

**5<sup>TH</sup> INTERNATIONALES CONFERENCE OF THE AFRAGA\***  
**ABOUNAWAS HOTEL, HAMMAMET – TUNISIA**  
**11 - 13 APRIL 2005**

\* Association Française de Recherche en Activités Gymniques et Acrobatiques

**PROGRAMME**

**Sunday 10 April**

**Registration of the participants - 17h in the hotel**

<b>Monday 11 April</b>	
8h	<b>Registration</b>
9h – 10h	<b>Official Opening</b>
10h – 11h30	<b>Conference</b>  Hafsi Bedhioufi et Nawal Mechri (Tunisie – ISSEP du KEF) <b>Corps, savoir et activités gymniques</b>
11h30 – 12h10	<b>Oral Session: Learning and Pedagogy</b> (2 short communications)  <ul style="list-style-type: none"> <li>• <b>Busquets, A. (Espagne - INEFC)</b> Apprentissage du balancé en gymnastique artistique</li> <li>• <b>Gutiérrez Vélez, A. (Espagne – Universidad de Leon)</b> Teamwork in the Learning of Gymnastic Skills</li> </ul>
12h30	<b>LUNCH</b>

	<b>Monday 11 April</b>
14h – 15h30	<b>Symposium</b>  <b>Etapé Tous Elisa, Bortoleto Marco, Robin Jean-François</b> <b>« L'enseignement de l'acrobatie à l'école à partir</b> <b>d'une conception systématique »</b>
15h30 – 16h	<b>Long Communication</b>  <b>Robin JF. (France – Paris 12)</b> <b>Les transpositions didactiques en question</b> <b>dans l'enseignement des activités acrobatiques scolaires</b>
16h – 16h30	<b>Break</b>
16h30 – 17h50	<b>Oral Session: Didactic</b> <b>(3 short communications)</b>  <ul style="list-style-type: none"> <li>• <b>Nouillot, P. (France – Paris 12)</b> Place des connaissances scientifiques dans l'élaboration des contenus d'enseignement</li> <li>• <b>Bali, N. (Tunisie – ISSEP Tunis)</b> Les pratiques didactiques des activités gymniques : savoirs scientifiques ou théories implicites. Cas des Instituts Supérieurs de Sport et d'Education Physique tunisiens</li> <li>• <b>Kammoun, M. (France – Toulouse)</b> Expertise gymnique et gestualité enseignante : une analyse didactique</li> </ul>
18h	<b>Synthesis of the day</b>
18h30	<b>Opening Ceremony of the 5<sup>th</sup> International Conference</b> <b>of the AFRAGA</b> <b>Cocktail offered by SIMI Reality Motion Systems GmbH</b>

	<b>Tuesday 12 April</b>
8h30	<b>Registration</b>
9h – 10h30	<b>Conference</b> <b>Sands William (USA, Colorado Springs)</b> <b>Gymnastics research at the Olympic Center</b>
10h30 - 11h10	<b>Long Communication</b> <b>Jemni et al. (Grande Bretagne – Leeds Metropolitan University)</b> Effects of gymnastics training on energetic components of men gymnasts
11h10 - 11h30	<b>Break</b>
11h30 – 13h	<b>Oral Session: Training and Coaching 1</b> (3 short communications)  <ul style="list-style-type: none"> <li>• <b>Seck, D. (Sénégal - INSEPS)</b> Caractéristiques physiques et capacités bio motrices des gymnastes du Sénégal</li> <li>• <b>Viana, J. (Portugal – University of Porto)</b> Heart Rate Analysis during Men and Women's Artistic Gymnastics Routines</li> <li>• <b>Silva, MR. (Portugal – University of Porto)</b> Eating Disorders in Female Athletes: Rhythmic and Artistic Gymnasts</li> </ul>
13h	<b>LUNCH</b>



	<b>Tuesday 12 April</b>
14h 30 – 16h	<b>Conference</b>  <b>Yeadon Fred (Grande Bretagne – Loughborough University)</b> <b>Computer simulation of gymnastics skills</b>
16h - 16h20	<b>Break</b>
16h20 - 17h	<b>Long Communication</b>  <b>Laborde, F. (Présentation du logiciel SIMI Systems. Allemagne)</b> (SIMI Reality Motion Systems GmbH) Analyse de mouvement humain en 3D
17h - 17h40	<b>Long Communication</b>  <b>Marina et al. (Espagne – INEFC Barcelone)</b> Cinématique du saut vertical en Gymnastique Artistique
17h40 – 19h	<b>Oral Session: Technique</b> (3 short communications)  <ul style="list-style-type: none"> <li>• <b>Mkaouer, B. (Tunisie – ISSEP Tunis)</b> Analyse des paramètres déterminants de la performance lors du grand jeté lancer-rattrapper en GR</li> <li>• <b>Botelho, M. (Portugal – University of Porto)</b> Analyse de la Variation de l'Equilibre Statique et Dynamique en Populations diverses</li> <li>• <b>Botelho, M. (Portugal – University of Porto)</b> Gymnastique Artistique Féminine - Évolution des éléments techniques des barres asymétriques. Comparaison entre les éléments techniques de barre Fixe et les barres asymétriques</li> </ul>
19h30	<b>Gala evening: dinner, musical entertainment, traditional Tunisian folklore and dance</b>

	<b>Wednesday 13 April</b>
8h30	<b>Registration</b>
9h– 10h30	<b>Conference</b> <b>Sands William (USA, Colorado springs)</b> <b>Kinematics of Vault Board Behaviors -</b> <b>A Preliminary Comparison</b>
10h30 - 11h10	<b>Long Communication</b> <b>Maja Horvatin-Fuckar et al. (Croatia - Zagreb)</b> Relations between rhythmic abilities and success in artistic and rhythmic gymnastic
11h10 - 11h30	<b>Break</b>
11h30 - 12h40	<b>Oral Session: Training and Coaching 2</b> (4 short communications) <ul style="list-style-type: none"> <li>• <b>Fayt V et al. (France – Liévin)</b> Walking on a gymnastics balance beam : a stressful situation for children with mental disorders</li> <li>• <b>Bortoleto, M. (Espagne – INEFC Lleida)</b> High level men's artistic gymnastics : an ethnographic insight of the training culture</li> <li>• <b>Botelho, M. (Portugal – University of Porto)</b> La dimension esthétique au Trampoline face aux attitudes et à l'opinion des entraîneurs portugais de haut niveau</li> </ul>
13h - 14h 30	<b>LUNCH</b>



	<b>Wednesday 13 April</b>
14h 30 – 16h00	<b>Symposium</b>  <b>Carnus et al. (France – Besançon)</b> Acrosport en milieu scolaire - état des lieux des pratiques et perspectives de formation des enseignants
16h 00	<b>Conclusion and end of the conference</b>



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## Opening session 1

### GYMNASTICS RESEARCH AT THE U.S.A OLYMPIC TRAINING CENTER

**Dr William A Sands (USA OTC)**

*Dr. William (Bill) Sands is the Head of Sport Biomechanics and Engineering for the U.S. Olympic Committee in Colorado Springs, Colorado. Previously, he served as Senior Sport Physiologist at the Lake Placid Olympic Training Center in New York. He has over 35 years of experience in Olympic sports. Dr. Sands has served as an associate professor at the University of Utah's Department of Exercise and Sport Science and Co-Director of the Motor Behavior Research Laboratory with adjunct appointments in Bioengineering and Physical Therapy, Department Chair of Exercise Science & Sports Medicine at California Lutheran University and Director of the Human Performance Laboratory, Director of Research and Development for USA Gymnastics, Exercise Physiologist for USA Diving and USA Track and Field-Heptathlon. Dr. Sands, a former gymnast, was also a World Championship coach in gymnastics and produced several Olympians, more than a dozen national team members, and many World Championship team members. Dr. Sands has served on the USA Gymnastics National Staff in various capacities since 1978. He has written more than a dozen books and over 200 articles on sport performance. His primary interests lie in electromyography, training monitoring, and strength and power performance.*



**Dr Sands will describe/discussed some monitoring techniques and their effectiveness in causing changes in training and performance of men's and women's gymnastics.**

- 1- Muscle activation patterns of the maltese skill in the rings;
- 2- Comparison between the triple twisting and quadruple twisting back somersault in tumbling/floor exercise.

**Strength:** At the request of the Men's National Team coaches and administrators, we undertook a study of the muscle activation patterns of the maltese. The maltese done alone and in combination was a highly prized skill and the coaches wanted to know how to direct their training to most closely simulate a maltese. We studied four athletes who could already do a maltese by monitoring the electromyographic activity of eight muscles via telemetry. Then we studied two athletes who performed more than a dozen drills to determine if the muscle activation patterns of the drills were similar to the patterns observed in the actual maltese. We found that a number of the drills thought to be useful by coaches were in fact not as good as others, and the

maltese performed with the head and shoulders too high actually does a very poor job of targeting the appropriate muscles.



**Technique:** The gymnast's performance techniques are under constant scrutiny by coaches. Moreover, we also scrutinize technique in terms of both kinematics and kinetics. Projects undertaken regarding technique include an extensive study of men's vaulting, still rings investigations via strain gages placed in the ring tower along with simultaneous videography, high speed video of tumbling and vaulting, qualitative video using Dartfish to provide immediate and augmented feedback, and we have analyzed one gymnast's performances of both a triple twisting and quadruple twisting back somersault in tumbling/floor exercise for comparison purposes.

All of these ideas will be described and discussed regarding their efficacy and their effectiveness in causing changes in training and performance of our men's and women's teams.

## Opening session 2

### COMPUTER SIMULATION OF GYMNASTICS SKILLS

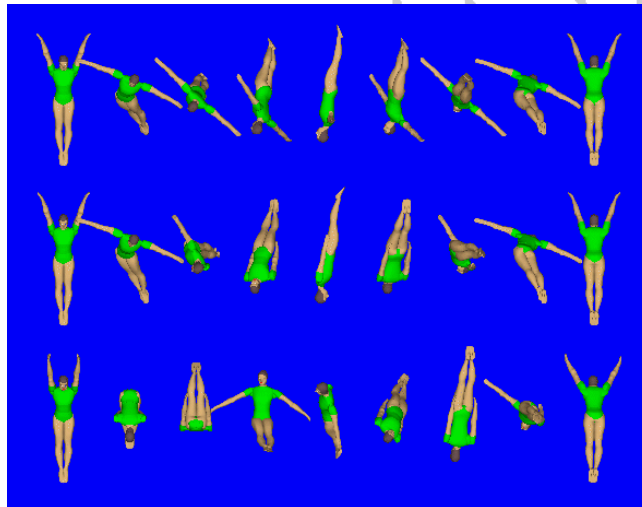
#### Pr. Fred Yeadon (Loughborough University, UK)

*Fred Yeadon graduated in Mathematics from the University of Cambridge in 1968 and after a number of years teaching mathematics obtained his PhD in Biomechanics from Loughborough University in 1985. He then took up a biomechanics position at the University of Calgary and in 1990 returned to Loughborough University where he is currently Professor of Computer Simulation in Sport.*



*Fred has received awards from the International Society of Biomechanics and the American Society of Biomechanics for his research on the computer simulation of twisting somersaults and continues to research in this area and to provide practical advice to gymnasts, divers, trampolinists and freestyle aerial skiers.*

**Professor Yeadon will discuss computer simulation models used to investigate the production of aerial twist using asymmetrical hip movement, to maximise rotation in tumbling, and to determine the limiting dismount from the high bar.**



## Opening session 3

Dr William A Sands (USA OTC)

**Dr Sands will present a pilot study about “Kinematics of Vault Board Behaviors”.**

The purpose of this pilot study was to investigate the impact and recoil kinematics of a domestic (American) vault board and a foreign vault board of the type used at the Athens Olympic Games. Board movement characterization was considered a first step in ascertaining measurement techniques of vault board behavior. A secondary purpose was to investigate the use of magnetic motion sensing of gymnastics apparatus in conjunction with a larger study performed to ascertain the interaction between gymnasts and their apparatuses.

