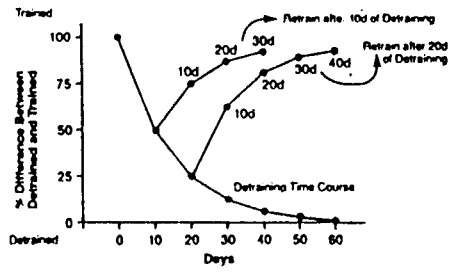

Fig.3
Theoretical time course of the decline in mitochondrial enzyme activity and endurance performance ability with detraining, as well as the rate of increase when training is resumed after 10 d or 20 d of detraining.

If, after ten days of detraining, the athlete attempts to resum normal training, it will requir

(Continued on next page)

longer than ten days to return to trained levels (Figure 3). The retraining response also follows a half-life of 10 d. However, the athlete will start retraining at the 50% level, and 10 days of retraining will theoretically move him to 75% of the trained value (i.e., half the distance between 50 and 100%). Twenty days of retraining will bring him to 87%, 30 d will bring him to 94%, and 40 d will bring him to 97% of trained, values. Figure 3 also shows the theoretical time course of retraining after 20 d of detraining.

SUMMARY

The available scientific evidence suggests that the increase in VO_2max produced by short-term endurance training of mild-to-moderate intensities vanish after several months of detraining. When athletes detrain after several years of intense training, they display reductions (i.e., 5% to 15%) in stroke volume and VO_2max during the first 12 to 21 d of inactivity. These declines do not indicate a deterioration of heart function, but are largely a result of reduced blood volume and, consequently, a diminished ability to return venous blood to the heart. The VO_2max of endurance athletes continues to decline during the 21 to 56 d of detraining because of reductions in maximal arteriovenous O_2 difference. These reductions are correlated with a loss of mitochondrial enzyme activity within the trained musculature. Mitochondrial enzyme activity in endurance athletes remains higher than values seen in sedentary subjects. Skeletal muscle capillarization is maintained at higher levels, and both VO_2 max and the maximal arteriovenous O_2 difference stabilize at values higher than untrained levels.

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Tribute to Te-Pei Feng

by Prof. Xiong-Li Yang.
Shanghai Institute of Physiology
Chinese Academy of Sciences

Te-Pei Feng, Honorary Director of the Shanghai Institute of Physiology, Chinese Academy of Sciences, died on April 10, 1995 at age 88.

Feng's long scientific career had several outstanding landmarks. The first landmark was when he studied in the laboratory of Profes sor A.V. Hill in University College London working on the heat production of muscle and nerve. Among his achievements during that period was his discovery of the increase of the resting heat production of muscle on passive stretch, Which later became known as "Feng effect".

The second landmark was the period 1934-1941, just after his return from abroad, when he was teaching in the Department of Physiology, Peking Union Medical College. During this period he opened a new research direction in the physiology of neuromuscular function. He made a number of seminal discoveries; in the period 1936-41 he and his students published a long series of 26 papers on neuromuscular junction in the Chinese Journal of Physiology (English), which attracted worldwide attention among neurophysiologists. He soon became an internationally acknowledged pioneer in modern research on neuromucular junction.

The third landmark in his research career was in the field of nerve-muscle trophic relations which he entered in 1961 with a spectacular discovery at the very beginning, namely, the discovery of the extraordinary phenomenon of post-denervation hypertrophy in the slow muscle fibers of the chick. He resumed his research in this field in the seventies and together with his collaborators made important contributions to the problem of the neural determination of the phenotypic characteristics of skeletal muscle fibers.

When he reached the age eighty, Feng took up the study of synaptic plasticity in central synapses, in particular long-term potentiation (LTP) and had already made significant contribution to the cellular mechanisms underlying LTP.

Feng was born in 1907 in Zhejiang, China and obtained a bachelor' s degree in biology from the Fudan University in 1926 and a master's degree in physiology from the University of Chicago in 1930. He earned a doctorate in physiology from the University College of London in 1933. After returning to China in 1934 he served as professor of Physiology at the Peking Union Medical College until 1941. In 1943 he became an acting director of the Medical Research Institute (preparatory), Academia Sinica. When the Institute was renamed the Institute of Physiology in 1950, Feng served as a director until 1984. At the time of death, Feng was a professor emeritus and honorary director of the Shanghai Institute of Physiology. During Feng's lifetime, he published over 100 scientific papers.

Feng was elected to the Chinese Academy of Sciences in 1955. He was a foreign associate of the National Academy of Sciences (USA), a member of the Third World Academy (1986) and a foreign member of the Indian Academy of Sciences (1988). Feng won honorary members from various societies including, very recently, FAOPS.

Feng was a devoted scientist and will be greatly missed.

(Meeting Calendar)

6-9: 12th Iranian Congress of Physiology and Pharmacology, Tehran, Iran

For furter details:
Prof. M. Mahmoudian
International Relations Department
Iran University of Medical Sciences
P.O, Box 15875-6171
Tehran, Iran
Tel: 681646
Fax: 8016207

December, 1995

5-8: 18th SEA GAMES Scientific Congress, Chiangmai, Thailand
For further details:
Dr. Supitr Samahito
18th SEA GAMES Scientific Congress
Faculty of Education
Kasetsart University
50 Paholyothin Road, Jatujak
Bangkok 10900, Thailand
Tel: 66-2-5792030
Fax: 66-2-5795559, 5798781

June, 1996

30-3 July: 12th Annual Meeting of the Europian Society of Human Reproduction and Embryology, Hamburg, Germany
ESHRE Central Office
c/o Bruno Van den Eede
AZ-VUB
Laarbeeklaan 101,
1090 Brussels, Belgium
Tel: 32-2-4775761
Fax: 32-2-4776727

November, 1996

16-20: Second Asian and Oceanic Congress of Andrology, Chandigarh India
For further details:
Dr. Natwar R. Kalla
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Chandigarh 160014, India
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Publication of The Third FAOPS Congress Abstracts in CEPP

The abstracts of all papers presented at the Third Congress of the Federation of Asian and Oceanian Physiological Societies held in Shanghai, China in November 1994 will be published in supplementary pages to the journal, *Clinical and Experimental Pharmacology and Physiology*. This publication arrangement was agreed to after discussion between Blackwell Science, as publisher of the journal, and the FAOPS Council. Publication in the journal allows presenters at the recent FAOPS Congress the opportunity of given reference to the journal, *Clinical and Experimental Pharmacology and Physiology* when citing their presentation. Reference should be given as follows:

Clinical and Experimental Pharmacology and Physiology 1995,22:(3) A....

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