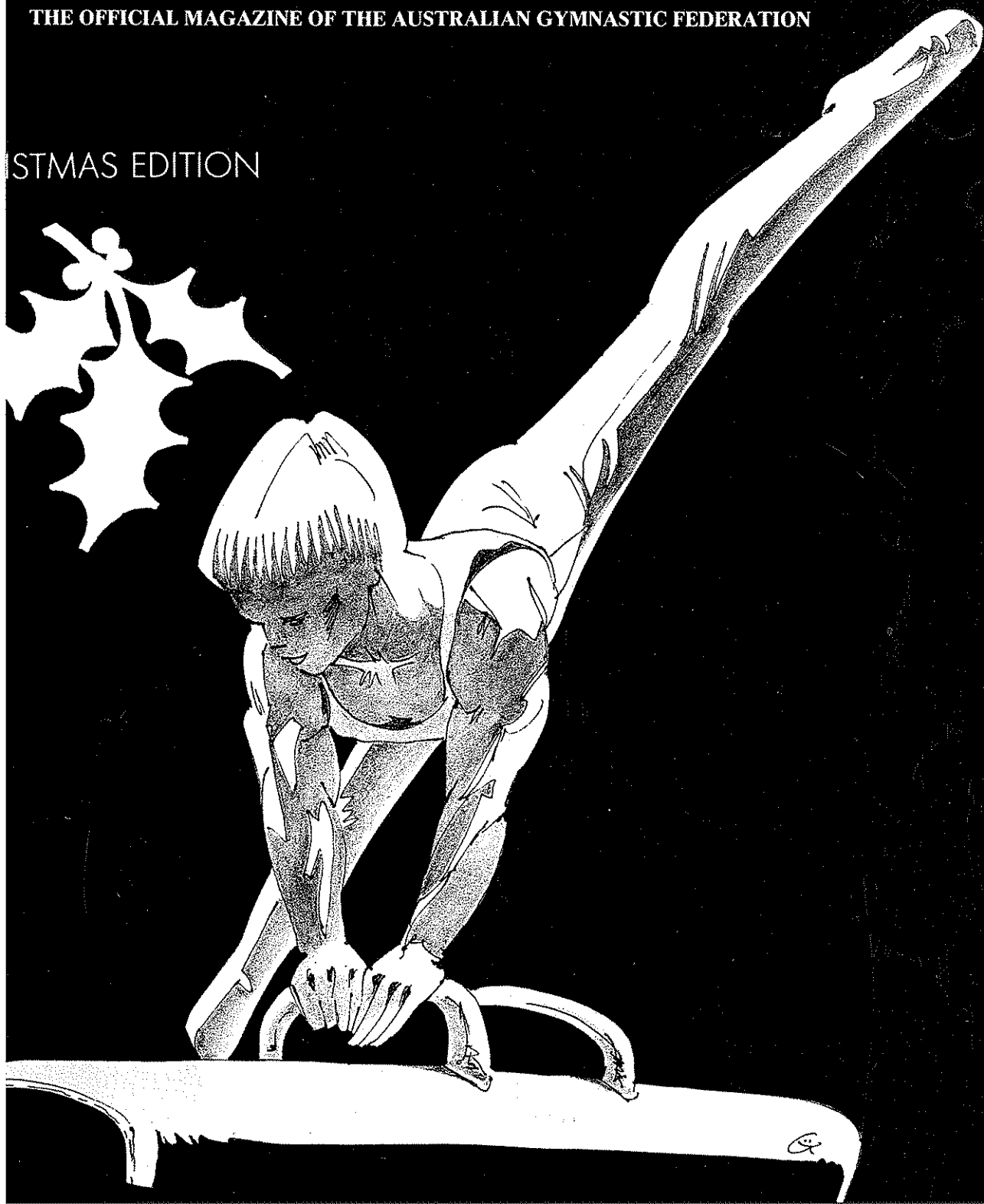


# THE AUSTRALIAN GYMNAST

THE OFFICIAL MAGAZINE OF THE AUSTRALIAN GYMNASTIC FEDERATION

CHRISTMAS EDITION



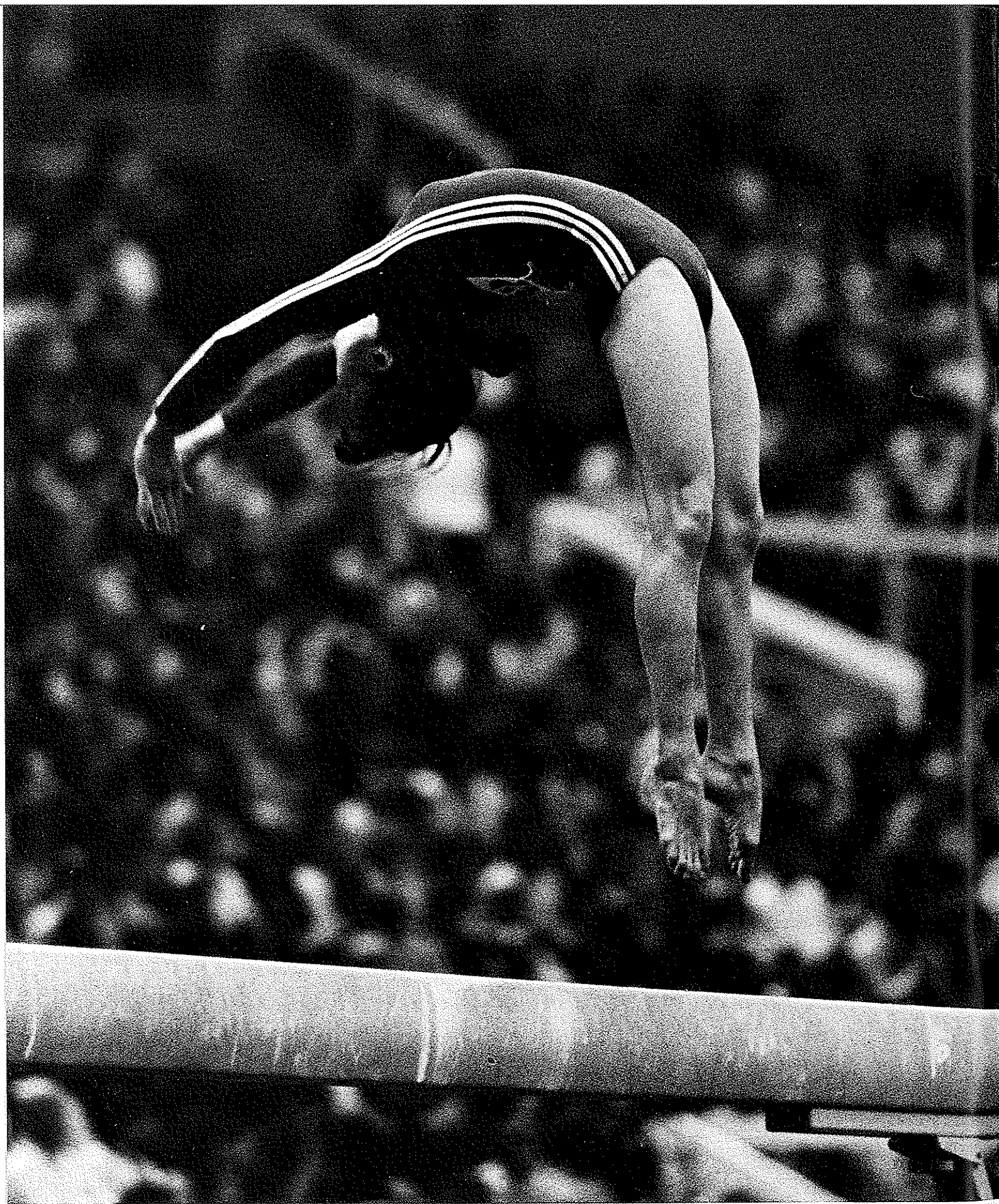


Photo courtesy Peter Meyers

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### EDITORIAL

We are delighted to welcome Georges McKail to assist the AGF on a part-time basis with the Federation's publications. Georges McKail has commenced with the responsibility of putting together "Gym Coach" (in the absence of Gene Schembri) but will move into assisting with "The Australian Gymnast" and other Technical manuals.

As 1986 draws to a close, we reflect on the past year and note that again it has been one of achievement for the Federation. There are many new challenges before us; in particular, the emphasis now being placed on General Gymnastics moves us into a totally new direction with a very large community. We look forward to all the challenges the Federation will meet in 1987.

To all who have contributed to "The Australian Gymnast" Magazine during 1986, I give my thanks and appreciation for their interest and support. I look forward to your continued assistance and support in 1987. With the assistance of Georges, the opportunity to seek advertisers will allow us to produce the magazine partly in colour; this is looming to become a reality.

Peggy Browne

Limited back issues of The Australian Gymnast are still available. Write to A.G.F. Office.

Viewpoints and opinions expressed in articles appearing in The Australian Gymnast are those of the authors. The Publishers accept no responsibility for the information supplied or the changes subsequent to the date of publication.

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### DEADLINE DATES FOR 1987

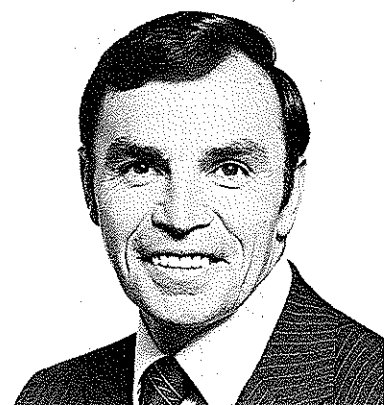
27th February  
1st June  
1st October  
16th November

### 1987 CALENDAR (Provisional)

DATE	PLACE	EVENT
Dec 7—20	AIS	MAG National Squad Clinic
Dec 7—13	AIS	Sub Junior Training Camp WAG
Dec 29—		
Jan 11	USA	MAG Development Tour
Jan 3—10	AIS	RSG Jnr/Snr Clinic
Jan	Canberra	TD's & WAG Technical Meeting
March 8—13	USA	McDonalds Cup
March 13—22	Melb	Australia Cup
March	Poland	RSG International
March 27—29	USSR	Moscow/Riga
April 3—5	Hungary	International
April	Romania	International
April 10—12	East Germany	International
April 16—21	AIS	WAG Level III Course/IOC
April	West Germany	RSG Weisbaden Competition
April	PRC	Shanghai Invitational
May 1—3	Australia	General Gym Workshop. AGF Biennial Conference
May 4—11	Israel	Hapoel Games (MAG/WAG/RSG)
May	Austria	RSG Medico Cup
May	Hungary	RSG Invitational
May	Bulgaria	RSG Invitational
May	Switzerland	RSG Invitational
May 15—17	France	RSG Corbeil-Essonnes
May 23—31	Japan	RSG Brother Cup
May	Australia	MAG IOC Jnr Coaching Course
June	USA	RSG Development Tour
June	Bulgaria	Golden Sands
June 13—20	Hobart	WAG National Stream Championships 8/9/10
July	Brazil	RSG Cup
July 2—6	Denmark	FIG Congress
July 7—11	Denmark	Gymnaestrada
July 11—14	Yugoslavia	Universiade (MAG/WAG/RSG)
Aug	Australia	WAG National Clubs
Aug	Japan	Junior Invitational
Aug	Brazil	Artistic Cup
Sept	Bulgaria	RSG International
Sept 17—20	Varna	RSG World Championships
Sept 21—27	Perth	Senior Nationals
Oct	Sydney	MAG/RSG Junior Nationals
Oct	Spain	Artistic Criterium
Oct 18—25	Rotterdam	Artistic World Championships
Nov	Germany	DTB Pokal Cup
Nov	Canberra	AIS Invitational
Nov	Taipei	TPE Invitational Junior Competition
Nov	Germany	Leverkusen Cup (WAG)
Nov	Japan	Chunichi Cup
Nov	Australia	Tour by USSR

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## PRESIDENT'S REPORT

**As the year draws to a close it is always time to reflect on the events that have affected our sport both directly and indirectly. Our Annual Report will address all these areas, but one that has struck my mind occurred at our International Federation's 64th General Assembly.**

It is a reminder to all that Sport must stand up for itself and not allow itself to be used by politicians, particularly when the sport concerned has not transgressed. It will be obvious to the readers that I am writing about our colleague Federation in South Africa. It is now history that the SAAGU survived with a strong rejection of the proposal to be suspended and the result is a credit of our sport.

Australians reject constitutional apartheid and most recognise that they can only make changes from within. Our politicians and leaders use sport as the lever and make the mistake of blanket sanctions. They in fact harm the very people they seek to assist.

I had the privilege of witnessing the Gymnaestrada in Zurich, Switzerland, in 1982. South Africa sent a group in excess of 800 that proved the point for me. They have arguably the best recreational gymnastics program in the World. The participants are mainly non white and even the highest cynic could not label that group display as not being representative of the program. Hugo Oliver the President of the SAAGU is a brave man in his fight to make changes in South Africa and his statement at the Congress was neither pleading nor arrogant, but rather it put all the other speakers points in perspective. His statement is produced in full (below). It is worthy of being read by all Australians, particularly politicians, to better understand how some institutions in South Africa are succeeding in instituting changes in that society.

**We wish Hugo and his colleagues well in their continuing fight to remove apartheid from this nation's constitution. Using sport as a lever in this manner works!**

James E. Barry

**THE SOUTH AFRICAN AMATEUR GYMNASTIC UNION  
ADDRESS TO THE 64th  
CONGRESS OF THE INTERNATIONAL GYMNASTIC  
FEDERATION, ROME (ITALY)  
NOVEMBER 10th, 1986**

**J. HUGO OLIVER, PRESIDENT  
SAAGU**

Mr President, members of the Executive Committee, dear delegates, ladies and gentlemen,

The South African Amateur Gymnastic Union has been a respected member of The FIG for the past 40 years. During this time, I personally have attended close on 20 congresses of this esteemed body and have made many good friends—from both the East and the West. I have always been impressed by the spirit that prevailed at these congresses, one of working for the advancement of gymnastics throughout the world without bringing politics into it. Somehow I find it strange these days how many delegates attend the congresses with clear instructions how to vote—not instructions from their respective gymnastic federations, but rather that of their Olympic Committees and governments. Luckily we in South Africa are still free to decide for ourselves and are not present here under instructions from our government.

According to Article One of the FIG Statutes, we as delegates have one main aim: to promote friendship between gymnasts of all nations. This principle was repeatedly stated this morning by both Mr Corro from the Italian Olympic Committee and by yourself Mr President, when you spoke about unity in our organisation.

I hold the view that we all accept the fact that we are sports administrators in the first place, and not politicians. We also accept the fact that nowhere in the world do the sportsmen rule a country—not in yours Mr President, and surely not in mine. Although we as sportsmen cannot be held responsible for the actions of our governments (such as yours and others with the boycotts of the Moscow and Los Angeles Olympic Games), we always have to try—through our sport—to somehow make this a better world to live in.

The Algerian Federation requested the FIG to expell South Africa because of discrimination in gymnastics. I am indeed sorry that my colleague from Algeria is not present today to give us proof of this allegation. Because, Mr President and delegates, I can tell you that there is no such thing as discrimination in gymnastics in South Africa. My Union's constitution clearly forbids this, most of you have read our documentation and viewed a video production to prove this, we have more black and coloured gymnasts in South Africa than probably in the whole of Africa and for that matter, in the world and many of you present here today have visited my country and can testify to this. The proposal put forward by Algeria to

the FIG Executive Committee must by right now fall away purely on the lack of evidence, but specifically because of their absence. This indeed poses the question if this matter should be discussed at all.

In the FIG proposal for suspension, no mention is made of discrimination or of a violation of any article of the Statutes. But it asks for something completely new: suspension on the grounds of certain "circumstances" in my country. This proposal must be challenged on the basis of a principle—one that has nothing to do with South Africa per se. I am referring to the principle of blatantly bringing politics into sport. Other speakers have referred to this subject; enough for me to issue a warning to all you delegates: next year it might be one of your countries that is accused of "circumstances" with which the FIG in its limited wisdom, does not agree with.

As to the reference re the policy of the IOC—this is in no way applicable and should have nothing to do with the issue. Surely the FIG must be able to take its own decisions like all other international federations. May I remind you of two things: South Africa's membership of at least 8 such federations catering for Olympic sports and secondly the stipulation in the Charter of the IOC not allowing it to discriminate against any country on the grounds of politics.

We all know, Mr President, about the current hysterics of the world about South Africa—as if this is the only country in the world that has had problems. Many reforms in our society are presently taking place for which credit should be given. But at least sports in South Africa is completely autonomous and firmly committed to a declaration of equal opportunities, of non-discrimination and of freedom of the individual sportsmen. As president of the Gymnastic Union, I am totally opposed to any form of discrimination in our society. That is why SAAGU is currently known as an anti-apartheid organisation—a tag I am indeed proud of. We have integrated our sport completely and if ever in the future, Mr President, the FIG should doubt this, they are most welcome to send an official commission of enquiry to South Africa to see for themselves. You, and the Algerian representative, or whoever you would like to choose, will be welcome to be part of such a group.

Because of my personal friendship over many years with so many federations of the FIG, my policy has always been one where we do not insist on participating in certain world competitions if it could create problems for the organisers. May I remind you that it is close on 20 years since South Africa has last participated in a World gymnastic championships or Olympic Games. I can pledge publicly today that we have already withdrawn from the Gymnaestrada in Denmark (1987) and will not be present at the Rotterdam Championships or the Olympic Games in Korea. In reality, ladies and gentlemen, we have voluntarily withdrawn from par-

ticipation in these international events in order to demonstrate our goodwill.

All we ask today from you as the highest authority of the FIG, is for us to remain a full member in order to carry on promoting gymnastics in South Africa according to the way we find best. Suspension will only have one effect: it will slowly kill the sport we all love in the only place on the African Continent where anything worthwhile is done to advance it. In suspension there can be no winners, there are only losers—and the losers will be exactly those black and white gymnasts we are trying to help.

When the FIG gave membership to Palestine at the Los Angeles Congress, you all spoke strongly about a "family of friends". Mr Halteh from Jordania asked the Congress at this occasion to forget about politics and allow Palestine in as a member purely on the principle of sportsmanship. Are we not doing the exact opposite now, if you allow the next country to lose its membership by bringing politics into the picture?

Help us, dear delegates, not to isolate the gymnasts in South Africa but to rather give them a chance to bring about further changes in the social system of our society. Help us by voting NO to this proposal on the agenda so that we can use gymnastics to make this world a better place to live in—also for the peoples of South Africa.

**1986 SPORT AUSTRALIA  
AWARDS**

**SILVER AWARDS**

1. Most Popular Australian Sporting Personality  
**Greg Norman**
2. Most Outstanding Sporting Achievement Within Australia  
**Ten Pin Bowling—Tasmania**
3. Junior Female Athlete of the Year  
**Jessica Crisp—Yachting**
4. Junior Male Athlete of the Year  
**Miles Murphy—Athletics**
5. Junior Team of the Year  
**School Boys Rugby Union**
6. Coach of the Year  
**Reinholt Batschi—Rowing**
7. Administrator of the Year  
**Brian Emery—Soccer**
8. Best Organisation and Presentation of a Sporting Event  
**Adelaide Grand Prix—1985**
9. Best Single Sporting Performance  
**Robert de Castella**

**GOLD AWARDS**

10. Team of the Year  
**Rowing "8"s**
11. Female Athlete of the Year  
**Debbie Flintoff**
12. Male Athlete of the Year  
**Greg Norman**

by Mandi Shields

**Some of the top US gym stars from the 1984 Los Angeles Olympics, along with several hopefuls for the Seoul Games, have assembled once again; this time under the billing of the Bart Conner Gymnastics Spectacular. The crowd gathered in Boston Garden may have been disappointing to host Conner, but in the height of the finals for the World Series of Baseball featuring Boston's home team, he could hardly have expected more.**

While to "re-live the excitement of the 1984 Olympics" may have been asking a little too much of the spectators, it was nevertheless a good display of US gymnastics talent. There were all the familiar faces from '84—Talavera, McNamara, Hartung, Scott Johnson and of course Bart Conner; and some new stars as well. Then there was the Karolyi delegation of the famous Romanian and three of his prodigies, Kristie Phillips, Phoebe Mills and Rhonda Faehn. It was an appearance for three girls flown cross-country for a few hours before a show back home in Houston the next afternoon.

As has already been said, the gymnastics was all very good, though some was rather simplified. From Julianne, who seems to have gained quite a bit of weight since her competitive days, we saw her same balance beam and floor exercises of old, but her tumbling was greatly watered down and she left out her planch on the beam. Otherwise she was in prime form on her birthday.

The same may be said for Talavera. Although her beam exercise had some breaks, she did well on bars.

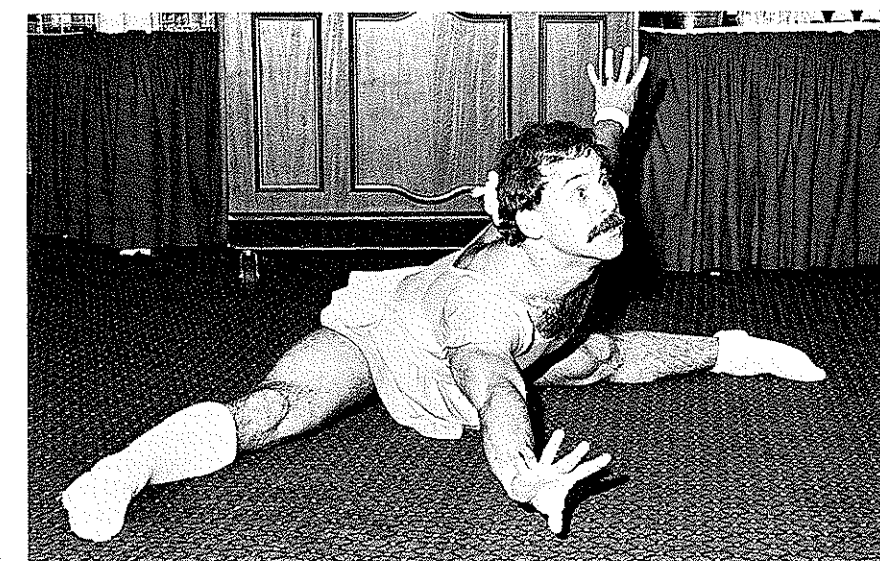
For the men, Jim Hartung looked better than ever before as did Scott Johnson, the only Olympian here still competing. His form seemed to be excellent, so perhaps these shows have been good for him; but as for the difficulty of his exercises, one can only wonder.

The real acrobatics of the evening though were Karolyi's students. Phillips and Mills (Juniors ranked 1st and 2nd) and Senior Faehn (ranked 12th) all performed superior routines with all their difficulty. Phillips, the top hopeful of the US seems to have grown up since the American Cup, with a new perm and perhaps two inches in height. We can only hope that she will not undergo the same transformation Talvera did at age 15.

A "gymnastics spectacular" ought to be... spectacular, and so it attempted to be. It was short, only slightly over an hour, and most of it was simply one apparatus exercise after the other. But there were some unusual events, and perhaps the cutest was a "gymnastics lesson" presented by one of the local gyms, consisting of "tinies" in a gym class.

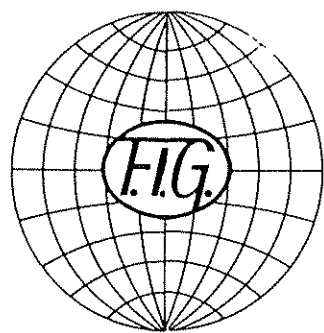
Perhaps one of the evenings highlights were the antics of Paul Hunt, the world's most renowned gymnastics comedian. Masquerading as Pauletta Huntchescu of Romania, he has bows in his short brown hair, wears a leotard complete with tutu and has a cute mustache. He performs on all womens events except vault and does a marvellous job of imitating the girls as they set up too long for various moves, and mocks some of the more famous floor routines.

**And for the ending of the production we saw for only the second time of the evening, the star of the show, Bart Conner. His earlier pommel horse exercise was superb, and could have surely earned a high score. For the man who ended his competitive career with an Olympic 10.00, he has certainly kept his form on his two events of pommels and parallel bars. In his final routine, and the end to an evening, he performed a magical parallel bars exercise to the song "Nobody Does It Better", and indeed, nobody does.**



"Pauletta Huntchescu"





The following information is principally a summarised extract from the official FIG post-Course Report, as authored by Mr Olaf Kihlmark, current Vice-President of the FIG General Gymnastics Technical Committee and recently retired Secretary of the Swedish Gymnastics Federation.



"General Gymnastics has many faces", this is one of the headlines in the Info-Magazine of General Gymnastics within FIG. Under the headline is the following passage:

"FIG spreads ideas. The member federations decide themselves what kind of general gymnastics they want to specialise in, observing their own national views and traditions".

One of the main objectives of the FIG Technical Committee for General Gymnastics is to spread ideas in the field of leaders education. A first attempt in this direction was a course at Lillsved Gymnastic School outside Stockholm, Sweden, arranged by the Swedish Gymnastics Federation, from June 21st to 28th 1986. The aim was to show how the basic courses for future leaders of General Gymnastics are carried through after the Swedish model. In fact two courses were presented: One for "children and youth" and one for "adults and elderly people".

## The Swedish Federation

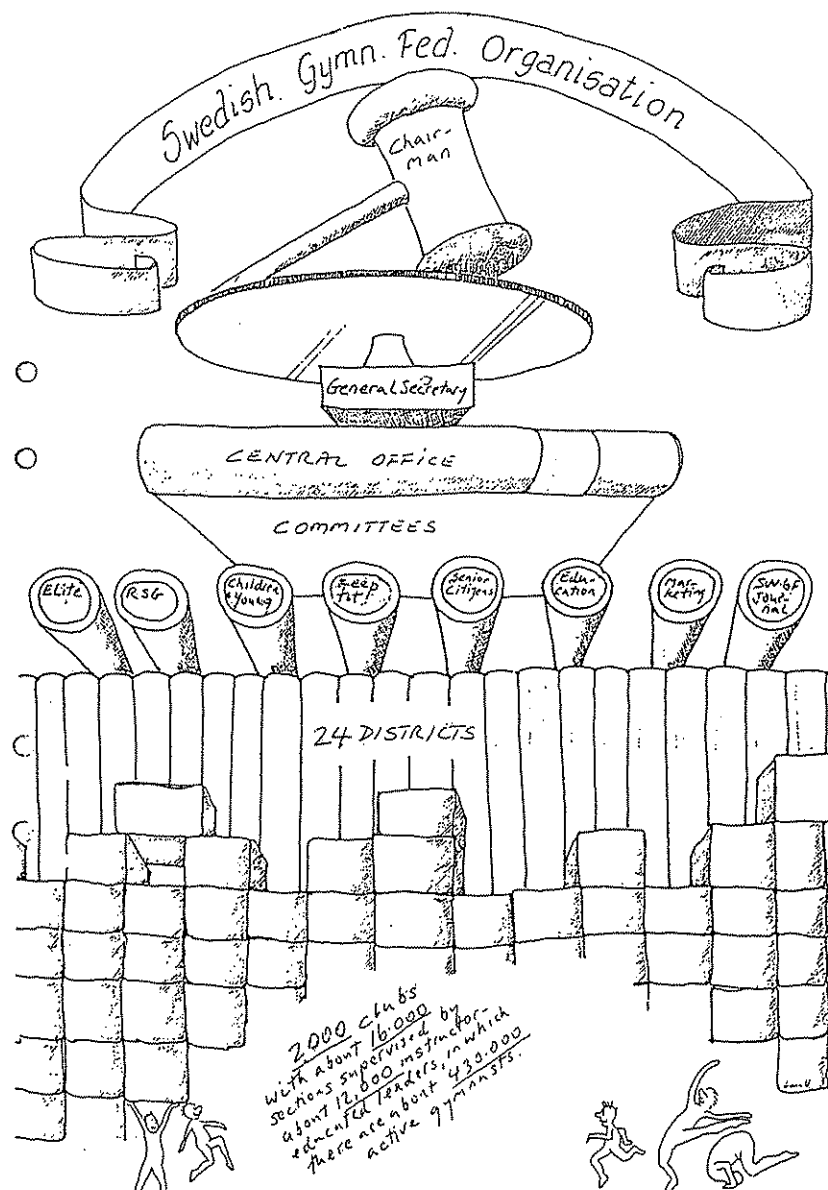
The basic structure of the Swedish Gymnastics Federation is illustrated below.

It is interesting to note that, at the moment, there are eight (8) principal areas addressed by their own Committee, on a National basis; these are:

- Elite
- RSG
- Children & Youth
- Keep Fit
- Senior Citizens
- Education
- Marketing
- National Journal

Information, systems and programs are then implemented through:

- 24 districts, to
- 2000 clubs, to
- 16,000 sections, of
- 12,000 instructors, to
- 430,000 active gymnasts.



## Training of Scandinavian Leaders

There is one task in the field of General Gymnastics, which the FIG/Technical Committee for General Gymnastics (The CT/GG) looks upon as especially important and which is therefore given high priority. That is TRAINING OF LEADERS. How to organize this training and to decide which items should be included, depends, of course, highly on the conditions in each country.

We have the whole world as our working-area. And so we must take a lot of different conditions into consideration in our work. It is simply not possible to create **one model**, which can be used everywhere. All the more so since general gymnastics itself comprises an almost infinite number of varieties and needs: from the very simple exercises for small

children and old people to very advanced programs for high-class show-groups. Therefore our objective is not to standardize the general gymnastics in all countries but on the contrary to seek methods to stimulate the particular national specialities within the field of gymnastics.

Whichever system you use in your country it is always necessary to have at least one leader for every class. The training of these leaders is a necessity in order to enable the establishment and development of gymnastics in any country.

I cannot find, nor believe, that it is useful to demonstrate **one general model** for leaders training. But I shall take the liberty to demonstrate a **possible model**, namely the one we use in Scandinavia. My hope is that this demonstration

of our model will arouse ideas and discussions in other countries and that these discussions will lead to new and improved solutions in the field of leader-training. First a few words about Scandinavia, which may have had influence in forming our model.

We have strong central organisations. Because of the long distances we have to work with a number of regional federations as links between the central federations and the local clubs. There is a large number of clubs all over the countries. The clubs are all independent and free to decide individually which kind of gymnastics they want to specialize in. The central and regional federations have accepted the responsibility for certain service functions to help the clubs to solve problems, which they may have difficulty in solving themselves on a local level. Of the service functions, leaders-training is one of the most important ones.

The basic training courses are arranged in the regional districts. The reason for this is chiefly to give the leader-candidates a possibility to attend their first course as near home as possible and thereby make the step from gymnast to leader less dramatic.

The extended training is arranged as central courses. All the courses whether regional or central, follow the plans prepared by the central committees.

After a year or two of practice the leaders will return to central courses for extended training. In the meantime they can attend regional weekend courses several times. During this time they often specialize in one of the many branches of general gymnastics. Examples are gymnastics for small children or jazz-gymnastics. In these different branches we arrange a "ladder" of two or three steps. Courses number two and three respectively. Above these step-courses there is a number of special courses, which can vary from year to year as new forms of gymnastics become topical. For instance, jazz-gymnastics has a ladder of its own, while aerobics is taught at special courses.

As teachers of all these courses we engage physical education teachers with an academic training and large experience of general gymnastics.

Let us stop for a moment and look at the basic course. Firstly, we can see a plan of goals and lessons for instructors of children and youngsters, this is followed by the same plan for adults and elderly people.

As you can see from the plan of lessons, the course comprises theoretical as well as practical studies.

## CHILDREN/YOUNGSTERS

### Goals

- \* To give an overall view on children's and youth gymnastics.
- \* To give knowledge of adapted gymnastics.

## Contents of lessons

- \* Children's physical and mental development.
- \* Motor and mental training.
- \* Music—movement.
- \* Anatomy, physiology.
- \* Leadership.
- \* Evaluation.

## ADULTS/ELDERLY PEOPLE

### Goals

- \* To give knowledge of the human body and understanding of its need of movement.
- \* To teach how to act as a good leader.

### Contents of lessons

- \* Physical training and development of adults.
- \* Human biology.
- \* Leadership.
- \* Music—movement.
- \* Marketing.
- \* Evaluation.

Towards the end of the course the candidates should attempt to compose their own gym-program and also select the music for it. This is included, even though it is presumed that they should work with material centrally composed by experienced teachers.

And finally on the last day of the course each candidate has the exam-task to lead fellow students for a complete lesson. To succeed with this task, each has most certainly spent many extra hours for the preparation. Maybe even the last night without much sleep.

## Course Evaluation

The first leadership course in General Gymnastics held in Lillsved, Sweden was well attended by interested participants from all around the world.

A course evaluation form was distributed to the participants in an effort to determine how well the FIG General Gymnastics Committee's objectives were met.

By and large, all participants felt the course was a success and did, in fact, achieve its stated objective... i.e. **to demonstrate the Swedish System of General Gymnastics as one possible "gymnastics for all" model for leaders training.**

Most participants agreed that the "child centered" approach to the joy of exercise, particularly free movement exercise, was the central strong point of Level 1's Basic Course for Teachers of Children and Youth. The consensus of opinion was that there were no definitive weak points to this program.

The strong points of Level 1's Basic Course for Teachers of Adults revealed that the program was excellent in terms of developing cardiovascular endurance, provided good recreational enjoyment, and was adaptable to adults of all ages. An overwhelming number of participants felt that there were no significant weak points in this program.

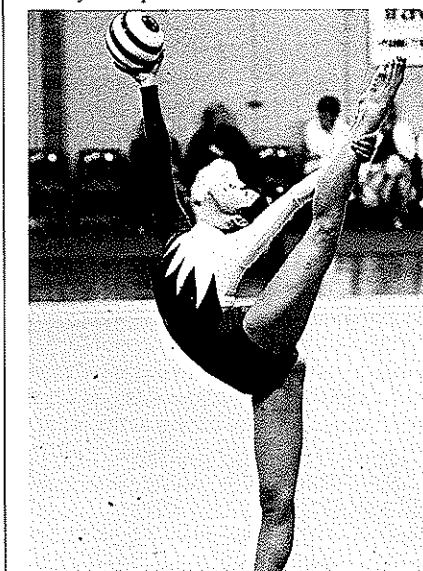
The three primary suggestions for improving a course of this nature are:

1. Increase the number of days for future programs.
2. Provide more films (videotapes) depicting General Gymnastics Activities in other countries.
3. Offer similar courses in other countries having strong general gymnastics programs.

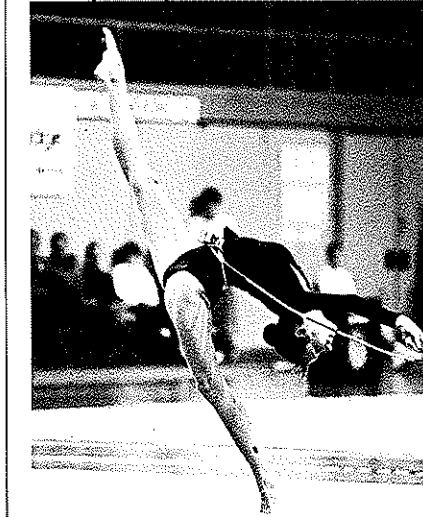
Australian participants at the inaugural General Gymnastics Course in Lillsved, Sweden, were Mr Lance Otto and Mr Georges McKail.



Rob Edmonds QLD/AIS Westfield Spectacular



Above & Below: Four Continents Championship



Photographs courtesy Ross Gould

**Future visits to the Soviet Union**

Vital to the success and value of this tour was the number of friends and acquaintances made before arrival in the country. During the visit new gymnastic friends were made and old gymnastic friendships renewed and strengthened. It is important that future Australian Coaches maintain and strengthen the existing contacts. It is recommended that the following list of gymnastic coaches and officials be used as a guide for future valuable contacts and friends of Australia.

1. **Yuri Titov.** President of FIG. Speaks English.
2. **Yuri Avazin.** President of Moscow Gymnastics. Speaks fluent English.
3. **Michael Klimenko.** Head Coach Women Central Army Club Moscow. Very limited English, very open, willing and generous.
4. **Victor Klimenko.** Head Coach CSKA.
5. **Victor Khumatov.** Women's Coach in Grodno, Belorussia.
6. **Mr Zaglada.** Director of Dynamo, Moscow.
7. **Mr Arhaev.** Head Men's Coach USSR. No English. Situated in Kruglery.
8. **Mr Boiko.** Head Coach Men, Central Army Club Moscow.
9. **Mr Popov.** Men's Coach CSKA.
10. **Alexander Tkatchev.** Consultant Coach Dynamo Club. Former World Champion and leading gymnast. Good for coaching clinic, limited English.

**Travel and Accommodation****1. International Travel**

The route via Tokyo is the most ideal way to travel to Moscow. An overnight flight to Tokyo 9 hours and an additional 10 hours to Moscow passes quickly. Arrival time is 18.00, in time for an evening meal and then sleep off the effects of the travel.

Qantas and Jal are the recommended flights to Moscow not the Aeroflot flight via Khabrovsk. The return journey of 18 hours is also very bearable rather than the 24 hour flight from London connecting from Moscow.

**2. Internal Travel**

Travel within the Soviet Union requires special visas that need to be arranged at the same time as the main Soviet Visa. It is possible with the help of the Sports Committee to arrange visas while in the Soviet Union but this takes 3 to 4 working days and a co-operative translator. Unless you know the right people it can be a difficulty.

It is advisable that exact travel plans and visas be arranged before departure and since it is very time consuming to travel I recommend that a one month visit to the USSR include only one other centre outside Moscow.

**3. Travel within Moscow**

Moscow is a huge city of 9 million and has increasing traffic problems although nothing like western cities. Travel around Moscow can eliminate most of one's day. Lunch and dinner are always organised at the Hotel Sport which is 40 to 50

minutes from the gymnasiums Dynamo and CSKA. Potentially this means four trips a day the equivalent of 3 hours sitting in a car. To overcome this problem, pack lunches can be arranged or more palatable is a lunch of food brought from Australia for the occasion. It is recommended that dried fruits, nuts, fruit juices and soups be brought from Australia to supplement the lunch.

**4. Accommodation**

This will always be at the Hotel Sport in Leninsky Prospekt as the Hotel is owned and run by the USSR Sports Committee. Costs to westerners are around \$60-\$80 dollars, but to the sports committee 3.45 roubles. This accommodation is very adequate, reasonable food, small heated rooms slightly less comfortable than a western hotel. Rating \*\*. There is no choice of Hotels for sports people unless this Hotel is fully booked.

**Medical Aspects**

From my first day at the gymnasium it was evident that their gymnasts were medically monitored from a very early age. I observed a routine medical check by a doctor in Dynamo who checked blood pressure, heart rate and weight of all junior and senior gymnasts. These checkups were carried out every six months with more extensive medical tests at the beginning of the year. Obviously, the elite performers were closely monitored by their best sports physicians.

In the Central Army Club the doctor appeared every day in the gymnasium to examine any new injuries and check on how older injuries were progressing. In talking to this doctor it was clear she had an in-depth knowledge about each performer. She talked of Dimitri Bilozherchev's problems and how they were handled during his growth from a young boy.

A complete medical profile must have existed on every gymnast that entered every gym so that those who progressed to the top had an extensive medical profile and medical record.

**Coaches Education and Sports Science**

In Moscow, the Institute that produces the coaches is the Order of Lenin Central Institute of Physical Culture where they specialise in producing coaches in four sports, gymnastics being one of these sports.

To be accepted into the Institute gymnastic coaching stream one must first be a Master of Sport in Gymnastics, that is score 108.00 points in a National competition. One must then pass the very strict academic requirements to be accepted. Those studying to become coaches have usually finished their sporting careers although they do have a correspondence course for training athletes/gymnasts. Those undertaking the course start with practical gymnastic coaching from day one of their course and continue this for four years without missing gymnastics from any day's work. All theory subjects are covered and related back to gymnastics.

Subjects of biomechanics, physiology, history, sociology, psychology are all covered and relate back to practical coaching.

Graduates from the Moscow Institute of Physical Culture are highly trained specialists and thus when I inquired as to their use of Biomechanics, physiology, psychology and scientific selection procedure it was usually met with curious looks and answers indicating that it was not necessary.

I presented one coach who spoke a little English with some copies of A.I.S. Sports Science Quarterly; within a few days he had indicated that he had read the journals but said he thought that the Sports Science Department was not necessary. What was important was well trained coaches and talented gymnasts and there was no secret to the hard work required.

Other coaches scoffed at the Biomechanists and Psychologists saying that they were not up to date with the top level of gymnastics. One coach said he would physically remove a psychologist from his gymnasium if one were to enter and attempt to assist.

This view point was reiterated by the Head Coach of the USSR Men's Gymnastics Mr Leonid Archaeo who said that when he took the helm of Soviet men's gymnastics he removed all the Sports Scientists.

"For twenty years we used many Sports Scientists and for twenty years we were behind the Japanese with their Ultra C's. Now the coaches are well trained and we no longer need any sports scientist in the National team training".

President of the F.I.G. Yuri Titov also thought my suggestion of spending time at the research Institute was not appropriate and recommended I examine the gymnasiums where the practical work was done.

The following level indicated my perception of the coaching structure and their use of sports science.

Level 1. National Team Coaches

Level 2. National Team Junior Coaches  
Scientific Research  
and education

Level 3. Apprentice and beginner club coaches  
Coaches Education  
Scientific Research

**Recommendation:**

I believe that Australian coaches more likely fall into Levels 2 and 3 and therefore need to be educated in sports scientific research to keep their coaching knowledge up to date. Coaches Education should be provided for all coaches who are also achieving in the practical world of producing gymnasts. All areas of sports science should be covered Physiology, Biomechanics, Psychology and Nutrition.

**Junior Selection**

I asked what selection criteria were used for the selection of the young gym-

nasts and discovered that there were not set procedures or national selection tests. Each coach in each gymnasium had their own tests and criteria to look for and every coach was given the opportunity to go out into the school and select young boys and girls to work with. Their selection was based on their experience, education and gut feeling.

It seems that scientific selection tests are not used at all and one coach said that perhaps some sports science academics could help with tests but so far no one had. Tests are usually simple and very similar.

<b>Stature</b>	Small and light framed Parent height Parent shoe size Grandparent height Stature, toes, elbow knee
<b>Power</b>	
leg power	20m sprint 20m hop standing long jump standing hop for distance standing vertical jump
arm power	chin ups time to climb 4 metre up a rope push ups dips
stomach power	leg raises situps hold an L sit
<b>Flexibility</b>	splits sideways splits forward shoulder flexion shoulder extension shoulder rotation hip extension hip flexion
<b>Coordination</b>	swinging on high bar double leg circles— hanging off rings press to handstand walk and jump ½ turn on beam

**Training Observations****SYSTEMATIC JUNIOR DEVELOPMENT**

All gymnasiums in the Soviet Union have the full range of gymnasts training usually at different times of the day but often at the same time. Little boys of 6 years can be seen in the gymnasium with Mogilny and Pogorolev who are on the Soviet team.

In observing this full scope of gymnastic development and talking with coaches it is evident that each age group have specific movement goals to achieve. These goals are usually very different from our Western approach. The USSR approach is very methodical and aimed at producing only excellence.

**Beginners — Ages 6—8 years**

Training content.

Boys	Girls
Ballet	Ballet

Flexibility	Flexibility
Posture	Posture and expression
Strength	Strength
manipulation in basic skills	
Co-ordination and swing	
Trampoline	Trampoline

**Ballet**

Classical ballet instruction for both boys and girls. Ballet for boys emphasises straight arms and gymnastic positions rather than ballet arm positions. The girls have strict ballet instruction with a pure classical orientation for expression.

**Flexibility**

Flexibility training is done extensively and almost to the point where the western world would think it cruel and torturous. Their view is that if flexibility work is done perfectly and extensively during these early years one avoids growth injuries. Extensive flexibility work to gymnasts at age 12—15 can only cause growth plate and stress injuries. This view has been confirmed by some Western doctors who have said if the flexibility work is done correctly and systematically it will not injure these very young gymnasts but is bound to cause injuries to the 12—14 year olds who are growing and whose ligaments are firming up.

**Training Intensity and Content**

A slow and progressive increase in training intensity avoids injuries associated with the training load required by top gymnasts. The organisation of lesson content is also an important factor in distributing the workload and reducing stress related injuries.

**Posture or Monolithic Shape**

Posture training involves correct ballet instruction and the teaching of the Monolithic body shape so widely known in gymnastics today. This dish shape was taught on all events and stressed to all young girls and boys. It was obvious that this concept originated in the Soviet Union and is still one of the principle concepts of junior development in the USSR.

**Intermediate Beginners Age 10—12**

Training content

Boys	Girls
strength	body posture
body tension	tension
preparation	ballet
ballet	flexibility
flexibility	fundamental
fundamental	skills
skills	new elements
trampoline	trampoline

\*Content for Fundamental skills in Junior Boy's National Clinic notes.

**Youth—age 13—15**

Training content

Boys	Girls
strength	new elements and advanced skills
advanced skills	strength
flexibility	ballet
ballet	flexibility
trampoline	trampoline

**Trampoline**

\*It is very evident that trampoline is used extensively at all levels of gymnastic development. Very small beginners spent time doing very basic developmental movements while the World Champions spent time performing advance vaulting and high bar skills. Australians need to invest more time in trampoline work to facilitate the learning of the more advanced skills.

**Strength**

Both girls and boys do very different but very intensive strengthening programs. It is important that strength training be done early so that correct technique can be taught, correct muscle recruitment can be learned and that morphological and neurological changes can occur in the muscle. It is now thought that different muscle fibre type can be altered when strength training begins at an early age. Careful and systematic progressive training is required to avoid injury.

**A Medical Perspective of Junior Development**

In the Soviet Union they begin at a younger age with more specific and systematic fundamental training. From a medical viewpoint this is very sensible:

1. To prepare the body for future forces and stress, thus avoiding injuries.
2. The light body weight of young children reduces the forces applied to the joints, keeping them injury free.
3. The physiologically and mechanically correct movements can be more easily taught with the small children through shaping and manipulation thus reducing the stress on joints and the risk of injury.
4. Flexibility is a major priority during these early years (6—9 years) as the young bodies are extremely pliable and can be given large ranges of movements without causing stress to growth plates of the bones. Anatomically correct flexibility training must be done giving them full and correct control of their flexibility.

From these remarks it is clear that the young Australian gymnasts have a completely different learning process than our Eastern European rivals. Australian gymnasts follow a recreational approach which is not oriented toward elitism.

**Summary**

- \* Ballet and posture training must start from a very early age.
- \* Extensive flexibility work must be done before 14 years for boys and 12 for girls.
- \* Body tension and balance activities.
- \* Increase the time devoted to trampoline and acrobatic elements.
- \* Good physical preparation, Strength and Power is essential before attempting many advanced elements.
- \* Stress the monolithic body shape in all work.
- \* Stress perfect posture in everything.

- \* Fundamental skills must be taught to 100% perfection.
- \* Turn over to the vertical line.
- \* Understand which skills and elements can be omitted from a gymnasts development.
- \* Training content and intensity must be reviewed throughout the development of the individual gymnast.
- \* Training plans must be long term and systematically implemented for long term success.

#### Conclusion

I would like to thank the Department of Sport and Tourism, and Foreign Affairs for their support and assistance. I would also like to thank the Australian Gymnastic Federation who gave me this opportunity to increase my gymnastic knowledge and have faith in my ability to pass the knowledge I have gained onto other Australian Coaches.

The final recommendations are important for the future contacts and co-operation with the USSR.

1. Australian Coaches must be continually supported to visit the Soviet Union as their gymnastic knowledge is superior to any other nation in the world.
2. Soviet gymnastic experts/coaches should be encouraged to visit Australia to run coaching clinics for our elite professional coaches.
3. Australian Teams should attend competitions and training in the Soviet Union on an annual basis so that gymnasts and coaches are kept in touch with the leading country in the world.
4. Arrange exchanges of coaches and gymnasts for training in different centres in the Soviet Union.
5. When possible Soviet gymnastic teams should be encouraged to visit the Australian Institute of Sport in Canberra before or after major competitions such as Australia Cup. This would enable our best gymnasts to observe their training and establish closer relations with some of the coaches and gymnasts.

by Warwick Forbes, Head Coach, Australian Institute of Sport

#### COMPULSORIES

Of the top gymnasts in the Men's competition a few were missing.

Bilozherchev—injured  
Korolev—?  
Mogilny—training for USA—CCCP  
Kurkulin—?  
Samofalov—ill  
Vorobiov—?

Plus numerous juniors who would have undoubtedly done very well but were training for the Junior European Championships in Karlsruhe. From the top 30 gymnasts in the Soviet Union perhaps 10 or so were missing.

#### Floor

Floor Compulsory. This exercise presented nothing out of the ordinary except that the dismounts were very high and there was a much greater control in the pike open to prone than was seen in the past. Gymnasts who had not achieved the 'master of sport' level were compelled to perform their floor routines to music. The Ukraine II and Belorussian II teams all used the same music pieces for the compulsory routines.

#### Pommels

Pommels was to be predicted, very few falls, none to my memory although Balabanov did struggle; higher dismounts and the occasional back scissor travel that went to handstand.

#### Rings

This event was a little disappointing, plances high, front uprises jerky but felges and back uprises to handstand were performed with straight arms without a problem plus very high dismounts with their head on chest, not over the shoulder.

#### Vault

In vault the distance was impressive rather than height which is of course, dependent on the speed of approach, landings were rarely stuck.

#### Parralel Bars

The mount obviously separated many gymnasts, many were low and with form breaks or falls. Only one back stutz through handstand and surprisingly few felges with straight arms (4-5), many had bent arms and arched backs on catching, press and dismount as safe as houses.

#### Horizontal Bar

Horizontal bar also took its toll, many gymnasts fell short in the free hip ½ turn either going short or too fast, Balabanov again. Only a few mounts, stoop ½ turn went to handstand and Kreiskahre staldler ½ combination was biggest area of deduction with the Kreiskahre pivoting with an arch and the staldler ½ coming out at 30-45 degrees. The last half was excellent except from Armanian team which had 5 gymnasts with very short legs and strong upper bodies, all 5 couldn't do a staldler to save themselves. Most stalders were excellent and very high full twist dismounts off with head neutral or down slightly throughout the twist.

#### OPTIONALS

##### Floor

Optional floor was highlighted by the

worlds first triple salto in competition (Porplenko) which landed on the feet but collapsed to the knees and hands. A layout double double (Gevorkian, Armanian) which landed a little short but was an impressive mount. The majority of good optional routines mounted with a double layout or a full in pike and dismounted with a full in or double tuck. Flair spindles were very common and flair to handstand were the easy D moves. Two gymnasts (Gogolaze) did flair to straddle pivot handstand back to flairs. Corner moves were clean but not very creative. All gymnasts demonstrated that the ballet training incorporated into the Soviet program has paid great dividends but gymnasts did not show any creative styles or dance.

Other moves were:

2/1 twist punch front x 3  
Handspring double front x 3  
Handspring flyspring 1 3/4  
Running double front  
3/1 twist x 4

The main difference between the lower teams and the top teams was their ability to perform the routines safely. Many lower teams attempted difficult moves only to sit down, fall or run out of the area. A very obvious Russian style is developing.

#### Pommel Horse

Magyar travels across and back the length of the horse predominated. From a young age the boys have perfected their circles so these skills seem to be rather easy for many gymnasts. The number of double and triple direct stockli B's were surprising or combinations of double leg circles on one handle followed by a direct stockli. Double leg circles predominated routines with only a few gymnasts preferring to do 50% flair work. The top performers all had a handstand in the middle of the routine, an easy D, and finished flaring up to handstand with a pivot. Spindle work was also very common both ends and on the handles again, a consequence of good doubles.

In all, routines were a little boring and only one or two gymnasts had the amplitude and style of Mogilny or Bilozherchev, nevertheless an impressive number of gymnasts were working consistently on one pommel. Strength was also a dominant factor for this stability on the pommel horse.

#### Rings

The lease developed of all events and this event stood out by its repetitive nature. Good posture giants and technique were mastered by all although Artemov, CCCP stood out as having the cleanest swing. Strength parts included the all too common:

Inverted cross  
Inverted cross push out to handstand  
Cross pull outs  
Planche

All gymnasts impressed me with their strength but strength was not over-emphasized in their routines. Early strength

training in young boys produces this impressive strength as mature gymnasts; as well as the natural selection process at work.

Dismounts double layout	50 or more
triples	8
½ in ½ out	8
Double double	1 or 2

Other than this there was no new work and nothing that had the flair and style of the Chinese.

#### Vault

A surprisingly few number of one arm vaults. Those were one arm layouts (2-3) and layout 1/1 twist (5) and one arm handspring pike front ½ (3). The most common vaults were the Tsukahara 1/1 twist and Kasamatsu 1/1 twist. New vaults included:

- \* 1½ front on to the horse Handspring off (3)
- \* Layout handspring front (2-3)
- \* Layout handspring front 1½ twist. Gevorkian (Armenia) and Gusev (CCCP). Or perhaps seen by some as a layout Cuervo with a 1/1 twist.
- \* 2/1 twist Tsukahara (1-2). Gulkin (Ukraine).

#### Parallel Bars

This event also had few original elements and combinations and generally suffered from the Bilozherchev syndrome of healy backstutz and back-toss back-toss double. Few had the class of Bilozherchev and Mogilny and the best routines were by

Artemov, Tihonkish. Giant circles were not that impressive although Balabanov has perhaps the best in the world. Giant ½ turn as performed in a blind change was seen frequently and a few giant Diamodovs. One Armenian gymnast performed a giant to eagle grip, no release, with a back pivot out.

Very little sideways work on the bars and if one rail was used a simple glide press resulted. Dismounts were the usual double tucks and more and more double pikes (D). On the whole no great improvements in originality but an increasing number of gymnasts are mastering the core elements and performing them securely and occasionally with great amplitude and virtuosity.

Original moves:

Round off ½ turn dive to support. (Not allowed under FIG rules).

\* Those who could do the compulsory mount felge ½ turn to handstand used it as an optional mount, D.

#### Horizontal Bar

Triple release moves were becoming more predominant and were performed by at least 10-15 gymnasts.

Triple release;

- \* Tkatchev, Tkatchev Gienger x 10
- \* One arm Tkatchev, Tkatchev Gienger x 1
- \* Full twist over Tkatchev Gienger x 1
- \* Tkatchev, full twist over one arm Gienger.

## HIGHLIGHTS FROM THE 64th FIG CONGRESS ROME, NOVEMBER 1986

**World Championships—Artistic—** Competition format. The competition format for the World Artistic Championships has been altered so that judges will only judge a half day. There will still be draw but the team event (1A and 1B) will be split into 2 rounds held on separate days.

**Protests—** A major step forward was taken when there was an overwhelming majority voting in favour of eliminating all protests from official FIG Competitions. This will be in effect in 1987.

**RSG Judges—** With official FIG events for rhythmic, in using 6 judges they will now eliminate the top 2 and bottom 2 scores and only average the middle two.

**Grand Prix—** There are moves afoot to have a Grand Prix competition circuit in gymnastics, culminating in a World Cup. Emphasis will be placed on continental regions each having a major competition included.

**RSG World Championships Program—** The Rhythmic World Championships program has been increased by one day.

**RSG Groups—** The RSG Groups will now perform two routines with two dif-

ferent sets of apparatus at the rhythmic World Championships.

**1987 Gymnaestrada—** The preliminary entry forms have been received by the Danish Organising Committee for a Gymnaestrada which indicates 5,500 male participants and 16,500 female participants. Australia hopes that our first representation will be at this Gymnaestrada. This will be the largest Gymnaestrada event to be held, and will be held in Denmark from the 7th to 11th of July.

**1989 World Championships—** The successful cities for the 1989 World Championships are:

Artistic—Stuttgart, West Germany  
Rhythmic—Sarajevo, Yugoslavia  
(No dates have been announced).

**1991 Gymnaestrada—** The successful candidate city, Amsterdam, is the home of the founder of General Gymnastics, Mr Johannes Sommers, who died this year at the grand age of 101 years.

**1987 Australia Cup—** Scheduled for 16-21 March, the Australia Cup will be held at the Melbourne Sports and Entertainment Centre. Participating nations will include:

Soviet Union, USA, China, Japan, Canada, Italy, Bulgaria, Switzerland and Romania.

Double release;

- \* Tkatchev Gienger, 10-15
- \* One arm Tkatchev Gienger—1
- \* Tkatchev cal hop Jaeger

Single release;

- \* Tkatchev 1/1 turn (missed)
- \* Jaeger 1/1 turn
- \* Gienger 1/1 turn
- \* Jaeger layout, pike straddled
- \* One arm Gienger, Tkatchev
- \* From inverted Jaeger, 1/1 Jaeger.

Most routines had the mandatory stoop inverts or healy inverts plus a staldler or endo, or both. An impressive Russian style is apparent and superb technical giants and salto's were mastered by all. One arm work was not all that impressive or dominant and is taking second place to release moves. This is perhaps a result of technical specifications of the USSR Men's Technical Committee which state each routine must have at least 180 degree turn, (and perhaps only one one arm giant).

#### Dismounts

Dismounts were again predictable with triples predominating from the top gymnasts. Only the top gymnasts had steady landings while others were unsteady and scruffy. Double layouts were the answer from the next league of gymnasts with a sprinkling of tuck double doubles and full out layout. One double front 1½ out and one from elgrip.

## TID BITS

Did you know that:

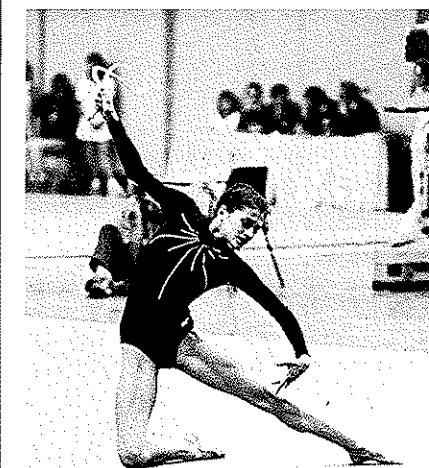
Mary Lou Retton has officially retired to pursue her academic studies.

Did you know that:

Diliana Gueorguiva has married and officially retired.

Did you know that:

Li Ning (China) has retired.

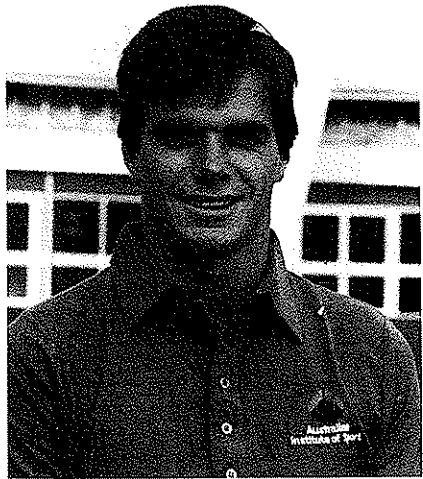


Diliana—Australia Games 1985



AN OUTLINE OF THE CENTRAL ARMY CLUB COACHING STRUCTURE

Report by Warwick Forbes, Head Coach, Australian Institute of Sport, who visited the Soviet Union in April 1986.



During my recent visit tour of the Soviet Union it became very apparent that the centralised system of Sport we now have at the Australian Institute of Sport is the most productive system and is in reality a model of the Soviet system. There are a number of significant differences between the Australian Institute of Sport and Soviet system, firstly there are a number of organisations within Soviet sport all operating with similar structures. The Army clubs, the Dynamo clubs, the Spartak clubs plus other educational and student clubs. These organisations or clubs have the centralised sporting facilities in Moscow and in addition have decentralised feeder clubs in every city of the Soviet Union. A brief description of one of these organisations, the Central Army Club (U.C.K.A.) in Moscow almost describes the Australian Institute of Sport but illuminates the major difference, that being the number of well trained coaches required for the elite gymnasts to achieve success.

The Army Club, with Dynamo is one of the biggest organisations involved in sport and caters for every Olympic sport plus other sports for the masses but it is primarily an elitist organisation. The Central Army Club gymnastics team in Moscow has produced numerous World and Olympic champions and almost forty percent of the recent Soviet gymnastic teams come from this central club. If this Central Army Club were to compete at the World Championships they would certainly be in the top 5 or 6 teams in the world. An outline of the coaching structure in the Club clarifies the reason for their success.

The Central Army Club is divided into a 'team' and a 'school' which have their own coaches and structure. In addition the coaches can recruit gymnasts from any other Army gymnastic team or school in the country and occasionally from other organisations. Recruited gymnasts are supplied with spartan dormitory rooms in the Army sporting campus.

CKSA COACHING STRUCTURE - WOMEN

In women's gymnastics there are three main coaches each with his own team of assistants extending down through the team and into the school.  
ONE MANAGER FOR ALL GIRLS IN ARMY CLUBS IN THE SOVIET UNION.

TEAM	COACHES	GYMNAST
HEAD COACH #1	MICHAEL KLIMENKO	Shoushounova: World Champion 1985 Baraksanova: Soviet team 1985 Preachina, Junior Soviet team
Assistant Coach	1	
Choreographer	1	
Acrobatic coach	1	
SCHOOL		
Assistant Coach #2		10-12 junior girls/ age 8 to 11
Assistant Coach #3		12-15 junior girls/ age 6 to 7
Choreographer	1	
Acrobatic coach	1	
HEAD COACH #2	VICTOR KLIMENKO	One 12yrs from Uzbekistan One 12yrs from Leninknusefsky Three girls from Moscow
Assistant Coach	1	
Choreographer	1	
Acrobatic Coach	1	
SCHOOL		
Assistant Coach #2		10-12 junior girls/ age 8 to 11
Assistant coach #3		12-15 junior girls/ age 6 to 8
Choreographer	1	
Acrobatic Coach	1	
HEAD COACH #3	VICTOR RASAMOFISKY	Bicherova, World Champion 1981 Schentenko, Soviet team Goureva, Junior Soviet team
Assistant Coach	Irena Rasamofsky	
Choreographer	1	
Acrobatic Coach	1	
SCHOOL		
Assistant Coach #2		10-12 junior girls/ age 8 to 11
Assistant Coach #3		12-15 junior girls/ age 6 to 8
Choreographer	1	
Acrobatic Coach	1	

\*Three pianists were in attendance every day and played the music for dance classes and floor routines.

\*Two masseurs are in the gymnasium to massage team members after training.

SUMMARY OF CSKA WOMEN'S TEAM

Total Coaches	Total Gymnasts	Ratio
TEAM		
Nine Coaches	12-15	1:1
Three Choreographers		
Three Acrobatic Coaches		
Plus Pianists		1:2
SCHOOL		
Six Coaches	70-80	1:10
Three Choreographers		
Three Acrobatic Coaches		1:6

AUSTRALIAN GYMNAST

THE OFFICIAL MAGAZINE OF THE AUSTRALIAN GYMNASTIC FEDERATION  
COACHES SUPPLEMENT

DECEMBER 1986/JANUARY 1987

A CRITICAL REVIEW OF BIOMECHANICAL RESEARCH IN THE SPORT OF GYMNASTICS

by Hardy Fink, The University of British Columbia, Vancouver, Canada. 1985

The course of biomechanical research in gymnastics has been a haphazard one. Virtually every skill has been analyzed by someone somewhere so that an enormous amount of isolated information exists yet all of this information put together cannot be considered to form a coherent body of knowledge. Very little of the research literature reveals any attempt to confirm a starting hypothesis or even to develop a biomechanically "idealized" criterion performance for the analyzed skills: rather the purpose of the bulk of the research appears to have been to describe the parameters of what are considered to be contemporary good performances, and occasionally, to compare those with lesser performances.

Cinematography in gymnastics research

The most common form of biomechanical analysis of gymnastic skills has been, and continues to be a process commonly referred to as cinematography. The advantages of film analysis are that the experimental protocol does not interfere with the performance, and that, if adequate precautions are taken, accurate measurements of time and of linear and angular displacement can be made for the whole body or for body segments from which the corresponding values for velocity and acceleration can be derived.

Until recently, the time to obtain the data from the film and to analyse that data has been excessive such that some researchers chose only to analyze selected frames (Harris, 1939; Bare, 1959; Payne and Barker, 1976) or to analyze every so many frames as in the extreme case of Capitao (1970) who looked at every 20 frames of his 128 frame per second film record of a hecht dismount from a horizontal bar.

The most common film transport speed for gymnastics research has been 64 frames per second (fps) (Heidloff, 1938; Spencer, 1963; Laseraim, 1966 and 1968; Guerra, 1968; Duck et al, 1969; Kuriss, 1972; Okamoto and Kumamoto, 1973; 1972; Okamoto and Kumamoto, 1973; Bajin, 1976; Yamashita et al, 1979; Igarashi, 1983; and many, many others) but in recent times, the introduction of more

accurate pin registered cameras and motorised rotating prism cameras has made the 100 fps speed increasingly popular (Hermann, 1968; Sale and Judd, 1974; Ramey, 1976; Knight and Wilson, 1978; Hay et al, 1979; Duck, 1980; Nissinen, 1983). Numerous other film transport speeds have been used in gymnastics research depending on the skill to be studied, the availability of equipment and the wishes of the investigator. Kamon and Gamley (1968) used 16 fps; Kurerov (1967) and Karas and Borms (1969) used 24 fps; Sullivan (1953) and Bovinet (1979) used 30 fps; Payne and Barker (1976) and Borgemann and Sorenson (1979) chose 32 fps; Kopp and Reid (1980) and Reid and Kopp (1983) and Sands (1984) selected 80 fps; Capitao (1970) 128 fps; Bruggemann (1979, 1983) and Spapean (1983) 200 fps; Kerighbaum (1979) 400 fps; and Kudlac (1981) 500 fps. Verification of film transport speed by the filming of a falling object or a sweep clock in the background has often revealed major deviation in the expected film transport speed. For example, investigators who had used spring-driven cameras at 64 fps reported actual speeds of 58 fps (Fink, 1974), 66 fps and 72 fps for two separate cameras (Lashuk, 1967) and 78 fps (Fortier, 1968).

The 16mm camera format has been used in the overwhelming majority of research but investigators have occasionally used 8mm (Sands, 1984) and 35mm cameras (Sullivan, 1953; Bare, 1959; Karas and Borms, 1969; and Bovinet, 1979).

Single plane cinematography

As early as 1939, Heidloff used 16mm film to describe the principles of physics that apply to four tumbling stunts and in 1939, Harris used cinematography to analyze a kip on the horizontal bar. He found the path of the total body centre of gravity by tracing individual frames and estimating the location of the body centre of gravity in each.

For the most part, these and other investigators used cinematography merely to describe the kinematics of a skill as

performed by selected subjects, and usually a skill that occurs in only one plane was chosen. Hakuda (1955) analyzed a giant swing on the horizontal bar and determined that a successful performance depended on stretching on the downswing and flexing at the hips on the way up in order to increase kinetic energy. Similarly, Hermann (1969) reported a loss of energy due to friction on the downswing which must be compensated for by reducing the moment of inertia of the upswing. Shaefer (1956), Akamoto (1961) and Borms et al, (1976) have also reported these findings.

Karerov (1967) reported that the characteristics of a successful full-twist dismount from the rings were a braking of the leg movement followed by a wide pulling of the arms. The twist is initiated by the legs concurrently with the release of the hands.

Brown (1967) studying arm action as contributing to successful front somersaults found that the arm speed for the "Russian lift" is seven times faster than for the "traditional lift" and that the "Russian lift" facilitates both upward thrust and rotational speed.

Guerrera (1968) studied handspring and hecht vaults but used a non-standard camera position with respect to the horse and various sessions of a competition and training. Nevertheless, he felt that the large distances travelled rendered centre of gravity measurement errors significant. He correlated selected biomechanical parameters of 18 handsprings and 17 hechts with the score and reported among other findings that for a handspring approach velocity ( $r = .52$ ), short duration of support phase ( $r = .52$ ), higher centre gravity in preflight ( $r = .48$ ), short board contact time ( $r = .47$ ) and higher and longer afterflight ( $r = .48$ ;  $r = .56$ ) were important for a higher score. For the hecht vault approach velocity ( $r = .63$ ) was the only parameter that showed higher correlations with the score than the handspring parameters.

A comparison of the differences in performances on the floor and the balance

NOTE:

This supplement may be removed for separate future reference.

CONTENTS

A Critical Review of Biomechanical Research in the Sport of Gymnastics. by Hardy Fink

beam of a back walkover, and a handstand forward roll was attempted by Fraser (1968). For the back-walk-over, she determined only that the centre of gravity is kept lower throughout the movement. Further indications for a successful performance were that back flexibility was neither essential nor desirable and that an unfluctuating velocity determined the better performance.

#### Multi-plane cinematography

Some investigators have looked at gymnastics movements with two cameras (Bare, 1959; Lashuk, 1967; Wiencke, 1972; Hay et al, 1979; Kudlac, 1981; and others) and some have used three cameras (Lascari, 1966 and 1968; Polacek, 1970; Kuriss, 1972; Gervais and Marino, 1983) that were set orthogonal to each other.

Lascari (1966, 1968) took a top, side and front view of beginner and advanced gymnasts performing double leg circles on the pommel horse. He determined that the best performers increased height by spinal flexion and shoulder depression, that they have greater speed, more side lean, that they typically have a counter rotation of the body up to 25°, and a more circular pattern of the feet. These findings agree with those of Sarver (1962) and Blievernicht (1969). Sarver gave some additional temporal information: A typical double leg circle takes 1.03 seconds with the time evenly split between the front and the back of the horse and better performers spend more time (up to 27%) in two hand support. A similar study by Polacek (1970) of a similar skill—the loop circle—corroborated the findings of a more circular and planar pattern of the feet and more hip extension for the better performers.

Lephart (1969), Kuriss (1972) and Gervais and Marino (1973) used 3-D cinematographic analysis of a gymnastics skill in order to demonstrate the path of the centre of gravity by the parabolic extrapolation of the analysis of a mid-flight constant position; Kuriss to demonstrate a method of synchronizing 3-plane cinematography; Gervais and Marino to develop a procedure for determining angular positional data relative to the principal axis of the human body.

#### Some interesting applications

Other interesting uses, other than pure description, have been made of the cinematographic analysis of gymnastics kinematics. Leigh and Bangerter (1967) used the technique and a questionnaire to determine that even expert coaches were not aware when or if twists were initiated from the springing medium. Bajin (1979) used cinematography purely to determine the goniometric and temporal parameter of a handspring-front somersault vault and found quite large differences between near end and far end vaults.

Igarashi (1983) attempted to predict the possibility of a quadruple somersault dismount from the horizontal bar. He showed that the time in air for a single, double and triple somersault does not change significantly and that that time of between 1.3 and 1.4 seconds may not be enough for a quadruple somersault. Possibilities for a successful performance would include increasing the angular velocity, changing the angle of release and staying tucked longer. Sands (1984) determined that a gymnast with a previous

history of spinal stress fractures had "learned" to modify her take-off technique to limit the movement of the spine and related "joints". Kreighbaum (1974, 1979) has attempted to determine the deflection pattern of S-shaped leaf spring and coil spring beat boards using high speed cinematography from two views. He found that it was best to contact these boards at the mid-point between the springs and that there is very inconsistent board use within and between vaults.

Extensions of cinematography have been attempted by Maier (1968) with the use of strobe-lights to study giant swing, and Landa (1974) with the use of video tape to confirm EMG findings of a swing on an uneven bars.

A more useful analysis than the traditional descriptive-kinematic is a kinetic or dynamic analysis since a knowledge of acting forces can influence the understanding of and preparation for a skill.

#### Indirect dynamometry

A number of investigators have tried to obtain kinetic information indirectly from cine-film. Cureten (1939) attempted to derive kinetic data about an overgrip giant swing on horizontal bar for displacement data. He calculated the "centrifugal" forces and velocities of the centre of mass but curiously found the peak centrifugal forces of almost 6 times body weight to occur at 135° after the start position (before the bottom). A similar dubious finding calculated from displacement data was repeated almost 30 years ago by Dusenbury (1968) who reported peak forces prior to the bottom for a giant swing on the rings. Direct force measurements with improved technology soon put these peak forces just past the bottom of the swing, where they intuitively belonged, and just after hip and shoulder flexion begin for both the horizontal bar overgrip giant (Maier, 1968; Yamashito, 1972; Yamashito et al, 1979; Kopp and Reid, 1980) and the giant and similar skills on rings (Sale, 1972; Valliev, 1973; Sale and Judd, 1975; Borchardt, 1976; Nissinen 1983).

Sullivan (1953) estimated forces during a front somersault on parallel bars from kinematic data obtained by measurement from film and estimates of the body centre of gravity at release and regrasp. Bourgeois (1968) determined that greater torques were developed during the "early drop" technique for a peach basket on parallel bars. Bovinet (1979) and Bergemann and Sorensen (1979) also tried to calculate kinetic information from segmental masses and second derivative of the displacement data.

More accurate and more useful kinetic data awaited the common use of direct force measuring instruments. The indirect measurements often led to large errors from displacement data "noise"—even after data smoothing—because the second derivative would grossly amplify the "noise" as the square of the frequency of that "noise".

#### Direct dynamometry in gymnastics research

A direct force measuring device is known as a force transducer and works on the principle that the strain in the transducer or the deformation in the material can be converted to an electrical signal which is proportional to the magnitude of the applied force. The trans-

ducers used must be calibrated properly, checked for linearity over the range of expected loads, have appropriate dynamic characteristics and be checked for "cross talk" among the axes such that the forces in the desired direction are measured independently of other forces or torques.

Maier (1968) was first to attempt to calibrate a horizontal bar for direct measurement. He developed what he referred to as a biodynamograph which consisted of a projection from the end of the bar with a pen attached such that the pen would record movements of the bar. Superposition of a gymnast's performance recording over an expert criterion recording could be used directly for detecting errors in force application. By 1970, Tikhonov had reported on a method of decoding strain gauge recordings on the horizontal bar and parallel bars using mathematical analysis of oscillation frequencies of the bar under known loads. Yamashito (1972), Oakmoto and Kumamoto (1973), Zinkovsky (1976) and Yamashito et al (1979) used multi-technique analysis, including dynamometry, of horizontal bar skills. All used strain gauges mounted on the bar to measure the horizontal and vertical components of force during the performances of the selected skills but were primarily concerned with how these measurements co-ordinated with electromyographic records of the performances.

Hay et al (1979) attempted to develop a technique to determine the magnitude of maximum forces executed on the uneven bars. They attached strain gauges 0.56 m from one end along the neutral axis of the bars for horizontal and vertical bending and calibrated them by statically loading the bars to the point of failure. They found some error in the signal amplification due to the dynamic response of the bars, in some transverse sensitivity of the strain gauges, in estimation of the point of application of maximum loads and in the normal data reduction procedures of digitizing and curve fitting resulting in possible overestimates of between 13% and 23%. As a result of the study, the investigators recommended that strain gauges be attached to both ends of the bar in future studies and that the bars be designed to withstand expected loads of 4205 Newtons and perhaps even more for advanced gymnasts.

Kopp and Reid (1980) studied the overgrip and undergrip giant swing on the horizontal bar to develop a model of force and torque application of expert performers. They bonded four strain gauges at each end of the bar such that the strain measured was independent of the point of application of the force and they attached two torque transducers at each end and then determined, by static calibration, that there was no interaction among the various transducers. The study revealed that the overgrip giant's maximum forces of 3.7 times body weight (2208 N) occur just past the bottom of the swing (221°) and torques as high as 34 Nm are attained. For undergrip giants peak forces are as high as 3.9 times body weight (2166 N) and torques can reach 46.4 Nm because of the added friction from the severe supination of the forearm and wrist. Polar plots were then generated to give a model for the force-torque relationships of a good performance.

Reid and Kopp (1983) used the identical methodology to determine the kinetic characteristics of a kip. They determined that average location of maximum force application is with the centre of mass almost directly beneath the bar (178°) and that the timing of the skill is most critical since the centre of mass moves through as much as 30° in 0.1 seconds.

Evans (1983) attached strain gauges to an uneven bar rail to study the free hip circle to handstand. She correlated the quality of the performance with biomechanical parameters and found a correlation of over 0.7 between the quality and the total amount of positive work and power. The most discriminating variables between good and bad performances were the maximum velocity of flexion at the shoulders and when that flexion occurred.

Another common use of force transducers in gymnastics research has been to attach a strain gauge in series with a ring cable to determine the forces on one cable, which on the assumption of symmetrical movement can be doubled to determine the total forces sustained during the performance of ring skills.

Sale (1972) and Sale and Judd (1974) used this method to study a shoot to handstand on the rings. They used a Hycam camera with a front lens to film the performance and a back lens to film an oscilloscope display of the load cell response simultaneously on film that can be exposed on both sides at once (Eastman 4X negative film, type 7224). Peak forces of 5.4 times body weight were recorded just after hip flexion began past the bottom of the swing and better performances were characterised by a rapid continuous transition from hang to handstand. A similar study of the discolate was conducted by Borchardt (1976) and of the "parallel arm drop" straight arm giant swing by Nissinen (1983). Nissinen attached a force transducer in series with each cable and recorded peak forces of as much as 9.2 times body weight for this advanced skill—the highest yet recorded. The best performers showed two additional force peaks that exceeded body weight; one during leg braking and trunk transfer and the other during trunk braking and arm initiation. He noted that the arms don't push the rings until hip extension in the upward swing is complete.

A further common use of force transducers has been in the study of take off forces from a force platform. The back somersault has come under frequent scrutiny (Feller, 1975; Payne and Barker, 1976; and Bruggemann, 1983). Payne and Barker (1976) studied the vertical and horizontal components of force during the performance of a back handspring and a back somersault from a stand on a force platform. They determined that a back handspring required the generation of much greater angular momentum than a back somersault because of the large in-flight moment of inertia and that this is generated by large horizontal forces during take-off. Bruggemann (1983) compared back and double back somersaults and determined, with a variety of statistical techniques, that the most influential factors in a successful performance are the horizontal components of the velocity of the centre of gravity before support, the angular momentum about the transverse

axis through the centre of gravity before support, the inertial force of the feet in the final take-off interval and the arm action.

Other efforts in dynamometry have been made. Polsky (1969) mounted strain gauge platforms under the pommels and on the body of a pommel horse and suggested that this technique could be useful in providing immediate feedback to improve the gymnast's ability to manage his movements. George (1973) tested five different types of beat board under static loads and found that the boards had significantly different inertial properties at near maximum tolerance limits. He recommended that boards have calibrated resiliency capabilities to accommodate individual differences. Furuya (1970) studied the forces during parallel bar swing and found that the three components of force were greatest on the forward swing and that trained gymnasts exert greater forces than untrained.

#### Electromyography in gymnastics research

A research tool that has been used quite frequently in gymnastics research is electromyography. The researchers have usually been interested in two questions: What muscles or muscle groups are most active during the performance of a skill and what muscle activation pattern is most correct for an excellent performance. In all cases, gymnastics investigators have confined themselves to the use of surface electrodes but even these and the attendant wires interfere with the performance somewhat.

Kamon (1966) studied the scissors movement on pommel horse electromyographically. He attached 5 mm surface electrodes to 19 muscles in the wrist, arm and upper body to determine the interplay of muscle activity in this curvilinear rhythmic movement. He also used cinematography to help assure that any detected muscle activity actually contributed to the skill. He concluded that the triceps kept the arm rigid, that dynamic work occurs during postural changes and that the EMG record is an indication of the skilled coordination required. He postulated further that short activity bursts of the wrist muscles and the biceps helped make adjustments and that the larger biceps activity, rather than being an artifact, helped pronate the forearm. Wright (1967) commented on the remarkable consistency of muscle patterning during the performance of headstands. Hebbelinck and Borms (1968) and Hebbelinck et al. (1969) studied the upper body musculature during a front handspring and found that the action potentials for all muscle groups (trapezius, triceps and biceps brachii, deltoideus, pectoralis major) was greatest during the push-up phase and reduced quickly during flight.

Landa (1974) tried to determine the relationship between shoulder muscle activity and the degree of swing on uneven bars. She applied surface electrodes to one side of the body only and administered a strength test to determine muscle activity during a maximal contraction. She found that the activity of the selected muscles increased with the amplitude of the swing and that the latissimus dorsi and inferior trapezius showed the greatest activity (contributed the greatest per cent of maximal strength)

during the swing phase while the other muscles acted as stabilizers.

Yamashito (1972) and Yamashito et al. (1979) studied the overgrip and undergrip giant swings electromyographically, dynamometrically and cinematographically. Furthermore, they took X-rays (1979) to determine the degree of body lengthening in relaxed versus contracted hanging and found the difference to exceed 8 cm. In agreement with Landa (1974), all upper body muscles were active at the bottom of the swing and during the hip flexion phase and rectus femoris and biceps femoris were active. They reported that there was a great consistency of EMG patterns within subjects but not so much among subjects even though they were all experts. The most remarkable deviation was displayed by World Horizontal Bar Champion, Eizo Kenmatsu, who showed no hip flexion in the up-phase of either giant swings and depended rather on passively lengthening the body by relaxing the shoulders on the down phase and then actively shortening the body on the way up by essentially shrugging his shoulders.

Nemessuri (1981) tried to determine the force structure of a stationary position—the iron cross on rings—by measuring action potentials at 17 muscle locations. He found that the serratus anterior and deltoid contributed very little and that the highest action potentials were recorded in the biceps and triceps brachii and in the abdominal and chest muscles.

Some investigators have taken a longitudinal look at altering muscle activity patterns during the learning of a gymnastics skill.

Kamon and Gormley (1968) recorded the activity of the superficial muscles of trunk, arms and thighs in 12 year old boys over a fifteen week period of learning a single knee circle mount on the horizontal bar. At the beginning stages, muscle activity patterns were characterized by much overlap and long duration of high bursts of activity. The myograms over time showed co-ordinated activity between muscles and greater consistency but they never reached the level of co-ordination of a skilled performer. These conclusions agree with those reached by Huber (1966) in his study of a back-walkover over 20 practice periods.

A more ambitious study of a glide kip was undertaken by Okamoto and Kumamoto (1973) who studied the activity of 8 muscles over a 1½ year learning period and also added cinematographic and direct kinetic analysis of the learners and of skilled performers. They concluded that beginners show excessively strong activity at the shoulder and elbow as hip flexion begins and that practice eliminates these unnecessary contractions. They were able to find no EMG pattern which is indispensable to the success of the kip because there was so little difference in discharge between success and failure implying that success does not necessarily produce a specific pattern. However, even after the kip had been "mastered", the learners had not learned to use their biceps and triceps brachii in the way that skilled performers do.

#### Electrogoniometry in gymnastics research

A few investigators have attempted to use electrogoniometry in conjunction with



cinematography to determine directly from elgon tracings the angles moved through by body segments relative to others. It is doubtful if this technique is of any value for gross body movements over the techniques of simply measuring from film, and it suffers the additional handicap of possibly interfering with the skills to be investigated.

In 1969, Smirnov developed a simple non-interfering audible or visible goniometer to provide immediate feedback of undesirable hip flexion and extension during gymnastics skills such as the giant swing.

Duck et al (1969) studied the front handspring and Bajin et al (1969) studied the back tuck somersault electrogoniometrically. They found a large discrepancy between hip angles measured from film and by the elgon because the elgon measures the actual joint movement whereas the film analysis takes into account the flexion-extension of the back. Duck (1979), referring to a front handspring, remarked that the description of the mechanics and execution in the literature is generally wrong. He found that the largest contributors were a short duration of the take-off foot contact, rapid extension of the knee and plantar flexion.

Garavaglia (1971) combined electrogoniometry with electromyography to study a glide kip and determined that hip and trunk flexors were active during hip flexion against gravity and during hip extension with gravity.

A number of other technologies have been used sporadically by biomechanical researchers in gymnastics. Zinkovsky et al (1976) used an accelerometer on the back of a gymnast during a back uprise on the horizontal bar. Bruggemann (1979) studied vaulting by combining a number of technologies such as an accelerometer on the horse, a microphone by the beat board and force transducers in various locations. Fie (1984) determined the coefficients of restitution of various beat boards to show that synthetic materials have better durability, consistency and homogeneity than wood for the manufacture of boards. Tichonov (1978) used sensors to determine the temporal parameters of vaulting. And finally, an occasional study such as that of the free-hip-heckt dismount from horizontal bar by Dimitriev and Boyko (1973) has used the full array of technologies; dynamometry, electromyography, electrogoniometry and cinematography.

#### Mathematical modelling/simulation in gymnastics research

In recent times, a number of investigators have used mathematical modelling and computer simulation techniques in order to study aspects of gymnastics performance. The major impetus for this type of theoretical work came from researchers such as Hanavan (1964) who developed a mathematical model of the body consisting of 15 rigid segments based on male cadaver data; Kane and Scher (1969) and Kane (1971) who used mathematical and computer modelling of the human body to study the unsupported movements of astronauts in space; and Miller (1971) who developed a 4 segment mechanically linked computer model to study the effect of the varying parameters on simple non-twisting dives. Even though

models must entail simplification of the real world, Miller was motivated to state that "the very process of constructing a computer model forces a clear and disciplined approach to the analysis and often leads to an increased understanding of the operation of the system".

As early as 1961, Schmidt simulated a gymnast's body during a giant swing by a one-link frictionless pendulum in order to calculate the resulting forces. His model, which lacked any moveable joints, was too simple to be of much value.

Karas and Stapleton (1968) modelled the body as an open kinematic chain in order to mathematically analyze a swing on the parallel bars prior to the performance of a back somersault.

Perhaps the most extensive mathematical model analysis of a gymnastics skill was undertaken by Bauer (1976) in his study of overgrip and undergrip giant swings on the horizontal bar. He developed a relatively simple 2 segment model but included hand-bar friction and bar elasticity in his calculations as well as generating functions that could be interpreted as the learning process for the hip-control mechanism. He compared the theoretical results with dynamometric and cinematographic analyses and presented a further paper in 1981 (Bauer, 1981). In 1983, Bauer suggested further that the solution of the equations of linked pendulums of variable lengths can be used for constructing congruent trajectories for a variety of gymnastics swinging manoeuvres.

Duck (1980) reported that a hinged but rigid 3-segment body with elastic bands providing movements at the shoulder and hip provided a feasible and valid simulation of horizontal bar swings when analyzed cinematographically.

Other similar work has been attempted. Dainis (1980) developed a mathematical model of the handspring vault to help explain the mechanism of vaulting. She concluded, after verification by film, that the optimization of the parameters of a vault can be shown by the model, that the take-off is more critical than has been assumed by coaches and that the take-off phase must be modelled more accurately for individual gymnasts.

Smith (1981) mathematically studied the centrifugal forces during an uneven bar swing from handstand and Van Gheluwe (1981) developed a 3-D computer simulation of a full twisting back somersault from the mathematical reconstruction of that skill as analyzed with 3-D cinematography. Spapean et al (1983) modelled the back handspring, roll and back somersault and concluded that the accuracy of the calculated rotational characteristics is directly related to the precision with which the moment of inertia and the position of the centre of gravity of an individual subject is approached by the model.

A further study of interest, but in the quest for long jump rather than gymnastics information, was undertaken by Hatze (1981). He developed a complex 17-segment human model with 42 degrees of freedom such that the controls in the model simulate the internal muscular system with respect to motor unit recruitment and stimulation rate for the 46 muscles of the model. The model can

generate all kinetic and kinematic information for each segment and for the total body and can be used to find optimizing parameters for the performance.

#### An overview of the gymnastics research

Although an abundance of gymnastics research literature encompassing the use of a full range of biomechanical technologies exists, the research is less useful than one might think. Part of this problem is due to the nature of the sport itself, and part is due to the validity of the investigations.

As an example of the sport specific difficulties one would surmise that several skills have been thoroughly analyzed and certainly none as completely and by as many technologies as the overgrip giant swing. It has been studied cinematographically (Cureton, 1939; Hakuda, 1955; Schaefer, 1956; Okamoto, 1961; Herrmann, 1968; Borms et al, 1976), dynamometrically (Maier, 1968; Yamashito, 1972; Yamashito et al, 1979; Kopp and Reid, 1980), electromyographically (Yamashito, 1972; Yamashito et al, 1979), electrogoniometrically (Smirnov, 1969); by mathematical modelling/simulation (Schmidt, 1961; Bauer, 1976, 1981, 1983; Duck, 1980) and otherwise discussed in mechanical terms by Boone (1977) and numerous other authors. Yet, even for such a well studied and well known movement, all of the information is not yet in. Over the 45 years of research on the giant swing, the elastic and physical nature of the apparatus has changed, the nature of the leather hand grips has changed to alter the frictional forces on the bar and stresses on the hand and wrist, the "aesthetic" expectations and the actual use of the skill have changed and the number of variations for specific continuations has increased. In essence, most studies more than a few years old are of very little specific value to contemporary horizontal bar performers. If that statement is true for the giant swing, it is even more true for virtually every other skill.

The foregoing example clearly illustrates the problem of descriptive analyses in a sport that is constantly evolving. More useful would have been an early study of the giant swing that clearly delineated its optimizing parameters such that the sport would have been required to catch up with theory rather than always preceding it.

The validity of the research is also in question, partly because of its tendency to be purely descriptive in nature and partly because of the limitations of the biomechanical technologies in the past and in the present.

Much of the early gathering of kinematic data has to be questioned on the basis of the possible inconsistent identification of body landmarks, on the basis of constantly evolving anthropometric data that has been considered appropriate, on the basis of the verification of film transport speeds, on the basis of relatively naive data digitizing and processing technologies and on the basis of some of the mathematical treatments that have been applied.

Kinetic data that has been derived indirectly (Cureton 1939; Dusenbury, 1968) is especially questionable since any errors in the displacement curves can become impressive force peaks, though incorrect,

after the second derivative has been taken.

The gathering of direct kinetic data has been a recent development but often the investigators had to rely on performances that only a few years later would be considered decidedly inferior. (Compare Sale, 1972 and Nissinen, 1983).

The value of electromyographical research is open to question. Some investigators have accepted the intensity of the EMG signal as a direct measure of the percentage of maximum contraction of the muscle (Landa, 1974) but this relationship does not hold. Often artifacts due to the shock of support or the action of antagonists in protecting the joint enter the data and can be falsely interpreted as contributing muscle action. A further problem with electromyography is that the electrodes and wires can interfere with the movement. Nevertheless, this technology does have value but it should not be used independently of corroborating technologies such as cine-film and force transducers. The same can be said for electrogoniometry.

The problem with mathematical modelling and computer simulation techniques is that there is a trade off between simplicity and accuracy. The early studies, in the absence of adequate computers, were so simple as to have been merely exercises to demonstrate the possibilities rather than to provide real information about gymnastic skills. The technology is becoming increasingly sophisticated and increasingly promising but it is likely that there will always be more unknowns than can be adequately modelled.

#### The future of biomechanical research in gymnastics

In 1978, Malmberg reported a gymnastics "first" from the Central Institute of Sport and Physical Culture in Moscow. For the first time, science preceded performance in gymnastics by correctly predicting the possibility and the performance parameters of a "reverse hecht" on the horizontal bar, a skill that may well have been considered impossible by practitioners, but has become quite commonplace today. He reported further that as many as 80 persons (45 coaches, 1 professor-doctor, 14 masters of sport and 20 post-graduate students) are involved in gymnastics research under the direction of Y.K. Gaverdovsky. That approach, clearly, is the ideal future of gymnastics research. It is doubtful if there is one person in North America involved in gymnastics research on a full time basis.

Nevertheless, some promising research is underway. Nigg (1982) has investigated the stresses and loads on the body during the performance of gymnastics skills. Bruggemann and Nissinen (1982) have begun investigations on optimizing the characteristics of the gymnastics apparatus. More research in this direction to reduce the possibility of injury during gymnastics performance is needed.

Computer simulations such as the complex one by Hatze (1981) hold much promise for the future. Such an approach would lead away from descriptions of good performance to predictions of optimal performances and how changes in certain parameters will affect the performance. As this technology becomes more sophisticated even more reliable and accurate information on the distribution

of mass of body segments on the moments of inertia of body segments and on the total body moment of inertia need become available. Knowledge of the movement of internal organs during inverted and rapidly rotating skills is also necessary for accurate modelling.

Another promising and very new approach is the three dimensional study of work, energy and power transfer across the joints during gymnastics skills. Such analysis pioneered on studies of human gait (Robertson, 1977; Winter and Robertson, 1978; Robertson and Winter, 1980) can be used as a diagnostic tool to assist in the identification of inefficiencies in movement due to co-contraction, isometric contractions against gravity and jerky movements. It can also be used to measure and diagnose progress in skilled performance by measuring the overall work done during a given period of time.

Improved technology has already made 3-dimensional cinematography with automatic digitization possible with systems such as the Vicon, the Watsmart and the

Selcom which use infrared emitting diodes to digitize the skill instantaneously. A facilitated availability of this technology combined and synchronized with equally instantaneous dynamometry can be of the greatest benefit to gymnastics as it can provide rapid feedback of the performance parameters which, hopefully, could be compared with computer generated ideal performance parameters for the gymnast.

The science of biomechanics, much as the sport of gymnastics, has evolved phenomenally over the past two decades. In the future, it is only the careful analysis by and the application of the latest biomechanical technologies that can help gymnastics make further significant progress in the area of performance and in the area of safety. Hopefully, gymnastics can also be of service to biomechanics by providing the always eager researchers with interesting problems that will make use of existing technologies and perhaps demand the development of new technologies.

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AN OUTLINE OF THE CENTRAL ARMY CLUB COACHING STRUCTURE

MEN'S GYMNASTIC TEAM

This team was also divided up into a 'team' and a 'school' but the number of coaches and gymnasts are very different.

Manager for all Army Clubs in U.S.S.R. MR KERDEMELEIDI

COACHES		GYMNASTS
TEAM		
Head Coach #1	Mr Boiko	Pogorolev, Soviet team, (Volgograd)
Assistant Coach	Mr Litvinov	Gusev, Soviet team Two other gymnasts age 14
Head Coach #2	Mr Alexandrov	Bilozherchev, World Champion 1983 Valentine Mogilny Soviet Team
Coach	Mr Popov	Four or 5 junior boys, most on Junior National team
Coach	1	Four junior boys age 14-15
Choreographer	1. Mrs Boiko former Soviet team gymnast. Part time.	
SCHOOL		
Head Coach of School	Vladimir Markelov, former Soviet Champion and Team member	40-50 boys age 7-12
Junior Boy's Coaches	4	
Acrobatic Coach		
Choreographers	2-Part time	

SUMMARY OF CSKA MEN'S TEAM

Total Coaches	Total Gymnasts	Ratio
TEAM		
Five Coaches	13	1:20 or 1:3
SCHOOL		
Five Coaches	40-50	1:10 or 1:8

IMPLICATIONS

The current situation at the Australian Institute of Sport with two full time coaches for 12 girls and a choreographer who works a few hours a week is hardly a match for this Soviet club let alone a Soviet National team.

To think that our National training centre, the pinnacle of Australian Gymnastic training has only a coach gymnast ratio of 1:6, the prospect of lifting this ratio to a realistic Australian ratio of 1:3 or 4 becomes more remote every day. Yet there are great expectations that this institution will lift Australian Gymnastics into the world scene.

The Australian Institute of Sport needs to review the Coaching Numbers in gymnastics if it desires success internationally. Any criticism of the gymnastic programs' successes can only be put down to insufficient resources being provided to achieve success.

After the central institution in Canberra has been given appropriate staff to function effectively, the Institute urgently needs to establish decentralised feeder institutions in every major city of Australia. Co-operation with State Institutions and State Government is vital.

This information must not be dismissed as the 'Soviet system' but evaluated from the point of view that this is the way to produce champions. Many other Eastern and Western countries who work along similar systematic lines with large numbers of coaches have achieved remarkable success.

'THAT SOPHISTICATED PLACE FRANCE'



By the time we had arrived in France, the two little Aussie battlers, and literally I mean little! had it under control. Mrs Vyse and myself were sure we'd make it to the next Olympic Games in the "train change" event! We had it down to a fine art. . . .

- 5 seconds before the train stopped you got your baggage as close as possible to the doors, (along with the other 500 people!).
- as the doors slid open, Mrs Vyse (pushing those in her way aside) leaps to the ground. . .

- Nicole throws luggage, piece by piece to Mrs Vyse, and then. . . .
- As the train takes off, Nicole pole vaults to the ground!

Well, we were sure that in France, that sophisticated place in Europe, someone would meet us. So, hungry and tired we trudged down the platform in desperate hope that someone would notice our little 'gymnastique' bags.

After 30 minutes of flashing our 'trendy' green and gold tracksuit tops to every Frenchman passing by, we decided they weren't there, or, they had left after seeing our tracksuits!

So, what do we do? Ring them you say?

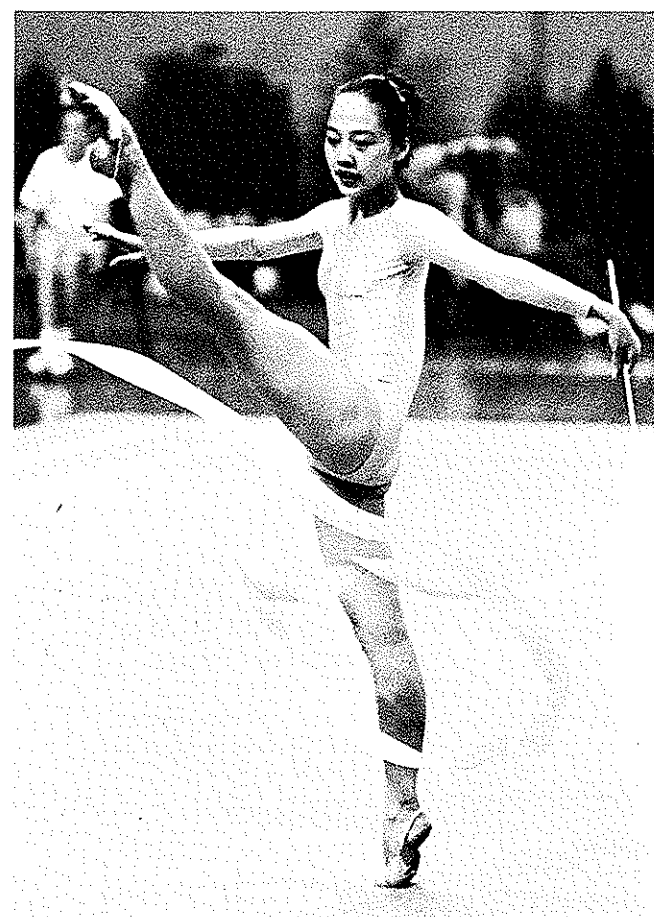
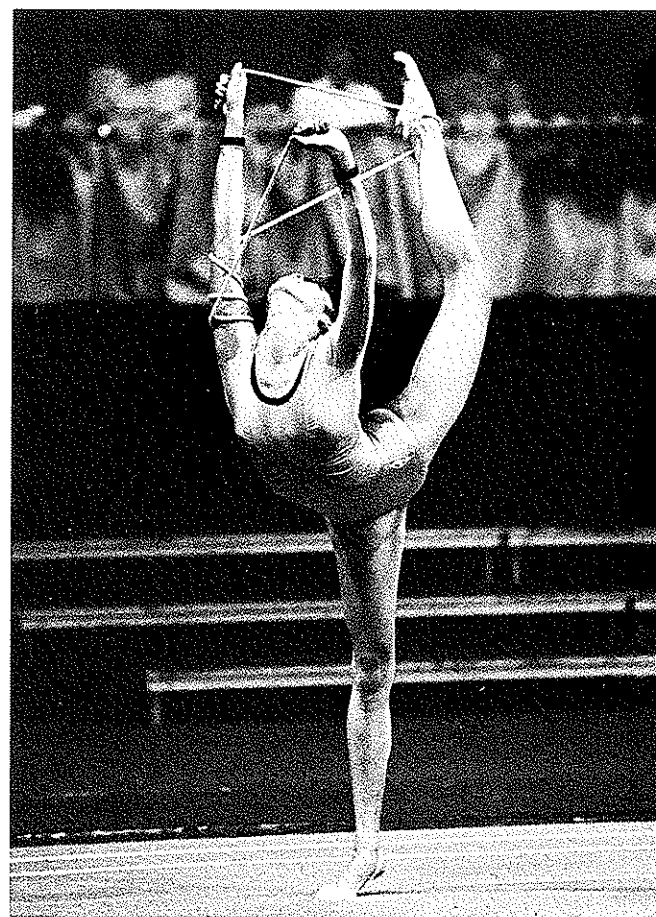
You guessed it! No phone number and no contact address either! I mean, really, don't be silly! What in the world would two non-French speaking Australian 'ladies' do with an address of their hotel? Anyone would think they were there for an important reason!!!!

When the little Frenchman at the desk refused to tell us where to buy a ticket to get to Corbeil, and Nicole kept running over everyone with the trolley, two young (quite nice looking) American guys, asked US where to go! (I often wonder whether they made it home or not).

Climbing up two flights of stairs, down one, round the corner, back up the two flights of stairs. . . . etc. etc. We were about to give up. Nicole, on the verge of tears, after finding out we were lost, let go of her suitcase and threw it down the stairs, consoling herself by slowly walking behind it, happy that she had punished it for being such a pain!

A man, feeling a little sorry for this poor child (SOB! SOB!) picked up her suitcase (with the now broken wheels) and carried it down the rest of the stairs for her. Explaining in the little English he knew, we managed to buy a ticket for Corbeil. He bid us goodluck and was gone. We then both decided to look a bit more distressed in the hope that someone would carry our bags!!!!

Nicole Higham



The Australian Gymnastic Federation hosted the fifth "Four Continents Championship" in Rhythmic Sportive Gymnastics, in Melbourne, from 1-4 October, for gymnasts from three of the worlds other continents, North America, South America and Asia. Nations represented at these Championships were Japan, The Peoples Republic of China, Brazil, Canada, USA, Australia, Argentina and New Zealand. For the first time, a competition for junior gymnasts was included in the program. All nations with the exception of Argentina were represented by senior individuals and a group.

The top contender for the individual overall championship was Lori Fung, 1984 Olympic and Four Continents Champion. Challenging her for that position were her fellow team mate from Canada, Adrienne Mark, the USGF Champion Marina Kunyavsky together with newcomer, Diane Simpson, bronze medallist at the 1984 Four Continent Championship, Yanfei Xia (PRC) with team mates Xiamin He and Qiong Pang. The Japanese girls, Masako Yokoa, Keiko Hamada and Kaoru Horiguchi also were determined to figure among the medal winners. Australia was represented by 1986 National Champion Anne Maree Kerr, together with Antoinetta Guida and Nicole Higham.

Lori Fung however was to totally dominate the competition with her sheer consistency, and the sparkling vivacity of the exercises she presented, enabling her to win the Championship by over one point from the gymnasts from PRC, Yanfei Xia and Xiaomin He, taking also the gold medal in each of the apparatus finals. The girls from The Peoples Republic of China were a delight, exhibiting that special relationship they have with the apparatus, complimented by their superb physical preparation. Diane Simpson (USA) was the real discovery of the competition, a great talent of the future.

The group competition also provided its share of excitement. Going into the finals, the PRC had a narrow lead over Japan, with the Canadians in third position, who were narrowly ahead of USA, with the result that there were almost two sub competitions going on in conjunction with the main event, one for the gold and the other for the bronze medal. Tension mounted when the PRC girls lost a hoop out of the floor area, giving the Japanese girls a chance of gold. Unfortunately, that chance was lost as one of their balls rolled off the floor, much to the horror of the Japanese contingent. The Canadians really hit their exercise to take the bronze medal. The Australian group achieved their best ever results in international competition to take fifth place.

Photographs courtesy Ross Gould

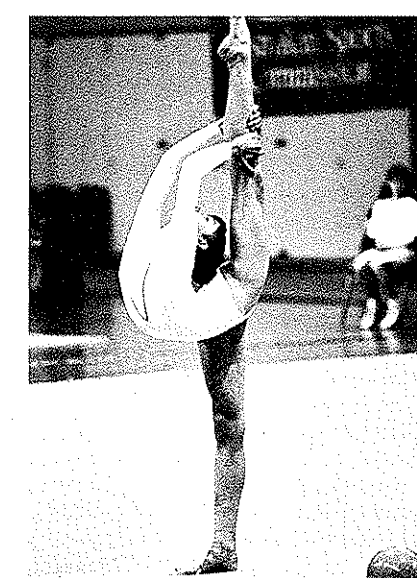
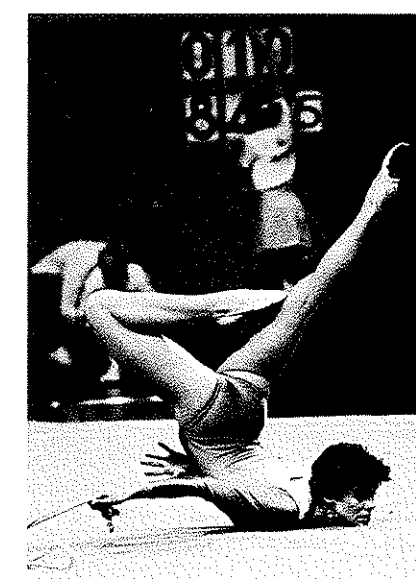
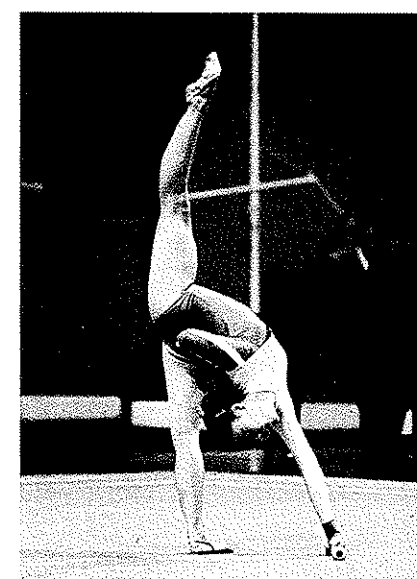
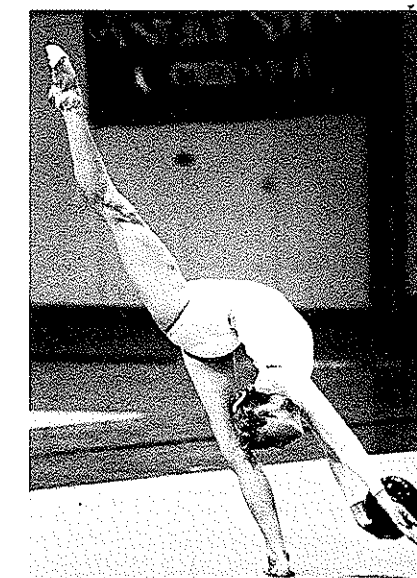
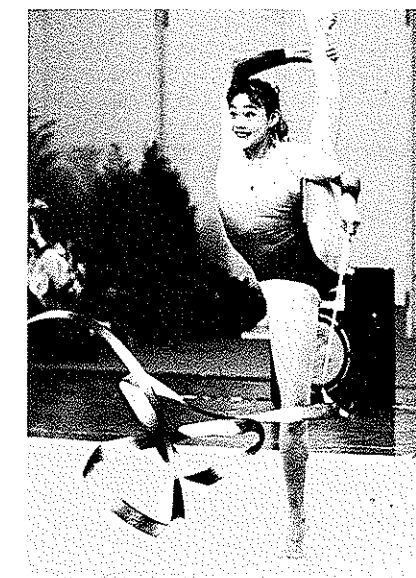
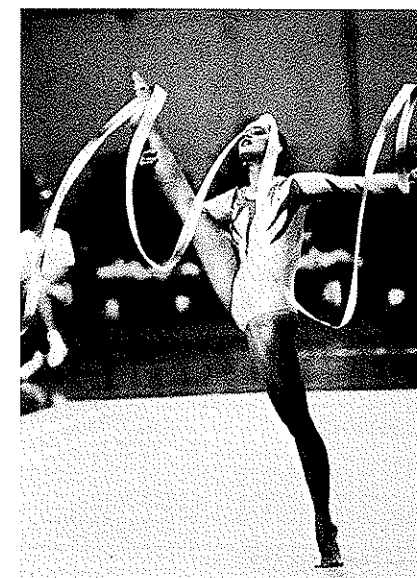
The junior competition culminated in three gymnasts advancing to apparatus finals held in conjunction with the senior finals. Mary Fuzesi (CAN) shared the overall title with Kaori Ishimi (JAP), with Susan Cushman (CAN) in third place. The standard of the junior competitors justified their inclusion in the competition, an ideal opportunity to encourage development of the sport at this level for participating nations. Australia was also well represented by Lisa Field, Nicole Mozes and Kathy Job, who finished in 8th, 11th and 14th places respectively.

The Australian Gymnastic Federation provided the best possible circumstances for the competition. A special tribute must be paid to the Championship Manager, Micky Kimber and her competition committee for their dedication.

The FIG representatives at the Championships were from the Executive Committee, Mr Jim Barry, and the RSG Technical Committee, Mrs Egle Abruzzini, Mrs Andrea Schmid-Shapiro and Mrs Doris Sutter. Their expertise greatly contributed to the final organisation of the competition.

The major sponsors for the Championship were Travelodge and the Australian Sports Commission, both organisations providing a great contribution towards the success of these Championships.

Peter Hassan





Source: Department of Sport, Recreation and Tourism 'Datasport', Vol. 1, No. 4, 1986.

**Faced with the loss of its club premises Canberra City Gymnastic Club (Inc) defied the odds to plan, develop, and construct a low cost training hall which incorporates the latest concepts in coaching techniques and aids.**

## Background

The club was founded in October 1978 as a private club, had one coach and selected its initial ten gymnasts from the primary school population. For five years they trained at the Kingsley Street Hall until the Australian National University required these premises for the launch of their own art gallery.

During this period the club's membership expanded to approximately thirty gymnasts, four coaches, five judges and hosted three international residential camps directed by internationally renowned coaches. These events allowed gymnasts from throughout Australia to compete and train with gymnasts and their coaches from five other countries.

In May 1984 the Commonwealth Department of Territories approved a capital and land grant for the new training centre to be located in the Belconnen Town Centre. The club was fortunate to be able to continue its training programs at the Canberra High School Hall until the new centre was completed.

## Design Concept

The centre is designed around a 700 square metre central training hall and a cluster of specifically designed sections. The project is divided into five major stages and the first stage consists of:

- An open plan central hall divided into an international competition stream training section of world standard and a self contained training area for levels 1 through 4 gymnastics; and
- an office and amenities wing.

The remaining stages are:

- stage two: Tiny Tots and Kindergym, weight training room, meeting and study room, handicapped children's section
- stage three: Choreography and dance hall
- stage four: Spectator gallery and store room
- stage five: Visiting team and coaches accommodation

## Facility Construction

The building has a MANSARD shape and is constructed of a modular steel-framed structure 16 metres wide by 40 metres long, clad with colourbond sheeting. It has a concrete slab floor and a 1 metre Boral Besser block wall. Many innovative energy management practices have been incorporated into the building. The whole building is insulated with aluminium clad

75 mm thick fibreglass insulation. There are no windows in order to improve thermal insulation, security and to prevent uneven lighting associated with direct sunlight. Solar hot water, with electric booster, has been installed for the ablution areas.

Standard materials and manufacturing techniques were in the fabrication of modular panels, thus no special skills were required for its manufacture or assembly.

## Lighting

Training rooms are lit using colour corrected fluorescent tubes which were specially designed by Philips to provide a uniform lighting level of 400 lux. The building requires only 5 1/2 kw to light the entire complex.

## Computer Coaching Aids

The facility has computer conduits installed throughout the floor to allow computer aided coaching with digital analysis of vaulting run-up and vault phase, as well as the monitoring of beam and bar routines. It is envisaged that this system will be operational in the latter part of 1987.

## Other Facilities

The main training hall incorporates the following:

- international competition sprung floor area complete with its own sunken crash mat positioned on the diagonal to provide safety during the execution of forefront acrobatic skills;
- A Reuther tumbling strip leading into a foam filled pit;
- five competition beams one of which has a sunken crash mat for dismounts;
- two vaults, one into a foam filled pit, the other onto a moveable sunken crash mat. This crash mat can be hydraulically lowered to 1 metre below floor level or raised to 1.4 metres above floor level;
- slant trampoline into a foam filled pit;
- four asymmetric beams, one over a foam filled pit, with suspended belt and suspended crash mats, and one with a sunken crash mat for dismounting skills.

## Voluntary Labour

Construction costs were minimised wherever possible through the substantial number of manufacturers and suppliers who recognised the benefits of a community project and thus provided goods and services at reduced rates. The dedication and prolonged support of the gymnast's parents cannot be ignored as this voluntary workforce supplied the labour for the non-skilled areas of the building once or twice a week for twelve months.

Tasks such as laying the wooden floor over the concrete, painting, temporary paving, general block laying, landscaping etc. were performed by this enthusiastic group.

## Usage

Apart from servicing the club's gymnasts the facility is also leased out at lunch-time to public servants from the nearby Cameron Offices for their daily XR Size classes. This provides much needed revenue for the purchase of additional equipment and the future expansion program.

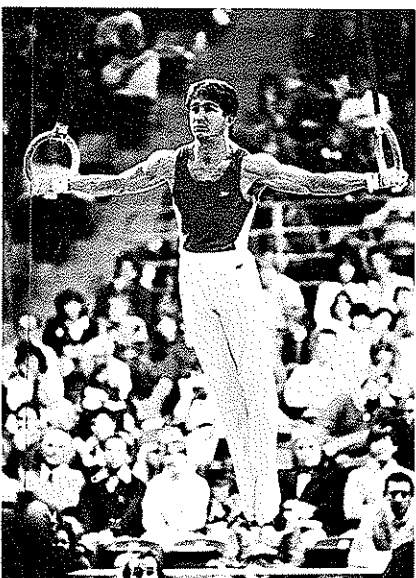
Club membership now stands at 400 gymnasts with 23 coaches and 19 judges.

## The Future

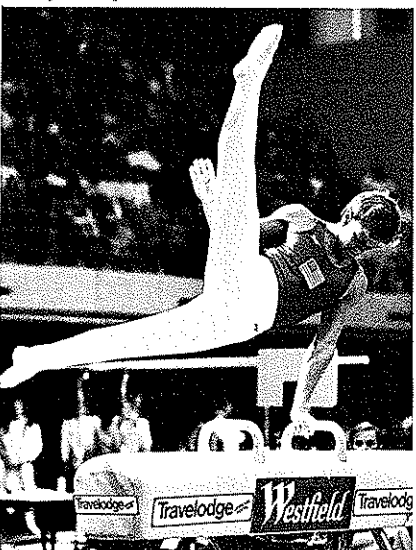
As there are 180 gymnasts on the waiting list the Club is eager to commence the construction of Stage 2. This will hopefully begin in early 1987 providing a training hall for Tiny Tots and the level 1 to 4 program thus increasing the total number of gymnasts to 500.

Further information can be obtained by writing to:

Mr Les Sharp  
Head Coach  
Canberra City Gymnastic Club Inc.  
Cnr College & Chandler Streets  
BELCONNEN, ACT. 2617.



Ken Meredith QLD/AIS  
Westfield Spectacular



Peter Vidmar—USA  
Westfield Spectacular

Photos courtesy Ross Gould

# IRINA BARAKSANOVA STRIVING TO BE THE BEST

by Mandi Shields

**To watch the 4'7", 75 pound child on the floor exercise is to completely understand the meaning of "Artistic" in Artistic Women's Gymnastics, for Irina Baraksanova, the quiet beauty hailing from Tashkent in the Soviet Union, is a product of the world's most successful of all training programs—one that stresses dance, grace and beauty. Irina is artistry in motion and fills every musical movement with not only meaning, but feeling as well; and all at the tender age of 17.**

Born July 4, 1969, Irina was chosen for gymnastics while in the second grade. Having grown up in Tashkent, the largest and capital city of Uzbek and also being the same town where Nelli Kim was from, Irina moved to Moscow and the ZSKA Club at age 9 to train with Mikail Klimenko. She is now in Spartak under Valentina Borisova. Though Borisova is her coach, Irina spends at least one hour each day with Irina Milogradova, a ballerina who choreographs the girl's beautiful routines.

Irina's favourite events are the floor exercise and the balance beam. She was National Champion on beam in 1985 but seems to have been having difficulties recently with falls and other breaks in several competitions.

She started out well in national and international competitions. At the age of 14 she placed fourth Overall at the Soviet Spartakiade. That same year she had her first international abroad where she was second to the Chinese Chen Yongyan at the Joachim-Blume Memorial in Barcelona. At the meet held in December of 1983, Irina scored 38.80, only .10 behind the winner. She received a 10.00 in the floor exercise, but had problems on the beam. After this competition she was noted as being a name to remember for the future.

In 1984 Irina competed in the Moscow News International, a meet where the Soviets often test young hopefuls, and once again did she have faults on the beam with a 9.30 score. Nonetheless, she and Elena Shoushounova tied for second with 38.85 behind Koleshnikova. Later she was third in the USSR Championships.

**But the most important competition of the year for the junior gymnasts must surely have been the Junior European Championships, where Irina became co-champion with teammate Elena Zabrodina, and once again received her lowest score on the beam, strange when it is one of her favourites. She also earned the gold medal on bars and silvers in vaulting and on the floor exercise where she shared with the Romanian Silivas.**

In the last months of that Olympic year, Irina travelled to Nagoya, Japan for the important Chunichi Cup. She had been a

member of the Soviet Team at the Friendship Games Alternative Olympics in Czechoslovakia and had only been in thirteenth position after compulsories as sixth ranked member of the gold medal winning Soviet Team. As a result, she could not go on to any of the finals. She had been looking forward to Los Angeles, but as she said, she and her parents were scared and didn't think it wise for the Soviet Team to compete where they were not wanted.



Photograph courtesy Mandi Shields

But here in Japan she was third Overall behind Szabo and Shoushounova. In the finals she came third in vault and bars and second on floor, but did not participate in the beam final. A week later in Tokyo she did well to come second on bars and a surprising third on beam.

The year 1985 was a quiet one leading up to the World Championships. The tiny pixi was fourth at the USSR Championships in Alma Alta and second to Eka Zeturidze at the Riga International. Also here she was second on beam and the gold medalist on bars.

**And then it was November and time for the World Championships in Montreal, Canada. The 16 years old school girl who loves drawing and dogs, who hates maths and loves literature (particularly Russian) and history but wants to be a sports doctor, had worked hard to be the best in Montreal.**

The first day during the Team Compulsories she had a total of 39.10 which had her fourth in the world—third on her team. Her routines were, for the most part solid but for a 9.525 in vaulting; and she received a near 10.00 on beam with 9.975. In Optionals her scores were greatly improved and she remained in fourth place as the third qualifier from her team to advance to the All-Around Finals.

Then she was suddenly not in the All-Around as she was said by coach Andrei

Rodionenko to be suffering from recurring injuries as was Mostepanova, who had also qualified, and both girls were replaced by Shoushounova and Omeliantchick.

But few believed the Soviet coaches, who said that the girls' health came first. They had seemed fine at the conclusion of the Team Competition, but in order to preserve the girls' health for the future, both were replaced by the two girls who then became Co-World Champions; perhaps the Soviets believing that they had more chance of overtaking the first placed Katy Szabo than did Irina or Olga. The question of whether they could have gone on with the competition will surely never be answered.

Following Montreal, we will never know what Irina's feelings were, but at the American Cup in Virginia she was a serious child indeed. She did not do well on the first day of competition, and probably would not have competed in the finals save for a judging error on floor when her foot out of bounds went unnoticed.

On the second day though, the little girl who bundles up in winter jacket, gloves and hat even when others feel it's a nice spring day, recovered enough to come third behind Kristie Phillips (USA) and Borjana Stojanova (BUL). She said that she was not in top form and that her shoulder injury from Montreal was still bothering her. However, it is very interesting to note that Rodionenko had said that it was her hand in Montreal.

A week later, Irina's shoulder seemed better as she won the International Mixed Pairs with Alexsei Tikhonikh in Hampton, Virginia.

Recently Irina seems to be free of injuries, although she still has her problems. She seemed to have bad luck in the USA-USSR Gymnastics Challenge in Worcester in April. She had bad mistakes on bars and beam to come only 12th out of 12 competitors. The coach explained that she was being affected by the same sinus infection that had kept Shoushounova out of the competition.

**The tiny girl from Tashkent and Moscow seems to be having a string of ups and downs, but hopefully the Soviets, who don't stand for inconsistency, will give Irina another chance. She graduated from secondary school last spring and hopes to enter university, so hopefully she will continue in the sports past the age of 17—something which seems to be becoming more and more unusual. She was prepared for the Goodwill Games but the Soviets did not see fit to place her on their team that included two newcomers. Let us only hope that we have not already seen the end of Baraksanova's beautiful artistry which the sport needs so much and that she will once again climb the victory rostrum as her idols Olga Korbut and Ludmilla Tourischeva have done so many times before her.**



**First panic....The midday before going in, the Bulgarian airlines would not confirm our flight OUT of Bulgaria.**

**Decision....Would we go on to Switzerland instead OR WHAT? Yes, we would go in.**

The train to leave the next morning left at 6.30 a.m. so, we booked the cab for 5.45 a.m. At 6.05 a.m. it had not arrived—NO ONE WAS UP AT THAT TIME OF THE MORNING! No-one at the cab company spoke English either, we just knew it was a good start to the experience we were just dreading. So, bags in hands, etc. etc., we dragged off to the station by foot with absolutely heaps of time to spare before the train arrived half a minute later.

At Zurich airport our flight out of Bulgaria was confirmed. So we thought that we would change our money....we were then told we could not take Bulgarian money in or out, that it would be confiscated if we did so. Well at least we couldn't spend much could we? On to the plane we got, wondering if anyone knew we would arrive and if they would pick us up as we did not have an address of accommodation only an FIG Bulletin with the Association address, (we wondered if they spoke English). No, we would continue and not worry about anything until it happened. (Even though we did not have any money anyway to ring or get a cab)....Oh well, the AGF knew best. It took ages to get through to customs in the entry hut realising that we were the only females on the flight (was there a message there). Probably our imagination.

Through to the other side, what do we do?...stand there we thought. So we stood there, and stood there and stood there.

At last, a smashed up yellow combi-mobile of some sort did a wheelie; it just had to be Gymnos. Yes, Yes. We could breathe again. He flashed his gym badge, we flashed ours, grabbed him before he disappeared and didn't care all that much where he took us, just as long as it was to someone else with another gym badge.

At the hotel they took our passports and our travel tickets and gave us a key for a room, we figured that seemed like a good exchange. Two very nice bellhops carried our bags up to the 16th floor. On arrival one went out, the other locked the door on us and himself....Panic, Panic. Nicole and I almost panicked, he wanted our money. Maybe he only wanted a tip??? No...he wanted to take our money and exchange it for Bulgarian—a better deal than the hotel, he said.

NO, NO WE HAVE NO MONEY. In the end he left, thank God!

We had training straight away and an interpreter would stay with us the rest of the day. The actual training venue was larger than 4 floor areas in size, but of course no tape recorder that ran at normal speed—either too fast or too slow. The tape had to be removed from the recorder each time with a bent fork. We hoped someone didn't have to eat with it as well! Result—Nicole's work became very fast. The hours supplied were more than enough for training. The only drawback was the walk through the park which was totally enclosed by trees—nicknamed by us as MURDER PARK. It had many inhabitants dwelling within—small birds and MEN. You would not see them as the shapes of the trees blended in with the body shape—so it was a challenge to get across the park without looking sideways and being relaxed in conversation with someone staring at you.

**The diet was exceptional....cucumber, tomatoes and cheese—one morning we received a whole single tomato on a plate (that was it); wonderful for the hips. What you didn't eat that day you knew you would get the next with stale bread. If this was guest living then Leningrad must be the pits. After the whole tomato, the next day it was chopped with cucumber and so on. The tea was made with luke warm water—no wonder all Bulgarians are thin, they wouldn't feel like eating anything. At one meal they had a wedding reception a-**

**round us—we guessed in these countries everyone enjoys extra guests even if they are strangers!**

It seemed there was no incentive to do anything. All on equal pay. If a tea bag was dropped on the floor then it would be left there for a whole week. Everything in the hotel was either broken or in need of repair.

The grass everywhere we went was very long as if it had never been mown, we only saw flowers in two small sections and these had not been cared for.

In the hotel everything was poorly made. The bath was screwed to the sides with nuts and was never cleaned, as were the carpets never vacuumed. The soap holder fell off the wall and the shower tap fell off. There was a 2" gap between the sink and the pedestal. If you were lucky enough for the water to climb up to the 16th floor to drip on you then you had to be prepared not to lather up in case it stopped for no reason and you were left with the suds.

We got stuck in the lift four times in one go. The TV only had one black and white channel and only ran for a few hours per day. Only one radio station. There was an enormous sliding window across the width of the whole room with no screens across and no balcony outside, just a sheer drop down 16 floors to the ground below; we didn't like the fresh air anyway.

Our room had absolutely everything you could want in it—but no room to operate everything. An enormous TV which was never on the air; a fridge (to open the door you had to shift the lovely chair which had the bags on top), etc., etc. It made you feel pleased you could go home when it was all over. By plane, of course.

The seats in the plane were not screwed exactly and the backs of the seats kept collapsing on to the seating part. The aisle carpet was not attached to the floor and made large ridges when you walked on it. The hostesses were kept busy pulling it straight again. Everyone cheered when we landed safely—so good luck to all who wish to go to the next World Games.

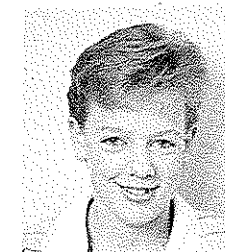
**And so ends the Bulgarian experience by the Australians. I hope the Federation can use this report in some way, even for a laugh.**

Thanks again for all your support on this trip.

Maureen Vyse  
RSG National Judging Co-ordinator

# NATIONAL SQUADS

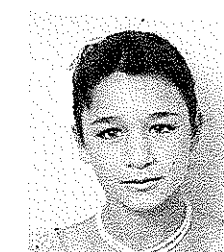
## WAG INTERNATIONAL



**Monique Allen (NSW/AIS)**  
1985 Junior National Champion  
Coach: Jan McConville



**Debbie Graham (NSW/AIS)**  
1984 Australian Champion  
Coach: Jan McConville



**Tracey Harris (QLD/AIS)**  
1986 Queensland Champion  
Coach: Barry Martin



**Kellie Larter (TAS/AIS)**  
1986 Commonwealth Silver Medal—Beam  
Coach: Margaret Jack



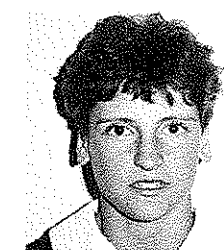
**Tracey Leotta (NSW)**  
1985 Attend Pre Worlds Competition  
Coach: Ken Benson/Ann Scott



**Jenny Richardson (VIC/AIS)**  
Member 1986 Pacific Alliance Team  
Coach: Kazuya Honda  
**WAG JUNIOR**



**Leanne Rycroft (SA/AIS)**  
1986 Australian Champion (Gymnast of the Year)  
Coach: Brian & Lyn Hutchins



**Carolyn Stewart (NSW/AIS)**  
1985 "Gymnast of the Year"  
Coach: Ken Benson/Ann Scott

**\*AIS Women's Head Coach—Ju Ping Tian**



**Julie Bigham (SA)**  
1985 South Australia State Champion  
Coach: Danica Mladenovic



**Sallyanne Hargrave (WA)**  
1985 WA Pre-Elite Champion  
Coach: Liz Chetkovich



**Sasha Hartnett (WA)**  
Member Australian Team for 1986 Canadian Classic  
Coach: Liz Chetkovich



**Kirsten McGregor-Lowndes (QLD/AIS)**  
1985 Queensland Junior State Champion  
Coach: Peter & Kym Dowdell



**Lee Ann Murray (ACT/AIS)**  
1985—2nd Junior National Championships  
Coach: Rhonda Murray



**Sasha Pascalis (NSW)**  
1985—5th Junior National Championships  
Coach: Ann Scott



**Lisa Read (NSW)**  
1986 Junior National Champion  
Coach: Ann Scott



**Shelley Turnbull (VIC)**  
1986—4th Junior National Championships  
Coach: Kazuya Honda



**Katie Watts (VIC)**  
1985 Victorian Jnr Elite All Round Champion  
Coach: Kazuya Honda

## WAG SUB JUNIOR



**Hollie Bevans (VIC)**  
1986—2nd National Clubs Competition  
Coach: Kazuya Honda



**Melanie Edwards (WA)**  
1986—3rd National Clubs Competition  
Coach: Liz Chetkovich



**Martine George (WA)**  
1984 WA Level 7 Champion  
Coach: Lindsay Nylund



**Kathryn Jamieson (VIC)**  
1986 Sub Junior Champion National Clubs  
Coach: Kazuya Honda



**Carolyn Morgan (WA)**  
1984 WA Level 6 Champion  
Coach: Lindsay Nylund

**Travelodge**  
SOUTHERN PACIFIC HOTEL CORPORATION

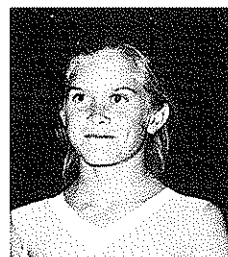
**OUR OFFICIAL HOTEL**



## NATIONAL SQUADS



**Kerry Nichols (WA)**  
1985—2nd W.A. U/10  
Coach: Lindsay Nylund



**Dhana Richards (WA)**  
1986—3rd on Bars  
National Clubs  
Coach: Lindsay Nylund



**Selina West (NSW)**  
1985—2nd NSW Sub  
Junior Championships  
Coach: Ann Scott/Ken  
Benson



**Jodie Dowse (NSW)**  
NSW 1985 Level 6  
Team Champion  
Coach: Bill Parsons

### MAG INTERNATIONAL



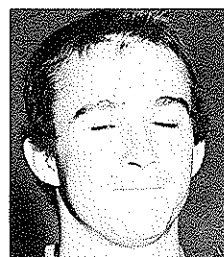
**Shaw Byng (NSW/AIS)**  
1986 Commonwealth All  
Round Bronze Medal  
Coach: Warwick Forbes



**Grant Carlyon  
(QLD/AIS)**  
1986 Pacific Alliance  
Vault—Bronze Medal  
Coach: Warwick Forbes



**Rob Edmonds  
(QLD/AIS)**  
1984 National Champion  
Coach: Warwick Forbes



**Ken Meredith  
(QLD/AIS)**  
1986 Commonwealth  
PB—Silver Medal  
Coach: Warwick Forbes



**Mark Mommsen  
(ACT/AIS)**  
1986 Overall Champion  
U/18 Australia vs Great  
Britain  
Coach: Warwick Forbes

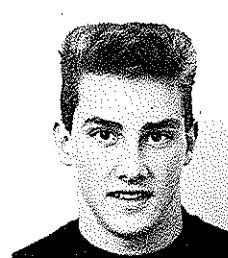


**Blaise Rizzo (NSW/AIS)**  
1986 National Champion  
Coach: Warwick Forbes

### MAG JUNIOR U/18



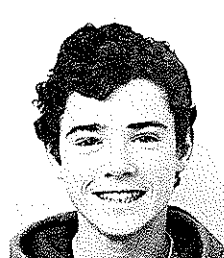
**Mark Bird (QLD/AIS)**  
Overall winner U/16  
Australia vs Great  
Britain competition 1986  
Coach: Paul Szyjko



**Tim Lees (VIC/AIS)**



**Glen Parker (ACT/AIS)**  
1984 U/16 National  
Champion  
Coach: Paul Szyjko



**Mark Shaw (ACT/AIS)**

### MAG JUNIOR U/16



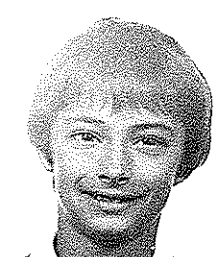
**Alex Boch (VIC)**  
1986—2nd Level 7  
National Championships  
Coach: David Turner



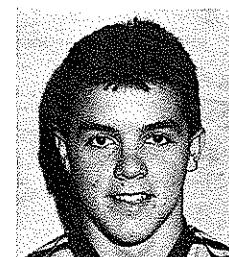
**Brennan Dowrick  
(ACT/AIS)**  
1985 U/16 National  
Champion  
Coach: John Curtin



**Brook Grimwood (NSW)**  
1984 NSW Level 7  
Champion  
Coach: Mako Sakamoto



**Peter Hogan (NSW)**  
1986 Level 8 Australian  
Champion  
Coach: Mako Sakamoto



**Stuart Ross (WA)**  
1986—2nd Level 7  
National Championships  
Coach: Masa Samura

## NATIONAL SQUADS



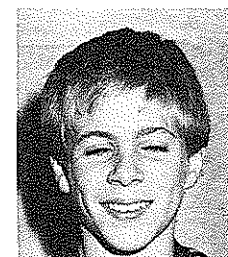
**Damien Smith (ACT/AIS)**  
1985—3rd Australia vs  
New Zealand in  
Canberra  
Coach: John Curtin  
**MAG JUNIOR U/14**



**Andre Cleland (ACT)**  
Member 1986 Team to  
tour USA  
Coach: David Hardman



**Adam Dickson (VIC)**  
1986—1st Victoria vs  
New Zealand  
Invitational  
Coach: Ken Armanasco



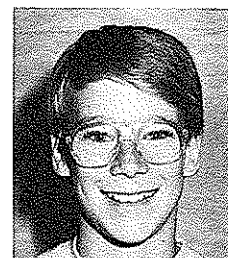
**Julian Fritz (WA)**  
1986—2nd WA State  
Level 6 Championships  
Coach: Anthony Gionetti  
/Lindsay Nylund



**Ben Holmes (NSW)**  
1986 NSW Level 6  
Champion  
Coach: Robert Kindell



**Stephen Mommsen  
(ACT/AIS)**  
1986 Level 6 Australian  
Champion  
Coach: John Curtin

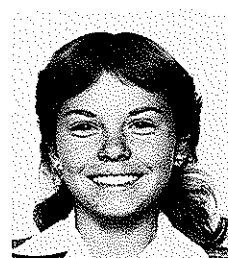


**Damien Norris (WA)**  
1986 WA Level 6  
Champion  
Coach: Val Norris

### APOLOGY:

We apologise to Andre Cleland and Adam Dickson for the incorrect photos used in the last issue of Australian Gymnast.

### RSG SENIOR SQUAD



**Juanita Ashworth (NSW)**  
1984 NSW State  
Champion  
Coach: Yvonne  
Ashworth



**Kylie Baker (SA)**  
1986 SA Senior  
Champion  
Coach: Pat Luscombe



**Gail Duquemin (VIC)**  
1986—3rd National  
Championships  
Coach: Lesley White



**Antonietta Guida (WA)**  
1985 National Champion  
Coach: Yvonne Bradley



**Nicole Higham (WA)**  
1986 Gymnast of the  
Year  
Coach: Karen Ho



**Ann Maree Kerr (VIC)**  
1986 National Champion



**Karina Lanz (VIC)**  
1986 Australian Junior  
Champion  
Coach: Ann Dearing



**Nicole Mozes (NSW)**  
1986 NSW Junior A  
Reserve Champion  
Coach: Ileana Vogelaar



**Amanda Fellow (VIC)**  
1984 Victorian Junior  
Champion  
Coach: Ann Dearing



**Elisa Pride (NSW)**  
1985 NSW Champion  
Coach: Ileana Vogelaar

## NATIONAL SQUADS

### RSG JUNIOR



**Simone Awty (VIC)**  
1984 Victorian B Grade  
Champion  
Coach: Ann Maree Kerr



**Lisa Field (NSW)**  
1986 NSW Champion  
Coach: Ileana Vogelaar



**Kathy Job (NSW)**  
Member NSW S.S.C.  
Gold Squad  
Coach: Ileana Vogelaar



**Debbie Jones (VIC)**  
Member Victorian Junior  
Team  
Coach: Bridget Kimber



**Libby Kempson (VIC)**  
1985 Junior Victorian  
Champion  
Coach: Ann Maree Kerr



**Felicity McManus (WA)**  
1985—3rd Junior  
National Championships  
Coach: Yvonne Bradley



**Sharmain Miller (SA)**



**Kylie Samorowski (QLD)**  
1986 Queensland Junior  
Champion  
Coach: Pam Armstrong



**Patty Varga (SA)**  
2nd South Australia  
Championships  
Coach: Linda Ritter



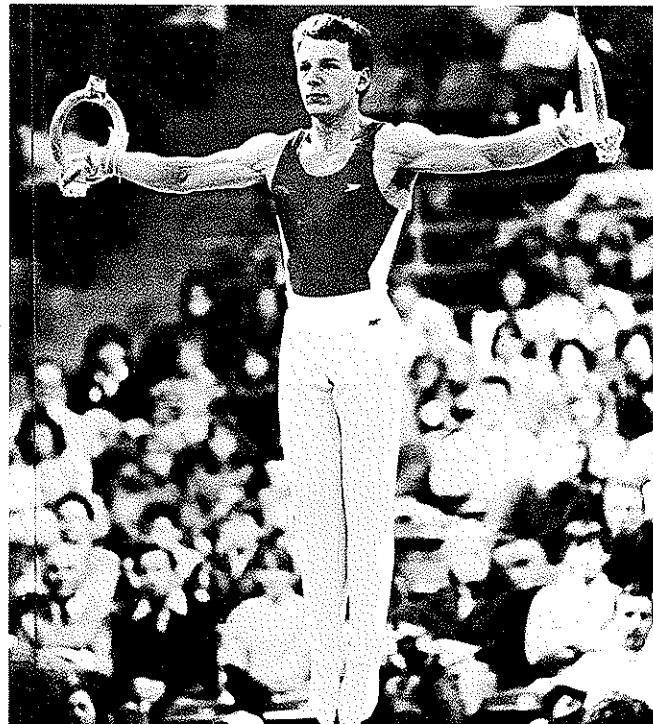
**Stacey Wild (NSW)**  
1986—3rd NSW  
Championships  
Coach: Ileana Vogelaar

### R.S.G. GROUP

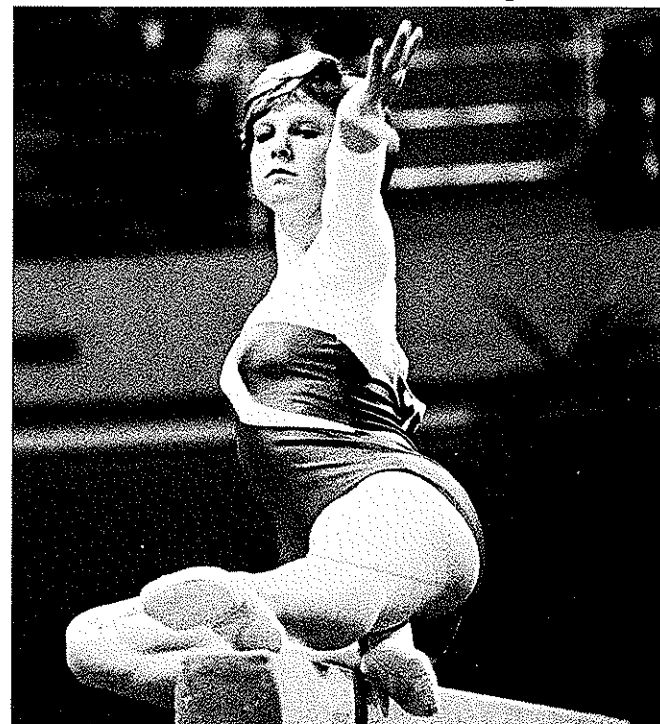
**Tara Beros, Melissa  
Wall, Rebecca Kelton,  
Caroline White, Heather  
Obremski, Sarah Leach.**  
1st 1986 Oceania  
Championships  
Coach: Gail Watson

## WESTFIELD SPECTACULAR—Reported in October/November '86 issue.

Photos courtesy Ross Gould



Werner Birbaum, NSW/AIS



Gabrielle Allen, NSW

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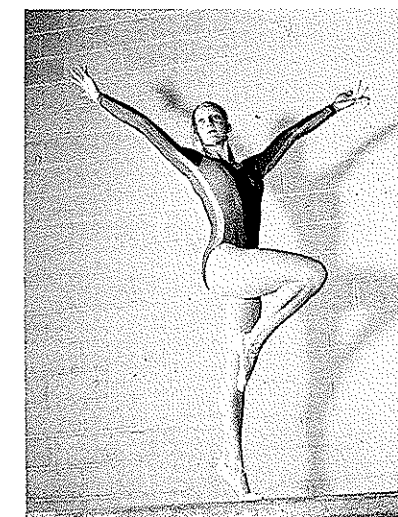
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**Head Coach  
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