



International Society of Biomechanics Newsletter

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AFFILIATE SOCIETIES OF ISB:

American Society of Biomechanics; Australian and New Zealand Society of Biomechanics; Brazilian Society of Biomechanics, British Association of Sport and Exercise Sciences; Bulgarian Society of Biomechanics; Canadian Society of Biomechanics/Société canadienne de biomécanique; Chinese Society of Sports Biomechanics; Comisia de Biomecanica Inginerie si Informatica (Romania); Czech Society of Biomechanics; International Society of Biomechanics in Sports, Japanese Society of Biomechanics; Korean Society of Sport Biomechanics; Polish Society of Biomechanics; Russian Society of Biomechanics; Société de biomécanique (France), Taiwanese Society of Biomechanics.

Guest Editors note

Dear readers of the Newsletter. In our previous newsletter, our editor---Dr. Karen Sogaard---referred to some “organizational changes and personal events” that she was dealing with. With this in mind, I offered to help out with the current newsletter---but be reas-

sured, Karen will soon resume her activities with ISB newsletters! Therefore, if you have any news for the next issue (number 105), please send it to her at kas@nrcwe.dk.

Brian L. Davis

ISB President's Report Walter Herzog, Ph.D

Technology is advancing at an exponential rate and futurists predict that the next twenty years will bring changes more profound than those occurring in the last 5,000 years. I am not sure if I can imagine how life might have been 5,000 years ago, but I amaze my kids with stories of my childhood, growing up without TV, no phone and of course no computers. My grandparents, when married had no electricity in their home; my grand father was a “Meier”, a man who milked cows for a living. But then, technology advanced, milking machines replaced the “Meier”, and he knew that an era had gone. That was just half a century ago!

So, what might be in store for the next twenty years, and more specifically what might we expect for our profession, biomechanics, and what might be our role and how can we keep up with this accelerating pace of technology development? Fourteen years ago, the first measurements of force produced by a single cross-bridge were made. The technology of capturing proteins with lasers, manipulating them, and making mechanical measurements was revolutionary then; it can be bought off the shelf now and learnt by a summer student in a few days. Today, we can see motor proteins walking along their tracks using high speed Atomic Force Microscopy; we can direct these motors and influence how fast they move and where they are going. How long will it take until we can use them as drug delivery systems, direct them to specific target sites, or have them destroy cancerous tumors? Twenty years?

Despite on-line publishing and electronic submission of manuscripts to scientific journals, the time from performing an experiment to seeing it published is probably two years; I have published scientific works on occasion as much as ten years after the experiments were performed. Imagine an experiment performed today and published ten years from now, according to our futurist's predictions, that would mean the equivalent of a couple of thousand years worth of technological development (on the past slope). Can

we afford to do that? Needless to say that technology development is slow compared to the ideas that scientists generate and the exponential increase in possibilities that arise for science from technological development.

So, how do we keep up with this pace of technological development and scientific ideas? One way that I always found useful is to attend scientific conferences. Good conferences will highlight the new and notable, and will foster the exchange of knowledge that is created now and important this minute. Presentations are less affected by the peer-review process; they allow us to share more provocative ideas than publications do. Presentations stir the mind, whereas publications are the backbone of our knowledge, more controlled, safer, but also slower. We must make sure, as a guiding principle, that the ISB conferences cater to the new and exciting, and that we facilitate presentation of the truly novel. We must embrace the future and want to be part of it.

Currently, my students struggle to get their abstracts ready for the NACOB conference this summer, and a question that I have heard from the beginning of time is: “Can I write an abstract when I only have a couple of pilot results”? My answer has always been “yes”, you want to present work that is ongoing, and half a year after the abstract deadline when the conference actually takes place, there will be more data and the story complete. I love to write abstracts based on pilot results, often not yet knowing what the precise outcome will be, and what I will have to present in six months time. It is of no use to repeat what has been published and has been accessible for the past year. Presenting ongoing work, cutting edge technology, current ideas, is what makes scientific meetings fun.

Scientific journals connect the past with the present; scientific conferences connect the present with the future. They both play a vital role in the functioning of science and scientific enquiry. While publications play the archivist, presentations play the educator, the

knowledge broker. We must take good care to preserve and enhance this role by fostering ideas and possibility for exchange.

One way the ISB is working as a knowledge broker was outlined in the last newsletter. I proposed that ISB affiliated societies could get a small grant (\$2,000US) for an invited keynote speaker for their 2008 conference, and that another small grant (\$500US) would go to the winner of a “young investigator type” competition. Five of the approximately 20 affiliated societies have taken advantage of this opportunity so far and have attracted exciting keynote speakers to their local conference. The ability to attract excellent keynote speakers, presenters with new ideas and at the cutting edge of scientific discovery, is important as they influence the students and newcomers to biomechanics.

There are many other ways of enhancing scientific conferences and meetings among scientists. Such meetings can take various forms, from small, informal

discussion meetings among a handful of scientists to global conferences with thousands of participants. The ISB has been, and is, open to ideas of how to enhance the exchange of scientific ideas on all levels. Our own biannual meeting (the next one will be in Cape Town in 2009), will attract many of the world’s best scientists and any ideas you might have to enhance what will undoubtedly be an exciting conference, are welcome by the organizing committee under the leadership of Kit Vaughan and by the ISB executive board. For 2008, I encourage you to participate in our affiliated societies’ meetings, and support your national biomechanics chapter. ISB is supporting these meetings actively in order to foster bonds and strengthen ties in an ever expanding world of technological advance.

Walter Herzog
President, ISB

ISB Past-President’s Letter

Brian L. Davis, Ph.D

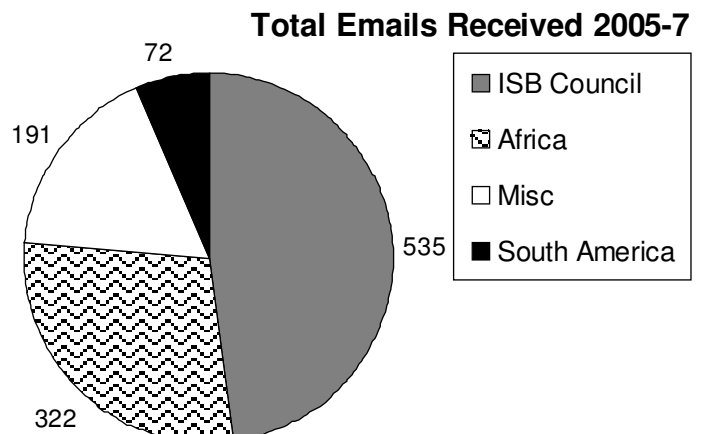
In the previous issue, our President, Dr. Walter Herzog started off by saying “It was easy then”. He was referring to his time as a graduate student, when it was not too difficult to choose which congress to attend. As I write this letter, I’m thinking “It is easy now”! However, in my case, I’m thinking of the fact that **he** is President and not me!

What I’d share with members are my thoughts on what it was like to serve as ISB President. This is an honor that not everyone gets to experience---although let me add that if I can be elected then anyone can! ☺ Usually the process starts when two potential candidates get to write about their ideas for the future . . . to my knowledge nobody has written about their thoughts *after* the 2 year term has ended. So here goes . . .

My first thought is that I was placed in a very unusual situation. Ton van den Bogert and I co-organized ISB2005, and for me that meant 4 years of being very busy with ISB affairs---2 years related to congress and 2 years related to more general ISB issues. It also meant there was an incentive to make some “profit” from the congress---because that could then serve as a means of paying for new initiatives during my term. The only problem was that I had to run back and forth from the main council meeting to the ISB2005 registration desk to deal with various issues! As a result, I was not around when the budget for my term was finalized--however, I did ask Graeme Wood to add a line item for “new initiatives” that would be paid for solely from

ISB2005 profits. At this embryonic stage of my presidency, I had in mind some ideas related to promoting biomechanics in Africa, South America and in fostering biomechanics through “seed groups”.

What I did not realize was how much email I would have to deal with, as each of these ideas made their way from concepts to reality. For instance, from August 1st, 2005 until July 2007, I received at least 1120 emails (that’s how many I still have in my ISB_received folder). Figure 1 below shows a breakdown of those I received. ISB Council members sent me 535 separate emails; 322 additional emails (some from council members such as Joe Hamill) related to ISB’s “Africa initiatives”. Longini Mtalo at TATCOT was one person who I can single out as being a key correspondent. Without his willingness to communicate on a regular basis, the ISB gait lab at in Tanzania would never have moved “off the drawing board”.



As for the 535 emails from council members, Mary Rodgers sent me 95, just short of one per week! Others accounting for much of the correspondence were Graeme Wood (on everything from wrapping up ISB2005 to getting prepared for ISB2007), Peter Milburn (mostly related to the ISB student grant program), Jill McNitt-Gray (whose “EDC country” portfolio dovetailed with our efforts in South America and Africa), and Julie Steele (on issues primarily related to biomechanics in Australia and New Zealand).

In terms of emails I sent, the picture is somewhat biased due to me personally sending out 2330 emails inviting biomechanists to join ISB. Thank goodness for mail merge!

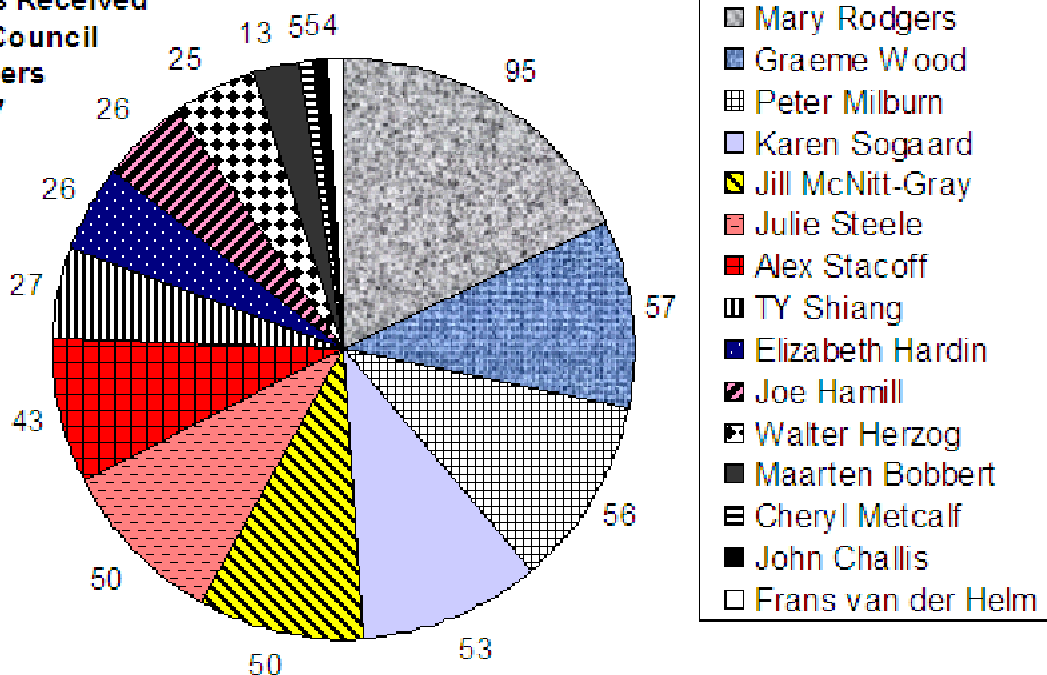
Emails that were *not* created via mail merge software, i.e., that were individually sent to single or multiple recipients totaled at 1075. (I may have deleted some of these or filed them incorrectly, so this may be a slight underestimate.) As for these emails, it is difficult to identify exactly who the main recipients were, because some had multiple people in the address line. As for the general topics of these emails; 222 related to biomechanics in Africa, 35 dealt with activities in South America, and the rest can be termed “miscellaneous”.

Excluding the membership drive, the total received (1220) and those sent (1075), obviously together mean that I averaged about 3 ISB-related emails per day for each of 730 days. I’m not sure what other

presidents experienced, but I can say that, for me, this was a fair amount of email traffic! In addition, given the fact that I was usually corresponding with people in Tanzania (8 hour time difference), or Peter Milburn, Graeme Wood, Julie Steele or TY Shiang (12 hours difference), this meant I had to try and make sure I checked email before going to bed or first thing when waking up each day. With this number of emails, members may ask, “How many were of the “unpleasant” variety?” Fortunately, I can say that “problem” emails were rare. Without mentioning names, I remember some related to ESB 2006 (where I thought students were not given a fair deal), a couple dealt with someone who wanted ISB to pay for his/her expenses at ISB2007, one or two related to award deadlines not being met, and (this is an issue all presidents have to face), informing potential congress hosts that their bids were unsuccessful.

In conclusion, I found my 2 year term to be extremely rewarding. There were very few controversial issues. Rather, I found working with seed groups in Brazil, Croatia and Tanzania to be personally motivating, and in line with the ISB’s mission of fostering biomechanics globally. I also happened to serve at a time when TY Shiang and his team were preparing an outstanding congress in Taipei. Council members such as Joe Hamill, Maarten Bobbert, Peter Milburn and others went “the extra mile” to serve ISB. I thank them for all their efforts...they made my work easy.

Emails Received from Council Members 2005-7



Report of trip to TATCOT, Tanzania to finalize Vicon Installation

Leendert Schaake, Roessingh Research and Development, Roessingsbleekweg
33b, 7522 AH Enschede , The Netherlands

First, I have to thank the people at TATCOT for their hospitality – from the beginning I really felt at home.

On Tuesday 30th of October 2007 we started connecting all the components. Longini Mtalo had already mounted the cameras on Monday so we had a flying start. After connecting everything we started testing and ran into some problems with the force platform. We also had some reflection and light issues with the cameras. So on Wednesday we moved one of the cameras to a new position, which solved some of the reflection issues. Longini made some temporary solutions (using thumbnails) with gaps in the curtains. This worked very well.

On Wednesday we discovered that the force platforms we not connected in the breakout box the way they should be (Editor's note: I must have inadvertently mixed some of the wires when I was there previously!) We also appeared to have a problem with the sensitivity values of the force platforms, but I figured out early Thursday morning that I had been making a thinking error – so we were able to solve that issue as well. We also exchanged the 2 force platforms, since one of the force platforms has a slightly shinier surface which seemed to cause some reflections. Moving this force platform to the other position solved the big reflection problem we had in the middle of the measuring volume.

On Wednesday I had already started to instruct Longini about the use of the system and we continued with that on Thursday and on Friday. We did our first measurement with a subject, after

which we adjusted some of the camera orientations to improve marker visibility. We also went through the methods of how to use plug-in gait for analyzing the data. On Saturday morning I explained to Longini how to get the results of the model calculations to be displayed via Polygon and how to port such a presentation to another computer for use in classrooms.

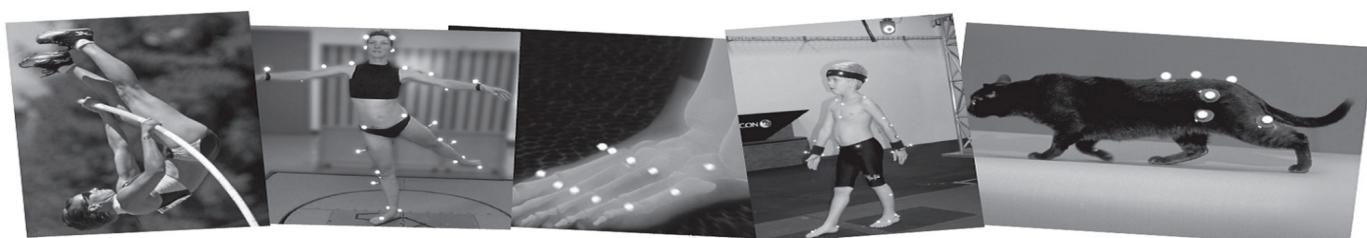
During the symposium (as part of TATCOT's anniversary) I attended the talks and gave a presentation on behalf of ISB. Longini did some additional experiments without me being present in the gaitlab. They ran into some small issues and had some additional questions which I could explain. I found the symposium itself very interesting, especially the stories of former students of TATCOT, and the story of a patient and a trip to the school and rehabilitation centre for children with disabilities. This gave me a better understanding of the circumstances people in these developing countries have to work with, so I'm happy I could attend that.

I also spoke to some other people, mainly from the International Society for Prosthetics and Orthotics (ISPO). Isabelle Urseau from Handicap International France would be interested to get into contact with French speaking ISB members who might be willing to assist in biomechanics teaching in French speaking developing countries in Africa. There is a major role here for ISB. Also I'm looking into some courses that are provided in the USA and in Europe that focus on interpretation of the data analyzed with VICON plug in gait and that may be interesting for the people at TATCOT.

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2009 International Society of Biomechanics Conference

The 2009 International Society of Biomechanics Conference is to be held in Cape Town, South Africa. The dates are Sunday 5th July to Thursday 9th July 2009.

Information on the ISB-Sponsored Gait Laboratory in Caracas-Venezuela Ediuska Laurens, Ph.D. candidate, ISB Student Representative

Venezuela lies at the northern extreme of South America, bordered by Colombia to the West, Brazil to the South, Guyana to the East, and the Caribbean Sea to the North (**Fig 1**). The country is just over 900 thousand square kilometers and with a population of 28 million. Its borders seem to hold all of South America in miniature as there are fine stretches of the Andes, huge areas of Amazonian rain forests, fertile plains known as llanos, miles of Caribbean shoreline, and even a small desert. The nation also has a few geographical superlatives, including the world's highest waterfall and South America's biggest lake.

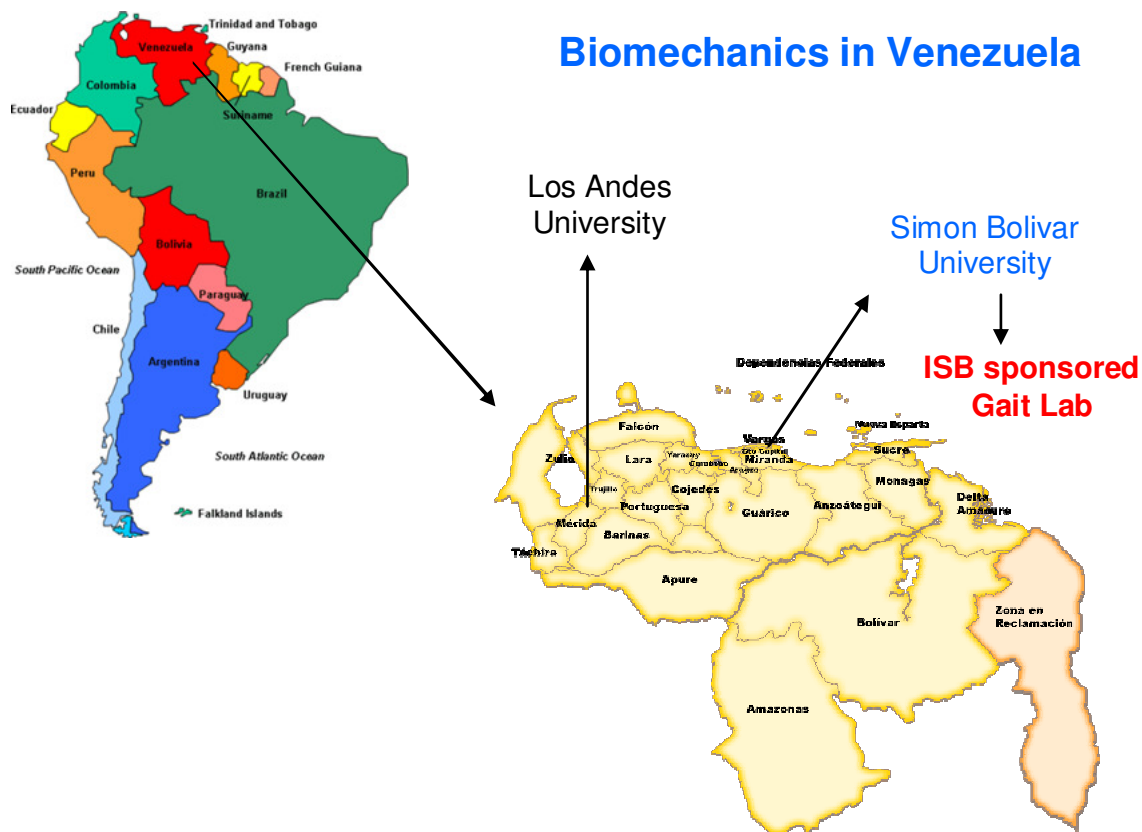


Fig 1. Biomechanics Research in Venezuela

Biomechanics is an exciting and developing field in this country, and it can be studied at two universities: **Los Andes University (ULA)** located in the city of Merida; and the **Simon Bolivar University (USB)**, located in the capital of the country, Caracas (**Fig 1**). These two institutions represent the only source for contributions and progress for the future biomechanists of this nation.

As an economically developing country, Venezuela possesses limited technological resources. For instance, it has one clinical gait laboratory to attend to both the orthopedic necessities as well as the ongoing biomechanics research of the entire country. Therefore, in order to improve the chances of biomechanics advancement and innovation in this part of the world, ISB, in its commitment to promote and improve biomechanics in economically developing countries (EDC) and inspired by Tanzania's successful project, will pledge once again to make possible the development of a gait analysis laboratory at the **Simon Bolivar University, Caracas-Venezuela**.

As the ISB student representative and a native of Venezuela, I have initiated and undertaken the task of serving the interests of ISB by coordinating the establishment of this gait lab in my home country. I knew that this project will require a lot of work, time, and patience trying to convince sponsors and members to contribute and participate in this project. However, to my surprise, I was thrilled with the immediate support and generous donations that we received from our amazing sponsors Motion Analysis Corporation and AMTI, and from the Cleveland Clinic Foundation. Furthermore, I am very happy to announce that these donations are so outstanding that we already have most of the equipment we need to set up this laboratory.

Additionally, I would like to share with you that as I travel to Venezuela every December to spend Christmas with my family, I took this opportunity to visit the biomechanics group at the Simon Bolivar University (**Fig 2**). My visit was very productive as I achieved my goals of meeting Dr. Carmen Müller-Karger (founder and director of this biomechanics group) and other researchers involved with this task. I was able to describe the relevance of these efforts more in detail, explaining ISB's role and mission, clarifying concerns and questions for both ISB and USB about the project, visiting the physical space, and finally meeting the students. The latter was the most important and exciting for me because it provided me with the opportunity to not only introduce my own research in biomechanics and my involvement with ISB, but also to interact with students and learn about their biomechanics research, challenges, and limitations.

I would also like to mention that the labor for this assignment is not one sided, since USB needs to provide and condition the physical space required for the gait laboratory, As you can see in the pictures (**Fig 2**) they have a lot of work to do! However, for the Venezuelan biomechanics researcher and students this is not discouraging but rather inspirational as they are thankful to receive such an enormous assistance and opportunity to build their own gait laboratory.

This laboratory will open new opportunities for biomechanics investigations for several research groups at USB, especially the Biomechanics and Mechatronics groups. They will now be able to better evaluate their lower limb prosthetic devices as well as to improve their imaging processing and pattern recognition techniques. Both research groups count with an average of 20 students each; however, the impact on students is expected to be much greater as students keep joining the biomechanics program from different parts of the country. Additionally, the establishment of this biomechanics gait lab will be of great help not only to the biomechanics research developing in the country, but also to the Venezuelan people in general, since as I mentioned before there is only one clinical gait lab in the entire country.

Finally, it is a privilege for me to lead this project in my homeland since as most people do, I always dreamt with the opportunity to give back to my country, especially by means of facilitating and improving education. Hence, I feel fortunate to make this possible so soon in my career and through such a prestigious society such as the International Society of Biomechanics. I would like to deeply thank the ISB president, Walter Herzog, and past president, Brian Davis, for their unconditional and incredible support and guidance throughout this process. Lastly, I would also like to thank Motion Analysis, AMTI, and the Cleveland Clinic for their unbelievable donations.

USB →



Physical Space to be renovated

USB
Biomechanics



Biomechanics Researchers



Lower Limb Prosthesis

Intervertebral Disc Prototype



Biomechanics Students

Fig 2. Biomechanics Research at USB

For all the ISB members, if you would like to contribute or have any questions about this project, please do not hesitate to contact me at laurene@ccf.org.

Best Regards,
Ediuska Laurens
Student Rep.

On your next trip to the library, look for*:

Martin KL, Johnson PB, Robbins EA, Hernandez JA, Speer TM, Pommerening RC et al. Long walks on moonlit beaches: Monitoring grunion runs in California. *Integrative and Comparative Biology* 2004; 44(6):725.

Kruisselbrink LD, Martin KL, Megeney M, Fowles JR, Murphy RJ. Physical and psychomotor functioning of females the morning after consuming low to moderate quantities of beer. *J Stud Alcohol*. 2006 May;67(3):416-20.

Nascimento JM, Shi LZ, Meyers S, Gagneux P, Loskutoff NM, Botvinick EL et al. The use of optical tweezers to study sperm competition and motility in primates. *J. Royal Soc Interface* 2008;5(20):297-302.

Hurlbert AH, Ballantyne F, Powell S. Shaking a leg and hot to trot: the effects of body size and temperature on running speed in ants. *Ecological Entomology* 2008;33(1):144-54.

* Some were extracted from Biomch_L postings by Keith Gordon, 2/14/2008 – 2/21/2008

Biomechanist in Baghdad

Interview with Firas Mohammed

Baghdad-Iraq

Brian Davis (BD): *What do you enjoy in your spare time? What is your favorite food? What is your favorite movie?*

Firas Mohammed (FM): I spend much of my time reading books, my favorite food is "Grilled fish", and my favorite movie is "Professionals".

BD: *Could you describe your educational background and research you are currently involved with?*

FM: I had got my B.Sc. in medical engineering from AL-NAHRAIN university (which was called SADDAM University) and I went to study M.Sc. in medical engineering in 2005 to complement my education in medical engineering. I am specifically working in the area of biomechanics of human walking. My research is "static models of the human musculoskeletal systems during gait". This involves calculations of muscle and joint reaction forces of the lower extremity during walking. I use D'Alembert's principle in which the musculoskeletal structures are in a state of dynamic equilibrium during a gait cycle (where walking is considered as static with inertia at each instant of walking). Muscle forces are also calculated based on the application of numerical optimization methods during each step. Dynamic equilibrium equations are used to find the joint reaction forces of the lower extremity.

BD: *How many students study biomechanics at Al-Nahrain University?*

FM: There are 2 to 4 MSc biomechanics students each year. A total of 16 students studied biomechanics in the last six years.

BD: *Are there many professors with interests in biomechanics?*

FM: There are a few professors with interests in biomechanics. In my department there are two main doctors, Prof. Dr. Albert

E. Numan (my supervisor) and Assistant Prof. Dr. Sadiq J. Abbas.

BD: *Do you have a biomechanics or a gait laboratory?*

FM: There is a simple biomechanics lab but there is no gait lab. However, this year we may see the opening of new gait lab.

BD: *Have there been many changes at your University after the time it changed its name to Al-Nahrain University?*

FM: Yes there is many changes happened to Al Nahrain university ; the system of education (for B.Sc.) before 2003 was 4 quarters (if a student failed in a specified subject he/she should return to this specific subject completely with lectures and examinations). Now the system of education has changed: there are 2 semesters (and if one fails in a specific subject he/she should only re-examine this course to pass). The number of education years has also changed. For the college of engineering, for example, departments required 3 years --- except the medical engineering department which was 4 years. Now all the departments are 4 years except medical engineering which is 5 years.

Many of the doctors and professors in my college left Iraq after 2003 because of the bad security conditions after that time.

Also there was special spending because SADDAM university was not included in the ministry of higher education; now the spending has been reduced after being included in the ministry of higher education.

Before 2003 students applying to the university had to pass an efficiency test to get admission -- now there is no such test.

BD: *You mention a "bad security situation". How bad is it?*

FM: The security situation had gradually worsened since 2003 to reach a peak on the last three months of 2006 and first three months of 2007 (black days). This was a very bad situation. Many students did not go to the university. Now it is much better. I can feel improvements in the number of car explosions and the number of people killed. Last year many of my colleagues were killed by car explosions or road side bombs and also at the imaginary check points. (They look like policemen but kill selectively and this causes great challenges in traveling from home to university and vice versa.)

BD: Can you describe a typical day for yourself, in terms of what it is like to get to University, and the challenges you face travelling in the city?

FM: For me the typical day starts at 7:00 o'clock at morning. I can go to the street at this time. The day ends at 6 pm (in winter) and 8 pm (in summer). After this time I can not go on the street so there is a great waste of time. Also the security situation has had an affects on the electricity (causing damages to the network) in which most days Baghdad has a maximum of 4 hours supplied per day by the electricity network. Nearly all residents in Baghdad have generators at there homes.

BD: Once you finish your studies, where do you or your friends see yourself working?

FM: when me and my friends finish M.Sc. study we have opportunities to work at the university. There are no opportunities to work in industry because there are only two factories in Iraq for artificial limbs. One is in Baghdad and was built in 80's. It is very old and the artificial limbs are like the limbs of dummies! The other factory is in Kurdistan in the north. It was built by the UN in 90s.

My country need more developed factories that can make artificial limbs and other aids for amputees and disabled people. The number of amputees is very large because the several wars since 1980. The number of amputees is not exact and there is no accu-

rate statistics of such cases but it is really high when compared to other countries. There is low spending on health care sector in general. For example we were supposed to get a hospital specialized for amputees in 1985 in Baghdad, but it is still not completed!

BD: Do you have any specific biomechanics questions for ISB members?

FM: I would like to know more about the muscle lines of action of the lower extremity during gait cycle. I had found only Dr. Herzog had published a paper about lines of actions of muscles around the knee joint but I did not find any paper talk about muscles lines of actions about hip and ankle joints. Could you please tell me is there any method to calculate these lines of actions?

A colleague in the M.Sc. program has some questions about the dimensions of normal and artificial ankle joints. She is doing a stress analysis of the artificial ankle joint during a gait cycle using finite element method (ANSYS). Could ISB members please send any paper or information about the accurate dimensions or recommended dimensions of bones around ankle joint (normal and artificial)? I will give this information to her.

BD: Are there other problems you think the ISB could assist with?

FM: One of the most important problems that we face is that our university library lacks biomechanics books and journals. The central library of Baghdad University contains very old books in biomechanics and very few journals of biomechanics. Other university libraries have lost many references. All my attempts to access Iraqi virtual science library (IVSL) are also useless because the website does not register for biomechanics journals (not only ELSEVIER, but also ASME). So the lack of references is one of the greatest problems we have faced.

BD: Thank you for your time.

FM: Thank you for your patience. My access to email is sometimes limited!



NIKE

2009 Nike Award for Athletic Footwear Research

For the third time, Nike will again sponsor a \$25,000 award for Athletic Footwear Research. The award will be presented at the Ninth Footwear Biomechanics Symposium in the summer of 2009. Additional details will be available in future newsletters and can also be found on the Footwear Biomechanics Group webpage (www.footwearbiomechanics.org).

Call For Papers: NORTH AMERICAN CONGRESS ON BIOMECHANICS, August 5-9, 2008

The North American Congress on Biomechanics (NACOB 2008), a joint meeting of the American Society of Biomechanics (ASB) and Canadian Society for Biomechanics (CSB), will be held August 5-9, 2008, at the University of Michigan in Ann Arbor, Michigan, U.S.A. The organizers of NACOB 2008 encourage you to submit papers in a broad range of biomechanics topics, including aging, biofluidics, comparative and developmental biomechanics, cellular mechanics, dental, ergonomics, finite element modeling, injury prevention, locomotion, molecular motors, motor control, neuromechanics, novel instrumentation, orthopaedics, prosthetics, protein folding, rehabilitation, reproductive biomechanics, sports, tissue engineering, and vehicle occupant safety. Both modeling and experimental work is encouraged at scales ranging from the molecular to the whole body level. The program will include four concurrent sessions, lab tours, tutorials, symposia, four keynote lectures, best paper competitions (Microstrain, Clinical Biomechanics, and Journal of Biomechanics awards), the ASB Borelli, CSB Career, ASB Hay, and Young Investigator award presentations. Please see the ASB and CSB web sites for information on awards for outstanding research by student and other investigators. On campus housing will be available. The deadline for abstract submission is March 1, 2008. Abstracts must be submitted electronically at <http://www.abstracts.nacob2008.org/>. For more information about the meeting, please visit the NACOB 2008 website at <http://www.nacob2008.org/>.

**Do You Want to Have a Chance to Visit the Highest Waterfall in the World,
Ride the Longest Cable Car in the World through the Andes Mountains, or
Experience the Most Extravagant Carnivals in the World?**

Ediuska Laurens, Student Representative

Dear ISB Members,

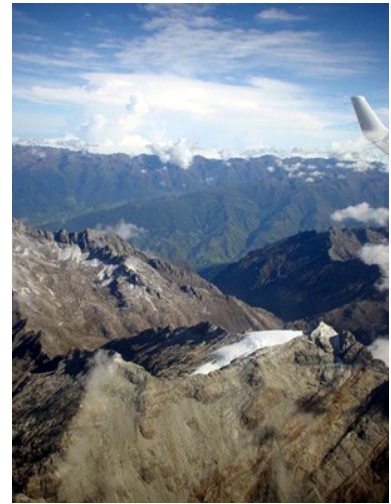
As part of ISB efforts towards promoting biomechanics around the world, I would like to announce that we are looking for volunteers who are interested in teaching workshops in certain areas of Biomechanics at the Simon Bolivar University (USB) in Caracas, Venezuela, at Los Andes University (ULA) in Merida, Venezuela, and at Universidade Federal do Rio Grande do Sul (UFRGS) in Porto Alegre, Brazil. As ISB is committed to developing biomechanics in Economically Developing Countries (EDC), the society will be able to finance a qualified member to participate in this educational and rewarding exchange.



Angel Falls



Carnival in Brazil



Venezuelan Andes

If you fulfill the following requirements, then you are a potential traveler to Venezuela or Brazil:

1) Requirements at USB:

- Expertise in of the following areas of biomechanics:
 - o Finite Element Analysis (non-linear / viscoelastic) with applications to both bone and the development of medical devices.
 - o Medical Devices, in particular external prostheses.
 - o Experimental testing of bone structure.
- The workshops can be taught in English, but Spanish would be preferable.
- Availability for traveling either the second week of the month of April or December 2008.

2) Requirements at ULA:

- Expertise in the area of Biomaterials for Orthopedic Applications.
- The workshop needs to be taught in Spanish.
- Availability for traveling sometime in the month of March or April 2008.

3) Requirements at UFRGS:

- Expertise in the areas of:
 - o Skeletal Muscle Biomechanics
 - o Sport Biomechanics, Locomotion.
- The workshop can be taught in either English or Portuguese.
- Availability for traveling sometime in the months of April, May, September, October, or November 2008.

Venezuela and Brazil are beautiful countries with amazing natural resources and landscape! Therefore, you will not only have the opportunity to enjoy these paradises and experience their rich culture, but most importantly you will be contributing to enhance biomechanics in this part of the world.

Members who are interested in this collaboration please contact Ediuska Laurens at laurene@ccf.org.

Best Regards,
Ediuska Laurens
Student Rep.

The AnyBody Modeling System™ version 3.0 is now available!



IMPROVED USER INTERFACE FEATURES!

Users of The AnyBody Modeling System™ has time after time made it evident that the general capabilities of the software in terms of handling sophisticated, detailed models is not merely adequate and satisfactory - it is quite unique!

However, keeping track of all these details during modeling requires effort and skills.

That's why we now in version 3.0 have improved the general user interface of the system.

Version 3.0 has undergone significant improvements of the AnyBody interface in terms of supporting the modeling process, and now offers a platform for further improvement in the interface in terms of GUI, scripting language etc.

New features of version 3.0 are namely:

- parameter and optimization study features
- net moment measures about joints
- linear data filtering; and...
- extensive changes in the user interface.

Version 3.0 of the AnyBody Modeling System™ is now available for download from our website.

Visit our website at www.anybodytech.com, and read the release news for more information.

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ISB INTERNATIONAL TRAVEL GRANT 2007
NYAVO YAWO, student from Tumaini University/TATCOT
Tanzania, East Africa

In November 2005, the former President of ISB Dr. Brian Davis visited our school and it was from him we learnt about ISB and ISB GRANTS. This year after applying I was checking my email several times per day but it was 4th April at 8h30.AM that I was informed that I had received an award. Really that date has become a historical date for me and I can never forget it in my life.

This grant allowed me to travel to Hong Kong Polytechnics University (PolyU) at the Department of Informatics and Health Technology. The aims of this travel were to strengthen my knowledge in instrumented gait analysis and have exposure to other approaches in education. PolyU gait lab has many facilities including a Vicon 370 3-D Motion Analysis System with 6 Cameras and AMTI force plates (to measure the ground reaction force of both limbs simultaneously for gait analysis). First I been taught how to use the system. I was very glad when I started operating the system independently!

After getting familiar with the system I was allowed to conduct a small project on biomechanical effects of using a flexible foot versus a convention prosthetic foot (SACH FOOT) by trans-tibial amputees. In fact in prosthetic fitting the choice of the foot is one of the most important factors to be considered.

Compared to traditional SACH foot, the flexible foot showed higher prosthetic dorsiflexion moments and positive power at late stance, which could assist in the push-off. Therefore It has been demonstrated that flexible prosthetic feet are capable of storing energy in the heel and mid foot section when load bearing and releasing energy during the push-off phase. Such behaviour would presumably provide a more natural gait pattern and a decrease in the energy cost of gait.

Apart from my own project I had the chance to participate in many research projects (e.g., foot impression procedures to control foot alignment, and techniques to make transtibial prostheses in developing countries). It was a great chance for me to attend the Hong Kong prosthetics and orthotics scientific meeting. It was a first time for me to participate in such a scientific and interesting meeting. I learnt a lot from that meeting!

As a future tutor in Prosthetics and Orthotics in Togo (West Africa), this travel was very beneficial for me inasmuch as it allowed me to gain knowledge, and advice related to teaching methodology from the experienced lecturers of Polytechnic University. I was very impressed with the equipment, the modern technology and quality of the different orthopaedic appliances observed during my visit of the different orthopaedic rehabilitation centres of Hong Kong.

I wish to register my heartfelt gratitude and thanks to the former president Dr. Brian Davis, to the award committee (whoever you are!) and to the ISB council for their financial support as well as the International Society of Prosthetics and Orthotics (ISPO). Thanks should be given to my supervisors (Prof Daniel Chow, Dr Aaron Leung), their collaborators and all the research students who have greatly assisted me during my studies.

Based on the level of knowledge I achieved during my travel, I would like to suggest that more chance may be given to other students from developing countries where there is a lack and/or inappropriate study facilities. Travelling like I did will give other better understanding and strengthen their knowledge in biomechanics and related fields.

ISB INTERNATIONAL CONGRESS GRANT 2007
Ediuska Laurens, Ph.D. Candidate, ISB Student Representative

I joined the Ph.D. Biomedical Engineering program at Cleveland State University-Cleveland Clinic Foundation in the fall of 2005. Dr. Brian Davis was the director of this program at the time, and during our first introductory meeting, he spoke about the International Society of Biomechanics, and I became a member at once. A year after that, I bumped into Dr. Davis in one of the halls at the Cleveland Clinic and began chatting, as we would usually do. During this conversation, he encouraged me to apply for the ISB student grants. I became very excited about this idea and went on the ISB website to obtain more information about the grants and their requirements.

By searching on the ISB website, I also realized that the ISB Congress was the following year (2007). As I had just generated my first set of valuable data, I thought the ISB Congress would be a great opportunity to present my work. Therefore, I decided to apply to the ISB Congress Grant.

In the month of April, I was informed that I was one of the fortunate students to receive the ISB Congress Grant. I really could not believe I was one of the recipients of such a competitive grant. This financial assistance secured my attendance to the ISB Congress in Taipei, Taiwan. It would have definitely been difficult for me to attend this meeting if I did not receive the grant. These funds helped me to pay for registration, hotel, and food while in Taipei.

Because of the amazing educational and cultural experience I had in Taipei, now as the ISB student representative, I am a huge advocate for the ISB Student Grants. Having these opportunities available to all student members represents a chance to learn biomechanics in the most exciting and intellectually stimulating environments. Hence, as I was encouraged once, I would like to take this opportunity and encourage all the ISB student members to plan and apply for the ISB student grants in the coming years.



Ediuska and ISB President-elect, Dr. Julie Steele outside a restaurant in Taipei.

Invitations to collaborate

1

Roger V. Gonzalez, PhD, PE
Professor, Biomedical and Mechanical Engineering
Director, LeTourneau Engineering Global Solutions (LEGS)
rogergonzalez@letu.edu
www.letu.edu/legs ---- www.legsresearch.org
www.letu.edu/bmeresearch



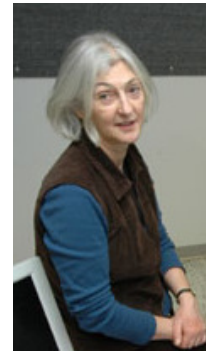
LeTourneau Engineering Global Solutions (LEGS) would like to test the abilities of their prosthetic component designs in terms of meeting the needs within developing countries. LEGS would provide engineering and biomechanics expertise, while their partner would provide P&O skills (instructor and student) and the setting in which to perform longer termed detail studies. Dr. Gonzalez is asking the ISB to help facilitate contact with other colleagues within the biomechanics community who have specific expertise in AK gait. *Please note that these endeavors are not highly funded and thus would require a passionate personal commitment from any persons involved.*

Dr Gonzalez asks, "Feel free to give my contact information to anyone you feel would give serious consideration to this collaboration".

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2

Geneviève A. Dumas, PhD, PEng,
Professor, Department of Mechanical and Materials Engineering,
Queen's University, Kingston, Ontario, K7L 3N6 Canada
Email: dumas@me.queensu.ca



wani
physi-
Hu-
Pinti,
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A group that includes researchers from three continents (Dr. Mohamed M La- and Dr. Barnabé Aplogan at the Institut national de la jeunesse, de l'éducation que et du sport (INJEPS), in Bénin, West Africa, Dr. Geneviève Dumas, in the man Mobility Research Centre at Queen's University, Canada, and Dr. Antonio Université de Valenciennes France) is studying occupational biomechanics of nancy in a West African context.

They are seeking assistance in terms of equipment and supplies needed for this project. Examples include (i) a system for continuously monitoring flexion/extension and lateral bending of the trunk during a normal work day or during specific tasks (e.g., a virtual corset), (ii) a system for measuring spine curvature with good resolution (e.g., a "spinal mouse"), (iii) a laptop for data acquisition and analysis, and (iv) a request from faculty in Benin for a data projector for seminars.

By way of background . . . the Benin population is mostly rural and constitutes 52% women, predominantly involved in commercial and agricultural activities. Rural pregnant women are subjected to heavy physical work at home, in the fields and carrying heavy loads on their back or head. This commonly leads to back pain and other musculoskeletal conditions. There are no official statistics, but approximately 60% of Benin women report back pain at prenatal consultations. Collaboration between Canada and Benin originated from a common interest in the prevention of back pain during pregnancy. The connection was facilitated by G. Poumarat (Université d'Auvergne, France) and by A. Pinti (Université de Valenciennes). Collaborative work between the partners has focused on developing pain scales to evaluate back pain severity that would be appropriate in the Benin context. Questionnaires, designed or adapted from existing scales at Queen's university and from the literature, have been reviewed and translated into French. With appropriate and relatively light equipment, the project could develop in biomechanical directions. For example, (i) evaluating the effect of carrying heavy loads on spine lordosis and kyphosis, (ii) determining thresholds for safe/safer loads, and (iii) studying techniques used to lift and lower the loads commonly encountered in Benin.

If interested in learning more about this occupational biomechanics project, or if your institution can provide assistance, please contact Dr. Dumas at dumas@me.queensu.ca.

ISB MEMBERSHIP NEWS - New Members

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United States

Lei Ren
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Engineering
King's College of London London 0
United Kingdom

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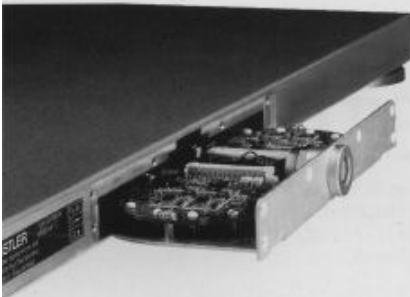
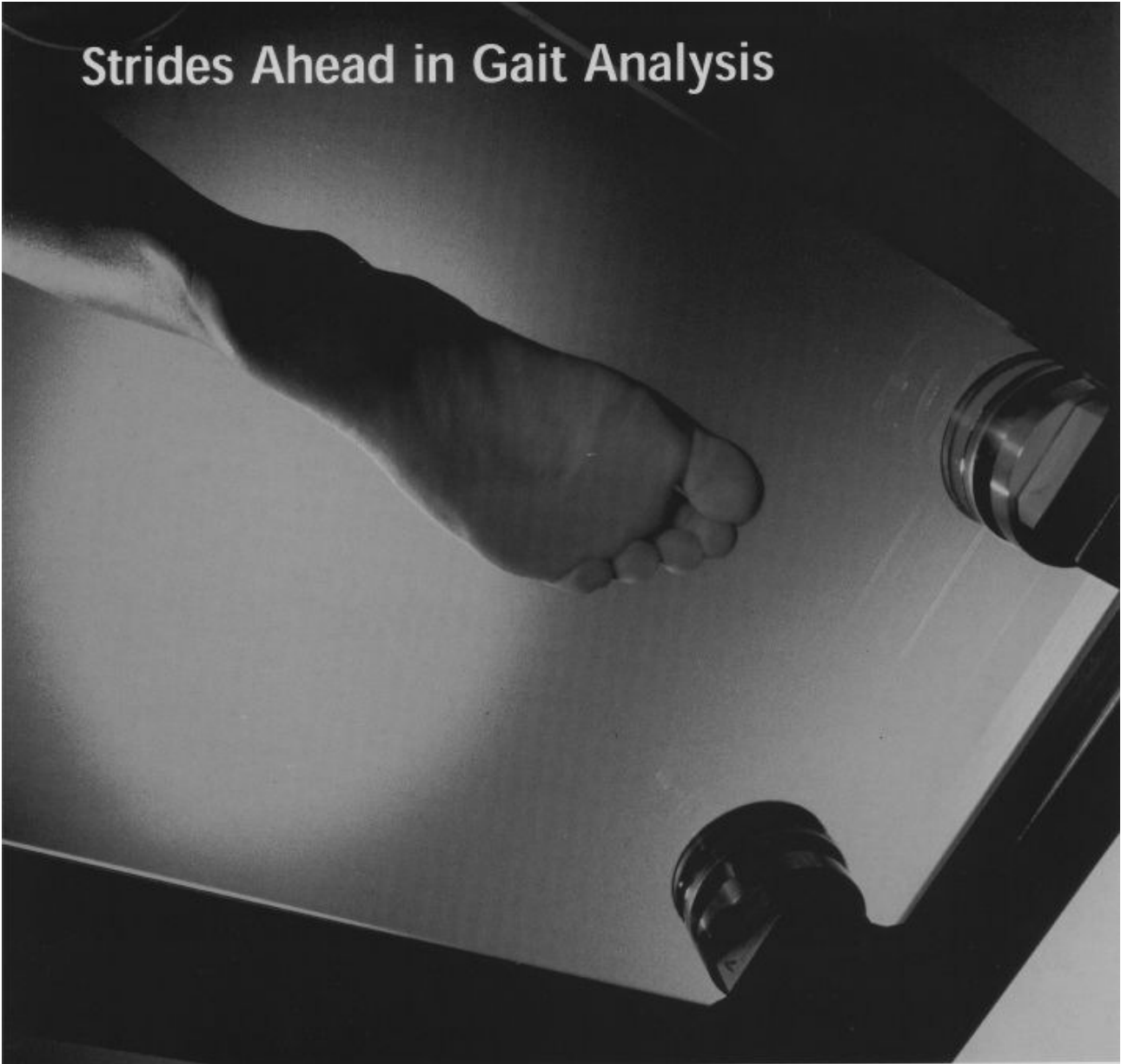
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